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RESEARCH PAPER

Why Incorporating a Platform-Intermediary can Increase Crowdsourcees' Engagement

Case-Study Based Insights

Julia Troll · Ivo Blohm · Jan Marco Leimeister

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Abstract While the crowdsourcer's job is to encourage valuable contributions and sustained commitment in a cost-effective manner, it seems as if the primary attention of management and research is still centered on the evaluation of contributions rather than the crowd. As many crowdsourcers lack the resources to successfully execute such projects, crowdsourcing intermediaries play an increasingly important role. First studies dealt with internal management challenges of incorporating an intermediary. However, the issue of how intermediaries influence crowdsourcees' psychological and behavioral responses, further referred to as engagement, has not been addressed yet. Consequently, two leading research questions guide this paper: (1) How can the engagement process of crowdsourcees be conceptualized? (2) How and why do crowdsourcing intermediaries impact crowdsourcees' engagement? This study extends existing knowledge by offering IS-researchers a process perspective on engagement and exploring the underlying mechanisms and IT-enabled stimuli that foster value-creation in a mediated and non-mediated setting. A theoretical process model is first conceptualized and then explored with insights from two common cases in the growing field of crowd testing. By triangulating platform and interview data, initial propositions concerning the role of specific stimuli and the intermediary within the engagement process are derived. It is proposed that crowdsourcing enterprises, incorporating intermediaries, have the potential to generate a desired engagement state when perceived stimuli under their control belong to the so-called group of "game changers" and "value adders", while the intermediary controls mainly "risk factors" for absorbing negative experiences. Apart from the theoretical relevance of studying mediated engagement processes and explaining voluntary use and participation in a socio-technical system, findings support decisions on how to effectively incorporate platform intermediaries.

Keywords Crowdsourcing · Platform intermediaries · Crowdsourcing experience · Engagement process · Satisfaction response · Case study research

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1 Introduction

Crowdsourcing is an emerging global trend which 85 of the top hundred global brands try to take advantage of (Owyang 2015). While there are several application domains for crowdsourcing, such as design and innovation or software development and testing (Vuković 2009), it broadly defines a participative, IT-mediated activity in which a given entity proposes a task to a crowd to create

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mutual benefit (Blohm et al. 2013). For crowdsourcing enterprises (called crowdsourcers), this benefit may involve solving problems that cannot be satisfactorily solved in-house, but also relationship building with end-users or enhanced brand visibility (Ye and Kankanhalli 2015). For participants (called crowdsourcees), the emerging value may be of economic nature (e.g., reward) or satisfaction of other needs, like entertainment. Thus, value can be produced by outcomes (i.e., instrumental value) and preceding processes (i.e., experiential value). In either way, the crowdsourcer's job is to encourage valuable contributions and sustained commitment, subsequently referred to as *crowdsourcee's engagement*, by creating satisfying experiences in a cost-effective manner. However, it seems as if crowdsourcers' primary attention is currently paid to managing contributions rather than the crowd as the original source of value. This is also reflected by a strong research focus on, e.g., the absorption of knowledge from the crowd (Blohm et al. 2013), the efficient and effective management of crowdsourcing processes (Geiger et al. 2011; Vuković 2009; Stol and Fitzgerald 2014), or the evaluation of contributions (Poetz and Schreier 2012; Afuah and Tucci 2012).

Nevertheless, as many enterprises still lack the competences, (technological) resources or crowd access to successfully execute such an initiative, crowdsourcing intermediaries (e.g., Testbirds or Amazon Mechanical Turk) play a key role in numerous projects (Zogaj et al. 2014). Depending on the service agreement, they can provide the platform as well as support the handling of the crowdsourcing process (Zogaj et al. 2014). Yet, when looking at the crowd as a form of social capital, handing over all or part of the power to an intermediary may mean that risks like losing valuable contributors or gaining a reputation damage due to perceived negative experiences run out of their control. Additionally, crowdsourcers may miss a promising opportunity to directly interact and connect with the crowd. While first studies dealt with management challenges from intermediaries' perspectives (Zogaj et al. 2014), their ability to solve problems (Terwiesch and Xu 2008) or architectural structure (Colombo et al. 2013), the issue of how crowdsourcing intermediaries may influence crowdsourcees' psychological and behavioral responses within and after the interaction process towards the crowdsourcer has not been addressed by research yet. Apart from the theoretical relevance of studying mediated engagement processes and explaining voluntary platform use and participation in a socio-technical system, our findings could support management decisions on how to effectively incorporate platform-intermediaries, instead of investing in own systems and processes (Blohm et al. 2018). Two research questions guide this paper: (1) *How can the engagement process of crowdsourcing participants be conceptualized?* (2) *How and why do crowdsourcing intermediaries impact the crowdsourcees' engagement process regarding the crowdsourcer?*

To generate first insights into this topic, this study takes a process perspective on crowdsourcees' end-to-end experiences with IT-mediated interaction points to assess the underlying engagement process regarding the crowdsourcer. In this context, we conceptualize crowdsourcing engagement as a psychological process that models the underlying mechanisms by which a crowdsourcee develops commitment, resulting in directly and indirectly related value contributions (Troll et al. 2016). Psychological mechanisms are identified as satisfaction responses on a specific arousal level (Oliver and De Sarbo 1989; Briggs et al. 2008), while value contributions may range from over-fulfillment of task to positive word of mouth. Collected interview and platform data from two exemplary crowdsourcing cases in the field of software-testing, one in a mediated and one in a non-mediated setting, is triangulated. Against expectations, observations illustrated that emotional and rational bonds developed towards the crowdsourcer in both cases, and even more strongly in a mediated setting. This is probably due to the crowdsourcer's sole control over engagement-driving stimuli and the absorption of negative experiences by the intermediary.

Presuming that crowdsourcees' engagement is a relevant success-factor, this research paper aims to: (1) first understand relevant elements and conceptualize the general logic of an engagement process; (2) then, to illustrate it and explore the potential roles of specific stimuli by studying the two cases; (3) to finally identify similarities and differences in the engagement process across cases and propose the potentially advantageous effect of incorporating an intermediary to support commitment formation towards the crowdsourcer.

2 Theoretical Background

2.1 Crowdsourcing

The fundamental idea of crowdsourcing is that a crowdsourcer (e.g., a company) proposes to an undefined group of contributors (i.e., individuals), henceforth called crowdsourcees, the voluntary undertaking of a task presented in an open call (Blohm et al. 2013). The ensuing interaction process unfolds over IT-based crowdsourcing platforms, owned and managed by the crowdsourcer himself or provided by an intermediary. There are several forms of crowdsourcing and platform types, which can be categorized according to their specific crowdsourcing function. Vuković (2009) differentiates between four types

of functions, representing the product or service lifecycle-part that is crowdsourced by the project: design and innovation, development and testing, marketing and sales, or support. While enterprises that crowdsource design processes rather benefit from the crowd's innovation power (e.g., Threadless.com), those who conduct marketing-related projects rely on its predictive power (e.g., Predictify). Other forms of crowdsourcing make use of the simple mass and diversity of people that can be reached. In the case of crowdtesting (or crowdsourced software testing), either experts (e.g., for complex tasks) or potential end-users (for micro tasks) are approached to test, e.g., applications or webpages regarding their functions, usability, or interface-design (e.g., Testbirds.com).

Independent of the type and ultimate output objective of a crowdsourcing project, crowdsourcer and crowdsourcees engage in a participative, IT-mediated interaction process to create mutual benefit (Estellés-Arolas and González-Ladrón-De-Guevara 2012). Thus, in a broader context, this process relates to the macro-construct of value co-creation (Storbacka et al. 2016), by which organizations open themselves up to the co-creation efforts of external individuals (Zwass 2010). For the crowdsourcing enterprise, value and project success is multidimensional (Blohm et al. 2013). First, it may involve solving a crowdsourcer's problem that cannot be satisfactorily solved in-house (Blohm et al. 2016). Yet, the generated value may go beyond problem solving, and indirect benefits like enhanced brand visibility and reputation are desired side-effects of a successful campaign (Ye and Kankanhalli 2015). Similarly, for crowdsourcees the benefit of participation can be of economic nature (i.e., a reward or remuneration) or may satisfy other needs, like social recognition, self-esteem, skill development, or entertainment (Estellés-Arolas and González-Ladrón-De-Guevara 2012). In the case of financial remuneration, the initial motivation to participate is rather extrinsic, and further factors, experienced throughout the interaction process, may influence contributions and commitment towards the crowdsourcer.

Hence, it can be argued that crowdsourcees take on several roles throughout the value co-creation process, ranging from a platform-mediated worker (e.g., solving a problem and obtaining a reward in return), to a community member (e.g., fostering interaction and enjoying social exchange) and to becoming a (potential) consumer and influencer (e.g., learning about offerings and spreading the word). Accordingly, this paper argues that value goes beyond simple transactions of resources, and success needs to be defined more holistically. In this context, Storbacka et al. (2016) illustrate that engagement is the micro-foundation of value co-creation. Without engagement, no resource integration can occur and no value can be co-created. It is argued that the conceptual and physical context determines why, when and how an individual engages. Hence, we assume that crowdsourcees' engagement is inseparably linked to the perceived co-creation experience within the interaction process. Some authors have emphasized the need for researching crowdsourcing from an experience-based perspective (Vuković 2009; Füller et al. 2009; Pedersen et al. 2013) and studying the topic of engagement (Zwass 2010). De Vreede et al. (2013) explain initial engagement, suggesting personal interest, goal clarity, and motivation as antecedents. Sun et al. (2012) found that task-complexity and self-efficacy are drivers of sustained participation. Moreover, a participant engagement index for crowdsourcing has been proposed, based on the characteristics of contributions (Nguyen et al. 2015). Riedl et al. (2013) found a positive impact of platform-design choices on the crowdsourcee's attitude, while process satisfaction and a sense of virtual community was found to impact affective commitment (Schulten and Schaefer 2015). Lastly, it was observed that crowdsourcing participation is perceived as a hedonic experience, enhancing brand image (Djelassi and Decoopman 2013). While interest is growing and first research attempts offer insights into specific types of stimuli and potential measures for engagement, no study provides a holistic engagement definition for the context of crowdsourcing and systematically examines the underlying mechanisms of the engagement process throughout the IT-mediated journey from a crowdsourcee's perspective.

2.2 Crowdsourcing Intermediaries

As already mentioned, crowdsourcers can set up their own crowdsourcing platform and processes (e.g., My Starbucks Idea) or they can refer to intermediaries (e.g., Innocentive or Testbirds) that provide a technical infrastructure and access to a crowd. In this sense, they either serve as market places, offering a virtual platform where crowdsourcer and crowdsourcees simply interact for the purpose of value co-creation, or they even act as mediators who offer additional services such as task specification, crowd acquisition, and evaluation of results to support the end-to-end crowdsourcing process (Zogaj et al. 2014).

On the one hand, these types of crowdsourcing intermediaries can be considered as brokers, insuring that crowdsourcing enterprises do not only connect with a suitable crowd by providing the necessary skills and resources, but also shift risks, efforts and overhead related to crowd and process management (Zogaj et al. 2014). On the other hand, if the crowd is considered a form of valuable resource and social capital which often consists of actual and potential customers or end-users of the crowdsourcing enterprise, handing over full power to an

intermediary may also bear some risks. As outlined by Zogaj et al. (2014), crowdsourcing intermediaries may face three main challenges, depending on their services: managing the process, the crowd, and the technology. In all three areas, mistakes can have major impact on the crowdsourcing experience of participants and their engagement throughout the interaction process. Hence, the crowdsourcing enterprise may not only risk to lose valuable contributors during or after the interaction due to perceived negative experiences out of their control, but also their reputation if undesired interactions are transferred to the brand's image (Gebauer et al. 2013). Additionally, the crowdsourcing enterprise may miss a promising opportunity to directly interact and connect with the crowd, thereby stimulating overall engagement, which could create extra value, e.g., in form of positive word of mouth, further knowledge contributions, or repeated participation (Nambisan and Nambisan 2008). By deploying a mediator, one may assume that he absorbs all the crowd's attention and commitment, comparable to the role of an employer, while the crowdsourcer is only perceived as an ordering party, defining the task and gathering the contributions. Positive impressions may be attributed to the intermediary, rather than to the crowdsourcer as the initiating party.

First studies dealt with the management challenges from an intermediary perspective (Zogaj et al. 2014), especially an intermediary's ability to solve problems (Terwiesch and Xu 2008) and support the innovation process (Feller et al. 2012) or the assessment of the architectural structure (Colombo et al. 2013) and platform-typification (Kaganer et al. 2013). However the issue of how and why crowdsourcing intermediaries influence crowdsourcees' experiences and associated psychological and behavioral responses to the crowdsourcer within and after the interaction process has not been addressed by research yet. Hence, this paper studies the intermediary's impact on the engagement process of crowdsourcees towards the crowdsourcer. In the following section an initial overview of the engagement concept is provided.

2.3 The Concept of Engagement

Engagement is a broad field, which is discussed, e.g., in the Organizational Behavior, Marketing, and Information Systems (IS) literature. Due to the interdisciplinary character of crowdsourcing and the diverse roles of crowdsourcees (e.g., a platform-mediated worker, community member, or consumer and influencer), different perspectives of engagement seem suitable.

First, from an IS-perspective, user engagement is defined as a situational or enduring emotional, cognitive and behavioral connection between a user and a (technological) resource (Attfield et al. 2011), based on a user experience that extends beyond pure usability (O'Brien and Toms 2008). A vague description of the user engagement process is offered, consisting of a point of engagement, a period of sustained engagement, disengagement, and (possibly) reengagement (O'Brien and Toms 2008). Behavioral responses (e.g., technology use, length, return) can be observed through interaction patterns (Attfield et al. 2011). Second, employee or work engagement commonly refers to a psychological state that is above and beyond simple satisfaction, as well as a behavioral response that includes, e.g., innovative behaviors, proactive contribution, and over-fulfillment of task (Macey and Schneider 2008). Third, community engagement discusses the identification and interaction of community members within the group (Algesheimer et al. 2005). Brodie et al. (2013) identified learning, sharing, advocating, socializing and co-developing as relevant behavioral sub-processes. Lastly, the concept of consumer engagement is defined as a psychological state that occurs by virtue of interactive, co-creative customer experiences with a focal agent (Brodie et al. 2011), usually followed by behavioral responses in form of referral or consumption (Kumar et al. 2010; Van Doorn et al. 2010). In this context, customer experience is related to the internal, subjective perception of interactions throughout the customer journey (Johnston and Kong 2011).

Although those definitions differ in terms of the engagement object (i.e., a resource/technology, an employer, a community or a company) and resulting behavior (i.e., use, contribute, interact or consume) the underlying understanding of engagement is very similar. For the purposes of this study, engagement is defined as a dynamic, iterative process by which a specific type of psychological state, desired by the engagement object (e.g., an enterprise), develops among engagement subjects (i.e., an individual), resulting in value-contributions for both parties. Despite of its potentially dynamic nature, the psychological end-state is regarded as a relatively pervasive and persistent (Wefald and Downey 2009), positive affective-cognitive (Hollebeek 2011b) state of mind. Active participation in the creation of an offering is widely assumed to be a central antecedent of engagement formation (Brodie et al. 2011, 2013; Vivek et al. 2012; Kumar et al. 2010). In the subsequent section each part of the here defined engagement process is assessed in detail.

3 Towards an Engagement Process Model for Crowdsourcing

3.1 Conceptualizing the Process of Engagement

Based on the above mentioned summary of the engagement concept and the provided working definition of the engagement process, a guiding model is developed for the purpose of this study (see Fig. 1). It can be summarized as a four-step process model from a subject's perspective. In the first step, perceived interaction points, so-called stimuli, and prior experiences serve as input factors (A). In a second step, these input factors stimulate a subject's cognitive, emotional and behavioral experience dimension, initiating an experience evaluation process and resulting in several intermediate satisfaction responses (B). The sum of all intermediate experience evaluations result in a final commitment state (C) and related behavioral consequences (D) as process outcomes. Each step is elaborated in more detail and grounded in substantial theory.

3.1.1 Process Step A

First of all, based on the logic of the model of Kano et al. (1984), we assume that perceived stimuli throughout the interaction process between subject and entity can take on different roles within the subsequent process of engagement, depending on their categorization from an attribute-perspective (see Fig. 2 for an illustration). The model, routed in the fields of marketing and product lifecycle management, is used to explain in how far product or service attributes (later referred to as stimuli) may lead to different satisfaction levels, depending on a subject experience perception and related expectations (Chen and Chuang 2008). Firstly, Kano et al. (1984) suggest that some attributes, often called *differentiating attributes*, are explicitly demanded by the subject, and that satisfaction is assumed to be proportional to the level of fulfillment. That means the higher the level of fulfillment (i.e., beyond expectations), the higher the subject's satisfaction and vice versa. Secondly, Kano et al. (1984) advocate that so-called *attractive attributes* have the potential to lead to very high satisfaction as they are neither explicitly expressed nor expected by the subject. Lastly, Kano et al. (1984) introduce the basic requirements that are simply needed for a product or service to perform. Those *basic attributes* have the potential to only foster a state of fulfillment or dissatisfaction (i.e., no over-fulfillment is possible), as their performance is simply taken for granted and clear expectations exist. However, no over-fulfillment of those attributes can be expected. Consequently, from a high level view, all perceived stimuli that serve as potential input factors in the process of engagement can be related to one of those attribute-categories, initiating a specific level of satisfaction-generation. Besides, it is also assumed that prior experiences with those (or similar) stimuli influence the experience evaluations, as familiarity is strongly related to the expectations a subject has towards a specific attribute (Bowden 2009). Hence, prior experience as a relevant input factor is also added to the process model. Nevertheless, initial involvement (i.e., a subject's personal interest, relevance, or value of something), originally supposed to enhance positive judgements, was not found to be an influencing factor for successive experience evaluations and satisfaction responses in prior studies (Mano and Oliver 1993; Oliver and De Sarbo 1989). Hence, it is intentionally omitted as an input variable for now. For the purpose of this study, in the subsequent process step satisfaction generation as a substantial part of the engagement process is assessed and outlined in more detail.

3.1.2 Process Step B

Within the multidimensional perspective of engagement, researchers agree on the observation that the processing of stimuli has a cognitive, emotional and behavioral

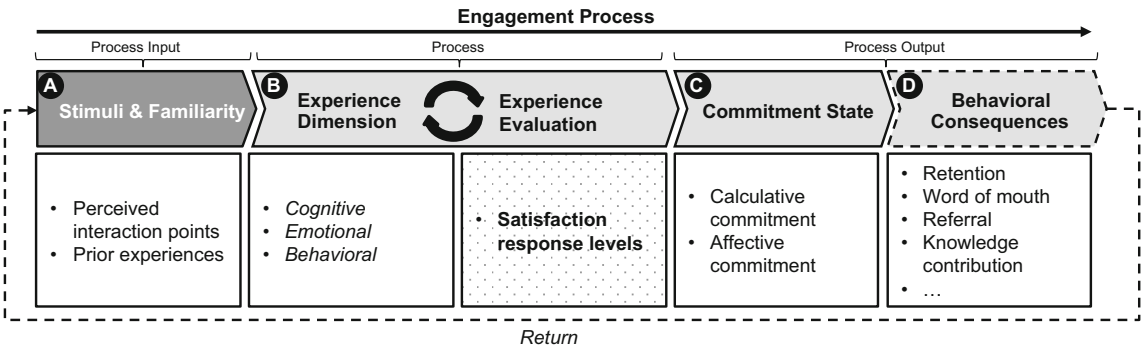

Fig. 1 Conceptualization of the engagement process

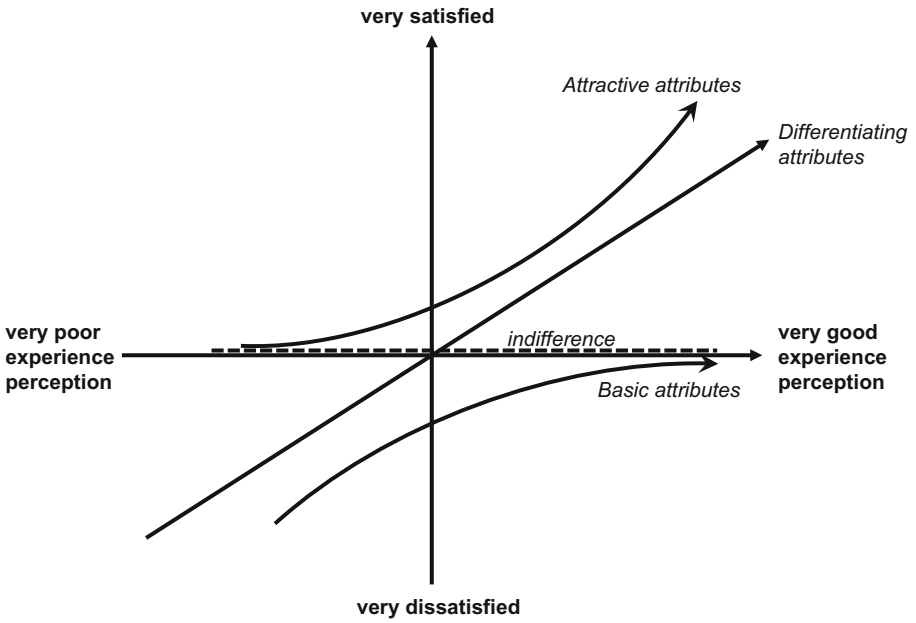

Fig. 2 Illustration of the Kano model (Kano et al. 1984)

dimension (Brodie et al. 2013; Hollebeek 2011a; Kahn 1990). The cognitive dimension can be interpreted as a more passive state of immersion and absorption (e.g., being focused and stimulated) (Hollebeek 2011a; Hollebeek et al. 2014) or a more active state of cognitive processing to expedite comprehension (e.g., reasoning, learning or decision making) (Mollen and Wilson 2010). The emotional dimension relates to the feelings, activated by an experience (e.g., happiness). Based on the cognitive and emotional perception, a behavioral response towards a specific stimulus (e.g., continue interaction) may be expressed within the process. Addressed dimensions regarding a perceived stimulus are assumed to be evaluated by the subject, and an intermediate state is generated, happening unconsciously (Bowden 2009; Sashi 2012). As already suggested by Kano et al. (1984), such an intermediate state can be defined as a specific satisfaction level, which may change with each subsequent stimulus experience (Verhoef 2003; Oliver 1993). From the consumer and organizational behavior literature, satisfaction is generally known as a factor influencing loyalty behavior and thus creates additional value for the firm (Hallowell 1996; Abraham 2012). While several researchers agree on its relevance within the engagement process, like Bowden (2009), Hollebeek (2011b), Sashi (2012), and Wefald and Downey (2009), they question its sufficiency and assume that other, stronger mechanisms are operating. However, this depends on the choice of the satisfaction definition that is used, as several have appeared in the past years. Some of them are unidimensional, based on a solely cognitive evaluation as proposed by the famous expectancy disconfirmation model (Oliver 1980), on which also the Kano-model builds. The concept of satisfaction applied in this paper is a more comprehensive one that allows for differentiating between more levels of satisfaction which are relevant for truly understanding the engagement process. It is a function of both, cognition and affect, as suggested by the two-appraisal model of Oliver and De Sarbo (1989). Based on their model, cognitively perceived disconfirmation between an expectation and perception may lead to positive or negative emotional arousal as a satisfaction response to the experience. Generally, three categories of events can be differentiated: (1) perceptions in a confirmation region, in which deviations from expectations are considered normal, without any emotional arousal; (2) plausible but infrequent disconfirming perceptions that are noted as unusual, arousing some emotions; (3) highly unexpected deviations, evoking disconfirmation and high emotional arousal due to surprise (Oliver et al. 1997; Oliver and De Sarbo 1989). However, even without expectation disconfirmation, low to high emotional arousal may occur, e.g., if an experience is novel and no clear expectations exist (i.e., an expected unexpectedness) (Oliver and De Sarbo 1989). In this context, Briggs et al. (2008) offer a finer grained definition of the satisfaction response in an IS-context. They describe it as a valenced affective arousal continuum, reaching from not-aroused to aroused, and the valence characterizes the level of arousal as positive or negative, while not-aroused describes a neutral, rather cognitive state. A switch of valence from positive to negative (or vice versa) may occur without passing the neutral state (Briggs et al. 2008). This is a relevant insight for the process perspective of engagement, in which several stimuli throughout an interaction journey are perceived and evaluated consecutively.

Thus, individual satisfaction responses may not be explained independently but relate to preceding ones, while high emotional arousal may have a dominant impact on the overall experience evaluation and the end-state. An illustration of the emotional arousal continuum is presented in Fig. 3, based on the descriptions of Briggs et al. (2008), extended by means of the specific satisfaction levels and terms from Mano and Oliver (1993) and Oliver and Swan (1989). Those five ascending types of positively (i.e., contentment, pleasure, delight, elation, ecstasy) and negatively (i.e., boredom, displeasure, disappointment, frustration, outrage) valanced satisfaction responses are used for the detailed assessment in later sections, for which reason they are numbered here. Consequently, combining the multi-dimensional logic of the satisfaction concept with the emotional arousal continuum offers a suitable tool for assessing the satisfaction responses within the engagement process and for identifying the role of specific stimuli.

3.1.3 Process Step C–D

Satisfaction in our context is not defined as an end in itself but rather seen as an intermediate step towards the desired engagement end state. The end state can be described as commitment towards the engagement object, which fits the description of a persistent, affective-cognitive state of mind (Wefald and Downey 2009; Hollebeek 2011b) as it was described in our initial working definition of engagement. The relationship between satisfaction and commitment is empirically confirmed by several authors (e.g., Gustafsson et al. 2005; Verhoef 2003; Schulten and Schaefer 2015) and also conceptualized in first models of the engagement process (e.g., Sashi 2012; Bowden 2009; Macey and Schneider 2008; Wefald and Downey 2009; Brodie et al. 2011). While satisfaction is a backward-looking (nondurable) evaluation of a stimulus' perception, the resulting commitment dimension is more a forward-looking (durable) state of mind, by which an individual has the desire to maintain a relationship with an engagement object (Gustafsson et al. 2005). It is associated with a specific attitudinal position, which may be of a more rational or emotional character. Calculative commitment is the rational or economically based dependence on an object's benefits due to perceived utility, switching costs or a lack of alternatives that fosters return intentions and behaviors (Gustafsson et al. 2005). Affective commitment refers to an emotional state that expresses a subject's psychological closeness to a focal agent and is related to the willingness to refer and use word of mouth (WOM) (Gustafsson et al. 2005). It is expressed as a holistic or aggregate judgment of an engagement object, independent from its functional attributes, but rather based on aroused emotions. Prior familiarity and access to more information may foster the development of affective commitment. When both forms of commitment develop, it is assumed that the engagement subject and object are in an enduring relational exchange with strong emotional bonds (Sashi 2012). This desired psychological engagement state is related to direct (e.g., return) as well as indirect behavioral value contributions (e.g., referral) towards the engagement object (Bowden 2009; Sashi 2012).

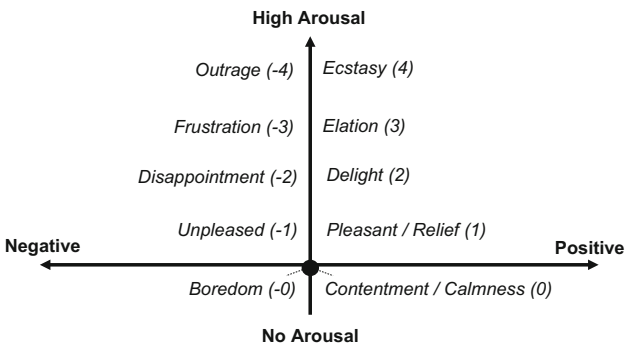

Fig. 3 Illustration of the emotional arousal continuum

3.2 Application to the Topic of Crowdsourcing

Independent of the crowdsourcer's original intention, performing a crowdsourcing initiative creates an experience that may foster engagement among crowdsourcees. The *crowdsourcing experience* in this paper is defined as a crowdsourcee's internal and subjective perception of the end-to-end, IT-mediated interaction process, resulting in a psychological state. It is an online experience, in which perceived stimuli can be found in the pre-participation- (e.g., invitation receipt), participation- (e.g., task solving), and post-participation phase (e.g., reward receipt). Due to its participative character, the underlying assumption is that crowdsourcing generally has the potential to generate high levels of engagement towards the crowdsourcing enterprise among participants. Depending on the set up, crowdsourcees (i.e., the engagement subject) may engage with the crowdsourcer directly or via an intermediary (i.e., the engagement objects). They can have varying degrees of familiarity concerning the objects (e.g., prior crowdsourcing or customer experiences), influencing their expectations and experience evaluation. Henceforth, *the crowdsourcee's engagement process* is conceptualized as a psychological process that models satisfaction response levels as generative mechanisms through which a crowdsourcee develops calculative and affective commitment based on perceived stimuli and prior experiences, resulting in diverse value contributions.

First, referring to step A and B in the process model, we assume that the cognitive and emotional dimension can be addressed due to a diverse range of potentially attractive and

differentiating attributes, leading to different satisfaction response levels. From an IS-perspective, a system's attributes like novelty, variety, aesthetics (affective or sensory appeal), and fun have the potential to arouse medium to high levels of emotions (Attfield et al. 2011; O'Brien and Toms 2008). In the crowdsourcing context this could be referred to an attractive and fun-providing crowdsourcing platform. In addition, the organizational behavior literature discusses some task attributes (e.g., entertaining or challenging), a subject's identification with it (e.g., good skill-task fit), and specific rewards (e.g., unexpected) as potential generators of positive affect (Macey and Schneider 2008). This may relate to a fun-providing task or a surprise benefit (e.g., a gift, status upgrade) in the crowdsourcing context. Moreover, according to community research, interaction with the crowd may stimulate a sense of group belonging that is known to foster intense positive feelings (Algesheimer et al. 2005). Lastly, from consumer behavior research we know that personal and close interactions between buyers and sellers (e.g., in co-creative set ups) can have a positive effect on demand and word of mouth, due to the buyers' desire for recognition and appreciation (Mustak et al. 2013). This may be transferred to crowdsourcer-to-crowd interaction throughout the task-solving process (e.g., compliment, query, or support), resulting in positive arousal or relief.

Subsequently, referring to step C in the process model, a state of calculative commitment may develop if a clear utility of participation is seen. Additionally, a state of affective commitment may develop when emotional arousal has been generated. Resulting direct and indirect behavioral value contributions (step D) towards the crowdsourcer and intermediary may lead to repeated participation, virtual or direct word of mouth, referral behavior, further voluntary knowledge or feedback contributions (exceeding the scope of the original task), as well as consumption activities (buying/using something from the crowdsourcer).

Moreover, when including a crowdsourcing intermediary, specific stimuli like the platform, communication with the crowd, and reward transaction may be outsourced to the intermediary, depending on the service agreement. It needs to be investigated (1) which stimuli-related experiences play a major role in the engagement process, and (2) how crowdsourcees relate them to the crowdsourcer or intermediary. This will help to identify the risks and values of incorporating an intermediary.

4 Methodology

This section illustrates how the concept and process of engagement can be useful for interpreting the findings of a qualitative study that has investigated the perceived *crowdsourcing experience* of participants in different project settings–with and without the use of an intermediary. Thus, to contribute to our research questions, we deliberately selected two common crowdsourcing cases that offered contrasting management situations, while being comparable in all other parameters (Yin 2013). That allows us to make derivations from both cases concerning (1) the role of the satisfaction response level of specific stimuli within the engagement process, and (2) to assess potential differences across cases regarding the impact of the intermediary on the process. Nevertheless, while assessing two cases leads to significantly more insights than one, a generalization of findings would be inappropriate (Yin 2013). However, the purpose of this study is not to test the conceptualized engagement process, but rather to illustrate its use for exploring the underlying mechanisms of crowdsourcing success and an intermediary's potential effect (Leonardi 2011). Furthermore, it presents a new possibility to support platform-related management decisions of crowdsourcing enterprises.

4.1 Case Selection

The first case (A) is initiated by a leading insurance company from Switzerland (hereafter called InsureCorp) together with a leading Swiss crowdsourcing intermediary. In order to apply a user-centered approach for developing its new website, in 2015 the company decided to use crowdsourcing with potential end-users. Pre-selected crowdsourcees were invited via email to individually test and give feedback regarding the website's interface as well as to report on functional bugs, usability, and provide ideas for improvement and additional features. They had to go through realistic test scenarios to explore the whole page. In return, they were offered a fixed monetary reward, transferred at the end of the project. InsureCorp chose to cooperate with an intermediary, responsible for acquiring the crowd, providing the platform, evaluating contributions, and handling the payment process. The professional crowdsourcing platform integrates all necessary functions to support the task-solving process, like feedback space, discussion forum, information-wiki, etc. InsureCorp could follow the submission process and communicate with crowdsourcees for questions via a chat function. It conducted three independent crowdsourcing projects with around 20 (potential) end-users per iteration, each with a duration of five days and involving a new crowd. The last project was analyzed in detail for the purpose of the study, presented in this research paper (May 2016).

In comparison, the second case (B), initiated by one of Switzerland's largest retail companies (hereafter called RetailCorp), is fully managed by the initiator itself. RetailCorp conducts regular crowdsourcing projects with

customers to improve its web shop, as this channel is increasingly growing in importance for them. For the investigated project (June, 2016), around 300 (potential) consumers of the web shop were invited per mail to participate individually in a crowdsourcing initiative via a link to an improvised crowdsourcing platform, consisting of a registration and landing page with access to files (e.g., design suggestions), a survey tool and a collaboration space for discussion. RetailCorp could communicate with crowdsourcees via mail (used as a chat function) throughout the process. Crowdsourcees were asked to evaluate several design suggestions for a new website interface (A/B-Testing) by answering a structured questionnaire. In return, they received a gift voucher for the shop.

Both projects illustrate common cases and incorporate all characteristics of crowdsourcing being a concrete task proposed via an open call, a virtual platform for feedback submission and interaction as well as a specified reward. Both cases can be placed in the field of crowdtesting (i.e., crowdsourced software-testing) with end-users, which is a relatively new and growing area and known for the use of intermediaries (Leicht et al. 2017). As both companies were already familiar with those projects, it is expected that exceptional problems, unusually influencing the *crowdsourcing experience*, could be reduced.

4.2 Data Collection

For the case assessment, first, to understand the intended experience, five semi-structured interviews were conducted with two managers from each crowdsourcing enterprise as well as one manager from the intermediary and one focus group discussion (including all). Based on that, a general blueprint of the interaction process with all its potential stimuli from a crowdsourcee's perspective could be visualized for both cases. This supported the subsequent interview process and ensured that collected data on stimuli were comparable.

Second, semi-structured in-depth interviews (60–90 min) with a total of fourteen crowdsourcees (seven for each case) were conducted to decipher the *crowdsourcing experience* and underlying engagement processes. A slightly adapted version of the novel approach from consumer behavior, called "Sequential Incident Laddering Technique" (SILT), was used (Jüttner et al. 2013). Respondents were first asked to recall all stimuli ("incidents") from the interaction process (step A). The process blueprint supported the interviewer in guiding the discussion. Subsequently, simple "what", "why", "how" questions were asked ("laddering") to establish the link between a stimulus and the crowdsourcee's cognitive, emotional, satisfaction and behavioral response within the process (step B). Lastly, the crowdsourcee's final commitment and (planned) behavioral contribution (step C and D) were captured. Interviewees were asked to describe their emotional and rational disposition towards the crowdsourcer and intermediary. To avoid a recall bias (Koenig-Lewis and Palmer 2008), interviews took place two to seven days after participation. For reasons of better comparability, crowdsourcees with the same cultural background (Swiss) and comparable income as well as some prior crowdsourcing familiarity (2–7 projects with different crowdsourcers) were selected to avoid interviewing overly excited or bored individuals. The interviews were transcribed and assessed, together with the other data sources, by means of qualitative content analysis (Mayring 2015; Gläser and Laudel 2010). A category system, based on the theoretical framework of the engagement process, was developed and collected data was coded along stimuli: (a) perceived experience dimensions (*emotional, cognitive or behavioral*), (b) satisfaction response levels according to the negative (*boredom, displeasure, disappointment, frustration, outrage)* and positive *(contentment, pleasure, delight, elation, ecstasy*) emotional arousal states illustrated in Fig. 1, (c) related engagement object (*crowdsourcer or intermediary*), commitment state (*affective, calculative or none*), and (planned) behavior. Three researchers independently coded the data by allocating direct and indirect statements to the categories (interpretive approach) and subsequently discussed and aligned findings.

Third, to extend information and validate statements on crowdsourcees' behavioral responses within the participation process, data concerning the time spent on the platform and with the website as well as demographic information and amount of previous activities were tracked. Contributions were analyzed in terms of their length (word count) and level of detail (i.e., under-/overfulfillment of task).

5 Results

First, based on initial interviews and focus group discussions with project managers, a general blueprint of the interaction process could be visualized for each case (see Fig. 4). While in the case of InsureCorp five stimuli are solely designed, managed, and communicated by the intermediary to the crowd (i.e., *invitation mail, registration and platform interface, closing mail, reward transaction*) and only three stimuli are provided and managed by the crowdsourcer (i.e., *task, test object, support chat*), in the case of RetailCorp all interaction points are managed by the crowdsourcer. The stimulus *discussion forum* triggers the interaction among crowdsourcees only and hence is not

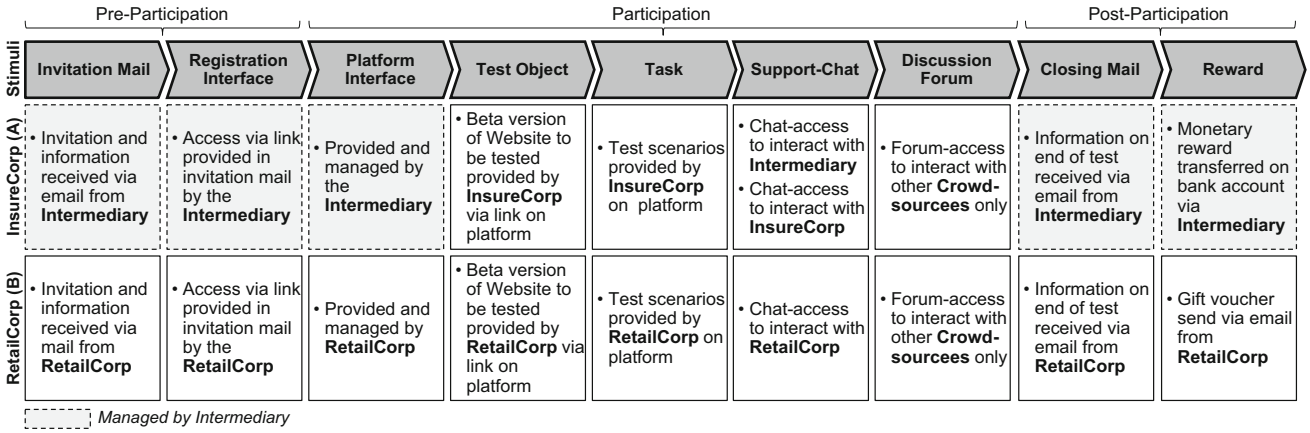

Fig. 4 Stimuli along the crowdsourcing interaction process of InsureCorp and RetailCorp

assumed to impact the engagement process towards the crowdsourcer or intermediary.

5.1 Insure Corp: Assessment of the Crowdsourcing Experience and Underlying Engagement Process

Figure 5 gives an overview of perceived stimuli at the bottom of the illustration (process step A) and presents vertically the cognitive, emotional, related satisfaction and behavioral responses (process step B) from the seven interviewed crowdsourcees of InsureCorp. Captured responses regarding the final commitment states are not shown in the figure (out of space issues) but are elaborated in detail in the upcoming sections. Additionally, coding examples of satisfaction response types and commitment states can be found in the Appendix (available online via http://link.springer.com). All previously identified interaction points were perceived and mostly experienced by interviewees, shaping their *crowdsourcing experience*. As expected, crowdsourcees related the stimuli task, test object and (partly) the support function to the crowdsourcer and the rest to the intermediary. Around half (53%) of all perceived stimuli were evaluated to be emotionally arousing, dominantly positive in terms of *pleasure*, *delight*

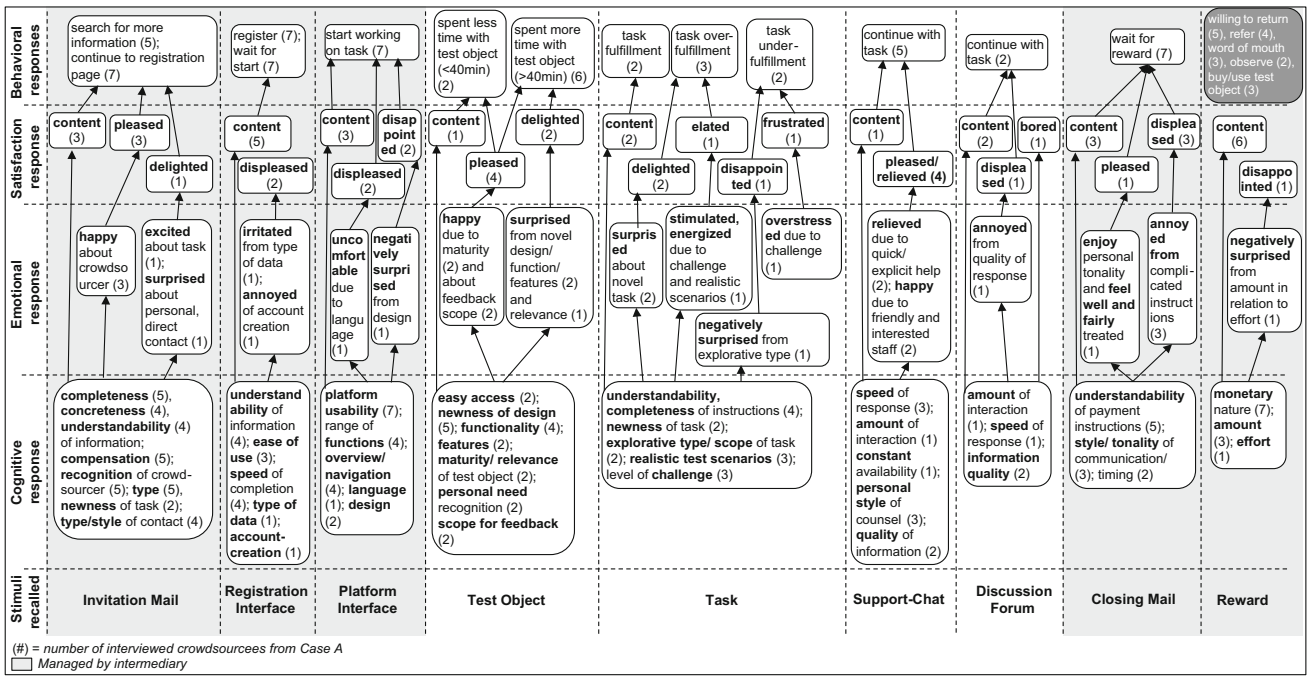

Fig. 5 Crowdsourcing experience-analysis based on SILT-approach for InsureCorp

or *elation* (58%), of which the major part (66%) can be accounted to the crowdsourcer-managed stimuli. In comparison, 85 percent of negative-emotional evaluations (*displeased, disappointed, frustrated*) relate to intermediary-managed stimuli.

More specifically, the *invitation mail* led only to positive or neutral states, while positive-emotional evaluations were related to feelings of happiness regarding the crowdsourcing enterprise (*pleasant*) or even task-excitement and surprise about the personal direct contact via mail (*delight*). Contrarily, the *registration- and platform interface* only led to neutral or negative statements, resulting in *displeasure* or even *disappointment* states due to irritations from requested type of data, language issues or negative surprises concerning the interface design. The *test object* (i.e., the website) led mainly to positive emotions due to its maturity and coverage (*pleasant*) as well as its relevance (core online service page) and surprisingly novel design, functions and features (*delight*). The behavioral data collected from the platform showed that emotionally aroused crowdsourcees spent also more time with the test object (more than 40 min) in comparison to the less aroused ones (less than 40 min). Interestingly, the *task* (i.e., website exploration with realistic case scenarios and preparation of think-aloud videos) covered the whole range of emotions. Feelings of surprise regarding the novelty and explorative type of task as well as stimulation due to the level of challenge and realistic cases led to either states of *delight* or even *elation*, or to *disappointment* and *frustration*, depending on the valence of arousal. Contribution analysis revealed that more emotionally aroused crowdsourcees did more than was expected in the task (over-fulfillment) and gave more detailed feedback in terms of word count (1.25 to 1.6 time as much), while negatively aroused ones contributed much less. Nevertheless, the *support chat* with the crowdsourcer only aroused *pleasure, relief* or simple *contentment*, depending on the speed of response and perceived friendliness of staff; while the *discussion forum* for interaction with other crowdsourcees was more cognitively evaluated (*content or bored*) or aroused negative emotions (*displeased*). The *closing mail* (received after submission of feedback) also resulted in negative (*displeased*), positive (*pleased*) or neutral (*contentment*) states, depending on the perceived tonality, fairness of treatment throughout the process and understandability of payment instructions. Lastly, the *reward* (fixed monetary amount) led mostly to a neutral state (*content*) as expectations were clear (amount was known before participation) and effort perceived as reasonable for all apart from one *disappointed* interviewee.

Collected data on ensuing commitment and behavior (process step C and D) towards InsureCorp demonstrates that four out of the seven interviewees described an attitude change and showed signs of *calculative and affective* commitment. They perceived InsureCorp to be more innovative, modern, open-minded, collaborative, customer-centric or supportive after participation. They mentioned an improved brand image and a strengthened relationship to the crowdsourcer. Those crowdsourcees described diverse value contributions, like *return-intentions* for further projects, *referral* and *word of mouth* to colleagues regarding the participation, a desire for *additional contributions* without monetary reward, willingness to *use the test object* in future, *consumption-intentions* as well as an interest in *observing the further development* of the website. One interviewee described himself as only *calculatively* committed due to perceived utility concerning learning potentials in the area of website design, resulting only in a willingness to return, although other crowdsourcing projects were of interest too. Lastly, two interviewees stated to be *not committed* at all and perceived no change in attitude. They were not sure if they would participate in another project due to their negative experiences. In comparison, crowdsourcees described their attitude towards the intermediary mostly rational by emphasizing the latter's utility and perceived role as means to an end. They used terms as responsive, fair, reliable, effective and well-organized, referring to a more *calculative* form of commitment. Only those that felt familiar with the intermediary due to repeated interaction seemed to have developed a form of more *affective* commitment.

5.2 Retail Corp: Assessment of the Crowdsourcing Experience and Underlying Engagement Process

All previously identified interaction points were generally perceived and related to the crowdsourcer only, as no other party was mentioned (Fig. 6). Fifty percent of all perceived stimuli were evaluated to be emotionally arousing, while even 68 percent were evaluated to be positive in terms of *pleasure*, *delight* or *elation* of which all can be accounted to the crowdsourcer-managed stimuli.

Taking a closer look at the experience evaluations (process step A and B), the *invitation mail* led to mainly positive statements, due to feelings of happiness regarding the crowdsourcing enterprise and a personal relevance of the test object (*pleasant*). The *registration* and *platform interface* also led to only neutral states and *displeasure* or even *disappointment*, due to an annoying amount of requested data, limited and bad integrations of functions. The *test object* also led mainly to positive emotions, due to its maturity (*pleasant*), surprisingly modern design and features (*delight*) and stimulation of personal need recognition (*elation*). Behavioral data showed that emotionally aroused crowdsourcees spent also more time with the test object (more than 10 min) in comparison to the less aroused ones (less than 10 min). The *task* (i.e., A/B-testing

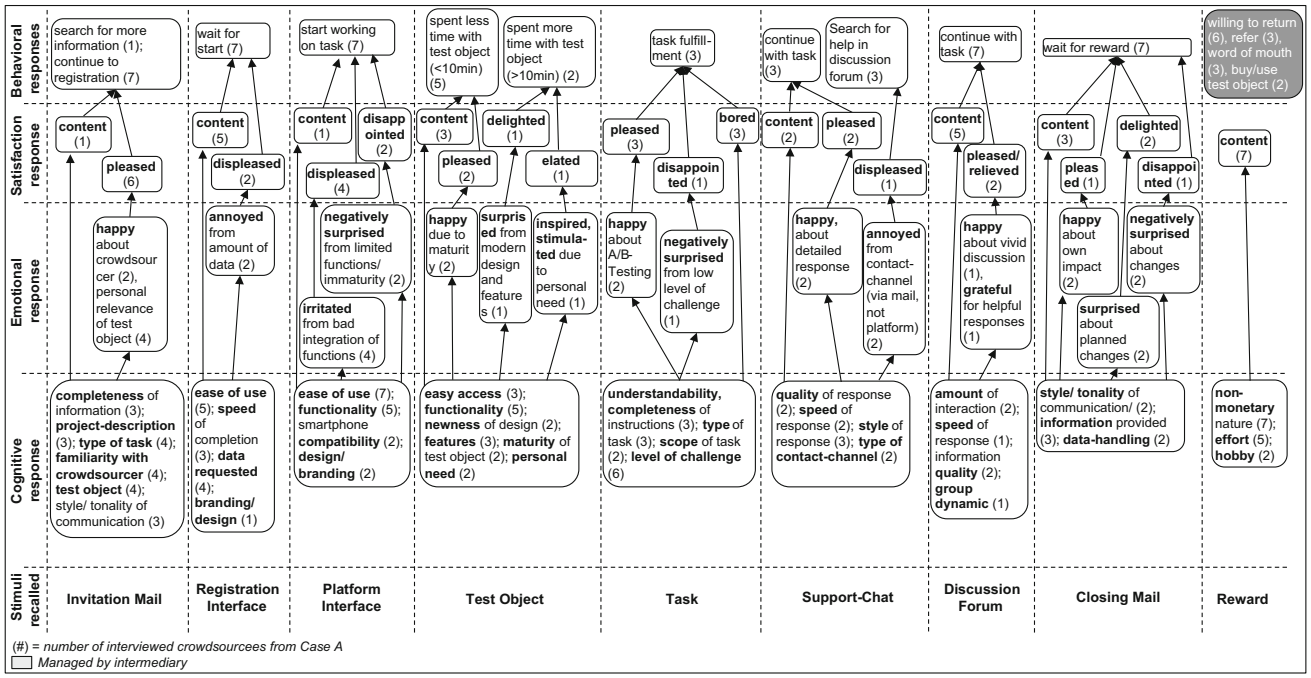

Fig. 6 Crowdsourcing experience analysis based on SILT-approach for RetailCorp

and filling out structured UX-surveys) led to neutral (*bored*), positive (*pleased*) and negative (*disappointed*) emotions, depending on the perceived happiness about the type of task and negative surprise about the low level of challenge. All crowdsourcees filled out the questionnaires and evaluated the test object as requested by the task. The *support chat* with the crowdsourcer aroused simple *contentment* or even *pleasure* when responses were perceived as detailed and *displeasure* when the contact channel (mail instead of platform) was disliked. In contrast, the *discussion forum* only led to positive evaluations, while emotions were aroused when the chat was perceived as vivid and responses as helpful (*pleased/relieved*). The *closing mail* (including information on reward, planned changes based on feedback, other crowdsourcing projects) also resulted in a broad range of emotional states, depending on the aroused happiness, due to perceived impact and valence of surprise about changes (*delight/disappointment*). Lastly, the *reward* (shopping voucher send via mail) led to a neutral state (*content*) as expectations were clear and the effort perceived as reasonable.

Data on the ensuing commitment and behavior shows that only three out of the seven interviewees described an attitude change and signs of *calculative and affective* commitment towards RetailCorp. They described RetailCorp as a lovable and caring company that has become an important part of their life. Some even felt like a member of the company, much closer than before participation. Those crowdsourcees also mentioned return approaches and referrals regarding the project and the company itself, as well as the use of the test object. Two interviewees described themselves as at least *calculatively* committed, due to their interest in the reward and perceived utility through support of a product that is of use to them. They mentioned its future use and a general willingness to return for other crowdsourcing projects but would also join projects of other companies. Only one interviewee perceived no change in attitude and felt *not committed* to the crowdsourcer at all, unwilling to participate again as he missed the sense and incentive of this activity.

6 Discussion

For simplification reasons, we recoded the data concerning the satisfaction responses of both cases into numerical categories according to the suggestion, presented in Fig. 3, and summarized them together with the commitment states in Table 1. That allows a direct comparison of satisfaction levels and related end states among the two cases to identify in a first step (1) similarities in terms of potential satisfaction levels, relevant for commitment formation, and in a second step (2) potential differences among cases that may relate to the role of the intermediary.

Table 1 Overview of satisfaction response levels and related end-states across cases (InsureCorp & RetailCorp)

	Pre-Participation Phase		Participation Phase					Post-Participation Phase		End State
Stimuli	Invitation Mail	Registration Interface	Platform Interface	Test Object	Task	Support-Chat	Discussion Forum	Closing Mail	Reward	Commitment
InsureCorp (A) A1	0	0	0	1	-3	-	-	-1	0	NC
A2	2	-1	0	2	3	1	-	1	0	ACC
A3	1	0	-2	1	2	1	-	-1	0	ACC
A4	1	0	-2	2	0	1	0	0	-2	ACC
A5	0	0	-1	0	-2	-	-1	0	0	NC
A6	1	-1	-1	1	2	1	0	0	0	ACC
A7	0	0	0	1	0	0	-0	-1	0	CC
RetailCorp (B) B1	1	0	-1	0	-0	-	0	0	0	CC
B2	1	0	0	1	1	-	0	2	0	ACC
B3	1	0	-1	2	1	1	1	1	0	ACC
B4	1	0	-2	1	-2	-1	0	-2	0	NC
B5	1	0	0	3	1	1	0	1	0	ACC
B6	1	-1	-1	0	-0	0	0	1	0	CC
B7	0	-1	-1	0	-0	0	1	0	0	CC

Managed by Intermediary
A/B[#] = Interviewee ID of Case A or B
0 = Contentment / Calmness
1 = Pleasant / Relief
2 = Delight
3 = Elation
-0 = Boredom
-1 = Unpleased
-2 = Disappointment
-3 = Frustration
NC = No Commitment
CC = Calculative Commitment
ACC = Affective & Calculative Commitment

6.1 Similarities Across Cases: Role of Stimuli Within the Engagement Process

In both cases an equal amount of emotionally evaluated stimuli (half/half) could be observed as well as similar patterns of levels of negative and positive emotional arousals along the interaction process. First, both cases showed that the *invitation mail* led to only low to medium high levels of emotional arousal (referring to response types 1–2 in Table 1) or at least to a simple contentment without arousal (0), while the *test object* led to a broader range of positive emotions (1–3). But obviously, both stimuli did not arouse any negative feelings. Second, the *registration* and *platform interface* as well as the *reward-receipt* mainly led to neutral states (0) or even low to medium high levels of negative arousal, ranging from − 1 to − 2. But no positive emotions were expressed. Third, the *task, support chat, discussion board,* and *closing mail* covered the whole range of states, including positive, negative and neutral ones (− 3 − 3). Based on this we can cluster those stimuli into four group types, inspired by the attribute-based perspective proposed by Kano et al. (1984) and enriched with the multidimensional logic of the satisfaction response described by Oliver and De Sarbo (1989) and the more detailed emotional arousal continuum provided by Briggs et al. (2008). The four stimuli groups can be described as follows:

6.1.1 Door Opener

Stimuli that must arouse positive emotions or at least neutral states at the very beginning of an interaction process to motivate a crowdsourcee to continue. In the observed cases, this was enabled by the initial *invitation mail* that was sent to the crowd in the beginning of the process. From motivation literature, we know that at least two types of crowdsourcees exist that need to be stimulated differently (Brabham 2010). Intrinsically motivated crowdsourcees are interested in self-fulfillment through the perceived content and the experience itself, while extrinsically motivated crowdsourcees are interested in the reward or external recognition (Zheng et al. 2011). On the one hand, to stimulate intrinsically motivated crowdsourcees, positive emotions need to be aroused through the information provided (e.g., on crowdsourcer, task, test object, etc.), style and tonality (e.g., personal, warm, innovative) as well as the type of contact channel (e.g., e-mail). A perceived importance and personal relevance needs to be sensed by those crowdsourcees, also referred to as involvement (Mittal and Lee 1989). On the other hand, to stimulate extrinsically motivated crowdsourcees, expectations regarding the reward need to be at least met, resulting in a natural (cognitive) state of contentment. Hence, to ensure that both types of motivation are addressed, crowdsourcees' expectations on content and reward need to be known and the stimulus experience proactively designed accordingly. If "door openers" have succeeded, for the rest of the interaction, the

crowdsourcees' initial motivation and involvement is assumed to play no or only a very limited role for further experience evaluations and commitment development (Mano and Oliver 1993; Oliver and De Sarbo 1989).

6.1.2 Risk Factors

Stimuli that in the best case foster a neutral state, while bad experience perception leads to negative emotional arousal. Here, the stimuli *registration interface*, *platform interface*, and *reward* were observed to be such risk factors. First, their performance are simply taken for granted as they are basic requirements that are needed for the whole process to function in its most rudimentary way (Kano et al. 1984). Without registration and the platform itself, no task and test object can be accessed and no feedback provided. For our cases, this may be further explained by the crowdsourcees' concrete expectations due to their prior familiarity with other crowdsourcing platforms and registration interfaces in general as well as the pre-defined reward in the beginning of the process (Oliver and De Sarbo 1989). Additionally, the character of those types of stimuli is mostly administrative as, e.g., the platform's role is mainly that of coordinating communication between the crowdsourcer and the crowd (Peng et al. 2014). Hence, to ensure contentment and avoid negative emotions, again crowdsourcees' expectations in terms of reward type and amount, interface usability (ease of use), design, language and requested data for registration need to be well-understood and fulfilled. No effort needs to be invested in trying to over-fulfill them as they are assumed to have no or limited effects on engagement.

6.1.3 Game Changer

Stimuli that have the potential to arouse all types of satisfaction responses, even highly positive and negative emotions, depending on the experience perceptions. They are assumed to have substantial impact on the subsequent stimuli evaluations as well as the overall commitment state. Here, *task, support chat,* and *closing mail* were observed to be game changers throughout the interaction. Those stimuli seem to play a key role as they are specifically demanded and also necessary for basic interaction, but there is also potential for positive expectation disconfirmation and high arousal. One explanation may be that experiences with stimuli like task and closing mail are rather variable for each crowdsourcing campaign (in comparison, e.g., to the crowdsourcing platform that stays the same) and expectations may be more loosely defined. In such a case, even for generally familiar crowdsourcees it can be seen as a novel experience and the crowdsourcee "expects the unexpectedness", which can be negatively and positively disconfirmed, accompanied by low to high emotions (Oliver and De Sarbo 1989). Additionally, the *closing mail* may take a specific role as it is the last direct interaction with the crowdsourcer or intermediary in the process. Hence, when evaluating the overall experience, it may have a lasting effect as the most recent memory. Moreover, for stimuli like *support chat*, crowdsourcees may have more concrete needs and expectations as they are usually approached when help is needed. In these cases often lower levels of positive (negative) emotions are aroused without disconfirmation, like relief or simple pleasure (displeasure), depending on the importance of the request to the individual (Oliver and De Sarbo 1989). Nevertheless, due to their arousal potential, those stimuli may impact subsequent experience evaluations, especially if they have the opposite valence. As a switch of valence often occurs without passing the neutral state (Briggs et al. 2008), for a game changer high positive arousal may influence subsequent negative arousal, e.g., for a risk factor, in a much more intense way, making it stronger than it would have been as a single (independent) experience. Hence, when handling those stimuli, it is not only important to manage novelty and expectation fulfillment, but also anticipate subsequent stimuli types and their arousal potential to avoid, e.g., undesired high (negative) emotions. Although the *discussion board* fulfills the criteria of a game change in our cases, we have left it out of the discussion as it is not supposed to affect engagement towards the crowdsourcer or intermediary but rather the crowd itself.

6.1.4 Value Adder

Stimuli that only foster positive emotional arousal due to surprise without causing any harm if their performance is bad due to their unexpectedness. In our cases, the *test object* was observed to fall into that category. It seems as if crowdsourcees cognitively develop expectations concerning the task, reward, platform and the crowdsourcer throughout the pre-participation phase, but spend no or less thoughts on anticipating the experience perception or relevance of the object of interest throughout the crowdsourcing activity. One explanation could be that due to the fact that the task is about giving feedback and further developing the test object, crowdsourcees expect low performance anyway. Nevertheless, as it is still unusual for firms to open up in their early development phases and involve consumers strategically before the product launch (Merlo et al. 2014), another explanation might be that there is a general expectation of low relevance of the test object (Kaganer et al. 2013). Hence, a feeling of positive surprise may occur if the test object has a substantial level of maturity, relevance (e.g., core offering of the firm), unexpected features, functions or design elements, or even

triggers an unexpected personal need recognition. In comparison to emotional arousal due to novelty, where the "unexpected is expected", surprise may lead to even higher arousal (Oliver and De Sarbo 1989). Other potential game-changers in the crowdsourcing context could be, e.g., elements related to gamification activities. Nevertheless, it needs to be mentioned that stimuli and their specific roles may vary from case to case, depending on the specific project's set-up and goal as well as the individual attributes.

Consequently, as the discussion of the four stimuli groups has shown, all types are supposed to take an important role throughout the interaction process and need to be managed strategically for the targeted engagement goal. Nevertheless, the discussion has also made clear that game changers may take on a special role within the process of engagement, given that all other stimuli are perceived as at least neutral. Based on the findings presented in Table 1, three potential relationships between game changer arousal (e.g., task, support chat and closing mail) and specific end states regarding the crowdsourcer could be observed, independent of the experience evaluations with other stimuli. First, it is observable that positive emotional arousal by these stimuli seems to be related to affective and calculative commitment states (ACC) (referring to interviewees like A2/3/4/6 and B2/3/5 in Table 1), while the opposite can be observed (no commitment) when negative arousal appears (e.g., A1/5 and B4). If no arousal at all is sensed, only calculative commitment states (CC) can be identified (e.g., A7 and B1/6/7). Hence, based on these observations the following propositions are made:

(a) *The state of affective and calculative commitment (ACC)* related to *diverse value contributions* (e.g., intentions to return, refer, observe, use/consume) after participation, is proposed to interrelate with positive emotional arousal sensed with *game changers* during participation, independent of the experience evaluations with other stimuli.
(b) *The state of no commitment (NC)* related to *no return* intentions after participation, is proposed to interrelate with negative emotional arousal sensed with *game changers,* during participation, independent of the experience evaluations with other stimuli.
(c) *The state of calculative commitment (CC)* related to only *return* intentions after participation, is proposed to interrelate with no emotional arousal sensed with *game changers*, during participation, independent of the experience evaluations with other stimuli.

6.2 Differences Across Cases: Role of Intermediary within the Engagement Process

First, looking at Table 1, although an equal number of stimuli led to emotional arousal in both cases, in the case of InsureCorp more stimuli were evaluated to be negatively arousing (41%) and less positive (58%) compared to the case of RetailCorp (32% negative and 68% positive evaluations). However, InsureCorp overall showed one more affectively committed crowdsourcee towards the crowdsourcer (4) than is the case for RetailCorp (3). Interestingly, when taking a closer look at the negatively evaluated stimuli in the case of InsureCorp, it can be observed that the dominant part of them were intermediary-managed stimuli, while only two negative evaluations can be found with the crowdsourcer-managed stimulus task (A1/5), relating to a NC-state. For the given case, based on the results presented in Table 1, we can observe that negative evaluations with intermediary-managed stimuli, like registration, platform and reward, are not always related to low commitment states (e.g., A2/3/4/6), even in the case of *game changers,* like closing mail (e.g., A3). In contrast, in the case of RetailCorp we observe that a negative emotional evaluation of a game changer like a closing mail is also related to a NC state (e.g., B4) and that of a risk factor like a registration or platform interface is only related to a CC-state (e.g., B1/6/7), if no substantial positive arousal is observed with another game changer like the task or support chat. Hence, based on those observations the following propositions are made in addition to the former ones:

(a) *The state of affective and calculative commitment (ACC)* is proposed to be unrelated to negative evaluations with intermediary-managed stimuli, belonging to the group of *risk factors.*
(b) *The state of affective and calculative commitment (ACC)* is proposed to be unrelated to negative evaluations with intermediary-managed stimuli, belonging to the group of *game changers.*

One explanation for those observations is that intermediary-managed stimuli mainly belong to the category of risk factors (registration, platform, reward), with high potential of negative arousal, while the stimuli managed by the crowdsourcer are game changers (task and support chat) and value adders (test object), both with the potential of arousing high levels of positive emotions. Thus, if crowdsourcees evaluate crowdsourcer-managed stimuli positively, this relates directly to the overall experience evaluation regarding the crowdsourcer (Oliver 1993) and chances are high that an overall positive and emotional commitment state develops as well (Verhoef 2003).

Consequently, we propose that in a mediated setting in which crowdsourcees can differentiate stimuli-related

experiences, they are generally able to draw separate conclusions regarding their engagement towards the different parties. In such a setting, negative evaluations, which are especially probable with stimuli like risk factors, can be absorbed by an intermediary when outsourced to them. Hence, we propose that crowdsourcing enterprises incorporating intermediaries theoretically have the potential to generate a desired commitment state, when recognized and perceived stimuli under their control rather belong to the group of game changers (e.g., task) and value adders (e.g., test object) and the intermediary mainly controls risk factors (e.g., platform interface). In this context, crowdsourcing enterprises may minimalize their effort while maximizing the engagement potential by proactively designing and managing game changers and value adders under their control, with the goal of arousing positive medium to high emotions. Thus, by involving an intermediary, crowdsourcers are not only able to outsource part of the work of managing the initiative, but also to shift risk regarding potential threats to the intermediary, while increasing their chance of fostering engagement towards the enterprise, when focusing on a targeted design and execution of their high-potential stimuli. Yet, this requires the ownership of stimuli to be recognizable for crowdsourcees.

Finally, we want to emphasize that these propositions were formulated in a way that they are also generalizable to other crowdsourcing contexts, in order to explore and test them further with different types of projects and intermediary set-ups. Yet, they need to be treated with care as empirical observations are based on only two crowdsourcing cases with a total of fourteen interviews. Case study research is not sufficient to prove causal relationships (Yin 2013). Hence, here described observations can be seen as a kind of pilot study for testing a promising methodology and making initial propositions (Leonardi 2011). For future research, it is recommended to verify proposed relationships with quantitative research. A survey approach may be applied, which tests satisfaction response levels related to specific stimuli and their impact on commitment and behavior. Also, experiments with manipulated stimuli may be used to explain effects in controlled settings.

7 Conclusion

This research paper is among the first that deals with the questions of (1) how the process of engagement in a crowdsourcing context might be understood and (2) how crowdsourcing intermediaries potentially affect this process towards the initiating enterprise. Applying the engagement concept to the case of mediated and non-mediated crowdsourcing and deploying an adapted form of the "Sequential Incident Laddering Technique" (SILT) (Jüttner et al. 2013) as a unique measuring approach is a first step in offering researchers a new perspective on the holistic evaluation of crowdsourcing activities and the support of decisions regarding outsourcing questions. Yet, suggested models and methods as well as initial insights are applicable in a broader IS-context.

In the past, IS-research often dealt with topics such as user acceptance (e.g., Davis 1985; Wixom and Todd 2005) and more rational definitions of satisfaction as a form of an end state (e.g., Ives et al. 1983; Melone 1990). Those concepts may fit a traditional work context, in which use is rather obligatory, but may be insufficient for work or other contexts in which use and participation is voluntary and subjects are especially motivated by a delightful experience, positively impacting value for both parties, user and provider. Hence, due to its voluntary character and the shift in power and dependency, crowdsourcing as a modern form of IT-mediated work (Durward et al. 2016) and collaboration between entities and potential end users (Leimeister 2014) offers a great opportunity for initially exploring this novel perspective.

First research attempts offered valuable insights into the role of specific types of stimuli like the task (Sun et al. 2012) or platform design (Riedl et al. 2013), crowdsourcees' characteristics as interest and motivation (De Vreede et al. 2013) as well as behavioral measures for engagement (Nguyen et al. 2015). This research study extends such knowledge by making two original contributions for practitioner-oriented audiences and academics interested in the fields of crowdsourcing, engagement, and platform-mediation: (1) A theoretical process model, conceptualizing crowdsourcees' engagement formation, based on relevant work from the IS and consumer behavior literature; (2) Propositions on the role of specific stimuli and the intermediary within this process, based on case study insights. The process is proposed to be initiated by experience-enhancing stimuli inspired by the model of Kano et al. (1984), while the core of the process model consists of the satisfaction response concept, strongly shaped by the work of Oliver (e.g., 1989) and enriched with the logic of the emotional arousal continuum, suggested by Briggs et al. (2008). By triangulating platform and interview data, four crowdsourcing-specific stimuli groups, supposed to operate as the micro-foundation of engagement, were identified and initial propositions concerning the role of specific stimuli and the impact of an intermediary as a risk absorber within the general engagement process derived. Observations illustrated that the engagement process is based on so called *door openers*, *game changers* and *value adders*, which generate higher levels of positive emotional arousal, fostering the development of affective commitment and (planned) direct and indirect value contributions.

Against the expectations, emotional as well as rational bonds developed not only towards the intermediary as the dominant point of contact, but especially towards the less familiar crowdsourcing enterprise, due to his control over engagement-driving stimuli (i.e., *game changers* and *value adders*) and the absorption of negative experiences with so called *risk factors* by the intermediary. In comparison, in the non-mediated case, less affectively committed crowdsourcees were identified, possibly due to the full accountability of negative as well as positive experiences towards the crowdsourcer.

Thus, based on the assumption that in a mediated setting participants can differentiate stimuli-related experiences, it is concluded that incorporating a crowdsourcing intermediary constitutes no general disadvantage in terms of the engagement-potential towards the crowdsourcing enterprise due to the limited amount of contact points, but rather a chance to mitigate risks and focus on the targeted management and execution of an engaging experience concerning controllable stimuli.

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