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# Tourist co-creation and tourism marketing outcomes: An inverted U-shaped relationship

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ABSTRACT

Extant literature typically advocates a positive linear relationship between a myriad of tourist co-creation behaviors and tourism business performance. This study challenges this conventional wisdom by probing the potential curvilinear effects of tourist co-creation on tourism marketing outcomes. The findings across three experiments manifest an inverted U-shaped relationship between the degree of tourist co-creation and an array of tourism marketing performance indicators comprising liking, participation, and recommendation intention. Furthermore, the results reveal that tourist experiential fluency may positively moderate this relationship, thereby offering measures to mitigate the negative impacts of excessive tourist co-creation on the ultimate tourism marketing outputs. This research makes theoretical contributions by cautioning against the possibility of value co-destruction and puts forward practical suggestions for tourism marketers to better manage the tourist co-creation process.

## 1. Introduction

Tourist co-creation generally refers to the active participation of tourists in the creation or modification of products or services related to their travel experiences (Campos et al., 2018). This participatory process can transpire in various phases of the tourism journey, including the pre-trip, on-trip, and post-trip stages, and may manifest through a multitude of channels including online platforms and direct interpersonal interactions (Tseng & Chiang, 2016). Previous studies have extensively identified a broad spectrum of benefits associated with fostering tourist co-creation (Mathis et al., 2016; Prebensen & Xie, 2017). Consequently, tourism practitioners are increasingly shifting their resources to incorporating tourists in the decision-making and experience formation process (Prebensen et al., 2013).

Despite the well-documented positive effects of tourist co-creation in the extant literature, it is not well understood whether such effects have limits. Admittedly, facilitating tourist co-creation can bolster tourist engagement and preference fit, thereby enhancing their overall touristic experiences and associated tourism marketing performance (Jaakkola et al., 2015; Sugathan & Ranjan, 2019). Nevertheless, on the flip side, tourist co-creation is simultaneously a highly complex and dynamic resource exchange process (Grönroos & Voima, 2013). Thereby, an excessive augmentation of tourist co-creation may also imply heightened costs and risks (Stokburger-Sauer et al., 2016). As such, given the presence of these two parallel but countervailing underlying mechanisms, it remains questionable whether there is a saturation point for the benefits that tourist co-creation can yield.

These reflections lead to the main investigation in the current study about whether there is an optimum of tourist co-creation in relation to tourism marketing outcomes. To the best of our knowledge, existing literature has primarily assumed a positive linear relationship between various tourist co-creation actions and marketing outputs (see systematic reviews by Campos et al. (2018); Phi and Dredge (2019). Against this backdrop, this study resorts to the value co-destruction literature and conducts a critical review of the inherent benefits and costs embedded in the course of tourist co-creation, the results of which have directed us to theorize a negative curvilinear (i.e., inverted U-shaped) relationship between tourist co-creation and tourism marketing performance.

Further, to develop strategies for optimizing co-creation consequences, the current study also examines the conditions under which tourism marketing performance can continue to grow despite a high degree of tourist co-creation. Considering tourist co-creation entails intensive cognitive activities that require tourists to think, learn, and perceive (Gligor & Maloni, 2022), the present study refers to the cognitive psychology literature and draws upon the seminal processing

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fluency theory (Schwarz, 2004) to propose tourist experiential fluency, namely the cognitive smoothness, during the co-creation process as a moderating variable in this relationship. Specifically, it is contended that by elevating customer skills and knowledge and adjusting user interface design to promote tourist experiential fluency, improved tourism marketing outcomes can be attained.

We test the above propositions across three experiments. The results consistently reveal an inverted U-shaped pattern between the degree of tourist co-creation and a range of tourism marketing performance indicators encompassing liking, participation, and word-of-mouth intention, manifesting that although augmenting tourist co-creation can raise tourism marketing performance to a certain point, an overwhelming level would cause performance deterioration. In addition to that, the tests for the moderation effect indicate that fluent tourist co-creation experience can effectively counteract the negative impacts of excessive tourist co-creation on tourism marketing outcomes, offering hints for averting the risks pertinent to tourist co-creation activities.

Our research makes three main contributions. First, we provide one of the first pieces of experimental evidence for the negative curvilinear effect of co-creation on marketing outcomes in the tourism business context. The finding thereby challenges the commonly held presumption of a positive linear relationship between these two genres of constructs. Since tourist co-creation behaviors can be either value-creating or value-destructing, we call for subsequent theoretical construction to argue why in a given tourism business scenario the value co-destruction scenario is unlikely to occur. Second, we identify tourist experiential fluency as a boundary condition to determine the consequences of co-creation, which articulates the dynamics of the co-creation by bridging cognitive psychology literature. The finding sheds light on ensuing tourism co-creation research by highlighting the importance of concentrating on the customer's concrete cognitive experiences during the co-creation process to optimize co-creation outcomes. Third, for tourism practitioners, the current research warrants their attention to the hidden side-effects of excessive tourist co-creation. We highlight that co-creation can be a double-edged sword and that blindly increasing the level of tourist participation in the value-creation process does not necessarily guarantee enhanced business outputs. In this way, we emphasize the need for tourism practitioners to make informed decisions to affirm the optimal rather than the highest possibility of tourist co-creation.

The following sections are structured as follows: We first present the theoretical framework and research propositions in the next section, followed by a delineation of the methods and results of our three experiments. After that, we discuss our findings with existing literature to provide theoretical and practical implications. Finally, we present the limitations of the study as well as recommendations for future research.

## 2. Theoretical framework

### 2.1. Value co-creation: Benefits of tourist co-creation

Viewing tourists as value co-creators represents a paradigm shift in understanding the process through which value is generated for both tourists and tourism businesses (Sugathan & Ranjan, 2019). Contrary to the conventional service marketing logic, which positions tourists as mere recipients of value, the co-creation approach acknowledges tourists as dynamic agents capable of contributing their own operand and operant resources to create value for themselves (Prebensen et al., 2013). As such, tourists should not be solely treated as passive visitors or sightseers, but rather as active participants in the construction of their own travel experiences (Alves et al., 2016).

Adopting this value co-creation perspective, extant studies have extensively gauged the positive effects of tourist co-creation in a myriad of onsite and digital tourism settings, unveiling abundant benefits for both tourists and tourism businesses. On the side of tourists, for instance, engaging in co-creation activities can directly enhance their autonomy, preference fit, and sense of engagement (Grissemann & Stokburger-Sauer, 2012; Mathis et al., 2016), which in turn contributes to an elevated overall value perception of the journey, encompassing value attributes such as quality, financial, novelty, emotional, relational, and epistemic value (Guan et al., 2018; Prebensen & Xie, 2017; Xie et al., 2020). Consequently, such an increase in tourist perceived value would amplify tourist satisfaction as well as their well-being at large (Saha et al., 2022).

Likewise, on the side of tourism businesses, previous studies have found that enabling tourist co-creation is conducive to unlocking innovative ideas, removing barriers between stakeholders as well as strengthening brand uniqueness and equity (Assiouras et al., 2019; Carvalho & Alves, 2023). As a consequence of such benefits, a series of key tourism business and marketing outcomes, including service innovation success rate, service quality, tourist loyalty, word-of-mouth behavior, tourist expenditure, and business market share are all likely to be boosted (Grissemann & Stokburger-Sauer, 2012; Hollebeek & Rather, 2019; Sarmah & Rahman, 2018). Consequently, due to the multitude of benefits derived from tourist co-creation, incorporating tourists into the value-creation process has emerged as a crucial strategic approach and core business orientation for tourism service providers and destination management organizations to achieve competitive advantages (Saha et al., 2022).

Notwithstanding the well-researched benefits of tourist co-creation, scant literature has discussed its potential downsides. That said, it is largely taken for granted that tourism co-creation would linearly and unconditionally benefit the tourist experience and tourism marketing outcomes. This presumption, however, has been recently challenged by marketing researchers who argue that customer co-creation or active participation also entails certain risks and costs (Echeverri & Skålén, 2021). Therefore, it warrants further research attention to exploring the circumstances under which tourist co-creation can be value-destructing, which will be critically reviewed in the subsequent section.

### 2.2. Value co-destruction: Costs and risks of tourist co-creation

As opposed to value co-creation, value co-destruction denotes the circumstances in which the interactions between actors in the value system result in the diminishment of value and well-being for relevant stakeholders (Zhang et al., 2018). Recent research has provided empirical evidence and theoretical articulations on the occurrence of value co-destruction in service and tourism marketing contexts (see reviews by Echeverri and Skålén (2021) and Freire and Veríssimo (2021).

The primary research stream on value co-destruction is developed from the resource-based viewpoint. As noted by Grönroos and Voima (2013), co-creation is essentially a resource-exchange practice inevitably demanding customers to invest and exchange their financial, physical, and intellectual resources such as ideas, skills, knowledge, expertise, and time. This implies that as the degree of co-creation increases, the required operand and operant resources from customers would also significantly rocket up (Gallarza et al., 2019). In the context of tourism experiential consumption, studies have demonstrated that when the degree of tourist co-creation is intensive, tourists who are relatively new to the destination or touristic activities may not always possess compatible resources to engage in meaningful participation (Freire & Veríssimo, 2021). As a result, issues of resource mismatching may arise, which in turn leads to negative consequences for both tourists and business outcomes (Freire & Veríssimo, 2021; M. Smith, 2013).

Apart from the issue of resource misalignment, prior studies have also investigated value co-destruction from psychological perspectives. As suggested by Wang et al. (2019), while customers usually view co-creation as a voluntary choice, it should be noted that all their inputs of operand and operant resources are not monetarily compensated. That said, when tourists perceive injustice and unfairness in the way they are treated during the co-creation process, they may transform their identities from "co-creators" to "unpaid employees", combined with feelings

of boredom, anxiety, frustration, and even "labor exploitation" (Cova et al., 2011; Freire & Veríssimo, 2021). This depriving sentiment can be particularly pronounced when the degree of required co-creation becomes overwhelming, and tourists have to expend considerable time and effort to fulfill their "duties" (Guan et al., 2020).

Meanwhile, extant consumer psychology research has also suggested that value co-destruction may be associated with cognitive biases. For instance, implicated by the equity theory (Huppertz et al., 1978), as the volume of customer contribution soars, so does their expectation for outcomes, which can make it harder for the co-created experience to reach a satisfactory level given the same level of service quality (Childers et al., 2001). Similarly, the self-serving bias phenomenon (Bendapudi & Leone, 2003) posits that customers are more likely to attribute positive co-creation results to their own actions and negative co-creation outcomes to service providers' practices. Thereby, applying these findings to the tourism consumption context, doubts can be raised about whether tourists will equally attribute their experienced values to the service providers when the co-creation level is overly high.

Last but not least, several studies illustrate value co-destruction phenomena from the lens of complexity science. According to complexity theory, an increase in the number of actors and actions in a system naturally entails greater uncertainty, potentially leading to a higher probability of uncontrollable events, conflicts, and misbehaviors (Hallikas et al., 2004). As a result, the increasing co-creation activities would make it harder for service providers to monitor and control the service provision, which would eventually increase the possibility of service failure and negatively impact the customer experience (Wang et al., 2019). For instance, as found by Sthapit and Björk (2019), the friction in excessive customer interaction is shown to be a significant reason leading to tourist dissatisfaction.

In summary, the above review leads us to present Fig. 1 below, which illustrates the inherent costs and benefits associated with the tourist co-creation process, referred to as the "black box of co-creation". As can be revealed by Fig. 1, while extant research predominantly focuses on the positive sides of co-creation, there are, in fact, two parallel but countervailing underlying mechanisms transpiring the tourist co-creation process. That said, on one hand, tourist co-creation can elevate tourist perceived benefits, which in turn improves tourism marketing performance. On the other hand, tourist co-creation can also produce hidden costs and risks, which would in turn undermine customer evaluation and thus tourism marketing performance.

Then, following the guidelines of theorizing curvilinear effects (Haans et al., 2016), we can couple with the law of diminishing marginal utility from microeconomics to argue that while tourists can obtain increasing benefits due to their co-creation actions, such benefits are likely to increase at a decreasing rate, resulting in a concave benefit curve. In the meantime, as the level of tourist co-creation increases, the costs linked to co-creation activities will exponentially increase, resulting in a convex cost curve. Consequently, the additive benefits of tourist co-creation to the tourism marketing performance would point to a negative curvilinear pattern. That is, the tourism marketing outcomes led by the tourist co-creation will be enhanced at a declining speed until reaching the maximum, after which they will decline at a growing speed as the level of tourist co-creation behaviors continues to increase. As such, we can make our first proposition as follows:

**Proposition 1**. *Tourist co-creation has a negative curvilinear (inverted U-shaped) effect on tourism marketing outcomes.*

### 2.3. Tourist experimental fluency as a moderator

Given this first proposition, it is now both theoretically and practically important to further investigate under what circumstances the anticipated downturn occurring in high tourist co-creation conditions can be avoided. Previous co-creation literature has discussed that customer capability (i.e., skills, knowledge, expertise) may play a decisive role in affecting the relationship between customer co-creation and co-creation outcomes (Gligor & Maloni, 2022; Stokburger-Sauer et al., 2016). This is because, capable customers can better cope with and adapt to the challenges emerging in the co-creation process, which enables them to maintain a smooth and comfortable co-creation experience even though the degree of co-creation is immensely high (Yim et al., 2012). This discussion leads us to the idea that as long as tourists can undergo a fairly smooth co-creation experience, they will be less likely to detect and be negatively impacted by those underlying costs and risks pertinent to co-creation.

In the cognitive psychology research field, such an experiential feeling of smoothness is conceptualized as processing fluency, which is defined as the ease with which the information is processed (Lee & Labroo, 2004). One of the key determinants of processing fluency, as already noted, is related to customer capability as it can directly uplift people's cognitive power and self-efficacy during information

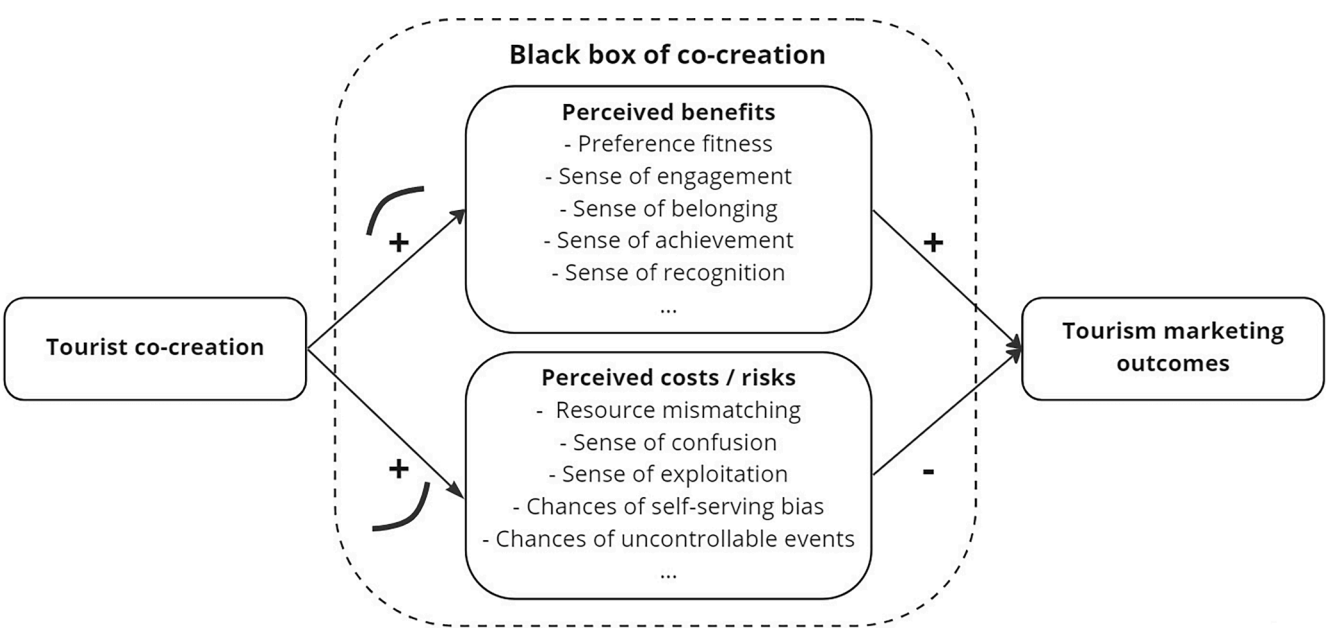


**Fig. 1.** The black box of tourist co-creation.

processing (Hamann, 1990). Aside from that, processing fluency also pertains to the ease with which a person identifies the physical features such as clarity, modality, font, and size, contained in a stimulus, which is called perceptual fluency, as well as the ease with which a person understands the semantic meanings contained in a stimulus, which is called conceptual fluency (Tulving & Schacter, 1990; Winkielman et al., 2003).

Despite distinct sources of processing fluency, extant consumer psychology research shows that all fluent experiences would impose identically positive impacts on customer affective responses (Reber et al., 1998; Winkielman & Cacioppo, 2001). This is because, according to the seminal affect-as-information theory, fluent conditions (vs. disfluent conditions) would signal little harmlessness and higher familiarity, cognitive ease, and opportunities for success (Song & Schwarz, 2008). In the same vein, according to the flow theory, when people experience fluent thoughts and actions, feelings of enjoyment would naturally emerge (Drengner et al., 2008). As a result of these positive affect, customer judgment and behavioral intention toward the processed targets can be lifted though people may not always be aware of it. Some interesting instances include that stocks with simple names perform better than those with complex names, brands with easy-to-understand features yield higher customer trust than those with difficulty-to-understand features, and suggestions printed with clear fonts are more likely to be accepted than those with intricate fonts (Schwarz et al., 2021).

In the tourism marketing context, existing literature has also provided supportive evidence for such a fluency-pleasure relationship (Orth & Wirtz, 2014), as well as the positive moderating effect of processing fluency on ultimate marketing outcomes. For instance, Tang and Jang (2014) found that processing fluency can positively moderate the relationship between utilitarian value elicited by web material and destination image. This implies that when information related to a destination is easily understood and processed, it can lead to a more positive perception of the destination. Similarly, in the context of CSR communication, Zhang et al. (2018) found that when the material is easy to process, tourists tend to have a more positive attitude toward the CSR campaign. This suggests that facilitating the processing fluency of CSR information can enhance its effectiveness and contribute to a more favorable evaluation of the campaign.

Following the above-elaborated psychological mechanisms and empirical cases, we can argue that in the tourism co-creation context, tourist experiential fluency could be one of the essential moderators in determining the relationship between tourist co-creation and tourism marketing outcomes. That is, when the co-creation experience is fluent, tourists' mindsets are expected to be positively triggered, making their interests, motivations, and attitudes to respond to an increase in the co-creation intensity more favorable; as such, an increase in the degree of tourist co-creation will lead to a smaller increase in the perceived costs and a larger increase in the perceived gains. According to Haans et al. (2016), such a transformation would shift the turning point of our proposed inverted U-shaped curve to the upper right, which can be postulated as a positive moderating effect. Based on these arguments, we can put forward the second proposition below. Then, in the following sections, we present the methods and results of three experiments conducted for proposition testing.

**Proposition 2.** *Tourist experiential fluency positively moderates the negative curvilinear (inverted U-shaped) relationship between tourist co-creation and tourism marketing outcomes.*

## 3. Experiment 1

### 3.1. Design, participants, and measures

In experiment 1, we set out to test the first proposition by operationalizing tourist co-creation in an online package-tour co-creation setting. We used a real-life package tour product called "Nutshell in Norway", which allowed us to systematically vary the required degree of tourist co-creation such as time investment, information provision, and preference expression while controlling for extraneous variables. Specifically, we conducted a single-factorial between-subjects online experiment using an Amazon Mechanical Turk (MTurk) sample ($n$ = 294; 37.5% female; $M_{age}$ = 34.8) who participated in return for a small monetary reward. The manipulation technique was to ask participants to perform a simulated package tour reservation task based on "Nutshell in Norway". To effectively manipulate the degree of co-creation (low vs. moderate vs. high), we intentionally varied the number of service options needed for reviewing, reflecting, and selecting, ranging from transportation, accommodation, catering, and specific touristic activities (see Appendix A).

A pre-test with college students in Norway affirmed a significant difference in terms of the perceived degree of co-creation (items: "I have been actively involved in the packaging of my trip" "I have used my experience from previous trips in order to arrange this trip" "The ideas of how to arrange this trip were predominantly suggested by myself', scales 1——7, from Grissemann and Stokburger-Sauer (2012) between the three levels ($\alpha = 0.85$, $F(2, 42) = 84.6, M_{High} = 6.73, M_{Moderate} = 5.86, M_{Low} = 3.4$, $p < 0.001$). During the actual online experiments, the MTurk participants were randomly assigned to one of the three experimental conditions and were instructed that they were going to co-create a package tour in Norway and then make evaluations. After completing the task, the participants were required to report their attitudinal evaluation, namely liking, toward their co-created package-tour product (item: "how much you like this Norwegian package-tour offering", scale 1——7). As a manipulation check, we asked them to rate their perceived co-creation degree as we did in the pretest. Regarding co-variates, we measured their attitude to Norway and their familiarity with Norway as a destination (scales 1——7). In the end, the participants reported their demographic information.

### 3.2. Results and discussion

The manipulation check revealed a significantly different perceived degree of co-creation between the three conditions ($F(2, 290) = 305.565$, $M_{High} = 6.40, SD = 0.699, M_{Moderate} = 5.92, SD = 0.691, M_{Low} = 3.66$, $SD = 1.045$, $p < 0.001$). After that, Analysis of Covariance (ANCOVA) with attitude and familiarity as covariates, manifested a significant main effect of co-creation on liking ($F(2, 292) = 24.899$, $p < 0.001$), and the *post hoc* comparisons further revealed significant differences between the low and moderate conditions ($M_{low} = 5.19, M_{Moderate} = 5.93, p < 0.01$), between the moderate and high conditions ($M_{Moderate} = 5.93$, $M_{High} = 5.70, p < 0.01$) and between the high and low condition conditions ($M_{High} = 5.70$, $M_{Low} = 5.19$, $p < 0.05$). Fig. 2 demonstrates the

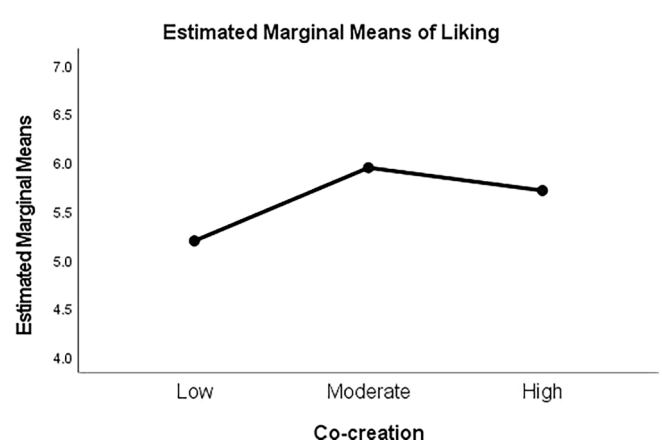


**Fig. 2.** The relationship between tourist co-creation and liking.

estimated marginal means of liking in three co-creation conditions.

The results of experiment 1 indicate that participants' co-creation level had a significant main effect on their liking toward their co-created package tours and that the net relationship between the degree of tourist co-creation and liking did follow a negative curvilinear (inverted U-shaped) pattern as presented in Fig. 2. Therefore, our first proposition was preliminarily supported in this experiment. Despite the expected results, a limitation of this study is that those MTurk participants were not actual tourists who are intrinsically motivated to spend time and effort on this co-creation task. Additionally, the online experiment may not have effectively controlled for environmental covariates. To address these limitations, the next experiment will replicate experiment 1 using an event manipulation technique to vary the co-creation level and continue to test our second proposition.

## 4. Experiment 2

### 4.1. Design, participants, and procedure

In experiment 2, we conducted a single factorial between-subjects experiment with a student sample ($n = 132$; 56% female; $M_{age} = 18.7$) who were freshmen from three classes studying at a university in eastern China. Similar to study 1, we designed a field trip co-creation task intended to vary their perceived degree of co-creation (low vs. moderate vs. high). In this experiment, we designed a tour based on a local destination in which the university is located. The rationale for this design was that 42.4% of the students ($n = 56$) were local residents who just graduated from high schools in the same city as the university is located. Therefore, we expected that this characteristic of the sample could enable a natural variation in experiential fluency as such local students would have more relevant experiences and knowledge when processing the co-creation tasks. That said, the local students expected to undergo a higher experiential fluency while co-creating their stay than the others who just commenced their bachelor's studies in this relatively new city.

To simulate realistic tourist co-create experiences, we applied an event technique to manipulate the degree of co-creation. First, we randomly assigned one co-creation scenario to each class. Then, at the beginning of each round of the experiment, a marketing course lecturer, who reacted as the experimenter in this study, instructed students in the class that the faculty had planned a two-day field trip for them in the coming spring semester and would like to learn about their preferences concerning this field trip. Then, students were asked to use their computers and click a link that directed them to their assigned online package-tour co-creation scenario. During the task, they had to individually co-create their assigned trip scenario in the online form. After completing the task, the students continued to complete a questionnaire measuring their liking (item: "how much do you personally like this field trip plan", scale 1–7) and participation intention as a downstream consequence (item: "how likely you are participating this field trip", scale 1–7). Then, the manipulation check was made as in study 1, followed by measuring their perceptual fluency during the task (item: "difficult-easy to process the co-creation task", scale 1–7, from Graf et al. (2018)), and their attitude to the field trip site as a covariate (scale 1–7). Finally, the students reported their demographic information items. A debriefing was made by the lecturer about the purpose of the study after the experiment.

### 4.2. Results and discussion

As predicted, the manipulation check showed significantly different perceptions of the co-creation level between the three conditions ($F(2,129) = 160.031, M_{High} = 6.59, SD = 0.54, M_{Moderate} = 5.63, SD = 0.84, M_{Low} = 3.29, SD = 1.17, p < 0.001$). After that, we conducted a Multivariate Analysis of Covariance (MANCOVA) with the attitude toward the field trip site as a covariate to test whether there existed differences between the degree of co-creation and the two outcomes (liking and participation intention). The results manifested a statistically significant MANOVA effect ($Pillais' Trace = .122, F(4,256) = 4.416, p < 0.05$) and significant main effects of co-creation on both liking ($F(2,131) = 5.902, p < 0.01$) and participation intention ($F(2,131) = 3.732, p < 0.05$). In terms of liking, the *post hoc* comparisons further revealed significant differences between the low and moderate conditions ($M_{Low} = 4.95, M_{Moderate} = 5.57, p < 0.01$) and moderate and high conditions ($M_{Moderate} = 5.57, M_{High} = 5.2, p < 0.05$) and a non-significant difference between the high and low conditions ($M_{high} = 5.2 M_{low} = 4.95, p = 0.175$). As for the participation intention, the *post hoc* comparisons revealed that the low condition was significantly lower than both the moderate condition ($M_{low} = 5.09, M_{Moderate} = 5.50, p < 0.05$) and high condition ($M_{low} = 5.09, M_{High} = 5.52, p < 0.05$); yet, no significant difference between the moderate and high conditions ($M_{moderate} = 5.50, M_{high} = 5.52, p = 0.897$) was found. Fig. 2 demonstrates the estimated marginal means of liking and participation intention in all three co-creation conditions.

To test the moderating effect of perceptual fluency, we conducted a multiple-moderated regression analysis. Following Hayes (2013), we treated the low co-creation as the baseline and respectively regressed liking and participation intention on the attitude, effect-coded level of co-creation, and mean-centered experiential fluency, followed by entering the mean-centered interaction effects. As can be seen from the regression results depicted in Table 1, in both model 1 and model 2, the omnibus F-tests were not significant and accordingly the coefficients of interaction terms were not significant as well. Therefore, the results did not support a significant moderation effect.

The results of study 2, again, disclosed an inverted U-shaped relationship between the degree of tourist co-creation and liking, which supported our first proposition. As for the participation intention, even though it did not fully resemble an inverted U-shape, the results indicated that the high condition did not yield a better outcome than the moderate condition. Hence, we found support for proposition 1 in this experiment. Regarding the moderating effect of experiential fluency, we however did not find supportive results for proposition 2. As a reflection, such nonsignificant results might be due to several unavoidable limitations in this study. For example, when we checked students' self-reported fluency value, the results showed that most participants perceived the co-creation tasks as somewhat easy to process ($M = 5.76$, $SD = 1.393$), putting doubts on the efficacy of our intended natural variation technique. Hence, in the following experiment, we continued to replicate the study with a larger sample and intentionally manipulate the experiential fluency to further validate our propositions.

## 5. Experiment 3

### 5.1. Study design, participants, and procedure

In experiment 3, we conducted a 3 (co-creation level: low vs. moderate vs. high) by 2 (experiential fluency: low vs. high) between-subjects experiment. The participants of this study ($n = 324$; 59% female; $M_{age} = 20.8$) were sophomores and juniors from six classes in the same university as in experiment 2. In this experiment, we adopted the stimulus we developed in experiment 1 with the language being translated into Chinese by a bilingual tourism marketing researcher from Norway. Different from study 2, we hereby intentionally manipulated the experiential fluency of the co-creation task. For the sake of contextual realism, we referred to Herrmann et al. (2013) to respectively vary the experiential fluency by modifying the font (Simsun vs. STXingkai), font size (12 vs. 10), and Michelson contrast (0.7 (RGB background: 0,0,0; RGB text: 255,255,255) vs. 0.45 (RGB background: 0,0,0; RGB text: 150,150,150)).

The experimental procedure was similar to study 2. We first

**Table 1**
Moderating test results.

| | Liking | | | | Participation Intention | | | |
|---|---|---|---|---|---|---|---|---|
| | Model 1a | | Model 1b | | Model 2a | | Model 2b | |
| Independent variables | b | t | b | t | b | t | b | t |
| Constant | 4.844 | 14.082** | 4.845 | 14.157*** | 5.305 | 15.305** | 5.284 | 15.139** |
| Attitude | 0.02 | 0.289 | 0.018 | 0.26 | −0.049 | −0.709 | −0.043 | −0.615 |
| Low CC (baseline) | – | – | – | – | – | – | – | – |
| Moderate CC | 0.608 | 3.53** | 0.637 | 3.707** | 0.41 | 2.362* | 0.402 | 2.294* |
| High CC | 0.304 | 1.752 | 0.325 | 1.885 | 0.489 | 2.796** | 0.49 | 2.785** |
| Fluency | 0.164 | 3.177** | 0.245 | 2.467* | 0.15 | 2.876** | 0.078 | 0.771 |
| Moderate CC*Fluency | | | −0.235 | −1.73 | | | 0.072 | 0.521 |
| High CC.*Fluency | | | −0.027 | −0.216 | | | 0.114 | 0.896 |
| $R^2$ | 0.157 | | 0.182 | | 0.113 | | 0.119 | |
| Adj.$R^2$ | 0.13 | | 0.143 | | 0.085 | | 0.076 | |
| F(df) | 5.914 (4) ** | | 4.647 (6) ** | | 4.042 (4) ** | | 2.803 (6) ** | |
| $\triangle R^2$ | 0.067 | | 0.025 | | 0.058 | | 0.006 | |
| $\triangle$F(df) | | | 1.936 (2) | | | | 0.401 (2) | |

Notes: * $p < 0.05$; $p < 0.01$; CC: Co-creation.

randomly assigned one co-creation scenario to each class. Then, at the beginning of the test, the lecturer instructed students in the class that the faculty had planned a summer exchange program in Norway for future students and would like to learn about their opinions concerning the arrangement of a 2-day journey in this program. Then, students received the link and used their computers to conduct the co-creation process. When they finished the task, they were required to complete a questionnaire measuring their liking (item: "how much do you personally like this 2-day field trip", scale 1–7) and another downstream marketing outcome which is the word-of-mouth (WOM) intention (item: "how likely would you recommend this trip to your future peers who intend to join this Norwegian exchange program", scale 1–7). Likewise, the manipulation checks for participants' perceived co-creation degree and experiential fluency were made as in Experiment 2, followed by measuring their attitude toward Norway as a covariate and collecting their demographic information. A debriefing was conducted at the end by the lecturer.

### 5.2. Results and discussion

The manipulation check, as expected, showed a significantly different perception of the degree of co-creation between the three co-creation conditions ($F(2,231) = 837.0, M_{High} = 6.41, SD = 0.71, M_{Moderate} = 5.26, SD = 0.76, M_{Low} = 2.33, SD = 0.80,\ p < 0.05$) as well as a significantly different experiential fluency ($M_{High} = 5.81, SD = 0.94, M_{Low} = 4.32, SD = 0.82,\ t(322) = 13.94, p < 0.05$) between the two processing fluency conditions. After that, we performed a two-way MANCOVA, with the destination attitude as a covariate for our propositions testing. The results showed a significant main effect of co-creation ($F(4,634) = 6.901, p < 0.05$) as well as significant interaction effect of co-creation × fluency ($F(4,634) = 4.366, p < 0.05$) on the combined dependable variables.

Specifically, in the high fluency condition, the results of pairwise comparisons showed significant differences in liking between the low and moderate conditions ($M_{low} = 4.75, M_{Moderate} = 5.51, p < 0.01$), between the low and high conditions ($M_{Low} = 4.75, M_{High} = 5.31, p < 0.01$) and no significant difference between the moderate and high conditions ($M_{Moderate} = 5.51, M_{High} = 5.31, p = 0.195$). As for the WOM intention, the results showed significant differences between the low and moderate conditions ($M_{Low} = 5.14, M_{Moderate} = 5.60, p < 0.05$), between the low and high conditions ($M_{Low} = 5.14, M_{High} = 5.49, p < 0.05$) and no significant difference between the moderate and high conditions ($M_{Moderate} = 5.60, M_{High} = 5.49, p = 0.454$).

In the low fluency condition, the results showed significant differences in liking between the moderate and high conditions ($M_{Moderate} = 5.28, M_{High} = 4.79, p < 0.05$), and no significant difference between the low and moderate conditions ($M_{Low} = 5.05, M_{Moderate} = 5.28, p = 0.143$) and between the low and high conditions ($M_{Low} = 5.05, M_{High} = 4.778, p = 0.085$). As for the WOM intention, the results showed significant differences between low and moderate conditions ($M_{Low} = 5.01, M_{Moderate} = 5.37, p < 0.05$), between the moderate and high conditions ($M_{Moderate} = 5.37, M_{High} = 4.83, p < 0.01$) and no significant difference between the low and high conditions ($M_{Low} = 5.04, M_{High} = 4.82, p = 0.227$).

Concerning the moderating effect, the results of simple effect analysis showed that, in the conditions of high co-creation level, there were significant differences in both liking ($M_{Liking:fluenct} = 5.31, M_{Liking:disfluent} = 4.78, p < 0.01$) and WOM intention ($M_{WOM:fluent} = 5.49, M_{WOM:disfluent} = 4.83, p < 0.01$) between the low and high fluency conditions. While in both the low and moderate levels of co-creation conditions, the interaction effects were not significant. Finally, the estimated marginal means of liking and WOM intention across three co-creation degrees are visualized in Fig. 3.

In consequence, it can be seen in Fig. 4 that the relationship between the degree of co-creation and liking and WOM intention basically followed an inverted U-shaped curve in both experiential fluency conditions, with the moderately co-created package tour being liked and recommended most. Thus, the results, again, supported our first proposition. As for the second proposition, the interaction effect was significant when the tourist co-creation degree was high, indicating that tourist co-creation was able to impart more positive influence on customer liking and recommendation intentions when there was higher tourist experiential fluency. As such, the results provided us with supportive evidence for our second proposition as well. In the following section, we further discuss the results obtained from three experiments with extant literature to present theoretical and practical implications.

## 6. Discussion and conclusion

### 6.1. Theoretical implications

In a nutshell, our study proposed and examined the potential inverted U-shaped relationship between tourist co-creation and tourism marketing outcomes. Results from three experiments consistently manifested that cementing tourist co-creation from a very limited level to a moderate level would significantly enhance tourist liking, participation, and recommendation intention toward the corresponding touristic activities. The findings thereby affirm previous research that extensively highlights the significance of treating tourists as value co-creators in promoting tourism marketing and business performance (Mathis et al., 2016; Prebensen & Xie, 2017; Saha et al., 2022). In this respect, we have addressed the call for adopting a tourist-centric

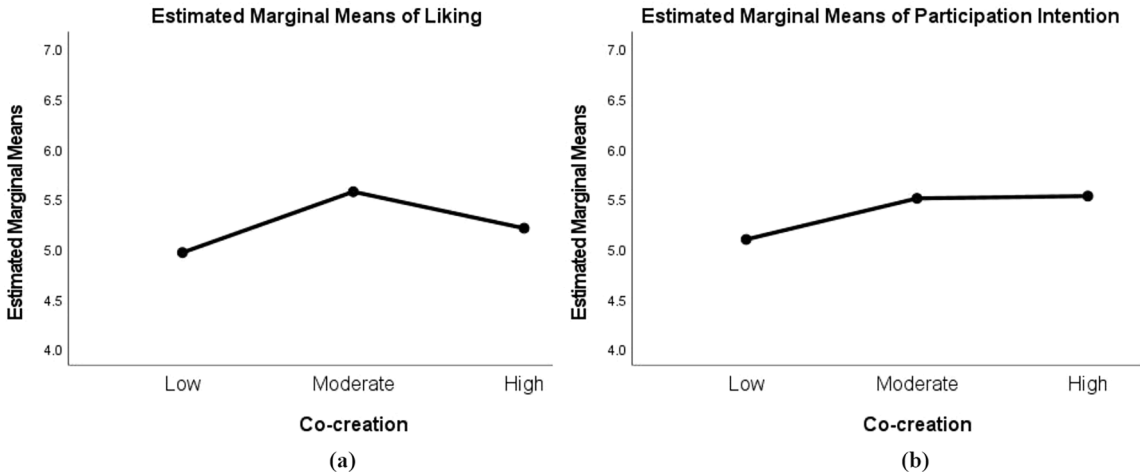


**Fig. 3.** The relationship between co-creation, liking, and participation intention.

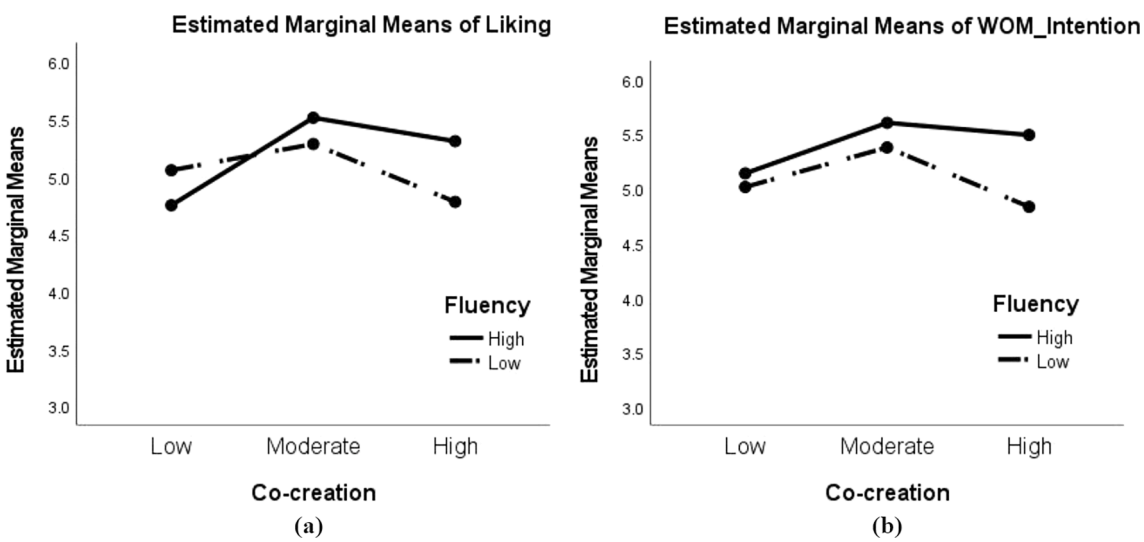


**Fig. 4.** The relationship between tourist co-creation, liking, and WOM intention.

paradigm when designing, planning, and innovating tourism offerings (Phi & Dredge, 2019).

A more symbolic finding distinct from extant literature is that, compared with a moderate level of co-creation, a high degree of co-creation would not necessarily improve and can even cause a downturn in tourist evaluative attitudes and behavioral intentions. This decline, as what has been reviewed, can be articulated from both the resource-based viewpoint and customer psychology perspective (Cabiddu et al., 2019; Homburg & Kuehnl, 2014). In our cases, along with the increasing co-creation degree, the research participants had to spend more time and effort on reading, searching, checking, communicating, and reflecting on how to choose from all the alternatives. Consequently, those participants in high co-creation conditions might end up in a situation where they feel bored, incapable, and unwilling to proceed with the co-creation tasks (Echeverri & Skålén, 2021; Zhang et al., 2018). Eventually, such time and attention costs, coupled with burdensome feelings and cognitive overload, may surpass the benefits brought by the co-creation and induce a downgrade in several marketing performance indicators.

This finding, being rather novel in tourism marketing studies, echoes other empirical value co-destruction research in general marketing and management contexts. For instance, Homburg and Kuehnl (2014) displayed a negative curvilinear relationship between the degree of customer integration and product innovation success. Recently, in the supply chain management context, Gligor and Maloni (2022) found an inverted U-shaped relationship between value co-creation and customer satisfaction. In this way, our study extends the value co-destruction literature by presenting another solid piece of experimental and causal evidence in the scenario of package-tour co-creation, showing that tourists can also be value co-destroyers when the co-creation degree reaches an excessively overwhelming level.

The inverted U-shaped relationship is important because it suggests that there is an optimal level of tourist co-creation that leads to the best tourism business performance. If co-creation is too low, it may not provide enough value to the customer and the business may not realize its potential benefits. On the other hand, however, if co-creation is too high, it may become too complex or costly for tourists and businesses to manage, leading to decreased performance. Understanding this relationship helps businesses to determine the right balance between tourist co-creation and performance, maximizing the benefits and minimizing the costs of the co-creation process.

Beyond that, our study further investigated the dynamics in the "co-creation black box" by integrating tourist experiential fluency as a contingency factor in the relationship between tourist co-creation and tourism marketing outcomes. We have identified that the valence and consequence of tourist co-creation depended upon their cognitive

fluency in the co-creation process. Specifically, the results showed that when the tourist involvement was intensive, an increase in tourist co-creation induced higher liking and recommendation intention in the fluent condition than in the disfluent condition. The results are in line with extant tourism marketing and consumer psychology literature documenting that the sense of fluency is essentially hedonically marked (Lee & Labroo, 2004; Schwarz et al., 2021) and can elicit positive affective responses and cognitive judgment (Tang & Jang, 2014).

More importantly, this finding expands our understanding of how to boost tourist co-creation outcomes. Extant literature mainly focuses on elevating customer capabilities such as skills and knowledge to enhance the co-creation experience (Gligor & Maloni, 2022; Stokburger-Sauer et al., 2016). Whilst customer capability is undoubtedly a theoretically valid customer variable, it could be formidable for tourism providers to always select tourists based on such preferable traits or conduct tourist education to enhance their co-creation capabilities prior to the journey (Wang et al., 2019). As such, by identifying processing fluency as a positive moderator in the current study, tourism researchers can explore the antecedents of tourist experiential fluency and focus on the concrete design of co-creation materials to probe more co-creation optimization strategies.

Taken together, now that business value can be both co-created and co-destructed depending on the exact co-creation degree and specific customer co-creation experience, it would be questionable to always normatively conceptualizes a positive linear relationship between co-creation and business outcomes. Nevertheless, as noted in existing reviews, tourism marketing literature has heavily focused on the positive sides of tourist co-creation behaviors, or value co-creation, and less has been centered on the dark sides of co-creation, or value co-destruction. In this case, our research suggests that co-creation should be deemed as an analytical and utilitarian construct with neutral semantics and cautions ensuing tourism researchers to keep the potential embedded costs and risks of the co-creation in mind and should not take it for granted that tourist active participation is always value-creating. That is, when theorizing a positive linear relationship between an array of tourist co-creation actions and business performance indicators, they should argue how the overwhelming scenario is not likely to occur in a certain tourism service or marketing context.

### 6.2. Managerial implications

Our study proposes threefold implications for tourism practitioners. First, the results of our research do indicate enhanced marketing outcomes when the tourist involvement in the value formation process elevated from very little to a moderate extent. Therefore, we fully recognize the significance of a co-creation mindset for tourism practitioners. Especially in the nowadays highly competitive tourism market environment with homogeneous tourism offerings, we would support and encourage tourism marketers and managers to leverage possible offline and emerging digital tools to establish interactive touchpoints with tourists so as to provide them with individualized and highly engaged service experiences.

Nevertheless, as the saying goes “too much water drowned the miller”, tourism practitioners need to be simultaneously aware of the potential costs and risks carried by tourist co-creation activities. That said, whilst too little co-creation limits meeting customer needs and preferences, too much co-creation can also lead to the risks of resource misalignment and customer dissatisfaction, both of which can be detrimental to the ultimate business and marketing performance. As such, tourism service providers and marketers must find the right balance and determine the peak point of tourist co-creation in concrete service encounters. To achieve that, corresponding market research, pretests, and experiments are helpful to detect the optimum level of required tourist co-creation actions, especially when issuing service offerings containing demanding co-creation requirements to the market for the first time.

Following that, as suggested in our study, one efficacious strategy to manage the tourist co-creation process is to center on facilitating tourist experiential fluency during the co-creation process. To achieve that, it is always advisable to check whether tourists have adequate information and applicable knowledge to accomplish the co-creation tasks. If not, the tourism providers must intervene in the co-creation process to offer instruction and assistance. Noting that very often tourism practitioners cannot conduct customer education or select only those “expert tourists”, tourism marketers can shift to the concrete co-creation interface design to ascertain the smoothness of the co-creation procedure. In principle, the materials (e.g., texts, images, procedure, etc.) contained in the co-creation interface have to be streamlined with high readability, clarity, and coherence. This can be realized via breaking down complex information into simpler, more manageable pieces and modifying specific visual and auditory attributes such as font, size of the words, figure-ground contrast, and so forth. Especially in the online co-creation context, it is necessary to warrant that artistic and sophisticated interaction design should not sacrifice the ease of processing.

### 6.3. Limitations and future research

This research has several limitations that could be addressed in future studies. First, our conceptual framework considers tourist experiential fluency as a contingency factor. Future research could investigate other potential moderators (i.e., for whom and under which conditions) that may influence the relationship between co-creation and business performance. Second, in all three experiments, we only operationalize tourist co-creation in pre-trip package-tour settings. Future studies should explore broader digital and on-site contexts during and after the trip, as co-creation encompasses various activities throughout these stages (see Yi and Gong (2013). Additionally, in studies 2 and 3, we tested our propositions using student samples, which may limit the generalizability of the research findings. As such, caution is needed when extrapolating these findings to other contexts. To address this issue, we strongly encourage future studies to improve ecological validity by conducting field experiments to establish the causal relationship between specific co-creation actions and business outcomes in realistic marketing scenarios.

### CRediT authorship contribution statement

**Yaozhi Zhang:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Formal analysis, Data curation, Conceptualization.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Data availability

Data will be made available on request.

## Appendix A. Package-tour co-creation task for a two-day trip in Norway (English Version)

The stimuli were designed on the realistic package tour called “Norway in a nutshell” (https://www.norwaynutshell.com). The co-creation elements, as shown in Table A1, varied by catering, lodging, transportation, and scenic spots. These stimuli were pre-tested with college students in Norway and showed a significant difference in terms of the perceived degree of co-creation.

**Table A1**
Manipulation elements.

| | Low Level | Moderate Level | High Level |
|---|---|---|---|
| Travel Date | x | x | x |
| Departure place | x | x | x |
| Ending destination | x | x | x |
| No. of travelers (Adults) | x | x | x |
| No. of travelers (Kids) | x | x | x |
| Optional suggestions | x | x | x |
| Carbon offsetting | x | x | x |
| Tourist activity (Flåm) | | x | x |
| Tourist activity (Voss) | | x | x |
| Type of hotel | | x | x |
| Type of meals | | x | x |
| Preferred language | | x | x |
| Travel Insurance | | | x |
| Train seat selection | | | x |
| Boat seat selection | | | x |
| Welcome drinks | | | x |
| Beds | | | x |
| Pillow | | | x |
| Quilt | | | x |
| Brand of amenity | | | x |
| View | | | x |
| Other amenities | | | x |
| Free cancelation | | | x |

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