Customer Satisfaction: A Meta-Analysis of the Empirical Evidence

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The growing number of academic studies on customer satisfaction and the mixed findings they report complicate efforts among managers and academics to identify the antecedents to, and outcomes of, businesses having more- versus less-satisfied customers. These mixed findings and the growing emphasis by managers on having satisfied customers point to the value of empirically synthesizing the evidence on customer satisfaction to assess current knowledge. To this end, the authors conduct a meta-analysis of the reported findings on customer satisfaction. They document that equity and disconfirmation are most strongly related to customer satisfaction on average. They also find that measurement and method factors that characterize the research often moderate relationship strength between satisfaction and its antecedents and outcomes. The authors discuss the implications surrounding these effects and offer several directions for future research.

Our focus is customer satisfaction.

—Gulfstream Aeronautics

Our customers will be totally satisfied with the products, services and technology we supply.

—Shell Chemical Company

Satisfaction Guaranteed.

—Wal-Mart Stores, Inc.

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As these business slogans make apparent, customer satisfaction has come to represent an important cornerstone for customer-oriented business practices across a multitude of companies operating in diverse industries. This emphasis on businesses' having satisfied customers further serves to accentuate the potential value resulting from an empirical synthesis of the documented findings on the antecedents and consequences of customer satisfaction. These findings vary considerably in terms of statistical significance, direction, or magnitude. Consequently, a meta-analysis of the evidence can advance managers' and academic researchers' understanding of customer satisfaction principles by documenting the statistical significance, direction, and magnitude of the effects that can be expected on average. A meta-analysis can also document the degree to which the variance in effect sizes is real versus artifactual and can further identify moderating variables that account for the variance in the satisfaction relationships.

Our objective in this study is to advance understanding by conducting a meta-analysis of the satisfaction findings and discussing the results. To accomplish this objective, we proceed with an overview of the rationale behind the general antecedents, outcomes, and potential moderators of customer satisfaction. We then describe the methodology used for identifying the population of empirical studies on customer satisfaction. The findings from our statistical analysis of 50 empirical studies' reporting 517 correlations involving customer satisfaction and related elements are presented immediately thereafter. We conclude the meta-analysis by discussing implications of the findings, limitations of the study, and directions for future research.

ANTECEDENTS, CONSEQUENCES, AND MODERATORS OF CUSTOMER SATISFACTION

The framework guiding our theoretical discussion and empirical investigation focuses on the relationships from Oliver's (1997) conceptual model of customer satisfaction that have been empirically examined in the literature.[1] Although subsequent discussions center on anticipating the sign of the association that will emerge on average, of more substantive foci in the meta-analysis are the estimation of the magnitude of the respective relationships and the identification of factors accounting for the variance in reported effect sizes.

Antecedents to Satisfaction

Research on customer satisfaction has focused predominantly on modeling the effects of the following factors on buyers' level of satisfaction: expectations, disconfirmation of expectations, performance, affect, and equity. Each of these effects is discussed in turn.

Expectations. The role of expectations in satisfaction levels has traditionally been modeled in one of two ways. One is the role of expectations as *anticipation*, which we will discuss here. The other is the role of expectations as *comparative referents*, which we will discuss later in the context of disconfirmation effects. With regard to expectations as anticipation, the thinking is that consumers' expectations have a direct influence on satisfaction levels. This direct influence is in the absence of any assessment of, or comparison to, actual outcomes or performance levels of the stimulus (LaTour and Peat 1979; Oliver and DeSarbo 1988). Rather, consumers are thought to adapt to a certain level of performance. They form expectations consistent with these performance levels, and these expectations serve as the baseline for satisfaction assessments (Oliver 1981, 1993). Consumers are thought to assimilate satisfaction levels to expectation levels in order to avoid the dissonance that would arise when expectations and satisfaction levels diverge. This assimilation effect results in satisfaction judgments' being high/low when expectations are high/low (Oliver 1997), and the majority of the empirical findings support a positive relationship between expectations and satisfaction (e.g., Bearden and Teel 1983; Oliver and Linda 1981; Swan and Trawick 1981).

Disconfirmation of expectations. Besides support for expectations as anticipation, there is support for expectations as comparative referents. Subsumed under the disconfirmation paradigm, this perspective to satisfaction judgments is a central focus in early studies on satisfaction. For example, well over half of the correlations (64%) on disconfirmation effects are from studies published before 1984 (e.g., Bearden and Teel 1983; LaBarbera and Mazursky 1983; Oliver 1980). In these studies, we find the first conceptualizations of expectations as the standard against which performance outcomes are assessed. Here consumers are said to be satisfied when actual outcomes exceed expectations (positive disconfirmation), dissatisfied when expectations exceed outcomes (negative disconfirmation), and just satisfied (zero or simple disconfirmation) when outcomes match expectations (Oliver 1981; Oliver and DeSarbo 1988). Hence, disconfirmation and satisfaction are thought to be positively correlated and we expect this relationship to be evidenced in the meta-analysis.

Performance. In addition to performance as a component of disconfirmation, performance has been modeled as directly affecting satisfaction (e.g., Churchill and Surprenant 1982; Halstead, Hartman, and Schmidt 1994; Oliver and DeSarbo 1988; Tse and Wilton 1988). Modeling performance as a separate predictor of satisfaction follows directly from the notion of a value-percept diversity; that is, customers are likely to be more satisfied with the offering as the ability of the offering to provide consumers what they need, want, or desire increases relative to the costs incurred (Johnson 1998). Because this positive relationship between performance and satisfaction is documented frequently in the literature (exceptions include Gilly and Gelb 1982; Swan and Oliver 1991; Westbrook 1981), we anticipate that performance and satisfaction will be positively correlated on average in the cumulative findings.

Affect. The possibility that satisfaction is not just cognitive but includes an affective component has also been a focus of research attention. Studies in this genre (e.g., Mano and Oliver 1993; Westbrook 1987; Westbrook and Oliver 1991) explicate the dimensionality of affect and examine the role of affect in satisfaction judgments. They find that affect is two-dimensional with overall affect's having an impact on satisfaction levels above and beyond classical expectancy-disconfirmation effects, for example. These effects are often discussed in the context of affective-processing mechanisms. That is, emotions elicited during consumption are proposed to leave affective traces in memory, traces that are available for consumers to access and integrate into their satisfaction assessments (Westbrook and Oliver 1991). A second explanation grounded in attribution theory, specifically, Weiner's (1986) locus-stability-controllablility matrix, suggests that affect can be attribution dependent (Oliver 1993; Oliver and DeSarbo 1988). Attributions can evoke specific affect depending on whether the outcome of the consumption experience is a success or failure, and therefore, affect is presented as another component of postpurchase expression that feeds positively into satisfaction assessments. These theories imply a positive relationship between affect and satisfaction, and a positive

relationship between these two factors is widely supported in the literature. Our corresponding expectation, therefore, is a positive relationship between affect and satisfaction in the aggregate data.

Equity. In addition to expectations, disconfirmation, performance, and affect, satisfaction has been modeled as the direct outcome of equity. Equity is a fairness, rightness, or deservingness judgment that consumers make in reference to what others receive (Oliver 1997:194). Consumers' calculation of equity implicitly if not explicitly assumes the following form:

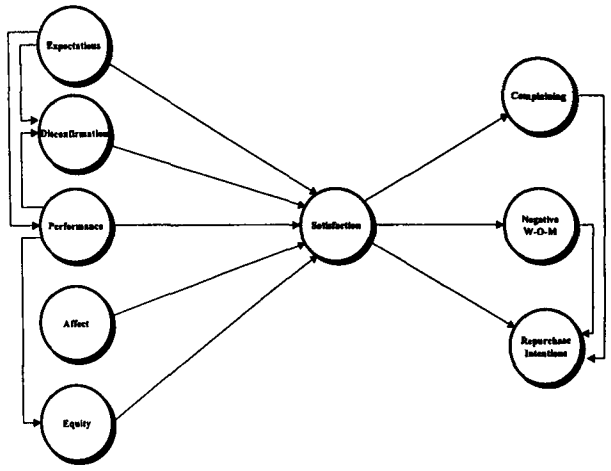
$$\frac{O_c}{I_c} \propto \frac{O_r}{I_r}, \quad (1)$$

where O is outcomes, I is inputs, c is the consumer, r is the referent person or group, and $\propto$ is a proportional operator. Based in theory on distributive justice (individuals expect to get what they deserve based on their inputs [e.g., Oliver 1993; Oliver and Swan 1989a, 1989b]), procedural justice (the relative manner in which the outcomes were delivered [e.g., Swan and Oliver 1991]), and interactional justice (the relative manner in which the consumer is treated in terms of respect, politeness, and dignity [e.g., Clemmer 1988]), consumers are presented as being satisfied (positive inequity) when their equity ratio is proportionately greater than the ratio achieved by the referent person or group (see Goodwin and Ross 1992; Oliver 1997).[2] The positive relationship between equity and satisfaction that is typically supported in the literature (e.g., Clemmer 1988; Oliver 1993; Oliver and Swan 1989a, 1989b, Swan and Oliver 1991) leads us to expect a positive relationship on average in the meta-analysis.

Relationships among predictors of satisfaction. An assessment of the nomological network among the predictors of customer satisfaction suggests that several pairs of antecedents may be related (see Figure 1). For one, it is possible that performance and expectations are positively related. Johnson (1998) describes this relationship both in terms of expectations' or past performance information's predicting current performance levels and strong expectations' affecting perceptions of performance. Hence, we anticipate expectations' having a positive effect on perceptions of performance on average.

Second, arguments can be advanced for performance and expectations being separately related to disconfirmation (see Figure 1). However, the net direction of these effects is difficult to predict. On one hand, improved performance can have a positive effect on disconfirmation when expectations remain constant, and higher expectations can have a detrimental affect on disconfirmation when performance remains constant. On the other hand, improved performance does not guarantee positive disconfirmation when expectations rise proportionately or more than proportionately to performance. Likewise, higher expectations alone do not guarantee negative disconfirmation when performance increases proportionately or more than proportionately compared with expectations. These multiple outcomes on disconfirmation that are possible and that can be associated with a change in performance and/or expectations imply that resolving the directionality issue is better relegated to the empirical portion of the meta-analysis.

FIGURE 1
Model of the Antecedents and Consequences of Customer Satisfaction



NOTE: WOM = word of mouth.

Another determination that is better relegated to the empirical portion of the meta-analysis is the direct effect of performance on consumer equity. On one hand, performance and equity may be positively related. This would occur when the consumer's outcomes improve in the face of inputs' staying the same, declining, or increasing less than proportionately to outcomes, all else being constant. On the other hand, higher performance by itself is unlikely to guarantee that equity perceptions will improve. Equity can remain the same or decline in the face of improved performance when the consumer's inputs increase in proportion to, or more than proportionately to, their outcomes. Equity also can remain the same or decline when (1) the referent party's outcomes increase in proportion to, or more than proportionately to, the consumer's outcomes; or (2) the other party's inputs decrease to the extent that the party's equity ratio is now equal to, or higher than, the consumer's equity ratio. In other words, multiple states of equity (positive, negative, or a steady state) can be associated with a change in performance. Identifying the state that emerges on average is one of the objectives in the meta-analysis.

Consequences of Customer Satisfaction

Few studies have investigated the outcomes of satisfaction and only a few outcomes of satisfaction have been investigated in these studies. These outcomes are complaining behavior, negative word of mouth (WOM), and repurchase intentions.

Complaining behavior. Consumers' tendency to complain to sellers has been discussed in the literature as one mechanism available to consumers for relieving cognitive dissonance when the consumption experience is dissatisfying (Oliver 1987). Complaining has also been discussed as a mechanism for venting anger and frustration and a mechanism for initiating or seeking redress for failed consumption experiences (Nyer 1999). Although consumers have the option of voting with their feet (exiting) or remaining loyal (staying) in the face of a dissatisfying experience (Andreasen 1988; Day 1984; Hirschman 1970), greater dissatisfaction is traditionally thought to prompt complaining, especially when the problem leading to dissatisfaction is severe, the degree of external attribution of blame is to the retailer or manufacturer, or the likelihood of redress is relatively high (e.g., Folkes 1984; Richins 1983; Ursic 1985). In other words, given proper ability (e.g., channel knowledge, access and communication skills) and motivation (e.g., cultural norms, willingness to confront) to complain ("behavioral model of complaining"), as well as a favorable alignment of perceived costs (e.g., time, effort, and monetary importance), benefits (e.g., money back, replacement) and assessments of success (e.g., firm's reputation, threat to business) in regard to complaining ("economic model of complaining" [see Oliver 1997]), the expectation is that greater dissatisfaction would be manifested in more complaining to sellers.

Negative WOM behavior. Negative WOM behavior to other consumers represents yet another form of complaining behavior that is expected to increase in the face of a dissatisfying experience. This effect is especially likely when the product or service failure is severe, attributions for the failure are external, or high levels of social activity characterize the disappointed consumer (Folkes 1984; Richins 1983). Negative WOM offers consumers a mechanism for releasing tension, getting back at the entity by informing others of disappointing encounters, regaining control over a distressing situation, gaining sympathy from others, and conveying to others that the consumer has high standards (Nyer 1999). These motivations for telling potential buyers about a particularly dissatisfying experience, in turn, suggest that negative WOM and satisfaction would be inversely related on average.

Repeat purchasing. Satisfaction is further thought to affect the likelihood that consumers will buy the offering again. Oliver (1997), for example, discusses loyalty as an outcome of customer satisfaction. He proposes three phases of satisfaction—cognitive, affective, and conative—that culminate in action loyalty (operationalized as repeat usage). This positive relationship between satisfaction and repeat purchasing is evidenced in the extant data (e.g., Bearden and Teel 1983), and we anticipate the same relationship in the meta-analysis.

Relationships between the outcomes of satisfaction. In addition to the direct effects of satisfaction on complaining, negative word of mouth, and repeat purchasing, relationships can exist between the outcomes of customer satisfaction (see Figure 1). In this regard, both complaining and negative WOM activities have been discussed for their effects on repeat purchasing. Specifically, an increase in complaining or negative WOM behaviors is viewed as having a detrimental effect on the likelihood of repatronage. This train of thought is grounded in self-perception theory—public disclosure of a position increases commitment to that position—and dissonance theory, which predicts that consumers strive for actions that are consistent with cognitions (Tax and Chandrashekaran 1992). These theoretical perspectives imply that consumers strive for consistency across voiced feelings, held emotions, and purchasing actions. As a consequence, more complaining to sellers and other consumers (which represents an explicit, negative position toward an offering by the consumer) is likely to reduce repatronage (which represents a negative consumer behavior toward the offering). This negative relationship should be evidenced when the data are aggregated across studies.

Potential Moderators of Customer Satisfaction

As documented later in the meta-analysis, there often is wide variation in the magnitude of the correlations reported for the same correlate with satisfaction. One objective of the meta-analysis, therefore, is to identify the moderators of satisfaction effects. These moderators include the comparison standard, measurement level, methodology, subject population, and type of offering.

Comparison standard. In formulating a level of satisfaction, consumers might arrive at different conclusions depending on the reference being used. For example, comparison-level theory (LaTour and Peat 1979; Thibaut and Kelly 1959) suggests that satisfaction is an additive function of both experience-based disconfirmation of attribute levels obtained from a brand and the corresponding comparison levels of that brand. Satisfaction modeled as the discrepancy between outcomes and some standard of expectation implies that overall satisfaction may differ when different references are being used across studies. This could happen when the expectancy-based (e.g., expecta-

tions formed through vicarious learning) or experience-based (actual performance) norms are used as references in the satisfaction studies (see Oliver 1997; Yi 1990). In fact, the use of different references across studies implies that satisfaction estimates would differ when consumers' expected and experience-based norms are not the same. Moreover, because it is likely that they will not always be the same, we anticipate that the comparison standard will emerge as a significant moderator of satisfaction effects.

Measurement level. By measurement level, we refer to whether satisfaction is captured through an aggregate (single-item) or attribute (multi-item) level of measurement (see Yi 1990). To differentiate, an attribute level of measurement attempts to first capture buyers' satisfaction toward a specific aspect or dimension of the offering and then aggregates the assessments into an overall satisfaction score. In contrast, an aggregate measurement would inquire only about a buyer's overall or global satisfaction with a product or service encounter.

The aggregate measurement subsumes the attribute measurements. One presumption, therefore, is that the two assessments—aggregate and individual attribute—would yield similar estimates of overall satisfaction. On the other hand, studies have begun to address causal relationships between the two measures (see Mittal, Ross, and Baldasare 1998). This research implies that using one measure in lieu of the other would lead to different estimates of association when the aggregate and attribute assessments are not perfectly correlated. Moreover, it is conceivable that the two measures would diverge and that the aggregate measure may be a more accurate measure of customer satisfaction. For example, the estimates would diverge when consumers engage in partial information processing and partial satisfaction assessments (i.e., satisfaction assessments based on evaluations of only some of the features) or when consumers disproportionately weight the attributes incorporated into satisfaction judgments (Oliver 1997). An aggregate assessment would allow consumers to impose their weighting criteria on the elements before responding with an overall assessment of satisfaction. Adding or averaging item scores, as is typically done in an attribute-by-attribute approach, would preclude the capturing of consumers' disproportionate weighting schemes and could incorporate factors into the satisfaction judgment that consumers would not naturally consider when making satisfaction assessments (e.g., selected factors that are included in the survey instrument by the researcher). This difference in what is or can be captured when using aggregate versus attribute measures suggests that the measurement level could be an important explanator of the differences in satisfaction effects reported in the literature.

Methodological approach. An additional element that could account for the variance in the magnitude of the effect evidenced in the literature is whether researchers use an experimental or survey approach. Each approach has characteristics that could contribute to the variance observed across estimates of relationship strength. Experiments, for example, can control the levels of the factor to which a participant is exposed and can offer the control necessary to eliminate potential confounds. However, experiments compromise realism when they use fictitious stimuli under artificial consumption conditions. A survey approach, meanwhile, may offer less control over the assignment of subjects to the levels of a factor but may be more realistic because it is based on real offerings under natural consumption conditions (Tabachnick and Fidell 1996). The degree to which the differences that characterize surveys and experiments bias estimates of association will be examined explicitly in the meta-analysis.

Participants. Researchers have raised concerns about the generalizability of student-based findings across the consumer population (Burnett and Dunne 1986; Park and Lessig 1977). Students' restricted age range, limited consumption experiences, and relatively low income have resulted in students' being portrayed as atypical consumers. Students have also been portrayed as having yet-to-be-solidified cognitive structures that make them more susceptible to reference group influences (Park and Lessig 1977). More important, these distinctions could translate into differences in how the two groups of consumers assess satisfaction or how they react to satisfying and dissatisfying experiences. For example, having less-defined cognitive structures and being more outward focused (i.e., more susceptible to reference group influences) could mean that the more cognitive and inward-focused factors such as expectations, disconfirmation, and affect play less of a role in student participants' satisfaction assessments. Satisfaction assessments might also play a lesser role in students' purchasing intentions if students are influenced more by their peers. Furthermore, the comparisons to others implied by the reported findings on reference group influences suggest that equity assessments—the comparison of outputs and inputs to other consumers or groups of consumers—could play a heightened role in the satisfaction assessments of student participants relative to nonstudent participants. These possibilities suggest that the types of participants could account for some variance in the satisfaction correlations.

Type of offering. While early research on consumer satisfaction sometimes contrasts the processes and outcomes associated with evaluating durable versus nondurable goods (e.g., Churchill and Surprenant 1982), more recent perspectives have focused on the distinction between services and products. Services are distinguished from prod-

ucts in at least four ways: perishability, tangibility, separability in production and consumption, and standardization (Parasuraman, Zeithaml, and Berry 1985). Individually and collectively, these inherent differences are thought to have an impact on how satisfaction is assessed and what the final assessments look like. Johnson (1998), for example, proposes that expectation effects on satisfaction are generally weaker in a service context because the intangible nature of services makes information on expectations less concrete and less useful. Halstead et al. (1994) find that consumers' satisfaction formation processes are distinct for services compared with products. They reference the services literature for theoretical support for their findings. This literature argues that evaluations for services are more difficult than evaluations for products because service evaluations are based on different expectations and grounded in processes as well as outcomes (Gronroos 1982; Zeithaml, Berry, and Parasuraman 1993). Although a separate focus on satisfaction effects for services versus products is only now gaining momentum, the product-service contexts found in early studies will be captured in the meta-analysis.

METHODOLOGY

To assess the validity of the satisfaction effects proposed here, steps were taken to first develop a database of the satisfaction findings. The first step in this process was the delineation of the criterion for including studies in the review. Candidates for inclusion were empirical studies that specified customer satisfaction as a measured variable in their empirical models. These studies were identified through keyword searches of electronic databases (ABI/Inform, WILS, UMI, among others) using customer-consumer satisfaction and buyer satisfaction as identifying terms, searches of the references found in the available studies, and manual searches of leading academic journals in which studies on customer satisfaction would most likely be published, namely, the *Journal of the Academy of Marketing Science*; the *Journal of Consumer Research*; the *Journal of Customer Satisfaction, Dissatisfaction and Complaining Behavior*; the *Journal of Marketing*; the *Journal of Marketing Research*; *Management Science*; and *Marketing Science*. In addition, we requested working papers on satisfaction from authors of previous satisfaction studies and asked them for leads on working papers by other authors. The search process was terminated in July 1998, when it became clear that further efforts were not yielding additional studies.

After gathering the studies on customer satisfaction, our attention turned toward identifying the measure of association (correlation, regression coefficient, etc.) that would permit the greatest number of effects to be included in the meta-analysis, that is, the correlation coefficient. The correlation coefficient is used most often in the literature to report satisfaction relationships, it is the metric to which many satisfaction findings can be converted (see Glass, McGaw, and Smith 1981), and the correlation preserves the continuous properties in the satisfaction measure and its correlates.[3]

Not all the empirical studies, however, reported correlations or measures that could be converted to correlations. We therefore asked the authors of satisfaction studies not reporting correlations for correlational data. In a few instances, the authors were able to provide the correlations we requested so that in the end, data from 50 of 85 empirical studies on customer satisfaction could be included in the meta-analysis (see studies with an asterisk in the References section for included studies). The 50 studies consist of 44 published studies and 6 dissertations reporting a total of 517 correlations involving satisfaction or satisfaction-related variables. The correlation values and the methods and measures associated with each correlation were coded into the database. Two individuals independently coded all the data. Coding consistency was achieved in 96% of the instances, and the few discrepancies that occurred were resolved through discussions in reference to the coding scheme.

META-ANALYTIC FINDINGS

The analysis of the data and the reporting of findings proceed in three phases. First, we describe the correlations in terms of range, direction, statistical significance, and sample size. These data accentuate the nature and diversity of the findings on customer satisfaction. Second, we present the findings from the univariate analysis of the correlations. The purpose here is to offer insights into the central tendencies of the individual correlates with customer satisfaction. Multivariate analysis of the correlations is also presented to offer additional evidence in support of bivariate findings. The final stage of data analysis centers on identifying the statistically significant moderators of the satisfaction effects.

Descriptive Analysis

The data in Table 1 make apparent the diversity in the satisfaction effects reported in the literature. For one, the data reveal that the range of the reported values can be quite broad for certain correlates with satisfaction. As examples, the correlations for disconfirmation with satisfaction range from –.24 to .87, the values of the correlations for performance with satisfaction range from –.37 to .81, and the values of the correlations for expectations with disconfirmation range from –.36 to .34. In addition, the

TABLE 1
Descriptive Information on the Satisfaction-Related Correlations

Correlate	Number of Studies	Total Number of Correlations	Range of r Values	Cumulative N	Positive Significant Correlations		Positive Nonsignificant Correlations		Negative Significant Correlations		Negative Nonsignificant Correlations	
					Number	Percentage[a]	Number	Percentage[b]	Number	Percentage[a]	Number	Percentage[b]
Predictor side of model												
Expectations-satisfaction	8	17	−.13 to .66	5,927	13	(76.5)	1	(5.9)	1	(5.9)	2	(11.7)
Disconfirmation-satisfaction	30	137	−.24 to .87	37,879	121	(88.3)	14	(10.2)	1	(0.7)	1	(1.4)
Performance-satisfaction	21	159	−.37 to .81	88,959	136	(85.5)	3	(1.9)	17	(10.7)	3	(1.9)
Affect-satisfaction	13	72	−.17 to .84	22,447	48	(66.7)	14	(19.4)	7	(9.7)	3	(4.2)
Equity-satisfaction	5	27	−.14 to .87	7,389	22	(81.5)	NA	NA	3	(11.1)	2	(7.4)
Expectations-disconfirmation	7	23	−.36 to .34	4,445	6	(26.1)	9	(39.1)	6	(26.1)	2	(8.7)
Performance-disconfirmation	7	23	.20 to .73	3,435	22	(95.7)	1	(4.3)	NA	NA	NA	NA
Performance-equity	2	5	.00 to .30	614	4	(80.0)	1	(20.0)	NA	NA	NA	NA
Expectations-performance	6	25	−.09 to .50	4,201	22	(88.0)	1	(4.0)	1	(4.0)	1	(4.0)
Outcome side of model												
Satisfaction–complaining behavior	3	4	−.43 to −.20	580	NA	NA	NA	NA	4	(100)	NA	NA
Satisfaction–negative word of mouth	3	5	−.79 to −.07	1,170	NA	NA	NA	NA	3	(60.0)	2	(40.0)
Satisfaction–repeat purchasing	9	17	.11 to .91	5,066	15	(88.2)	2	(11.8)	NA	NA	NA	NA
Negative word of mouth–repeat purchasing	1	1	−.91	410	NA	NA	NA	NA	1	(100)	NA	NA
Complaining behavior–repeat purchasing	1	2	−.49 to −.39	375	NA	NA	NA	NA	2	(100)	NA	NA

NOTE: NA = not applicable.

a. Statistically significant at alpha ≤ .05.

b. Not statistically significant at alpha ≤ .05.

correlations reported for the same correlate with satisfaction often contain positive and negative correlations as well as correlations that are statistically significant in the face of other correlations that are not significant. Although most of the correlations have signs that are consistent with overriding expectations, we do find instances where the disparity in direction and statistical significance is notable. For example, for the expectations-disconfirmation link, we find that 26 percent of the correlations are positive and statistically significant, another 26 percent of the correlations are negative and statistically significant, and the remaining 48 percent of the correlations are not statistically significant in either direction.

The data in Table 1 further document that far less attention in the empirical literature has been devoted to understanding the outcomes of customer satisfaction. Only 29 (5.6%) of the correlations in our database pertain to a variable that is a consequence of customer satisfaction. In contrast, 488 (94.4%) correlations pertain to an antecedent of customer satisfaction. Moreover, among the antecedents, disconfirmation (137 correlations) and performance (159 correlations) are by far the two factors specified most often in the empirical models of customer satisfaction.

In all, these data bear witness to both the preponderance of models addressing a limited set of antecedents and the mixed evidence on the drivers and consequences of customer satisfaction. Simultaneously, the data raise questions regarding the central tendency of the relationships and the statistical significance of these associations. They also raise questions as to whether the apparent variance in the magnitude and statistical significance of the reported correlations results from chance, sampling error, or differences in measures or methods. These questions are addressed subsequently.

Analysis of Direct Effects

The reliability-corrected mean (the sample size–weighted mean corrected for systematic variance due to variability in the reliability of the measure) is the focus throughout the meta-analysis under the assumption that, all else being equal, correlations from larger samples (central limit theorem) and estimated from more reliable data produce a mean correlation closer to the population mean (Hunter and Schmidt 1990). When the reliability-corrected mean cannot be estimated due to the absence of reliability data from the original studies, the next best estimate of the population mean, the sample size–weighted mean, is emphasized. We also emphasize the individual correlations reported for the model (individual-level analysis) rather than the average of the correlations reported within a study (study-level analysis) for several reasons. First, our proposed moderators are categorical and vary across models within the same study, and so an individual-level analysis ensures that the moderator data are coded and captured in the database for each effect (Matt and Cook 1994). Second, the Q test for homogeneity in correlational values was applied to all studies reporting more than five correlations for the same correlate with satisfaction (Hedges and Olkin 1985; Hunter and Schmidt 1990) and it was rejected in 87 percent (27 of 31) of the cases. These data imply that an analysis of the correlations at the study level is inappropriate because of excessive heterogeneity across correlation values within studies. Finally, Hunter and Schmidt (1990) raise the possibility that the sampling-error variance, and hence the generalizability of the estimates, can be underestimated when analysis is at an individual level. However, the data in Table 2 do not support this contention. Sampling-error variance is identical or nearly identical at either level of analysis, and the respective mean correlations tend to be comparable. These data further imply that an individual-level analysis is appropriate within the context of this meta-analysis.

Antecedents to satisfaction. A review of the data in Table 3 reveals that the mean correlations for the antecedents of satisfaction are all positive and statistically significant as suggested by theory. Furthermore, the means differ significantly from zero to the extent that hundreds to tens of thousands of null effects would have to reside in the file drawers of researchers to bring the respective mean estimates down to a level not considered statistically significant (see "Availability Bias" in Table 3). Our efforts to secure unpublished studies and the fact that six unpublished studies are included in the meta-analysis make it improbable that large numbers of null effects exist that have not been captured in our database. Reasonable confidence, therefore, can be placed in the mean correlations for disconfirmation, expectations, performance, affect, and equity's being statistically significant above chance levels.

Of the predictor variables, equity and disconfirmation exhibit the strongest correlation with satisfaction on average. The mean correlation between equity and satisfaction is .50 and the mean correlation between disconfirmation and satisfaction is .46. In contrast, the mean correlations between performance and satisfaction, affect and satisfaction, and expectations and satisfaction are .34, .27, and .27, respectively. Finding that equity and disconfirmation have the greatest impact on satisfaction assessments gains additional validity when the correlation matrix (see Table 4, Panel A) containing the correlations among the respective predictors and satisfaction is used as input to a multivariate regression model.[4] What we find when expectations, disconfirmation, performance, affect, and equity are specified as simultaneously affecting satisfaction assessments

TABLE 2
Comparison of Mean Correlations and Sampling Error Variances by Level of Analysis

	Individual-Level Analysis		*Study-Level Analysis*	
Correlate	*Sample Size–Adjusted r*	*Variance Due to Sampling Error*	*Sample Size–Adjusted r*	*Variance Due to Sampling Error*
Predictor side of the satisfaction model				
Expectations-satisfaction	.19	.003	.20	.003
Disconfirmation-satisfaction	.37	.003	.38	.002
Performance-satisfaction	.33	.001	.36	.002
Affect-satisfaction	.21	.001	.35	.002
Equity-satisfaction	.49	.002	.55	.002
Expectations-disconfirmation	.02	.005	.08	.005
Performance-disconfirmation	.41	.004	.46	.004
Performance-equity	.25	.006	.20	.008
Expectations-performance	.28	.005	.24	.006
Outcome side of the satisfaction model				
Satisfaction–complaining behavior	–.34	.006	–.36	.006
Satisfaction–negative word of mouth	–.57	.003	–.61	.002
Satisfaction–repeat purchasing	.52	.002	.52	.002
Negative word of mouth–repeat purchasing	–.91[a]	NA	–.91	NA
Complaining behavior–repeat purchasing	–.44	.000	–.44	.000

NOTE: NA = not applicable.
a. Only one *r* is available from the literature.

is that the estimated regression coefficient for equity (e.g., $\beta = .28$) is largest in relative magnitude and the coefficient for disconfirmation (e.g., $\beta = .23$) is once more the second largest in relative value (see Table 4, Panel B).

The correlation data in Table 3 also reveal that among the antecedents to satisfaction, performance is correlated with disconfirmation ($r = .49$), expectations ($r = .34$), and equity ($r = .25$) to a statistically significant degree. Regarding the mean correlations between both performance and disconfirmation and performance and expectations, thousands of null effects would have to be hidden away in file drawers for the mean correlations to be nonsignificant in a statistical sense, which seems unlikely. However, more caution is advised when interpreting the statistical significance of the mean correlation between performance and equity. Fewer than 100 null effects must exist for this mean correlation to be nonsignificant in a statistical sense (Table 3). Although a sizeable number, it is far less than the number of null effects required in the context of performance with disconfirmation or performance with expectations.

Outcomes of satisfaction. Among the outcomes of customer satisfaction, the data in Table 3 support a positive relationship between customer satisfaction and repeat purchasing. In fact, the mean correlation between these two factors is among the stronger correlations reported in Table 3. The reliability-adjusted correlation is .53.

The data in Table 3 further reveal that satisfied (dissatisfied) consumers are likely to be less (more) vocal consumers, on average. The mean correlation between satisfaction and complaining behavior is –.34, and the mean correlation between satisfaction and negative WOM is –.57. However, caution is advised when interpreting these average estimates of relationship strength. Few correlations are available in the literature to report on these associations and so a few studies reporting different effect sizes in the future could alter conclusions. Similar caution is advised when interpreting the magnitude and statistical significance of the mean correlations for repeat purchasing with either negative WOM ($r = -.91$) or complaining behavior ($r = -.44$). Only one correlation is available for negative WOM with repurchase, and just two correlations are available for complaining behavior with repurchase intentions.

Analysis of Moderator Effects

Besides documenting the distributions, central tendencies, and relative and absolute magnitudes of the satisfaction correlations, the meta-analysis explores whether the variation in the magnitude of the correlations is due to chance or the measurement and method factors discussed previously. Regarding chance, the data indicate that the variance in the reported correlations is unlikely the result of chance alone. For one, the Q test for homogeneity in correlational values indicates that the respective correlations are, in fact, heterogeneous in value for each pair of correlates with the exception of satisfaction with complaining behavior. Second, 33 percent to 98 percent of the variance in the correlational values remains after factoring out the variance due to sampling error and unreliability in the measures (see "Remaining Variance" in Table 3).

TABLE 3
Means and Variances of the Satisfaction-Related Correlations

Correlate	H_i	*Simple Mean*[a]	*Sample Size–Adjusted Mean*	*Reliability-Adjusted Mean*[b]	*Availability Bias*[c]	*Total Variance*	*Variance Due to Sampling Error (percentage of total variance)*	*Variance Due to Reliability Variation (percentage of total variance)*	*Remaining Variance (percentage of total variance)*
Predictor side of model									
Expectations-satisfaction	+	.24*	.19*	.27*	184	.05	.003 (6.5)	.004 (8.7)	.04 (84.8)
Disconfirmation-satisfaction	+	.37*	.39*	.46*	19,293	.05	.003 (6.4)	.01 (8.2)	.04 (85.4)
Performance-satisfaction	+	.33*	.34*	NA[d]	16,519	.06	.001 (1.6)	NA[d]	.05 (98.4)
Affect-satisfaction	+	.21*	.20*	.27*	1,527	.05	.003 (5.7)	.001 (1.9)	.04 (92.4)
Equity-satisfaction	+	.46*	.49*	.50*	660	.10	.002 (2.2)	.00 (0)	.10 (97.8)
Expectations-disconfirmation	—/o	.02	.02	.02	NA	.03	.005 (17.9)	.00 (0)	.02 (82.1)
Performance-disconfirmation	+/o	.43*	.41*	.49*	4,234	.02	.004 (26.2)	.00 (0)	.02 (73.8)
Performance-equity	+/—/o	.22*	.25*	NA[d]	92	.01	.006 (50.0)	NA[d]	.01 (50.0)
Expectations-performance	+	.31*	.28*	.34*	1,657	.02	.005 (24.3)	.00 (0)	.02 (75.7)
Outcome side of model									
Satisfaction–complaining behavior	—	–.31*	–.34*	NA[d]	59	.01	.006 (66.6)	NA[d]	.01 (33.4)
Satisfaction–negative word of mouth	—	–.37*	–.57*	NA[d]	7	.11	.003 (2.8)	NA[d]	.10 (97.2)
Satisfaction–repeat purchasing	+	.48*	.52*	.53*	407	.06	.002 (3.4)	.001 (1.8)	.06 (94.8)
Negative word of mouth–repeat purchasing	—	–.91*[e]	NA	NA	NA	NA	NA	NA	NA
Complaining behavior–repeat purchasing	—	–.44*	NA	NA	NA	.003	.003 (100)	NA	NA

NOTE: NA = not applicable.

a. Simple mean is the correlation across models unadjusted for sampling error or study artifacts.

b. Reliability adjustments are based on the distribution of the reliabilities.

c. Availability bias represents the number of unlocated models averaging null results ($r = 0$) that would have to exist to bring the adjusted mean down to the just significant level ($p = .05$).

d. Predictor or criterion variable reliability estimates are not reported frequently enough in the literature ($N < 2$) to adjust the mean correlation for differences in scale reliabilities.

e. Because only one r is available from the literature, estimates of adjusted means and their variances, as well as estimates of availability bias, are not relevant.

* Statistically significant at alpha ≤ .05 based on calculations of the reliability-corrected credibility interval when possible and the sample size–adjusted credibility interval when data on scale reliability are unavailable.

TABLE 4
Correlation Matrix and Multiple Regression Results for the Predictors of Customer Satisfaction

A. Correlation Matrix for the Antecedents to Satisfaction:

	Satisfaction	*Affect*	*Expectations*	*Disconfirmation*	*Performance*	*Equity*
Satisfaction	1.00					
Affect	.27	1.00				
Expectations	.27	.54	1.00			
Disconfirmation	.46	.08	.02	1.00		
Performance	.34	.02	.34	.49	1.00	
Equity	.50	—	—	.54	.25	1.00

B. Regression Results (βs) With Satisfaction as the Criterion:

	Substituted Values for Missing Correlations[a]					
Predictor Variable	*Low*	*(.14)*	*Medium*	*(.32)*	*High*	*(.50)*
Affect	.15	(.06)*	.13	(.06)	.10	(.07)
Expectations	.10	(.09)	.06	(.10)	.02	(.11)
Disconfirmation	.22	(.07)*	.23	(.08)*	.23	(.08)*
Performance	.12	(.06)	.13	(.06)	.15	(.06)*
Equity	.32	(.05)*	.28	(.05)*	.28	(.06)*
R^2 (adjusted R^2)	.37	(.35)	.34	(.33)	.33	(.31)
Maximum variance inflation factor	1.92		2.04		2.56	
F (p level)	26.05	(< .01)	23.50	(.01)	21.92	(<.01)

a. Values were substituted for the two missing correlations in the matrix to estimate the model. Reasonable values are ones consistent with the other correlations in the matrix. Hence, the medium value is the mean for the correlations found in the correlation matrix. The high and low values reflect one standard deviation above and one standard deviation below the mean, respectively.

* $p \leq .05$ one-tailed using median sample size of 231 as reference. Statistical significance is reported and interpreted with caution since statistical significance is grounded in the median number of participants.

Hunter and Schmidt (1990) emphasize that when more than 25 percent of the variance remains after accounting for variance due to sampling error and unreliable scales, a search for moderator variables is justified.

Our search for significant moderators was conducted by regressing the dummy-coded methods and measurement factors on the Fisher z-transformed values of the corrected correlations (Cohen and Cohen 1983; Hedges and Olkin 1985). We estimated separate regression models for pairs of correlates having 15 or more correlations. The Q-statistic was used to assess the statistical significance of the model (Hedges and Olkin 1985), and the predictive validity of the model was assessed using the prediction sum of squares (PRESS) procedure—a form of bootstrapping whereby each data point is predicted from the least squares fitted regression function developed from the remaining data points (Neter, Wasserman, and Kutner 1989).

The findings from the moderator analysis indicate that the regression models are relatively free of collinearity. The maximum variance inflation factor (max VIF) values reported in Table 5 are well below the threshold value of 10 for suggesting that collinearity is unduly influencing the estimates of the regression coefficients (Neter et al. 1989). The PRESS ratios are also 3 or lower in seven of nine models, implying that the models display reasonable levels of predictive validity. The exceptions are the models pertaining to expectations with disconfirmation and affect with satisfaction, where the PRESS ratios are 3.39 and 5.62, respectively. These data imply that greater caution should be exercised when using the coefficients from these models for prediction (Hair, Anderson, Tatham, and Black 1995).

The data in Table 5 further reveal that the proposed moderators fail to account for a significant proportion of the variance in the correlations for expectations, disconfirmation, and equity with satisfaction and the correlations for performance with disconfirmation. The respective models are not statistically significant ($p > .05$). The statistically significant models are the ones in which the following correlations are criterion variables: performance with satisfaction, affect with satisfaction, expectations with disconfirmation, expectations with performance, and satisfaction with repeat purchasing.

A focus on the coefficients in the statistically significant models reveals that comparison standard, measurement level, method type, participants, and type of offering are statistically significant ($p < .05$) moderators of the relationships in satisfaction models. The correlation between affect and satisfaction ($\beta = .36$), expectations and

TABLE 5
Regression Results for the Moderator Analysis

	Criterion Correlations								
	Antecedents to Satisfaction					*Correlations Among Predictors*			*Outcome of Satisfaction*
Moderator Variable	*Expectations-Satisfaction*	*Disconfirmation-Satisfaction*	*Performance-Satisfaction*	*Affect-Satisfaction*	*Equity-Satisfaction*	*Expectations-Disconfirmation*	*Performance-Disconfirmation*	*Expectations-Performance*	*Satisfaction–Repeat Purchasing*
Comparison standard									
Beta: actual, expected[c]	.11 (.72)	−.10 (.29)	.13 (.18)	.36 (.57)*	NA[b]	1.74 (.41)*	−.96 (.54)	−1.00 (.48)*	.57 (.26)*
No. of correlations: actual, expected	13, 4	14, 123	110, 49	56, 14		7, 16	8, 15	6, 19	10, 7
No. of studies: actual, expected	5, 2	17, 13	18, 6	9, 3		3, 4	3, 4	1, 5	4, 4
Measurement level									
Beta: aggregate, attribute[c]	NA[a]	−.06 (.55)	.09 (.18)	−.69 (.64)*	.53 (.44)	NA[b]	NA[b]	NA[b]	.27 (.26)*
No. of correlations: aggregate, attribute	17, 0	67, 76	33, 126	42, 28	14, 13				10, 7
No. of studies: aggregate, attribute	8, 0	20, 10	10, 13	9, 3	4, 1				5, 3
Method type									
Beta: survey, experiment[c]	NA[a]	−.14 (.22)	−.57 (.25)*	−.23 (.51)	NA[a]	−.12 (.38)	1.12 (.48)*	−.31 (.36)	.89 (.53)*
No. of correlations: survey, experiment	17, 0	72, 65	136, 23	8, 64	27, 0	12, 11	7, 16	3, 22	15, 2
No. of studies: survey, experiment	7, 0	19, 19	15, 8	5, 8	4, 0	5, 2	4, 3	2, 4	6, 2
Participants									
Beta: nonstudents, students[c]	.59 (1.34)	−.03 (.19)	-.15 (.50)*	.02 (.22)	NA[a]	1.79 (.52)*	−1.12 (.53)*	1.10 (.42)*	−.04 (.36)
No. of correlations: nonstudents, students	16, 1	93, 44	156, 3	40, 32	21, 6	19, 4	18, 5	18, 7	8, 9
No. of studies: nonstudents, students	7, 1	20, 9	21, 2	9, 5	3, 1	5, 2	4, 3	3, 3	4, 4
Type of offering									
Beta: products, services[c]	.62 (.58)	.11 (.19)	.03 (.17)	−.39 (.49)*	−.58 (1.03)	−.46 (.38)	.54 (.54)	NA[a]	−.75 (.43)*
No. of correlations: products, services	7, 10	80, 46	68, 75	31, 9	21, 1	11, 12	16, 7	25, 0	8, 9
No. of studies: products, services	4, 4	17, 12	14, 9	10, 4	3, 1	3, 4	4, 3	6, 0	4, 5
R^2 (adjusted)	.11 (0.0)	.07 (.03)	.30 (.27)	.25 (.19)	.11 (.01)	.56 (.46)	.33 (.19)	.75 (.71)	.89 (.84)
Model p level	> .05	> .05	≤ .05	≤ .05	> .05	≤ .05	> .05	≤ .05	≤.05
Maximum variance inflation factor	1.55	1.27	1.68	2.38	1.07	1.65	1.72	3.24	5.30
PRESS ratio[d]	1.42	1.63	2.21	5.62	1.89	3.39	2.97	1.79	1.00
df	13	131	153	66	19	18	18	21	11

NOTE: NA = not applicable.

a. Insufficient number of observations in one of the comparison groups to permit meaningful analysis.

b. The respective moderator is unrelated to the factors that were correlated in the proposed criterion.

c. Standard errors (*SE*s) are in parentheses.

d. Ratio of the sum of squares residual based on estimating $n - 1$ regression models (PRESS) to the sum of squares based on estimating one regression model.

* Statistically significant at alpha ≤ .05, two-tailed.

disconfirmation ($\beta = 1.74$), and satisfaction and repeat purchasing ($\beta = .57$) are higher on average when the comparison standard is expectations grounded in actual performance, but lower on average ($\beta = -1.00$) when the correlation between expectations and performance is based in anticipated performance. Second, the satisfaction correlations are affected by whether an aggregate or attribute-by-attribute approach is used to capture satisfaction. Specifically, the correlation between affect and satisfaction is lower on average ($\beta = -.69$) and the correlation between satisfaction and repeat purchasing is higher on average ($\beta = .27$) when researchers use items that ask consumers for their overall satisfaction scores. Third, the correlation between satisfaction and repeat purchasing is higher on average ($\beta = .89$) when surveys are used instead of experiments and lower on average ($\beta = -.57$) when the association between performance and satisfaction is the focus.

In addition, the data in Table 5 indicate that participants and type of offering often moderate the estimates of the satisfaction correlations. Using nonstudents results in a lower correlation on average ($\beta = -.15$) when performance is correlated with satisfaction, and using nonstudents leads to a higher correlation on average when expectations are correlated with disconfirmation ($\beta = 1.79$) and expectations are correlated with performance ($\beta = 1.10$). Finally, we find that the correlations between affect and satisfaction ($\beta = -.39$) and satisfaction with repeat purchasing ($\beta = -.75$) are lower on average when products rather than services are the focus of research attention. Possible explanations for, and implications of, these and other findings reported in the meta-analysis are discussed next.

DISCUSSION OF THE SATISFACTION FINDINGS

The meta-analysis was designed to synthesize and analyze the empirical findings on customer satisfaction as one approach for taking stock of current knowledge, offering insights into satisfaction effects, and identifying areas where research is deficient. Several of these insights are discussed next.

Implications for Theory and Research

Main effects. The meta-analysis makes it apparent that the dominant focus in empirical investigations has been on modeling disconfirmation and performance for their effects on satisfaction (see Table 1). This raises the question of whether this emphasis is warranted. A review of past modeling efforts in conjunction with an examination of the cumulative effects suggests that the answer is mixed. On one hand, disconfirmation emerges as a dominant predictor of satisfaction effects on average. On the other hand, the strength of the relationship between performance and satisfaction is much weaker than the relationship documented for disconfirmation (mean r of .34 versus .46 for disconfirmation [Table 3]), and performance effects may not always be statistically significant on average when analyzed in a multivariate context (Table 4, Panel B). Thus, while the direct performance-satisfaction link has been found in selected studies to account for the most variance in satisfaction (e.g., Churchill and Surprenant 1982) and others emphasize the importance of capturing performance in satisfaction models (Johnson 1998; Yi 1990), the cumulative findings indicate that performance is not a dominant predictor of satisfaction levels and that a heavy emphasis on performance effects tells a relatively small part of the satisfaction story at best.

In contrast, our findings suggest that placing a greater emphasis on modeling equity is appropriate, especially when compared with modeling expectations and affect. While affect represents a potentially important departure from cognitive approaches to studying satisfaction (e.g., Westbrook 1987; Westbrook and Oliver 1991), on average, affect emerges as a statistically, but not practically, significant determinant of satisfaction levels (mean $r = .27$, Table 3). Expectations are also statistically significant on average (e.g., mean $r = .27$) but are of diminished practical significance, especially when compared to the magnitude of the effect evidenced for equity or disconfirmation. What we find is that equity is strongly related to satisfaction on average (mean $r = .50$) and, in fact, is most strongly related to satisfaction from among the classical predictors captured in the meta-analysis. This finding supports the position advanced by Fisk and Young (1985), Oliver and DeSarbo (1988), Swan and Mercer (1982), and Swan and Oliver (1985), among others, who argued for the applicability of equity theory (Adams 1963) to a satisfaction context. What we further document here is not only the relevance of equity to satisfaction but the central relevance of equity to consumers' satisfaction levels.

Contingency effects. Our moderator findings also offer a previously unavailable record of the specific relationships that are affected by how satisfaction and its components are captured, the nature of the participant pool, and the type of offering that serves as the focus in the investigation (see Table 5). With regard to the comparison standard, Cadotte, Woodruff, and Jenkins (1987) find that actual experiences are better than expected experiences in explaining consumer satisfaction. Oliver (1997), meanwhile, suggests that such effects may be contingent on special circumstances, such that more than one referent may be correct. The meta-analysis, in turn, identifies several situations where choice of comparison standard actually matters. Specifically, we find that the choice of comparison standard matters when affect is correlated with satisfac-

tion, satisfaction is correlated with repeat purchasing, and expectations are correlated with either disconfirmation or performance.

The meta-analysis also identifies the situations when the use of multi-item versus single-item scales for capturing satisfaction levels makes a difference. Yi (1990:72) finds the evidence on the reliability and convergent and discriminant validity of multi-item measures to weigh in favor of using multi-item measures to capture satisfaction. The meta-analysis, in turn, can add specificity to this conclusion. The findings from the meta-analysis indicate that it is particularly desirable to use a multi-item scale when capturing the relationships between affect and satisfaction and satisfaction with repeat purchasing. The mean correlations associated with these determinants vary to a statistically significant degree depending on which type of scale is used, an insight that was previously unavailable.

Moreover, the collective insights on alternative performance and satisfaction measures generated through the meta-analysis accent the need to identify the best measure for these constructs. Our findings indicate that the choice of measure can affect estimates of association, estimates that, in turn, would serve as the foundation for strategic decisions. Hence, identifying the best measures of performance and satisfaction would have practical value and pursuing this line of inquiry in the future is encouraged.

What also is important when assessing, modeling, and interpreting satisfaction effects is consideration of whether students or nonstudents comprise the participant pool. The possibility was raised that students would have less solidified cognitive structures; would be influenced more by their peers (Park and Lessig 1977); and thus would be guided less by cognitive and inward-focused factors such as expectations, disconfirmation, and affect when making satisfaction assessments. Satisfaction assessments were also proposed to play a diminished role in repeat purchasing decisions because of the possible dominance of reference group influences. Although the effect of affect on satisfaction is not impacted by the nature of the respondent, we do find support for expectation differences (which inarguably represent a component of consumers' cognitive structures) by participant type (see Table 5). Specifically, we find that expectations play a diminished role in students' satisfaction process. This effect is indicated by the weaker associations for expectations with both disconfirmation and performance within the student group. These findings, in turn, imply that the student-nonstudent biases outlined in Park and Lessig (1977) and Burnett and Dunne (1986) are relevant in a consumer satisfaction context.

Finally, the moderator findings identify the specific pairs of factors whose relationships are contingent on whether products or services are the context for the satisfaction assessment. Here we find that the product-service distinction is important when estimating the relationship between affect and satisfaction and satisfaction and repeat purchasing. Both relationships are lower on average in a product setting. One explanation for these effects is that they are a manifestation of services', affect's, and satisfaction's all being more subjective or intangible compared with disconfirmation and performance, which can be more objective or tangible in nature. A consistency in processing, thinking mode, orientation, or context among affect, satisfaction, and services could explain the stronger relationships evidenced among these factors in a service setting. Studies have shown that relational processing is stronger when the context or modality is consistent (e.g., Tavassoli 1998). In a like manner, we may be observing that satisfaction assessments and outcomes are different when people are in an intangible versus a tangible processing mode. For example, intangible feelings of satisfaction play a stronger role in decisions to buy intangibles (i.e., services) again, and intangible feelings of affect are more closely aligned with one's intangible feelings of satisfaction. Clearly, the plausibility of this and other explanations that have been advanced post hoc to explain several of the new insights generated in this meta-analysis should be pursued in future studies to establish their validity.

Implications for Managers

One benefit of the meta-analysis for managers is the identification of elements that should be the focus of their attention when designing strategies to augment customer satisfaction. Given that disconfirmation plays a dominant role in satisfaction assessments, one component of strategy should be designed around systems and programs geared toward improving disconfirmation levels through performance and expectations. It would, therefore, be judicious for managers to consider the negative ramifications that can result when firms overpromise and underdeliver (Parasuraman, Zeithaml, and Berry 1985). A second component of strategy should focus on managing the consumer's ratio of outcomes to inputs to ensure the ratio is not less than the ratio realized by a referent group and hence that consumers do not come away dissatisfied. The issue of treating customers fairly takes on added relevance in the context of equity and its significant impact on satisfaction.

Pursuing disconfirmation and equity objectives as mechanisms for augmenting satisfaction levels could also have relevance to several proposed outcomes of customer satisfaction. The initial findings on outcome effects suggest that dissatisfied consumers would be unlikely to buy again; would be likely to occupy management's time, energy, and resources complaining about the encounter; and would likely hurt bottom-line performance further by dissuading other consumers from buying the offering.

TABLE 6
Qualitative Review of Studies Not Otherwise Included in the Meta-Analysis

Study	*Focus*	*Findings*
Firm performance		
Anderson, Fornell, and Lehmann (1994)	Examined whether there are economic benefits (e.g., return on investment) to pursuing improved customer satisfaction ratings via quality improvement programs.	Firms that achieve high customer satisfaction tend to enjoy high economic returns, although there is a lagged effect between firm efforts and positive results. Customer satisfaction is cumulative in that high customer satisfaction somewhat insulates a firm from short-term deficiencies.
Anderson, Fornell, and Rust (1997)	Examined the relationship between satisfaction and productivity as well as how firm emphasis on both is affected by whether the offering is a good or service.	The association between satisfaction and productivity is positive and significant for goods, but negative and significant for services. Implications are that it is difficult to pursue both customer satisfaction and increased productivity when consumers expect customized offerings. Both satisfaction and production are interrelated, not mutually exclusive.
Rust and Zahorik (1993)	Explored the linkages between satisfaction, customer retention, and market share and modeled the bottom-line financial impact of customer satisfaction programs.	Findings indicate that customer satisfaction may be sequentially linked to customer loyalty, customer retention, and profitability. The authors provide a model for identifying key elements of satisfaction, providing direction for managerial emphasis and accountability.
Outcome issues		
Bitner (1990)	Presented and partially tested a model of service encounter evaluation that synthesizes customer satisfaction, services marketing, and attribution theory.	Nonverbal cues (e.g., physical environment) can influence customer attributions and satisfaction. Understanding the customer's attribution process may provide opportunities to mitigate customer dissatisfaction.
Hocutt, Chakraborty, and Mowen (1997)	Examined the impact of service failure attributions and perceived levels of justice on satisfaction and intention to complain following a service failure.	Customers are less likely to be dissatisfied and complain when the service failure is attributed to them as opposed to the service provider. Indications are that procedural justice (means) may have more impact on consumer attitudes than distributive justice (ends).
Oliva, Oliver, and MacMillan (1992)	Used catastrophe theory and nonlinear modeling methodology to investigate the relationships among customer-transaction costs, satisfaction, and loyalty in an effort to enhance existing customer service strategies.	Findings indicate the relationship between satisfaction and loyalty is nonlinear for some facets of service. Greater transaction costs borne by consumers increase the likelihood of a nonlinear relationship. Several practical service strategies are described.
Richins (1983)	Examined three commonly noted responses to an unsatisfactory consumer experience as they relate to each other and the organizational attempts at redress. The study used a cross-cultural data set and introduced consumer characteristics as predictor variables.	Results indicate that complaint behavior, negative word of mouth, and switching intentions may operate somewhat autonomously. Each may be separate processes influenced by different variables or in different ways by the same variables. Social activity, a consumer characteristic, was a strong predictor of word-of-mouth activity.
Sulek, Lind, and Marucheck (1995)	Investigated the impact that customer service intervention (customer-oriented or technical approach) and store design have on performance, positing satisfaction as a mediating variable.	A customer-oriented service approach had both a direct effect on performance as well as an indirect effect through customer satisfaction. Technical approaches were shown to be less effective in affecting performance, which highlights the continued need for personal interaction even as technology becomes a competitive necessity.

Attitude and intent		
Bolton and Drew (1991)	Used a longitudinal analysis to investigate the impact of changes in service quality on customer attitudes and to evaluate the cumulative effect of customer attitudes.	Found that the effect of disconfirmation on attitude diminishes with time but that customer attitudes are cumulative with prior attitudes influencing current attitudes. Another key finding was that attribute-level ratings were sensitive to changes in service levels, whereas aggregate-level ratings showed a greater lag time before evaluations changed.
LaBarbera and Mazursky (1983)	Investigated the direct and indirect cognitive effects of satisfaction on consumer intentions and repeat purchase behavior.	Results support an extension of the role of satisfaction to a longitudinal (versus static) perspective. Implications are that satisfaction decays into attitudes or intentions that persist for extended periods. Also, the importance of satisfaction in predicting repurchase appears to decrease as brand loyalty increases.
Oliver (1980)	Integrated antecedent and hypothesized consequences of satisfaction into a comprehensive framework.	Satisfaction was found to mediate the changes between preexposure and postexposure attitudinal components of consumer intention, while disconfirmation was shown to have a dominant impact on satisfaction. Revised attitudes and intentions are shown to be outcomes of satisfaction.
Other issues		
Anderson and Sullivan (1993)	Examined the antecedents and consequences of customer satisfaction with particular emphasis on the direct and moderating effects of perceived quality on customer satisfaction.	Satisfaction was found to increase with both perceived quality and disconfirmation. When quality is ambiguous or difficult to evaluate, expectations play a greater role in determining satisfaction.
Garland and Westbrook (1989)	Investigated the compositional structure of customer satisfaction in a nonprofit service domain.	Four distinct dimensions of nonprofit service were supported and account for the majority of variance in a global satisfaction measure. The interpersonal dimensions proved to be larger in both magnitude and statistical significance than the physical aspects.
Mittal, Ross, and Baldasare (1998)	Investigated the existence and nature of a potential asymmetric and nonlinear response of satisfaction to attribute-level performance.	Negative performance has an asymmetric and larger impact on satisfaction and repurchase intentions than does positive performance. In addition to its mediated impact through satisfaction, attribute-level performance has a direct effect on repurchase intentions.

This growing recognition of the negative repercussions from having dissatisfied consumers may explain why increasing numbers of companies have senior executives responsible for customer satisfaction.

Directions for Future Research

While our analysis of the findings from previous studies can advance understanding of customer satisfaction effects, many issues need to be examined in more detail. Several issues discussed subsequently are drawn from selected studies outlined in Table 6 that did not report correlations.

- Studying the relationships between satisfaction, loyalty, retention, and the economic performance of the firm using the studies by Anderson, Fornell, and Rust (1997); Anderson, Fornell, and Lehmann (1994); Oliva, Oliver, and MacMillan (1992); and Rust and Zahorik (1993) as a foundation could prove insightful. Using the studies by Bitner (1990); Hocutt, Chakraborty, and Mowen (1997); and Sulek, Lind, and Marucheck (1995) as a foundation for further study into the effects of the physical environment, different forms of justice, and customer orientation, respectively, on satisfaction assessments could also prove interesting and valuable (see Table 6).
- Understanding what leads to expectation formation, knowledge of the structural relationships between antecedents (e.g., equity and expectations), modeling satisfaction at an attribute level (e.g., the role of satisfaction with some attribute *j* in overall satisfaction judgments), and documenting the specific attributes that typically factor into consumers' satisfaction assessments (e.g., product quality [Anderson and Sullivan 1993]) could also enrich our understanding of the satisfaction process.
- Finally, explicating nonrecursive effects could further improve understanding by documenting how satisfaction has an impact on expectations or how repurchase intentions affect equity. These research directions also tie in with previous calls for longitudinal research on satisfaction processes (e.g., Bolton and Drew 1991; LaBarbera and Mazursky 1983), calls that generally have gone unheeded.

Examining these relationships is important for advancing understanding. One avenue for advancing understanding is the quantitative synthesis of the satisfaction literature reported here. Another is the use of meta-analysis as a springboard for further study into the drivers and outcomes of customer satisfaction. The latter is strongly encouraged as we collectively strive to know why customers come away from shopping experiences satisfied or dissatisfied and what the resulting satisfaction levels mean for effective business practice and the long-run success of the enterprise.

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NOTES

1. The conceptual framework for the meta-analysis is grounded in the available empirical evidence and the work of Oliver (1997). Oliver rightfully takes the opportunity in his book to embellish and advance thought on customer satisfaction so as to "infuse 'new wine into old bottles' so that new work . . . will be forthcoming" (p. 261). He therefore includes variables and paths in his model that have not yet been examined empirically. They include the mediating effect of evaluation on the relationship between performance outcomes and affect, the direct effects of disconfirmation and other appraisals on attribution and distinct emotions, and the direct effects of distinct emotions on satisfaction (see chapter 12). Regarding the consequences of satisfaction, Oliver presents redress as mediating the relationship between complaining behavior and word of mouth (WOM); secondary satisfaction as the outcome of satisfaction, complaining behavior, redress, and WOM; and secondary satisfaction as having an impact on repurchase intentions (see chapter 13).

2. The studies in our database by Clemmer (1988) and Swan and Oliver (1991) examined all three forms of justice, and the studies by Oliver (1993) and Oliver and Swan (1989a, 1989b) focused on distributive justice.

3. Elements that are discussed in the literature in terms of dichotomies, zones, and thresholds are typically operationalized in the empirical studies as continuous measures captured via correlations.

4. Estimating a structural equations model is precluded by the fact that a full matrix cannot be developed from the data reported in the respective studies on customer satisfaction (e.g., correlations for negative WOM with either expectations, disconfirmation, or complaining behaviors are unavailable), and the model in Figure 1 does not meet the order condition outlined in Duncan (1975).

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