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December 2006

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### Recommended Citation

Whitaker, Jonathan; Krishnan, M.S.; and Fornell, Claes, "Does Offshoring Impact Customer Satisfaction?" (2006). *AMCIS 2006 Proceedings*. 394.  
<http://aisel.aisnet.org/amcis2006/394>

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# Does Offshoring Impact Customer Satisfaction?

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## ABSTRACT

While researchers have noted the increase in offshoring IT and business processes since the 2000 timeframe, there is limited work on the implications of offshoring for firms and consumers. This research begins to address these implications by studying the relationship between offshoring and customer satisfaction, expressed through the American Customer Satisfaction Index™ tracked by the National Quality Research Center.

We analyze panel data of 68 firms and business units from 1997-2004, and find that offshoring is associated with an increase in both perceived value and perceived quality, the two key components of customer satisfaction. We also find that the positive relationship between offshoring and customer satisfaction is mediated by both perceived value and perceived quality. This indicates that as firms engage in offshoring IT and business processes, firms simultaneously increase the value *and* quality of their goods and services.

## Keywords

Offshoring, customer satisfaction, perceived value, perceived quality.

## INTRODUCTION

Firms are increasingly offshoring their IT and business processes to manage their operations and achieve their strategic objectives (Carmel and Agarwal 2002; Prahalad and Krishnan 2004). While researchers have noted the increase in offshoring IT and business processes, there is limited work on the implications of offshoring for firms and consumers. This research begins to address these implications by studying the relationship between offshoring and customer satisfaction. Customer satisfaction is an important indicator of firm performance. Higher customer satisfaction scores have been linked to higher firm profitability, shareholder value and risk-adjusted stock returns (Anderson, Fornell and Mazvancheryl 2004; Fornell, Mithas, Morgenson and Krishnan 2006).

This study makes two primary contributions. To the best of our knowledge, this is the first empirical study that builds on previous research in information systems, shared services, international trade and marketing to develop a theoretical model to study the impact of offshoring on customer satisfaction. We validate this model by conducting an empirical analysis across a broad cross-section of US firms. Although there are some anecdotal media reports on individual firms that have experienced adverse impacts to customer satisfaction from offshoring (Dawson 2004; Pfeffer 2006), our theoretically grounded work and empirical analysis across a range of firms shows that offshoring is associated with an increase in customer satisfaction.

Second, we find that the relationship between offshoring and customer satisfaction is mediated by both perceived value and perceived quality. This indicates the customer perception that as firms engage in offshoring IT and business processes, firms

simultaneously increase the value *and* quality of their goods and services (Prahalad and Krishnan 2004). The finding on perceived quality is contrary to a frequent assertion that cost savings is the sole motivation for firms to pursue offshoring. While cost is certainly a key motivation (Loh and Venkatraman 1992; Lacity and Hirschheim 1994), our findings suggest that firms may also pursue offshoring to improve the quality of IT and business processes.

## THEORY AND RESEARCH MODEL

To study the relationship between offshoring and customer satisfaction, we draw from previous research on information systems governance and outsourcing, shared services, international trade and marketing.

The information systems literature discusses how to structure the IT department in a firm for maximum effectiveness, efficiency, and consistency with corporate strategy and structure (Sambamurthy and Zmud 1999; Tavakolian 1989). One key idea in this literature is the concept of centralization vs. de-centralization (Brown and Magill 1994). Centralization involves consolidating the IT department into a smaller number of organizational or geographic units, and providing services to the firm from the consolidated unit(s). Decentralization involves dispersing the IT department throughout the organizational and geographic units of the firm, and providing services from the dispersed unit(s). While decentralization can tailor services to local geographic and business unit requirements, the resulting need to maintain and integrate duplicate and disparate systems can also be costly and inefficient. A properly managed IT department where the appropriate functional aspects are centralized enables the firm to achieve scale in both personnel skills and technical resources (Rockart, Earl and Ross 1996).

This discussion on centralization is complemented by an extensive literature on information systems outsourcing (see Dibbern, Hirschheim, Goles and Jayatilaka 2004 for a recent and comprehensive review). Outsourcing features similar characteristics to centralization, such as scale in personnel skills and technical resources, as a vendor centralizes the information systems from several client firms into its operations (Levina and Ross 2003). While outsourcing provides these potential benefits, it also introduces risks including loss of client expertise (Willcocks, Hindle, Feeny and Lacity 2004) and misaligned incentives between vendor and client (Whang 1992).

To alleviate some of the risks in outsourcing, many firms have turned to a shared service model, consolidating IT and business processes throughout the firm into a single or small number of centers owned and run by the firm (Shah 1999; Ulrich 1995). The use of global resources is a relatively recent development in both shared services and IT outsourcing. General Electric and Procter & Gamble were two early adopters of global shared services during the late 1990's. IT offshoring accelerated during the 1990's, as client firms in North America engaged vendor firms in India for Y2K remediation projects (Arora and Gambardella 2005). IT offshoring matured during the 2000-2001 timeframe (Carmel and Agarwal 2002).

International trade literature considers the implications of global resources in the manufacturing and service contexts (Bhagwati, Panagariya and Srinivasan 2004; Feenstra 1998). This literature recognizes the wage differential between developed and developing countries (Atkinson 2004) that can provide a cost benefit to firms that leverage global resources. This literature also recognizes that factors other than cost, such as flexibility and access to skills, motivate firms to leverage global resources (Deavers 1997). The marketing literature brings cost and non-cost factors together at the customer level, to understand the drivers of customer satisfaction (Anderson and Fornell 2000; Fornell, Johnson, Anderson, Cha and Bryant 1996), and in turn the implications of customer satisfaction for firm success (Anderson et al. 2004; Fornell et al. 2006).

While these literatures separately address the concepts of IT and business process outsourcing, shared services, global resources and customer satisfaction, there is a need to integrate these concepts for a comprehensive view of the relationship between offshoring and customer satisfaction. Outsourcing, shared services and global resources have implications for cost and quality, and cost and quality in turn have implications for customer satisfaction.

### Offshoring and Perceived Value

The use of global resources provides a significant potential cost advantage to firms, as wages in developing countries are much lower than wages in developed countries. For example, India wages for comparable educational and skill levels are as low as 20% of U.S. wage rates (Atkinson 2004). As more firms engage in offshoring and achieve similar cost bases, market mechanisms will transfer the surplus to consumers. Even if the end prices for products and services do not decrease, the broad use of offshoring will slow the rate of increase in prices. In fact, globalization is credited in part with the current low inflationary environment (Rogoff 2003). Because of the cost advantage provided by offshoring, and the market mechanisms that translate this cost advantage into consumer surplus, we hypothesize that:

*H1: Offshoring is positively associated with higher levels of perceived value.*

### **Offshoring and Perceived Quality**

In addition to cost advantage, offshoring provides at least two other potential advantages to firms. First, firms may use offshoring to serve customer segments that it could previously not afford to serve, or may provide more services to current customers at a given price. For example, while during the late 1990's firms used voicemail trees to reduce expensive phone contact with customers, firms can now afford to use offshore call centers to increase customer contact with customer service representatives. In addition to better service at a given price, firms are striving to provide outright better service from offshore locations. For example, many offshore firms are implementing rigorous education programs to train their associates on how to 'delight the customer' (Martin 2005). In IT software development, offshore firms aggressively pursue initiatives to improve quality. For example, most firms rated by the Software Engineering Institute as Capability Maturity Model (CMM) Level 5 (the highest level) are based in India (Ethiraj, Kale, Krishnan and Singh 2005). With the potential for offshoring to provide quality benefits in addition to cost benefits, we hypothesize that:

*H2: Offshoring is positively associated with higher levels of perceived quality.*

### **Offshoring and Customer Satisfaction**

As mentioned above, customer satisfaction is a key measure of firm success. In the marketing literature, the rationale is that customer satisfaction strengthens customer loyalty, and customer loyalty strengthens repeat purchases. To increase sales, it is much easier for firms to increase purchases from existing customers than to acquire new customers. Customer satisfaction has been linked to higher profitability, firm value and risk-adjusted stock returns (Anderson et al. 2004; Fornell et al. 2006).

Offshoring, and the underlying IT and business processes, have a relationship to customer satisfaction. Porter and Millar (1985) develop a framework to show the role of support mechanisms, such as IT and customer service, in the value chain of a firm. Sambamurthy, Bharadwaj and Grover (2003) discuss the connection between a firm's IT infrastructure and its capability to manage information, such as customer information. IT also enables firms to manage the complexity of business processes. As IT offshoring enables the stronger management of IT, offshoring in turn strengthens the management of customer information and related business processes. Much of the current offshore business process outsourcing is in the form of call centers (Scardino, Anderson, Brown, Da Rold, Dreyfuss, Karamouzis, Lovelock, Maurer, Moore and Young 2005), which as mentioned above are enabling increased customer contact and extending service to customers that were not previously served. Therefore, we hypothesize that:

*H3: Offshoring is positively associated with higher levels of customer satisfaction.*

### **Perceived Value, Perceived Quality and Customer Satisfaction**

Previous marketing research points to perceived value and perceived quality as key determinants of customer satisfaction (Anderson and Fornell 2000; Fornell et al. 1996). Perceived value is the perceived level of product quality based on the price paid, and perceived quality reflects recent consumption experience in terms of customization and quality. Because the relationship between perceived value, perceived quality and customer satisfaction is already established in the marketing literature, we do not hypothesize that relationship in this paper. Instead, we hypothesize the mediation of customer satisfaction through perceived value and perceived quality, in part to understand the relative influence of offshoring on each dimension of customer satisfaction, and to understand whether there may be any impact of offshoring that is not explained by perceived value and perceived quality.

*H4: The effect of offshoring on customer satisfaction is mediated by the effect of offshoring on perceived quality and perceived value.*

We present our conceptual research model in Figure 1 below. We control for firm size, industry, and industry concentration, as these variables are known to impact perceived value, perceived quality and customer satisfaction (Anderson et al. 2004; Fornell et al. 1996).

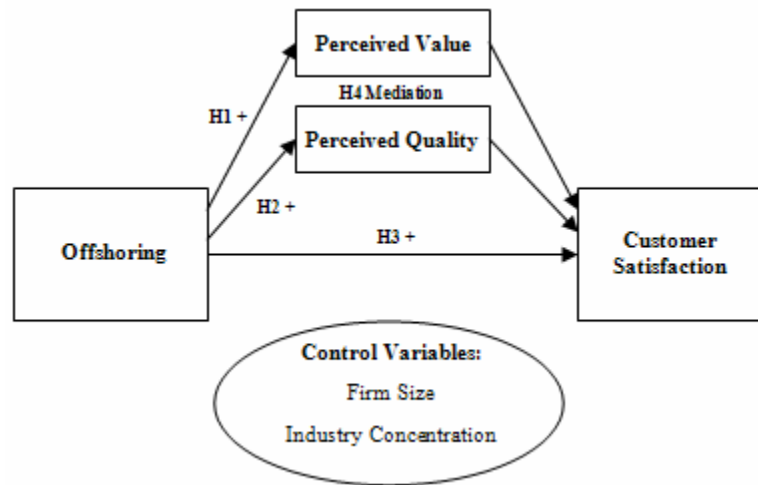


Figure 1. Conceptual Model

## RESEARCH DESIGN AND METHODOLOGY

This study performs an empirical analysis on data from an unbalanced panel of 68 firms and business units (hereafter referred to as firms) for the period 1997-2004. This period includes an equal number of years before and after the 2000-2001 timeframe when IT offshoring reached maturity (Carmel and Agarwal 2002). The data for each firm includes customer satisfaction data, and data on the IT and business process offshoring activities of each firm. Data on customer satisfaction, perceived value and perceived quality is provided by the National Quality Research Center. Data on the IT and business process offshoring activities of each firm is compiled from various news reports (discussed in more detail below). Data on control variables is gathered from the financial databases Compustat, Standard & Poor's, and Dun & Bradstreet. Of the 68 firms in our unbalanced panel, 57 firms appear in all eight years from 1997-2004 inclusive, and 11 firms appear in fewer than eight years.

### Variable Definition

*Customer Satisfaction (ACSI)*: The American Customer Satisfaction Index™ (ACSI) is tracked by the National Quality Research Center (NQRC). The ACSI score for a firm ranges from 0-100, and represents its customers' evaluation of their purchase and consumption experience with that firm (Fornell et al. 1996). ACSI is considered to be a reliable indicator of a firm's customer satisfaction, and is regularly featured in leading business publications such as the Wall Street Journal and Business Week. The scale for customer satisfaction score ranges from 0-100. See Appendix I for more information on ACSI methodology and measurement.

*Perceived Value (PERVAL)*: Tracked by the NQRC as part of the ACSI (see also Appendix I). The perceived value of a firm's products or services is measured by asking about quality relative to price, and price relative to quality. Note that the perceived value and perceived quality constructs are inter-related, and the ACSI model explicitly accounts for this relationship through its measurement and structural model. The scale for perceived value score ranges from 0-100.

*Perceived Quality (PERQUAL)*: Tracked by the NQRC as part of the ACSI (see also Appendix I). The perceived quality of a firm's products or services is measured by asking customers to rate their recent experience with a product or service on overall post purchase evaluation of perceived quality, perceived customization and perceived reliability. The scale for perceived quality score ranges from 0-100.

*Offshore (OFFSHORE)*: Indicates whether a firm offshored its IT and/or business processes during a specific year (0=no, 1=yes). Offshoring occurs when a firm places a business function(s) with a service center owned by the firm at a global location, or when the firm places the function(s) with an external vendor who performs the work from a global location (Whitaker and Krishnan 2005). For purposes of this study, both forms of offshoring are considered equally. Data for this

variable is from a compilation of news reports that indicate offshoring by firms beginning in the year 2000. The date of the news report is used as the start year for offshoring. While not specifically used in this study, in most cases the news reports also indicate the specific function(s) that is being offshored, the destination country, and an approximate number of U.S. jobs that may be affected by the offshoring. The authors assume that once a firm begins offshoring, that firm continues to offshore throughout the period of this study (until 2004).

U.S. government figures and news reports indicate that India is the second largest destination (behind Canada) for U.S. payments for services such as IT offshoring (U.S. Department of Commerce 2003). As an additional step to validate data in the news reports, the authors will work with the India National Association of Software and Service Companies (NASSCOM™) to verify that the firms reported as offshoring to India are actually offshoring to India. As the association for the IT and business process industry in India, NASSCOM maintains records of which firms have company-owned centers in India, and which firms are clients of IT and business process vendors in India.<sup>1</sup> This verification step adds credibility and accuracy to the offshoring variable.

*Industry Concentration (HHI):* The market concentration of an industry may influence customer perceptions of and satisfaction with products and services for a firm in that industry (Anderson et al. 2004). Therefore, the marketing literature uses industry concentration as a control variable. The Hirschman-Herfindahl Index (HHI) is a widely accepted measure of market concentration (Curry et al. 1983). We compute the HHI for each industry at the four-digit North American Industry Classification System (NAICS) level, and use that HHI as a control for all firms in that industry. To compute the HHI, we use data from Standard and Poor's, supplemented by data from Dun & Bradstreet where necessary.

*Firm Size (REVENUE):* Log of annual revenue, to control for effects of firm size. This variable is from Compustat for publicly traded firms, and from Dun & Bradstreet for privately held firms.

*Industry (MFGNON, MFGDUR, RETAIL, TELEINFO, FINANCE):* Based on the NAICS code for each firm, we created dummy variables to control for the primary industry sectors for firms tracked by the ACSI – non-durables manufacturing (MFGNON), durables manufacturing (MFGDUR), retail (RETAIL), telecommunications and information (TELEINFO), and financial services (FINANCE).<sup>2</sup> The base category is transportation and logistics. The NAICS code is from Compustat for publicly traded firms, and from Dun & Bradstreet for privately held firms.

## Estimation Models

We test the relationship between offshoring and perceived value, perceived quality and customer satisfaction using a linear model estimation approach. Consistent with prior research, we control for other variables that may influence the relationships between offshoring and customer satisfaction, such as firm size, industry and market concentration. Our empirical models are as follows:

$$PERVAL = \alpha_{10} + \alpha_{11} OFFSHORE + \alpha_{12} REVENUE + \alpha_{13} HHI + \alpha_{14} MFGNON + \alpha_{15} MFGDUR + \alpha_{16} RETAIL + \alpha_{17} TELEINFO + \alpha_{18} FINANCE + \varepsilon_1 \quad (1)$$

$$PERQUAL = \alpha_{20} + \alpha_{21} OFFSHORE + \alpha_{22} REVENUE + \alpha_{23} HHI + \alpha_{24} MFGNON + \alpha_{25} MFGDUR + \alpha_{26} RETAIL + \alpha_{27} TELEINFO + \alpha_{28} FINANCE + \varepsilon_2 \quad (2)$$

$$ACSI = \alpha_{30} + \alpha_{31} OFFSHORE + \alpha_{32} REVENUE + \alpha_{33} HHI + \alpha_{34} MFGNON + \alpha_{35} MFGDUR + \alpha_{36} RETAIL + \alpha_{37} TELEINFO + \alpha_{38} FINANCE + \varepsilon_3 \quad (3)$$

$$ACSI = \alpha_{40} + \alpha_{41} OFFSHORE + \alpha_{42} REVENUE + \alpha_{43} HHI + \alpha_{44} MFGNON + \alpha_{45} MFGDUR + \alpha_{46} RETAIL + \alpha_{47} TELEINFO + \alpha_{48} FINANCE + \alpha_{49} PERVAL + \alpha_{50} PERQUAL + \varepsilon_4 \quad (4)$$

The ordinary least squares approach for estimating equations (1) – (4) may not be appropriate for our panel data set, because the residuals across time for the same firms may be correlated. A preferred way to estimate the parameters more efficiently is through random effects models, which allow for correlations among residuals of firms across time periods and control for unobservable firm specific effects (Baltagi 2001). We estimated the models in equations (1) – (4) allowing the intercept to vary across individual firms (Greene 2000; Wooldridge 2002).

<sup>1</sup> Because of our non-disclosure agreement with NASSCOM, we are unable to disclose the name or identify of any specific firm that is offshoring IT and/or business processes to India.

<sup>2</sup> Note that we discarded one Utilities firm from our dataset, because it was the only firm from that industry.

## RESULTS

Hypothesis 1 predicts a positive association between offshoring and perceived value. This hypothesis is supported ( $\alpha_{11}$ =positive,  $p<0.05$ ). Hypothesis 2, that there will be a positive association between offshoring and perceived quality, is also supported ( $\alpha_{21}$ =positive,  $p<0.01$ ). Consistent with hypothesis 3, our results show a positive association between offshoring and customer satisfaction ( $\alpha_{31}$ =positive,  $p<0.10$ ), though this coefficient is only moderately statistically significant.

For hypothesis 4, we test whether the effect of offshoring on customer satisfaction is mediated through perceived value and perceived quality, using a procedure from Baron and Kenny (1986). In this procedure, mediation occurs when 1.) an independent variable X (offshoring) significantly accounts for variation in a mediating variable(s) M (perceived value or perceived quality), 2.) the mediating variable(s) M account(s) for variation in the ultimate dependent variable Y (customer satisfaction), and 3.) controlling for the mediating variable(s) M reduces a previously significant relationship between X and Y when not controlling for M. If controlling for M causes the effect of X on Y to become insignificant, this occurrence suggests that effect of X on Y is fully mediated by M. Since the effect of offshoring on customer satisfaction changes signs when perceived quality and perceived value are controlled for ( $\alpha_{41}$ =negative,  $p<0.10$ ), our results provide support to the mediation hypothesis. Table 1 below provides a summary of the hypotheses supported in this study.

	Description	Coef.	Sig.	Support
H1	Offshoring $\rightarrow$ Perceived Value	+	$p<0.05$	Yes
H2	Offshoring $\rightarrow$ Perceived Quality	+	$p<0.01$	Yes
H3	Offshoring $\rightarrow$ Customer Satisfaction	+	$p<0.10$	Yes
H4	Offshoring $\rightarrow$ Customer Satisfaction Mediated by Value and Quality	-	$p<0.10$	Yes

Table 1. Summary of Hypothesis Tests

## DISCUSSION AND CONCLUSION

Our goal in this paper was to study the relationship between offshoring and customer satisfaction. We developed a theoretical model by drawing on previous research in information systems, shared services, international trade and marketing. For 68 firms, we obtained 1997-2004 data on customer satisfaction, perceived value and perceived quality from the National Quality Research Center, and compiled data on offshoring IT and business processes from news reports.

Consistent with our hypotheses, we find that firms offshoring IT or business processes experience increases in both perceived value and perceived quality once they begin offshoring. This finding is consistent with previous research that firms centralize and implement outsourcing and shared services models to improve the cost and quality of IT and business processes (Lacity, Feeny and Willcocks 2003; Loh and Venkatraman 1992). Outsourcing and shared services enable the firm to achieve scale (via the vendor or company-owned service center) in personnel skills and technical resources. This scale enables the firm to reduce costs by removing redundant resources, and to improve quality by attracting and retaining skilled personnel. In an international context, the increase in cost savings is further augmented by the difference in wage rates between developed and developing countries, and the increase in quality is further augmented by the rigorous quality processes in place at foreign vendors (Isaac, Rajendran and Anantharaman 2004).

Secondary results in our equations are also consistent with prior literature. The coefficient for the impact of perceived quality on customer satisfaction ( $\alpha_{50}$ ) is much higher than the coefficient of perceived value on customer satisfaction ( $\alpha_{49}$ ), consistent with the marketing literature that perceived quality has a stronger impact on customer satisfaction than does perceived value (Fornell et al. 1996). It is also worthwhile to note that the coefficient for impact of offshoring on perceived value ( $\alpha_{11}$ ) is slightly higher than the coefficient for impact of offshoring on perceived quality ( $\alpha_{21}$ ), consistent with the literature that cost savings may be the initial motivator for outsourcing (Lacity and Hirschheim 1994).

There are five primary limitations to this paper. First, there is a difference in scope between the offshoring variable that represents the offshoring of specific process(es), and the ACSI variables that represent customer satisfaction with a firm's overall products and services. While this research performs an initial study of the relationship between offshoring and customer satisfaction, there is a need for future research to use outcome variables that are more directly related to the specific process(es) being outsourced. Second, the data does not distinguish between whether firms offshore via a company-owned center or an external vendor. There may be differences between offshoring through these two vehicles (Whitaker and

Krishnan 2005), and the data in this paper does not enable us to understand these potential differences. Third, the data also does not distinguish between offshoring IT and offshoring business process. While the IT function may have a differential impact from various business processes on customer satisfaction and perceptions of value and quality, the data does not enable us to identify these potential differences.

Fourth, while the authors will work with NASSCOM to validate the news reports on firms that are offshoring to India, the news reports may not be complete or accurate. There may be Type I 'false positive' errors where a news report indicates offshoring and the firm is not actually offshoring, and Type II 'false negative' errors where firms are offshoring and no news report has been produced. Fifth and finally, even if the news report is correct on whether the firm is offshoring, the date of the news report may not be an accurate reflection of when the firm began offshoring. It is possible that the news report may be an announcement of future planned offshoring, or an announcement of an offshoring arrangement that has been in place.

To conclude, this paper empirically tests the relationship between offshoring and perceived value, perceived quality and customer satisfaction. We find that offshoring is associated with an increase in both perceived value and perceived quality, and that perceived value and perceived quality mediate the relationship between offshoring and customer satisfaction. These results suggest that firms should consider offshoring as one mechanism to improve the cost and quality of their products and services, and ultimately to strengthen their customer satisfaction.

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**Appendix I. ACSI Measurement and Methodology**

The American Customer Satisfaction Index™ (ACSI) is tracked by the National Quality Research Center (NQRC). Each year, the NQRC surveys 50,000 customers who purchase products from 150+ companies (200-250 customers from each company) in industries and sectors that comprise 40% of U.S. gross domestic product. The NQRC contacts customers by random digit dialing, and asks each respondent questions on 15 measurement variables that are used as indicators of six latent constructs including customer satisfaction, perceived value and perceived quality.

The ACSI methodology ensures a uniform, independent, customer-based, cumulative and comparable firm-level customer satisfaction measure across industries and sectors of the U.S. economy. ACSI is embedded in a cause-and-effect model, and a version of partial least squares (PLS) is used to estimate this model. PLS estimates weights for the survey measures to maximize the explained variance in customer loyalty as the ultimate dependent variable. These estimated weights are subsequently used to form the ACSI, perceived quality and perceived value indices on a 0-100 scale. See Fornell et al. 1996 for further details on ACSI measurement.