IT Service Climate: An Extension to IT Service Quality Research

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Abstract

IT departments are service providers to business users, and service quality has been proposed as one measure of IT effectiveness. Previous research has adapted the SERVQUAL scale from service marketing literature, using it to gauge business users' expected and perceived levels of IT service quality. In this research, we investigate the other side of the IT-user relationship and look inside the IT function to identify variables that could affect IT service quality.

Building on research into climate from the organizational psychology literature, we propose a new construct, IT Service Climate, and a theoretical model that links IT Service Climate with antecedents and service quality. A series of propositions are derived from the model to guide future empirical research, and other potential applications of the climate construct in IT research are discussed. By focusing on the IT department's impact on service quality, we hope to assist managers to pinpoint the causes of service shortfalls.

Keywords: Climate, IT service climate, service quality, SERVQUAL

IT Service Climate: An Extension to IT Service Quality Research

SERVQUAL is a useful starting point, not the final answer, for assessing and improving service quality.

—Parasuraman, Berry and Zeithaml, 1991, p. 445

1. Introduction

The role of the IT function within the organization has expanded considerably in recent years, driven by changing expectations from business and the evolving technological environment. The IT department is now enabling and supporting the interactions of both internal clients and external supply chain partners with a wide range of services, including hardware/software selection and installation, systems development and maintenance, web design, network, helpdesk, and training (Kettinger and Lee, 2005; Pitt et al., 1995). Many best-practice frameworks and methodologies such as Application Services Library (ASL), Capability Maturity Model (CMM), IT Infrastructure Library (ITIL), and Microsoft Operations Framework, have been proposed to guide IT operations and services. Kettinger and Lee (1994) note that IT departments are increasingly viewed as service providers to business users, and improving service quality and user satisfaction has been a concern of IT researchers and practitioners. It has been proposed that service quality, as a measure of IT effectiveness, be added to DeLone and McLean's (1992) IS success model to complement information quality and systems quality (Pitt et al., 1995).

Existing work on IT service quality (e.g., Kettinger and Lee, 1994; Kettinger et al., 1995; Pitt et al., 1995; Watson et al., 1998; Jiang et al., 2002; Kettinger and Lee, 2005) has looked to the service marketing literature and focused on adapting Parasuraman and colleagues' (1988, 1991, 1993) SERVQUAL instrument to the context of IT service. Because this research instrument focuses on customers, the IT service quality research has largely focused on business users to identify IT service quality shortfalls.

However, in order for IT managers to improve service to customers, they need to understand how the internal functioning of the IT department affects its service quality. In other words, managers need internal measures to diagnose and predict how changes within the IT department will improve service quality. For example, after identifying a service quality shortfall (the *what*), managers also need to find the root causes (the *why*) and implement appropriate corrective actions (the *how*). Parasuraman and colleagues realized the need to address both sides of the customer-server relationship. They noted that,

> In our research over the years we have learned much about service quality from employees who provide the service. Indeed, our research with employees has been the primary source of many important insights about possible causes of service shortfalls… Companies that focus service quality research exclusively on external customers are missing out needlessly on a rich and vital source of information. (Parasuraman et al., 1990: pp. 41-42)

In this study, we attempt to fill this gap and extend IT service quality research by identifying variables within the IT function that have an impact on the service it provides. We seek to provide an expanded theory-based framework to help IT managers identify the causes of service shortfalls. A lack of responsiveness may have several sources (e.g., a lack of service orientation, lack of resources, or lack of knowledge). Service quality, as an outcome variable, as well as the SERVQUAL instrument, will become more useful to IT managers as its antecedents are identified.

We looked to the organizational psychology literature, specifically climate theories, which connect management practices with organizational outcomes through employees' shared cognition of their work environment (Campbell et al., 1970; Kopelman et al., 1990). Much of that literature has focused on one type of climate, i.e., *service climate* (or *climate for service*), and research has established service climate as a predictor of the quality of service provided to bank customers (Schneider and Bowen, 1985; Schneider et al., 1980, 1996, 1998). Building on these studies, we apply service

climate theories to the IT context and introduce a new construct, *IT service climate*. We propose a theoretical framework that links IT professionals' climate perceptions with antecedent and outcome variables. We argue that it is the various organizational practices within the IT function that shape the climate perceptions of IT employees, which in turn serve as a guide to their service behavior. The nature of IT service is different from services like retail banking, which much of the prior research is based on. IT service is knowledge work and requires creativity and problem-solving abilities in order to produce idiosyncratic, esoteric knowledge (Drucker, 1993; Schultze, 2000). IT work is often project-oriented and complex and requires extensive teamwork, rather than routinized and scripted one-on-one service encounters. To further ground the climate construct and research model in the context of IT service, we conducted field interviews and utilize quotes from professionals to illustrate and support our theoretical model.

We begin this paper with a discussion of the service quality literature, followed by a review of the organizational climate literature, including the existing IT research on climate. We then introduce the IT service climate construct and a theoretical framework, on which we propose propositions and a research agenda. The paper concludes with a discussion of its contributions to IT research and practice.

2. Service Quality

In this section, we review the literature on service quality and its related conceptual and operational issues.

2.1. Service quality in the services literature

Garvin (1988) suggests that "quality is an unusually slippery concept, easy to visualize yet exasperatingly difficult to define" (p. xi). There are many definitions of quality (Garvin, 1984), and it has been argued that "the main cause of the lack of unanimity is that quality can be and has been studied from many different perspectives" (Steenkamp, 1989, p. 7). However, most prior research has taken either a production-oriented or a customer-oriented approach to quality (Gummesson, 1991).

The production-oriented approach reflects an operations management perspective and defines quality as "conformance to specifications" (Crosby, 1984). Also referred to as manufacturing-based quality, objective quality, or technical quality, this approach is well suited to measuring the quality of mass-produced, standardized products (Kasper et al., 1999; Oliver, 1997). In contrast, the customer-oriented approach reflects a marketing perspective and views quality as subjective and determined by the perceptions of customers (Rust and Oliver, 1994). In other words, quality is in the eye of the customer (Gummesson, 1991).

Because the subjective, customer-oriented view toward quality is considerably more applicable to the intangible and heterogeneous features of service than the technical approaches, it has become the main approach to assessing quality in the services literature (Schneider and White, 2004). Consistent with this customer-oriented approach, *service quality* has been defined as the consumer's overall impression of the relative inferiority/superiority of the service (Zeithaml, 1988). Perhaps the most influential conceptualization of service quality is the five-dimension model proposed by Parasuraman et al. (1988) including tangibles, reliability, responsiveness, assurance, and empathy. Despite the disagreements over its dimensions and measurement approaches (e.g., Carman, 1990; Cronin and Taylor, 1992; 1994; Parasuraman et al., 1991, 1993, 1994; Teas, 1993, 1994), the SERVQUAL instrument has become the most popular measure of service quality (Zeithaml, 2000) and has been found to be a good predictor of overall service quality (Bitner and Hubbert, 1994).

2.2. Service quality in the IT literature

When the service quality construct was investigated in the IT field, most studies adopted the customer-oriented view of service quality (e.g., Kettinger and Lee, 1994; Kettinger et al., 1995; Pitt et al., 1995; Watson et al., 1998; Jiang et al., 2002; Kettinger and Lee, 2005). Four of the five original

service quality dimensions were retained for the IT service context, i.e., reliability, responsiveness, assurance, and empathy (Pitt et al., 1995).

The existing IT service quality research has primarily focused on measurement issues related to SERVQUAL (and other similar instruments such as SERVPERF). To our knowledge, no research to date has investigated how the internal functioning of the IT department affects customer assessment of IT service quality. In the following sections, we introduce the organizational climate literature and examine how the climate construct can increase our understanding of the IT service quality phenomenon.

3. Climate

Schneider (1990) noted that the construct of *climate* was first introduced in the 1960s, primarily based on the "social climate" and "social atmosphere" constructs proposed by Lewin (Lewin et al., 1939; Lewin, 1951) and followed by empirical research conducted in organizational settings (e.g., Litwin and Stringer, 1968). Climate is functional in nature; it serves as a basis for interpretation and, therefore, as a guide to action (Litwin and Stringer, 1968).   Since Likert's (1967) early empirical work, organizational climate has been viewed as a fundamental building block for describing and analyzing organizational phenomena (Schein, 2000). Cumulative research demonstrates that employee climate perceptions have important effects on both individual and organizational outcomes, such as work attitudes and satisfaction (e.g., Carr et al., 2003; DeCotiis and Summers, 1987; Schnake, 1983), job performance (e.g., Lawler et al., 1974), service quality (e.g., Schneider et al., 1980; 1998), customer satisfaction (e.g., Schneider et al., 1996), workplace accident rates (e.g., Zohar, 2000), TQM outcomes (Lin et al., 1999), and organizational financial performance (e.g., Borucki and Burke, 1999), among other things. (See Parker et al. 2003 and Ostroff et al. 2003 for reviews.)

3.1. A Definition of Climate

Organizational members are active perceivers and interpreters of their work environments, and employees tend to form their perceptions by observing how the daily operations of the organization are conducted and what goals the organization appears to be pursuing (Kopelman et al., 1990). Schneider and White (2004) note that the organization transmits this information to employees through its policies, practices, and procedures (e.g., human resources policies, marketing practices, operations management procedures), which collectively send messages about what is important—what behaviors the organization rewards, supports, and expects. Based on these behaviors and activities, employees develop a summary sense of "what is important around here," which represents climate. Climate represents the *patterns* or *themes* that employees perceive in what they experience; it is one way to conceptualize the totality of the experiences organizational members have of their workplace (Schneider and White, 2004). It can be viewed as subjective, temporal, and potentially subject to managerial manipulations (Denison, 1996).

Climate has been defined as "*the shared perceptions of employees concerning the practices, procedures, and kinds of behaviors that get rewarded and supported in a particular setting*" (Schneider, 1990: p. 384). Employees' sense-making and cognitive representations of meaning in the workplace are in turn used to understand and guide their behavior. In other words, climate is a perceptual mediator through which the effects of the work environment on employee behavior pass (Campbell et al., 1970; Kopelman et al., 1990).

It is necessary to distinguish climate from culture, because the term culture is often used when climate is the more appropriate term (Schein, 2000). Climate is about experiential descriptions or perceptions of what happens; it can most accurately be understood as a manifestation of culture (Schein, 1985). In contrast, culture is a deeper phenomenon based on symbolic meanings that reflect core values and fundamental ideologies and assumptions (Schein, 1992; Trice and Beyer, 1993). See the Appendix for further discussions about the distinction between the two constructs.

3.2. Psychological and Organizational Climate

To make a clear distinction between the levels at which climate is conceptualized, James and Jones (1974) described individuals' perceptions of their environments as *psychological* climates and the combination of these individuals' perceptions at the group or organizational level as *organizational* climate. Climate constructs at different levels of data aggregation share the same content, meaning, and construct validity (Chan, 1998; James, 1982; Kozlowski and Klein, 2000; Ostroff et al., 2003). Therefore, climate theories offer ample opportunities for multilevel research (Klein and Kozlowski, 2000). In later sections we discuss how the multilevel approach can be applied in the context of IT service climate.

In order to argue for the existence of a climate beyond the individual level, it is necessary to provide evidence that there is a high level of "sharedness" in cognition among individuals. The most common procedure is to use a mean or aggregated score across individuals and then demonstrate some form of within-group agreement (e.g., James et al., 1984). To the extent that homogeneity in perceptions of climate is present, organizational-level relationships can emerge and be meaningfully examined (Ostroff and Bowen, 2000). Large variability in perceptions among members indicates that aggregated perceptions do not adequately represent a construct of climate at the higher level (James, 1982). In other words, there is either a fragmented organizational climate or no organizational climate at all (Ostroff et al., 2003).

3.3. Climate Level and Climate Strength

To the extent that an organizational climate exists, it will have both a "level" and a "strength." Climate level represents the favorableness of employees' climate perceptions (calculated as the group mean), and climate strength represents the degree of consensus among employees' climate perceptions (calculated as within-group variance or the lack thereof).

Although early research only studied climate level, there has been a growing interest in climate strength, because the degree of variability of responses can be an important variable in its own right, not only a justification for an aggregate score (Ostroff et al., 2003). The notion of climate strength is largely derived from Mischel's (1973) early discussion of strong vs. weak situations. An organization with a strong climate (i.e., a place where events are construed the same way and where expectations are clear) should produce uniform behavior from the people in the setting (Schneider et al., 2002). In contrast, weak situations are ambiguously coded or not uniformly interpreted across individuals and do not generate uniform expectancies concerning the desired behavior (Ostroff et al., 2003). Thus, it is postulated that climate level should have stronger relationships with outcome variables when climate strength is high than when climate strength is low (e.g., Chan, 1998; Lindell and Brandt, 2000; González-Romá et al., 2002). Figure 1 illustrates this moderating relationship.
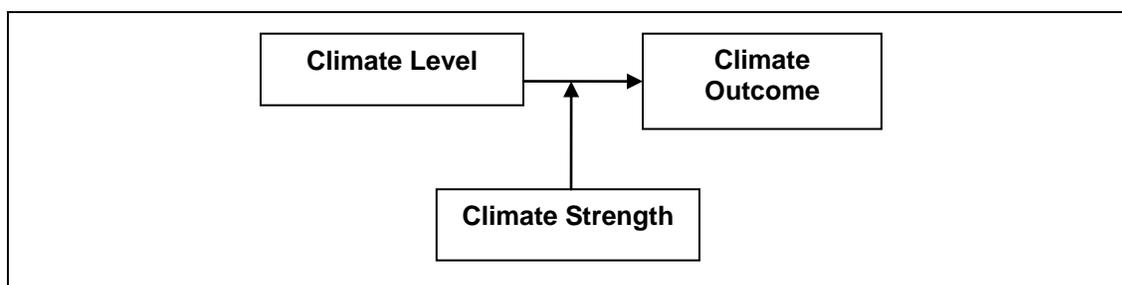

Figure 1: A Measurement Model: Climate Strength as a Moderator

3.4. Strategic Focus for Climate

Climate is best regarded as a construct having a "strategic focus" – a climate must be a climate *for something* (Schneider, 1975), because it is "not an omnibus construct conceptually," and "non-specific measures of climate are useless for anything but the most gross descriptions of the range of variation in organizations" (Schneider and Reichers, 1983; pp. 22-23). The underlying premise is that the

predictor and criterion variables must be conceptually linked and be operationalized at the same level of specificity. The "climate-for" approach has been used to study issues such as climates for safety (Zohar, 2000), service (Schneider, 1990), innovation and systems implementation (Klein and Sorra, 1996; Klein et al., 2001), technical updating (Kozlowski and Hults, 1987), creativity (Amabile and Gryskiewicz, 1989), organizational justice (Naumann and Bennett, 2000), citizenship behavior (Schneider et al., 1994), ethics (Victor and Cullen, 1988), etc.

The climate-for approach has gained wide acceptance (Ostroff et al., 2003) and has explained a significant proportion of variance in specific behavior-related variables beyond that achieved in studies of general climates (Tracey et al., 1995). Among all strategic climates studied in the literature so far, climate for service, first conceptualized by Schneider (1973), has been the climate-for that has received the most research attention. As we will elaborate in later sections, cumulative research in this area has established service climate as a viable predictor of service quality.

So far, we have reviewed the conceptual and methodological issues in climate theory research and emphasized the nature of climate as a perceptual mediator through which the characteristics of the work environment impact employee behavior. In the following section, we review the existing climate research in IT and build on this work to introduce the IT service climate construct.

4. Climate Research in the IT literature

Ein-Dor and Segev (1982), in perhaps the first study of climate in IT, examined the relationship between climate toward MIS and the quality of developer-user relationships, the degree of system use, and system integration in the organization. Boynton et al. (1994) developed a conceptualization of the overall "IT management climate," which is related to managerial IT knowledge and IT-management-process effectiveness. More recently, Watts and Henderson (2006) explored the concept of innovative IT climate and discussed how it is related to IT innovation.

There is also work on individuals' psychological climates, such as creativity climate for IT professionals (Couger, 1994), climate for business process change (Janz et al., 1997), ethical climate of IT professionals (Banerjee et al., 1998), technical updating climate (Blanton et al., 1998; Trimmer et al., 1998), climate for reporting bad news in software projects (Tan et al., 2003), climate for knowledge-sharing (Bock et al., 2005), etc. The main climate variables and relationships in these and other climate studies are summarized in Table 1.

In summary, IT researchers have used various conceptualizations of climate in past research. Conceptual and methodological developments, such as the distinction between psychological and organizational climates or the statistical justification for the presence of an organizational climate, have not yet consistently been incorporated in climate research in IT. Our conclusion is that further study of climate can make a contribution to our understanding of perceptions and behaviors within the IT function. To date, there has been no application of climate theories to the IT service context, and our hope is to fill this gap in the literature. To accomplish this, we build upon the work in other disciplinary areas, notably Schneider and colleagues' work in service climate in organizational psychology literature.

5. IT Service Climate

We adapt Schneider et al. (1998) and define IT service climate as *IT professionals' shared perceptions of the practices and behaviors in their workplace that support the prevision of IT service to business customers.* As with other organizational climates, IT service climate will be described as having a level and a strength. Thus, IT units with higher service climate levels will be said to have more favorable climates; units with higher climate strength will be said to agree more completely on the favorableness of their service climate. Previous research has laid foundations for the development of the multidimensional construct of IT service climate. Schneider et al. (2000) noted that "climate is a gestalt, a whole that is constructed and can be identified based on specific activities, behaviors and experiences…" and "service climate is inferred based on the presence of parts relevant

Table 1: Climate-Related Studies in the IT literature				
Author	**Research Design**	**Climate Variable**	**Outcome Variable**	**Literature Cited**
Alavi et al. 1995	Experiment	Emotional climate in different learning conditions	Learning effectiveness	Evans and Jarvis 1986
Banerjee et al. 1998	Survey	Ethical climate	Ethical behavioral intentions	Victor and Cullen 1988
Bock et al. 2005	Survey	Organizational climate for fairness, innovativeness and affiliation	Subjective norm to share knowledge	Denison 1996
Blanton et al. 1998; Trimmer et al. 1998	Survey	Technical updating climate	Technical competency and obsolescence of IT personnel	Kozlowski and Hults 1987
Boynton et al. 1994	Survey	IT management climate	Managerial IT knowledge and IT management process effectiveness	Schneider 1975; Ashforth 1985
Brown and Chervany 1995	Survey	Communication climate	Technology adoption	--
Butler and Fitzgerald 1997	Case study	Participatory climate for users	Development project success	--
Couger 1994, 1996; Couger et al. 1993	Survey; conceptual essay	Climate for creativity	IT professionals' creative behavior	Amabile and Gryskiewicz 1989
Dong and Neufeld 2001	Survey	Climate for implementation	ERP project success	Klein and Sorra 1996
Ein-Dor and Segev 1982	Interview	Psychological climate toward IS	Quality of developer-user relationships	--
Faniel and Majchrzak 2002	Survey	Organizational climate for knowledge reuse	Likelihood of reusing vs. inventing knowledge	--
Janz et al. 1997	Survey	Climate for change in systems development	Improvements in systems development process	Litwin and Stringer 1968
Newton et al. 2004	Survey	Organizational ethical climate	Job satisfaction of IT personnel	Victor and Cullen 1988
Tan et al. 2003	Experiment	Climate for reporting bad news	Willingness to report bad news	--
Wastell 1999	Case study	Psychological climate of support	Learning in IT departments	--
Watts and Henderson 2006	Conceptual; interview	Innovative IT climate	IT innovation	West 1990

for service" (p. 28). In a study of banks' retail branches, Schneider et al. (1998) developed a three-factor model of service climate, including *customer orientation*, *managerial practices*, and *customer feedback* (with *global service climate* as an overall measure).

These dimensions are expected to apply in the IT context. To deliver quality service, the IT department should emphasize meeting customer needs (*customer orientation*), and IT managers play a pivotal role in guiding daily work and service (*managerial practices*). Soliciting and addressing client feedback (*customer feedback*) allows the IT department to make targeted efforts to improve its

service quality. However, in contrast to retail banking, IT employees provide services to internal customers, and the services often involve complex knowledge work (Schultze, 2000). Thus, there is a need to further assess the applicability of these existing dimensions into the IT context, and to uncover any new potential dimensions. We explicate the dimensionality of the IT service climate construct in the following sections.

5.1. Construct Development

To develop a set of dimensions for the IT service climate construct that would be theoretically based and grounded in reality, we conducted both an extensive literature review and field interviews. Based on recommendations regarding climate construct development (e.g., Koys and DeCotiis, 1991; Ostroff et al., 2003; Schneider and Reichers, 1983), we employed three guidelines in developing IT service climate dimensions: 1) they must be in keeping with the construct definition and reflect employees' perceptions of practices, procedures, and behaviors in the IT workplace, 2) they must be immediate, proximal to providing services to business clients because factors at the most immediate and proximal level are likely to have the greatest influence (Katz and Kahn, 1978), and 3) they must have theoretical and empirical support in the literature.

We examined different climate constructs to see if they contained dimensions relevant to the IT service context. (For reviews of various climate constructs and dimensions studied in the literature, see Borucki and Burke, 1999; Carr et al., 2003; Koys and DeCottis, 1991; Patterson et al., 2005; Schneider et al., 1980). Many dimensions (e.g., fairness, warmth, technical updating) were eliminated based on the above three guidelines. Most of the remaining dimensions generally fell into Schneider and colleagues' service climate factors (i.e., managerial practices, customer orientation and customer feedback). One notable exception was customer communication – a construct that has been extensively studied in the organizational climate as well as the IT literature, but was not a part of the Schneider and colleagues' climate construct.

To further ground these climate dimensions in the context of IT service, we conducted 12 interviews with IT professionals and their users from four industries. Characteristics of these participating companies, their IT organizations, and our interviewees are summarized in Table 2. The interviews were semi-structured and used open-ended probes such as, "What are the factors in the IT department that have an impact on the quality of service provided to its clients?" and "Are there formal practices and procedures in your IT department regarding providing service to clients?" Interview questions were sent to interviewees in advance so that they had an opportunity to reflect on these issues. Each interview lasted 1-2½ hours.

The three Schneider factors and the additional one of customer communication were supported and further grounded in the context of IT service by our interviews. We therefore propose a four-dimension model of IT service climate, including service leadership, service vision, customer feedback, and customer communication. We explain these dimensions and their theoretical and empirical support and use interview quotes to illustrate these points in the next section.

5.2. A four-dimension model of IT service climate

Service leadership, similar to Schneider et al.'s (1998) managerial practices dimension, refers to the extent to which IT managers take actions to guide and reward the delivery of service, such as setting goal, planning and coordinating work, and recognizing and rewarding employees. This dimension finds its theoretical bases in goal setting and expectancy theories of motivation as well as path-goal theory of leadership.

Goal-setting theory (Locke, 1968; Locke and Latham, 1990) posits that specific, difficult goals, with rewards contingent on goal attainment, result in high levels of performance; and expectancy theory (Vroom, 1964) postulates that individuals will engage in behaviors that are likely to lead to valued outcomes. Integrating these two motivation theories, House (1971) proposed the path-goal theory of leadership, suggesting that employee performance improves when the leader clarifies the behaviors (paths) needed for them to attain the valued outcomes (goals). With regard to service, the path to

goal attainment would be service quality behaviors and rewards associated with such behaviors (Schneider and White, 2004).

Table 2: Participating Companies in the Field Interviews			
Company	**Company Characteristics**	**IT Department Highlights**	**Interviewees**
WirelessCo	A large wireless provider	• 2,000+ IT employees in multiple locations throughout the U.S. • Driven by market competition for new, innovative wireless phone and data services	1. Director, Strategic Systems 2. Senior Systems Manager 3. Director, Marketing
InsureCo	A large insurance and financial services provider	• 4,000+ IT employees decentralized along lines of business • Top IT executives have formal responsibility for business results (e.g., customer retention rate)	1. Officer, Personal Lines Solutions 2. Director, IT Applications 3. Manager, Annuity Systems 4. Manager, IT Training
BankCorp	A regional bank in the providing retail and commercial financial products and services	• One of the first U.S. banks to offer free online banking and bill pay • Online banking website rated Top 10 by *Keynote Banker Scorecard*	1. Senior Analyst
MediaCo	A daily newspaper publisher (print and online) and operator of TV and radio stations	• IT budget accounts for 7% company revenue	1. CIO 2. Manager, IT Operations 3. Senior Analyst 4. Team Leader, Advertising Dept.

IT studies have shown how managers' leadership practices, such as goal-setting, planning, and coordination, are related to IT work outcomes. Boehm (1981) argues that a successful systems project requires a continuous process of setting goals, reconciling conflicting goals, and planning and coordinating activities according to the goals. Employees, in turn, exert more effort and pay more attention to these goals. In another study, goal-setting has a significant impact on project outcomes as system project teams exhibit work behaviors consistent with the different goals set for them (Abdel-Hamid et al., 1999).

If IT managers set clear goals for employees regarding providing quality service to clients, effectively plan and coordinate their work and service, and evaluate and reward IT employees based on these goals, it is much more likely that a positive service climate will emerge in the IT organization, where employees devote more time and effort to service.

A senior executive described the service leadership role that managers in his IT department play:
> *The IT organization has overarching financial, customer, and operational objectives. These strategic objectives cascade from high to low managers to employee daily work… Our managers are very involved in helping their teams and individual members achieve their objectives… At the end of the day, every one is evaluated against [his] objectives…as well as [his] customer focus. All these factors impact our incentive pay.*

Another executive described his personal goal-setting and monitoring processes:

> *I sit down with each of my eight systems managers to discuss work objectives. My managers do the same with their direct reports, so we stay on top of all projects, coordinate activities as necessary, and make sure that people have what they need…*

Service vision is defined as the extent to which IT professionals view themselves as having a service-oriented role and emphasize meeting business client needs. Also referred to as service orientation or customer orientation, this climate dimension has been investigated in a number of studies in the services literature (e.g., Lytle et al., 1998; Schneider et al., 1998).

IT services are complex, knowledge-based work, and providing quality IT services to business clients requires much more than "a smiley face." Because vision represents "a higher order goal and a motivating force at work" (West, 1990, p. 310), the notion of a service vision has a broader scope than customer orientation, as it allows a more proactive role for the IT professionals, i.e., going beyond meeting customers' current needs to becoming strategic partners and providers of value-added service, or from a "factory" support role toward a "strategic" role (McFarlan and McKenny, 1983).

IT service vision is based on role theory (Biddle and Thomas, 1966) and broadly builds on the cumulative research on IT role orientation (e.g., Markus and Benjamin, 1996) and business-IT alignment theories (e.g., Reich and Benbasat, 2000), which investigate the IT department's alignment of IT objectives with business objectives. To the extent that an IT department sees its mission as serving business needs, it will likely emphasize providing value-added service, aligning its objectives and priorities with those of the clients, and demonstrating flexibility and adaptability when dealing with customer requirements. IT departments with other dominant orientations (e.g., introducing new technologies) may not deliver quality IT service.

A marketing director commented on the broad service vision of the IT group he works with:

> *What makes this IT group different from the other ones I worked with before is that they have a sense of the whole company and the business… they care about the organization, how well it performs. They are business persons in their approach.*

A director of applications notes his commitment toward helping the clients understand the project process:

> *The orientation of the business side at our company is very short term… We introduce project management and the disciplined methodology to the business… we do workshops and educate them at a very high level, about project management cycle… we developed a project sponsor's check list… Those that came had an "aha" experience.*

Customer feedback refers to the extent to which feedback from clients regarding service quality is solicited and addressed (Schneider et al., 1998). The effect of feedback on work performance is well established. In job characteristics theory (Hackman and Lawler, 1971; Hackman and Oldham, 1976), feedback is viewed as one characteristic essential to jobs constructed to motivate employees for higher performance. Goal-setting theory research also shows that task-relevant feedback enables employees to gauge their progress toward goal attainment, thus it moderates the relationship between goals and performance, such that goals can have little or no impact on performance in the absence of feedback (e.g., Erez, 1977).

Numerous studies in the IT literature have investigated the importance of feedback in both lab and field settings and its implications for performance (e.g., Dennis and Kinney, 1998; Ferratt and Short, 1988; Kraut et al., 1982). In the many complex and unstructured tasks that IT professionals perform for their clients, customer feedback plays a crucial role in affecting decision strategies and performance because it helps identify the need to adjust service behavior and may also provide specific information concerning how to adjust it (Abdel-Hamid et al., 1999). Regularly soliciting and addressing client feedback is also one practice that helps form the perceptions amongst IT

professionals of the importance of quality service and a positive service orientation because employees tend to form their perceptions by observing the various cues in the workplace (Schneider and White, 2004).

A senior manager described how his group solicits and addresses customer feedback:
> *We use customer satisfaction surveys for our network support and helpdesk annually… For systems projects, we survey the business side after the project gets to a certain point… After delivery, they rate us again…on quality, on time and on budget… Our managers and team members will deal with the issues raised there…*

Customer communication refers to the extent to which IT professionals openly and frequently communicate with customers regarding task-related issues. Customer communication, unlike the more formal practice of soliciting feedback, is concerned with the day-to-day information sharing with clients over task-related issues. While not all IT departments formally solicit client feedback, all communicate with their clients to varying degrees.

Communication has long been seen as an important dimension of work climate (Jones and James, 1979). The emphasis on communication and information sharing with business clients has also been a theme in research on business-IT relationships (e.g., Boynton et al., 1994; Brown, 1999; Brown and Chervany, 1995; Caron et al., 1994; Lind and Zmud, 1991; Markus and Benjamin, 1996; Roepke et al., 2000). Unlike many types of customer interactions, which are characterized by one-on-one short service "encounters," much IT work is project-oriented and requires intensive and frequent communication with business clients over extended periods of time. Such communication helps IT tailor its service to client needs and promotes client participation in the delivery of IT services as well as a sense of involvement in the process (Hartwick and Barki, 1994; Robey and Farrow, 1982). Communication also makes goal alignment possible by enabling business and IT units to become knowledgeable about each other's goals and the status of work tasks. Those IT departments that emphasize customer communication will focus on removing communication barriers and improving information sharing. Without effective information sharing with clients, IT departments may not be able to deliver quality service and ensure mutual understanding.

A systems manager describes regular communication during projects:
> *We do projects in two to three week iterations... so business gets to see it much sooner, and we can accommodate change. What's key about it is good communication skills and keeping the business involved… We ask lots of questions.*

An IT director notes the importance of clear communication channels to keep the IT group aligned with the business:
> *Communication is the most important component. Marketing meets with my boss, the CIO, monthly to review all projects… We have a single point of contact for each marketing unit we are partnered with. This way, we keep the communication channels open and get our work aligned with marketing.*

Another IT executive points out the importance of communication to create shared understanding:
> *[Many user groups] know little about technology, and what it takes to do what they are asking --why do I have to get so many signoffs to get such a simple thing approved? They don't see that to add one line on the screen will impact our 20,000 customer care reps – that's why the Training Department must sign off on it… They see all this as the bureaucratic process… You must communicate with them.*

To summarize, based on an extensive review of the literature and field interviews, we propose a four-dimension model of IT service climate, including service leadership, service vision, customer feedback, and customer communication. These dimensions and their definitions are summarized in Table 3. This conceptualization highlights the scope and complexity of creating and sustaining a favorable service climate in the IT organization. As evidenced in Watson et al.'s (1998) case study of two unsuccessful IT service quality improvement initiatives, the delivery of quality IT service requires

appropriate actions at strategic, tactical, and operational levels. Without in-depth knowledge of the various service climate dimensions and a systemic approach, change programs are likely to result in failure and employee cynicism.

Recent IS research has become sensitive to the distinction between reflective and formative constructs. Based on Jarvis et al.'s (2003) guidelines, IT service climate should be specified as a multidimensional formative construct, because the relationship between the climate construct and the climate dimensions is formative and causal, as "service climate is inferred based on the presence of parts relevant for service" (Schneider et al., 2000: p. 28). These climate dimensions employ different themes that tap into unique, non-interchangeable aspects of the construct domain, and do not necessarily covary. From a managerial standpoint, it would be ideal if they were correlated to avoid the situation in which the work setting represents "a bundle of stimuli presenting ambiguous and conflicting cues" (Kopelman et al. 1990). However, in reality, managers may emphasize the importance of client service while the employee evaluation and reward structure favors technical excellence. As also evidenced in Watson et al.'s case study, change initiatives often fail to take a systemic approach.

When specifying a construct and establishing its content validity, it is critical that the entire domain of the construct is captured. This is often accomplished through a literature review (Petter, Straub and Rai, 2007). Since the four-dimension climate model in this research is proposed based on theory and prior literature and with grounding in field interviews, it is expected to have satisfactory content validity and domain coverage. However, it is important to note that in future empirical stages of construct validation, adjustments to the proposed dimensions may be necessary. For example, it is possible that certain proposed dimensions have a complex structure and need to be split (e.g., service leadership, which consists of three types of managerial practices, including goal setting, work coordination and planning, and recognition and reward.). It is also possible that conceptually distinct dimensions may not be empirically distinguishable (e.g., customer feedback and customer communication) and thus need to be combined. Such adjustments, if necessary, will be guided by both theory and empirical data. In the next section, we propose a theoretical framework linking IT service climate and its antecedent and outcome variables.

Table 3: IT Service Climate Dimensions and Definitions	
Dimension	**Definition**
Service Leadership	The extent to which IT managers take actions to guide and reward the delivery of quality service, such as goal setting, work planning and coordination, recognition and rewards.
Service Vision	The extent to which IT professionals view themselves as having a service-oriented role and emphasize meeting business client needs.
Customer Feedback	The extent to which feedback from clients regarding service quality is solicited and addressed.
Customer Communication	The extent to which IT professionals openly and frequently communicate with customers regarding task-related issues.

6. A Research Framework for IT Service Climate

Climate theories connect management practices with organizational outcomes through employees' shared cognition of these practices (Kopelman et al., 1990). In the context of IT service, we argue that IT professionals' shared perception of the service-related aspects of the workplace drive their service behavior. We summarize these relationships in a theoretical framework (Figure 2) that links IT service climate and its antecedent and outcome variables. We discuss each variable in turn and derive propositions.
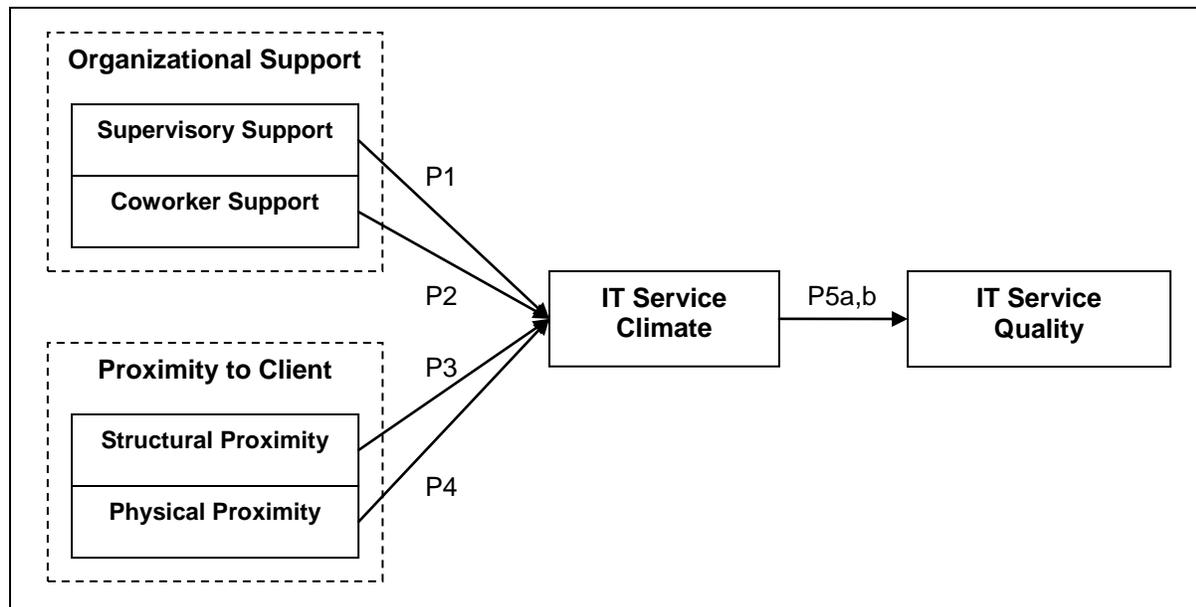
Figure 2: A Theoretical Model of IT Service Climate, Antecedents and Outcome

Note that our primary goal in this research is to make a contribution to theory in the area of IT service climate and IT service quality and to lay the foundation for future research. Thus, we take a cumulative traditions approach (as opposed to a grounded approach) and derive propositions from the existing climate research. Because it is an initial step toward this new area of research, it does not purport to be complete. Additional antecedent and outcome variables can be explored in future studies.

6.1. Antecedents of IT Service Climate

There are two major theoretical approaches in the research on the antecedents of climate, reflecting divergent conceptualizations of reality in the organizational literature (Schneider and Reichers, 1983). The objectivist approach views reality as a concrete structure and organizational participants as responders to this structure, whereas the subjectivist approach believes reality is constructed through social interactions (Morgan and Smircich, 1980). Climate theorists taking the objectivist approach have emphasized the structural characteristics of the organization, whereas those taking the subjectivist approach have focused on the various social processes in the work setting. Following Schneider and Reichers (1983), we take an integrative approach as we identify antecedents of IT service climate and view climate as being subject to both structural and social influences.

Despite the conceptual work in this area, there has been little empirical research on the antecedents of climate (Ostroff et al., 2003). Examples of structural variables tested to date include size, centrality, hierarchy (Payne and Pugh, 1976), and centralization (Kozlowski and Hults, 1987). Empirical work with an emphasis on social interactions has focused on organizational and leadership practices such as supervisory work facilitation and support (e.g., Kozlowski and Hults, 1987; Schneider and Bowen, 1993; Schneider et al., 1998) and interdepartmental service (Schneider et al., 1998).

From this literature, we propose two sets of antecedents of IT service climate: organizational support (including supervisory support and co-worker support) and proximity to client (including decentralization and co-location). We discuss these antecedents and introduce propositions to suggest their relationship with IT service climate below.

Although these antecedent variables have been studied in other IT research, they are new to the context of IT service climate and deserve theoretical and empirical exploration. In addition to testing

the individual antecedents proposed, it is also important to examine them together as a set and assess their differential impacts on IT service climate. We will be able to answer questions such as, "Are supervisory and coworker support (social) more influential than decentralization and co-location (structural) in building a favorable service climate?" If so, IT managers should first focus on building a more supportive IT workplace before pursuing structural changes, which often require the involvement of many stakeholders beyond the IT organization. Future empirical research will provide useful guidance to managers aiming to improve their internal service climate.

Organizational Support

Research into organizational support implicitly takes a social exchange theory perspective (Blau, 1964) on employee behavior (Eisenberger et al., 1997). The exchange of resources (i.e., support) prompts a sense of obligation on the part of the recipient to reciprocate the organization's support by engaging in behaviors that support organizational goals. Ang and Slaughter (2001) found that differential organizational support received by IT contract employees and permanent employees was related to their work performance. Another study shows that organizational support forms the foundation of customer orientation (Susskind et al., 2003).

In thinking about organizational support as an antecedent of IT service climate, we follow prior research (e.g., Bowers and Seashore, 1966; Goldstein and Rockart, 1984; Susskind et al., 2003) and make a distinction between supervisor and coworker support. We discuss these two elements as follows.

Supervisory Support

Also referred to as managerial support or work facilitation (Schneider et al., 1998), supervisory support is defined as general efforts made by managers to facilitate employees in their work and provide work-related assistance (Schneider et al., 1998; Susskind et al., 2003). Thus, managers can be characterized as "climate engineers" as they shape the meaning employees attribute to organizational support and facilitation (Dansereau and Alutto, 1990; Kozlowski and Doherty, 1989).

Supervisory support has been found to reduce IT professionals' role ambiguity and role conflict (Goldstein and Rockart, 1984), which in the context of IT service, are related to IT professionals' service role orientation. Other IT research has linked supervisory support with IT employees' job performance and career satisfaction (e.g., Igbaria and Wormley, 1992; Jiang and Klein, 1999/2000). Watson et al.'s (1998) case study of two IT service quality improvement initiatives also demonstrated the importance of "service quality champions" in providing resources and support.

A senior analyst notes how managers can support his team's work:

> *We absolutely need managers' support, sometimes from top management. Sometimes the problems we run into are beyond IT, higher than IT, we have to have the managers come out and help us…*

In addition,

> *Good managers can support their teams in many ways. Those that show respect and are personable have better teams… They provide more training opportunities to the staff… and have a long-term orientation.*

Coworker Support

Coworker support refers to cooperative peer-level effort amongst employees to provide work-related assistance to aid in the execution of their tasks (Susskind et al., 2003). Schneider et al. (1998) investigated interdepartmental service (e.g., support from marketing, HR, etc. to service units) as a type of internal support necessary for the creation of a favorable service climate in banks. However, because IT professionals typically do not rely on task support from other organizational departments, we focus on another type of internal support, i.e., coworker support, which is particularly relevant in the IT service context.

Coworker support is important in the IT context because IT work is often team-based and requires

substantial cooperation and collaboration among peers. Prior research (e.g., Goldstein and Rockart, 1984) has shown that peer support reduces IT professionals' role ambiguity and role conflict, which, in the context of IT service, are related to IT professionals' service vision. An internal work environment that encourages IT employees to help each other is also likely to spill over to helping customers. Thus, coworker support is an important foundation element upon which to build a favorable IT service climate.

An IT director notes the significance of coworker support in his group:
> *Teamwork and cooperation are critical. Our HR department has a seminar on how to work with each other in a team environment... how to be helpful and cooperative… It's not free, so we paid to get our entire group to attend… you can see how strongly we felt about this. We have seen many positive changes after that, within the group and when we deal with our customers.*

A systems manager describes another form of coworker support in the IT context -- internal backend support from within the IT organization:
> *We are on the systems side so we don't manage the datacenters or the hardware that the applications run on. We have them [the operations personnel] on our projects as necessary and they attend our project meetings. They have generally been cooperative... many of them don't directly talk to the users like we do, but they help us help the users.*

In sum, we propose that supervisory support and coworker support are related to the level of IT service climate.

Proposition 1: The level of supervisory support in the IT department will be positively related to the level of IT service climate.

Proposition 2: The level of coworker support in the IT department will be positively related to the level of IT service climate.

Proximity to Client

Climate researchers taking the structuralist approach have found factors such as size, centrality, hierarchy (e.g., Payne and Pugh, 1976), and centralization (e.g., Kozlowski and Hults, 1987; Payne and Pugh, 1976) to have an impact on climate. Building on this literature, we propose IT's proximity to client as an antecedent of IT service climate. Such proximity can have two aspects: physical (i.e., co-location) and structural (i.e., decentralization).

Decentralization

Decentralization has long been a topic in the IT literature (e.g., Olson and Chervany, 1980; Ein-Dor and Segev, 1982; Brown and Bostrom, 1989; Brown, 1997). Adopting Brown's (1997) definition, we define centralized IT functions as "those for which the locus of responsibility (decision-making authority) belongs to a central (corporate) IS unit" and decentralized IT functions as "those for which the locus of responsibility belongs to the business unit (including an IS unit that reports to a business unit)" (p. 73). Prior studies have shown that user satisfaction and system use are higher in decentralized IT organizations (Montazemi, 1988; Raymond, 1985). However, the mechanism through which IT structure influences business client outcomes has typically been treated as a black box. Based on structuralist approaches to climate, we propose IT service climate as a mediator through which IT structural characteristics exert impacts on client outcomes. Decentralization may have important effects on IT service climate, as it can facilitate goal alignment and a service-focused IT role orientation and create "an empowered work setting where stakeholders are motivated to pool their knowledge resources" (Ravichandran and Rai, 2000: p. 404).

One IT executive describes the impact of the increased decentralization of his department on interactions with business clients:
> *[Our company] has had some fast growth in recent years, and IT has been*

> *increasingly decentralized into different lines of business… Now we are able to work*
> *more closely with our business partners, be more aligned to their needs... We have*
> *heard positive things from business.*

Although we believe that decentralization will result in higher levels of IT service climate, it may or may not result in higher levels of perceived service quality. Other issues, such as the cost of decentralized service and lack of standardization or integration may influence the client's perceptions of service quality. Due to the multiplicity of its objectives and constraints, it is incumbent upon the IT department to strike a balance between its operational and service quality objectives. See Sambamurthy and Zmud (1999) for further discussions on how multiple contingency forces can influence the degree of IT (de)centralization.

Co-location

Co-location refers to the degree of physical closeness between IT and business clients. Because decentralization can be achieved without physically co-locating business and IT units (Olson and Chervany, 1980), they are treated as separate variables. Prior IT and organizational research on co-location has shown that close proximity allows for frequent and rich interactions and communication, knowledge exchange, and shared language and understanding (e.g., Brown, 1999; Daft et al., 1987; Monge et al., 1985; Preston, 2004).

Though the four companies in our field interviews do not co-locate their IT units with business units on a long-term basis, one executive describes how co-location of development teams and key business stakeholders during the course of a project may impact project outcomes:

> *For mission critical projects, we have experimented with the idea of a "team room" in*
> *the past year or two… it is a separate conference room for the project team with*
> *business sponsors and key stakeholders in it throughout the duration of the project…*
> *With this co-location factor, instead of meeting for two hours a day, we have six hours*
> *a day. It has worked very well for us, especially for systems with a lot of user*
> *interface.*

In summary, we propose that IT proximity to clients is an antecedent of IT service climate. It is important to note that when empirically testing this and other climate antecedent variables, factors such as industry and IT department size need to be controlled for.

Proposition 3: IT decentralization will be positively related to the level of IT service climate.

Proposition 4: Co-location of IT and business clients will be positively related to the level of IT service climate.

Outcome of IT Service Climate: Service Quality

Schneider and colleagues found that bank branches whose employees gave favorable ratings of their branch's service climate were the same branches whose customers positively described the service quality they received (Schneider et al., 1980; Schneider and Bowen, 1985; Schneider et al., 1996). In addition, changes in employees' service climate ratings preceded changes in customer satisfaction (Schneider et al., 1996). Concurrent studies conducted in other service contexts (e.g., Johnson, 1996; Schmit and Allscheid, 1995; Thompson, 1996) replicated this finding. Thus, we expect a significant and positive relationship between an IT unit's service climate and its service behavior, i.e., the IT service quality experienced by business customers. Because the IT department, as an internal service provider, has many opportunities to interact formally and informally with business clients over work and non-work related issues, one would expect the linkage between service climate and service quality to be at least as strong as that found in an external service environment such as retail banking.

However, such a relationship can only be meaningfully examined to the extent that there exists agreement in IT employees' service climate perceptions. As discussed earlier, large variability would indicate that aggregated perceptions do not adequately represent a construct of climate at the organizational level (James, 1982). Thus, the relationship may not hold in a virtual or outsourced IT

environment, where a unified climate is likely to be absent. The theoretical framework may also not apply to organizations that offer information technology as their products and services (e.g., Microsoft, Oracle).

It is also important to note that IT service climate is not likely the only variable that shapes IT service quality. Factors such as skills and experience (in both the IT and the user community) and past IT performance will also have an impact on client perceptions of IT service quality, and thus need to be controlled for in empirical studies.

Proposition 5a: The level of IT service climate will be positively related to IT service quality.

The IT work context may pose specific challenges for developing a strong service climate. For example, some IT professionals are co-located with users, while some others may perform back-office roles and not fully appreciate the need for customer service. When a high level of consensus among individual climate perceptions emerges, it will impose strong expectations on employees and induce uniform behaviors; however, when such emergent process is weak, idiosyncratic perceptions of climate within an organization develop, which can result in wide variability in individual attitudes and behaviors, diminishing the relationship with the outcome variable (Chan, 1998; Ostroff et al., 2003).

Thus, when IT service climate is both favorable and strong, one would expect the most consistently positive behavior from employees; when climate is both unfavorable and strong, the most consistently negative behaviors would be expected. However, when the climate is weak, regardless of the level of climate perceptions (favorable or unfavorable), predictions of resultant behavior would become less reliable than when it is strong (Schneider et al., 2002). This view has been empirically supported by work on service climate (Schneider et al., 2002) and other strategic climates (González-Romá et al., 2002; Lindell and Brandt, 2000). We similarly propose a moderating relationship in the IT service context.

Proposition 5b: The relationship between IT service climate level and IT service quality will be moderated by IT service climate strength such that the relationship will be stronger when climate strength is higher.

Prior research has shown that the more frequent the customer contact, the stronger the relationship between service climate and service outcomes (Dietz et al., 2004). It will be interesting to see how much stronger the relationship might be in an internal service context like IT rather than in the retail banking context of prior students. The stronger it is, the more useful the construct of service climate for IT managers aiming to improve IT service quality. Similarly, the size of the proposed interaction effect will inform managers as to how critical it is to maintain a uniform climate.

7. Summary and Contributions

Building on organizational climate research, we offer a new construct, *IT service climate*, as a lens to look inside the IT function at the very practices and behaviors related to providing IT service to business users. We also present a theoretical framework that links IT service climate with antecedent and outcome variables from which a series of propositions have been derived for future empirical research. We have used interview quotes to ground the climate construct and propositions in the context of IT service. This paper makes the following contributions to IT research and practice.

7.1. Contributions to IT research

This research is the first to apply organizational climate theories to IT service quality. It emphasizes the need to study the people who provide services, in addition to those they serve, and offers a theory-based extension to the existing IT service quality research. The research lays the foundation for the development of an instrument to measure IT service climate.

Because organizational climate is a fundamental building block for describing and analyzing organizational phenomena (Schein, 2000), climate theories expand the horizon of IT research and bring about an alternative lens to study IT phenomena. We provide a comprehensive review of the climate literature, including the initial work done in the IT literature. We hope this paper will increase awareness of and interest in climate theories, thus paving the way for further exploration of their potential applications to IT phenomena.

7.2. Contributions to IT practice

The proposed program of research is also important to IT practice. Employees are observers and reporters of the values and practices that define their work environments. When tools are properly designed to capture "observations" and "reports" about what matters most in predicting organizational success, such tools produce information that represents "a significant organizational asset" (Wiley and Brooks, 2000: p. 189). The concept of IT service climate can be one such asset. After the development of its measurement instrument, service climate will have important diagnostic value and will assist IT managers in taking targeted actions to improve service quality.

Equipped with a deeper understanding of the IT service quality phenomenon, IT managers will be enabled to improve customer service, increase customer satisfaction, and achieve stronger business-IT alignment. Existing research on IT service quality, as an outcome variable, as well as the IS-SERVQUAL instrument, will then become more interpretable by managers if IT service climate can be established as an antecedent.

The multidimensionality of the IT service climate construct suggests that a comprehensive approach is required when implementing change programs to improve IT service quality. Schneider (1990) points out that, "all subsystems of an organization must be targeted effectively on the strategic goal to create the strategic climate of interest. This strategic focus needs to be the target of climate assessment and management's attempts at climate change" (p. 403). IT managers must understand that it is difficult to effect climate changes without a thorough understanding of the various climate dimensions and a systemic approach.

Many existing best-practice frameworks, such as ITIL, are oriented toward IT operations and have ties with other process improvement-related methodologies (e.g., TQM, Six Sigma). The IT service climate approach complements and goes beyond comprehensive checklists and standard operating procedures by emphasizing the human side of IT service, including service leadership, service-oriented IT vision, client communication, and client feedback. The proposed research model also provides a high-level view of IT service climate by situating it in the larger social and structural contexts of the organization where IT work and services are performed.

Judging from the reactions of our interviewees, the concept of IT service climate will make a meaningful contribution to IT practice. Many of our interviewees found the notion empowering because IT managers, as service climate engineers, are in the driver's seat in building and maintaining a favorable service climate. An IT executive who provided much support to this study commented:

> *I am very interested in the climate approach and believe that the right IT climate…can highly influence the groups overall behavior and performance.*

8. Directions for Future Research

One of the first steps in future empirical research will be to develop measurement scales to validate the proposed four-dimension model of IT service climate. Equipped with such a measurement instrument, survey studies can be conducted to establish the relationships between IT service climate and its antecedent and outcome variables, assess whether IT service climate is a full or partial mediator between these antecedent and outcome variables, and lead to a better understanding of IT service quality. There are existing measures for all climate antecedent and outcome variables in the research model. For the convenience of future researchers, these measures are summarized in Table 4.

Table 4: Measures of Climate Antecedents and Outcomes in the Research Model		
Construct	**Source of Measure**	**Sample Items**
Supervisory support	Measurement scale from Susskind et al., 2003	I find my supervisor very helpful in performing my duties.
Coworker support	Measurement scale from Schneider et al., 1992; Susskind et al., 2003	People in my team work together to get the job done.
Structural proximity (decentralization)	Measurement scale from Brown, 1997	The extent to which local autonomy for decision-making is emphasized or encouraged.
Physical proximity	Objective measure from Preston 2004	Adjoining offices; same floor in the same building; different floor in the same building; different building in the same city; different city
IT service quality	Measurement scales from Kettinger and Lee, 1994; Pitt et al., 1995	IT employees give prompt service to users.

The IT service climate construct so far has been discussed at the level of the IT function. There are opportunities to take a multilevel perspective (Kozlowski and Klein, 2000) and examine it at other levels because, as discussed earlier, climate constructs can be conceptualized at different levels with the same content, meaning, and construct validity (Chan, 1998; James, 1982; Kozlowski and Klein, 2000; Ostroff et al., 2003). For example, when conceptualized at the level of the IT service unit, there are opportunities to compare and contrast the climates across the many service units within the same IT function, so relevant subclimates are not overlooked (Chan, 1998). It may also be fruitful to study the construct at the individual level.

This paper focuses on how IT service climate influences IT service quality, which is one measure of IT effectiveness (Pitt et al., 1995). Future research may investigate other implications that IT service climate may have for IT effectiveness and business value. A longitudinal study found that a more favorable service climate leads to higher bank customer satisfaction (Schneider et al., 1996). This relationship will likely also hold in the IT service context, as IT practices such as, "maintenance of user-friendly atmosphere," "management of end-user expectations," and "communication with users," which are all essential elements of a positive IT service climate, have been identified as leading to business user satisfaction (e.g., Essex et al., 1998; Magal et al., 1988; Mirani and King, 1994). Future empirical research needs to assess whether there is a direct relationship between IT service climate and client satisfaction.

In addition to user satisfaction, another avenue to explore is the relationship between IT service climate and IT-dependent organizational agility, which includes system agility, information agility, and strategic agility (Fink and Neumann, 2007). As exhibited in many of our field interviews, a focus on serving business clients and communication leads to shorter development cycle time, increased ability to accommodate changes in systems projects, and better project outcomes.   These observations suggest a possible linkage between IT service climate and system agility as well as strategic agility. There are numerous other opportunities to assess additional outcomes of IT service climate. For example, future researchers may also examine the relationship between IT service climate and clients' intent to develop partnership with IT (Bassellier and Benbasat, 2004).

In addition to service climate, many other climate variables are highly relevant to IT research. Though some of them have been used in prior IT studies, such as climates for innovation and systems implementation, technical updating, creativity, and ethics (summarized in Table 1), there is ample room for broader adoption and assimilation of climate theories in future IT research. We hope that the introduction of climate theories in this paper will stimulate further interest in the IT community.

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Appendix: Distinguishing Climate from Culture

Climate and culture are two related but distinct constructs. It is necessary to distinguish the two because the term culture is often used when climate is the more appropriate term (Schein, 2000). Although the two constructs have certain overlaps, there are important conceptual differences between them (Ostroff et al., 2003).

Climate is about experiential descriptions or perceptions of what happens; it develops from the deeper core of culture and can most accurately be understood as a manifestation of culture (Schein, 1985). Culture, therefore, is more stable than climate and is more resistant to change and manipulation (Denison, 1996). Ostroff et al. (2003) note that climate is more immediate than culture and is more easily observable: individuals can sense the climate upon entering an organization through things such as the physical appearance of the place, the emotionality and attitudes exhibited by employees, and the experiences and treatment of visitors and new employee members. In contrast, culture is a deeper phenomenon based on symbolic meanings that reflect core values and fundamental ideologies and assumptions (Schein, 1992; Trice and Beyer, 1993).

For example, an organization may have a passive-defensive culture (Cooke and Lafferty, 1987) characterized by bureaucracy, risk aversion and an inward focus. Such cultural values and assumptions may be manifested in different ways such as, in the IT context, a lack of a climate for technical updating (Blanton et al., 1998), or a climate for reporting bad news in software projects (Tan et al., 2003). Thus, climate is experiential based descriptions of what happens, whereas culture explains at a deep level why these things happen (Schein, 2000).

In addition to these conceptual differences, climate and culture have divergent research traditions as well. Research into culture originated from anthropology and has traditionally been studied with qualitative methods such as case studies, whereas the climate construct finds its roots in organizational psychology and has largely been quantitative and survey-based. See Schneider (1990) for additional discussions about the distinction between culture and climate.

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