

STRUCTURAL RELATIONSHIPS BETWEEN WORK ENVIRONMENT AND PERCEPTIONS OF SERVICE QUALITY AS A FUNCTION OF CUSTOMER CONTACT INTENSITY: IMPLICATIONS FOR HUMAN SERVICE STRATEGY.

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ABSTRACT

This study assesses the importance of customer-contact intensity at the service encounter level as a determinant of service quality assessments. Using data from the U.S. Department of Veterans Affairs, it shows that performance-driven human resources practices play an important role as determinants of employee customer orientation and service capability in both high-contact (outpatient healthcare) and low-contact (benefits claim processing) human service contexts. However, there existed significant differences across service delivery settings in the salience of customer orientation and the congruence between employee and customer perceptions of service quality, depending on the intensity of customer contact. In both contexts, managerial attention to high-performance work systems and customer-orientation has the potential to favorably impact perceptions of service quality, amplify consumer satisfaction, and enhance operational efficiency.

INTRODUCTION

The pursuit of quality is an established imperative within the human services sector. This pursuit comprises not only the quest for delivery of high-quality technical service, but also the need to provide high-quality customer service. As a case in point, inpatient hospitals are presently required to report their performance on an established set of

clinical quality measures to the Centers for Medicare & Medicaid Services (CMS) and are penalized financially, through reduced payments, for failure to comply. Moreover, recent reforms to the Medicare program have expanded the list of publicly reported quality measures and have added an indicator of customer service satisfaction to the required set of metrics.

The critical role played by front-line employees in the service value chain has been emphasized by several writers and researchers (e.g., Grönfeldt & Strother, 2006; Zomerdijk & de Vries, 2007). Workers who have contact with the consumers of service interact with their customers during the service encounter and thereby shape external perceptions of service quality. However, front-line workers' perceptions of their capability to deliver high quality service are strongly influenced by the work environment in which they perform their duties. It is clear that strategic human resource practices that result in high-performance work environments are linked with important organizational outcomes – such as service quality, efficiency, and customer satisfaction – in a wide variety of commercial industry contexts (Dean, 2004) and in the health care sector (Harmon et al, 2003). Goldstein (2003) also found a link between employee development practices and customer outcomes in her study of U.S. hospitals, and argued that this relationship is particularly important in “high-contact” service environments such as hospitals, law practices, and consulting firms. Evidence also is accumulating that customer-oriented work climates produce superior service quality and customer satisfaction operating independently (Henning-Thurau, 2004) or in conjunction with high-performance human resource practices in proprietary firms doing business in retail services industries (Schneider, White & Paul, 1998; Yoon, Beatty and Suh, 2001) and, more recently, in health service settings (Scotti, Harmon, and Behson, 2007).

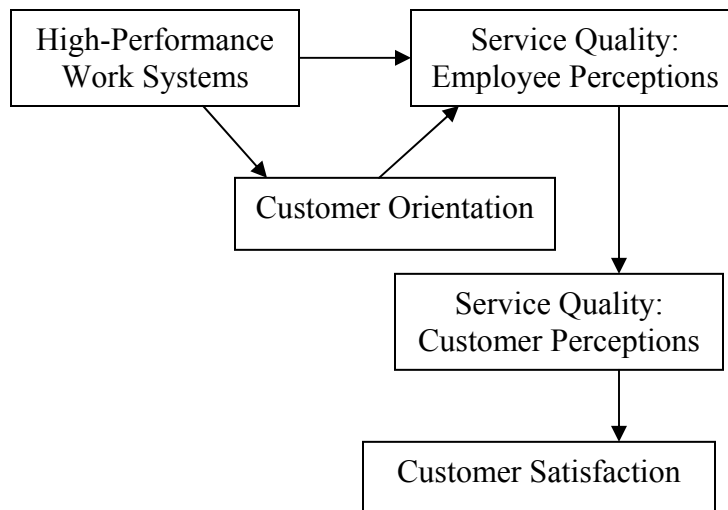
The purpose of this study is to add to the inventory of empirical evidence linking organizational work climates and customer outcomes by comparing the strengths of these links in a high-contact health service (i.e., outpatient care) and a low-contact human service (i.e., disability benefits adjudication). To our knowledge, there have been no prior studies that have directly compared human service contexts that vary greatly in the duration and intensity of customer contact. Drawing upon a national sample of outpatient visits from the Veterans Health Administration (VHA) and disability claims processing from the Veterans Benefits Administration (VBA), we will propose and test a conceptual model delineating the relationships among high-performance work systems, customer orientation, employee perceptions of service quality, customer perceptions of service quality, and customer satisfaction. In addition to testing the model for the combined sample of VHA and VBA service encounters, we will perform separate analyses of high-contact (VHA) and low-contact (VBA) service experiences to identify the nature and magnitude of observed differences in the relationships between our study variables across these different service contexts. Finally, to more fully explore the relationship between service-encounter intensity and customer perceptions of quality within the VBA, we will compare the customer perceptions of clients who had personal contact with staff against those with minimal contact. The paper concludes with a discussion of managerial implications for service strategy design and opportunities for future research.

THEORETICAL FRAMEWORK

This study continues in the tradition of *linkage research* which posits that favorable organizational performance outcomes are the result of a chain of events rooted in strategic human resource (HR) practices and

conveyed through superior service quality to satisfied customers (for excellent summaries of this subject, see Dean, 2004 and Pugh et al., 2002). Harmon et al. (2003) demonstrated that the array of HR practices that conceivably drive the sequence of linkages in healthcare settings are best implemented as a bundled system of interventions, referred to as High-Performance Work Systems (HPWS), rather than applied individually. Scotti et al. (2007) replicated this finding and demonstrated that the array of prescribed HR practices acts directly and indirectly through customer orientation to initiate the chain reaction of employee-consumer interactions. Figure 1 shows the fundamental structural model to be tested in this study. We discuss below the theoretical and empirical foundations for the links in this model.

Figure 1.
Conceptual Model of Service Quality Chain



General Linkages among HPWS, Customer Orientation, Service Quality, and Customer Satisfaction

High Performance Work Systems (HPWS), which also have been referred to as high-involvement work systems and high-performance organizations (Nadler & Gerstien, 1992; Lawler, Mohrman, & Ledford, 1995), represent a mutually reinforcing constellation of core workplace attributes including involvement, empowerment, trust, goal alignment, training, teamwork, communications, and performance-based rewards (Harmon, et al., 2003 provides the conceptual and empirical foundations of the HPWS construct). Performance-driven work environments improve service quality by enabling employees to focus their efforts on meeting customer needs and expectations (Pugh et al., 2002; Schneider & Bowen, 1985). Prior research offers compelling evidence that bundling complementary sets of HR practices akin to HPWS positively influences employees' perceptions of how well they can deliver high-quality services to their customers in a range of for-profit, retail service settings, including banking (Schneider, Parkington & Buxton, 1980; Schneider & Bowen, 1985), telecommunications (Batt, 2002), and insurance (George, 1990; Hallowell, Schlesinger & Zornitsky, 1996). In the not-for-profit healthcare context, work conditions have been connected with staff perceptions of their patient-service ability (Newman, Maylor & Chansarkar, 2001; Scotti et al., 2007), and employee-development practices have been empirically linked to hospital staff productivity (Goldstein, 2003).

Customer orientation is defined as the importance that service providers place on their customers' needs and expectations relating to a firm's service offerings (Kelly, 1992) and involves commitment to customers, gathering of information regarding customer needs, and reliance on

consumer feedback to improve service design (Schneider & Bowen, 1995). A balanced approach to total quality management would provide for service-enabling HRM practices as well as an emphasis on customers. Schneider and Bowen (1993) established a connection between human resource practices and customer service orientation and also observed that both played a role in shaping employee and customer perceptions of service quality. The contention that customer-oriented behaviors form a critical link between human resource practices and service quality was echoed by Morrison (1996), and empirically confirmed by Scotti et al. (2007). Accordingly, we expect that strong customer orientation will increase staff confidence in their ability to discharge assigned service roles, thereby elevating their expectancy of superior performance. Customer orientation is therefore treated as a construct that partially mediates the relationship between HPWS and perceptions of service quality.

Employee and Customer Perceptions of Service Quality. The linkage between employee and customer perceptions of service quality delivered and received in commercial retail service settings has been previously established (Schneider, Parkington, & Buxton, 1980; Schneider & Bowen, 1985). Subsequently, a relationship between employee and patient perceptions of service also was observed in studies of hospital inpatient stays (Nelson et al., 1989) and outpatient visits (Scotti et al., 2007). These connections are supported by the contention that service providers, by virtue of their close contact with customers, are reliable interpreters of consumer needs and expectations (Hennig-Thurau, 2004). The simultaneous provision and receipt of interpersonal human services obscures the boundary between employee and customer. Recipients of such services must participate in the delivery process and are often co-creators of their own outcomes. Therefore,

employee and customer perceptions of service quality are formed through shared experiences.

Customer Satisfaction. The belief that customer satisfaction is predicated on consumer perceptions of service quality has been extensively researched and is generally accepted in the services marketing literature (e.g., Anderson, Fornell & Lehmann, 1994; Churchill & Surprenant, 1982; Cronin & Taylor, 1992; Rust & Oliver, 1994). More recently, support for this relationship has emerged through research efforts in human services settings (Bigne, Moliner & Sanchez, 2003; Marley, Collier, & Goldstein, 2004; Woo et al., 2004).

The following hypotheses are derived from the previously cited review. The overall set of structural relationships is shown in Figure 1.

H1: High-Performance Work Systems (HPWS) are positively related to employee perceptions of service quality both directly and indirectly through perceived customer orientation.

H2: Employee perceptions of service quality are positively related to customer perceptions of service quality.

H3: Customer perceptions of service quality are positively related to customer satisfaction.

Influence of Customer Contact Intensity on Model Linkages

Services, in contrast to manufactured goods, typically require the involvement of customers in the service delivery process. Moreover, services vary in terms of the extent to which customers come into direct contact

with service delivery personnel (Chase, 1981). According to Kellogg & Chase (1995), high-contact services are characterized by high levels of communicative interaction, intimacy, and content-rich information exchanged during the service encounter. Moreover, high-contact services are complex experiences provided by skilled personnel that transform the customer as a person (Ottenbacher, Gnoth, & Jones, 2006). Zomerdijk and de Vries (2007) invite our attention to the fact that multiple modes of customer contact can be recognized, ranging from direct physical interactions to indirect contact via telephonic, electronic (e.g., internet), and postal communications. Applying this taxonomy, health care services – such as those provided by the Veterans Health Administration (VHA) – would be classified as *high-contact*, as patients typically engage in face to face interaction, sometimes involving physical contact and personal information. Claims processing services – such as those provided by the Veterans Benefits Administration (VBA) – would be classified as *low-contact* as most claimants proceed through the service delivery episode with limited direct provider interaction.

The level of contact typical of a particular service context is likely to exert a differential influence on selected links of our model. Prior research has shown that HR practices designed to develop employee service capability (including many components bundled in the HPWS construct) were a critical ingredient to successful management of service encounters in high-contact environments (Hartline & Ferrell, 1996; Goldstein, 2003). In high-contact human services settings, the extent to which frontline employees believe they are capable of delivering high quality service is also, in part, dependent on their perceived membership in customer-focused organizations. A recent study conducted by Paarlberg (2007) revealed that customer orientation has a strongly positive affect on work attitudes and perceptions of performance reported by

government service employees, exerting greater impact on the workers having frequent and direct contact with customers than on workers having less frequent and less personal customer interactions. Accordingly, customer orientation should be a stronger driver of service quality in high-contact service encounters than in low-contact exchanges.

Moving further along the service value chain, the interaction between service providers and service consumers is especially sensitive in high-contact encounters where service workers are pivotal in shaping customer perceptions of service quality and satisfaction, such as the interactions that characterize healthcare encounters. As reasoned by Goldstein (2003, p. 188):

Hospitals also deliver services high in credence characteristics in which customers may not be able to evaluate the technical quality of medical services they receive (Zeithaml 1981). This inability to adequately evaluate clinical quality shifts customers' attention to service (process) quality and, in particular, their interactions with hospital employees (Meyers & Collier 1998).

The effect that attitudes and behaviors of frontline employees exerts on customer perceptions of service encounters is further heightened in organizations that foster a climate of customer orientation (Hartline, Maxham III & McKee, 2000). Owing to the highly intimate, complex, and recondite nature of the healthcare production function, we would expect the relationship between care providers and patients to be particularly strong in the VHA model. In the VBA context, where services transactions are more comprehensible and detached, we would anticipate a diminished connection between claimants and claims processors. Based on theoretical and empirical support from the literature, we hypothesize that the pattern of

results we expect to find in our prior hypotheses will vary based on contact setting. Specifically:

H1a: The relationship between customer orientation and employee perceptions of service quality will be stronger in a high-contact (VHA) service setting than a low-contact (VBA) service setting.

H2a: The positive relationship between employee perceptions of service quality and customer perceptions of service quality will be stronger in the high-contact (VHA) service setting than in the low-contact (VBA) service setting.

However, even within service environments, employee-customer interactions differ in impact on the formation of customer perceptions of service quality. Gould-Williams (1999) demonstrated that the frequency and duration of contact between service providers and patrons, in combination with the exchange of tangible items, play determinant roles in shaping customer perceptions of service quality. These conditions characterize the typical healthcare encounter provided by VHA facilities (i.e., extended relationships, recurrent interactions, and technology-intensive exchanges). However, the range of service episodes enacted at VBA offices varies from brief, low-tech episodes (e.g., primarily mail correspondence) to prolonged adjudications punctuated by repeated volleys of interaction involving assorted mixes of written, telephonic, and face-to-face communications. We would, therefore, expect the link between employee and customer perceptions of service quality to vary as a function of customer contact intensity. Specifically, a more pronounced relationship should be observed in those VBA encounters where beneficiaries were more personally involved in their claims proceedings.

H2b: Within the low-contact (VBA) service setting, the positive relationship between employee perceptions of service quality and customer perceptions of service quality will be stronger for clients with more contact-intensive service encounters than for those with less-intensive service encounters.

METHODS

Study Participants and Procedure¹

Employee Survey Data

There were 74,662 responses to the confidential and anonymous employee survey (72% response rate) from employees in 147 VHA medical facilities across the United States. However, we confined our analyses only to those facilities for which employee survey data could be reliably paired with customer and other facility data for 2001. This yielded usable data from 113 VHA facilities; specifically, responses of 59,464 employees. In the VBA, there were 6,345 responses to an identical survey (71% response rate) from employees in 57 VBA offices throughout the US. However, the VBA is organized into several disparate, highly independent service divisions (e.g., Compensation and Pension, Vocational Rehabilitation, Loan Guaranty). Because the full set of customer and performance data necessary for our study was available only from the Compensation and Pension (C&P) division — which processes veterans' applications for disability and pension

¹ The research reported here draws primarily upon responses from existing Veterans Healthcare Administration (VHA) and Veterans Benefits Administration (VBA) 2001 surveys of its employees, and from existing VHA and VBA customer service surveys of its patients/clients from late 2001 to mid 2002.

claims — we opted to use only the survey responses from 919 employees in 54 C&P offices. Both the VHA and VBA employee surveys asked for employee observations and opinions on a wide variety of topics regarding their work experiences. We then aggregated this data by averaging the individual responses for each item within each of the 167 VA facilities/offices. Our data collection procedure closely matches that described in Harmon et al. (2003) and Scotti et al. (2007).

Customer Survey Data

To measure patients' perceptions of service quality, we used responses from a 2001 VHA customer service survey of its ambulatory care patients at the same 113 facilities described above. This customer survey followed a stratified, random sampling design that resulted in a total of 212,874 respondents (an average of approximately 5.8% of the total ambulatory care patients of these facilities; with samples ranging from 478 customers of the smallest facility to 10,608 customers of the largest). This survey asked for customer observations and opinions on a wide variety of topics regarding the care they received at the VHA. We then aggregated this customer data by averaging the individual responses for each item within each of the 113 VHA facilities.

We obtained comparative measures of claimant service-quality perceptions from a 2002 VBA customer service survey of compensation and pension (C&P) claims applicants at the same 54 C&P offices described above whose claims were being processed from 2001 through 2002². This customer survey followed a stratified, random sampling design that resulted in a total of 23,320

² Note: During 2001-2002 it took an average of 6-8 months for the VBA to process a claim. Thus, the majority of VBA clients surveyed in 2002 after completion of their claim had begun their processing period in 2001.

respondents (an average of approximately 3.1% of the total C&P clients of these offices; with samples ranging from 199 customers of the smallest office to 315 customers of the largest). This survey asked for customer observations and opinions on a wide variety of topics regarding the processing of their claims. We then aggregated these data by averaging the individual responses for each item within each of the 54 C&P offices.

To investigate the effects of *service-encounter contact intensity* within the VBA, we assigned to the “low-contact-intensity” group those who specified that their interactions with the VBA were only via mail or telephone, and to the “high-contact-intensity” group those who indicated they had at least one in-person encounter with the VBA and its employees. This resulted in a low-intensity group totaling 10,294 VBA customers across the 54 offices used in our study, and a high-intensity group totaling 3,976 VBA customers across the same offices, representing 17% of total VBA customer survey respondents. As in previous analyses, we aggregated responses by facility to produce for each group the study measures discussed above.

Because the VHA and VBA customer survey items were assessed on different response scales (specifically, a three-point response scale for the VHA and a five-point response scale for the VBA), it was necessary to convert all responses to a directly comparable common response scale. To do so, we standardized each individual customer response within the VHA and VBA customer groups. Conversion of all responses to a standard scale permitted valid comparisons across samples.

Study Measures and Analysis

Dependent Variables

Customer-Perceived Service Quality (CPSQ) was measured with a five-item scale in the VHA and a four-

item scale in the VBA, using items available from the respective customer surveys that we deemed the most appropriate service attributes for assessing customer-perceived service quality in each unique type of service context. The VHA survey items selected concerned the attentiveness, courtesy and trustworthiness of the provider, the adequacy of information patients received about their condition and course of treatment, and the organization of the clinic (see Table 1a for these five VHA CPSQ items along with their unstandardized facility means and standard deviations). The VBA items selected concerned the helpfulness of employees, the adequacy of information received by claimants, and the timeliness and fairness of the claim adjudication process (see Table 1b for these four VBA CPSQ items along with their unstandardized facility means and standard deviations). The Chronbach's alpha (α) index of reliability of the two CPSQ standardized scales are .80 for the VBA and .83 for the VHA, indicating high levels of measurement reliability.

Customer Satisfaction was measured by a single item in each agency's customer survey. Although it is often assumed that multiple-item (or scale) measures of satisfaction are preferred, recent evidence suggests that single-item measures of global satisfaction are as good or better (Nagy, 2002; Wanous, Reichers & Hudy, 1997). In the VHA, the item used was: "All things considered, how satisfied are you with your health care in the VA?" (1 = completely dissatisfied, 7 = completely satisfied). In the VBA, the item used was: "Regardless of the outcome, how satisfied are you with the way VA has handled your claim?" (1 = very dissatisfied, 5 = very satisfied). As in the case of the CPSQ measures, because the two agencies used items with different response scales, we used the same standardization technique described above to place the two measures on a common valid scale.

Table 1a.
Customer Perceived Service Quality Construct Items
VHA (N=113)

Item	Mean	S.D.
Did the provider listen to what you had to say?	2.80	.05
Did you have confidence and trust in the provider you saw?	2.68	.06
Did you get as much information about your condition and/or treatment as you wanted from the provider?	2.53	.07
Overall, how would you rate the courtesy of your provider?	2.74	.06
How well organized was the clinic you visited?	2.72	.07

Note: Three-point response scale (with a value of 3 the most favorable)

Table 1b.
Customer Perceived Service Quality Construct Items
VBA (N=54)

Item	Mean	S.D.
1. How completely did VA keep you informed about the status of your claim?	3.47	.27
2. Given what you know about your claim, how <u>reasonable</u> was the length of time it took VA to arrive at a decision about your claim?	3.26	.27
3. How fair was the VA's evaluation of your claim?	3.37	.20
4. Overall, how helpful were VA employees?	4.00	.16

Note: Five-point response scale (with a value of 5 the most favorable)

Independent Variables

High Performance Work Systems (HPWS), the measure we used to assess strategic human resource practices, is a composite of ten factor-analytically derived dimensions extracted from the VA employee survey that has been previously tested and validated (see Harmon, et

al., 2003, for a fuller explication of how this scale was derived and validated through a series of confirmatory factor analyses). A common instrument was used to survey employee perceptions at both the VHA and the VBA facilities. Therefore, the scales and items used in the two agencies are the same, and standardization is not necessary. The questionnaire instrument queried employees about the degree to which they believed that their workplace exhibited the characteristics commonly associated with high-performance work practices (goal-alignment, communication, involvement, empowerment, teamwork, training, trust, creativity, performance enablers and performance-based rewards). Responses were made on a Likert-type scale anchored at 1 = strongly disagree, 5 = strongly agree. Table 2 lists these ten items along with their facility means and standard deviations. The alpha for this ten-item scale was .91 for the combined VHA/VBA employee responses, indicating high levels of reliability and item inter-correlation.

Customer Orientation was measured by three items from the VHA employee survey that assessed the degree to which employees believed that their organization was geared towards accommodating its customers: “Products, services and work processes are designed to meet customer needs and expectations,” “Customers are informed about the process for seeking assistance, commenting, and or complaining about products and services,” and “Customers have access to information about products and services.” The alpha for this five-point, three-item scale was .83, indicating high levels of reliability and item inter-correlation.

Table 2.
High Performance Work Systems Construct Items
Overall Sample- Both VHA and VBA (N=167)

	Item	Mean	S.D.
1.	Employees are rewarded for providing high quality products and services to customers.	2.68	0.37
2.	Managers let employees know how their work contributes to the organization's mission and goals.	3.16	0.37
3.	Employees are kept informed on issues affecting their jobs.	3.18	0.34
4.	Sufficient effort is made to get the opinions and thinking of people who work here.	2.73	0.37
5.	Employees have a feeling of personal empowerment and ownership of work processes.	2.65	0.31
6.	A spirit of cooperation and teamwork exists.	3.39	0.65
7.	There is trust between employees and their supervisors/team leaders.	2.92	0.38
8.	I am given a real opportunity to improve my skills in the organization.	3.21	0.26
9.	I feel encouraged to come up with new and better ways of doing things.	2.92	0.31
10.	Conditions in my job allow me to be about as productive as I could be.	3.11	0.32

Note: Five-point response scale– strongly disagree to strongly agree

Employee-Perceived Service Quality (EPSQ) was measured with a two-item scale derived from the employee satisfaction survey reflecting their ability to deliver high-quality customer service at their workplace. The two items were: “How would you rate the overall quality of work done in your work group?” and “Overall, how would you rate the quality of service provided to veterans by your facility or office?” The α for this two-item, five-point scale was .76, indicating adequate levels of reliability and item inter-correlation.

Preliminary data analyses were conducted using the SPSS 15.0 software package and hypotheses were tested using the AMOS 5.0 software package for structural equations modeling. Structural equations modeling (SEM) offered us two distinct advantages over traditional regression techniques: (1) SEM allowed us to simultaneously calculate both direct and indirect effects of the independent variables, and (2) SEM provided us with statistical tests to determine the adequacy of our hypothesized model against alternative models and hypotheses (see Schumaker & Long, 1996).

RESULTS

The correlations between the measures used in this study, along with their means and standard deviations are presented in Tables 3a-3c. The results of the SEM analyses can be found in Figure 2. In this figure, the results are shown for the total sample (VHA and VBA facility-level data combined), as well as the results for the VBA and the VHA separately. As can be seen, the results provide support for our hypotheses that: a) High-Performance Work Systems (HPWS) are positively related to employee perceived service quality (EPSQ), both directly and indirectly through perceived customer orientation (H1); b) the relationship between customer orientation and EPSQ is

stronger in a high-contact (VHA) service environment (H1a); c) EPSQ is positively related to customer perceived service quality (CPSQ; H2); d) this relationship is stronger in a high-contact (VHA) service environment (H2a); e) this relationship is stronger for high-intensity service encounters within the low-contact VBA service context (H2b); and f) CPSQ is positively related to customer satisfaction (H3).

Tests of Overall Model

The goodness-of-fit statistics for the overall structural equations model (chi-square of 7.2, $df = 5$; $p < .21$; CFI = .99; RMSEA = .05) are all excellent (rules of thumb for good model fit are a non-significant, $p > .05$ chi-square, a CFI of .90 or higher, and an RMSEA of .08 or lower). This indicates that the hypothesized model accurately reflects the underlying data and that there are likely no significant indirect or direct effects in the model except for those that are hypothesized. In the overall model, HPWS had a total path effect on EPSQ of $\beta = .39$. This includes both its direct positive effect on this variable ($\beta = .20$) as well as its indirect effect, through customer orientation ($\beta = .19$; derived by multiplying the β between HPWS and Customer orientation by the β between Customer orientation and EPSQ). We also found a significant positive relationship ($\beta = .30$) between EPSQ and CPSQ. Further, 9% of the variance in CPSQ can be explained by knowing employee perceptions. As expected, CPSQ is a main driver of customer satisfaction, with a direct effect of $\beta = .81$. Fully 66% of the variance in customer satisfaction is explained by the other variables in the model.

Table 3a.
*Descriptive Statistics and Correlation Coefficients for Study Variables:
 Overall Sample- Both VHA and VBA (N=167)*

	Mean	s.d.	1	2	3	4	5	6
1. High-Performance Work Systems (HPWS)	2.96	.26	(.91)					
2. Customer Orientation	3.60	.21	.65	(.83)				
3. Employee Perceived Service Quality (EPSQ)	4.10	.24	.39	.42	(.76)			
4. Customer Perceived Service Quality (CPSQ)	0.00	1.00	.19	.28	.30	(.82)		
5. Customer Satisfaction	0.00	1.00	.14	.23	.26	.81	(na)	
6. Volume	0.00	1.00	.08	.02	-.08	-.14	-.18	(na)

Notes:

Correlations above .15 are significant at $P < .05$

Scale Reliabilities (Chronbach's alpha) are listed in parentheses on the diagonal. The CPSQ, Customer Satisfaction, and Volume variables were standardized so we could meaningfully compare between the two different VA agencies. Thus, for these variables, the means are zero and the standard deviations are 1.0.

Table 3b.
*Descriptive Statistics and Correlation Coefficients for Study Variables
 VHA Sample Only (N=113)*

	Mean	s.d.	1	2	3	4	5	6	7
1. High-Performance Work Systems (HPWS)	2.90	.17	(.91)						
2. Customer Orientation	3.59	.13	.74	(.83)					
3. Employee Perceived Service Quality (EPSQ)	4.16	.13	.60	.68	(.76)				
4. Customer Perceived Service Quality (CPSQ)	2.70	.06	.25	.34	.59	(.83)			
5. Customer Satisfaction	5.70	.13	.12	.25	.50	.76	(na)		
6. Volume	32,756	16,216	.13	-.06	-.10	-.13	-.16	(na)	
7. Cost/Patient	4,166.4	406.8	-.01	-.18	-.24	-.19	-.30	-.08	(na)

Notes:

Correlations above .19 are significant at $P < .05$

Scale Reliabilities (Chronbach's alpha) are listed in parentheses on the diagonal

Table 3c.
*Descriptive Statistics and Correlation Coefficients for Study Variables:
 VBA Sample Only (N=54)*

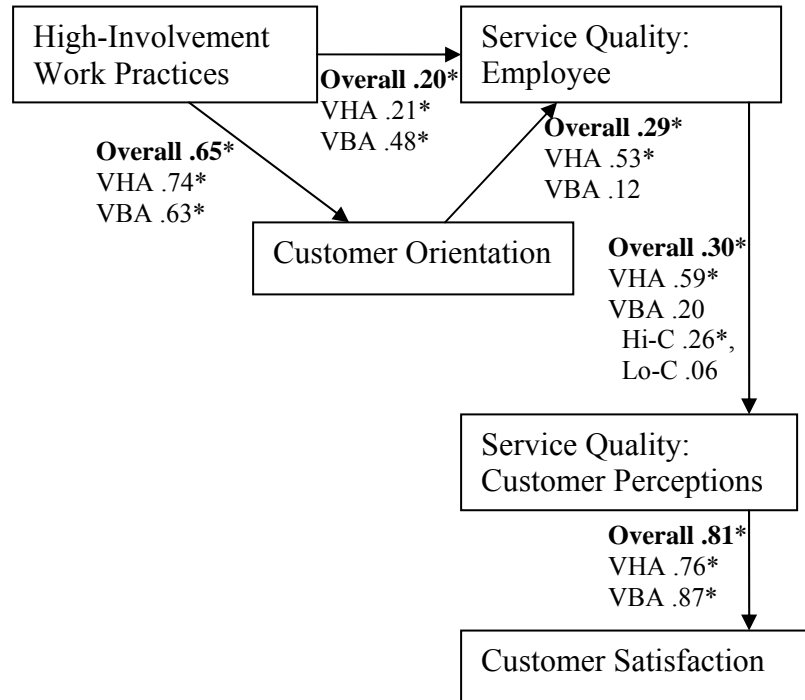
	mean	s.d.	1	2	3	4	5	6.	7
1. High-Performance Work Systems (HPWS)	3.07	.39	(.92)						
2. Customer Orientation	3.62	.31	.64	(.69)					
3. Employee Perceived Service Quality (EPSQ)	3.97	.24	.56	.42	(.81)				
4. Customer Perceived Service Quality (CPSQ)	3.69	.23	.17	.27	.20	(.80)			
5. Customer Satisfaction	3.65	.20	.10	.10	.20	.87	(na)		
6. Volume	14,131	10,917	.05	.10	-.10	-.17	-.22	(na)	
7. Average days to process a claim	227.2	52.6	-.29	-.33	-.32	-.51	-.44	-.12	(na)

Notes:

Correlations above .26 are significant at $P < .05$.

Scale Reliabilities (Chronbach's alpha) are listed in parentheses on the diagonal

Figure 2.
Results of the Structural Equations Model Analyses



Note:
Significant results marked with *

Model Fit Statistics:

Overall (VBA & VHA)	VHA Only	VBA Only
N= 167	N= 113	N= 54
$\chi^2 = 7.2(5) p < .21$	$\chi^2 = 8.4(5) p < .13$	$\chi^2 = 3.5(5) p < .62$
CFI = .99	CFI = .99	CFI = 1.0
RMSEA = .05	RMSEA = .08	RMSEA = .00

Tests of Contact-Intensity Effects

The goodness of fit statistics for each of the separate VHA and VBA structural equations models were excellent (VHA model chi-square of 8.4, $df = 5$; $p < .13$; CFI = .99; RMSEA = .08; VBA model chi-square of 3.5, $df = 5$; $p < .62$; CFI = 1.0; RMSEA = .00) indicating that both models accurately reflect the underlying data. We conducted Critical Ratio of Differences (CR) tests to determine whether certain hypothesized path coefficients differed from each other based on service context.

HPWS, Customer Orientation, and Employee PSQ linkages. As hypothesized in H1a, we found that employees perceptions of customer orientation had a significantly stronger effect on their perceptions of service quality in the high contact VHA setting than in the low contact VBA setting (CR = 4.78, $p < .05$; critical ratios above 1.68 are statistically significant), whereas the direct relationship between HPWS and employee-perceived service quality was significantly higher in the low contact VBA sample than in the high contact VHA sample (CR = 2.32, $p < .05$). The indirect effects of HPWS on EPSQ that occurred through customer orientation were almost five times greater for the VHA than VBA, whereas the direct influence of HPWS on EPSQ was over twice as strong for the low-contact VBA than the high-contact VHA.

In the *high-contact VHA-only model*³, HPWS had a strong direct effect of ($\beta = .74$) on employee perceptions of whether the organization is oriented toward customer service. Further, HPWS had both a direct effect ($\beta = .21$) on EPSQ and a total path effect on this variable (i.e., both direct, and indirect through the customer-orientation path)

³ Results for the VHA-only model have been previously reported in Scotti et al (2007).

of $\beta = .60$. In contrast, in the *low-contact VBA-only model*, HPWS had a strong direct effect of ($\beta = .63$) on employee perceptions of whether the organization is oriented towards customer service. Further, HPWS had a direct effect ($\beta = .48$) on EPSQ and a total path effect on this variable of $\beta = .56$. However, the direct path between customer orientation and EPSQ was non-significant at $\beta = .12$, $p > .05$, indicating the HPWS exhibits a statistically significant direct effect on EPSQ within the low contact VBA context but does not function indirectly through perceived customer orientation.

Employee and Customer PSQ linkages. As was hypothesized in H2a, the relationship between employee perceptions of service quality and customer perceptions of service quality was significantly stronger in the high-contact VHA sample than in the low-contact VBA ($CR = 4.87$, $p < .05$). Specifically, the relationship between EPSQ and customer-perceived service quality (CPSQ) was three times stronger in the high versus low-contact delivery setting. In the VHA, we found a significant relationship ($\beta = .59$) between EPSQ and CPSQ, with 34% of the variance in customer perceptions of service quality being explained by knowing the employees' perceptions. However, in the VBA only 4% of the variance in CPSQ can be explained by knowing employees' perceptions. Thus, these results for the VBA fail to lend support to our hypotheses regarding the employee-customer link in low-contact service contexts.

Contact Intensity Effects within the VBA. Based on our earlier discussion regarding the importance of service contact on the relationship between employee and customer perceptions of customer service quality, we ran an additional structural equations model analysis using VBA data, comparing the data from customers who had at least

one in-person encounter with the VBA and its employees to those who did not have an in-person encounter (i.e., those who simply had phone or mail correspondence). As hypothesized in H2b, the relationship between employee perceptions of service quality and customer perceptions of service quality was significantly stronger in the high-contact VHA sample than in the low-contact VBA sample (CR = 1.85, $p < .05$). For the low-intensity sample, the relationship between employee and customer perceptions of service quality is not statistically significant ($\beta = .06$, $p > .05$), with just 6% of the variance in customer perceptions of service quality explained by knowing the employees' perceptions. In the high-intensity sample, the relationship is statistically significant ($\beta = .26$, $p < .01$), with 32% of the variance in customer perceptions of service quality explained by knowing the employees' perceptions.

Customer PSQ and Satisfaction Linkages. As expected (H3), customers' perceptions of service quality are a potent driver of their satisfaction irrespective of service context. In the VHA, the direct effect of CPSQ on customer satisfaction was $\beta = .76$. Fully 58% of the variance in VHA customer satisfaction can be explained by the other variables in the model. In the VBA, CPSQ is an even stronger predictor of customer satisfaction, with a direct effect of $\beta = .87$. Seventy-five percent of the variance in VBA customer satisfaction can be explained by the other variables in the model.

We also investigated the degree to which the number of clients served at each facility moderated the results by examining correlations and introducing client volume as a control variable in our models. Doing so revealed no significant relationship between the number of clients served and any of the variables in our models, except for customer satisfaction; however, this correlation was small, did not account for additional variance in the

model, and did not change the values of any of the hypothesized paths between constructs. Thus, we can be confident that the relationships we found hold across VHA and VBA facilities of different sizes and number of customers served.

Finally, we examined the relationship of our study variables to measures of cost efficiency and service speed. In terms of *cost efficiency*, Harmon et al.(2003) previously reported, using VHA data overlapping that of this study, that facilities with higher HPWS, customer-perceived service quality and customer satisfaction also tended to have lower average patient treatment expenditures. Specifically, patient resource consumption was negatively correlated with perceived customer service quality ($r = -.24, p < .01$) and with satisfaction ($r = -.30, p < .001$). In terms of *service speed*, the VBA Compensation and Pension division collects data from all its offices on the number of days it takes to process each claim. We found the average number of days it took VBA offices to complete processing of a claim in 2002 was negatively correlated to every variable in our study (except volume of claims). Facilities that had higher HPWS, customer orientation, and employee-perceived service quality took significantly less time to process claims, and faster claim processing was associated with higher customer perceived service quality and satisfaction. In fact, there was a strong correlation ($r = .73$) between objective processing time and customers responses to the item concerning the reasonableness of time it took to complete their claim, providing some objective validation of customer perceptions. Further, an unpublished analysis conducted by VBA's internal Office of Quality assessment (VBA, 2001) found processing time and costs of claim processing to be highly correlated ($r = .49$).

DISCUSSION

Prior research (Scotti, et al. 2007) established the significance of the proposed model and its constituent links using data from Veterans Health Administration (VHA) outpatient care facilities. The present study separately examined the basic linkage model in each of two different service delivery contexts -- the high-contact VHA outpatient care setting and the low-contact Veterans Benefits Administration (VBA) claims processing setting. The findings further validate the pivotal role that high-performance work systems (HPWS) play in driving the chain reaction producing high service quality and customer satisfaction, regardless of service context. Superior HPWS were associated with stronger customer orientation and more favorable perceptions of service quality in both high-contact (VHA) and low-contact (VBA) types of service organizations. Moreover, superior HPWS were associated with more cost-efficient patient treatment in the VHA and faster claim processing time in the VBA.

At the same time, this study revealed important differences across service contexts with regard to the salience of customer orientation and the congruence between employee and customer perceptions of service quality. Whereas in the high-contact VHA environment customer orientation was a distinct and strong mediator of the relationship between HPWS and employee service-quality assessments, in the low-contact VBA context HPWS alone influenced service-quality perceptions, with customer orientation playing an insignificant role.

Although we predicted customer orientation would play a weaker role in a low-contact setting, we did not expect to find a non-significant association. The reasons why VBA employees apparently did not regard customer focus as a meaningful determinant of service quality remain unclear and deserve further investigation. We did,

however, confirm the congruence between employee and customer service-quality assessments for the subset of VBA customers that engaged in higher levels of interaction with employees during the service-delivery process. These results show that even short periods of less intense direct interaction (such as meeting with a client to discuss the status of his/her VBA benefit claim) can create perceptual congruence between employees and customers. This suggests the importance of thinking about contact intensity, and the necessary service-delivery mechanisms to promote quality and customer satisfaction, not only at the organizational level of analysis but also at the level of service encounters, which can vary greatly in intensity even within the same organizational setting.

The present study suggests several opportunities for further research. Although not specifically addressed in the present study, job pressure and workplace stress may have a meaningful impact on employees' perceptions of their ability to effectively respond to the demands of the service encounter. According to Gronfeldt and Strother (2006), employees occupying high-pressure positions will be challenged to render superior levels of individualized attention to customers and will not have the time to cater to client expectations that transcend the normal routines. Subsequent investigations should explicitly include measures of work stress to elucidate its role and significance in shaping workers' capacity to engage in customer-oriented behaviors.

Future research is also needed to investigate the multi-dimensional drivers of perceived customer service quality and to assess their relative importance. Managers would benefit from an enhanced understanding of the aspect-level determinants of service quality so they can focus on the most relevant aspects and better direct and allocate resources to increase customer perceptions of quality.

Finally, it would be important to determine whether and how customer satisfaction leads to improved economic returns on investment. Strategies that succeed at retaining customers should ultimately result in higher profits (or surpluses) through enhanced patronage combined with reduced operating expenses (i.e., it is less costly to retain a current customer than it is to recruit a new one, and experienced customers who are familiar with operating protocols impose fewer demands on internal resources). Therefore, further research is needed to test and elaborate upon the linkages between client satisfaction and various aspects of financial performance.

Several limitations of our findings should be acknowledged. First, even though the sample of VHA and VBA facilities used in this study contained a great deal of diversity, these facilities are part of a single, large government organization. Because of this, the extent to which similar results would be obtained in the private sector is open to question. Second, the measures of employee and customer perceptions used in this study were conveniently obtained from existing VHA and VBA surveys, and were not specifically constructed with the study's purposes in mind. Despite this limitation, these survey-based measures have demonstrated reliability, content validity and construct validity. Caution in drawing inferences about causality is also warranted, since multiple, time-ordered perceptual measures necessary to establish causal relationships were not used in our research design. Lastly, as is the case in the vast majority of behavioral science quantitative research studies, this study makes use of attitudinal survey data which are technically considered ordinal level data because the exact distances between points on these scales cannot be precisely known (Aguinis, Henle & Ostroff, 2001). While a strict interpretation of levels of measurement would lead one to reject all regression-based statistical tests making use of this type of

data, it is widely recognized that the distinction between ordinal and interval level data is dubious at best, for a number of conceptual and practical reasons, and that, in the behavioral sciences, well-constructed ordinal scales with multiple response categories and multiple items are seen as fully acceptable for a full range of statistical tests that technically require interval level data (as summarized by Velleman and Wilkinson, 1993).

CONCLUSIONS AND IMPLICATIONS

Findings from this study add to our knowledge of how to design service strategies to fit the demands of customer encounters. To date, research on strategic management of health and human services has centered primarily on issues of market positioning and enterprise differentiation (i.e., organization-level strategy). Issues pertaining to service design and delivery (i.e., service-level strategy) have received limited, but rising attention with regard to these types of services. This study focuses on the design aspect of service strategy in the health and human services domain. Human services are labor intensive and, as such, depend heavily on the management of human resources for successful delivery. In addition, human services typically involve substantial interaction with clients and must be rendered in a customer focused climate with due regard to for the intensity of customer contact during the service episode. The fundamental implication for managers is that successful delivery of services is dependent upon the design of a service strategy that complements the particular needs and expectations of the customer. Moreover, the strategic design adopted to guide implementation of service delivery may need to be adjusted across service units within a given organization.

The interrelated practices constituting high-performance work systems have proven their effectiveness in commercial retail industries and are shown here to be beneficial to the delivery of health and human services as well. While the role of a customer-oriented climate is most salient in human services that are dominated by high intensity customer contact, its importance should not be overlooked in services that are characterized by less intensive customer interactions; particularly those in which high-contact engagements prevail episodically. In both contexts, managerial attention to high-performance work systems and customer-orientation has the potential to favorably impact perceptions of service quality, amplify consumer satisfaction, and enhance operational efficiency.

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