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The Service-Profit Chain: An Empirical Analysis in High-contact Service Industries

Key words: service-profit chain; satisfaction; loyalty; firm profitability; empirical research

Abstract

In their well-known conceptual framework of the service-profit chain (S-PC), Heskett *et al*. (1994) suggest that there are strong relationships among employee satisfaction and loyalty, service quality, customer satisfaction and loyalty, and firm profitability. However, there is little empirical evidence on this proposition. In this research we empirically examine the relationships among employee attributes, operational performance, and business outcomes. We collected data from 210 high-contact service shops in Hong Kong. Using structural equation modelling, we find that most of the postulated relationships in S-PC are highly significant, supporting the S-PC concept. Our findings parallel anecdotal evidence in many service organizations that an increase in employee satisfaction and loyalty triggers a corresponding change in customer satisfaction and loyalty, resulting in significant increase in sales revenues. We provide strong empirical evidence that employee satisfaction and loyalty play a significant role in enhancing the operational performance of organizations in the high-contact service sectors.

Key words: service-profit chain; satisfaction; loyalty; firm profitability; empirical research

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1. Introduction

Much research in operations management (OM) is concerned with investigating various operational practices and systems considered conducive to optimizing organizational effectiveness (e.g., Soteriou and Zenios, 1999). On the other hand, researchers in human resources management (HRM) have focused on identifying the links between appropriate human resources practices and the effectiveness of a firm (e.g., Batt, 2002). Nevertheless, the impact of human resources on operational systems has often been overlooked (Boudreau *et al.*, 2003). A pioneer in this topic, Heskett *et al*. (1994) propose the Service-profit Chain (S-PC) model that integrates OM and HRM for organizational improvement in the context of the service industry. Boudreau *et al.* (2003) discuss the potential value of connecting OM and HRM, and identify a set of research challenges that need addressing before synergies from integrating these two fields in research and practice can be derived. A growing amount of research has been devoted to investigating the impacts of employee attributes on service operations (e.g., Oliva and Sterman, 2001; Voss *et al*., 2005). Such studies are particularly essential to the service industry where the activities of service employees connect organizations to their customers and operations managers rely heavily on service employees' personal interactions to impress customers.

S-PC suggests satisfied and loyal employees can deliver high-quality services to fulfill customers' needs; satisfied customers would, in turn, become loyal to the firm, leading to improved business performance. The S-PC proposition has inspired many researchers from various fields, including OM, HRM, marketing, and service management (e.g., Batt, 2002; Loveman, 1998; Mittal and Kamakura, 2001; Silvestro and Cross, 2000), to explore the different issues associated with the arguments put forward by Heskett *et al*. (1994). These previous studies, while scattered among different disciplines, serve as important sources of information for the consolidation of knowledge and yield insights for research into S-PC.

Considering an issue closely related to S-PC, Yee *et al*. (2010) detect the effects of pertinent moderating factors on the linkages of the constructs of S-PC. They explore the moderating effects of contact time, market competitiveness, and switching cost on the associations among employee loyalty, service quality, customer satisfaction and loyalty, and firm profitability. Clearly, their focus is on examining the effects of potential contextual factors on the relationships among some of the constructs in S-PC. In contrast, we examine in this paper the key constructs in the S-PC model without considering the effects of contextual factors.

In this research we address the following basic question: Is S-PC generally valid in service sectors as prescribed by Heskett *et al*. (1994)? We empirically validate the relationships postulated in S-PC by applying structural equation modelling using the disaggregation approach to treat the data collected from high-contact service shops in Hong Kong.

2. Theoretical background and hypothesis development

2.1 Theoretical background

Although Heskett *et al.* (1994) suggest that there is a causal order in the links between employee satisfaction and loyalty, service quality, customer satisfaction and loyalty, and firm performance, there is little empirical evidence on this proposition. Empirical studies on S-PC would require collection and analysis of data on all of the postulated linkages in the chain (Silvestro and Cross, 2000). Perhaps for this reason, the validity of the associations proposed in Heskett *et al*. (1994) has remained unverified in the literature. Loveman (1998) examines the linkages of S-PC using data from a regional bank. He reports that the relationships are confounding, inferring that the links in S-PC were not explicitly validated in his research. Moreover, Loveman's (1998) study was conducted in a single service organization, which limits the generalizability of his findings to different service organizations. Obviously,

empirical assessments aimed at examining all the key constructs in S-PC as a system of related hypotheses are called for in order to verify the proposition.

On the other hand, researchers have adopted Heskett *et al.*'s (1994) proposition to justify the presumed causal linkages in S-PC in different service settings (e.g., Jones and Sasser, 1995; Khatibi *et al.*, 2002; Silvestro and Cross, 2000; Stank *et al.*, 1999; Voss *et al.*, 2005). Their empirical studies have produced mixed results. Some studies find that customer satisfaction and loyalty are positively related (Stank *et al*., 1999) and higher satisfaction in employees leads to improved customer satisfaction (Voss *et al.*, 2005). However, other studies find no significant link between customer satisfaction and loyalty (Khatibi *et al*., 2002) or between employee satisfaction and customer satisfaction (Silvestro and Cross, 2000). One challenge to these prior studies is about their methodological grounds. Except Loveman (1998), all of the studies use small samples, which have low statistical power, leading to low precision of sample estimates (Sawyer and Ball, 1981). Further, many of these studies are conducted in a single organization or industry; thus, different findings result from various research environments. Moreover, previous studies use either individual employees or a few business divisions within an organization as their unit of analysis. In addition, previous studies have provided very limited evidence of the recursive effect of business performance on employee satisfaction and loyalty. Clearly, a large-scale empirical study is needed to examine the major constructs of S-PC and the recursive effects embedded in the related S-PC linkages.

High-contact service industries typically involve activities in which service employees and customers have close and direct interaction for a prolonged period (Chase, 1981). A high-contact environment of services is characterized by long communication time, close communication, and rich information exchanged (Kellogg and Chase, 1995). Through close contact, service employees and customers have ample opportunities to build up their ties and

exchange information about purchase. This enhances employees' ability to deliver high-quality services and influence their customers' purchase decisions, contributing to sales performance. Researchers have argued that satisfied employees are more committed to serving customers (e.g., Loveman, 1998). Small service firms are more likely to experience constraints on organizational resources, therefore they have to rely more on the motivation of individual employees in providing good services to customers (Haugh and McKee, 2004). In line with the above arguments, we believe that satisfied and loyal employees in a small, high-contact environment are more likely to have greater influences on service quality, customer purchase, and sales performance. Thus, small organizations in the high-contact service sector are particularly suited for examining how employee satisfaction and loyalty affect organizational performance through service quality and direct customer contact.

2.2 Development of hypotheses

We formulate the following propositions grounded in pertinent theories and empirical works accordingly.

Employee satisfaction, employee loyalty, and service quality. Heskett *et al.* (1994) postulate that employee satisfaction influences employee loyalty. The logic is that employees who are satisfied with their job are prone to be loyal to their employing organization. Empirical studies have shown that employee satisfaction is positively correlated with employee loyalty (Loveman, 1998), but has a negative impact on absenteeism (e.g., Gordon and Denisi, 1995).

S-PC also posits that employee loyalty affects customer perception of service quality. Loyal employees who are satisfied with their job demonstrate their loyalty to the employing organization by being committed to delivering high-quality services to customers. Loveman (1998) demonstrates that employee loyalty is positively correlated with service quality.

Social exchange theory can be applied to account for the relationships between employee satisfaction, employee loyalty, and service quality. The norm of reciprocity in social exchange theory states that an action by one party leads to the other's response. A positive reciprocity orientation involves the tendency to return positive treatment for positive treatment (Flynn, 2005). An individual accorded some manner of social gift that is inequitably in excess of what is anticipated will experience gratitude and feel an obligation to reciprocate the benefactor. In the context of social exchange theory, the employer is devoted to building a relationship of long-term employment with his employees by fulfilling their needs through offering them favourable working conditions; in return, employees will be loyal to their employer by being devoted to offering high-quality services as a means of reciprocity for their organization. Drawing on the norms of reciprocity and equity of social exchange theory, we develop the following two hypotheses:

Hypothesis 1: Employee satisfaction has a positive influence on employee loyalty.

Hypothesis 2: Employee loyalty has a positive influence on service quality.

Service quality and customer satisfaction. S-PC conceptualizes that external service value, i.e., the value of services perceived by customers, is linked with customer satisfaction. The underlying rationale is that high-quality services offered by a firm would lead to customer satisfaction. Empirical findings have shown that service quality is related to customer satisfaction (Silvestro and Cross, 2000).

The relationship between service quality and customer satisfaction can be accounted for by the attitude theory proposed by Bagozzi (1992). Bagozzi (1992) proposes that individuals typically engage in activities because of a desire to achieve certain outcomes.

Accordingly, if an individual's appraisal of an activity indicates that the person has achieved the planned outcome, then "desire-outcome fulfillment" exists and an affective response follows, leading to satisfaction (Gotlieb *et al.*, 1994). When applied to service encounters, the framework infers that a favourable cognitive service quality evaluation, i.e., appraisal, leads to a primarily emotive satisfaction assessment (Bagozzi, 1992). We therefore suggest the following hypothesis:

Hypothesis 3: Service quality has a positive influence on customer satisfaction.

Employee satisfaction and customer satisfaction. Although the original S-PC model does not stipulate that employee satisfaction has a direct impact on customer satisfaction, such a potential relationship has recently received much attention in the literature. Researchers have demonstrated that the sharing of emotion, i.e., emotion contagion, occurs in personal transactions under a service environment. Emotional contagion is defined as the tendency of a person to automatically mimic and synchronize expressions, postures, and vocalizations with those of another person and, consequently, to converge emotionally (Hatfield *et al.*, 1992). This process occurs through the conscious or unconscious induction of emotion states and behavioural attitudes (Schoenewolf, 1990). Accordingly, we conjecture that when customers are exposed to the emotional displays of employees, they experience corresponding changes in their own affective status (Barsade, 2002). Service employees with a high level of job satisfaction will appear to customers more pleased with their environment, leading to a positive influence on customer satisfaction (Homburg and Stock, 2004). Based on this argument, we propose that

Hypothesis 4: Employee satisfaction has a positive influence on customer satisfaction.

Customer satisfaction, customer loyalty, sales performance, and firm profitability. Heskett *et al*. (1994) presume that a customer's satisfaction with the quality of the services influences his loyalty to the service firm, which in turn affects the firm's profitability. Considerable findings have shown that customer satisfaction significantly impacts the loyalty level of customers (e.g., Stank *et al.*, 1999), supporting that customers who are satisfied with the perceived service quality will become loyal to the service firm. A customer's loyalty manifests in many customer behaviours such as repurchases, purchasing in greater volume, and making referrals of the service firm to others, thereby enhancing the long-term profitability of the firm (Anderson *et al.*, 1994; Loveman, 1998). Loveman (1998) evaluates the economic return of customer loyalty, in terms of profitability, market share, and revenue growth. An effort to increase the loyalty of existing customers induces higher sales volume, more repeated purchases, and customer referrals. Thus, we include a mediating construct of "sales from repurchases and referrals", which we believe to be an explicit and immediate consequence of customer loyalty. The increased sales incomes as a result of repurchases and referrals will lead to better financial performance, in terms of return on assets, return on sales, and return on investment. Consequently, sales from repurchases and referrals should have a direct influence on firm profitability. Thus, we hypothesize that

Hypothesis 5: Customer satisfaction has a positive influence on customer loyalty.

Hypothesis 6: Customer loyalty has a positive influence on sales from repurchases and referrals.

Hypothesis 7: Sales from repurchases and referrals have a positive influence on organizational profitability.

Firm profitability and employee satisfaction. The balanced theory supports the tenet that organizational performance leads to employee satisfaction (Kaplan and Norton, 1992). The argument suggests that financially and market-successful organizations provide superior benefits to employees, yielding a higher level of employee satisfaction, including higher pay and better promotion opportunities (Schneider *et al.*, 2003). Accordingly, we develop the last hypothesis:

Hypothesis 8: Firm profitability has a positive influence on employee satisfaction.

3. Methodology

3.1 Sample

We focus our study on high-contact service industries in Hong Kong. We identified twelve main shopping areas in Hong Kong (e.g., Tsimshatsui and Causeway Bay) and randomly selected five major shopping avenues from each area. We controlled firm size by choosing small service organizations with two to five frontline service employees. Being small organizations, the levels of employee satisfaction and loyalty tend to be more consistent (George and Bettenhausen, 1990) and easier to capture. We avoided choosing large chain stores as the customer satisfaction and loyalty of such firms are more likely reflected at the corporate level, rather than at the individual shop level. Nevertheless, we covered different types of high-contact service shops and excluded those with low customer contacts, such as convenience stores, in order to enhance the generalizability of our study. Table 1 displays the major service sectors covered in our sample.

Insert Table 1 Here

3.2 Data collection procedures

We conducted a pilot study in eight different types of service shops, where we verified the relevance of the indicators to the corresponding constructs, the appropriateness of the wording, and the clarity of the instructions to fill in the questionnaires. Upon completing the pilot study, we made minor modifications to the questionnaires in order to improve their validity and readability. We prepared survey packets, which included a "shop-in-charge" questionnaire and two "service employee" questionnaires. The persons in charge of a shop are responsible for answering questions on customer satisfaction, customer loyalty, sales performance, and firm profitability. They are normally shop proprietors or shop managers with the ultimate responsibility for profits, so they are capable of providing very reliable financial information. They also have comprehensive information about the overall customer profile, based on loyalty programmes, re-purchase records, and customer satisfaction surveys. Although it could be argued that customers are more preferred to be informants about customer satisfaction, empirical findings from similar studies have demonstrated that internal and external measures of customer satisfaction are highly correlated (e.g., Schneider and Bowen, 1985), justifying the use of internal measures for customer satisfaction in our study. Because of the proven high correlation between internal and external measures for customer satisfaction in particular and customer data in general, we adopt internal measures for customer loyalty in this study.

Service employees refer to staff members who are directly responsible for service deliveries in shops. They therefore are relevant informants about employee satisfaction, employee loyalty, and service quality. We surveyed two service employees in each shop. Researchers have advocated the use of multiple informants from a business unit where subjectivity in judgment is anticipated (Becker and Gerhart, 1996).

We deployed a research team consisting of one of the authors as the leader and some student helpers to solicit the participation of service shops in our study. Our research team visited each shop in person to show our sincerity and explain clearly the requirements of the study. For instance, we required the shop-in-charge to fill in the questionnaire based on actual accounting data and recent customer survey data, if available. To further enhance the response rate and reduce the non-respondent bias, we rewarded each respondent with a cash coupon of HK$50 (US$6.5), which is approximately the wage of two hours of an unskilled service employee in Hong Kong. Experimental psychologists have shown that recruiting participants with monetary rewards greatly improves the quality of responses (Brase *et al.*, 2006). Our research team distributed the questionnaires in person to each of the three respondents in a shop. The respondents were allowed to complete the questionnaire at different times and different places (e.g., work vs. home) at their convenience. Our team then collected the questionnaire from each respondent individually and gave him/her the cash coupon at his/her convenient time. The team also re-visited individual participants that had not returned the questionnaire by the due date and re-invited them to participate. Re-visiting helped improve the response rate.

We visited approximately 300 shops over a twelve-month period. However, because of company policy of not responding to surveys or confidentiality of the information sought, we only obtained 651 questionnaires from 223 shops. We dropped the returns of 13 shops because of missing data on either the shop-in-charge or one of the service employee questionnaires, leaving 210 sets of usable questionnaires from 630 participants (Table 1).

3.3 Variable measures

We adopt the measures used in this study from well-established instruments in different fields. We use a seven-point Likert scale where 1 = “totally disagree” and 7 = “totally agree” for all the multiple-item scales.

Employee satisfaction: We intend to capture the degree to which service employees are satisfied with their job. We use the indicators from the Job Descriptive Index (Smith *et al.*, 1969). We choose four questions out of five classical satisfaction facets, namely salary, job nature, promotion, and relationship with colleagues listed in the Index. We do not measure employee's relationship with their supervisors. This is because such a relationship might significantly depend on their performance in service delivery (Teas, 1981) - an indicator closely related to service quality in this research.

Employee loyalty: We refer employee loyalty to an employee's feeling of attachment to his/her employing organization. We assess this construct using psychological measures, namely intention of absenteeism, intention to stay, willingness to perform extra-work, sense of belonging, and willingness to take up more responsibility (Porter *et al.*, 1974).

Service quality: We adopt the SERVQUAL instrument developed by Parasuraman *et al*. (1988). It suggests there are five dimensions of perceived service quality, namely tangibles, reliability, responsiveness, assurance, and empathy. Consistent with previous research on service quality (e.g., Gotlieb *et al.*, 1994), we choose an item from each of the five dimensions that are most relevant to the service sectors being studied, instead of using all 22 items.

Customer satisfaction: Customer satisfaction is defined as the pleasurable emotional state of a customer from his/her experience with a shop, i.e., a summary evaluative response (Anderson *et al.*, 1994). This summary response contains evaluations of the key facets that customers consider important in the service context (Oliver, 1997). We formulate four questions on the performance of key features that drive satisfaction, including enquiry service, price, transaction service, and service handling of dissatisfaction (Oliver, 1997).

Customer loyalty: We refer customer loyalty to a customer's feeling of attachment to the service shop. We select continuity of purchase, consideration of the service shop as the first

priority for purchase, recommendation to others, speaking good words, and encouragement of others to purchase (Zeithaml *et al.*, 1996).

Sales from repurchases and referrals: Sales performance is specifically linked to existing customers as a result of their loyalty to the shop. We include three items for this latent variable, namely sales volume of repurchases, profit gained from repurchases, and profit gained from referrals. We ask shop the in-charge persons to assess their relative sales amount from repurchases and referrals as compared with industry norms (e.g., Delaney and Huselid, 1996).

Firm profitability: Firm profitability reflects the financial performance of a shop. We assess it by return on assets (ROA), return on sales (ROS), and return on investment (ROI) (Schneider *et al*., 2003). We ask the shop in-charge persons to assess their shops' profitability relative to industry norms (Delaney and Huselid, 1996). Past research has found that measures of perceived organizational performance correlate positively (with moderate to strong associations) with objective measures of firm performance (Powell, 1992).

3.4 Interrater agreement and reliability

We obtained responses on employee satisfaction, employee loyalty, and service quality from two service employees in each shop. We estimated within-shop interrater agreement (James, 1982). The average within-group interrater reliability values, $r_{wg(j)}$, for the constructs of employee satisfaction, employee loyalty, and service quality were 0.936, 0.942, and 0.950, respectively, which were higher than the commonly accepted criterion of 0.7 (James, 1982), suggesting sufficient within-group agreement to aggregate the data at shop level.

We used intra-class correlation (ICC) statistics, ICC(1) and ICC(2), to assess interrater reliability (Bartko, 1976) within shops. The ICC(1) values were 0.531, 0.438, and 0.435 for employee satisfaction, employee loyalty, and service quality, respectively, which were much higher than the cutoff value of 0.12 (James, 1982), indicating a sufficient inter-shop variability

ratio. The ICC(2) values were 0.694, 0.609, and 0.606 for employee satisfaction, employee loyalty, and service quality, respectively, which were slightly higher than the cutoff point of 0.60 (Glick, 1985), rendering sufficient interrater reliability within shops.

In sum, the results of $r_{wg(j)}$, ICC(1) and ICC(2) justify aggregation of the data on employee satisfaction, employee loyalty, and service quality for further analysis at the shop level.

3.5 Common method variance

When two or more variables are collected from the same respondents and an attempt is made to interpret their correlation, a problem of common method variance could occur (Podsakoff and Organ, 1986). In our study there are two relations that might be affected by this problem, namely relations between (1) employee satisfaction, employee loyalty, and service quality, and (2) customer satisfaction, customer loyalty, sales performance, and firm profitability. We applied Harman's one-factor test to assess the influence of common method variance (Podsakoff and Organ, 1986) on our collected data. We conducted two separate Harman's one factor tests on the items of the above-mentioned relations. All of them yielded clearly two separate factors except the pairs of customer satisfaction and loyalty, and of sales performance and firm profitability. This suggests that common method variance might exist in these two pairs. However, the tests of discriminant validity conducted on the pairs of (1) customer satisfaction and loyalty and (2) sales performance and firm profitability in the following section confirmed that these two pairs of constructs are different and unique constructs. As a whole, we believe that common method bias was not serious in our study. Table 2 shows the results of Harman's one-factor test on employee satisfaction, employee loyalty, and service quality. The results of the tests of discriminant validity of the constructs of customer satisfaction,

customer loyalty, sales performance, and firm profitability are presented in the following section.

Insert Table 2 Here

3.6 Further validation

As mentioned in Section 3.2, we follow previous studies to assess customer satisfaction and loyalty using internal customer data. To validate the use of internal measures by employees, instead of external measures by customers directly, we collected data on customer satisfaction and loyalty from both employees and customers in another 42 service shops. In each shop we surveyed three employees (including the shop-in-charge and two service employees) and five randomly selected customers. We examined the correlations between the average ratings of employees and of customers. Despite the small sample size ($n = 42$), the correlations for all the items of service quality, customer satisfaction, and customer loyalty between employees and customers were significant at $p = 0.1$, providing empirical support for the use of internal measures of service quality, customer satisfaction, and loyalty in our study. Tables 3, 4, and 5 show the correlation matrices of the indicators of service quality, customer satisfaction, and customer loyalty, respectively.

Insert Table 3 Here

Insert Table 4 Here

Insert Table 5 Here

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4. Data analysis and results

We apply structural equation modelling (SEM) to examine our proposed model using AMOS. One important concern about our study is the possible presence of random measurement errors

in SEM as our model is very complicated with a large number of constructs and indicators. A complex model with many parameters will result in unstable estimates and low statistical power in detecting causal relationships between constructs of interest (Bagozzi and Edwards, 1998). To alleviate this concern, we adopted the *partial disaggregation approach* to reduce the number of parameters in the measurement models (Bagozzi and Edwards, 1998). Following Bagozzi and Edwards' (1998) suggestion, we formed the constructs of our study by averaging their corresponding indicators with odd- and even-numbers so as to reduce the number of parameters to be estimated in a structural model. In effect, this practice reduces the scale indicators to two items for each construct for further analysis. Bagozzi and Edwards (1998) show that structural models adopting the partial disaggregation approach result in better statistical properties than ones using the total disaggregation approach whereby all the indicators are used to form the constructs of a complex model.

Similar to relevant studies (e.g., Fynes *et al*., 2005; Koufteros *et al*., 2009; Singh, 2008; Skerlavaj *et al*., 2007), we followed Anderson and Gerbing's (1988) two-step approach to estimate a measurement model prior to estimating the structural model using the partial disaggregation method. In what follows, we present the results of the measurement model analysis, structural model analysis, hypothesis testing, and comparison of competing models.

4.1 Measurement models analysis and results

We assess the convergent and discriminant validity of the scales by the method outlined in Fornell and Larcker (1981). Convergent validity is indicated when the path coefficients from latent constructs to their corresponding manifest indicators are statistically significant (i.e., $t > 2.00$). In this study all the items loaded significantly on their corresponding latent constructs with the lowest t-value being 7.66 ($p < 0.001$), providing strong evidence for convergent

validity. We test discriminant validity by examining whether the AVE of the underlying construct is larger than the shared variance (i.e., the squared intercorrelation) with other latent constructs. We find sufficient evidence for discriminant validity between each possible pair of latent variables. As shown in Table 6, for each listed pair of constructs, the mean value of their average variances extracted is greater than their squared correlations, providing support for discriminant validity.

Table 7 shows the results of analysis of individual measurement models of the seven constructs in this study. The values of absolute fit measures for the seven constructs were above their corresponding acceptable criteria, suggesting the measurement models are capable of predicting the observed covariance or correlation matrix. The values of comparative fit measures were also above the acceptable criteria, providing evidence against the hypothesis of a null model. These results support that the measurement models achieve satisfactory fit and are ready to be used for structural model analysis.

Insert Table 6 Here

Insert Table 7 Here

4.2 Structural models results and hypotheses testing

Table 8 contains the structural model results for the hypothesized model (Model H). The overall fit of this structural model was good: $\chi^2 = 124.324$, $df = 69$, $\chi^2/df = 1.802$; GFI = 0.926; AGFI = 0.887; CFI = 0.974; RMSR = 0.062. All the eight hypothesized relationships were highly significant as shown in Figure 1, supporting the arguments above.

Insert Figure 1 Here

Insert Table 8 Here

4.3 Comparison of alternative models

SEM is best conducted in the form of comparisons among different plausible models that are nested in one another and can be justified theoretically (Baumgarner and Homburg, 1996). Moreover, Bentler and Chou (1987) point out that in an ideal situation, a researcher should build a few alternative models that shed light on the key features of the hypothesized model. In practice, both hypothesized and alternative models can be found to be an acceptable fit; however, the most nested model with a good fit should be selected as it best represents a "true model". Thus, against our baseline model, we developed three alternative models for comparisons, based on different arguments in the literature. More specifically, we developed the models to examine the existence of mediation effect on the corresponding relationships. The examination of mediation effect can explain and specify how (i.e., the mechanism) a given relationship occurs (Baron and Kenny, 1986). The examination results offer more insights into understanding the presumed relationships in the study.

We developed the first alternative model, Model A_1, on the presumption that employee satisfaction affects service quality. In particular, this hypothesis helps confirm if employee satisfaction has a direct effect on service quality, or such an effect mediates through employee loyalty. Similarly, we proposed another alternative model, Model A_2, by postulating that customer satisfaction impacts sales performance. This hypothesis helps confirm if the effect of customer satisfaction on "sales from repurchases and referrals" mediates through customer loyalty. For the same purpose, we developed the last alternative model, Model A_3, by presuming that customer loyalty has a direct influence on firm profitability.

Table 8 shows the results of the SEM analyses of the alternative models. The three alternative models are all good fit models as they meet the general criteria of both absolute and comparative fit measures. However, compared with the hypothesized model (χ^2 = 124.324),

the χ^2 value of Model A_1 was almost the same ($\chi^2 = 124.084$). With an increase of one degree of freedom, the decrease in χ^2 value was only 0.24, much lower than the threshold value of 3.841 at $p = 0.05$. Since the hypothesized model, Model H, is a nested (more restricted) model compared with Model A_1, the former is more parsimonious and thus more preferred. Hence, Model A_1 was rejected, providing evidence that employee satisfaction has an effect on service quality mediating through employee loyalty. According to Baron and Kenny (1986), a mediating effect is confirmed if (1) an independent variable has a significant effect on the proposed mediating variable, (2) the proposed mediating variable has a significant effect on the dependent variable, and (3) the independent variable does not have a significant direct effect on the dependent variable. Likewise, with an increase of one degree of freedom, the decrease in the χ^2 statistics from Model H to Model A_2 ($\chi^2 = 124.188$) was 0.136, which was insignificant at $p = 0.05$ ($\Delta\chi^2 < 3.841$). This implies that customer satisfaction does not have a direct influence on sales from repurchases and referrals. Instead, such an effect mediates through customer loyalty. Nevertheless, Model A_3 appears to be a significantly better fit model when compared with the hypothesized model. With an increase of one degree of freedom, the χ^2 value decreased by 4.003, which was significant at $p = 0.05$ level ($\Delta\chi^2 > 3.841$). The estimated path coefficient was 0.102 ($p = 0.043$, $t = 2.024$) while all the original hypotheses remained significant at $p = 0.05$.

In sum, all the statistical indices displayed in Table 8 support Model A_3 as the best fit structural model among the hypothesized and alternative models. Accordingly, we chose Model A_3 instead of Model H as it best represents the "true model". Figure 2 presents the alternative models and their path estimates.

Insert Figure 2 Here

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5. Discussion and conclusions

Model A_3 represents an empirical S-PC model in high-contact service industries. It provides strong support for the hypothesized relationships in the S-PC model, suggesting that positive relationships exist among the key constructs as proposed by Heskett *et at*. (1994). Loveman (1998) explicitly points out a major limitation of S-PC research is the absence of large sample data spanning all of the S-PC components from different service organizations. Obviously, the present study fills this research gap by validating the entire suite of relations in S-PC using data from a large number of firms from different high-contact service sectors. The results show that the profit of a high-contact service firm is bolstered by a series of cyclic effects. In other words, provided that employees are satisfied to offer high-quality services to customers, the impact of employee satisfaction on firm performance might be somewhat "self-sustainable". The findings also lend strong support for the assertion that employee satisfaction and loyalty are important determinants of firm improvement in service industries.

A central research issue in S-PC is the need to investigate the antecedents and consequences of employee loyalty and customer loyalty. Some previous research supports the relationships between employee satisfaction and service quality through the mediation effect of employee loyalty, and between customer satisfaction and profitability through the mediation effect of customer loyalty (e.g., Loveman, 1998). However, not all the studies are positive (e.g., Khatibi *et al.*, 2002). Our findings support the former. The results support the assertions that employee satisfaction leads to service quality through employee loyalty and that customer satisfaction induces sales performance through customer loyalty. These findings explicitly reveal that loyalty in both employees and customers are essential elements to yield better service and financial performance of a firm.

This study bears some managerial implications. For practitioners, our results provide evidence to high-contact service firms that high levels of satisfaction and loyalty in service employees lead to higher quality in services. Thus, programmes to enhance employee satisfaction and loyalty are considered as effective tools for service firms to assure service quality, to satisfy customers, and to develop their customers' loyalty towards the firms. Furthermore, measures to improve sales force's satisfaction and loyalty might be regarded as a long-term investment of a service organization. This is a particularly important consideration for small firms where the resources are limited.

The S-PC proposition has inspired many researchers to investigate the postulated linkages in various kinds of service setting, such as supermarkets (Silvestro and Cross, 2000) and banks (Loveman, 1998). Various insightful results have been obtained that provide different interpretations for the corresponding service contexts. Our study differs from previous investigations in several major ways: We conduct this study in different major service sectors under the high-contact service environment. Thus, our findings are not limited to one particular service sector, but can be generalized to major service sectors in the high-contact service environment that is characterized by close and direct interaction between service employees and customers. This implies that our results may not be readily generalized to low-contact service firms, e.g., convenient stores or postal services. In addition, our research findings tend to be more valid in labour-intensive service sectors, rather than knowledge-intensive service sectors such as accounting and legal services. Finally, given that we focus on small service shops, our results may not be generalized to large service organizations or organizations with many chain stores.

We collected the data on employee attributes and service quality from two service employees within each surveyed shop (out of a maximum of five within a shop). The results of

interrater agreement and intra-class correlation statistics provide strong evidence that the collected data on employee satisfaction, employee loyalty, and service quality had sufficient within-group agreement and enough interrater reliability within shops for data aggregation. Our use of multiple respondents within a shop increases the reliability of our findings. Though reliable, more precise estimates could be acquired if we surveyed all the service employees in each shop. Besides, we used internal customer data and perceptual financial data to test the hypothesized relations, leading to less precise measurements.

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References

Anderson, E.W., Fornell, C., Lehmann, D.R., 1994. Customer satisfaction, market share, and profitability: Findings from Sweden. Journal of Marketing 58 (3), 53-66.
Anderson, J.C., Gerbing, D.W., 1988. Structural equation modeling in practice: A review and recommended two-step approach. Psychological Bulletin 103 (3), 411-423.
Bagozzi, R.P., 1992. The self-regulation of attitudes, intentions, and behavior. Social Psychology Quarterly 55 (2), 178-204.
Bagozzi, R.P., Edwards, J.R., 1998. A general approach for representing constructs in organizational research. Organizational Research Methods 1 (1), 45-87.
Baron, R.M., Kenny, D.A., 1986. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. Journal of Personality and Social Psychology 51 (6), 1173-1182.
Barsade, S.G., 2002. The ripple effect: Emotional contagion and its influence on group behavior. Administrative Science Quarterly 47 (4), 644-675.
Bartko, J.J., 1976. On various intraclass correlation reliability coefficients. Psychological Bulletin 83 (5), 762-765.
Batt, R., 2002. Managing customer services: Human resource practices, quit rates, and sales growth. Academy of Management Journal 45 (3), 587-597.
Baumgarner, H., Homburg, C., 1996. Application of structural equation modeling in marketing and consumer research: A review. International Journal of Research in Marketing 13, 139-161.
Becker, B., Gerhart, B., 1996. The impact of human resource management on organizational performance: Progress and prospects. Academy of Management Journal 39 (4), 779-801.

Bentler, P.M., Chou, C., 1987. Practical issues in structural modeling. Sociological Methods and Research 16, 78-117.
Boudreau, J., Hopp, W., McClain, J.O., Thomas, L.J., 2003. On the interface between operations and human resources management. Manufacturing and Service Operations Management 5 (3), 179-202.
Brase, G., Fiddick, L., Harries, C., 2006. Participant recruitment methods and statistical reasoning performance. Quarterly Journal Experimental Psychology 59 (5), 965-976.
Chase, R.B., 1981. The customer contact approach to services: Theoretical bases and practical extensions. Operations Research 21 (4), 698-705.
Delaney, J.T., Huselid, M.A., 1996. The impact of human resource management practices on perceptions of organizational performance. Academy of Management Journal 39 (4), 949-969.
Flynn, F.J., 2005. Identity orientations and forms of social exchange in organizations. Academy of Management Review 30 (4), 737-750.
Fornell, C., Larcker, D.F., 1981. Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research 18 (1), 39-51.
Fynes, B., Voss, C., Burca, S.D., 2005. The impact of supply chain relationship quality on quality performance. International Journal of Production Economics 96 (3), 339-365.
George, J.M., Bettenhausen, K., 1990. Understanding prosocial behavior, sales performance, and turnover: A group-level analysis in a service context. Journal of Applied Psychology 75 (6), 698-709.
Glick, W.H., 1985. Conceptualizing and measuring organizational and psychological climate: Pitfalls in multilevel research. Academy of Management Review 10 (3), 601-616.
Gordon, M.E., Denisi, A.S., 1995. A re-examination of the relationship between union membership and job satisfaction. Industrial and Labour Relations Review 48 (2), 222-236.
Gotlieb, J.B., Grewal, D., Brown, S.W., 1994. Consumer satisfaction and perceived quality: Complementary or divergent constructs? Journal of Applied Psychology 79 (6), 875-885.
Hatfield, E., Cacioppo, J.T., Rapson, R.L., 1992. Emotional Contagion, Review of Personality and Social Psychology. Newbury Park, CA, pp. 151-177.
Haugh, H., McKee, L., 2004. The cultural paradigm of the smaller firm. Journal of Small Business Management 24 (4), 377-394.
Heskett, J.L., Jones, T.O., Loveman, G.W., Sasser Jr., W.E., Schlesinger, L.A., 1994. Putting the service-profit chain to work. Harvard Business Review 72 (2), 164-174.
Homburg, C., Stock, R.M., 2004. The link between salespeople's job satisfaction and customer satisfaction in a business-to-business context: A dyadic analysis. Journal of the Academy of Marketing Science 32 (2), 144-158.
James, L.R., 1982. Aggregation bias in estimates of perceptual agreement. Journal of Applied Psychology 67, 219-229.
Jones, T.O., Sasser, W.E., 1995. Why satisfied customers defect. Harvard Business Review 73 (6), 88-99.
Kaplan, R.S., Norton, D.P., 1992. The balanced scorecard - Measures that drive performance. Harvard Business Review 70 (1), 71-79.
Kellogg, D.L., Chase, R.B., 1995. Constructing an empirically derived measure for customer contact. Management Science 41 (11), 1734-1749.
Khatibi, A.A., Ismail, H., Thyagarajan, V., 2002. What drives customer loyalty: An analysis from the telecommunications industry? Journal of Targeting, Measurement and Analysis for Marketing 11 (1), 34-44.
Koufteros, X.A., Babbar, S., Kaighobadi, M., 2009. A paradigm for examining second-order factor models employing structural equation modeling. International Journal of Production Economics 120 (2), 633-652.

Loveman, G.W., 1998. Employee satisfaction, customer loyalty, and financial performance: An empirical examination of the service profit chain in retail banking. Journal of Service Research 1 (1), 18-31.
Mittal, V., Kamakura, W.A., 2001. Satisfaction, repurchase intent, and repurchase behavior: Investigating the moderating effect of customer characteristics. Journal of Marketing Research 38 (1), 131-142.
Oliva, R., Sterman, J.D., 2001. Cutting corners and working overtime: Quality erosion in the service industry. Management Science 47 (7), 894-914.
Oliver, R.L., 1997. Satisfaction: A Behavior Perspective on Consumer. McGraw Hill, New York.
Parasuraman, A., Zeithaml, V.A., Berry, L.L., 1988. SERVQUAL: A multiple-item scale for measuring customer perception of service quality. Journal of Retailing 64 (1), 12-40.
Podsakoff, P.M., Organ, D.W., 1986. Self-reported in organizational research: Problems and prospects. Journal of Management 12 (4), 531-544.
Porter, L.W., Steers, R.M., Mowday, R.T., Boulian, P.V., 1974. Organizational commitment, job satisfaction, and turnover among psychiatric technicians. Journal of Applied Psychology 59 (5), 603-609.
Powell, T.C., 1992. Organizational alignment as competitive advantage. Strategic Management Journal 13 (2), 119-134.
Sawyer, A.G., Ball, A.D., 1981. Statistical power and effect size in marketing research. Journal of Marketing Research 18 (3), 275 - 290.
Schneider, B., Bowen, D.E., 1985. Employee and customer perceptions of service in banks: Replication and extension. Journal of Applied Psychology 70 (3), 423-433.
Schneider, B., Hanges, P.J., Smith, D.B., Salvaggio, A.N., 2003. Which comes first: employee attitudes or organizational financial and market performance? Journal of Marketing Research 88 (5), 836-851.
Schoenewolf, G., 1990. Emotional contagion: Behavioral induction in individuals and groups. Modern Psychoanalysis 15, 49-61.
Silvestro, R., Cross, S., 2000. Applying the service-profit chain in a retail environment: Challenging the satisfaction mirror. International Journal of Service Industry Management 11 (3), 244-268.
Singh, P.J., 2008. Empirical assessment of ISO 9000 related management practices and performance relationships. International Journal of Production Economics 113 (1), 40-59.
Skerlavaj, M., Stembergera, M.I., Skrinjara, R., Dimovskia, V., 2007. Organizational learning culture - The missing link between business process change and organizational performance. International Journal of Production Economics 106 (2), 346-367.
Smith, P.C., Kendall, L.M., Hulin, C.L., 1969. The Measurement of Satisfaction in Work and Retirement. Rand-McNally, Chicago.
Soteriou, A., Zenios, S.A., 1999. Operations, quality, and profitability in the provision of banking services. Management Science 45 (9), 1221-1238.
Stank, T.P., Goldsby, T.J., Vickery, S.K., 1999. Effect of service supplier performance on satisfaction and loyalty of store managers in the fast food industry. Journal of Operations Management 17 (4), 429-447.
Teas, R.K., 1981. A test of a model of department store salespeople's job satisfaction. Journal of Retailing 57 (1), 3-25.
Voss, C., Tsikriktsis, N., Funk, B., Yarrow, D., Owen, J., 2005. Managerial choice and performance in service management - A comparison of private sector organizations with further education colleges. Journal of Operations Management 23 (2), 179-195.

Yee, R.W.Y., Yeung, A.C.L., Cheng, T.C.E., 2010. An empirical study on employee loyalty, service quality, and firm performance in the service industry. International Journal of Production Economics 124 (1), 109-120.
Zeithaml, V.A., Berry, L.L., Parasuraman, A., 1996. The behavioral consequences of service quality. Journal of Marketing 60 (2), 31-46.

APPENDIX: QUESTIONNAIRES AND THEIR MEASUREMENT PROPERTIES

(a) Service employee questionnaire

Responses to the following questions range from "1=totally disagree" to "7=totally agree".

Employee satisfaction [Cronbach's α=0.860, $r_{wg(j)}$=0.936, ICC(1)=0.531, ICC(2)=0.694, AVE=0.615, Construct reliability=0.863]

ES1	We are satisfied with the salary of this company. (0.83)[1]
ES2	We are satisfied with the promotion opportunities within this company. (0.87)
ES3	We are satisfied with our job nature within this company. (0.78)
ES4	We are satisfied with our relationships with our fellow workers within this company. (0.64)
ES5*	We are satisfied with the supervision of our supervisors within this company.

Employee loyalty [Cronbach's α=0.859, $r_{wg(j)}$=0.942, ICC(1)=0.438, ICC(2)=0.609, AVE=0.615, Construct reliability=0.883]

We intend to …….

EL1	be absent from work. (0.40)
EL2	continue our employment in this company. (0.76)
EL3	contribute extra effort for the sake of this company. (0.94)
EL4	become a part of this company. (0.90)
EL5*	turn down other jobs with more pay in order to stay with this company.
EL6	take any job to keep working for this company. (0.79)

Service quality [Cronbach's α=0.820, $r_{wg(j)}$=0.950, ICC(1)=0.435, ICC(2)=0.606, AVE=0.492, Construct reliability=0.827]

SQ1	Our appearance is neat and appropriate. (0.71)
SQ2	We provide services at the time we promise to do so. (0.78)
SQ3	We provide prompt services to our customers. (0.62)
SQ4	We can be trusted by our customers. (0.80)
SQ5	We do not understand our customers' needs. (0.57)

(b) Shop-in-charge questionnaire

Responses to the following questions range from "1=totally disagree" to "7=totally agree".

Customer satisfaction [Cronbach's α=0.907, AVE=0.711, Construct reliability=0.908]

Our customers are satisfied with …….

CS1	the price of their purchased product(s) sold by this company. (0.77)
CS2	the enquiry service provided by this company. (0.89)
CS3	the customer service in transactions. (0.88)
CS4	the service of handling customer dissatisfaction in this company. (0.3)

Customer loyalty [Cronbach's α=0.946, AVE=0.778, Construct reliability=0.946]

Our customers intend to ……

CL1	do more transactions with this company in the coming years. (0.82)
CL2	consider this company as their first choice for purchases. (0.87)
CL3	recommend this company to people who seek their advice on purchases. (0.93)

CL4	say something good about this company to others. (0.91)
CL5	encourage their friends and relatives to purchase from this company. (0.89)

Responses to the following questions range from 1 = "Much worse" through 4 = "No change" to 7 = "Much better", regarding changes in sales and financial performance of the company relative to its competitors.

Sales from repurchases and referrals [Cronbach's α=0.876, AVE=0.713, Construct reliability=0.881]

SP1	Sales volume of customer repurchase (0.74)
SP2	Profit gained from customer repurchase (0.89)
SP3	Profit gained from customer referral (0.90)

Firm profitability [Cronbach's α=0.938, AVE=0.836, Construct reliability=0.938]

FP1	Return on assets (0.92)
FP2	Return of sales (0.92)
FP3	Return on investment (0.90)

[1]Standardarized path weight from the latent variable to the measurement item.

*Deleted item.

Figures and tables:

Table 1: Distribution of sampled shops

Service Sector	Number of shops
Agency service (e.g., estate agencies and travel agencies)	45
Beauty care services (e.g., salon and beauty shops)	40
Catering (e.g., steakhouses)	22
Fashion retailing (e.g., dress shops and shoes shops)	40
Optical services (e.g., optometry shops and optical shops)	22
Retailing of health care products (e.g., cosmetic shops)	10
Retailing of valuable products (e.g., jewelry shops)	10
Others	21
Total	210

Table 2: Results of Harman's one-factor test on employee satisfaction, employee loyalty, and service quality

Item	Factor 1 (Employee satisfaction)	Factor 2 (Employee loyalty)	Factor 3 (Service quality)
Satisfaction with salary	**.765**	.311	.081
Satisfaction with promotion opportunities	**.833**	.259	.087
Satisfaction with job nature	**.678**	.339	.226
Satisfaction with relationships with fellow workers	**.541**	.273	.304
Loyalty of not being absent	.210	**.674**	.362
Loyalty of continuing employment	.243	**.682**	.196
Loyalty of contributing extra effort	.305	**.856**	.275
Loyalty of becoming a part of the company	.419	**.794**	.211
Loyalty of taking any job	.327	**.688**	.178
Service quality – Tangibles	.185	.103	**.711**
Service quality – Reliability	.060	.231	**.719**
Service quality – Responsiveness	.113	.083	**.617**
Service quality – Assurance	.189	.251	**.720**
Service quality – Empathy	.033	.088	**.589**

Table 3: Results of zero-order correlations between the average ratings of employees and customers on different items of service quality

	Items	Employees				
		1.	2.	3.	4.	5.
Custo	1. Tangibles	**.368***				
	2. Reliability	.418**	**.332***			
	3. Responsiveness	.296	.250	**.360***		

4. Assurance	.503**	.350*	.339*	**.381***	
5. Empathy	-.143	-.218	-.142	-.054	**.312**†

†$p < 0.1$, *$p < 0.05$, **$p < 0.01$

Table 4: Results of zero-order correlations between the average ratings of employees and customers on different items of customer satisfaction

	Items	Employees			
		1.	2.	3.	4.
Customers	1. Price	**437***			
	2. Enquiry service	.211	**.360***		
	3. Transactions service	.342*	.292	**.334***	
	4. Handling dissatisfaction service	.359*	.239	.336*	**.426****

†$p <0.1$, *$p < 0.05$, **$p < 0.01$

Table 5: Results of zero-order correlations between the average ratings of employees and customers on different items of customer loyalty

	Items	Employees				
		1.	2.	3.	4.	5.
Customers	1. Do more transactions	**.534****				
	2. Consider as first choice	.397**	**.387***			
	3. Recommend to others	.114	.021	**.308***		
	4. Say good words	.406**	.313*	-.306*	**.326***	
	5. Encourage to purchase	.193	-.033	-.131	-.035	**.356***

†$p < 0.1$, *$p < 0.05$, **$p < 0.01$

Table 6: Results of average variance extracted and squared correlations for constructs

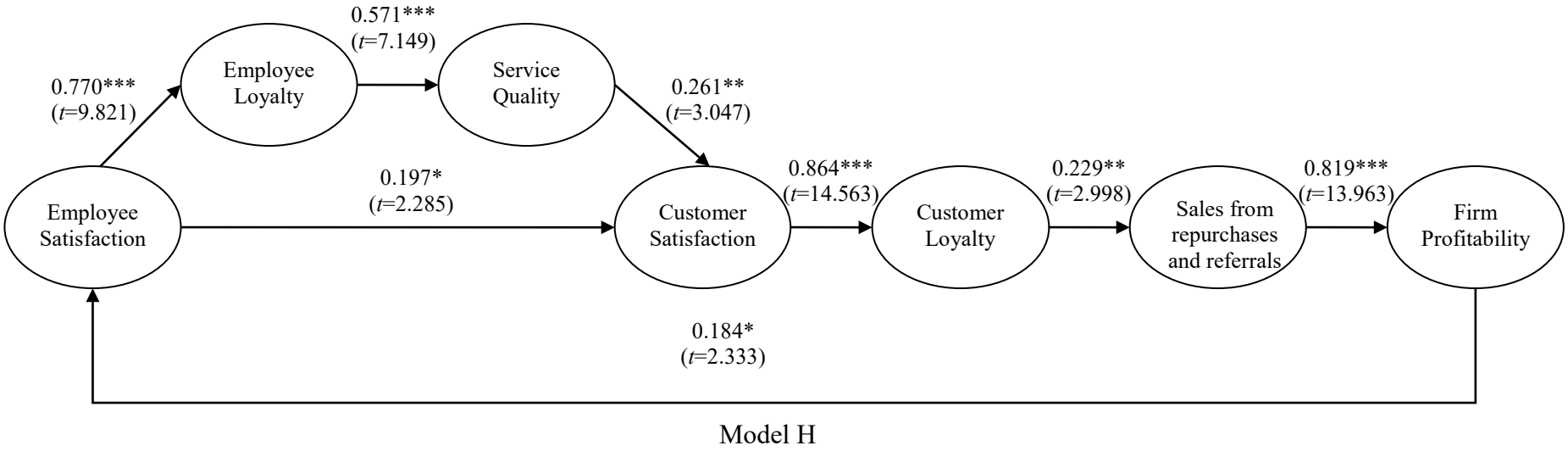
Construct	Average Variance Extracted	Squared Correlation
Employee satisfaction versus employee loyalty	0.587	0.534
Employee loyalty versus service quality	0.539	0.294
Service quality versus customer satisfaction	0.593	0.150
Customer satisfaction versus customer loyalty	0.705	0.689
Customer loyalty versus sales from repurchases and referrals	0.732	0.063
Sales from repurchases and referrals versus firm profitability	0.774	0.681

Table 7: Goodness of fit indices for measurement models

Goodness of Fit Measure	Criteria	Employee satisfaction	Employee loyalty	Service quality	Customer satisfaction	Customer loyalty	Sales from repurchases and referrals and firm profitability
Sample Moments	-	10	15	15	10	15	21
Distinct Parameters	-	8	10	10	8	10	13
Chi-square (χ^2) of Estimated Model	-	4.469	8.374	7.594	5.111	6.023	12.914
Degree of Freedom (*df*)	-	2	5	5	2	5	8
Absolute Fit Measures							
Probability of χ^2	$p \geq .05$	.107	.137	.180	.078	.304	.115
Chi-square/Degree of Freedom (χ^2/df)	≤ 3.0	2.235	1.675	1.519	2.556	1.205	1.614
Goodness of Fit Index (GFI)	$\geq .90$	.989	.984	.986	.989	.988	.981
Root Mean Square Residual (RMSR)	$\leq .10$	.077	.057	.050	.086	.031	.054
Comparative Fit Measures							
Normed Fit Index (NFI)	$\geq .90$	.989	.987	.979	.991	.994	.988
Non-normed Fit Index (NNFI)	$\geq .90$	.981	.990	.985	.983	.998	.991
Comparative Fit Index (CFI)	$\geq .90$	.994	.995	.995	.994	.999	.995
Adjusted Goodness of Fit Index (AGFI)	$\geq .80$	.946	.951	.957	.943	.964	.950

Table 8: Goodness of fit indices for hypothesized and competing structural models

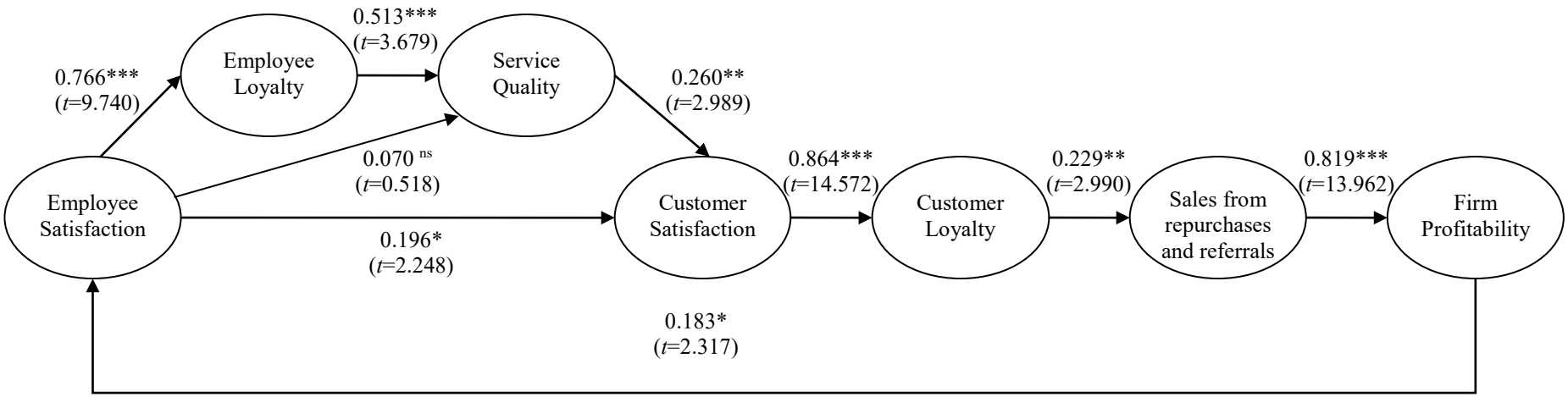
Goodness of Fit Measure	Criteria	Model H	Model A_1	Model A_2	Model A_3
Absolute Fit Measures	-				
Distinct Parameters	-	36	37	37	37
Chi-square (χ^2) of Estimated Model	-	124.324	124.084	124.188	120.321
Degree of Freedom (*df*)	-	69	68	68	68
Chi-square/Degree of Freedom (χ^2/*df*)	≤ 3.0	1.802	1.825	1.826	1.769
Goodness of Fit Index (GFI)	≥.90	.926	.926	.926	.928
Root Mean Square Residual (RMSR)	≤ .10	.062	.063	.063	.061
Comparative Fit Measures					
Normed Fit Index (NFI)	≥ .90	.945	.945	.945	.946
Non-normed Fit Index (NNFI)	≥ .90	.966	.965	.965	.967
Comparative Fit Index (CFI)	≥ .90	.974	.974	.974	.976
Adjusted Goodness of Fit Index (AGFI)	≥ .80	.887	.886	.886	.889



(***$p < .001$; **$p < .01$; *$p < .05$)

Figure 1: Baseline model (Model H) and its path estimates

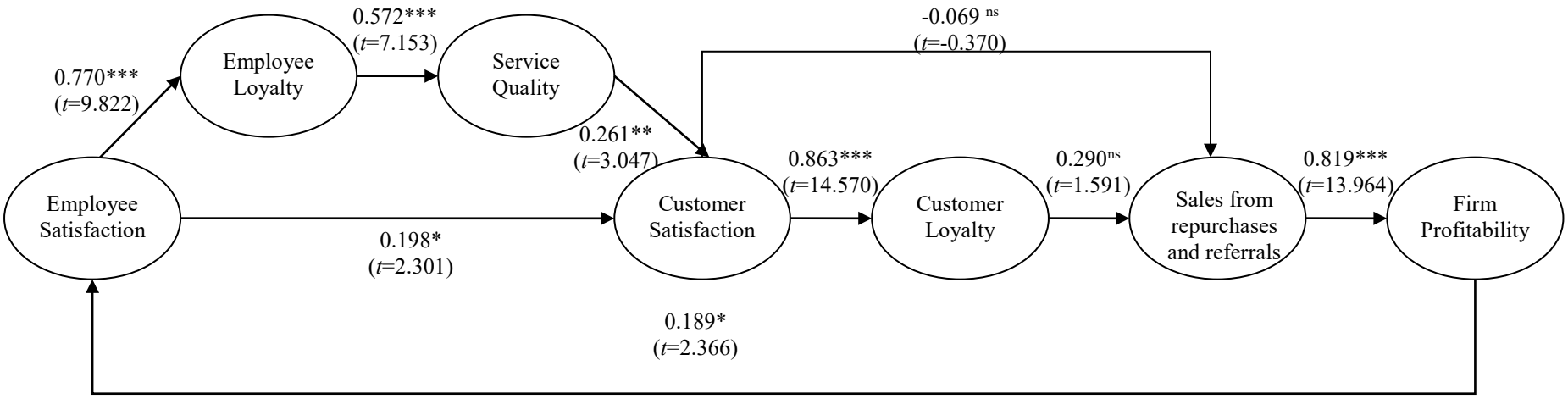
Alternative model: Model A_1



Model A_1

(***$p < .001$; **$p < .01$; *$p < .05$)

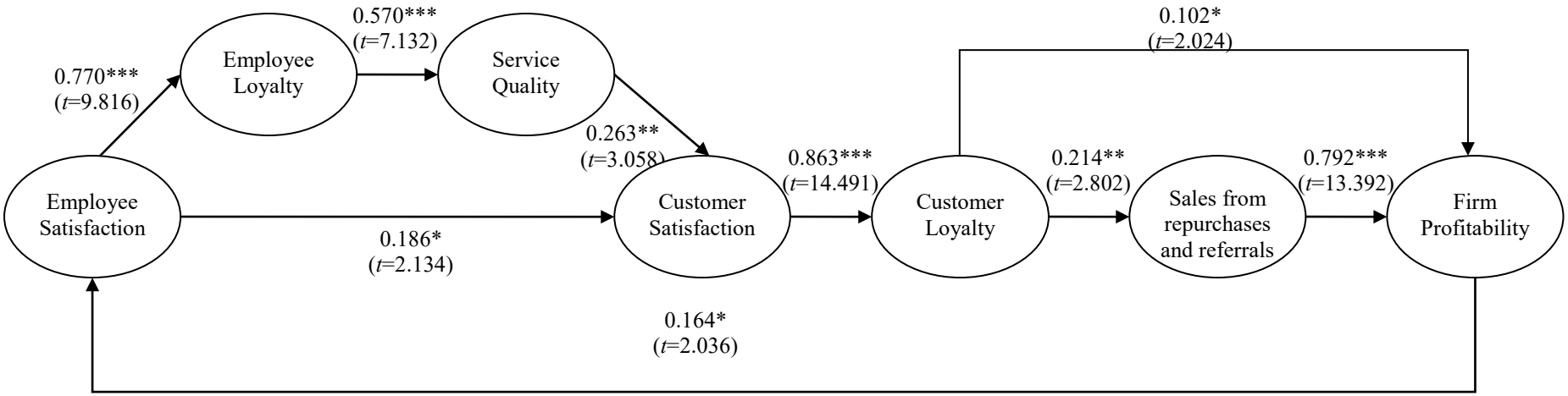
Alternative model: Model A_2



Model A_2

(***$p < .001$; **$p < .01$; * $p < .05$)

Alternative model: Model A_3



Model A_3

(***$p < .001$; **$p < .01$; *$p < .05$)

Figure 2: Competing models and their path estimates