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When co-production fails: The role of customer's internal attributions and impression management concerns

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ABSTRACT

Contrary to the expected notion of self-serving bias, co-production researchers have found that when co-produced products and services fail, customers internally attribute the failures to themselves. We examine the influence of different internal attributions on customers' future behavioral intentions. Two independent experiments using two different types of co-production stimulus show that effort and ability attributions have different effects on customer's intentions regarding co-production in the future. Furthermore, the customer perspective of ability as fixed vs. learnable, influences the effects of ability attribution. Elucidating the underlying mechanism of these effects, we investigate co-production situations, wherein the stimulus of social presence can trigger impression management and reduce the avoidance goal orientation that emerges after failure when ability is seen as difficult to develop.

1. Introduction

Co-production is defined as customers' applying operant resources such as effort, skill, and knowledge to involvement in the creation of products and services (Prahalad & Ramaswamy, 2004; Vargo & Lusch, 2004, 2008). Co-production has been considered the next frontier in terms of firms gaining competitive advantages because it can enable them to benefit from utilizing a diverse and invaluable set of customer resources (Madhavaram & Hunt, 2008). Therefore, research efforts across several disciplines have sought to improve the understanding and management of co-production processes (Bendapudi & Leone, 2003; Galvagno & Dalli, 2014; Gamble & Gilmore, 2013; Kull & Heath, 2016; Voorberg, Bekkers, & Tummers, 2014). However, this body of research has remained skewed towards positive and successful co-production endeavors, and has paid limited attention to co-production failures (Dong, Evans, & Zou, 2008; Heidenreich, Wittkowski, Handrich, & Falk, 2015). It is critical to rectify this imbalance in order to ensure that the adoption of co-production in practice is well-informed (Palmisano, 2010; Schaefer & VanTine, 2010).

Recent studies on failure of co-produced products and services have examined customer's attributions, satisfaction levels, and equity evaluations (Dong et al., 2008; Heidenreich et al., 2015; Zhu, Nakata, Sivakumar, & Grewal, 2013). In contrast to the dominant expectation of the self-serving bias and the fundamental attribution error, which attributes failures of co-production to the firm, Heidenreich et al. (2015) and (Sugathan, Ranjan, & Mulky, 2017a,b) found that failures of co-production result in internal attributions because co-producers might partially put the blame for the failures on themselves. Further research into this process will help advancing an understanding of the different types of attributions that characterize co-production failures, boundary conditions (key moderators and contingencies), and the prediction of other key customer outcomes (adaptive versus maladaptive behavior). To achieve these goals, we: (1) apply a more nuanced view of how attribution theory relates to failures of co-production, (2) assess the post-failure behaviors of co-producers across two critical behavioral operant resources – consumers' efforts and abilities, (3) examine these behavioral operant resources from the theoretical perspectives of entity theory and incremental theory, and (4) study social presence during co-production as a mechanism to alter post-failure behaviors and thereby check possible adverse implications for the firm (as described by impression management theory).

Thus, we build our research on failures of co-production in three ways (see conceptual framework, Fig. 1). First, we provide a detailed examination of how different types of internal attributions for these failures will influence consumers' intentions towards future co-production. Therein, we show how an individual's attribution to effort and abilities during the co-production task influences her or his subsequent intention to increase effort, seek assistance, and avoid similar failures.

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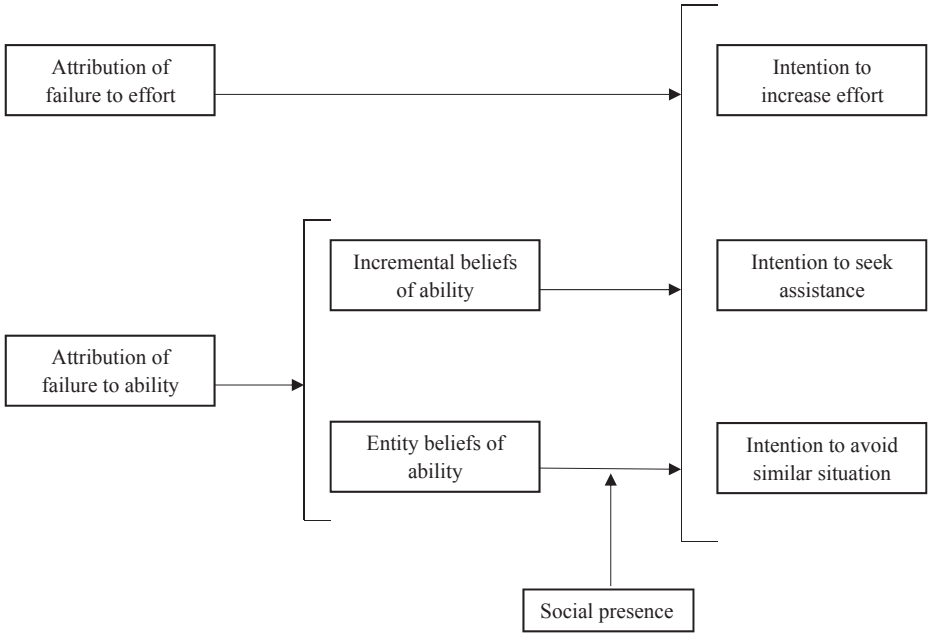


Fig. 1. Conceptual diagram.

Second, an analysis of ability to perform the co-production task provides novel insights into the design of co-production tasks. Customers are hesitant to co-produce after failing at a task they perceive requires an ability that is difficult to learn. Third, we detail a mechanism that results in shift in internal attribution during the co-production process due to the effect of social presence that can restrain the consumer hesitation and encourage them to participate in co-production. Therein, we show that social presence may reverse the influence that ability attribution to a failed co-production task may have on future intentions to co-produce.

2. Theory

Attribution theory offers insights into the causal explanations by individuals for their life events including products or service failure. Attributions have been classified as internal/external and stable/unstable. We specifically focus on the dimension of internal attribution in light of recent research which suggests that customers attribute failures of co-production internally to themselves (Sugathan et al., 2017a) In the event of failure, customers tend to attribute the failure to the internal resources they used while coproducing. Depending on the co-production task, these resources will vary along the dimension of stability. Most of the co-creation situations use varying degrees of customer effort or ability. For example, a co-production task like designing an artwork that could be printed on a t-shirt might primarily need customer's ability, whereas a co-production task that requires customers to assemble Ikea furniture would largely demand customer effort. Internal attribution in combination with the dimension of stability creates conditions such as internal-stable (e.g., attribution to an individual's ability, an important operant consumer resource) and internal-unstable (e.g., attribution to an individual's effort, another important operant consumer resource) (Weiner, 1985). These nuanced levels of internal attribution can explain different behavioral intentions such as the amount of effort put into a task in a certain period, the propensity to seek assistance, and the intention to avoid similar situations in the future.

To fully understand the role of ability in co-production failures, it is important to recognize that individuals have different beliefs about their own abilities (Dweck, Chiu, & Hong, 1995). We draw from the entity theory and incremental theory (also called implicit theories) of ability, and hypothesize their perspective of future behavior. Entity theory views ability as a fixed innate characteristic which cannot be improved, while incremental theory views ability as a learnable characteristic which can be improved. People have different beliefs about ability that are context-dependent (Dweck et al., 1995; Dweck & Leggett, 1988). For example, one customer might consider the creativity and imagination needed to design a table as abilities that are difficult to learn (entity theory perspective), whereas another customer might view the dexterity and skill involved in assembling a cycle as learnable (incremental theory perspective), or vice versa.

According to the perspective of incremental theory, individual customers who have faced failure have a higher learning goal orientation. According to the entity theory perspective, such individuals display an avoidance goal orientation (Mueller and Dweck (1998). Since individuals' behaviors are determined by their goal orientations (Elliott & Dweck, 1988), the differences in goal orientation put forth by incremental and entity theories help us to examine the belief contingencies pertaining to ability.

Co-production tasks can be performed in private as well as in the presence of others. For example, when users co-produce an open source content on an open source platform, it is largely done individually, a travel package through a web-interface is accomplished alone or along with a few relevant others. However, the usage experience of users of online community practices, or the experience of a group of tourists, is derived from activities done in the presence of others. We examine social presence as an environmental variable within the co-production context that – if managed by the firm – can check the maladaptive behavior described by entity theory's view of ability (Dweck & Leggett, 1988). Understanding the role of social presence in co-production failures is important for at least three reasons: (1) co-production is commonly a joint group process that takes place in the presence of others, (2) social presence can be managed and altered by firms in the short-run, and (3) social presence activates impression management tendencies, which can be used to influence attributions and behavioral intentions following co-production failures. The influence of social presence is explained by impression management theory, which has studied people's motivation to make a particular impression on others, forget certain tendencies, and promote and present themselves in way that supports the achievement of goals (Argo, Dahl, & Manchanda, 2005; Puntoni & Tavassoli, 2007). These factors are important to

account for during the co-production process in general and specifically when co-production fails.

3. Hypothesis development

In normal situations of product or service failures, consumers usually have a self-serving bias and make the fundamental attribution error, which leads them to attribute the failures to external sources (including the firm or the brand) as an ego-defense (Miller & Ross, 1975). However, when customers are involved in product creation, the reason for failure becomes more accessible to them, mitigating the fundamental attribution error. Thus, customers might internally attribute failure to themselves (Heidenreich et al., 2015; Sugathan et al., 2017a,b). As alluded above, internal attributions of failure can be of two types: internal-unstable and internal-stable (Teas & McElroy, 1986). Unstable attributions are contingent on characteristics such as effort and luck which fluctuate over time, whereas stable attributions are directed at fixed or stable characteristics such as individual ability and personality traits (Weiner, 1985).

3.1. Effort

The attribution of failure to a lack of effort during co-production is unstable attribution because customers can increase or change their effort in their next co-production task (Weiner, 1986, 2014). As customers believe they can influence the outcome of a task by putting more effort in the future, attributions of failure to unstable factors increase future expectancies of success (Teas & McElroy, 1986; Weiner, 1986) through a positive effort–performance link. Consequently, attributions of failure to unstable factors in turn increase customers' intentions to increase their efforts.

When customers attribute a co-production failure to their efforts, it will cause them to increase such efforts in the future. This means that the customer perceives that he/she can prevent a co-production failure from occurring on her or his own, by increasing his/her efforts. Due to this inward directedness, customers may not opt for other means of attempting to control future failures (i.e., seeking assistance or avoiding similar situations). Therefore, we hypothesize that:

H1a. In the case of a co-production failure, attributing the failure to customer effort will lead to an intention to increase effort in a similar situation in the future.

H1b. In the case of a co-production failure, attributing the failure to customer effort will lead to a lower intention to seek assistance in a similar situation in the future.

H1c. In the case of a co-production failure, attributing the failure to customer effort will lead to a lower intention to avoid a similar situation in the future.

3.2. Ability

Ability is generally considered to be a stable characteristic since an individual cannot change it in the short-term. Most of the prior research on achievement motivation (e.g. Weiner, 1986; Teas & McElroy, 1986) views ability as unchangeable or inherent in a person. For example, people do not expect that they can improve their intelligence quickly. According to Weiner (1986, 2014), when customers attribute a co-production failure to their abilities, they will have a reduced expectancy of improving their abilities in the future and therefore a lower expectancy of future success on co-production tasks.

However, the association between ability and expectancy of success is not always observed, and may be even reversed such that attribution to ability results in increased expectancy of success. Studies conducted with learning and social judgment domains provide more nuanced views on the stability of ability-related characteristics (Butler, 2000; Dweck & Leggett, 1988). According to such studies, the nature of the stability of an ability can depend on the individuals and the context in which the ability is performed (i.e. the people can have different perspectives of stability in different domains) (Dweck et al., 1995). For example, a person can perceive intelligence to be fixed and if that person failed a mathematics test, he or she might not expect to improve in math. In contrast, a person may perceive athletic ability to be malleable and believe that it can be improved.

The two prominent explanations as to whether or not an attribute would be considered as stable/unstable are based on entity theory and incremental theory (Dweck et al., 1995). Prior studies in learning and performance contexts provide a growing body of evidence that the stability of a perceived ability will depend on whether a person views that ability as fixed (entity theory) or malleable (incremental theory). When individuals consider abilities to be fixed characteristics, they are concerned about demonstrating those abilities and avoiding the deficiencies of such abilities to others. In contrast, individuals who consider valuable abilities to be malleable holding on to incremental theory are concerned about demonstrating that they can improve those abilities with effort (Butler, 2000; Dweck et al., 1995; Dweck & Leggett, 1988).

Individual attributions for success or failure and determinations of end goals reflect implicit beliefs regarding ability (Dweck & Leggett, 1988; Hong, Chiu, Dweck, & Wan, 1999). Therefore, when individuals have faced failure, beliefs that are aligned with entity theory will be associated with avoidance goal orientation, whereas beliefs that are aligned with incremental theory will be associated with a learning goal orientation. Individuals with a learning goal orientation will think about the best way to increase and master their ability. The outcomes of this effort will provide information as to whether one is pursuing the optimal path, and if not, what needs to be changed. In the case of failure, the co-producers will perceive their current co-production strategy to be insufficient and a sub-optimal path for mastering the task at hand. As a result, the co-producer may revise her or his strategy. In contrast, individuals with an avoidance goal orientation will be concerned with measuring their ability and ascertaining whether their ability is adequate. To them, failure will therefore mean that their abilities are inadequate and cannot be developed, which would trigger exit behavior. In the next section, we detail the different influences that individuals' views of ability have on their future behavioral intentions.

3.2.1. Incremental theory perspective

From the viewpoint of incremental theory, ability is considered to be an unstable characteristic that can be learned and developed. When individuals who have this view face with a failure of co-production, they will exhibit a learning goal orientation and intend to increase their effort in anticipation of future success – they will not try to avoid such situations. However, they will seek assistance, if available, because they perceive their ability to be insufficient. Therefore, the hypotheses that arise from incremental theory perspective are as follows:

H2a. In the case of a co-production failure, attributing the failure to customer ability that can be learned will lead to an intention to increase effort in a similar situation in the future.

H2b. In the case of a co-production failure, attributing the failure to customer ability that can be learned will lead to a higher intention to seek assistance in a similar situation in the future.

H2c. In the case of a co-production failure, attributing the failure to customer ability that can be learned will lead to a lower intention to avoid a similar situation in the future.

3.2.2. Entity theory perspective

From the viewpoint of entity theory, ability is a fixed characteristic and co-producers will perceive it as something which they cannot learn/acquire. Consequently, they will exhibit avoidance goal orientation after facing failure. As they will not see a way to improve their

ability, they will avoid putting effort into certain tasks or avoid those tasks. Therefore, entity theory predicts that when faced with failure of co-production, customers will reduce effort on future tasks due to a low expectancy of success, and will exhibit avoidance goal orientation (Dweck & Leggett, 1988; Weiner, 1986). However, due to their perception of limitations and constraints, they will be willing to seek available assistance in order to accomplish their performance goals. Therefore, based on entity theory perspective, the following are the expected hypotheses:

H3a. In the case of a co-production failure, attributing the failure to customer ability that cannot be learned will lead to an intention to decrease effort in a similar situation in the future.

H3b. In the case of a co-production failure, attributing the failure to customer ability that cannot be learned will lead to a higher intention to seek assistance in a similar situation in the future.

H3c. In the case of a co-production failure, attributing the failure to customer ability that cannot be learned will lead to a higher intention to avoid a similar situation in the future.

Customers' avoidance goal orientation constitutes a loss of an operant resource for the firm, and firms do not want customers to shun co-production tasks (Madhavaram & Hunt, 2008). Even if customers face a co-production failure, firms want them to expend their effort in co-production again. To achieve this, we now explain a means by which firms can transform co-producers' avoidance orientation into a state of proving goal orientation. One way to achieve such goal orientation is by conducting the co-production task in the presence of others (henceforth termed social presence).

3.3. Social presence

Social presence, i.e., presence of other consumers in a shopping environment is a commonplace phenomenon. In fact, presence of others is an important aspect of consumer shopping experience. Prior literature argues that social presence influences behavior – albeit indirectly – by enhancing people's motivation to act in a certain way and moderating the effect of the key antecedents of customer behavior (Thomas, Skitka, Christen, & Jurgena, 2002). Certain co-production tasks, such as crowdsourcing consumers' ideas on a company's web-portal, are largely performed in isolation. However, tasks such as designing products in groups or creating a store experience through community practices (i.e. American Girl Space) are social in nature and performed in presence of others. We speculate that with digital intervention, co-production tasks will be easily transformed into a nexus of social activities, wherein each task is viewed by several others (Ramaswamy & Ozcan, 2016). We will now offer more insights into the influence of social presence on customer behavior subsequent to failure.

Social presence triggers impression management concerns, as individuals are motivated to project a positive public self-image. Impression management places attention on factors that would improve an individual's social image (Puntoni & Tavassoli, 2007). In the event of a failure in social presence, customers will try to manage the factors that can restore a positive public self-image and prove their self-worth. It is salient to note that proving goal orientation has been found to have a positive relationship with the motivation to execute the task at hand (e.g., study for an exam) (Elliot & McGregor, 1999) and the motivation to expend rather than evade additional effort during difficult task situations (i.e. solving the difficult problems in the concerned course, or solving a tricky puzzle) (Elliot & Harackiewicz, 1996). To that end and in keeping with the proving goal orientation, individuals try to exhibit behavior that creates a good impression, demonstrates competence and garners favorable judgements from others (Geen, 1989; He, Chen, & Alden, 2012; VandeWalle, 2003; VandeWalle, Cron, & Slocum, 2001). Consequently, in a situation where co-production has failed, the presence of a social audience during a co-production task can cause customers to shift to a proving goal orientation from an avoidance goal orientation.

In light of the above findings, we argue after a co-production failure, the presence of a social audience shifts the goal orientation from avoidance to proving, thereby increasing customers' willingness to increase their efforts. This shift is possibly able to resurrect any loss of public image due to the previous failure, as co-producers will display more willingness to put in more effort and be less likely to seek assistance or avoid such situations in the future. Therefore, we hypothesize:

H4a. Social presence will positively moderate the influence of an attribution to ability on intention to increase effort in a similar situation in the future.

H4b. Social presence will negatively moderate the influence of an attribution to ability on intention to seek assistance in a similar situation in the future.

H4c. Social presence will negatively moderate the influence of an attribution to ability on intention to avoid a similar situation in the future.

4. Methodology

The hypotheses were tested across two independent studies. Consumers' beliefs in relation to entity or incremental theory were manipulated through contextual features in the experimental vignettes that stimulated the salience of one belief over another (Butler, 2000; Dweck et al., 1995). As entity theory explains individual characteristics such as intelligence and creativity, whereas incremental theory explains effort or physical ability, we designed two different studies to manipulate the two different theories.

Our first study involved the co-production of a table. Participants were required to use creative abilities in order to design and sketch the table. Their actions are better explained by entity theory than incremental theory because individuals perceive the creative abilities needed to design furniture as fixed and difficult to learn. Our second study involved the co-production of a cycle. Customers were required to use their effort and physical abilities to customize and assemble the cycle. Such characteristics are more pertinent to incremental theory, because individuals perceive them to be malleable, so they can be learned or acquired. Before conducting the studies, we tested the two scenarios to confirm the intended nature of ability beliefs between the table and cycle co-production situations.

We designed a between-subject experiment in which participants were assigned to the co-production of either the table or the cycle. Once the tasks were complete, we asked participants whether the nature of the ability needed for the task is temporary or permanent. An analysis of the variance estimates of the experimental data supported our design: the nature of the ability needed for the table co-production was found to be more stable (Mean = 5.25) than the nature of the ability needed for the cycle co-production (Mean = 4.23), and difference is significant (F (1, 80) = 7.12, $p < .01$).

4.1. Study 1

4.1.1. Method

Participants participated in a scenario-based experiment that simulated a co-production task at a firm's design facility and the co-production task was manipulated to culminate in failure. Scenario-based experimental stimulus is prominent in leading marketing and psychology research. Failure usually results in feelings of stress and frustration about the defied goal, and such emotions may manifest strongly in real life or in a field experiment triggering such stimulus. The use of a scenario helped avoid such emotional hazards and is less expensive than observing or enacting an actual failure. Scenarios provide better anchoring and focus on a context and are also proximal to

Table 1
Reliability and validity analysis.

						Correlations between constructs			
	alpha	CR	AVE	MSV	ability	effort	i_effort	i_assistance	i_avoid
Ability	0.91	0.91	0.68	0.03	0.83				
effort	0.91	0.91	0.67	0.09	0.05	0.82			
i_effort	0.94	0.94	0.75	0.23	0.15	0.30	0.87		
i_assistance	0.93	0.93	0.74	0.16	0.17	0.02	0.40	0.86	
i_avoid	0.96	0.96	0.81	0.23	0.07	0.01	−0.48	−0.08	0.90

i_effort = intention to increase effort, i_assistance = intention to seek assistance, i_avoid = intention to avoid similar situations
alpha = Cronbach's alpha, CR = composite ratio, AVE = average variance explained, MSV = maximum squared variance.

actual situation, thereby they ameliorate concerns about memory lapse and the threat of post-hoc rationalizations better than recall-based surveys (McCollough, Berry, & Yadav, 2000; Strizhakova & Tsarenko, 2010).

The design and assembly of a computer table, aiming at personalization and comfort, at a firm design facility was the co-production task used in the scenario. First, they had to prepare sketches of the table and provide its dimensions and other specifications. Then, participants were provided with machine-cut modules created according to their designs and specifications and assembled to create the tables. Finally, the scenario describes the end outcome as failure, as the table did not meet the customer's expectations and requirements.

We used a completely randomized design by assigning participants to one of the two manipulations: one with social presence, and the other without. Social presence was manipulated during the co-production activity and the final outcomes were manipulated by descriptions and caricatures of onlookers. In the no social presence situation, participants created the design and uploaded it privately using a website. In the social presence scenario, participants created the design at a firm facility, uploaded it, and performed the assembly in the presence of others.

Participants were instructed to read the scenario and imagine that they were customers who purchased the design of the table and then assembled it (Appendix A). After reading the scenarios, participants answered questions about the social presence, attributions for the task failure, and intentions regarding involvement in a similar situation in the future. The scales for the attributions and behavioral intentions were adapted from Dixon, Spiro, and Jamil (2001) and Dixon, Spiro, and Forbes (2003). The scale items were anchored on a Likert scale of 1 to 7. We assessed the realism of the scenario using a two-item seven-point Likert scale (Liao, 2007). Further, if participants had experienced a similar co-production failure in the recent past, they were asked to write about it and reflect on it. This improved participants' internalization of the co-production task and the vividness with which they remembered it.

4.1.2. Pretest

The pretest involved 96 respondents and was used to improve the scenarios and to refine the measures and the overall instrument. After modifying the research instrument, concurrent verbal protocols were conducted to verify if respondents were interpreting the scenarios as intended.

4.1.3. Manipulation checks

The manipulations were found to be successful and the participants perceived the context to be realistic. One hundred and seventy participants (91 females and 79 males, M_{age} = 37 years, SD_{age} = 12.5 years) were subsequently recruited online at Amazon Mechanical Turk for a small monetary compensation to participate in a web-based study. It is generally agreed that Amazon Mechanical Turk samples are representative of the US population and provide data that has reliability and validity that are comparable to other sample recruitment methods (Goodman, Cryder, & Cheema, 2013; Mason & Suri, 2011). Further, the social presence manipulation was found to be successful (M_{social} = 5.48, $M_{no\ social}$ = 2.28; F (1, 168) = 215.3, p < .001). The Chi square test revealed a significant association between the social presence manipulation and participants' recall of whether others were present during the co-production task (χ^2 (1) = 119.05 and p < .001).

It might be desirable to investigate whether the social presence manipulation in the co-production context inadvertently varied participants' attributions for failure (Perdue & Summers, 1986). So, as a confounding check, we tested this effect and confirmed that social presence manipulation does not influence attribution to effort (F (1, 168) = . 17, p > .6) or attribution to ability (F (1, 168) = 0.90, p > .3).

4.1.4. Results

We utilized a confirmatory factor analysis (CFA) with SPSS AMOS to assess the psychometric properties of the scales employed in the study. The CFA model demonstrated good overall fit indices based on the criteria provided by Hu and Bentler (1999) (χ2 (2 6 3) = 547.98, CMIN/df = 2.08, p < .01; SRMR = 0.06; CFI = 0.93; TLI = 0.92; RMSEA = 0.08). We found that all the indicator loadings were positive and significant (p < .001). All the constructs displayed high reliability (Table 1). Average variance extracted (AVE) for all these constructs was greater than 0.5, indicating convergent validity. The maximum squared correlation for each construct was less than its AVE, confirming the discriminant validity (Fornell & Larcker, 1981). Thus, the CFA analysis (Table 1) supported acceptable psychometric qualities and the uni-dimensionality of the scales.

Since we gathered data using self-reported measures, we recognized the potential for common method bias and conducted several tests to check its effects. In designing the survey instrument, we followed Feldman and Lynch (1988) recommendations of positioning the survey questions carefully in order to counter "self-generated validity". We took great care in placing the measures for constructs in different pages of the instrument and ensuring that the constructs never appeared in the hypothesized order (attributions → behavioral intentions).

Common method bias was examined using three tests. Firstly, Harman's one factor method (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) revealed that the first factor of all the items in the measurement model did not account for the majority of the variances (only 28% of the variance was explained by the common factor), which indicated that common method bias is not a problem. Secondly, we loaded all the items on to a common factor and conducted the CFA. The results of this CFA were then compared with the results of the CFA using the measurement model (Grace & Weaven, 2011) through a chi-squared difference test, which suggested no common method bias. Finally, we followed the common latent factor method (Podsakoff et al., 2003) by testing the same measurement model with a common latent factor linked to all the items, which ruled out common method bias.

We used multiple regression analysis (results in Table 2) to test the hypotheses because it is more flexible in testing moderation effects and is adaptable to multiple kinds of scales (e.g., (Mittal & Kamakura,

Table 2
Regression results.

	i_effort				i_assistance				i_avoid			
	Table (study 1)		Cycle (study 2)		Table (study 1)		Cycle (study 2)		Table (study 1)		Cycle (study 2)	
	no social	full model	no social	full model	no social	full model	no social	full model	no social	full model	no social	full model
intercept	4.10***	4.10***	−0.17	−0.17	4.50***	4.50***	4.95***	4.95	2.00**	2.99***	5.42***	5.42***
effort	0.40***	0.40***	0.51***	0.51***	0.11	0.11	−0.24***	−0.24***	−0.13	−0.13	−0.13	−0.13
ability	−0.12	−0.12	0.61***	0.61***	0.10	0.10	0.32***	0.32***	0.39*	0.39*	−0.14	−0.14
social		−1.88		3.04*		−0.26		−1.95*		2		−1.67
effort*social		−0.17		−0.07		−0.16		0.22**		0.22		0
ability*social		0.50**		−0.45*		0.19		0.25*		−0.5(+)		0.23
R-sq	0.14	0.17	0.29	0.28	0.02	0.07	0.28	0.30	0.06	0.04	0.02	0.03
Adj R-sq	0.12	0.15	0.27	0.26	0	0.04	0.26	0.28	0.04	0.02	0	0
N	86	171	82	173	86	171	82	173	86	171	82	173

i_effort = intention to increase effort, i_assistance = intention to seek assistance, i_avoid = intention to avoid similar situations, social = social presence.
sig.: $^{+} = p < .1$; * = $p < .05$; ** = $p < .01$; *** = $p < .001$.
All tests are two tailed.

2001)). The correlation between the two major independent variables was 0.08, so ability and effort attributions were unrelated. In addition, all VIF values were less than 2, indicating that multicollinearity was not a concern (Hair, Black, & Anderson, 2010).

When co-production occurred without social presence, the attribution of failure to effort positively influenced customer intention to put more effort into similar situations in the future (β = 0.40, p < .001), supporting H1a. The results did not support our prediction regarding the influence of an attribution to effort on customer intention to seek assistance (H1b) ($\beta = 0.11, p > .3$) and intention to avoid similar situations in the future (H1c) ($\beta = -0.13, p > .3$). We expected that participants would align with the entity theory perspective when facing a failure of co-production in the table context, and subsequently display avoidance goal orientation. We had expected the attribution for failure to ability to negatively influence the intention to increase effort (H3a) and positively influence the intention to seek assistance (H3b). Though the signs were as expected, the coefficients were not significant ($\beta = -0.12, p > .3$ and $\beta = 0.10, p > .3$, respectively), indicating a lack of support for our hypothesis. The predicted positive influence of attribution to ability on intention to avoid future co-production situations (H3c) was supported ($\beta = 0.39, p < .05$), which confirmed the presence of avoidance goal orientation.

The moderation hypothesis was tested via the interaction terms, using dummy coded social presence variable, in the multiple regression ($N_{social\ presence} = 84$, $N_{no\ social\ presence} = 87$). The sample size was predetermined for at least 90% power of determining a medium to high effect size (Cohen 1988: R software library (pwr)). We found that social presence moderated the influence of attribution to ability on the intention to increase effort (H4a; β = 0.50, p < .01) and the intention to avoid a similar situation in the future (H4c; β = −0.5, p < .1). Both these interactions were significant and in the same direction as predicted, although H4c has limited support. The hypothesized moderating influence on intention to seek assistance (H4b) was not significant (β = 0.19, p > .2). However, the sign of the coefficient was as expected.

4.2. Study 2

4.2.1. Method

Study 2 was conducted along lines similar to study 1, but utilized a different co-production scenario: the design and assembly of a cycle. The scenario was designed in a manner that aligned with incremental theory in emphasizing participants' perspectives of the physical ability/effort needed for the co-production task and beliefs that ability can be learned.

Participants participated in a vicarious co-production task at a firm facility through a vignette. The task was manipulated to culminate in failure. Participants were offered a choice of cycle parts and subsequently to assemble the cycle manually as a co-production task. The outcome of failure was simulated by conveying that the cycle did not meet the customer's expectations and requirements as it was not aesthetically pleasing and did not balance properly.

Participants read the vignette (see Appendix A) and were motivated to visualize themselves as the customer in the scenario. After reading the scenario, they answered questions about their internal attributions for failure and their behavioral intentions. The scales used were exactly the same as those used in Study 1. If participants had experienced a similar co-production failure in the recent past, they were asked to write about it and reflect on it in order to improve their internalization of the task context.

4.2.2. Results

The psychometric properties of the constructs were evaluated for reliability and validity using a CFA of the measurement model. Common-method bias was tested for and was not present. The guideline offered by Feldman and Lynch (1988) was followed to avoid self-generated validity. The hypotheses were tested using multiple regressions. The correlation between the two major independent variables was 0.08, so ability and effort attributions were unrelated. In addition, all VIF values were less than 2, indicating that multicollinearity was not a concern (Hair et al., 2010). The social presence manipulation was found to be successful ($M_{social} = 5.21$, $M_{no\ social} = 2.02$; $F(1, 171) = 279.2$, $p < .001$). Additionally, the Chi square test showed significant association between the social presence manipulation and participants' recall of whether others were present during the co-production task ($\chi^2(1) = 87.39$ and $p < .001$).

We found that the attribution of failure to effort positively influenced customer intention to put more effort into similar situations in the future (β = 0.51, p < .001), supporting H1a. The results also supported the expected influence of attribution to effort on customer intention to seek assistance (β = −0.24, p < .001) (H1b). The results did not support our prediction about the influence of the attribution to effort on intention to avoid similar situations in the future (H1c) (β = −0.13, p > .3). We expected that participants would employ the perspective of incremental theory when facing a co-production failure in the cycle context, and subsequently lower avoidance goal orientation. According to this premise, we expected the attribution of failure to ability to positively influence the intention to increase effort (H2a) in a similar situation in the future; the intention to seek assistance in a similar situation in the future (H2b), and negatively influence intention to avoid a similar situation in the future (H2c). Further, subsequent to failure, we found support for the positive relationship between

Table 3
Validation study.

	i_effort		i_assistance		i_avoid	
	no social	full model	no social	full model	no social	full model
intercept	1.01(†)	1.01(†)	3.61***	3.61***	3.51****	3.51***
effort	0.47***	0.46***	−0.06	−0.06	−0.09	−0.09
ability	0.42***	0.42***	0.43***	0.43***	0.29*	0.29(†)
social		2.70**		0.30		−0.99
effort*social		−0.06		−0.06		0.23
ability*social		−0.44**		−0.00		0.05
R-sq	0.36	0.30	0.29	0.27	0.05	0.04
Adj R-sq	0.34	0.28	0.27	0.25	0.03	0.02
N	86	190	86	190	86	171

i_effort = intention to increase effort, i_assistance = intention to seek assistance, i_avoid = intention to avoid similar situations, social = social presence.
sig.: †= $p < .1$; * = $p < .05$; ** = $p < .01$; *** = $p < .001$.
All tests are two tailed.

attribution to ability and intention to increase effort in the future (β = 0.61, p < .001) and (β = 0.32, p < .001), supporting H2a and H2b. The predicted negative influence of attribution to ability on intention to avoid future co-production situations (H2c) was not supported.

The moderation hypothesis was tested via the interaction terms, using dummy coded social presence variable, in the multiple regression ($N_{social\ presence}$ = 82, $N_{no\ social\ presence}$ = 91). We found that social presence moderated the influence of attribution to ability on the intention to increase effort (H4a; β = −0.45, p < .05) and the intention to seek assistance in the future (H4b; β = 0.25, p < . 05). The hypothesized moderating influence on intention to avoid (H4c) was not significant (β = 0.23, p > .2). However, the sign of the coefficient was as expected.

4.3. Validation study

To improve the generalizability and validity of our results, we conducted a study with several enhancements. We build a counterfactual model for the scenario in which entity belief was involved in co-creating a table. Suppose A → X and B → Y, A's transition to B would change the outcome from X to Y (Morgan & Winship, 2014). Such counterfactuals using the same set of respondents are argued to increase the validity of the results. In the initial stages of theory development, such designs are needed for stronger test of theory (Calder, Phillips, & Tybout, 1981, 1982).

4.3.1. Methodology

Our main objective of the validation study is to examine the causal reasoning we had in our hypothesis. We argued in our hypothesis that the treatment effect is due to the degree of higher perceived stability of ability in table co-production than the cycle co-production. If we want to test this reasoning, we need to remove the treatment effect from table co-production; that is, making the perceived stability of ability similar between table and cycle co-production. This was done through a redesigned table scenario and tested for the difference in perceived stability between the two scenarios.

The new counterfactual scenario of co-creating a table was changed such that the required abilities are based on incremental belief much like co-creating the cycle. This is in contrast to our main study wherein the scenario of co-creation of the table emphasized that the ability needed to design and assemble a table was difficult to learn. The new scenario was simplified and the ambiguity was reduced through pictorial representation, the images illustrating that the design just includes selecting certain parts and dimensions from an easy to use online portal (images shown in Appendix C). This reduction in ambiguity made the scenario similar to and simple as co-creating the cycle. The pictorial representation of the process also made it appear as a learnable task. We redesigned the scenarios after deliberating the objective of developing the counterfactual with a set of doctoral students and conducting the focus group discussion. We tested whether incremental beliefs of ability are comparable to that of cycle scenario through a pretest. We designed a between subject experiment in which one group of participants was exposed to cycle scenario as in the previous study and the other group to the revised table scenario. Once the tasks were complete, we asked participants whether the nature of the ability needed for the task is temporary or permanent. The nature of ability needed for table co-production task was found to be almost similar (Mean = 4.34) to that needed for cycle co-production (Mean = 4.21) and the difference was not significant (F (1, 98) = 0.15, p > .69).

4.3.2. Results

This new scenario, developed around incremental belief about the ability needed for the task, was tested in a manner similar to Study 1 and 2. One hundred and ninety participants (104 females and 86 males, Mage = 39.75 years, SDage = 12.67 years) recruited through Mturk were randomly allotted to social-presence and no social-presence scenarios. Further, the social presence manipulation was found to be successful (M_{social} = 5.49, $M_{no\ social}$ = 2.05; F (1, 188) = 279.2, $p < .001$). The Chi square test indicated a significant association between the social presence manipulation and participants' recall of whether others were present during the co-production task (χ^2 (1) = 130.22 and $p < .001$).

Since we expected the nature of ability needed to perform the new co-creation task to be as per incremental view of ability, we expected the results to be similar to that of cycle co-creation. The results, shown in Table 3 suggest that the creation of counterfactual design of the table co-creation to be successful, because the results are similar to that of the cycle co-creation in which we expected incremental beliefs about the ability.

We found that the attribution of failure to effort positively influenced customer intention to put more effort into similar situations in the future (β = 0.47, p < .001), supporting H1a and is similar to the findings in the case of cycle co-production (β = 0.51, p < .001). The results did not support the expected influence of attribution to effort on customer intention to seek assistance (β = −0.06, p < .1) (H1b) and the intention to avoid similar situations in the future (H1c) (β = −0.09, p > .1). According to incremental theory premise, we expected the attribution of failure to ability to positively influence the intention to increase effort (H2a) in a similar situation in the future; the intention to seek assistance in a similar situation in the future (H2b), and negatively influence intention to avoid a similar situation in the future (H2c). Further, subsequent to failure, we found support for the positive relationship between attribution to ability and intention to increase effort in the future and the intention to seek assistance

($\beta = 0.42$, $p < .001$) and ($\beta = 0.43$, $p < .001$). The effect sizes as well as their valence are similar to that we observe in cycle co-production ($\beta = 0.61$, $p < .001$) and ($\beta = 0.32$, $p < .001$), supporting H2a and H2b. The predicted negative influence of attribution to ability on intention to avoid future co-production situations (H2c) was not supported and is in opposite direction as expected ($\beta = 0.29$, $p < .05$).

The moderation hypothesis was tested via the interaction terms, using dummy coded social presence variable, in the multiple regression ($N_{social\ presence} = 86$, $N_{no\ social\ presence} = 104$). We found that social presence moderated the influence of attribution to ability on the intention to increase effort (H4a; $\beta = -0.44$, $p < .01$) and is similar to what was observed in cycle co-production (H4a; $\beta = -0.45$, $p < .05$). The hypothesized moderating influence on intention to seek assistance (H4b; $\beta = -0.00$, $p < .1$) and intention to avoid (H4c) was not significant ($\beta = 0.05$, $p > .1$). Thus, we see that most of the results are similar to that of the cycle scenario and hence we are sufficiently successful is establishing a counterfactual to the table co-production.

5. Discussion

It is now important to reconsider two questions that were posed at the beginning of this study. The first question asked how customers' internal attributions influence future behavioral intentions subsequent to a failure of co-produced products. We try to answer this by studying the influence of the two major classifications of internal attribution: internal-stable and internal-unstable. Co-production requires customers' operant resources, such as effort, ability, and knowledge. We consider the attributions toward effort and ability as internal-unstable and internal-stable, respectively.

Our results indicate that customer attribution to the inadequacy of expended effort may result in the intention to increase effort in a future co-production situation. This is because of the internal-unstable nature of the effort attribution, which increases customers' expectancy of future success because they tend to believe that success will result from an increase in effort. As the customer expects that he/she can improve his/her performance in the future by putting in more effort, he/she may have less of an intention to seek assistance and to avoid similar situations in the future.

Our results also indicate that customer attribution to a lack of ability to co-produce will result in an intention to avoid co-production situations in the future. We hypothesized such an effect due to the internal-stable nature of the ability attribution. The stable nature of the ability attribution causes a low expectancy of success in the future. Customers may think that they do not have enough skill or ability to accomplish the co-production task successfully and hence will try to avoid such situations in the future. However, the result seems to hold only in case of entity theory-related beliefs about ability. When customers who have faced failure at a co-production task expect that the ability needed for such tasks is fixed and difficult to develop, they tend to avoid co-production in the future. This also supports our theory that customers develop an avoidance goal orientation as a consequence of holding entity theory-related beliefs about ability.

We also predicted a negative intention to increase effort and positive intention to seek assistance in order to accomplish the co-production task successfully, when customers held entity beliefs about ability. Entity theory-related beliefs about the ability to co-produce reduce the expectancy of future success in co-production. Given this low expectancy of success, we expected customers to decrease their efforts or seek help from others who possess the ability needed to complete the co-production task successfully. Although the coefficients were in the predicted direction, they were not significant, which indicates a lack of statistical support for this prediction.

We expected that when customers held incremental beliefs about ability, they would have a positive intention to increase effort and seek assistance in order to accomplish the co-production task successfully in the future. This is probably because these beliefs lead the customer to expect to improve his/her ability through effort and assistance. Both relationships were supported in our results, validating our theorizing about incremental theory and learning goal orientation.

Our second question asked how relationships between effort and behavioral intentions and ability and behavioral intentions are influenced by the social presence in the co-production context. To answer this question, we draw from impression management theories (Puntoni & Tavassoli, 2007) and argue that when customers face failure in a situation characterized by social presence, their impression management concerns are activated, which will have a non-directional behavioral effect in motivating them to restore their public self-image. We had expected social presence to positively influence the effects of effort attribution. This was because of the internal–unstable nature of effort attribution, which would cause expectancies that expending more effort would lead to better performance in future co-production.

We expected social presence to negatively influence the effects of ability attribution. Therefore, when a customer faces a social evaluation which can adversely impact his or her public self-image, and there is no evident way to improve co-production in future due to a lack of ability, he/she will strive to alter his/her behavior in future. An intention to restore his/her compromised public self-image will be activated and the accompanying need for self-monitoring need will shape future actions. Our results support the claim that customers will try to expend more effort in such situations in the future in order to generate a positive outcome and image that impress others. They will not intend to avoid such situations, as doing so will deprive them of the opportunity to restore their compromised public self-image. However, there was a lack of support for the positive moderation of social presence on the intention to seek assistance that we hypothesized, which might be attributed to the lack of availability of credible experts to consult in the scenario.

Some of our hypotheses developed based on attribution and implicit theory were not supported. For example, we had predicted that attribution of failure of co-production to customer effort would lead to lower intention to avoid such situation in the future and lower intention to seek assistance. Even our re-reading of this theory suggests that the hypothesis should have found support. Given that the direction (i.e., valence) of the relationship was as expected, we think one possible explanation for the lack of statistical support is possible suppressor variables that might have diminished the strength of the relationship. Our approach to include three behavioral measures at the same time could have contributed to noisy data that triggered non-support of hypothesis. Separating these behavioral measures and performing simpler studies to validate the hypothesis in a series of studies could be one way forward. Another reason for the non-support of hypotheses can be lack of strength of manipulation of co-creation. A scenario-based manipulation of co-creation may not be strong enough for customers to perceive that they have indeed applied effort in co-creation.

5.1. Theoretical implications

Our research has several implications for theory. First, the study extends the literature on failures of co-produced products by examining how different types of attributions impact customer behavior. Additionally, although there has been some empirical support for the claim that attributions subsequent to failure are internal and not external, our study partially strengthens these findings by offering evidence for internal attribution post failure.

Second, our choice of the internal attributions of effort (internal-unstable) and ability (internal-stable) contributes to Service Dominance Logic (SDL) and claims regarding the use of operant resources in co-production. We found that since customers use operant resources such as effort, ability, and knowledge in co-production, when co-produced products fail, the attributions are directed to these resources. While current SDL research largely emphasizes knowledge as an all-encompassing operant resource, we highlight the use and application of attribution as a possible adjacent resource which can act on other

operand resources to co-produce value.

Third, although attribution theory has been extensively used in studies on failure, our study extends some of the attribution principles. The principles of self-serving bias and fundamental attribution theory hold in most studies on failure when customers attribute failure externally to firms or other situational factors. Our findings indicate that this accepted notion about customer attributions in product and service failures does not hold when customers are involved in the creation of those products and services.

Fourth, we found that different types of internal-stable and internal-unstable attributions affect customer behavioral intentions differently, which contributes important insights to the literature on product and service failures. Our findings also support the concept of atypical expectancy shifts (Sugathan et al., 2017a) subsequent to situations of failure situations by showing that intention to increase effort is higher when customers internally attribute the failure to their lack of effort. Additionally, it also should be emphasized that extant research is tasked to shift focus on other conceptual atypicality, for instance, it is plausible that effort attribution might exhibit stability characteristic closer to the lower or higher degree of effort demands (or, when effort demands are structured, constrained as against when they are liberal).

Fifth, our results also contribute to the literature by examining how an individual's perceptions of his/her ability to co-produce influences goal orientation and behavioral intentions. Our examination of ability in the co-production context from the perspective of entity vs. incremental theory context was novel. It brought to light many insights on how customers will form future goal orientations when they attribute failure to a lack of ability. Specifically, we explicate how learning vs. avoidance goal orientation is formed depending on whether the customer's beliefs are aligned with entity vs. incremental theory. We have also shown that social presence can alter a customer's avoidance goal orientation to a proving goal orientation.

Sixth, our work contributes to the research on product and service failures by explaining an important set of behavioral intentions within the context of such failures. It is important to understand the theoretical nuances of – and empirical evidence into – how customers' willingness to put more effort into co-production and how customers' intention to seek assistance in co-production is influenced by past failure. Additionally, this knowledge can help firms with information management and personnel planning to improve customer support and assistance.

5.2. Practical implications

The three behavioral intentions which we examine in this paper have important practical implications. Since co-production is gaining increased attention in marketing, firms might be interested to understand how the customers' behavioral intentions change subsequent to a co-production failure. Understanding how the different types of attribution influence behavioral intentions can help firms to manipulate these attributions in several ways: (1) by managing the amount of each operant resource the customer has to expend while co-producing (i.e., increasing the skill needed in a certain co-production task will direct attributions to ability), and (2) by managing the information provided to customers. Kelley (1973) information dimensions can be used to manipulate the kind of attributions customers make. For example, information about consensus (how others are performing in the same situation) and information about consistency (how people tend to usually perform the same in similar situations) can be combined to motivate an internal-stable (ability) attribution (Martinko & Thomson, 1998).

Our findings also inform firms about how social presence in the co-production context according to the operant resources that customers expend and the attributions they make can influence their behavioral intentions. For example, we found that high social presence in the co-production context would motivate customers to attribute a failure to their abilities and increase their efforts in co-production in the future. Concurrently, they would be less inclined to avoid co-production in the future. However, as impression management research has also highlighted the dark side of such tendencies (see, Crocker & Park, 2004; Leary, Tchividijian, & Kraxberger, 1994), it is important to clarify the goal of our study. While the consumers guided by proving goal orientation might run the risk of going overboard to make a failed situation succeed, firms should be cautious of the long-term adverse repercussions of such consumer tendencies. Consumer-centric firms would try to safeguard their consumers from falling prey to such impression management tendencies that would expose them to adversity. In that spirit, our goal was to make firms more responsible (and not exploitative), by making them aware of the effect of social presence in case of failed co-creation.

6. Future research

The main drawback associated with scenario-based experiments is the greater likelihood of the demand effect and participants' inability to respond as they actually would in a real situation. While strict contextual and experimental setting enables 'understanding' of causal relationships by minimizing 'possible contingencies' (Lewin and Sager 2007, p. 1220) and allow control of confounding effects (Singh, Goolsby, and Rhoads 1994), it limits generalizability as well as external validity. Therefore, field studies, even if they are constrained on internal validity, will be interesting to pursue to broaden our generalizability. Future studies can be conducted in real life field settings in order to generate more convincing insights. Experiments suffer from ecological and external validity threats. In scenario experiments, even when scores on believability, vividness and realism, and relevance of the manipulation and stimuli are high, additional field-based research would strengthen the replicability of the relationships tested in this study. Improvements are possible, for e.g., the study could have been conducted by having customers report their responses to real-life explanations for service failures, but this method introduces other sources of bias (including lack of control over extraneous variables, comparison of non-standardized explanations, and imperfect recall). More innovative methods, possibly including role-play simulations and event-contingent diary studies, are recommended for future use. Another drawback of study is the use of MTurk samples. Though, some researchers argue that Mechanical Turk samples are representative of the US population and provide data that has comparable reliability and validity as other sample recruitment methods (Goodman et al., 2013; Mason & Suri, 2011), MTurk samples can have different psychological characteristics than the general population. We acknowledge this limitation and claim cautious generalizability. However, many seminal and classic articles in the field, for e.g., Calder et al. (1981) maintain that representative sampling of subjects is neither necessary nor desirable when one is conducting theoretical consumer research. According to them, researchers ought to strive to create the strongest possible test of the theory being considered. In particular, they suggest that convenience samples of relatively homogenous subjects are desirable, as the heterogeneity of the subjects inflates the error terms of statistical tests and thus reduces the chance of detecting systemic violations of a theory when it is false.

While assessing the impact of social presence on avoidance goal orientation, it will be fruitful to differentiate between the influences of onlookers, other customers, and employees. Future research can study how the size of these social audiences and the customers' levels of acquaintanceship with them might affect the results. It would be particularly interesting to investigate the role of other constructs such as the expertise of the social audience and the hope they instill in the customer. As we mentioned earlier, firms would need to manage the customer attributions by understanding the role of specific operant resources.

Appendix A. Study vignettes

Table

You are planning to buy a new Table. Please put yourself in the situation described below and answer the questions that follow. Imagine yourself as **an active participant** *in the situation and answer the questions to express* **your true feelings** *about your participation.*

You are in a program/job that requires lot of working on a laptop. You have already developed uneasiness in working on a laptop for long hours. You decided to buy a new table to improve your sitting comfort.

Social Presence

You decide on a company that makes customized furniture. For this, you have to upload photos or sketches of the table. You also need to input the dimensions, sizing information, measurement, and the material to be used for construction.

You will also have to specify the type of joints for the table; the joints which you will be comfortable to work with, as you will have to join the different modules yourself.

You can watch the work of others in understanding the furniture design and assembly systems to make your decisions on the table. Other customers too can watch your design and final product. All this would be done at the company's facility, and public including other customers can view your design, specification, and the outcomes.

You made a design for the table using your intuition and by watching how others design and make custom furniture. You prepared a sketch of this design and uploaded on their website. You also filled in the necessary details regarding dimensions, material, type of joint, etc.

Next day, you visit the facility. Different modules were ready for you to assemble. You assembled them using the tools provided**,** in front of others. With some difficulty, you finished the assembly.

No social presence

You decide on a company that makes customized furniture. For this, you have to upload photos or sketches of the table. You also need to input the dimensions, sizing information, measurement, and the material to be used for construction.

You will also have to specify the type of joints for the table; the joints which you will be comfortable to work with, as you will have to join the different modules yourself.

The company will send the different modules by courier. You will have to join them to make the table at your home.

You made a design for the table using your intuition and with the help of internet. You prepared a sketch of this design and uploaded on their website. You also filled in the necessary details regarding dimensions, material, type of joint, etc.

When the different modules arrived by courier, you started assembling them alone at your place. Different modules were already ready for you to assemble. With some difficulty, you finished the assembly.

Failure

But, the table was not looking good. You tried to work on the table. But, you started feeling uncomfortable in the posture from the beginning.

Cycle

You are planning to buy a new bicycle. Please put yourself in the situation described below and answer the questions that follow. Imagine yourself as ***an active participant*** *in the situation and answer the questions to express* ***your true feelings*** *about your participation.*

You see an online advertisement from a reputed bicycle brand inviting you to a nearby store to design your own bicycle. Necessary assistance is available from the store-employee.

You visit the bicycle shop the next day. You were led to an employee X, who would be assisting you in designing the bicycle.

No social presence

X takes you to a facility which displays various parts. The facility also stocked a range of models for each part. You initially choose a frame you like. Subsequently, you chose other parts, one-by-one assessing the configurations, after carefully reading through descriptions of each part and reassuring with the employee on the overall fit. Then, you try to fit the parts in the frame after getting the required tools from the employee. You had to put a lot of effort because of the large number of parts available and because of lack of prior experience. You assembled the bicycle *after trying them out. The employee asks you to collect the bicycle the next day.*

Social presence

X takes you to a facility which displayed various parts. You find several other customers in the facility. The facility stocked a range of models for each part. You initially chose a frame you like. Subsequently, you chose other parts, one-by-one assessing the configurations, after carefully reading through descriptions of each part and reassuring with the employee on the overall fit. You found that the onlookers are watching what you are doing. You try to fit the parts in the frame after getting the required tools from the employee. You had to put in a lot of effort because of the large number of parts available and the nature of the fitting task. At that time of the day, customers were still arriving and you found that others were watching you work on the bicycle. You carried out the assembly to completion after trying almost each of the available parts.

Failure

You performed a test ride in the facility. You found that the bicycle had balancing issues. The bicycle looked very bad. Some of the parts did not seem to fit properly and you feared that might be dangerous while riding.

Appendix B. Measures

Intention to increase effort

When attempting similar things in future -

I would put forth more time and effort.

I would work harder for a successful outcome.

I would work much harder.

I would put in greater effort.

I would put in more time.

Intention to seek assistance

When attempting similar things in future -

I would seek assistance from someone in the company.

I would get input from someone who may have handled a similar situation.
I would seek advice in how to deal with the situation.
I would seek assistance in dealing with this situation.

Intention to avoid

When attempting similar things in future -
I would stay away from situations like this one.
I would avoid such situations in the future.
I would not call on that type of prospect again.
I would not put myself in that situation again.

Appendix C. Stimulus for validation study

Table

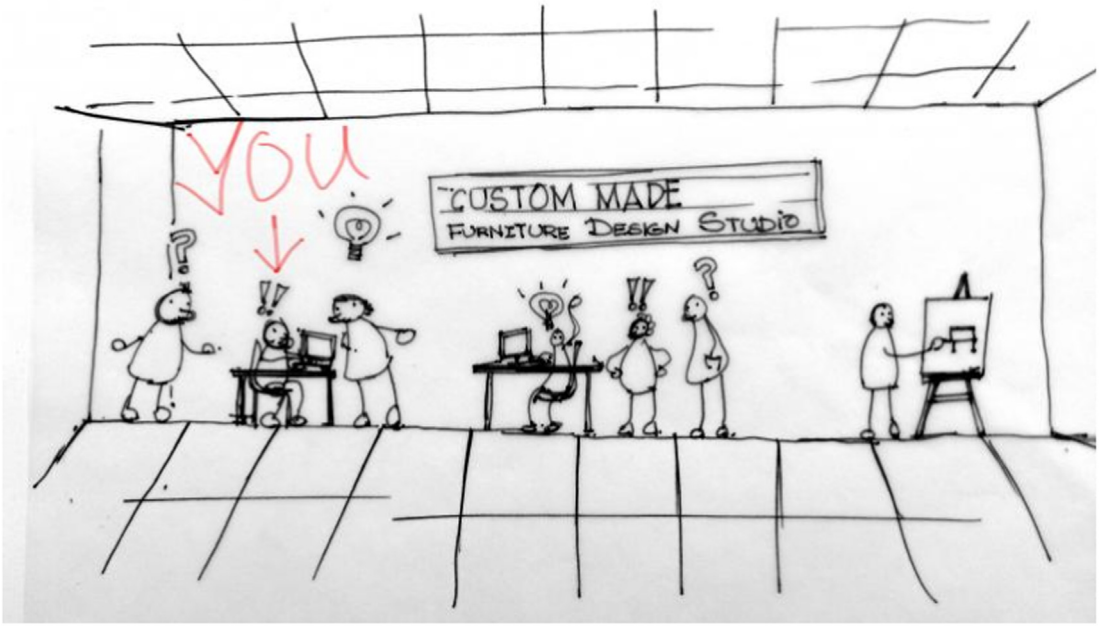
You are planning to buy a new Table. Please put yourself in the situation described below and answer the questions that follow. Imagine yourself as **an active participant** *in the situation and answer the questions to express* **your true feelings** *about your participation.*

You decided to buy a new table to improve your sitting posture. You expect that the new table will help you to maintain a good posture and will give ease in typing and writing.

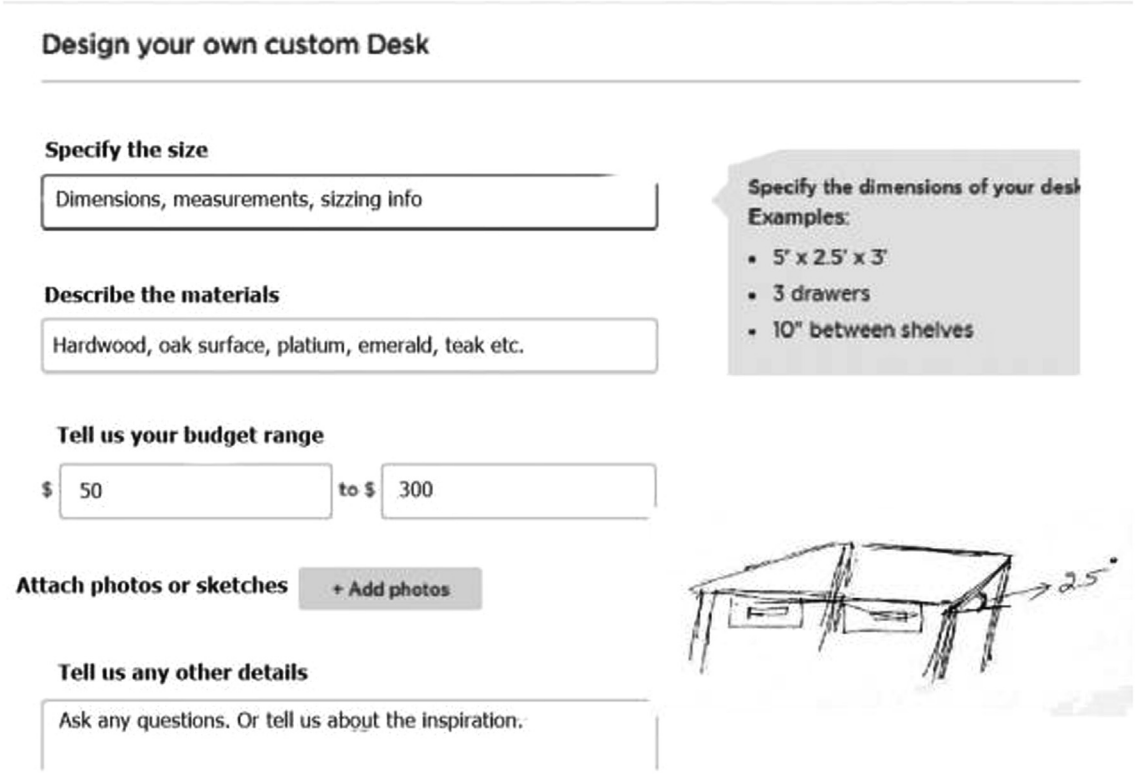
Social Presence

You decide on a company that makes customized furniture. For this, you have to upload photos or sketches of the table. You also need to input the dimensions. The company mentions that it is easy to learn the assembly.

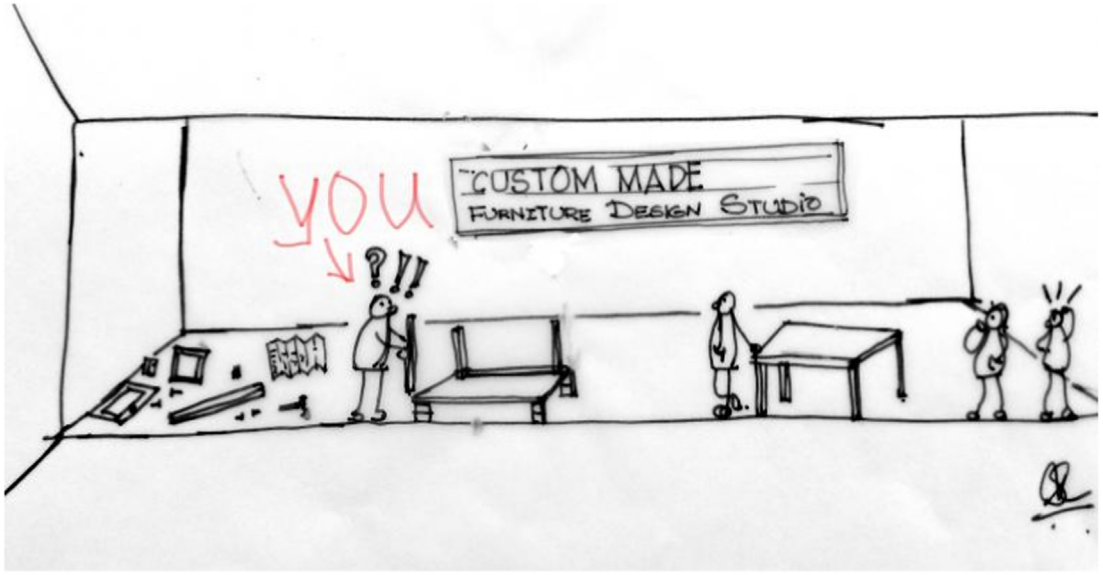
You can watch the work of others in understanding the furniture design and assembly systems to make your decisions on the table. Other customers too can watch your design and final product. All this would be done at the company's facility, and public including other customers can view your design, specification, and the outcomes.



You made a design for the table using your intuition and by watching how others design and make custom furniture. You prepared a sketch of this design and uploaded on their website. You also filled in the necessary details regarding dimensions, material, type of joint, etc. You found the exercise to be easy and learnable.



Next day, you visit the facility. Different modules were already ready for you to assemble. You assembled them using the tools provided, in front of others.

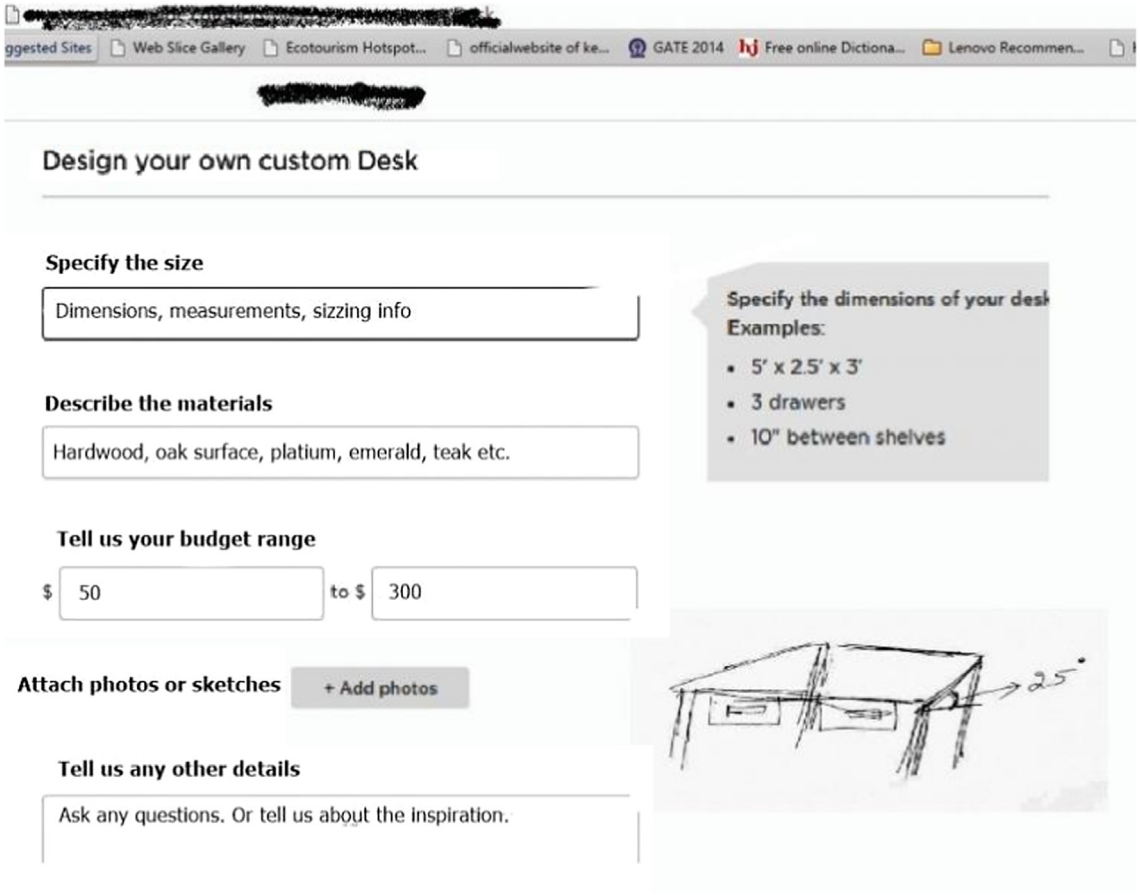


No social presence

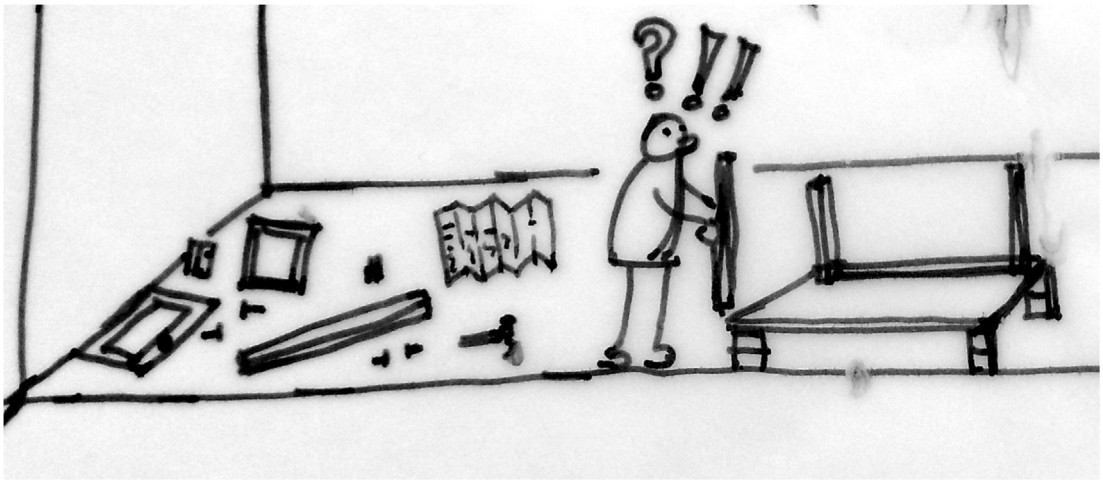
You decide on a company that makes customized furniture. For this, you have to upload photos or sketches of the table. You also need to input the dimensions, sizing information, measurement, and the material to be used for construction. The company will send the different modules by courier. You will have to assemble them to make the table.

The company mentions that it is easy to learn the assembly.

You made a design for the table using your intuition and with the help of internet. You prepared a sketch of this design and uploaded on their website. You also filled in the necessary details regarding dimensions, material, type of joint, etc. You found the exercise to be easy and learnable.



When the different modules arrived by courier, you started assembling them alone at your place. Different modules were already ready for you to assemble.



Failure

But, the table was not looking good. You tried to work on the table. But, you started feeling uncomfortable in the posture from the beginning.

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