# Causal-Predictive Model of Customer Lifetime/Influence Value: Mediating Roles of Memorable Experience and Customer Engagement in Hotels and Airlines

**ABSTRACT**

This study integrates memorable experience (MEM) into customer engagement (CE) by introducing two composites, namely, customer lifetime value (CLV) and customer influence value (CIV), as proxies for traditional revisit intention. Drawing upon CE theory and the service–profit chain framework, our causal-predictive model of CLV and CIV extends the MEM literature by identifying two potential antecedents, namely, employee engagement (EE) and service innovation (SI). Based on 596 respondents who rated a hotel or airline, our findings indicate that MEM functions as a full mediator between EE/SI and CE. Moreover, SI and MEM are identified as the most salient driver of CLV.

**Keywords:** perceived employee engagement (EE), perceived service innovation (SI), memorable experience (MEM), customer engagement (CE), confirmatory composite analysis (CCA), importance-performance map analysis (IPMA), generalized structured component analysis (GSCA), hotels and airlines

# 1 Introduction

Attempting to create customer engagement (CE) has been recognized by marketing scholars to be a helpful strategy in this customer management era because CE is a significant factor enhancing a firm's long-term profitability. As the marketing paradigm has shifted from relationship marketing to CE marketing, academicians in marketing have widely acknowledged that building a long-term relationship with customers (e.g., satisfaction, trust, commitment) is a necessary but not sufficient condition to improve a firm's profitability (e.g., CLV and CIV). Pansari & Kumar (2017) highlighted the vital role of CE in tourism and hospitality by reporting that money spent by engaged customers in the hospitality sector is 46% higher than money spent by disengaged customers. To this end, tourism scholars have had a specific interest in creating CE to remain the competitive advantage over competitors in the market, resulting in improved firm profitability.

The eminence of CE has been broadly examined in the tourism and hospitality literature. Based on the existing literature, tourism researchers have believed that employee engagement (EE) and service innovation (SI) are two potential candidates to establish CE (Kumar & Pansari, 2015; Leckie et al., 2018; Palmatier et al., 2017; Pansari & Kumar, 2017). For example, customers tend to develop more favorable perceptions of CE with the presence of SI (Leckie et al., 2018). Likewise, EE is presumed to be a crucial predictor of CE in any general business (Kumar & Pansari, 2015). The possible explanation for these links (EE-CE and SI-CE) lies in the spillover effect assumption, which presumes that a firm's investment in human resource management may be transmitted to its customers' perception (Raufeisen et al., 2019; Schumann et al., 2014). Despite

EE and SI are considered critical, tourism literature rarely investigates the impact of EE and SI on CE simultaneously. Our study may be the first to explore these relationships in tourism settings. Moreover, this research proposes another possible construct, called memorable experience (MEM), that may operate as a mediating role between EE-CE and SI-CE.

An abundance of empirical studies has indirectly suggested that MEM potentially serves as a missing link between EE-CE and SI-CE. Recent experiential tourism literature indicates that a hotel can charge its guests a 14% greater premium when it successfully provides innovative services that positively and uniquely shape its customer experience (Roy et al., 2019). Interestingly, a hotel that successfully delivers an unforgettable experience reports 5.7-fold more significant revenue than its competitors (B. Morgan, 2019; Roy et al., 2019). This case is similar to the airline business, where competition is intense. For example, Emirates can set its prices higher than those of its competitors because it can provide a positive indelible experience to its customers during their flight (So et al., 2017). Moreover, the past literature provides some clues of the causal relationship between employee-customer (Bharwani & Jauhari, 2013; Van Dolen et al., 2004) and service–customer (Bitner et al., 2008) interactions through MEM. Thus, MEM may be another customer metric that inevitably plays a significant role in explaining the missing link in the spillover effect assumption.

Despite the prior literature reporting positive relationships between a service provider (i.e., EE and SI platform) and CE, only a few extant studies have investigated the transmission process that elucidates the effects of EE and SI on MEM in the context of the hotel and airline industries. Hence, the extent to which the influence of MEM mediates the relationships between EE/SI and CE has been rarely studied. This condition presents a salient limitation because the literature on MEM implies that the quality of interactions between service providers and customers drastically promotes CE and firm performance (e.g., Pansari & Kumar, 2017; Sharma & Nayak, 2019). The missing link in the interactions between employee–customer and service platform–customer may be explained by validating the role of MEM as a mediator. Therefore, this research provides a crucial step in understanding the mediating role of MEM in explaining the transmission process in a firm's employee–customer and service platform–customer interactions in the context of hotel and airline businesses.

This study aims to fill the abovementioned research gaps by proposing and verifying a mediating role of MEM in the context of Thailand tourism. To generalize the effect throughout the tourism context in Thailand, this study selected hotel and airline industries as representative for two reasons: First, tourism scholars believe that the total travel experience of tourists may be represented by examining travel experience in hotels and airlines (So et al., 2016). Second, the hotel and airline sectors constitute around 60% of total Thailand tourism revenue, thus representing a significant market share in the Thailand tourism sector (Lunkam, 2021). However, we acknowledged the possible variation of travel experiences between the hotel and airline sectors previously ignored from the past literature. Concerning this potential variation, this study performs multigroup analysis (MGA) to test heterogeneity between hotel and airline groups (Manosuthi et al., 2021).

## 2 Theoretical review

Based on the valuation theory, CE theory, and service-profit chain (SPC) framework, we develop a theoretical framework that incorporates EE, SI, MEM, CE, Customer Lifetime Value (CLV), and Customer Influence Value (CIV). In section 2.1, CLV and CIV will be explained using the valuation theory to address why they were utilized as proxies to firm profitability. Later, CE and MEM will be introduced to the research model framed by merging the valuation and CE theories in section 2.2. Next, the SPC framework solidifies the connection between EE-CE and SI-CE in section 2.3.

### 2.1 Valuation theory: CLV and CIV

From the perspective of finance, it is believed that profit maximization is not the ultimate goal. (Brigham & Ehrhardt, 2013). Instead, its objective should be maximizing firm value (FV) (Jensen, 2002), which has been mathematically proven to be equal to growing shareholders' wealth (Padfield, 2017). This situation results in the following conditions: (1) maximizing the present value of the free cash flow of a firm (FCFF) and (2) minimizing the weighted average cost of capital (WACC). Based on this complicated relationship, a firm's lifetime value from time $t$ to time $T$ can be mathematically expressed using the following equation:

$$FV = \sum_{t=1}^{T} FCFF_t \, (1 + WACC_t)^{-t}.$$

In the accounting literature, the three sources of activities, namely, operating, financing, and investing (Brigham & Ehrhardt, 2013), can be potentially mapped with the free cash flow to a firm presented in a firm's value equation. We contend that the most crucial source of a firm's value creation is operating activities because they echo a firm's value creation from its ordinary course during daily operations. Our argument is in line with empirical findings in marketing (Kumar, 2018). That is, a firm's value creation directly relates to cash flow from operations.

Our research also connects this knowledge to the CE framework (Pansari & Kumar, 2017) through a firm's value creation, which can be measured using CLV and CIV. These measures can be considered holistic measures of a firm's value creation because they cover direct (CLV) and indirect (CIV) customer contribution to a firm or a brand. Interestingly, the theoretical foundations of CLV and CIV are also associated with the consequence of CE theory, which posits that the contributions (both direct and indirect) of customers can have tangible (direct) and intangible (indirect) benefits to the firm. CE theory suggests that a firm can gain immediate and indirect benefits from engaging with its customers (Pansari & Kumar, 2017). Also, CE theory has indicated that any customer must meet two preconditions (satisfaction and emotion) before committing to a firm (Kumar et al., 2019). When a firm initiates its value proposition and successfully delivers to potential customers, it possibly generates an unforgettable experience for its customers in the form of MEM, which is an all-inclusive measure that contains satisfaction and emotional facets

(Grisaffe & Nguyen, 2011). When the two prerequisites are initiated, a purchaser will likely create a degree of engagement over time. Given that CE theory holds, attitudinal CE is first developed, and then behavioral CE is subsequently driven. Finally, customer purchase, another form of behavioral CE, is considered the most valuable source of producing free cash flow.

## *2.2 CE theory: Attitudinal CE and MEM*

The customer management literature signifies that the customer management era has transitioned from the transaction era to the relationship marketing (RM) era (Palmatier et al., 2017). CE marketing is the third era and is currently receiving ever-increasing interest from marketing researchers due to its boom in social media (Kumar et al., 2019; Palmatier et al., 2017). Specifically, CE marketing can be described as "a firm's deliberate effort to motivate, empower, and measure a customer's voluntary contribution to the firm's marketing functions beyond the core economic transaction" (Harmeling et al., 2017). Relationship marketing seeks to determine, improve, and sustain long-term buyer rapport (R. M. Morgan & Hunt, 1994), while customer engagement marketing expects to inspire, encourage, and gauge customer contributions to a business (Harmeling et al., 2017). The main differences between the two marketing paradigms are summarized in Table 1. Empirical surveys in the marketing sphere concur that relationship marketing and CE marketing display a mutual relationship (Pansari & Kumar, 2017). In the case of relationship marketing → CE marketing, de Matos & Rossi (2008) stated that boosting buyer faith and loyalty in the relationship marketing sphere raises the likelihood that a customer will react positively and emotionally to a firm. In the case of CE marketing → relationship marketing, the application of experience-based and task-based customer engagement marketing has been discovered to raise the probability of customers constructively developing their satisfaction, trust, and commitment (Harmeling et al., 2017), causing intention to rebuy (Van Doorn et al., 2010). Most scholars in the hospitality and tourism literature have focused on the CE marketing → relationship marketing direction. For example, So et al. (2016) recommended that CE take the lead to brand service evaluation and trust. Rather (2020) asserted that CE affects customers' positive/negative experiences. The facts above emphasize the underexplored relationship marketing → CE marketing direction in the tourism literature.

[Insert Table1]

Apart from the variety in the directional path, the conceptualization and dimensionality of CE have been debated. The endorsement for CE conceptualization lies within two schools of thought: (1) pure behavioral and (2) attitudinal and behavioral CE. The bottom line generated from the earlier tourism CE literature, i.e., that inadequate knowledge can arise if some CE areas are missing is a powerful argument among specialists who favor multidimensional CE (So et al., 2016). By contrast, the advocates of pure behavioral CE explain that using only the behavioral element enhances internal validity for the reason that the confounding problem is mitigated. Romero (2018) noted that many constructs, such as brand identification, involve a similar concept of nonbehavioral CE. For example, So et al. (2016) conceptualized identification as one of the dimensions of CE, but Rather (2020) recognized it as a result of CE. Such incoherent practice in multidimensional CE can blur the actual impact of CE.

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Given the disagreement mentioned above, practitioners and scholars will experience trouble implementing CE to its maximum potential. We argue that the actual CE impact is more precise if CE is conceptualized in *mutually exclusive* and *collectively exhaustive* aspects. We chose the theory of CE as our fundamental framework for it satisfies both criteria. When satisfied purchasers are attached through their emotions, the theory states that they tend to contribute to a firm through direct buying, a recommendation to colleagues or families, or delivering advice to the firm (Kumar & Pansari, 2016). Given that CE theory holds, we proposed that attitudinal CE leads to behavioral CE. Hence, our practice makes the actual impact of CE more apparent than the previous studies because this practice diminishes bias from the confounding effect discussed above.

In CE theory, experience is considered a bridge between value proposition and attitudinal CE (Kumar & Pansari, 2016). Numerous marketing articles have verified that not all experiences are viewed as a source of value-added service to a firm. The recent tourism literature has acknowledged that tourists' decisions to re-patronize a destination is influenced by prior experiences stored in their memories (Kim, 2018), called MEM. Hence, our causal-predictive model proposes MEM as a representation for a traditional experience in the CE framework.

The extant literature provides convincing support for the reliability of the MEM scale. We adopted a similar conceptualization of MEM as operationalized by previous studies (Zhang et al., 2018). MEM is defined as "a tourism experience that is positively remembered and recalled after the event has occurred" (Kim, 2018). However, the dimensionality of MEM remains controversial. Kim et al. (2012) identified seven aspects of MEM, namely, hedonism, local culture, refreshment, meaningfulness, involvement, novelty, and knowledge. Meanwhile, other studies have proposed additional elements, such as adverse feelings or tour guide's performance (Chandralal et al., 2015). We argue that using a set of global indicators to reflect this experience is more appropriate than using several lines of dimensions. Previous research has modeled MEM's dimensions as a reflective construct, implying that all dimensions must be moved together in the same direction, which is occasionally challenging to achieve. For example, an airline customer or a hotel guest may have MEM only in the novelty dimension but not in the other dimensions (e.g., cultural dimension). In such cases, different dimensions, except for the novelty aspect, moving in the same direction are considered common variations in the language of structural equation modeling (SEM). Meanwhile, the novelty dimension is regarded as a measurement error, resulting in inaccurate findings. Thus, we modeled MEM as a standard factor indicator that uses global indicators instead of multiple dimensions to avoid this problem.

### 2.3 Extension of the service-profit chain framework: EE and SI

Following the service-profit chain theory, EE is recommended to be one of the critical factors of a company's success in its financial outcome (Cain et al., 2017). Several lines of research in the employee literature have suggested that the service-profit chain can be partitioned into three

components: employee (internal service quality), customer (external service quality), and company (profitability indices) (Hogreve et al., 2017). Internal service quality relies significantly on key performance indicators and employee metrics. By contrast, external service quality hinges on customer perception, such as perceived service quality. We posit that external service quality applies to generating insights into the interaction between service providers and customers. Hence, in terms of customer metrics, EE can be viewed from the perspective of service-profit chain framework.

SI and CE have been underlined in former research based on the service-dominant logic framework (Jaakkola & Alexander, 2014). Service-dominant logic posits that resource integrators, including customers, staff members, and stakeholders, create benefits for a business through the co-creation process (Vargo & Lusch, 2016). Resource integration is facilitated, and thus, a tourism firm's task is adopted to design a system innovation or SI that customers can co-create, improving customer's remarkable experience (Park et al., 2013). Several researchers have suggested that SI can also be interpreted as a salient source of augmenting a firm's value. It mainly happens in the course of the economic bust cycle (Beinhocker et al., 2009). The innovative literature also categorizes SI into three perspectives: assimilation, demarcation, and synthesis (Witell et al., 2016). From the assimilation perspective, SI pertains to introducing a novel technology and is frequently considered an upgrade of product innovation. This facet is consistent with goods-dominant logic (Baron et al., 2009). The demarcation perspective, which does not concentrate on core technology, focuses on the service development process that makes firms unique (Sundbo et al., 2007). Our premise is that service-dominant logic can be used to fit into this perspective (Hollebeek & Andreassen, 2018). The synthesis perspective regards all innovations as SI, focusing on a value proposition as a platform offered and delivered by a service firm. On the basis of these perspectives, the present study operationalizes SI as customer perception on a firms' value proposition with four characteristics: unique features, better than ever before, ease of use, and worth investing time to learn (Barrutia & Gilsanz, 2013; Leckie et al., 2018). Given that the service-profit chain model originally presumes that service is driven by staff members (Hogreve et al., 2017), another driver, SI, is added to the service-profit chain framework. Consequently, we propose that SI is a salient but disregarded driver of customer experience within the service-profit chain paradigm. Theoretically, our proposed causal-predictive model is illustrated in Figure 1.


[Insert Figure 1]


In this study, Thailand was chosen as the context to explore the contribution of the proposed model. Thailand's tourism sector generated tourism revenue of around THB 1.47 trillion, accounting for 10% of total GDP (TAT, 2017). Given that COVID-19 is not happening, Thailand's tourism revenue was projected to encounter significant growth. Recent reports from MTS in 2021 revealed that value for money is a primary reason for tourists to choose Thailand as their destination choice. This situation explains why many hotels and airlines in Thailand cannot increase their room rates for several years. However, Centara Hotels and Resorts, Dusit International, and Minor

International have maintained their competitive edges over other local competitors, as evidenced by the extremely high return on equity (ROE) of around 14.52% in 2019 for Minor International (SET 2019). Recent research supports the idea of CE marketing and SI to help Thailand hotels and airlines to remain competitive under this intense competition (Campiranon, 2018). Our proposed model, thus, is applied in this case.

## 3 Hypothesis development

### 3.1 MEM as a mediator between EE and CE

Recent research found that the improvement of CE level depends on the interaction quality between employee and customer (Kumar & Pansari, 2016). The prior literature has verified that interaction between customers and employees generates customer perception about a firm (Sirianni et al., 2013), shaping customer repurchase intention or loyalty (Kumar & Pansari, 2016; Zhang et al., 2018). Similarly, this positive customer perception, defined as perceived EE, creates a positive customer experience of employee service, engendering customer satisfaction and emotions. A positive interaction between customers and employees may also provoke customer recommendations of this service to other potential customers. These customer recommendations can result in purchases from new customers as measured by CIV (Beckers et al., 2018; Harmeling et al., 2017). This idea implies that CE can take place through actual EE behavior toward serving hotel guests. In this manner, employees or staff members can send their message to their customers through their eagerness and professionalism. Perceived EE is designed to exhibit priority in influencing customers' emotions as the demonstration of devotion, enthusiasm, and absorption of staff members can initiate the sentimental memory of tourists (Grisaffe & Nguyen, 2011). This type of outcome can provoke tourist emotions and satisfaction, which can trigger CE (Pansari & Kumar, 2017). When these types of unique experiences are developed within customers' minds, positive experiences enhance their levels of satisfaction and emotions, engendering attitudinal CE (Kumar & Pansari, 2016).

Several studies have described the association between EE and CE by using customer metrics. For example, Cain et al. (2017) used a 3×2 experimental design to determine the effect of perceived EE on customer loyalty. They found that the energy dimension of EE exerts the most decisive impact. The previous literature results also highlight the relationship between EE and CE (Kumar & Pansari, 2016). An engaged staff member exhibits the propensity to go the additional mile to deliver an extremely high level of service experience to customers (Bowen & Schneider, 2014), triggering MEM. Such MEM enables the development of customers' favorable attitude toward a service provider, resulting in direct and indirect contributions to hotels or airlines. Despite its importance, however, the tourism literature has rarely discussed the role of MEM as a mediator

between EE and CE. To the best of our knowledge, our study is the first to fill this gap by proposing the role of MEM as a mediator between perceived EE and CE based on CE theory. The following hypotheses are proposed.

**Hypothesis 1: EE exhibits a positive relationship with MEM.**

**Hypothesis 3a: MEM functions as a mediator between EE and CE.**

### 3.2 MEM as a mediator between SI and CE

The SI literature offers evidence for the causal connection between SI and CE (Leckie et al., 2018). However, previous conclusions show several signs of understanding the role of MEM in transmitting the impact of SI on CE. Leckie et al. (2018) found that the three characteristics of SI perceived by customers are closely associated with customer experience. Maslowska et al. (2018) pointed out that the CE level slowly rises, beginning from low to high. At the low level, customers exhibit passive behavior, such as acquiring and requesting information about new services from social media and then simulating their experience in their imagination before proceeding with the actual service (Sharma & Nayak, 2019). When the level is high, positive behavior, such as endorsing the marketing initiatives of hotels or airlines, can be expected from the encouraging service experience accumulated in customers' memories (Maslowska et al., 2018). Consistent with CE theory and service-dominant logic, when customers have an impressive background, they are motivated to make a positive contribution to a firm, such a purchasing services (CLV) and spreading positive words to others (CIV). Hence, the following hypotheses are proposed.

**Hypothesis 2: SI exhibits a positive relationship with MEM.**

**Hypothesis 3b: MEM functions as a mediator between SI and CE.**

### 3.3 Effects of CE on firm value

In the marketing realm, empirical evidence suggests that CE can, directly and indirectly, contribute to service firms. Repurchase intention is a classic example used by scholars as a rough benchmark for CLV (Kumar & Pansari, 2016). Similarly, word of mouth is utilized as a replacement for the indirect contributions of customers. Few scholars have related the CE issue with a firm's performance by employing a firm's metric. Kumar & Pansari (2015) highlighted the relationship between CE and firm performance. The link between CLV and a firm's valuation has also been efficiently found in the literature (Kumar, 2018).

Moreover, several articles have authenticated the usableness of a CIV-based measure. The anticipated contribution from CIV indirectly raises various key indicators, including 49% improvement in brand awareness, 40% increase in sales growth, and 83% rise in return on investment (ROI) (Kumar et al., 2013). Hence, the empirical findings are consistent with the theoretical suggestions, confirming the effectiveness of CE as a significant contributor to a firm's value creation (CLV and CIV). Accordingly, we hypothesize the following:

**Hypothesis 4: CE exhibits a positive relationship with CLV.**

**Hypothesis 5: CE exhibits a positive relationship with CIV.**

## 4 Method

### 4.1 Data collection

To verify the research model, we used a survey questionnaire to assess tourists' perceptions of the model's constructs. Data were collected from destinations located around Siam Square (5 km) by conducting a self-administered survey. The survey used a seven-point Likert scale and a semantic differential scale to evaluate the extent to which the respondents agree or disagree with the items regarding the identified names/brands of hotels or airlines that they were patronizing. We also asked them to rate their most unforgettable experience about the staff and service platform of the service provider that they patronized. Subsequently, they were asked to identify the hotel or airline they want to rate in our survey. The collection period lasted from September to December 2019, with an estimated response rate of approximately 35% to complete the data gathering process.

We also established procedural and statistical solutions because we acknowledge that the issues of common method variance and measurement errors can occur in our survey research. The questionnaire was written in both Thai and English languages. In this regard, 12 undergraduate students were trained to manage data collection, and some redundant items were intentionally distributed throughout the questionnaire to ensure the integrity of the respondents (MacKenzie & Podsakoff, 2012). A total of 604 travelers completed our questionnaire. However, our student volunteers detected and marked three questionable cases during the field survey. We found that five questionnaires contained unreliable answers, such as double answers, and thus, the result was 596 usable cases. A statistical examination based on the multitrait-multimethod matrix was subsequently performed (Malhotra et al., 2017). No sign of the common method variance was observed.

Finally, the demographic profile of the respondents was summarized, with additional data related to the frequency of visits. Given that investigating MEM requires visitors to travel to Bangkok more than once, data related to visiting frequency are relevant to this study. Among the 596 respondents, 41% were male, and 59% were female. The majority of the participants were 26–35 years old (43%), followed by 18–25 years old (31%), 36–50 years old (22%), and 50+ years old (4%). In terms of earnings, the most reported group was THB 150,000–500,000 (64%),

followed by >THB 500,000 (27%), and then <THB 150,000 (9%). The vast majority of the tourists held a bachelor's degree or higher (74%) in education. Given that our sample consisted of tourists who visited Bangkok more than once, 78% traveled using the same airline, and 43% stayed at the same hotel brand. The nationality composition was as follows: 68% (Southeast Asia), 9% (Asia and Oceania), 14% (Europe), and 6% (others). For frequency of visits, 75% of our sample visited Bangkok four or more times a year, 12.4% visited Bangkok one to two times a year, 8.5% visited Bangkok three times a year, and only 4% visited Bangkok once every two years. The average length of stay was 2.4 nights. Moreover, 94% of the respondents indicated that they would revisit Bangkok within 18 months. This study also examined customer perception in the airline and hotel industries.

*4.2 Survey instrument*

This survey instrument was organized based on the items previous research has applied. To this end, we can ensure the validity and reliability of the questionnaire. MEM was measured using four items adapted from the scale of So et al. (2017) and modeled using the reflective common factor method. To assess SI, we adopted six items from Leckie et al. (2018). We also used six items from Cain et al. (2017) to capture EE. SI and EE were operationalized in the same manner described in the previous literature and modeled as reflective-common factors, as indicated in Table 2.

As suggested by the CE theory, CLV and CIV were assessed using four items (Kumar, 2018; Kumar & Pansari, 2016). As CLV and CIV were considered artifacts, we modeled these artifacts as composites rather than common factors. Moreover, CE was evaluated using six items developed from Harrigan et al. (2017). The questionnaire was also submitted to an expert panel for ethical review. Since the scale has been widely accepted to conduct anonymous surveys throughout the world, our survey instrument can be categorized as exempt (e.g., anonymous surveys).

**5 Results**

*5.1 Heterogeneity investigation*

This section applied the multigroup analysis to assess the heterogeneity within our dataset to address the issue of variation between hotel and airline sectors. Three consecutive steps were implemented: (1) configural invariance, (2) compositional invariance, and (3) invariances of the mean and variance. First, the measurement and structural models of hotels and airlines are identical. Second, data treatment and algorithm settings are also similar in the two sectors. Hence, configural invariance was established.

[Insert Table 3]

As indicated in Table 3, compositional invariance was confirmed as the null hypothesis was not rejected. Similarly, the invariances of mean and variance for hotel and airline were discovered. Since the null hypotheses of equality of mean and variance were not dismissed, thus supporting mean and variance equality (Manosuthi et al., 2021).

Subsequently, structural invariance was examined using the MGA proposed by Klesel et al. (2019). Since the model-implied indicator covariance matrix is equal across groups, as shown in Table 3, we can conclude that there is evidence to believe that structural invariance between hotel and airline groups is statistically established.

## 5.2 Confirmatory Composite Analysis procedure

From Table 4, the AVE values were more significant than 0.5. It was higher than the threshold for all reflective constructs, thus ensuring construct reliability for measurement scales used in this study (Manosuthi et al., 2021). Similarly, the confidence intervals from bootstrapping with 10,000 samples of estimated weights did not include zero for all composites, signifying the relevance of measurement weight (Hair et al., 2020). Also, VIF values were lower than 3.3 for all composites' indicators. Hence, it was safe to conclude that all constructs' internal consistency, reliability, and convergent validity were at a satisfactory level (Manosuthi et al., 2021).

[Insert Table 4]

[Insert Table 5]

As suggested from Table 5, the HTMT ratio was below 0.85 (0.122 to 0.709) for all constructs, confirming the evidence of discriminant validity (Henseler et al., 2015). Since all construct correlations of all composite scores were statistically and significantly positive, the nomological validity was established (Hair et al., 2020; Manosuthi et al., 2021). Moreover, the concurrent validity was authenticated since the regression weights of all constructs were statistically significant at 0.01 ( $\hat{\beta}_{EE \to MEM} = 0.294$, $\hat{\beta}_{SI \to MEM} = 0.491$, $\hat{\beta}_{MEM \to CE} = 0.438$, $\hat{\beta}_{CE \to CLV} = 0.52$, $\hat{\beta}_{CE \to CIV} = 0.385$). Finally, the result of the redundancy analysis confirmed the convergent validity of all composites (CLV = 0.704 and CIV = 0.788) (Hair et al., 2020; Manosuthi et al., 2021). Hence, the confirmatory composite analysis procedure ensures that all constructs had desirable psychometric properties for subsequent analysis.

## 5.3 Structural Model Assessment

The overall structural model indicated a good fit ($D_G = 0.475$, $D_L = 3.526$, $D_{ML} = 2.651$, GFI = 0.938, and SRMR = 0.096) (Benitez et al., 2020; Manosuthi et al., 2021). Moreover, investigation of the structural path indicated that all hypotheses were not rejected, as shown in Table 6. Specifically, the role of MEM as a mediator between EE and CE (Hypotheses 1 and 3) is important ( $\hat{\beta}_{EE \to MEM} \in [0.1784, 0.3431]$ and $\hat{\beta}_{MEM \to CE} \in [0.3694, 0.5246]$). Similarly, MEM functions as a bridge to transmit effect from SI to CE (Hypotheses 2 and 3), as demonstrated by the 95% bias-corrected and accelerated CIs from the bootstrapping of 10,000 samples without zero ($\hat{\beta}_{SI \to MEM} \in [0.4682, 0.6228]$ and $\hat{\beta}_{MEM \to CE} \in [0.3694, 0.5246]$). The effects of CE on CLV (Hypothesis 4) and CIV (Hypothesis 5) were empirically verified ( $\hat{\beta}_{CE \to CLV} \in [0.4466, 0.5832]$ and $\hat{\beta}_{CE \to CIV} \in$

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[0.4320, 0.5607]). Hence, all the proposed hypotheses were not disproved by the empirical data, signifying the importance and relevance of all path coefficients.

[Insert Table 7]

[Insert Table 8]

[Insert Figure 2]

[Insert Figure 3]

Table 7 revealed that the normality assumption of error terms was violated. Hence, RMSE was favor over MAE criteria (Manosuthi et al., 2021). As the RMSE target was lower than the RMSE benchmark, we can conclude that our model had a very high out-of-sample predictive power (Shmueli et al., 2019). Finally, the importance-performance map analysis (IPMA) was executed. Table 8 exhibited the predictors' importance based on the bias-corrected and accelerated confidence interval from bootstrapping with 10,000 samples. Figures 2 and 3 presented the IPMA results, which indicated that the most crucial factor should exhibit the property of high importance but require further improvement at present (low performance) (Schloderer et al., 2014). Hence, perceived SI was identified as the most salient composite. Concerning the indicator level, practitioners should focus first on CE6, CE4, and CE5 because their performance requires further improvement compared with those of the other indicators. The IPMA result also indicated that SI and MEM are the critical drivers of CIV. However, the performance of these indicators was already high. Therefore, further improving SI and MEM may be very challenge in this situation.

**6 Discussion**

EE has a very long history of being one of the powerful predictors of CE as being supported by prevailing meta-analysis in engagement literature (e.g., Hogreve et al., 2017; Whitman et al., 2010). Recently, prior marketing literature tends to weigh more on SI as a potential candidate for CE creation since novel platforms enable customers to connect to the firm efficiently, providing them opportunities to co-create their unique demand with the firm easier than ever before (Leckie et al., 2018). From a managerial perspective, it is essential to know either EE or SI has more impact on CE because it can dramatically improve the competitive advantage of the tourism firms. However, prior tourism literature has investigated those constructs separately (e.g., Kumar & Pansari, 2015; Leckie et al., 2018). Building upon the previous literature recognizing the separate salient role of EE-CE and SI-CE in tourism, this study may be the first that merges these two potential predictors into a single model framed by valuation theory, CE theory, and SPC framework. Furthermore, this study contributes to theoretical development by proposing that

MEM may serve as a mediator between EE-CE and SI-CE, given that CE theory and spillover effect hold.

Results revealed that EE and SI could trigger CE through MEM. Moreover, the EE-MEM-CE relationship was tested using mediation analysis and found that MEM acts as a complete mediation. In turn, partial mediation was found in the case of SI-MEM-CE. EE indirectly influences CE through MEM, whereas SI, directly and indirectly, leads to CE through MEM. Also, our findings provide insight into the relationships among focal constructs that highlight the mechanism of firm value creation that SI has a more substantial impact on CE more than EE does. Theoretical and practical implications based on our findings are discussed below.

### 6.1 Theoretical implications

This study offers at least three theoretical implications. Originating from the valuation theory in the finance literature, it is clear that increasing firm value by improving operating cash flow through long-term customer contribution is necessary and sufficiency conditions for any firm to sustain in the fierce competition (Brigham & Ehrhardt, 2013). Recent marketing literature bridges this gap by introducing CLV and CIV as proxies of customer contribution to the brand (Kumar, 2018). Based on the current measurement literature, CLV and CIV may be classified as artifacts. Contemporary literature found that mixing those artifacts with traditional factors (e.g., customer satisfaction, trust, or revisit intention) can cause either an identification problem (Manosuthi et al., 2021) or a severe estimation bias (Hwang et al., 2020). Hence, although CIV and CLV are considered salient proxies of firm value, they are rarely found in tourism literature, partly due to the abovementioned limitations. This study removes such limitations by applying the unbiased estimator (PLSc), thus widening the theoretical lens used in tourism literature to embrace valuation theory. This study, therefore, makes a valuable and unique contribution to the tourism literature by emancipating the barriers that previously constrain tourism researchers to frame their research model within the theoretical lens supported by the standard factor model.

Second, prior tourism literature separately investigated EE-CE and SI-CE with the support of SPC (Hogreve et al., 2017; Pansari & Kumar, 2017) and service-dominant logic (Leckie et al., 2018). This study extends the theoretical lens by introducing CE theory (Harmeling et al., 2017; Palmatier et al., 2017), which fits the existing SPC and SDL. Drawing upon these theoretical frameworks, we proposed and validated the research model that explains the EE's and SI's mechanism to engender CLV and CIV through MEM. Past studies have explored the role of SI and EE in predicting CE. Nevertheless, previous research did not contemplate any probable mediator such as MEM that may reveal relationships between EE-CE and SI-CE. Hence, this study adds more value to the tourism literature by merging well-established theoretical frameworks.

Third, this study enhances sturdy evidence to the tourism literature on the mediating role of MEM between EE-CE and SI-CE. The full mediating character of MEM was evident in EE-CE, as suggested by a significant direct and indirect effect from EE to CE. This finding implies that guests' perceptions and emotions on EE may activate CE. At the same time, an unforgettable

positive feeling arisen from EE could make guests feel emotionally attached to the hotels or airlines. In line with Pansari & Kumar (2017), a customer perception about employee willingness to serve can be an impactful touchpoint to motivate a customer to contribute to the firm. This indicates that CE can be fulfilled based on the activities of an employee. Similarly, our study found the prominent role of MEM to mediate SI-CE. Prior research provided clues to uncover the association between SI and MEM (Hollebeek & Andreassen, 2018). Specifically, "Novelty" may be considered a crucial part of SI. In memory literature, novelty with the combination of joyful emotion or positive surprise is believed to influence memory (Loureiro & Kastenholz, 2011). As suggested by Oh et al. (2007), the festive feeling is one of the vital components of MEM, which in turn vastly trigger consumer behavior (Torres & Kline, 2006). Hence, our study provides more insight into this relationship by demonstrating the importance of MEM as a bridge between EE-CE and SI-CE connections, contributing to tourism engagement and memory literature.

### 6.2 Practical implications

This research also provides several suggestions for tourism managers aiming to augment their competitiveness, especially in hotels and airlines. Based on this empirical finding, it is recommended that hotel or airline managers focus on refining SI through the process of co-creation. By shifting their operation management to SI, various service providers today have reported a significant drop in their expenses (Belanche et al., 2020). The plausible explanation is that the per-unit cost of development and implementation of SI is lower than that of product innovation. Smart keycard, for instance, by smartphone, is one of the popular hotels' offerings to improve their guest convenience. On the one hand, it is undeniable that SI can be an efficient tool to control a firm's cost; on the other hand, it may lay a solid groundwork for creating guests' unforgettable experiences, as shown in our empirical finding. However, focusing on SI does not warrant MEM and CE. Our study provides more guidelines to hotel and airline managers by pointing that critical success for implementing a SI initiative is to make sure that three components (service concept newness, a relative advantage over competitors, and ease of use) can potentially trigger positive and memorable customer emotion.

Moreover, this study shows that EE and SI are critical drivers for firm success, consistent with prior research (Feng et al., 2020). However, our finding reveals that improving EE performance alone has a minimal effect on a firm's success if MEM and CE are not achieved. Therefore, hotel or airline managers should be very watchful about using EE, as it works in the case that EE can induce MEM and CE. Our empirical finding based on IPMA analysis also stresses that SI has a more significant effect on MEM than EE does. In other words, SI is preferred over EE if managers encounter a mutually exclusive situation. Besides, this study contributes to the managerial implication in terms of offering a parsimonious set of measurement scales. Rigorously been tested, our scale provides a piece of handy information for hotel and airline managers to monitor and evaluate employees' day-to-day performance.

## 7 Limitation and future research

Four limitations need to be concerned. First, the self-report method is subject to social desirability bias. It is the case that participants answer without carefully pondering. Even though we used procedural remedy to minimize the bias by inserting filtering questions to identify and delete illogical responses, social desirability bias is still a concern. Future research should aim at innovating a scale that minimizes the error from this bias. Second, the sample used in this research was drawn from two primary tourism sectors in Thailand, consisting of hotels and airlines. Although these industries constitute more than half of Thailand's tourism revenue, the variation within hotels and airlines is still a concern. Generalization issues across contexts should be noted despite the fact that the homogeneity within hotel and airline groups is statistically presented. We call for more research on studying airline and hotel groups as moderator. The information derived from this kind of study benefits the tourism community since it facilitates hotel and airline managers to accurately formulate relevant strategies that can fit a customer better, given unique variation between hotel and airline groups. Third, there is an inconsistent view of the causal relationship between CE and MEM depending on the different theoretical lenses. Based on CE theory, our study proposes a unidirectional MEM → CE. To advance the body of tourism research, we recommend scholars examine a new future research stream. Future research should delve into a bidirectional relationship between MEM and CE. Testing both constructs in bidirectional coefficient paths can advance the insight into the transmission role of these constructs. Forth, the weak spot of cross-sectional design is that association is not causation, although the relationship among constructs in our study was ground on the theoretical framework. Since the cross-sectional design cannot draw a cause-effect inference, improvement can be made in future work by exerting an experimental research design.

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**Table 1: Comparisons of the two marketing paradigms**

| | Engagement marketing | Relationship marketing |
|---|---|---|
| Definition | "A firm's deliberate effort to motivate, empower, and measure a customer's voluntary contribution to the firm's marketing functions beyond the core economic transaction" (Harmeling et al., 2017) | "All marketing activities directed towards establishing, developing, and maintaining successful relational exchange" (Morgan & Hunt, 1994) |
| Objective: | Main objective is to induce positive customer responses to the firm with emotional attachment. (Kumar & Pansari, 2016; Palmatier et al., 2017) | Main objective is to keep customers a good relationship and motivate them to repurchase or repeat transaction with the firm (Bricci, Fragata, & Antunes, 2016). |
| Assessment of customer value | Assessment is done through the combination of customer lifetime value (CLV), customer knowledge value (CKV), customer referral value (CRV), and customer influence value (CIV). (Kumar & Pansari, 2016) | Assessment is done through the use of customer lifetime value (CLV) metric. (Berger & Nasr, 1998) |
| Flow of infomation | The flow of information is embedded in network communication among customer, other customers, other stakeholders, and the firm. (Palmatier et al., 2017) | The flow of information is that between customer and the firm. (Harmeling et al., 2017) |

Note: This table is excerpted and modified from Harmeling, Moffett, Arnold, and Carlson (2017)

**Table 2: Conceptualization of the conceptual variables and its reference**

| Conceptual variables | Type | Conceptualization | Reference |
|---|---|---|---|
| Customer Lifetime Value (CLV) | Composite | The value-added generated from the direct contribution to the hotel/airline by its customer. | Adapted from Kumar and Pansari (2016). |
| Customer Influence Value (CIV) | Composite | The value-added generated from the indirect contribution to the hotel/airline by customer. | Adapted from Bode and Epstein (2015) and Kumar and Pansari (2016) |
| Customer Engagement (CE) | Common factor | The attitudinal aspects driving customers to contribute to the hotel/airline in both directly and indirectly way. | Adapted from Harrigan, Evers, Miles, and Daly (2017) |
| Memorable Experience (MEM) | Common factor | "a tourism experience that is positively remembered and recalled after the event has occurred" (Kim, 2018) | Adapted from Stokburger-Sauer, Ratneshwar, and Sen (2012) |
| Perceived Service Innovation (PSI) | Common factor | A customer perception on the service delivery by hotel/airline with four characteristics: unique feature, better than ever before, worth investing time to learn, and meet latent needs. | Adapted from Leckie, Nyadzayo, and Johnson (2018) |
| Perceived Employee Engagement (PEE) | Common factor | A customer perception involving how staffs devote their energy or willingness to their works. | Adapted from Cain, Tanford, and Shulga (2017) and Kumar and Pansari (2016) |

**Table 3**

**: Assessment of compositional, mean, and variance invariances based on MICOM procedure**

| Test | Composite | | | | | |
|---|---|---|---|---|---|---|
| | **EE** | **SI** | **MEM** | **CE** | **CLV** | **CIV** |
| Test | **Step 1: Test of Compositional invariance** | | | | | |
| Hypothesis | $H_0$: **Compositional measurement invariance of the constructs** | | | | | |
| Test stat: $c = 1$ | 0.9998 | 0.9994 | 0.9998 | 0.9979 | 0.9470 | 0.9461 |
| $p$ −value | 0.225 | 0.531 | 0.784 | 0.313 | 0.128 | 0.225 |
| Result | FTR | FTR | FTR | FTR | FTR | FTR |
| Test | **Step 2: Test of Mean invariance** | | | | | |
| Hypothesis | $H_0$: **Difference between group mean is zero** | | | | | |
| Test stat | 0.0002 | -0.0363 | -0.0464 | 0.03 | 0.0089 | 0.0986 |
| $p$ −value | 0.999 | 0.675 | 0.570 | 0.724 | 0.916 | 0.239 |
| Result | FTR | FTR | FTR | FTR | FTR | FTR |
| Test | **Step 3: Test of variance invariance** | | | | | |
| Hypothesis | $H_0$: **Log of the ratio of the group variances is zero** | | | | | |
| Test stat | 0.1277 | 0.0086 | 0.0516 | -0.1411 | -0.0328 | -0.1098 |
| $p$ −value | 0.242 | 0.942 | 0.684 | 0.19 | 0.777 | 0.273 |
| Result | FTR | FTR | FTR | FTR | FTR | FTR |
| Test | **Step 4: Test of multiple groups using Klesel et al. (2019) procedure** | | | | | |
| Hypothesis | $H_0$: **Model-implied indicator covariance matrix is equal across groups** | | | | | |
| Test stat: $d_G$* | 0.1368727 | | | | | |
| $p$ −value | 0.11422846 | | | | | |
| Result | FTR | | | | | |

* we use $d_G$ distance measure to avoid the problem of inflating the family-wise error rate as recommended by Klesel et al. (2019).

Note: PEE = perceived employee engagement, PSI = perceived service innovation, MEM = memorable experience, CE = customer engagement, CLV = customer lifetime value, and CIV customer influence value, FTR = Fail to reject the null hypothesis.

**Table 4: Assessment of internal consistency reliability and convergent validity**

| Item | $\hat{\lambda}_i$ | 95% CI ($\hat{\lambda}_i$) | $\hat{w}_i$ | 95% CI ($\hat{w}_i$) | $\alpha_a$ | AVE | VIF |
|---|---|---|---|---|---|---|---|
| **Perceived Employee Engagement** | | | | | 0.9310 | 0.6906 | |
| PEE1 | 0.8223 | [ 0.7914; 0.8491 ] | 0.2006 | [ 0.1901; 0.2127 ] | | | |
| PEE2 | 0.8710 | [ 0.8500; 0.8914 ] | 0.2117 | [ 0.2004; 0.2229 ] | | | |
| PEE3 | 0.8408 | [ 0.8015; 0.8725 ] | 0.1951 | [ 0.1844; 0.2055 ] | | | |
| PEE4 | 0.8425 | [ 0.8113; 0.8682 ] | 0.2068 | [ 0.1971; 0.2189 ] | | | |
| PEE5 | 0.8188 | [ 0.7825; 0.8532 ] | 0.1940 | [ 0.1848; 0.2038 ] | | | |
| PEE6 | 0.7885 | [ 0.7283; 0.8344 ] | 0.1948 | [ 0.1829; 0.2067 ] | | | |
| **Perceived Service Innovation** | | | | | 0.9020 | 0.6037 | |
| PSI1 | 0.7829 | [ 0.7477; 0.8140 ] | 0.2224 | [ 0.2075; 0.2376 ] | | | |
| PSI2 | 0.7293 | [ 0.6845; 0.7717 ] | 0.1912 | [ 0.1754; 0.2073 ] | | | |
| PSI3 | 0.7635 | [ 0.7215; 0.8043 ] | 0.2095 | [ 0.1915; 0.2293 ] | | | |
| PSI4 | 0.7934 | [ 0.7613; 0.8235 ] | 0.2108 | [ 0.1947; 0.2279 ] | | | |
| PSI5 | 0.8087 | [ 0.7740; 0.8416 ] | 0.2226 | [ 0.2065; 0.2398 ] | | | |
| PSI6 | 0.7818 | [ 0.7354; 0.8167 ] | 0.2291 | [ 0.2142; 0.2457 ] | | | |
| **Memorable Experience** | | | | | 0.9105 | 0.7093 | |
| MEM1 | 0.7986 | [ 0.7453; 0.8451 ] | 0.2612 | [ 0.2394; 0.2877 ] | | | |
| MEM2 | 0.8478 | [ 0.8024; 0.8852 ] | 0.2815 | [ 0.2531; 0.3074 ] | | | |
| MEM3 | 0.8951 | [ 0.8751; 0.9121 ] | 0.3519 | [ 0.3260; 0.3785 ] | | | |
| MEM4 | 0.8242 | [ 0.7881; 0.8582 ] | 0.2884 | [ 0.2636; 0.3136 ] | | | |
| **Customer Engagement** | | | | | 0.8733 | 0.5327 | |
| CE1 | 0.7836 | [ 0.7428; 0.8183 ] | 0.2574 | [ 0.2278; 0.2921 ] | | | |
| CE2 | 0.7071 | [ 0.6521; 0.7621 ] | 0.1962 | [ 0.1629; 0.2310 ] | | | |
| CE3 | 0.7427 | [ 0.6980; 0.7838 ] | 0.2390 | [ 0.2114; 0.2677 ] | | | |
| CE4 | 0.7313 | [ 0.6816; 0.7718 ] | 0.2218 | [ 0.1887; 0.2551 ] | | | |
| CE5 | 0.7066 | [ 0.6608; 0.7505 ] | 0.2146 | [ 0.1754; 0.2500 ] | | | |
| CE6 | 0.7045 | [ 0.6504; 0.7517 ] | 0.2388 | [ 0.2019; 0.2714 ] | | | |
| **Customer Lifetime Value** | | | | | | | |
| CLV1 | | | 0.5177 | [ 0.3566; 0.6645 ] | | | 1.316 |
| CLV2 | | | 0.4754 | [ 0.3217; 0.5987 ] | | | 1.346 |
| CLV3 | | | 0.3757 | [ 0.2371; 0.5288 ] | | | 1.044 |
| **Customer Inferential Value** | | | | | | | |
| CIV1 | | | 0.6510 | [ 0.4763; 0.7981 ] | | | 1.308 |
| CIV2 | | | 0.5061 | [ 0.3310; 0.6748 ] | | | 1.308 |

Note: $\hat{\lambda}_i$= estimated composite loadings; 95% CI ($\hat{\lambda}_i$) = 95% Confidence intervals from bootstrapping with 10,000 samples of estimated composite loadings; $\hat{w}_i$ = estimated weights of item; 95% CI ($\hat{w}_i$) = 95% Confidence intervals from bootstrapping with 10,000 samples of estimated weights; $\alpha_a$ = Dijkstra-Henselers $\rho_a$; AVE = Average variance extracted; and VIF = Variance inflation factor

**Table 5: Assessment of discriminant and nomological validity**

|      | EE       | SI       | MEM      | CE       | CLV     | CIV |
|------|----------|----------|----------|----------|---------|-----|
| PEE  | **0.690** | 0.364    | 0.348    | 0.052    | -       | -   |
| PSI  | 0.596*   | **0.603** | 0.496    | 0.127    | -       | -   |
| MEM  | 0.587*   | 0.666*   | **0.709** | 0.204    | -       | -   |
| CE   | 0.173*   | 0.278*   | 0.437*   | **0.532** | -       | -   |
| CLV  | 0.258*   | 0.409*   | 0.404*   | 0.520*   | -       | -   |
| CIV  | 0.122*   | 0.192*   | 0.241*   | 0.385*   | 0.359*  | -   |

*$p-$value < 0.01

**Note: EE = perceived employee engagement; PSI = perceived service innovation; MEM = memorable experience; CE = customer engagement;**

**Note2: The bold diagonal values are AVE. Lower triangle elements are the test of nomological validity using composite scores. Upper off-diagonal elements are the HTMT ratio, which is calculated using**

$$\frac{\frac{1}{K_i K_j}\sum_{g=1}^{K_i}\sum_{h=1}^{K_j} r_{ig,jh}}{\sqrt{\frac{2}{K_i(K_i-1)}\sum_{g=1}^{K_i-1}\sum_{h=g+1}^{K_i} r_{ig,jh}\frac{2}{K_j(K_j-1)}\sum_{g=1}^{K_j-1}\sum_{h=g+1}^{K_j} r_{jg,jh}}}$$ **based on recommendation from Henseler, Ringle, and Sarstedt (2015)**

**Table 6: Assessment of structural model**

| Endogenous | Predictor | $\hat{\beta}$ | 95% BCa CI ($\hat{\beta}$) | VIF    | $F^2$   | $R^2$   |
|------------|-----------|---------------|----------------------------|--------|---------|---------|
| CLV        |           |               |                            |        |         | -       |
|            | CE        | 0.5115        | [0.4466; 0.5832]           | -      | 0.3267  |         |
| CIV        |           |               |                            |        |         | -       |
|            | CE        | 0.4962        | [0.4320; 0.5607]           | -      | 0.3543  |         |
| CE         |           |               |                            |        |         | 0.2042  |
|            | MEM       | 0.4519        | [0.3694; 0.5246]           | -      | 0.2566  |         |
| MEM        |           |               |                            |        |         | 0.5395  |
|            | EE        | 0.2590        | [0.1784; 0.3431]           | 1.5744 | 0.0925  |         |
|            | SI        | 0.5485        | [0.4714; 0.6319]           | 1.5744 | 0.4149  |         |

**Note: $\hat{\beta}$ = estimated standardized beta coefficients; VIF = Variance Inflation Factor; $F^2$= Cohen's effect size; $R^2$= In-sample predictive power. 95% BCa CI = 95% bias-corrected and accelerated confidence intervals from bootstrapping with 10,000 samples**

**Table 7: Assessment of out-of-sample predictive power based on indicator level**

| Item | $Q^2_{predict}$ | MAE $_{target}$ | MAE $_{benchmark}$ | RMSE $_{target}$ | RMSE $_{benchmark}$ | Normality |
|------|------|------|------|------|------|------|
| MEM1 | 0.2736 | 0.9538 | 0.9393 | 1.2805 | 1.2837 | No |
| MEM2 | 0.3722 | 0.8146 | 0.8238 | 1.0821 | 1.0926 | No |
| MEM3 | 0.4592 | 0.7495 | 0.7444 | 0.9653 | 0.9663 | No |
| MEM4 | 0.3988 | 0.8402 | 0.8497 | 1.0621 | 1.0852 | No |
| CE1 | 0.0797 | 0.9344 | 1.0426 | 1.1693 | 1.2972 | No |
| CE2 | 0.0714 | 1.1332 | 1.1793 | 1.3960 | 1.4825 | No |
| CE3 | 0.0914 | 0.9453 | 1.0314 | 1.1852 | 1.2808 | No |
| CE4 | 0.0244 | 1.2806 | 1.2939 | 1.5686 | 1.6221 | No |
| CE5 | 0.0389 | 1.4919 | 1.4801 | 1.7909 | 1.8021 | No |
| CE6 | 0.0658 | 1.4190 | 1.4010 | 1.7041 | 1.7289 | No |
| CLV1 | 0.0966 | 1.1732 | 1.1167 | 1.4179 | 1.4271 | No |
| CLV2 | 0.1101 | 1.0409 | 0.9813 | 1.2193 | 1.2391 | No |
| CLV3 | 0.0351 | 1.2845 | 1.2513 | 1.6254 | 1.6657 | No |
| CIV1 | 0.1008 | 1.2661 | 1.1562 | 1.4866 | 1.4873 | No |
| CIV2 | 0.0496 | 1.3110 | 1.2667 | 1.5112 | 1.5986 | No |

**Note: We set the number of observation training to 540, thus leaving the number of tested observation to be 56. The number of CV folds and that of repetitions is set to 10. LM is set to be benchmarked with the original GSCA algorithm. Diff = the difference between RMSE target and RMSE benchmark since all residuals of item fail to the normality test.**

**Table 8: Assessment of the predictors' importance**

| Endogenous | Predictor | $\widehat{\beta}$ | 95% BCa CI ($\widehat{\beta}$) |
|---|---|---|---|
| CLV | | | |
| | EE | 0.0696 | [0.0351;0.1070] |
| | SI | 0.5044 | [0.4425;0.5755] |
| | MEM | 0.2686 | [0.1580;0.3775] |
| | CE | 0.3275 | [0.2517;0.3963] |
| CIV | | | |
| | EE | 0.0786 | [0.0426;0.1193] |
| | SI | 0.3783 | [0.2893;0.4615] |
| | MEM | 0.3036 | [0.1945;0.4245] |
| | CE | 0.3535 | [0.2706;0.4225] |

**Note: the importance of predictor (construct's level) is the total effect calculated using 95% bias-corrected and accelerated confidence intervals from bootstrapping with 10,000 samples**

Figure 1: The conceptual framework

EE = Employee Engagement

CLV = Customer Lifetime Value

MEM = Memorable Experience

CE = Customer Engagement

SI = Service Innovation

CIV = Customer Influence Value

EE

SI

MEM

CE

CLV

CIV
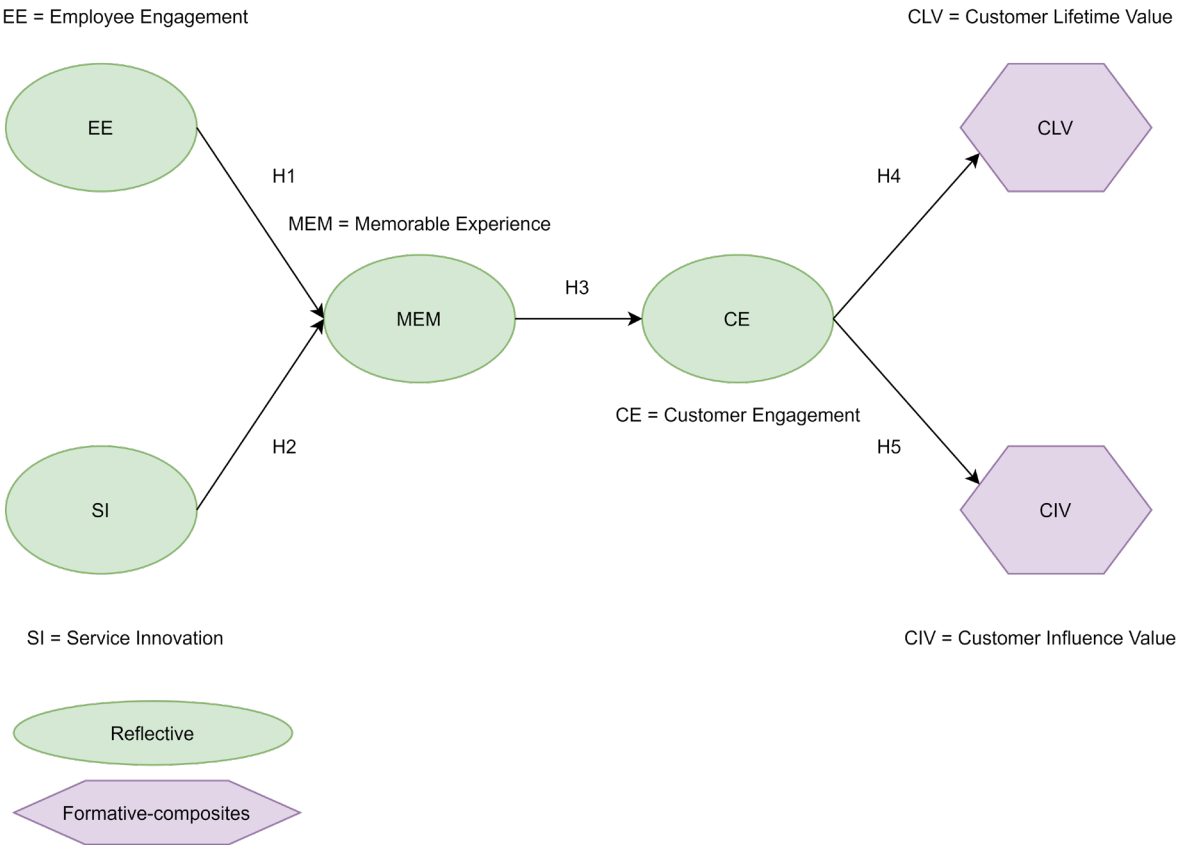
H1

H2

H3

H4

H5

Reflective

Formative-composites

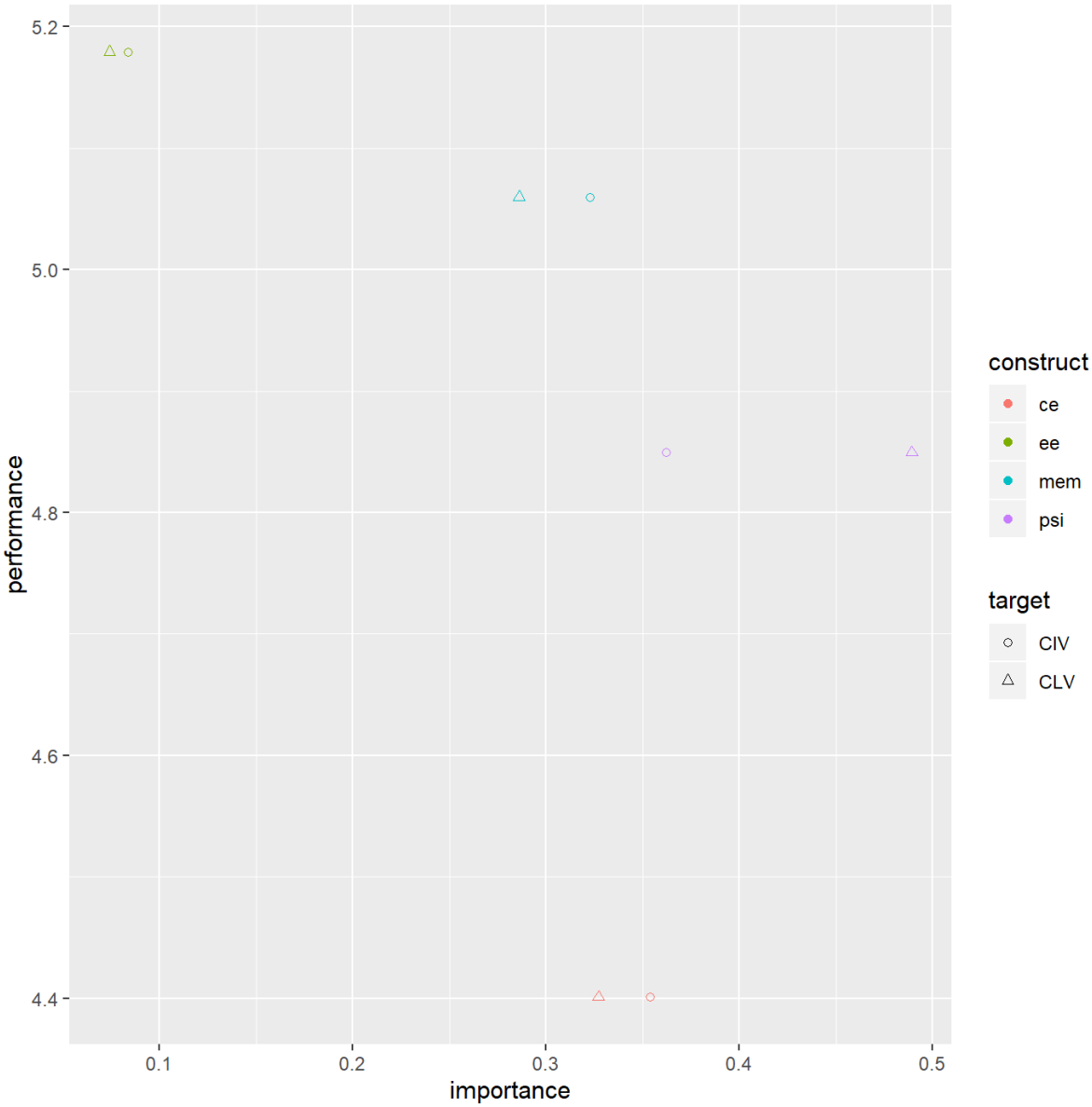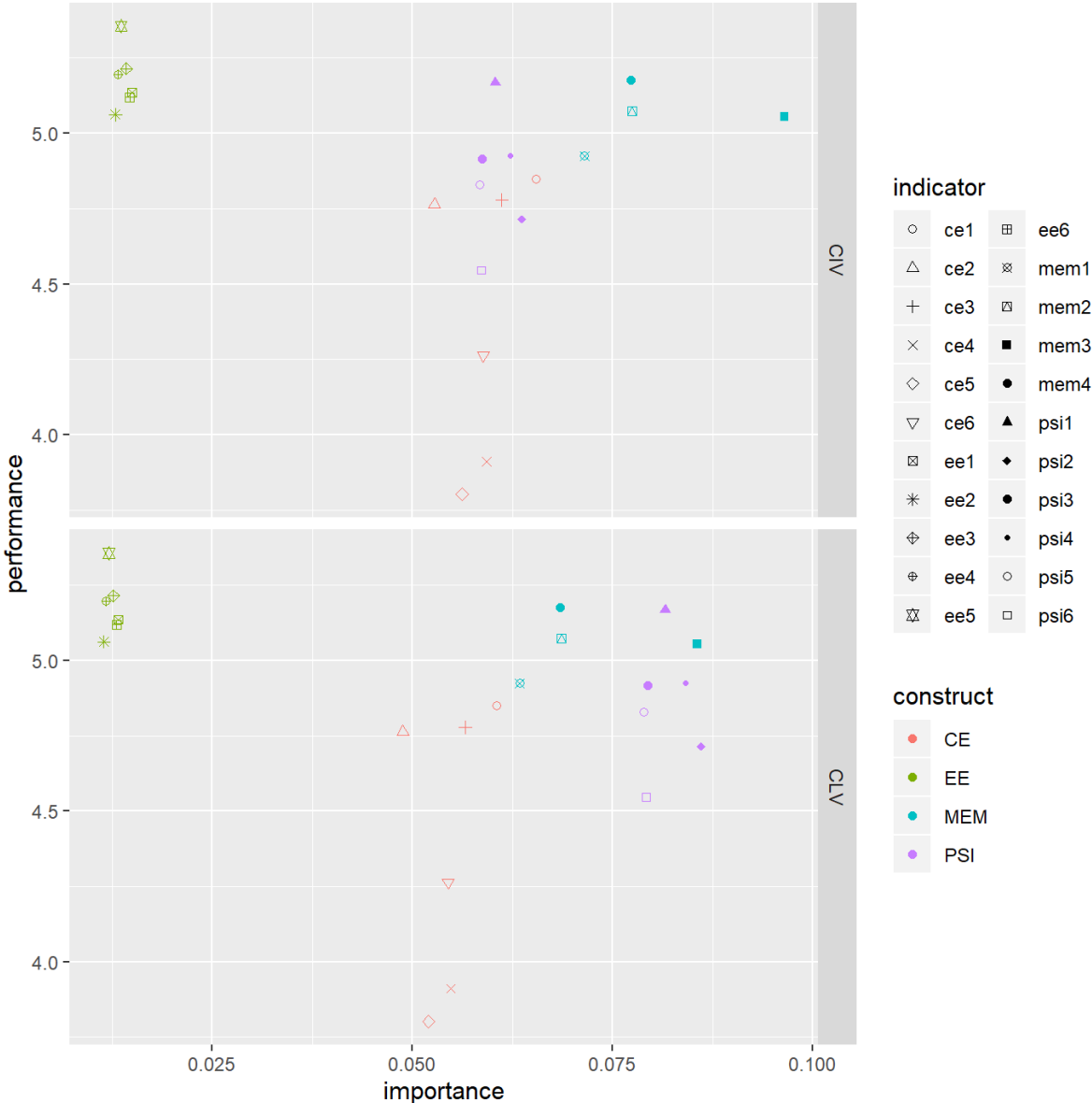Figure 2. The results of the importance-performance map analysis for the construct level

Figure 3. The results of the importance-performance map analysis for the indicator level
3a) divided by value-added

3b) divided by drivers