

Modeling Customer Loyalty from an Integrative Perspective of Self-Determination Theory and Expectation–Confirmation Theory

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Abstract

Purpose This research conceptualizes and tests an integrative model of customer loyalty by linking two important theories: expectation–confirmation theory and self-determination theory.

Design/Methodology/Approach The model is examined using data obtained from 207 part-time students who have encountered the service of a skincare and beauty salon in Taiwan. These students work as full-time professionals in a variety of industries during the daytime and are financially independent for their daily consumption.

Findings The empirical results of this study indicate that loyalty is positively influenced by both intrinsic regulation and identified regulation, while introjected regulation and external regulation are insignificantly related to loyalty. Affected positively by service expectation and service confirmation, satisfaction has positive influences on all four dimensions of self-determined motivation—namely,

intrinsic regulation, identified regulation, introjected regulation, and external regulation.

Implications The findings of this study show that the proposed model helps to learn about loyalty formation and its mediating mechanism in service contexts. Intrinsic regulation and identified regulation may be applied as two potential checkpoints for management to learn the actual status of customer loyalty based on a constant service quality offered by the service provider.

Originality/Value This study is one of the earliest to integrate expectation–confirmation theory and self-determination theory to explore loyalty. Besides, this study transplants the traditional application of self-determination theory from educational service to commercial service in general so that efficient strategies can be made for boosting loyalty.

Keywords Loyalty · Expectation–confirmation · Self-determination · Intrinsic regulation · Identified regulation · Introjected regulation · External regulation

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Introduction

Considerable evidence has disclosed that customer loyalty is a proxy for actual customer purchase behavior and can bring on long-term business profits. Even though Reinartz and Kumar (2000, 2002) questioned the relationship marketing theory whereby not all loyal customers are profitable in few specific cases, their perspective might partially reflect the reality given their databases cover a short period of time. In fact, the effect of loyalty in relationship marketing can be effectively amplified in the long run. Reinartz and Kumar (2003) further put emphasis on the impact of

customer relationship characteristics on profitable lifetime duration (a long-term perspective), suggesting a critical and influential role of relationship marketing.

Customers in the context of professional service tend to be loyal and remain with the same service provider, if they perceive the service to be superior (Crosby et al. 1990). For that reason, service industries today are seeking great success by offering customers highly superior and competitive packages to establish their strengths and unique competitive edges given the intense competition (Lin and Ding 2005). Nevertheless, such success relies on achieving customer loyalty. There is no reason in attracting customers only to lose them subsequently, especially given that searching for new customers is five times more expensive than retaining existing loyal customers (Bhattacharjee 2001; Lin and Ding 2005)—i.e., management should plan out appropriate strategies to foster customer loyalty due to its impact on customer retention and firm profitability (Crosby et al. 1990). However, an important step in achieving loyalty is to identify its antecedent and mediating variables so that the management strategies for boosting the loyalty can be effective (Lin and Ding 2006).

A critical theoretical framework that is being increasingly applied to study customer satisfaction, motivation, and future behavior (e.g., loyalty) is self-determination theory (SDT) (Ntoumanis 2005), whereas expectation–confirmation theory (ECT) is widely used to study customer satisfaction, repeat purchase (or loyalty), and their antecedents (Bhattacharjee 2001). ECT alone might be applied to predict customer loyalty via understanding the direct influence of satisfaction (e.g., Gotlieb et al. 1994; Taylor and Baker 1994; Dabholkar et al. 2000; Olsen 2002), but such a direct influence on loyalty has been challenged in previous research (Andreassen and Lindestad 1998), suggesting a potential gap that is unexplored between satisfaction and loyalty. This problem, which is challenged in previous research for the potential gap, may be improved by embedding SDT into the gap between satisfaction and loyalty. For example, self-determined motivation in SDT has been applied as a mediator between students' satisfaction and their behavioral intentions (Ntoumanis 2005) and between students' satisfaction and their positive effect toward the educational service provided (Standage et al. 2005). Consequently, it becomes important and interesting to integrate SDT and ECT together for exploring loyalty, given that satisfaction is a critical success factor shared across both theories.

At any rate, this research conceptualizes and tests an integrative model by linking two important theories (ECT and SDT) so that customer loyalty may be clearly examined. The hypothesized model is then validated empirically using data from a field survey of customers who have experienced service provided by a skincare and beauty

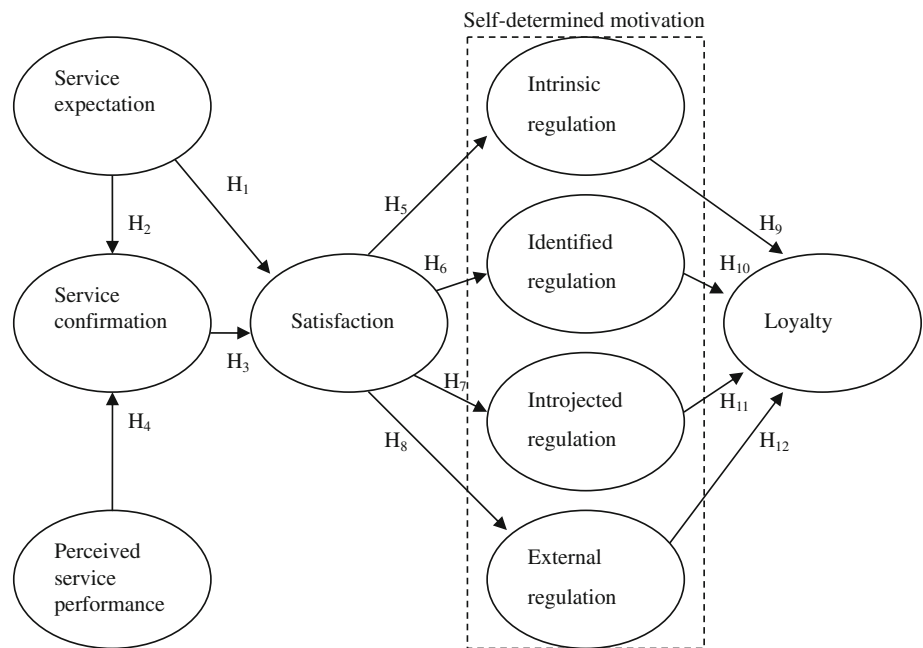
salon. More specifically, this study differs from previous works in two critical ways. First, this study is one of the earliest to integrate SDT and ECT to explore loyalty. Traditionally, the applicability of relationship quality in strengthening customer loyalty has been mostly and extensively used across various industries. Rather than using the theory of relationship marketing, this work tries elucidating insight via another alternative—namely, an integrative perspective of SDT and ECT. Second, SDT has been heavily practiced to learn about users' perceptions toward educational services (e.g., Standage et al. 2005), but its application on understanding customers' perceptions toward other commercial services is still insufficient and deserves more attention. Hence, this study transplants the application of SDT from a specifically educational service to a commercial service in general, so that customer perception and subsequent loyalty may be effectively clarified for business management so as to plan out efficient strategies.

Conceptual Model and Hypotheses Development

The theoretical model proposed in this research, as shown in Fig. 1, may help to learn customer loyalty effectively. Specifically, for customers in service industries, an evaluation of a firm often depends on both their expectation before “service encounter” and the perceived service performance after “service encounter” with the firm and its elements (Shamdasani and Balakrishnan 2000). First, perceived performance is considered important in services management, because services are characterized by a high degree of performance heterogeneity (Berry 1980; Wirtz and Mattila 2001). Second, given the robust findings of performance heterogeneity effects across different fields, it seems surprising that the service literature has largely ignored the impact of variant expectations on the satisfaction formation processes (Wirtz and Mattila 2001), suggesting a critical role of expectation in services management. This has called upon the concept of expectation in previous research when the nature and management of services are discussed (Coye 2004). Thus, knowledge of these two factors (service expectation and perceived service performance), which subsequently affect service confirmation and satisfaction, may have a part to play in establishing, maintaining, and enhancing loyalty in the long run. As such, the ECT becomes a good start in this study given that the predictive ability of ECT has been demonstrated over a wide range of service contexts and product repurchase (Bhattacharjee 2001).

Service confirmation in ECT is influenced by service expectation and perceived service performance, while service satisfaction is influenced by service expectation and

Fig. 1 An integrative model of loyalty



service confirmation. However, it is important to emphasize that the first half of the proposed model based on ECT in this study posits that satisfaction does not influence loyalty directly. Rather, in line with SDT, satisfaction is hypothesized to be mediated by four dimensions of self-determined motivations and consequently yields indirect influences on loyalty. Being affected by satisfaction, the four constructs—namely, intrinsic motivation, identified regulation, introjected regulation, and external regulation—generate a positive influence on loyalty.

Expectation may be described as the extent of what customers predict about the occurrence of a service (will happen) and what customers believe about the capability of the service provider (should happen) (Coye 2004). The expectation–confirmation paradigm suggests that the consumer’s level of satisfaction with a service is determined by the consumer’s initial expectation on the service, as well as discrepancies between expectation and service performance (confirmation) (Thong et al. 2006). Researchers (e.g., LaTour and Peat 1980) have concluded that expectation based on consumers’ direct experiences is a main predictor of consumer satisfaction (Thong et al. 2006). The direct influence of expectation on satisfaction after a service is important in ECT, because the expectation represents individual beliefs or sum of beliefs about the levels of service attributes, which are often a major source for directly generating subsequent customer satisfaction or preference (e.g., Oliver and Linda 1981; Churchill and Surprenant 1982; Bearden and Teel 1983; Thong et al. 2006). The direct influence of expectation on satisfaction has been also empirically supported by Spreng et al. (1996).

As a result, expectation becomes the first step in the decision-making process before customers reveal their attitude, intention, or behavior toward a service. ECT theorizes service expectation as an important determinant of satisfaction toward service, since service expectation offers the baseline or reference level for customers to form evaluative judgments about the focal service (Bhattacharjee 2001). Support for such a relationship initially comes from Helson’s (1964) adaptation level theory, which addresses that human beings perceive stimuli relative to or as a deviation from a baseline stimulus level. A high baseline level or expectation tends to enhance customers’ satisfaction, while low expectation consequently reduces satisfaction (Bhattacharjee 2001). This perspective has been supported empirically in various areas such as retail service (Swan and Trawick 1981), course instruction service (Oliver 1993), online banking service (Bhattacharjee 2000), and so on.

Meanwhile, service confirmation refers to the consistency between a customer’s perceived performance of a service and his or her expectation levels. Given the constant performance perceived by customers, service confirmation decreases if their expectation is lifted, suggesting an existing negative relationship between service expectation and service confirmation.

In this study, the process by which customers reach satisfaction based on the ECT theory (Bhattacharjee 2001; Oliver 1980) may be described as follows: First, customers form an initial expectation of a specific service from a business unit prior to take the service. Second, they take the service provided by the business unit. Following a period of experience in the service, they form perceptions about

the service quality from that unit. Third, they assess its perceived service vis-à-vis their original expectation and determine the extent to which their expectation is confirmed. Note that satisfaction herein indicates customer satisfaction after having his or her actual experience on a service. Thus, the hypotheses are derived as follows.

H₁: Service expectation is positively related to satisfaction.

H₂: Service expectation is negatively related to service confirmation.

Satisfaction in services can be defined as an evaluative response regarding the perceived service outcome of a particular consumption experience (Wirtz and Bateson 1999). Numerous consumer satisfaction models are based on some sort of comparison process (e.g., ECT) by comparing pre-consumption expectations with performance perceptions (Wirtz and Bateson 1999). Satisfaction is influenced according to the service confirmation level of expectation. Service confirmation is positively related to satisfaction toward service, because it implies realization of the expected benefits of the service offered by the service provider (Bhattacharjee 2001). Satisfaction of ECT was originally proposed by Locke (1976) as a pleasurable or positive emotional state resulting from the appraisal of one's job (Bhattacharjee 2001), and such meaning may be extended as the summary psychological state resulting when the emotion surrounding a disconfirmed expectation is coupled with customers' prior feelings (Oliver 1981) about their experience on a service provided by the business organization. Previous research has indicated anecdotal support for the relationship between service confirmation and satisfaction. For example, after perceiving and confirming the service with late deliveries, inaccurate billing, and non-availability of items listed on e-tail websites, online shoppers become significantly dissatisfied with the service offered by the e-tailer (Sliwa and Collett 2000).

Note that even though some studies have postulated perceived performance as a direct influence on satisfaction, both the initial theoretical study of ECT (Oliver 1980) and a further refined study using auxiliary theories and empirical tests (e.g., Bhattacharjee and Premkumar 2004) have confirmed an indirect relationship between perceived performance and satisfaction (Bhattacharjee 2001). This indirect relationship is also logical in business practices. For example, the perceived performance of a product from China is often bad and inferior to that from other countries such as Taiwan and Japan. In case the perceived performance does influence satisfaction directly, there is no point for the poor performance product from China to still get popular in the market as it happens. In fact, the poor performance product from China is still welcome by many

customers, because their satisfaction is indirectly influenced by their perceived performance after their expectation is taken into consideration (an indirect effect). Thus, perceived performance is low, but satisfaction is still somewhat enhanced based on an even lower expectation, suggesting an indirect influence of perceived performance on satisfaction through the confirmation.

At any rate, ECT suggests that satisfaction of customers is determined by two antecedents, including service expectation and service confirmation of expectation following actual service from the provider (Bhattacharjee 2001). Given a constant level of service expectation, perceived service performance becomes an influential factor that decides the level of service confirmation of customers. The hypotheses are thus derived as follows.

H₃: Service confirmation is positively related to satisfaction.

H₄: Perceived service performance is positively related to service confirmation.

The SDT is an organismic–dialectic framework of motivation that considers humans to be actively seeking new experiences to master and integrate (Deci and Ryan 1991). Considering the individual to be an intentional organism, SDT holds that individuals are motivated to obtain differing objectives during a service provided (Standage et al. 2005). To this end, Deci and Ryan (1985) identified four types of motivation—namely, intrinsic regulation, identified regulation, introjected regulation, and external regulation—to account for the different reasons why individuals engage in service activities (Standage et al. 2005), generating their subsequent loyalty. A concise summary for the four dimensions of self-determined motivation from Deci and Ryan (1985) is briefly described below.

First, intrinsic regulation refers to the customers' engagement in a service for their own feelings of pleasure and interest that derive directly from participation in the service. Identified regulation is defined as a relatively autonomous regulatory style characterized by the acceptance of a regulation as being one's own. In identifying a service as instrumentally important to a personal goal, a customer may likely participate in the service. Introjected regulation refers to a form of extrinsic motivation that is characterized by the individual internalizing external regulations. An example of introjected regulation is customers who use a service, not because they want to, but because they feel that they should (self-guilt or lack of confidence). Finally, external regulation is regarded as actions controlled by contingencies external to the individuals, such as rewards, threat of punishment, and so on. The justification for the influence of satisfaction on the four dimensions of self-determined motivation is discussed in the following.

Satisfaction undoubtedly plays an important role in affecting customer viewpoints on a specific service and accordingly changes customer motivation. Specifically, satisfaction is influential to customer motivation, because it provides a certain psychological accelerator—for example, a feeling of pleasure—to adjust their primary motivation. Customer motivation is tempered by the customer's actual perceived satisfaction on service and is therefore more realistic. For instance, identified regulation (e.g., to improve a person's skincare and appearance), a dimension of self-determined motivation, may be enhanced, if customers discover service benefits highly beyond their initial perception.

As SDT holds that the customer satisfaction based on customer needs is needed for optimal psychological functioning (Deci and Ryan 2000), overall satisfaction is expected to be an important mediator between a service-supporting perception (or service confirmation) and self-determined motivation (or four motivational regulations) (Standage et al. 2005). In other words, the motivation of customers is likely strengthened after they experience the satisfactory service, consequently leading to their loyalty toward the service. This phenomenon is supported by previous literature stating that a full understanding of loyalty needs to consider both motivation and satisfaction constructs simultaneously (Yoon and Uysal 2005). Restated, when the customer satisfaction is achieved, customers are strongly motivated by their inherent interest on the service (intrinsic regulation), recognition on the importance of the service (identified regulation), avoidance of guilt, feelings of worth (introjected regulation), and compliance of rules and avoidance of punishments (external regulation). The above deduction is in accordance with SDT (Deci and Ryan 1985), which postulates that satisfaction is essential for self-determined motivation, intrinsically and extrinsically (Ntoumanis 2005). The hypotheses are therefore developed as follows.

H₅: Satisfaction is positively related to intrinsic regulation.

H₆: Satisfaction is positively related to identified regulation.

H₇: Satisfaction is positively related to introjected regulation.

H₈: Satisfaction is positively related to external regulation.

It is important to note the above ordering between satisfaction and self-determined motivation in which the satisfaction leads to above four regulations. It is understandable because, given that satisfaction indicates the customer satisfaction after a service, self-determined motivation of customers is reasonably generated only after their taking after-service satisfaction into serious consideration. The

relationship between satisfaction and self-determined motivation has been also empirically demonstrated in educational research (e.g., Standage et al. 2005), albeit it had not been tried in areas related to consumer or marketing.

Meanwhile, it is very critical to investigate what human motivations drive loyalty (Yoon and Uysal 2005) since motivation is referred to as psychological/biological needs and wants, including integral forces that arouse, direct, and integrate a customer's behavior and activity (Yoon and Uysal 2005). Although many disciplines have been applied to explain the phenomena and characteristics associated with motivation, SDT is the one that deserves close attention given that psychological self-determined motivation is the key to the relationship economics and it epitomizes the survival of business organizations that depend heavily upon their customers.

Self-determination theory has received empirical support in a variety of service contexts related to physical education, sport, and exercise (Standage et al. 2005). SDT is also a framework of motivation that considers humans to be actively searching for optimal challenges and new experiences to master and integrate (Deci and Ryan 1991), predicting positive motivational outcomes including customer loyalty (Ntoumanis 2005). According to SDT, the degree to which service providers support their customers' needs would influence the latter's service need satisfaction, predicting an index of self-determined motivation including intrinsic, identified, introjected, and external regulations (Ntoumanis 2005). In turn, it is expected that self-determined motivation positively influences their future intention and behavior toward an entity (brand/service/store/vendor) and repeat patronage (Ntoumanis 2005). Loyalty is then influenced positively by four dimensions of self-determined motivation. Restated, customers are likely to yield strong loyalty when they experience enjoyment (intrinsic regulation), value (identified regulation), internal rewards (introjected regulation), and external rewards (external regulation) of the service (Ryan and Deci 2000).

H₉: Intrinsic regulation is positively related to loyalty.

H₁₀: Identified regulation is positively related to loyalty.

H₁₁: Introjected regulation is positively related to loyalty.

H₁₂: External regulation is positively related to loyalty.

Methods

Subjects

The subjects surveyed in this study are made up of part-time students in a department of business administration (BA) in an evening college in Taiwan. These students work

as full-time professionals in a variety of industries during the daytime and are financially independent for their daily consumption. Surveying those working adults helps facilitate improved external validity. Furthermore, given that perceived service performance and service confirmation are examined in this study, those who have experienced the service of a skincare and beauty salon were invited to participate in this study by filling out the questionnaires. After surveying 406 students about their experiences on the service mentioned earlier, this study collected data from 207 students who have encountered the service of a skincare and beauty salon, given that the other respondents are unable to complete the questionnaires due to their inexperience on such a service. Table 1 lists the characteristics of the sample.

Measures

The constructs utilized in this study are measured using five-point Likert scales drawn and modified from existing literature. The following steps are employed to choose scale items.

First, the items from the previous studies are translated into Chinese. Second, two university professors familiar with service industries were invited to examine the Chinese wording of each scale item and commented on its readability and content validity. These comments were used to reword, add, or remove inappropriate items correctly. Third, two pilot tests were conducted prior to the actual survey study to improve item readability and clarity. Subjects for the pilot tests were asked to fill out the survey questionnaire and comment on any confusing item in the

questionnaire. Finally, a back-translation technique was employed to convert the Chinese language version of the questionnaire into English and compare the translated English version with the original English items, as recommended by Reynolds et al. (1993). A high degree of correspondence between the two questionnaires assured us that the translation process did not introduce artificial translation biases in our Chinese language questionnaire.

Loyalty with five items is drawn and modified from Lin and Ding (2005) and Zeithaml et al. (1996). This construct is conceptualized here in the study in terms of repeat patronage, switching behavior, and word-of-mouth recommendations, which are in accordance with the definitions in previous studies (e.g., Oliver 1999; Uncles et al. 2003). The self-determined motivation with three items for each dimension is modified from Goudas et al. (1994) and Standage et al. (2005). Satisfaction with three items and service confirmation with four items are modified from Bhattacharjee (2001), while service expectation with four items and perceived service performance with four items are modified from Spreng et al. (1996). Finally, individual scale items are listed in “Appendix 1”.

Measurement Model Testing

After data collection, a two-step structural equation modeling (SEM) procedure proposed by Anderson and Gerbing (1988) is then employed for data analysis. The first step of the procedure examines scale validity from the measurement model using confirmatory factor analysis (CFA), while the second step focuses on hypotheses testing using the structural model. After a few indicator variables that did not fit well with the model in measurement model testing were removed (Hatcher 1994), every construct in the measurement model is measured using at least three indicator variables as in Table 2. The overall goodness-of-fit indices shown in Table 2 (χ^2/df is smaller than 2.0; RMR is smaller than 0.05, CFI and NNFI are greater than 0.9, while NFI and GFI are slightly lower than 0.9; RMSEA is smaller than the recommended maximum of 0.10) indicate that most fits of the model are satisfactory, given that a model’s fits need not meet all of the criteria in order to be deemed acceptable (Hatcher 1994).

The reliabilities in Table 2 for all constructs exceed 0.7, satisfying the general requirement of reliability for research instruments. All factor loadings for indicators measuring the same construct are statistically significant (see Table 2), showing that all indicators effectively measure their corresponding construct and support convergent validity (Anderson and Gerbing 1988). Accordingly, the average variance extracted (AVE) for each construct exceeds 0.50, suggesting that the hypothesized items capture more variance in the underlying construct than that

Table 1 Characteristics of the sample

Characteristic	<i>N</i> = 207
Age (years)	
Under 20	6 (3%)
20–29	97 (47%)
30–39	84 (41%)
40 or above	20 (9%)
Gender	
Male	74 (36%)
Female	133 (64%)
Marriage	
Married	88 (43%)
Not married	119 (57%)
Occupation	
Manufacturing industry	82 (40%)
Service industry	76 (37%)
Others	49 (23%)

Table 2 Standardized loadings and reliabilities

Construct	Indicators	Standardized loading	AVE	Cronbach's α
Loyalty	X1	0.84 ($t = 14.53$)	0.64	0.88
	X2	0.82 ($t = 13.99$)		
	X3	0.84 ($t = 14.53$)		
	X4	0.69 ($t = 10.82$)		
Intrinsic regulation	X6	0.80 ($t = 12.44$)	0.52	0.77
	X7	0.66 ($t = 9.72$)		
	X8	0.71 ($t = 10.66$)		
Identified regulation	X9	0.73 ($t = 11.21$)	0.59	0.80
	X10	0.78 ($t = 12.35$)		
	X11	0.78 ($t = 12.32$)		
Introjected regulation	X12	0.91 ($t = 15.23$)	0.65	0.84
	X13	0.86 ($t = 14.17$)		
	X14	0.64 ($t = 9.72$)		
External regulation	X15	0.82 ($t = 13.38$)	0.66	0.85
	X16	0.73 ($t = 11.39$)		
	X17	0.88 ($t = 14.67$)		
Satisfaction	X18	0.66 ($t = 10.16$)	0.63	0.83
	X19	0.83 ($t = 13.84$)		
	X20	0.88 ($t = 14.96$)		
Service expectation	X21	0.72 ($t = 11.10$)	0.55	0.83
	X22	0.85 ($t = 13.92$)		
	X23	0.70 ($t = 10.69$)		
Service confirmation	X24	0.68 ($t = 10.36$)	0.73	0.88
	X25	0.78 ($t = 12.95$)		
	X26	0.95 ($t = 17.38$)		
Perceived service performance	X27	0.82 ($t = 13.86$)	0.65	0.84
	X29	0.84 ($t = 13.62$)		
	X30	0.76 ($t = 12.00$)		
	X31	0.81 ($t = 13.03$)		

Few indicators that did not fit this measurement model were removed from the model
 Goodness-of-fit indices
 ($N = 206$): $\chi^2_{341} = 593.89$
 (P value < 0.001), $\chi^2/df = 1.74$, NFI = 0.83,
 NNFI = 0.91, CFI = 0.92,
 GFI = 0.85, RMR = 0.03,
 RMSEA = 0.06

attributable to measurement error. Collectively, the above results suggest that instruments used for measuring the constructs of interest in this study are statistically adequate.

The critical advantage of the chi-square difference test for discriminant validity is that it allows for simultaneous pairwise comparisons (based on the Bonferroni method) for the constructs. In this study, by using the Bonferroni method under the overall 0.01 levels, the critical value of the chi-square test is $\chi^2(1,0.01/28) = 13.21$. Since the chi-square difference statistics for every two constructs all exceed 13.21 for the model (see “Appendix 2”), discriminant validity is successfully achieved.

Structural Model Testing

As some sample characteristics might cause an unpredictable impact during the loyalty formation, this study uses them as control variables in order to avoid any improper inferences. More specifically, age with four levels, gender

with two levels, marriage with two levels, and occupation with three levels (see Table 1) are included as control variables using the application of dummy variables to reduce experimental errors. Following the first step of measurement model testing, the second step analyzing the structural models is now performed. Table 3 lists the test results for the structural model.

Results

Based on test results in Table 3, 10 paths out of 12 are significant (H_1 – H_{10} are supported), while the linkages from introjected regulation and external regulation to loyalty are insignificant (H_{11} and H_{12} are not supported). The failure of the unsupported hypotheses H_{11} and H_{12} is interesting and may arise, because both external regulation and introjected regulation reveal the perceived external locus of causality (Ryan and Deci 2000) that may be least autonomous

Table 3 Path coefficients and *t* value

Hypothesis	Standardized coefficient	<i>t</i> value
H ₁	0.39**	5.47
H ₂	-0.16*	-2.03
H ₃	0.51**	7.31
H ₄	0.41**	5.09
H ₅	0.76**	9.07
H ₆	0.43**	5.10
H ₇	0.23**	2.97
H ₈	0.36**	4.60
H ₉	0.54**	6.99
H ₁₀	0.45**	6.40
H ₁₁	0.01	0.18
H ₁₂	0.05	0.92

Control variables (age, gender and occupation) showed no significant effect on loyalty

* $P < 0.05$; ** $P < 0.01$

regarding consuming behaviors, leading to no adaptive response (Standage et al. 2005). This is consistent with previous works (Ntoumanis 2001; Standage et al. 2003, 2005), and this study did not find either external regulation or introjected regulation to significantly predict any outcome variable. It was speculated in previous research that any consequences of external regulation and introjected regulation might be displayed in a longitudinal investigation (Standage et al. 2005).

Implication for Research

The goal of this study has been to explore the mechanism of loyalty formation in a service context and to learn through what paths loyalty is influenced by its exogenous determinants. Toward this goal, the theoretical integration of ECT and SDT has been adapted from previous behavior literature to theorize an integrative model of loyalty. In other words, this study has provided an illustrative example of how a research model of customer loyalty may be extended by integrating two complementary theories that help obtain insights into relationship marketing. Although the significant influence of satisfaction on loyalty based on ECT is not new and has been already confirmed in the previous literature, only a few research studies have tried to explore the mediating effects of self-determined motivation between satisfaction and loyalty as shown in Fig. 1. More specifically, this study tries to open the black box in which the self-determined motivation dominates the mediating mechanism between satisfaction and loyalty. In this sense, the study herein helps to expand the boundaries of extant relationship marketing research by considering atypical

impacts of self-determined motivation and by incorporating theories and constructs from SDT within relationship marketing research.

By validating the SDT and ECT hypotheses using primary data collected directly from users, this study serves as a complement to prior studies that have employed secondary data from service providers for proving similar hypotheses. Our findings confirm that users' self-determined motivation that affects loyalty is not arbitrary, but rather it is based on key attributes of the target motivation. These attributes include the intrinsic regulation and identified regulation. On the other hand, this study may save time and efforts for future researchers by indicating the insignificant influence of introjected regulation and external regulation in relationship marketing research. While previous research considers self-determined motivation as one construct that contains four dimensions—including intrinsic, identified, introjected, and external regulation—this study suggests that these four dimensions should be examined respectively in future consumer research due to their substantial differences in influencing loyalty.

Implication for Practice

The empirical results of this study indicate that loyalty is positively influenced by both intrinsic regulation and identified regulation, while introjected regulation and external regulation are insignificantly related to loyalty. Affected positively by service expectation and service confirmation, satisfaction has positive influences on all four dimensions of self-determined motivation—namely, intrinsic regulation, identified regulation, introjected regulation, and external regulation. Finally, service confirmation is influenced by service expectation negatively and by perceived service performance positively. The findings of this study bring on several implications for management.

To begin with, the empirical findings indicate that satisfaction is determined by service expectation directly and indirectly via the mediation of service confirmation. This phenomenon suggests a leading role of service expectation on subsequent satisfaction due to its influence via two different routes. Management should learn customers' expectation before they take the service. In case of any misunderstanding—caused by, for example, advertising—management should immediately clarify the misunderstanding to better adjust their prior expectation. If management cannot precisely recognize what customers expect before a service is provided and how they perceive it afterward, then management is unlikely to provide a service that fits the customers. Accordingly, satisfaction is also influenced indirectly by perceived service performance via service confirmation, and this finding suggests

that management should keep track of the effectiveness (or performance) after a service, given that it usually takes time for service providers to display the service performance and for customers to recognize the benefit of the service due to service intangibility. Collectively, since customers' expectation may shift over time, management may establish a database that helps identify customers' expectation and perceived service performance, ultimately constructing loyalty. This kind of database based on a periodical market investigation paves the way to learn customers' allegiance which helps equip businesses with broadened horizons to achieve something more beyond the expectations of customers.

Loyalty is influenced by satisfaction via the mediation of intrinsic regulation and identified regulation, indicating that an improvement on service quality is an efficient way to strengthen customer loyalty. These findings based on self-determined motivation can be conceptually understandable since customers who enjoy the service (intrinsic regulation) or appreciate its value instrumentally (identified regulation) will be likely to stick to the service. Additionally, intrinsic regulation and identified regulation may be applied as two potential checkpoints for management to learn the actual status of customer loyalty based on a constant service quality offered by the service provider. Management may arrange a battery of surveys to measure customers' motivations particularly on these two dimensions that transform satisfaction to ultimately loyalty. On the other hand, the findings of this study suggest that management should take efforts to foster these highly adaptive forms of motivations in all customers, given the relatively strong influences from intrinsic regulation ($\beta = 0.54$) and identified regulation ($\beta = 0.45$) to loyalty. The promotion of these two self-determined regulations via creating superior service quality may serve to significantly foster loyalty.

In summary, the findings of this study show that the integrative model of ECT and SDT helps to learn the loyalty formation and its mediating mechanism in service contexts. By opening a black box of self-determined motivation between satisfaction and loyalty, this study calls for attention on customers' intrinsic regulation and identified regulation that critically convert satisfaction to relative loyalty levels.

Limitations and Future Research

The cross-sectional data in this study make up the first limitation. That is, this study might have a potential problem of common method bias by using a single questionnaire to measure all constructs, which could inflate the strength of the relationships among constructs. To test for this bias, we have herein conducted Harmon's single factor test (Podsakoff and Organ 1986). In this test, if a

substantial amount of common method variance is present in the data sample, then either a single factor emerges from the factor analysis or a general factor accounts for the majority of the covariance in the independent and dependent variables. An exploratory factor analysis of all items for the nine constructs of Table 2 has revealed nine factors explaining 14.7, 14.3, 12.6, 12.1, 11.4, 10.3, 10.1, 9.6, and 4.9% of the total variance, respectively. These figures indicate that none of the nine factors accounts for the majority of the covariance in the independent and dependent variables, suggesting that common method bias is unlikely a significant problem in our data. Nevertheless, empirical studies with longitudinal survey may provide an additional complementary on the proposed model. Several debates about ECT make up the second limitation in this study. For example, ECT is thought to ignore potential changes in customers' expectation following their learning experience and the impact of these changes on subsequent cognitive processes. A third limitation is that this study only surveyed consumers in the area of beauty and skincare service based on a single country setting. The restricted nature of our sample suggests that any generalization of our findings to other contexts should be made with caution. However, given the prevalence of similar services that require intensive contacts with consumers in a modern society, our findings may be fairly reflective of the service consumer population at large. On the other hand, this study may not be applied properly to another service area that takes place on the Internet without actual contacts between consumers and service providers. Additional research across different countries and industries may be required for any complementary research in the future. By exploring loyalty formation, this study raises the question of how much a difference exists concerning the mediating effects of self-determined motivation on loyalty between Western societies and Asian societies. It would be premature to answer this question, which was not covered in the research purpose of this study, and it is quite likely that such differences may exist from one country to another.

Finally, an ideal empirical design for testing an integrative model of SDT and ECT in future research would be a longitudinal comparison of customers' pre- and post-satisfaction perceptions, so as to truly capture the complicated, dynamic interrelationships between satisfaction and loyalty, including repeated purchase, word-of-mouth, and switching behavior. In addition, interesting research topics such as changes in service expectation and perceived service performance across satisfaction and loyalty phases may be also explored in future research. Future studies can try to improve the shortcomings by including more exogenous variables so that genuine relationships of customer loyalty in service contexts may be better transparently revealed.

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Appendix 1

Measurement items

Construct	Indicators
Loyalty	X1. I will continue using the service offered by that salon X2. I will likely purchase other services offered by that salon in the future X3. I will suggest friends or relatives to use the service offered by that salon X4. I offer others some positive information about that salon X5. When the price of service offered by other salons is lower, I will switch to using the service of other salons (reverse coded)
Intrinsic regulation	X6. I enjoy the service X7. The service is attractive X8. Using the service is an enjoyment
Identified regulation	X9. The service helps improve my skincare and appearance X10. I can learn skills of skincare and beauty X11. I can apply what I learn from the salon in my daily life
Introjected regulation	X12. I want others to feel that I look better than before X13. I would feel bad if I did not use the service X14. Once I stop using the service, I feel my confidence decreases
External regulation	X15. I get into trouble on skincare if I do not use the service X16. Using the service is what I am supposed to do X17. Using the service helps improve the way others treat me
Satisfaction	According to my overall experience on the service quality of that salon, I personally feel... X18. Very dissatisfied/very satisfied X19. Very displeased/very pleased X20. Very frustrated/very content
Service expectation	Please recall the moment before you first intended to use the service of the salon... X21. I expected the service quality of that salon to be good X22. I expected that the service quality of that salon to be stable X23. I expected that the service of that salon to be effective X24. I expected that the service of that salon to be valuable in comparison with the price I paid for it
Service confirmation	X25. My personal experience on using the service of that salon was better than what I expected X26. The service level provided by that salon was better than what I expected X27. The service content delivered by that salon was more thoughtful than what I expected X28. Overall, the service of that salon mostly met my expectation
Perceived service performance	X29. I think now the service actually provided by the salon is reasonable X30. I think now the service actually provided by the salon is consistent X31. I think now the service actually provided by the salon works for me X32. I think now the service actually provided by the salon is worth using

Appendix 2

Chi-square difference tests for discriminant validity

Construct pair	Unconstrained χ^2 ($df = 341$) = 593.89	
	Constrained χ^2 ($df = 342$)	χ^2 difference
(F1, F2)	660.78	66.89***
(F1, F3)	695.19	101.30***
(F1, F4)	851.28	257.39***
(F1, F5)	828.97	235.08***
(F1, F6)	726.81	132.92***
(F1, F7)	882.93	289.04***
(F1, F8)	855.29	261.40***
(F1, F9)	811.08	217.19***
(F2, F3)	722.72	128.83***
(F2, F4)	740.76	146.87***
(F2, F5)	725.50	131.61***
(F2, F6)	654.36	60.47***
(F2, F7)	737.97	144.08***
(F2, F8)	711.65	117.76***
(F2, F9)	731.32	137.43***
(F3, F4)	743.98	150.09***
(F3, F5)	765.95	172.06***
(F3, F6)	757.00	163.11***
(F3, F7)	792.58	198.69***
(F3, F8)	790.67	196.78***
(F3, F9)	780.49	186.60***
(F4, F5)	857.80	263.91***
(F4, F6)	832.98	239.09***
(F4, F7)	881.79	287.90***
(F4, F8)	948.96	355.07***
(F4, F9)	843.42	249.53***
(F5, F6)	816.69	222.80***
(F5, F7)	859.76	265.87***
(F5, F8)	861.58	267.69***
(F5, F9)	845.20	251.31***
(F6, F7)	801.01	207.12***
(F6, F8)	789.03	195.14***
(F6, F9)	797.91	204.02***
(F7, F8)	886.13	292.24***
(F7, F9)	826.47	232.58***
(F8, F9)	813.17	219.28***

F1 = loyalty, F2 = intrinsic regulation, F3 = identified regulation, F4 = introjected regulation, F5 = external regulation, F6 = satisfaction, F7 = service expectation, F8 = service confirmation, F9 = perceived service performance

*** $P < 0.01$ based on Bonferroni method

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