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Market-based capabilities, perceived quality and firm performance

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Chapter 8

Revisiting the Service-Profit Chain Framework: Extension of Theory and an Empirical Assessment

Abstract Considerable progress has been made in identifying the elements in the service-profit chain. Despite the recent progress, troubling gaps and shortcomings remain. To fill these gaps, we extend the ‘service-profit chain’ framework by explicitly incorporating the service operations management and relationship marketing perspective into this model. In this extended framework, we model the relationship between organizational service capabilities and profitability as a chain of effects. To estimate this model, we use dyadic data obtained from the suppliers and their customers. We discuss and apply bootstrap methods, which are recently recommended to assess the strength of mediation. Our findings indicate support for this extended service-profit chain model. The results support the following service-profit chain: organizational service capabilities → employee service capabilities → internal service outcomes → service relationships management → external service outcomes → financial performance. The implications of these finding for future research and for service firms are addressed.

8.1 Introduction

The field of services marketing management has undergone tremendous growth in popularity among both academics and practitioners over the past two decades. During this period, several concepts and views have been developed. Generally, these concepts largely emphasize the interrelationships between operational service variables, market performance (i.e., service quality) and financial performance. The most general model in this field is the service-profit chain (Heskett, Jones, Loveman, Sasser and Schlesinger, 1994). This framework aims to detect the (financial) consequences of internal service quality by modeling the relationship between internal service quality and profitability as a chain of effects. Empirically, Heskett et al. (1997) collect evidence from 20 service organizations, lending support to some of the linkages in this model.

Despite the recent progress in understanding the service-profit relationship (e.g., Bowman and Narayandas, 2004; Heskett et al., 1994; Kamakura, Mittal, de Rosa and Mazzon, 2001; Soteriou and Zenios, 1999) troubling gaps and shortcomings remain. First, the service-profit chain (SPC) framework is rather simplistic. In general, the importance of internal service quality is largely emphasized in these models and as a consequence little research has been conducted investigating other relevant service operations, such as customer orientation and service technology. In

this respect, Kamakura et al. (2002) argue that studies investigating comprehensive models of customer assessments, service operations, and outcomes are lacking. Second, researchers have largely studied specific links (of the service-profit chain framework) in isolation (e.g., Anderson and Mittal, 2000; Roth and Jackson, 1995; Schneider et al., 1985; Schneider et al., 1998; Soteriou and Zenios, 1999), which led to mixed and inconsistent findings. Third, although customer relationship management is found to influence both market performance (i.e., service quality) and financial performance and furthermore is affected by internal service operations, little research has been conducted investigating its relevance to the SPC framework.

To fill these gaps, we extend the SPC focus by incorporating other relevant service-related operations into the SPC framework. This is in line with recent research (see for example, Bowman and Narayandas, 2004; Kassinis and Soteriou, 2003). The general assumption behind our (extended) framework is that service-oriented organizations are committed to fulfill the needs of the customer as well as the needs of the service provider (this is basically Schneider et al.'s (1998) 'service climate' and Roth and Jackson's (1995) 'service capability' thesis). The rationale behind this is that service providers build relationships with customers and are therefore responsible for the fulfillment of the needs of customers (Grönroos, 2000). Furthermore, customer relationship management balances the customer-service provider linkage, which is largely seen as a shortcoming of the classical SPC framework. Finally, customer perceived outcomes positively influence business performance. Summarizing the previous, we model the relationship between organizational service operations/capabilities¹ and profitability as a chain of effects. First, the organizational service capabilities influence employee service capabilities. Second, improved employee service capabilities result in positive internal service outcomes. In turn, internal service outcomes affect customer-linking operations. Fourth, customer-linking operations lead to external service outcomes. Finally, the increased external service outcomes lead to greater profitability.

In our extended SPC framework, mediation takes a central role. To detect the degree or strength of mediation, several methods have been proposed in the psychometric literature. Two methods have become influential and widely used: (1) Baron and Kenny's (1986) test, and (2) Sobel's (1982) method. However, these classical methods have been criticized (Shrout and Bolger, 2002; MacKinnon et al., 1995; MacKinnon et al., 2002; MacKinnon, Lockwood and Williams, 2004). To overcome problems associated with the previously mentioned methods, several researchers propose to use bootstrap inference (Efron and Tibshirani, 1993) to assess (the strength of) mediation (MacKinnon et al., 2004; Shrout and Bolger, 2002).

This chapter develops and extends the classical SPC framework. Furthermore, we put this framework into an empirical examination, using data from both wholesalers (suppliers) and their customers. Dyadic data is most suitable and appropriate when investigating the linkages from suppliers to customers. To investigate the sig-

¹Note that service management strategists frequently address the importance of organizational service operations in explaining both service outcomes and financial performance (e.g., Roth and Jackson, 1995; Soteriou and Chase, 2000; Soteriou and Zenios, 1999).

nificance of the mediators, we use bootstrap methods.

This chapter is organized as follows. We briefly review the ‘service-profit chain’ literature. Next, we present our extended SPC model. Then, we formulate the hypotheses. Thereafter, the data collection approach and methods of analysis are described. Finally, we present the results and discuss their consequences for both marketing science and practice.

8.2 Background

The ‘service-profit chain’ framework has been the focus of a great deal of academic study. The general idea is that the relationship between service operations and business performance may be modeled as a chain of effects. In this context, two streams of research may be identified. The first stream actually investigates a ‘service-satisfaction chain.’ This stream of research aims identifying the relationship between service operations and service quality. Two models dealing with this framework are (1) the service climate model (Schneider et al., 1980; Schneider et al., 1985; Schneider et al., 1998), and (2) the gap model (Brown and Swartz, 1989; Parasuraman et al., 1985; Zeithaml et al., 1988). The service climate model’s general thesis is that a customer service-oriented climate both influences employee’s and customer’s perceptions of value. The main outcome of this stream of research is that it is unwise to develop strategies and tactics, such as behavioral-based rewards, that may motivate employees to deliver excellent service if their working conditions prevent them from doing so. However, after two decades of research, Schneider et al. (1998) state that “We suspect that much of what we have called ‘service climate’ will map well onto what services marketing researchers are calling ‘market orientation’” (p. 160). Concerning the second model, Zeithaml et al. (1988) develop an extended model of service quality to examine the internal gaps that impede the delivery of high service quality (see Parasurman, Zeithaml and Berry, 1985). Although their thesis is clear and sound, subsequent research could not support most of their propositions (Parasuraman et al., 1990).

The second stream in this field emphasizes a more aggregate model of the ‘service-profit chain’ framework.² This model actually incorporates the variables largely emphasized in the ‘service-satisfaction chain’ and is basically a generalization of the previously mentioned framework. Three models dealing with the general ‘service-profit chain framework’ are: (1) the service-profit chain (Heskett et al., 1994), (2) the service capability framework (Roth and Jackson, 1995) and (3) the return on quality model (Rust et al., 1995).

Concerning the first framework, Heskett et al. (1994) introduce this model, which emphasizes the human factor in delivering service value and in turn profitability. They develop this model from their analysis of successful service organizations. Heskett et al. (1994) depict the relationship between services and profit as a chain

²Note that this stream of research basically incorporates the (nested) ‘satisfaction-profit chain’ framework (Anderson and Mittal, 2000). Therefore, we did not include this framework as a third stream of research.

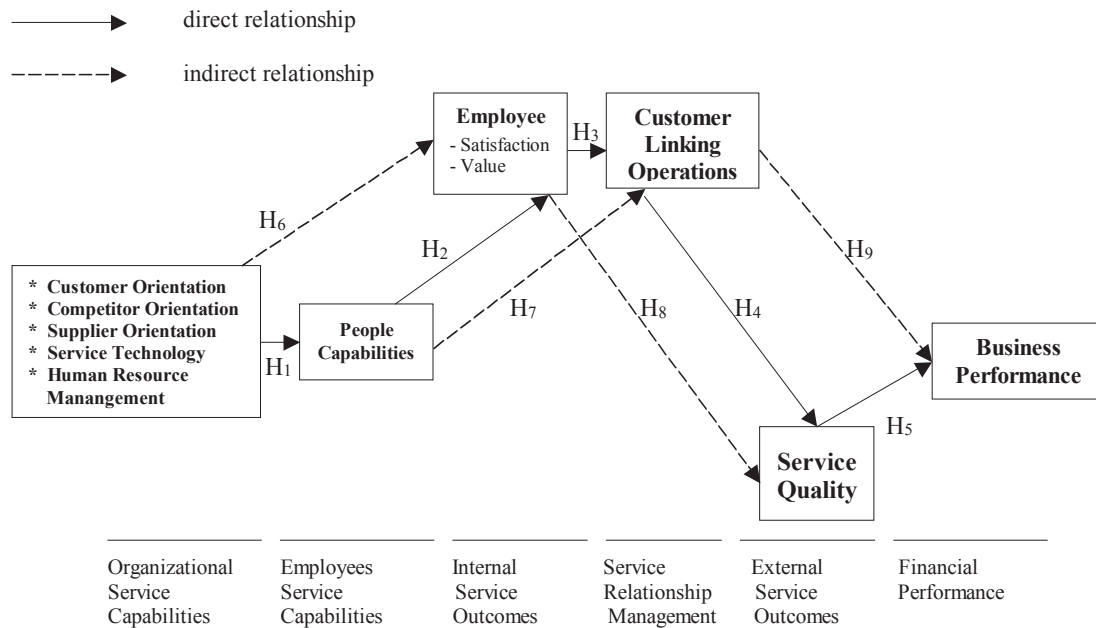


Figure 8.1: Extended Service-Profit Chain Framework

of effects: “Profit and growth are stimulated primarily by customer loyalty. Loyalty is a direct result of customer satisfaction. Satisfaction is largely influenced by the value of services provided to customers. Value is created by satisfied, loyal and productive employees and employee satisfaction results primarily from high-quality support services and policies that enable employees to deliver results to customers” (p. 164-165). Although some researchers have empirically investigated this framework (e.g., Rucci et al., 1998; Kamakura et al., 2001), their results and ample other research suggest that other operational variables may influence both employee- and customer-based advantage and business performance (e.g., Roth and Jackson, 1995; Schneider et al., 1998). The service capability model basically suffers from the same problems. In this model, the relationship between human resources and service quality perceptions is largely emphasized (e.g., Soteriou and Chase, 2000; Soteriou and Zenios, 1999); other relevant variables, such as customer orientation and employee attitude, are ignored. Concerning the return on quality model, this is a quite abstract framework, although Rust et al. (2004) recently made an attempt to implement this model.

8.3 Conceptual Framework

In developing our framework, we integrate the previously mentioned models. These are largely complementary in nature and an integration of these models may enhance our understanding of the development of market-based performance. We also extend the SPC framework by explicitly incorporating the ‘customer relationship management’ perspective into our framework.

Basically, our conceptual framework builds on Heskett et al.'s (1994) classical framework and upgrades it by incorporating other relevant service-related operations and the customer relationship management perspective. We model the relationship between organizational service capabilities and profitability as a chain of effects (Figure 8.1). First, the organizational service capabilities influence employee service capabilities. Second, improved employee service capabilities result in positive internal service outcomes. In turn, internal service outcomes affect the management of service relationships. Fourth, service relationship management leads to external service outcomes. Finally, the increased external service outcomes lead to greater profitability. We now focus on the extension of the classical SPC framework. These extensions of the classical SPC framework will be discussed.

8.3.1 Organizational Service Capabilities

As mentioned earlier, the aim of this study is to extend the service-profit chain framework. The first step in extending this framework is by incorporating other relevant internal organizational service capabilities into the classical SPC framework. Integrating Roth and Jackson's service capabilities model into the SPC framework suggests the incorporation of service technology as a critical organizational service capability (see also Chase and Bowen's (1991) typology). The service climate literature indicates the relevance of market-orientation in satisfying both employees and customers. The following market orientation dimensions are relevant (Langerak, 2001): (a) customer orientation, (b) competitor orientation, and (3) supplier orientation. In summary, the integration of service capability and service climate into the SPC framework result in the identification of five relevant service organizational capabilities (see also, Chase and Bowen, 1991; Grönroos, 1997; Parasuraman and Grewal, 2000; Schneider and Bowen, 1999; Schneider, Parkington and Buxton, 1980): (1) customer orientation, (2) competitor orientation, (3) supplier orientation, (4) service technology, and (5) human resource management. These capabilities are generally viewed as critical in (ultimately) delivering superior services (Albrecht and Zemke, 1985; Berry, Contant and Parasuraman, 1991; Schneider and Bowen, 1995; Schneider, Wheeler and Cox, 1992).

8.3.2 Employee Service Capabilities

The second extension concerns the inclusion of employee service capabilities as a consequence of organizational service capabilities and as a determinant of employee attitudes. A central role for frontline employees' capabilities in the employee-organization link is frequently suggested by organizational psychologists (e.g., Schneider et al., 1980; Schneider et al., 1985) and organizational behaviorists (e.g., Bettencourt and Brown, 1997; Bettencourt, Meuter and Gwinner, 2001; Organ and Ryan, 1995). The rationale behind this is, as expressed by Berry and Parasurman (1992, p. 25), that "customers "buy" the people when they buy a service." Therefore, Berry (1986) argues that a central question in services marketing is how to "give contact employees the knowledge and skills to be effective marketers."

Similarly, Bitner (1995) states that in order for employees to deliver superior service and build long-term relationships, they must possess certain capabilities and skills.

8.3.3 Service Relationship Management

We further extend the classical SPC framework by proposing a central role for ‘service relationship management’ in developing a market-based advantage. The rationale behind this link is fivefold. First, it is largely recognized that the service experience, which basically distinguishes one service firm from another, is a result of the unique interaction or number of interactions between customers and the supplier (Solomon, Surprenant, Czepiel and Gutman, 1985). The economic sociology literature (Granovetter, 1985) also argues that economic transactions take place within the context of relationships. Second, marketing scholars argue that there has been a shift from a transaction to a relationship focus (Day and Montgomery, 1999; Gronroos, 1994; Gummesson, 1994) and that customer relationships will be seen as the key strategic resource of the business (Webster, 1992). Empirically, the link between service relationship management and market-based advantage, i.e., service quality and business performance, is largely suggested in the marketing literature (e.g., Kalwani and Narayandas, 1995). Third, a problem of the classical SPC framework is the relationship between both employee attitude and productivity/retention and customer perceived outcomes. For example, Silvestro and Cross (2000) find no significant correlations between service value and employee satisfaction. Furthermore, which is far more evident, the nature of the relationship between job satisfaction and job performance remains unclear (e.g., Ryan, Schmit and Johnson, 1996; Brown and Peterson, 1993). By incorporating service relationship management as a mediator between employee attitude and service quality in our framework, we seek to contribute to this stream of literature. Fourth, the rites of integration perspective, which refers to planned (social) interactions that have the objective of achieving ‘a temporary sense of closeness’ between customers and service providers (Siehl, Bowen and Pearson, 1992, p. 537), supports the incorporation of service relationships into the SPC framework. Siehl et al.’s (1992) main thesis is that service organizations design rites of integration to produce a necessary level of psychological closeness, which, in turn, affects a favorable evaluation, by customers, of the service delivery process. Fifth, since service quality is hard to assess (Parasuraman et al., 1985) it is suggested that firms will suboptimally hire low ability workers (see for a discussion, Levin and Tadelis, 2005). Therefore, Levin and Tadelis (2005) recently propose ‘partnership’ to alleviate these problems. Their central thesis is that close relationships will emerge when human capital plays a central role in delivering quality and when customers are at a disadvantage relative to firms in assessing the ability of employees.

8.4 Hypotheses

In our conceptual framework, we assume both direct (or main) and indirect (or mediation) effects. Basically, the core thesis is the explicit relatedness of the links. For example, it is more likely that organizational service capabilities influence employee service capabilities whereas the relationship between organizational service capabilities and service quality is less likely to occur. Since the direct effects are essential in the SPC framework, we first outline the direct effects. Then we propose the indirect effects.

8.4.1 Direct Effects

Link 1: Organizational Service Capabilities → Employee Service Capabilities The first part of our conceptual framework deals with the relationship between organizational service capabilities (customer orientation, competitor orientation, supplier orientation, service technology and human-resource management) and employee service capabilities. This is in line with Hallowell et al.'s (1996) proposition that if an organization delivers good service to its employees, enabling them to deliver superior services to customers, the employees will feel they have the ability to serve customers well. Specifically, the proposed relationship between human resource capabilities and people capabilities is in line with the human resource management literature (e.g., Kamoche, 1996; Lado and Wilson, 1994) and services marketing (Berry and Parasuraman, 1992; Bowen and Lawler, 1992; Levin and Tadelis, 2005; Schneider and Schechter, 1991). Proposing a direct effect of service technology on people capabilities, Roth and Jackson's (1995) analysis confirms this relationship. Marketing researchers suggest that market orientation may influence people capabilities (Kohli and Jaworski, 1990; Sigauw, Brown and Widing, 1994). For example, Langerak (2001) proposes a direct effect of a firm's market orientation on the customer orientation of salespeople, as reported by customers. His data supports the proposed relationship. In summary, we propose that

hypothesis 1 the higher the organizational service capabilities, the higher the employee service capabilities

Link 2: Employee Service Capabilities → Internal Service Outcomes The relationship between people capabilities and employee satisfaction is often proposed (e.g., Mengüç, 1996; Sigauw et al., 1994; Spreitzer et al., 1997). Berry and Parasuraman (1992, p. 28) state that "Employees are unlikely to be motivated to perform services they do not feel competent and confident to perform." Sigauw et al. (1994) hypothesize a direct relationship between salespeople customer orientation and job satisfaction. However, their proposition is not supported. In a replication study, Mengüç (1996) reveals a significant relationship between customer orientation of the salesperson and employee satisfaction. Spreitzer et al. (1997) argue that "it makes intuitive sense that those who feel more competent about their work are likely to feel more satisfied about their work." Empirically, Thomas and

Tymon (1994) find that competence is related to lower levels of strain in a sample of managers. They did not find support for the relationship between competence and work satisfaction. In their second sample, however, the competence dimension predicted work satisfaction. In line with the former, we propose a positive effect of people capabilities on both employee satisfaction and value.

hypothesis 2 the higher the firm’s employee service capabilities, the higher the following internal service outcomes: (a) employee satisfaction, and (b) employee value

Link 3: Internal Service Outcomes → Service Relationship Management Concerning the relationship between internal service outcomes and service relationship management,³ relative little theoretical and/or empirical research exists. A notable exception is Bettercourt and Brown (1997), who propose and report a nonsignificant relationship between job satisfaction and cooperation (as part of contact employee prosocial service behaviors). There is however some literature implicitly suggesting a link between internal aspects of performance and customer-linking operations. Motowidlo and Van Scotter (1994) propose a “contextual performance” construct. Their main thesis is that individuals contribute to organizational effectiveness by doing things that are not main tasks but are important in shaping the organizational and social ‘context’ that supports task activities. Extrapolating this idea to an interorganizational perspective, we argue that a (boundary-spanning) contextual performance, such as helping customers and collaborative information sharing with customers, could be a consequence of employee attitude⁴ and is essential for developing superior service quality. The social exchange theory, which posits that employees will engage in reciprocal behavior with those from whom they benefit, suggests that higher levels of employee satisfaction will stimulate employees to express service-oriented behaviors. Pruden and Reese (1972) demonstrate that highly satisfied salesmen tend to avoid interorganizational conflict. In summary, when the organizational objectives imply the delivery of superior service through service encounters, employee satisfaction is very likely to determine a salesperson’s relationship-driven behavior. So,

hypothesis 3 the higher the internal service outcomes, the higher the customer-linking operations

Link 4: Service Relationship Management → External Service Outcomes The relationship between service relationship management and external service outcomes, as perceived by customers, is rather compelling.⁵ The rationale be-

³In this study we use a proxy for service relationship management, which we call customer-linking operations.

⁴We believe that employee attitude is a critical driver of boundary-spanning contextual performance. For example, Organ and Ryan (1995), in a review of 55 studies, conclude that employee attitudes are robust predictors of organizational citizenship behavior.

⁵We define service quality, following Bitner and Hubbert (1994), as a customer’s overall evalu-

hind this is twofold. First, the customer may perceive these relationship building activities as an investment of the focal firm. For example, Cannon and Homburg (2001) discuss the effect of relational processes on customer costs and find some evidence indicating a negative relationship. Second, it is largely suggested that a service relationship strategy is more likely to result in positive customer perceptions (Crosby, Evans and Cowles, 1990). Empirically, Soteriou and Chase (1998) investigate the relationship between customer contact dimensions (communication time and intimacy) and service quality and found support for their customer contact model. Anderson and Narus's (1990) analysis demonstrates a positive relationship of both communication and cooperation on trust, which, in turn, influences satisfaction. Crosby, Evans and Cowles (1990) report a significant positive effect of relational selling behavior on relationship quality.

hypothesis 4 the higher the customer-linking operations, the higher the service quality, as perceived by customers

Link 5: External Service Outcomes → Financial Performance The relationship between service quality, as perceived by customers, and business performance has received a great deal of attention in marketing (Zeithaml, 2000). Research suggests that it is satisfaction and loyalty that lead to quantitative outcomes (e.g., Anderson, Fornell and Lehmann, 1994; Fornell, 1992; Ittner and Larcker, 1999). In a recent study, Pugh, Dietz, Wiley and Brooks (2002) show that a 1.3 improvement in customer ratings of the sales staff led to a .5 percent improvement in sales, which in this case translated into an additional 4 million dollar in revenue. Hence,

hypothesis 5 the higher the service quality, as perceived by customers, the higher the financial business performance

8.4.2 Indirect Effects

The previous section outlined the direct effects representing subsequent linkages. Our conceptual framework also suggests indirect effects (see Figure 8.1). In general, an indirect effect occurs when the main effect of the independent variable on the mediator and the effect of the mediator on the dependent variable are both significant (in the method section we discuss a formal method to detect mediation significance). We propose the following mediation effects

hypothesis 6 organizational service capabilities influence internal service outcomes indirectly by increasing employee service capabilities

hypothesis 7 employee service capabilities have an indirect effect on customer-linking operations through both dimensions of internal service outcomes

ation based on all encounters and experiences with a specific organization.

hypothesis 8 internal service outcomes indirectly influence service quality through customer-linking operations

hypothesis 9 customer-linking operations have an indirect effect on financial performance through service quality

8.4.3 Database & Measurement

Data for this study are collected in 2003 as part of a larger research project which required two stages of data collection. The process of data collection is already described in the previous chapters. For this chapter, we have 57 matched sets (a total of 114) of questionnaires from wholesalers and their customers suitable for our analysis.

Scales of the constructs we examine are available in the literature or could be easily derived from previous work and modified to suit our research setting (see Table 8.1). All items of these scales, with the exception of the employee value scale, are measured on a seven-point scale. Items of the employee value construct are measured on a four-point scale. Table 8.1 summarizes the construct and the corresponding fit statistics (see Appendix F).

8.4.4 Methods of Analysis

To test the hypotheses, we use two methods: (1) standard linear regression analysis, and (2) mediation analysis. Specifically, to estimate the direct (main) effect, we apply ordinary least squares regression (OLS). Although our dyadic data are limited, a sample size of 57, the models could be easily estimated; all the models incorporate three, four or five independent variables. For example, for our five main-effect model, we have a sample size/independent variables ratio of approximately 10. Generally, a ratio of 5 or 10 is recommended (Hair et al. 1998). Finally, to assess mediation we use the bootstrap methods. Since the bootstrap method is recently recommended and classical methods have some serious limitations, we discuss these methods in-depth.

Classical Mediation Tests

Besides the hypothesized direct effects, we provide a test for the mediation hypothesis by applying mediation analyses. Mediation analysis or analysis of indirect effects may be utilized to assess the indirect effect, which exists when an independent variable causes a mediating variable, which, in turn, causes a dependent variable (Sobel, 1990). Two tests widely used are (1) Baron and Kenny's (1986) causal steps method, and (2) Sobel's (1982) product of coefficient test.

Baron and Kenny's Causal Steps Method Baron and Kenny (1986) introduce a method, based on a causal steps approach, to assess mediation. This method involves the estimation of a direct effects model, eliminating the mediation

Construct	Fit Statistics
Customer Orientation (Kohli and Jaworski, 1990; Jaworski and Kohli, 1993)	Chi Square = 3.75, d.f. = 6, p = .71, NNFI = 1.00, CFI = 1.00, IFI = 1.00; GFI = .99; RMSEA = .00; SRMR = .022
Competitor Orientation (Narver and Slater, 1990; Jaworski and Kohli, 1993)	Chi Square = 9.04, d.f. = 6, p = .17; NNFI = .99; CFI = .99; IFI = 1.00; RMSEA = .061; SRMR = .025.
Supplier Orientation (Langerak, 2001)	Chi Square = 6.29, d.f. = 6, p = .39, NNFI = 1.00, CFI = 1.00, IFI = 1.00; GFI = .98; RMSEA = .019; SRMR = .026
Service Technology (Bharadwaj, 2000)	Chi Square = 1.15, d.f. = 1, p = .28; NNFI = 1.00; CFI = 1.00; IFI = 1.00; GFI = 1.00; RMSEA = .033; SRMR = .007
Human Resource Management (Hartline and Ferrell, 1996; Lytle, Hom and Mokwa, 1998)	Chi Square = 23.2, d.f. = 16, p = .11; NNFI = .97; CFI = .98; IFI = .98; GFI = .96; RMSEA = .058; SRMR = .037
People Capabilities (Roth and Jackson, 1995)	Chi Square = 16.27, d.f. = 13, p = .23, NNFI = .99, CFI = 1.00, IFI = 1.00; GFI = .97; RMSEA = .043; SRMR = .036
Internal Service Outcomes (Churchill, Ford and Walker, 1974)	Chi Square = 3.78, d.f. = 1, p = .05, NNFI = .86, CFI = .98, IFI = .98; GFI = .99; RMSEA = .14; SRMR = .034
Customer-Linking Operations (Buvik and John, 2000; Cannon and Homburg, 2001; Lusch and Brown, 1996)	Chi Square = 2.42, d.f. = 1, p = .12; NNFI = .96; CFI = .99; IFI = .99; GFI = .99; RMSEA = .10; SRMR = .018
Service Quality (Parasuraman, Zeithaml and Berry, 1988)	Chi Square = 54.32, d.f. = 25, p = .00, NNFI = .99, CFI = .99, IFI = .99; GFI = .98; RMSEA = .049; SRMR = .022
Business Performance (Lusch and Brown, 1996)	Chi Square = 3.40, d.f. = 2, p = .18; NNFI = .99; CFI = 1.00; IFI = 1.00; RMSEA = .072; SRMR = .021

Table 8.1: Constructs and Fit Statistics

variable and comparing the direct effects with the corresponding coefficients from a model that includes the mediation variable. A full mediation is indicated if (1) the independent variable (X) produces significant effects on the dependent variable (Y), (2) the independent variable (X) significantly influences the mediator (M), (3) the mediator (M) has a significant effect on the dependent variable (Y), and (4) the effect of the independent variable (X) becomes statistically insignificant when introducing the mediator variable (M) in the model. Partial mediation is indicated when the direct effect of the independent variable(s) reduces but does not become nonsignificant in the fourth step.

Sobel's Product of Coefficient Test Another approach to investigate mediation is the so called product of coefficient method. This approach involves testing the significance of the mediating variable effect by dividing the estimate of the product of the direct effect of X on M (α) and M on Y (β) ($\alpha\beta$) by its standard error and compare this value to a standard normal distribution (MacKinnon et al., 2002, p. 89). MacKinnon et al. (1995) and Shrout and Bolger (2002) argue that

mediation occurs when the estimated indirect effect ($\alpha\beta$) is nonzero and significant. This effect, however, is subjected to estimation error. Therefore, the standard error of the indirect effect can be estimated by using Sobel's (1982) large-sample formula. This standard error, based on first-order Taylor series approximation of the product of α and β , may be expressed as $s_{\hat{\alpha}\hat{\beta}} = \sqrt{\hat{\alpha}^2 s_{\hat{\beta}}^2 + \hat{\beta}^2 s_{\hat{\alpha}}^2}$. This formulae tests whether the indirect effect is different from zero through z statistics and constructs a confidence interval. An often used confidence interval (95%) for the indirect effect is $(\hat{\alpha}\hat{\beta}) \pm s_{\hat{\alpha}\hat{\beta}} z_{.975}$ where z equals the constant 1.96.

Comments on the classical mediation tests Baron and Kenny's (1986) causal steps method of examining the significance of the mediation effect has been criticized (MacKinnon et al., 2002; Shrout and Bolger, 2002). First, some researchers have questioned the necessity of testing the overall association in step 1 (Collins, Graham and Flaherty, 1998; MacKinnon, Krull and Lockwood, 2000). Second, MacKinnon et al. (2002) indicate that Baron and Kenny's (1986) causal steps method have Type I error rates that are too low and have very low power, unless the sample size is large.

Sobel's (1982) approach also has several limitations. First, this method will only yield accurate estimates when the product $\hat{\alpha}\hat{\beta}$ is normally distributed (Shrout and Bolger, 2002). Note however that the product of two normal random variables is not normally distributed (Lomnicki, 1967). Second, several researchers observed that symmetric confidence intervals constructed using normality assumptions tended to give asymmetric error rates (Stone and Sobel, 1990). A consequence of this is the lack of statistical power to reject the null hypothesis that $\hat{\alpha}\hat{\beta}$ equals zero (MacKinnon et al., 2002). Furthermore, recently, MacKinnon et al. (2004) indicate that more accurate confidence limits are obtained using resampling methods. In their study, they found the (bias-corrected) bootstrap method to outperform other methods.

Bootstrap Method

To overcome the limitations associated with Baron and Kenny's (1986) and Sobel's (1982) methods, Shrout and Bolger (2002) argue that with nonsymmetric confidence intervals for $\alpha\beta$, as in our case, bootstrap methods should be used to assess mediation. Furthermore, this alternative for the classical methods is especially recommended when the sample size is rather small. Because this is the case in our study, and also usually the case in many services marketing studies, we investigate the mediating role of our mediators, applying bootstrap inference⁶ in calculating the standard error.

Efron's (1979) bootstrap approach allows the distribution of $\hat{\alpha}\hat{\beta}$ to be examined empirically, which may determine a possible mediation and the strength of this mediation. Efron and Tibshirani (1993) suggest a percentile interval with cutpoints

⁶Chernick (1999) defines bootstrap as follows (p. 7): "Given a sample of n independent identically distributed random vectors X_1, X_2, \dots, X_n and a real-valued estimator $\theta(X_1, X_2, \dots, X_n)$ of the distribution function parameter θ , bootstrap methods assess the accuracy of $\hat{\theta}$ as defined in terms of the empirical distribution function F_n ."

	MEAN	SD.	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
Customer Orientation (X1)	5.56	.64	-										
Competitor Orientation (X2)	4.64	1.04	.41**	-									
Supplier Orientation (X3)	5.38	.81	.45**	.62**	-								
Service Technology (X4)	5.05	1.40	.25	.17	.21	-							
Human Resource Management (X5)	5.00	.88	.54**	.40**	.51**	.23	-						
People Capabilities (X6)	5.52	.75	.62**	.60**	.61**	.08	.67**	-					
Employee Satisfaction (X7)	3.36	.51	.41**	.22	.30	.07	.51**	.51**	-				
Employee Value (X8)	2.92	.51	.09	.09	.27	.14	.31*	.37**	.32*	-			
Customer-Linking Operations (X9)	5.38	.81	.40**	.34*	.35*	.23	.34**	.42**	.36**	.20	-		
Service Quality (X10)	5.74	.53	.03	.00	-.08	-.01	-.02	.14	-.01	.04	.08	-	
Business Performance (X11)	5.13	.90	.30*	.21	.23	.26	.18	.29*	.00	.08	.33**	.29*	-

** Correlation is significant at the .01 level

* Correlation is significant at the .05 level

Table 8.2: Descriptive Statistics and Correlations

that exclude $(\alpha/2) \times 100\%$ of the values from each tail of the empirical distribution. Following Shrout and Bolger (2002), we construct a bootstrap distribution and investigate the significance of the mediation by the following steps: (1) using the original data set as a population reservoir, we create many bootstrap replicate data sets ($N = 1000$) by randomly sampling observations with replacement from the data set, (2) for the bootstrap sample, we estimate both the $\hat{\alpha}$ and $\hat{\beta}$, (3) we investigate the distribution of the estimates and determine the $(\alpha/2) \times 100\%$ and $(1 - \alpha/2) \times 100\%$ percentiles of the distribution, (4) we estimate $s_{\hat{\alpha}\hat{\beta}} = \sqrt{\hat{\alpha}^2 s_{\hat{\beta}}^2 + \hat{\beta}^2 s_{\hat{\alpha}}^2}$ by using the bootstrap mean and standard error, and (5) we test mediation by calculating $(\hat{\alpha}\hat{\beta}) \pm s_{\hat{\alpha}\hat{\beta}} z_{.975}$.

8.5 Findings

The descriptive statistics and Pearson correlations of the model's variables are shown in Table 8.2. First, the correlation among the organizational service capabilities, except service technology, is significant and exceeds .40, which indicates a strong correlation. Second, the correlation between the organizational service capabilities, except that of service technology, and people capabilities is significant and exceeds .60, indicating a very strong correlation. Third, the correlation between people capabilities and both employee attitude and customer-linking operations is significant and positive. Fourth, the association between employee attitude and customer-linking operations is strong and significant. Fifth, contrary to our expectations, the correlation between customer-linking operations and service quality is nonsignificant. Sixth, consistent with the literature, the correlation between service quality and business performance is significant and strong. This provides us with a first impression of possible relationships between the linkages. To fully investigate these relationships, multiple linear regression is applied. The results of our ordinary least squares regression are presented in table 8.3.

Direct Effects. Hypothesis 1 posits a direct effect of organizational service

	Dependent Variable					
	PC	ES	EV	CLO	SQ	BP
	Coefficient ^a (s.e.) ^b	Coefficient (s.e.)	Coefficient (s.e.)	Coefficient (s.e.)	Coefficient (s.e.)	Coefficient (s.e.)
Independent Variables						
Intercept	1.39 (.541)**	2.07 (.492)***	1.59 (.457)***	3.67 (.729)***	6.17 (.540)***	1.85 (1.241)
Customer Orientation	.30 (.117)**					
Competitor Orientation	.18 (.072)**					
Supplier Orientation	.12 (.107)					
Service Technology	-.09 (.045)*					
Human Resource Management	.30 (.088)***					
People Capabilities (PC)		.33 (.077)***	.24 (.082)***			
Employee Satisfaction (ES)				.48 (.206)**		
Employee Value (EV)				.10 (.205)		
Customer-Linking Operations (CLO)					.06 (.109)	
Service Quality (SQ)						.47 (.216)**
F- value	18.933***	17.956***	8.360***	3.836**	0.302	4.727**
R ²	.71	.26	.14	.13	.01	.08

* p < .10; ** p < .05; *** p < .01.

^a unstandardized regression coefficient.

^b s.e. refers to standard error.

Note: BP refers to Business Performance.

Table 8.3: Direct Effects

capabilities on people capabilities. Our analysis reveals a significant effect of customer orientation ($B = .30$, $p = .02$), competitor orientation ($B = .18$, $p = .02$) and human resource management ($B = .30$, $p = .00$) on people capabilities. Contrary to our hypothesis, we find that people capabilities are not significantly associated with service technology ($B = -.09$, $p = .06$) and supplier orientation ($B = .12$, $p = .26$). Therefore, the first hypothesis is partially supported. Table 8.2 reveals a relatively high correlation among the organizational service capabilities. To identify the degree of collinearity between independent variables we use the statistic ‘variance inflation factor’ (VIF) as the diagnosis tool. VIF values for customer orientation, competitor orientation, supplier orientation, service technology and human resource management are 1.7, 1.9, 2.1, 1.1 and 1.7, respectively. This indicates the absence of serious multicollinearity problems (Hair et al. 1998).

Hypothesis 2 proposes a direct main effect of people capabilities on both employee satisfaction and employee value. The outcomes support this hypothesis. People capabilities have a positive and significant association with both employee satisfaction ($B = .33$, $p = .00$) and employee value ($B = .24$, $p = .00$). Hypothesis 3 states that employee attitudes positively influence customer-linking operations. Employee satisfaction has a significant positive effect ($B = .47$, $p = .02$) on customer-linking operations. However, employee value has a (positive but) nonsignificant effect ($B = .11$, $p = .57$) on customer-linking operations. Therefore, hypothesis 14 is partially supported.

Hypothesis 4 posits a direct effect of customer-linking operations on service quality. The results in table 8.3 indicate a positive but nonsignificant effect ($B = .06$, $p = .10$) for this relationship. However, as can be seen, this relationship is just significant at a p-value of .10. Therefore, hypothesis 4 is only supported at an uncertainty level of .10.

	Dependent Variable					
	PC	ES	EV	Indirect Effect		
	Coefficient ^a (s.e.) ^b	Coefficient (s.e.)		Bootstrap Percentile	Bootstrap Mean SD	
Independent Variables						
Customer Orientation (A ₁)	.30 (.117)**			(.09, .52)	.296 .116	
Competitor Orientation (A ₂)	.18 (.072)**			(.03, .37)	.175 .080	
Supplier Orientation (A ₃)	.12 (.107)			(-.11, .40)	.128 .129	
Service Technology (A ₄)	-.09 (.045)			(-.16, .00)	-.086 .040	
Human Resource Management (A ₅)	.30 (.088)***			(.08, .49)	.297 .108	
People Capabilities (B ₁)		.33 (.077)***		(.20, .45)	.323 .066	
People Capabilities (B ₂)			.24 (.082)***	(.06, .35)	.240 .070	
A ₁ *B ₁				.10 (.009)**	(.01, .18)	.096 .008
A ₂ *B ₁				.06 (.006)**	(.00, .11)	.057 .005
A ₃ *B ₁				.04 (.009)	(-.04, .13)	.041 .008
A ₄ *B ₁				-.03 (.003)	(-.06, .00)	-.027 .003
A ₅ *B ₁				.10 (.007)**	(.01, .17)	.094 .007
A ₁ *B ₂				.07 (.010)**	(.00, .14)	.071 .008
A ₂ *B ₂				.04 (.006)	(-.00, .09)	.042 .006
A ₃ *B ₂				.03 (.009)	(-.03, .09)	.031 .009
A ₄ *B ₂				-.02 (.004)	(-.04, .00)	-.020 .003
A ₅ *B ₂				.07 (.007)**	(.00, .14)	.070 .008

** p < .05; *** p < .01.

^a unstandardized regression coefficient.

^b standard error.

Note: ES is employee satisfaction; EV is employee value.

Table 8.4: Bootstrap Inference: Hypothesis 6 and 7

Finally, in hypothesis 5, we predict a direct effect of service quality on business performance. Our analysis indicates a positive significant effect ($B = .47$, $p = .03$) of service quality on business performance, lending support for this hypothesis.

Mediation Analysis. Hypothesis 6 posits a indirect effect of organizational service capabilities on internal service quality. Table 8.4 provides the estimated coefficients, indicating whether the mediation is significant or not. Applying Sobel's test using bootstrap inference,⁷ we only find a significant indirect effect of customer orientation, competitor orientation and human resource management on employee satisfaction. This provides partial support for hypothesis 6a. Table 8.4, lower part, shows the estimated indirect effect of organizational service capabilities on employee value (hypothesis 6b). The bootstrap percentile results indicate that the indirect effect of both customer orientation and human resource management on employee value is significantly different from zero. Based on this outcome, hypothesis 6b is also partially supported. Hypothesis 7 proposes an indirect effect of people capabilities on customer-linking operations through both employee satisfaction and employee value. The outcomes are shown in table 8.5. In accordance with hypothesis 7, we find a positive significant indirect effect of people capabilities on customer-linking operations (confidence interval (CI): .01, .29) through employee satisfaction. However, the proposed indirect effect of people capabilities on customer-linking op-

⁷We might estimate the 95% bootstrap confidence interval for the indirect effect using $(\hat{\alpha}\hat{\beta}) \pm s_{\hat{\alpha}\hat{\beta}}z_{.975}$. However, this standard error estimate is based on large samples. In calculating the confidence interval for the standard normal confidence interval we use the t -test, value 2.00.

	Dependent Variable						Bootstrap Percentile	Bootstrap Mean	Bootstrap SD
	ES	EV	CR	SQ	BP	Indirect Effect			
	Coefficient ^a (s.e.) ^b	Coefficient (s.e.)	Coefficient (s.e.)	Coefficient (s.e.)	Coefficient (s.e.)	Coefficient			
Independent Variables									
People Capabilities (PC ₁)	.33 (.077)**						(.20, .45)	.323	.066
PC ₂		.24 (.082)**					(.06, .35)	.240	.070
Employee Satisfaction (ES)			.48 (.209)**				(.12, .90)	.463	.193
Employee Value (EV)			.10 (.205)				(-.29, .43)	.115	.190
PC ₁ → ES →CR						.16 (.016)**	(.01, .29)	.149	.013
PC ₂ → EV →CR						.02 (.017)	(-.06, .12)	.028	.013
ES			.48 (.209)**				(.12, .90)	.463	.193
EV			.10 (.205)				(-.29, .43)	.115	.190
CR				.06 (.109)			(-.12, .26)	.062	.098
CR					.42 (.173)**		(.05, .72)	.040	.183
ES → CR → SQ						.03 (.023)	(-.06, .12)	.029	.019
EV → CR → SQ						.01 (.022)	(-.03, .04)	.007	.019
CR				.06 (.109)			(-.12, .26)	.062	.098
SQ					.47 (.216)**		(.06, .81)	.477	.189
CR → SQ → BP						.03 (.024)	(-.07, .13)	.030	.018

** p < .05
^a unstandardized regression coefficient.
^b standard error.
Note: SQ is service quality and BP is business performance.

Table 8.5: Bootstrap Inference: Hypothesis 8 and 9

erations, through employee value, is not supported (CI: -.06, .12). Hypothesis 8 posits an indirect effect of internal service quality on service quality. However, this hypothesis is not supported by our analysis. Hypothesis 9 proposes an indirect effect of customer-linking operations on business performance through service quality. The confidence interval of bootstrap percentile (-.07, .13) indicates that the indirect effect is not significant. This outcome does not support this proposition leading to the rejection of hypothesis 9.⁸

8.6 Discussion

This study is motivated by three objectives: (1) extension of the classical SPC framework by developing a broader conceptualization of the SPC model, (2) to empirically investigate this extended service-profit chain model, and (3) to apply bootstrap inference as an alternative to the classical methods of mediation analysis. Concerning the proposed conceptual framework, our analysis offers initial support for this model. Based on our main-effects-only and mediation analysis, we found the following chain: organizational service capabilities (customer orientation, competitor orientation and human-resource management) → employee service capabilities

⁸Additional analysis indicate a positive effect of customer-linking operations on business performance. This effect reduces significantly when controlling for service quality (while service quality in the same model has a strong effect on business performance). This led us to believe that service quality possibly mediates the relationship between customer-linking operations and business performance. Although this sounds plausible, we encourage researchers to further investigate this linkage.

→ internal service outcomes → service relationships management → external service outcomes → financial performance.

Concerning the first linkage our analysis provides some support. Both customer orientation and competitor orientation have a direct effect on people capabilities and an indirect effect on employee satisfaction. These findings confirm that of Sigauw et al.'s (1994) and Mengüç's (1996). These researchers detect a strong relationship between market orientation and employee satisfaction. Furthermore, Mengüç (1996) finds that customer orientation of the salesperson influences employee satisfaction. Also, human-resource management is directly related to people capabilities and indirectly related to both employee satisfaction and value. Although some literature suggests (Heskett et al., 1994; Lings, 2004) and indicates (Reukert, 1992) a direct relationship between human-resource management and job satisfaction,⁹ we only find an indirect effect through people capabilities. These findings are in line with previous research. For example, Ramaswami and Singh (2003) could not find support for their proposition that fair distribution of rewards influences employee feelings of satisfaction. Preitzer et al.'s (1997) data suggests that empowerment explains a relatively small amount of variance in job satisfaction. Hartline and Ferrel (1996) propose people capability and employee satisfaction as mediators of the relationship between human resource capabilities and service quality. Their findings suggest that behavior-based evaluation has an indirect positive effect on employee satisfaction.

The relationship between employee service capabilities and internal service outcomes is largely supported. First, employee service capabilities directly influence employee attitude and customer-linking operations. Furthermore, they have an indirect effect on customer-linking operations. These findings are in line with organizational psychologists and behaviorists thesis that the internal climate influences employee's motivation and behavior (Organ and Ryan, 1995).

Although it is frequently suggested that a relational orientation enables or creates for the supplier ongoing opportunities to identify the customer's (unmet) needs and desires, we could only find partial support for this proposition. A plausible explanation for this finding may be derived from Cannon and Perreault's (1999) study. Cannon and Perreault's (1999, p. 457) results indicate that "some buyer firms do not want or need close ties with all of their suppliers. They are satisfied with the effective performance of suppliers who simply meet their needs without extensive entanglements." This suggests that a firm task performance, such as (effective) distribution and selling, may also be essential to satisfy customer's needs. Using an uncertainty level of .10 we however find support for this hypothesis. In short, we believe that this linkage is essential and plausible and future research is needed to clarify this issue.

⁹To examine this issue, we estimated two models with organization service capabilities as independent variables and job satisfaction and value as dependent variables. The findings indicate nonsignificant beta coefficients for these models.

8.7 Limitations and Further Research

The generalization of the findings presented in this paper should proceed with caution. As with every study, this research has several limitations. Although investigating a single industry can be valuable, in that it reduces the variation present when observations of many industries are made in the same study, it may decrease the ability to generalize the outcomes. Future research in other settings is necessary to increase the validity of this extended service-profit chain framework. Another limitation of this study is that we measured both employee satisfaction and employee value as the (marketing) managers' perceptions of employee attitude. Although (marketing) managers increasingly interact with customers, this will not always be the case. Therefore, to increase validity, we suggest investigating the extended framework from three perspectives: (1) the customers, (2) the managers, and (3) the front-line employees. We agree with Hartline and Ferrell (1996), who argue that "such an approach would seem preferable [to] asking a single sample (e.g., managers)" (p. 62).¹⁰ Another limitation relates to the fact that customer-linking operations explain rather little variance in service quality. Although customer-linking operations significantly influence business performance, this finding puzzles us and we encourage further research clarifying this linkage.

Several opportunities for further research may be identified. Although we speculate that the SPC framework could be relatively robust in different settings, it is unclear whether all the proposed organizational service capabilities are relevant in other research settings. We also encourage future research identifying other relevant organizational service capabilities.

A contribution of this study is the extension of the 'contextual performance' construct to an interorganizational setting. Although our model dimensions (customer-linking operations) slightly differ from those proposed in organizational psychology, we believe it is a good proxy for an interorganization contextual performance measure. We encourage marketing researchers to further refine the interorganizational contextual performance construct, which is different from constructs such as extra-role behavior and prosocial behavior (Motowidlo and Van Scotter, 1994).

In this study, the relationship between relationship-linking operations and service quality is partially indicated. Therefore, we believe that future research linking a relational orientation to customer's perceptions of service is necessary, since ample research suggests the relevance of building and maintaining relationships with customers to customer outcomes (e.g., Cannon and Perreault, 1999; Morgan and Hunt, 1994). A notable advantage of customer relationship management is provided by Bolton (1998). Her findings suggest that customers having many months of experience with the supplier weigh prior cumulative satisfaction more heavily and new experience less heavily. Therefore, we speculate that this relationship might be mediated by perceived relationship investment. For example, De Wulf, Odekerken-Schröder and Iacobucci (2001) report a significant positive effect of different rela-

¹⁰Note that we use two perspectives, from both the customers and the managers. This dyadic perspective is generally used and thus acceptable.

tionship marketing tactics, such as interpersonal communication and preferential reward, on customer perceptions of a retailer's relationship investment, which, in turn, is found to affect relationship quality. Furthermore, based on recent research (e.g., Morgan and Hunt, 1994; Sirdeshmukh, Singh and Sabol, 2002) in the field of relationship marketing, we speculate a mediator role for trust, commitment and fairness connecting customer-linking operations to customer's perceived service outcomes.

Previous psychometric research recommends using bootstrap inference when calculating Sobel's test. For example, recently, MacKinnon et al. (2004) investigate the performance of the distribution of the product with (several) resampling methods. Their simulation analysis indicates that the classical distribution of the product methods performs worst. Of the resampling methods, the outcomes suggest that the bias-corrected bootstrap provides the most accurate confidence limits and greatest statistical power. Based on their study, we recommend to further investigate the bias-corrected bootstrap, especially in the case of real data.

8.8 Conclusions

The goal of this study is to provide a first step in refining and extending the service-profit chain framework. Our findings indicate that the classical SPC model needs to be modified in order to explicitly deal with the service encounter and other organizational service resources. The analysis leads us to conclude that the following chain most appropriately represents the service-profit chain in this study: organizational service capabilities → employee service capabilities → internal service outcomes → service relationships → external service outcomes → financial performance. Besides providing support for our extended framework, the analysis confirms the explicit relatedness of the links. Though the relationships have been confirmed, improved conceptual SPC frameworks appear necessary to further refine and explain the causal processes linking organizational service capabilities with financial performance. In establishing the linkages in this framework it is important to apply sound methods to detect mediation, which is essential to further validate this framework. This led us to conclude that indeed a service-profit chain structure could enhance our understanding of market-based performance and could be a very interesting avenue for further research.