Effects of a Link Between Service Provider and Customer on a Service Supply Chain

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The purpose of this paper is to present an integrated model for the relationships between service provider and customer in a service supply chain. The relationships among internal service quality, employee satisfaction, employee loyalty, external service quality, and customer satisfaction are explored using a structural equation model with data from Korean securities companies. The empirical research reveals that higher internal service quality leads to increased employee satisfaction and loyalty, and ultimately affects external service quality and customer satisfaction. In addition, the study shows that employee loyalty is as important an indicator of customer satisfaction as are internal service quality, employee satisfaction, and external service quality.

I. INTRODUCTION

Supply chain management has been applied to many manufacturing companies to improve operations and obtain competitive advantages. The service sector is becoming dominant in the economy of developed countries because the structure of today’s economy in those countries highly depends on the service sector, and the number of employees in the service industries is growing rapidly. However, the structure of a supply chain in service organizations is still not well understood.

In recent years, some management theories and tools originally developed for improving manufacturing operations have been applied to service industries. Armistead and Clark (1993) applied the concepts of “value chain” to service industries, which played as a role of integrating service operations into supply chain management. Akkermans and Vos (2003) investigated the bullwhip effect in a service supply chain using data from the telecom industry. In addition, some research recently addressed that the service supply chain management has emerged because the chain relationship between service provider and customer is important in delivering service to customer’s needs (Akkermans and Vos, 2003; Ellram et al., 2004; Baltacioglu et al., 2007). Since employees’ behavior during their service affects customer satisfaction, identifying and managing the drivers of their behaviors is critical to the success of the service supply chain management.

The past decade has witnessed a series of studies on the relationship among these drivers for successful service delivery (Schneider and Bowen, 1985; Hallowell et al., 1996; Vilares and Coelho, 2003; Prichard and Silvestro, 2005). These studies focused on the partial relationships between employee satisfaction and customer satisfaction. Heskett et al. (1997) addressed more comprehensive relationships with the service profit chain and presented a conceptual model for including the linkages of management practices with service companies. However, they
did not consider external service quality that affects customer satisfaction.

This study attempts to investigate an integrated model for the relationships among internal service quality, employee satisfaction, employee loyalty, external service quality, and customer satisfaction in a service supply chain. The mediating role of employee loyalty between employee satisfaction and customer satisfaction is also investigated.

II. RESEARCH BACKGROUND AND HYPOTHESES

2.1. Internal Service Quality
Internal service quality refers to the attitude that people have toward and the way people treat one another in an organization (Heskett et al., 1997). Internal customers work together and interact with external customers. Thus, service organizations must stress not only external customer satisfaction, but also internal customer satisfaction. Heskett et al. (1997) presented a service profit chain model that established relationships among profitability, customer loyalty, employee satisfaction, loyalty, and productivity. In this model, internal service quality is an important driver of employee satisfaction. Hallowell et al. (1996) identified the eight components of internal service quality, which are tools, teamwork, management, training, reward/recognition, goal alignment, policies/procedures, and communication. They argued that service organizations attempting to increase external customer satisfaction must begin by delivering high service quality to internal customers. It was reported that internal service quality is strongly related to job satisfaction and external customer satisfaction. Pritchard and Silvestro (2005) identified that internal service quality correlates positively with employee satisfaction. These results lead to the following hypotheses:

H1. Internal service quality is positively related to employee satisfaction.

H2. Internal service quality is positively related to employee loyalty.

H3. Internal service quality is positively related to external service quality.

2.2. Employee Satisfaction and Employee Loyalty
Ostroff (1992) investigated the relationships among employee satisfaction, job related attitudes (commitment, adjustment, and psychological stress), and organizational performance. He showed a negative relationship between intention to leave the company and job satisfaction. Vilares and Coelho (2003) investigated the cause and effect of the relationship between customer satisfaction and employee satisfaction through the revised European Customer Satisfaction Index. The results showed that the impact of perceived employee satisfaction on perceived external service quality, customer satisfaction, and loyalty, although less strong, is significant and also found that there is an indirect effect between perceived employee loyalty and external service quality. Hurley and Estelami (2007) analyzed the relationships among employee satisfaction, employee turnover, and customer satisfaction and showed that turnover indicator of employee can be used in predicting customer satisfaction level. These results lead to the following hypotheses:

H4. Employee satisfaction is positively related to employee loyalty.

H5. Employee loyalty is positively related to external service quality.

H6. Employee loyalty is positively related to customer satisfaction.

2.3. External Service Quality and Customer Satisfaction
Over the past few decades, there have been many discussions related to service quality measurement (Parasuraman et al., 1988; Cronin and Taylor, 1992). These studies showed using SERVQUAL and SERVPERF models that external service quality impacts customer satisfaction.
satisfaction. McDougall and Levesque (2000) proposed that perceived external service quality and value influence customer satisfaction which, in turn, influences future intentions. These results lead to the following hypotheses:

H7. External service quality is positively related to customer satisfaction.

III. RESEARCH DESIGN AND METHOD

Data were collected from employees working at Korean securities companies located in South Korea. Survey questionnaires with thirteen questions in five categories were distributed through e-mail, mail, and fax. A total of 103 out of the 400 questionnaires were returned, yielding a response rate of 25.75 percent. The background and rationale of the questions are discussed below.

(1) Internal service quality
Reynoso and Moores (1995) identified the ten internal service quality dimensions: helpfulness, promptness, communication, tangibles, professionalism, reliability, confidentiality, flexibility, preparedness, and consideration. Hallowell et al. (1996) identified eight components of internal service quality, which are tools, policies and procedures, teamwork, management support, goal alignment, effective training, communication, and reward and recognition. Based on Reynoso and Moores (1995) and Hallowell et al. (1996), we chose the four items in this category.

(2) Employee satisfaction
Traditionally, a single item has been used to estimate employee satisfaction. However, we used a multi-item estimate because a single item may lead to wrong estimations and conclusions. We used two items from Rust et al. (1996).

(3) Employee loyalty
Employee loyalty can be measured by intention to leave (Silvestro and Cross, 2000). We used these two items to measure contact employees’ loyalty.

(4) External service quality
Parasuraman et al. (1991) investigated the relationship between external service quality and the five dimensions (tangibles, reliability, responsiveness, assurance, empathy) to refine SERVQUAL scale. In our study, two items are used to measure external service quality. Schneider and Bowen (1985) reported that overall external service quality experienced by customers is strongly reflected by what employees perceive. So, we asked employees to evaluate their perception of external service quality and customer satisfaction.

(5) Customer satisfaction
Customer satisfaction refers to the degree to which the possession and use of a service evoke positive feelings (Rust and Oliver, 1994). Based on previous research (Oliver, 1981; Rust and Oliver, 1994; Schmit and Allscheid, 1995), three-items were adopted to measure customer satisfaction which employees perceive.

IV. RESULTS

4.1. Measurement Results
All scales were tested simultaneously through confirmatory factor analysis to address the issues of dimensionality, convergent and discriminant validity (Anderson and Gerbing, 1988). From the results of the confirmatory factor analysis, an item having standardized loadings below 0.5 was deleted, which is “How satisfied are you with your supervisor”. As shown in Table 1, the final results of confirmatory factor analysis demonstrated a reasonable fit of the five-factor model. The $\chi^2$ (chi-square) statistic for the model was 70.98 (df = 55; $p = 0.07$). Goodness-of-fit index (GFI) and adjusted goodness-of-fit index (AGFI) were 0.91 and 0.85 respectively. Root mean square residual (RMR) was 0.05 and comparative fit index (CFI) was even better at 0.96. Also, the magnitudes of the standardized loadings range from 0.51 to 0.94, and t-values are significant.

These results provide support for convergent validity (Anderson and Gerbing,
<table>
<thead>
<tr>
<th>Construct/items</th>
<th>Standardized Loadings</th>
<th>t-values</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal Service Quality</strong></td>
<td></td>
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</tr>
<tr>
<td>How satisfied are you teamwork within your department</td>
<td>0.58</td>
<td>5.46</td>
<td>0.65</td>
</tr>
<tr>
<td>I receive adequate training when important changes take place.</td>
<td>0.51</td>
<td>4.73</td>
<td></td>
</tr>
<tr>
<td>I received adequate rewards for providing good service.</td>
<td>0.59</td>
<td>5.60</td>
<td></td>
</tr>
<tr>
<td>Our company supports the equipment I need to serve my customer well.</td>
<td>0.60</td>
<td>5.70</td>
<td></td>
</tr>
<tr>
<td><strong>Employee Satisfaction</strong></td>
<td></td>
<td></td>
<td>0.64</td>
</tr>
<tr>
<td>How satisfied are you with your job?</td>
<td>0.81</td>
<td>7.64</td>
<td></td>
</tr>
<tr>
<td>How satisfied are you with your benefit such as medical insurance, vacation etc.?</td>
<td>0.58</td>
<td>5.66</td>
<td></td>
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<tr>
<td><strong>Employee Loyalty</strong></td>
<td></td>
<td></td>
<td>0.55</td>
</tr>
<tr>
<td>If I had an opportunity to get a similar job with another organization, I would leave this company. How likely is it that you will leave this company within the next year</td>
<td>0.55</td>
<td>4.71</td>
<td></td>
</tr>
<tr>
<td><strong>External Service Quality</strong></td>
<td></td>
<td></td>
<td>0.85</td>
</tr>
<tr>
<td>How satisfied are you with the individual service quality provided</td>
<td>0.82</td>
<td>8.91</td>
<td></td>
</tr>
<tr>
<td>How satisfied are you with the office operations</td>
<td>0.91</td>
<td>9.96</td>
<td></td>
</tr>
<tr>
<td><strong>Customer Satisfaction</strong></td>
<td></td>
<td></td>
<td>0.87</td>
</tr>
<tr>
<td>How satisfied are you customer with your responsiveness?</td>
<td>0.73</td>
<td>8.22</td>
<td></td>
</tr>
<tr>
<td>How satisfied are you customer with your skill or competence?</td>
<td>0.94</td>
<td>11.66</td>
<td></td>
</tr>
<tr>
<td>How satisfied are you customer with your interest?</td>
<td>0.83</td>
<td>9.72</td>
<td></td>
</tr>
<tr>
<td><strong>Goodness-of-Fit Statistics</strong></td>
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<tr>
<td>( \chi^2 ) = 70.98, p = 0.07</td>
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</tr>
<tr>
<td>GFI (goodness of fit index) = 0.91, AGFI (adjusted goodness fit index) = 0.85</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>CFI (comparative fit index) = 0.96, RMR (root mean square) = 0.05</td>
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</table>

**Notes:** Each item is measured on a 7-point scale. All loadings are significant at 0.05 levels.

1988). The Cronbach’s alpha, which measures internal consistency reliability, was used to check the issue of discriminant validity. In order to reach a reasonable level of reliability, it is commonly believed that the standard reliability value of Cronbach's alpha should be at least greater than 0.5, or greater than 0.7 for high reliability standard (Nunnally, 1978). As illustrated in Table 1, all Cronbach's alphas were acceptable.

### 4.2 Model Test Results

Path analysis was performed to test the proposed model in Figure 1. Single indicators using summated scales were calculated to estimate the constructs in the model (Price et al. 1995). The maximum likelihood parameter estimates, t-values and fit statistics are shown on the model in Figure 1. The hypothesized model has an...
FIGURE 1: LISREL PATH DIAGRAM FOR A SERVICE SUPPLY CHAIN

As shown in Figure 1, internal service quality directly and significantly influences employee satisfaction (t-value=6.04) and external service quality (t-value=4.42) at the 0.01 level. Hypothesis 1 and 3 are therefore supported. These findings are consistent with previous studies (Hallowell et al., 1996; Prichard and Silvestro, 2005). On the other hand, there is an insignificant relationship between internal service quality and employee loyalty (t-value=1.10) at the 0.05 level. Employee satisfaction is significantly related to their employee loyalty (t-value=3.03). Hypothesis 4 is supported, but Hypothesis 2 is not supported. These results show that employee satisfaction play an important mediating role in linking internal service quality to employee loyalty.

Hypothesis 5 contends that employee loyalty is positively related to external service quality. This hypothesis is supported at the 0.05 level (t-value=2.31). External service quality influences significantly customer satisfaction at the 0.01 level (t-value=3.74) (Parasuraman et al, 1988; Cronin and Taylor, 1992). However, the relationship between employee loyalty and customer satisfaction is not supported at the 0.05 level (t-value=-0.56). Consequently, hypothesis 5 and 7 are supported, but hypothesis 6 is not supported. These results indicate that external service quality is an important predictor factor between employee loyalty and customer satisfaction. In addition, employee loyalty mediates the relationship between employee satisfaction and external service quality. This result is consistent with the study of Heskett et al. (1997).

V. CONCLUSIONS

Previous research in service industry has addressed the relationship between external service quality and customer satisfaction. In recent years, research in service operations is increasingly focused on the employees who deliver service at the frontline. The concept of supply chain management has also been addressed in service sector. In contrast with the supply chain of manufacturing companies, the units in service supply chain are constructed by supplier, service provider, and customer.

This paper investigated a link between service provider and customer that is core in a service supply chain. The result shows that internal service quality directly and positively affects employee satisfaction and external service quality. Employee satisfaction, in turn,
directly and indirectly influences employee loyalty and external service quality respectively. Finally, external service quality positively affects customer satisfaction. Moreover, employee satisfaction has an indirect effect on external service quality through employee loyalty. This suggests that managing employee loyalty indicator provides managers with better foresight into customer satisfaction.

This research is conducted by Korean securities companies to estimate the model. Also, service industry has various other variables, such as the degree of contact with customers, company size, and industry types. Therefore, a contingency approach to interpreting and applying the results of this research to real world is needed.

VI. REFERENCES


Lee, Park and Park
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