Does Offshoring Impact Customer Satisfaction?

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Abstract

Anecdotal reports suggest that offshoring may have negative implications for North American consumers. Despite the anecdotal reports, North American firms are increasingly offshoring front office functions such as customer service and back office functions such as IT. This leads to two primary research questions. Does front office offshoring actually have negative implications for consumers? If so, why would firms increasingly offshore in the face of evidence that offshoring has negative implications for consumers? This research addresses these questions by considering the relationship between offshoring and customer satisfaction. Customer satisfaction, expressed through the American Customer Satisfaction Index™ (ACSI), is an important indicator of firm performance. Higher ACSI scores have been linked to higher firm profitability, shareholder value and risk-adjusted stock returns.

We analyze longitudinal data of 150 North American firms and business units from 1998 – 2006, and find that front office offshoring is associated with a decrease in customer satisfaction. While back office offshoring is not associated with a change in customer satisfaction, it is associated with an increase in customer loyalty. Interestingly, while front office offshoring is associated with a decrease in customer satisfaction, onshore front office outsourcing is associated with a similar decrease. This finding suggests that declines in customer satisfaction from front office offshoring may be partly attributable to language and cultural issues, and partly related to other gaps for outside service providers (offshore or onshore) to adequately serve and satisfy consumers. The difference between front office and back office offshoring also suggests that in addition to considering whether or not to offshore, firms must carefully evaluate which functions are suitable for offshoring.

Keywords: Offshoring, front office, back office, ACSI, customer satisfaction, customer loyalty, perceived value, perceived quality, customer expectations.
1. **INTRODUCTION**

Firms are increasingly offshoring front office functions such as customer service call centers and back office functions such as IT to manage their operations and achieve their strategic objectives (Carmel and Agarwal 2002; Prahalad and Krishnan 2004). While cost is the primary motivation for firms to pursue offshoring (Atkinson 2004; Carmel and Tjia 2005), recent research suggests that firms may achieve both cost and quality benefits through offshoring (Whitaker, Kumar and Krishnan 2006). However, there has been limited academic research on the implications of offshoring for consumers (Bharadwaj and Roggeveen 2008; Roggeveen, Bharadwaj and Hoyer 2007), despite the fact that customers interact directly with offshore call centers and customer satisfaction and customer loyalty are important indicators of firm performance (Anderson, Fornell and Mazvancheryl 2004; Fornell, Mithas, Morgenson and Krishnan 2006).

Anecdotal reports suggest that offshoring may have negative implications for North American consumers (Alster 2005; Pfeffer 2004; Weinstein 2007), citing differences in communication skills and examples of some firms that initially offshored customer service functions and then subsequently brought part of the work back to North America. Consumers may be aware of these reports, along with other coverage that highlights negative implications of offshoring for U.S. job and salary growth (Fillion 2004). Despite the potential for consumers to formulate negative perceptions of firms that offshore, North American firms are increasing their level of offshoring (Venkatraman 2004) presumably because they want to maximize firm performance measures such as customer satisfaction.

This leads to two primary research questions. Does front office offshoring actually have negative implications for consumers? If so, why would firms increasingly offshore in the face of evidence that offshoring has negative implications for consumers? This research addresses these questions by considering the relationship between offshoring and customer satisfaction. We build on the information systems and marketing literature to identify the relevant considerations for how offshoring may impact customer satisfaction, customer loyalty and their determinants, and test empirical relationships using data on 150 North American firms and business units from 1998 – 2006. We find that offshoring front office
functions is associated with a decrease in customer satisfaction. While offshoring back office functions is not associated with a change in customer satisfaction, it is associated with an increase in customer loyalty. Interestingly, while front office offshoring is associated with a decrease in customer satisfaction, onshore front office outsourcing is associated with a similar decrease. Additional analysis shows that front office offshoring and onshore front office outsourcing are both associated with a similar decrease in perceived quality, one of the primary determinants of customer satisfaction. Neither front office offshoring nor back office offshoring are associated with an increase in perceived value, another primary determinant of customer satisfaction, despite the fact that offshoring enables firms to reduce costs.

The rest of this paper is structured as follows. Section 2 identifies relevant considerations and discusses mechanisms through which offshoring can positively or negatively impact customer satisfaction, customer loyalty and their determinants. Section 3 presents the data, methodology and results. Section 4 discusses implications of the study.

2. LITERATURE AND THEORY

Porter and Millar (1985) were among early researchers to conceptualize the firm as a value chain composed of primary and support activities. Primary activities include front office functions such as sales and service, and support activities include back office functions such as HR and IT. One of the key strategic decisions for a firm is to select the governance and geographic platform for each front and back office function (Apte and Mason 1995; Tanriverdi, Konana and Ge 2007; Whitaker, Mithas and Krishnan 2005). For governance platform, a firm must decide whether to place the function within the firm or outside the firm with an external vendor (Gurbaxani and Whang 1991). For geographic platform, a firm must decide whether to place the function within the home country or outside the home country in an offshore location (Mithas and Whitaker 2007).

The information systems literature provides useful background to understand the placement of primary and support activities across governance and geographic platforms (Dibbern, Goles, Hirschheim and Jayatilaka 2004). The IT function is one of the most frequently outsourced and offshored functions for firms (Ang and Straub 1998; Carmel and Agarwal 2002; Lacity and Willcocks 1998; Loh and
Venkatraman 1992). IT also facilitates the outsourcing of other primary and support activities (Bardhan, Whitaker and Mithas 2006; Bardhan, Mithas and Lin 2006). Many vendors who now provide outsourcing for primary and support activities first gained their understanding by providing IT outsourcing, and then specialized in the functional areas where they would handle business processes along with the underlying IT (Pfannenstein and Tsai 2004).

In the discussion of structuring functions for maximum effectiveness, efficiency, and consistency with corporate strategy and structure (Sambamurthy and Zmud 1999), one key idea is the concept of centralization vs. de-centralization (Brown and Magill 1994). Centralization involves consolidating a function into a smaller number of organizational or geographic units, and providing services to the firm from these consolidated units. Decentralization involves dispersing the function throughout the organizational and geographic units of the firm, and providing services from these localized units. 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 function where the appropriate aspects are centralized enables the firm to achieve scale in both personnel skills and technical resources (Rockart, Earl and Ross 1996).

Outsourcing features similar characteristics to centralization such as scale in personnel skills and technical resources, as the vendor effectively ‘centralizes’ the information systems from several client firms into its operations as a single vendor (Levina and Ross 2003). While outsourcing provides these potential benefits, it also introduces risks such as loss of client expertise and misaligned incentives between vendor and client (Whang 1992; Willcocks, Hindle, Feeny and Lacity 2004). Perhaps to alleviate some of the risks in outsourcing, many firms have turned to a shared service model, consolidating functions throughout the firm into a single or small number of centers run by the firm (Shah 1999; Ulrich 1995). Shared service centers have been implemented for functions such as HR, finance and IT. For example, Pacific Bell was an early adopter of the shared service concept, deploying a shared service center for various internal functions in 1991. By 1996, Pacific Bell simultaneously reduced costs by 54% and increased the percentage of satisfied customers by 20% (Forst 2001).
The use of global resources is a relatively recent development in outsourcing and shared services, motivated primarily by labor cost differences between developed and developing countries (Atkinson 2004; Carmel and Tjia 2005). General Electric was one of the first firms to deploy a large scale shared services center in India, forming GECIS (now called Genpact) in 1997. Procter & Gamble was also an early user of global shared services, establishing Global Business Services operations in the Philippines in 1999 and Costa Rica in 2000. IT offshoring accelerated during the 1990’s, as North American firms engaged Indian firms for Y2K remediation projects, and matured during the 2000 – 2001 timeframe (Arora and Gambardella 2005; Carmel and Agarwal 2002).

Building on the discussion above, prior research suggests that two considerations are important in studying the relationship between offshoring and customer satisfaction. First, while offshoring has some issues in common with domestic outsourcing such as the potential to lose expertise from the headquarters function (Willcocks, Hindle, Feeny and Lacity 2004), there may also be differences between offshoring and domestic outsourcing due to differences in management culture and values (Franke, Hofstede and Bond 1998; Hofstede 1983, 1984, 1985), language and communication (Bharadwaj and Roggeveen 2007), distance (Carmel and Agarwal 2001; Olson and Olson 2000), time zones (Espinosa and Carmel 2003), and labor rates (Atkinson 2004; Brainard and Litan 2004).

Second, there may be a difference in the role that offshoring plays in customer satisfaction via front office functions vs. back office functions. Front office functions involve direct interaction with the customer to sell and service the product, while back office functions do not involve direct interaction with the customer and instead provide support and infrastructure for front office functions (Porter and Millar 1985). The operations and marketing literature also distinguishes products, services and functions in terms of their customer contact, as the extent of customer interaction influences the variability of outcomes and customer perceptions of quality (Chase 1981: Kellogg and Chase 1995; Parasuraman, Zeithaml and Berry 1988).

We now draw on the marketing, information systems and economics literature to identify ways in which offshoring could impact customer satisfaction, customer loyalty and their determinants. Our
The objective is to identify relevant considerations and discuss mechanisms through which offshoring can positively or negatively impact customer satisfaction and customer loyalty. In section 3 below, we perform empirical analysis to test the relationships.

2.1 Offshoring, Customer Satisfaction and Customer Loyalty

The marketing literature extensively discusses the concept of customer satisfaction, customer loyalty and their derivation and importance (Anderson, Fornell and Lehman 1994; Anderson and Sullivan 1993; Fornell, Johnson, Anderson, Cha and Bryant 1996). When customers are satisfied with a firm’s product or service offering, those customers will be more loyal to the firm and increase their usage of the firm’s products or services, which will simultaneously secure future revenues and reduce the cost of future transactions for the firm (Anderson, Fornell and Rust 1997; Fornell 1992; Reichheld and Sasser 1990). Customer satisfaction and customer loyalty are important indicators of firm performance. Higher customer satisfaction and customer loyalty scores have been linked to higher firm profitability, shareholder value and risk-adjusted stock returns (Anderson et al. 2004; Fornell et al. 2006).

Prior marketing research identifies the theoretical constructs of perceived quality, perceived value and customer expectations as determinants of customer satisfaction (Anderson and Sullivan 1993; Anderson and Fornell 2000; Fornell et al. 1996). In turn, customer satisfaction is a determinant of customer loyalty (Fornell et al. 1996, see Appendix A). When customers are more satisfied with a service encounter, those customers are more likely to remain loyal to the firm, spend more with the firm, and recommend the firm to others (Zeithaml, Berry and Parasuraman 1996). Perceived quality is the customer evaluation of the consumption experience in terms of the extent to which the offering is customized to meet customer needs and the extent to which the offering is reliable and free of defects. Perceived value is the customer perceived level of quality relative to the price paid. Customers form expectations of future quality based on information from their consumption experience, which includes some non-experiential information such as advertising and word of mouth. Empirical analysis shows that perceived quality plays the largest role as a determinant of customer satisfaction, perceived value plays the next largest role, and customer expectations plays the smallest role of the three determinants.
(Anderson and Sullivan 1993; Fornell et al. 1996). As we consider the relationship between offshoring and customer satisfaction, we first identify the potential ways in which offshoring could impact each of the three determinants of customer satisfaction.

2.1.1 Offshoring and Perceived Quality

Prior research suggests that offshoring has the potential to make both a positive and a negative impact to customer perceived quality. In terms of the potential for a positive impact, offshore software development firms are aggressively pursuing initiatives to improve quality and reduce defects. Seventy-five percent of firms rated by the Software Engineering Institute Capability Maturity Model (formerly CMM, now CMMI) as level 5 are based in India (Mohnot 2003). In research on one CMM level 5 firm in India, the quality-adjusted price of customer software decreased 14% per year from 1999 – 2002 (Ethiraj, Kale, Krishnan and Singh 2005). Many of these offshore firms are expanding beyond software development to provide outsourcing services for additional front office functions such as call centers and back office functions such as HR and accounting (Pfannenstein and Tsai 2004). For example, Infosys, Wipro and Satyam, three of the largest software development firms based in India, each has a unit that performs business process outsourcing for front and back office functions. These firms are applying the same quality initiatives to other business functions that they have applied to IT, and are implementing rigorous education programs to train their associates on how to ‘delight the customer’ (Martin 2006). Some researchers argue that firms must leverage global resources to achieve the highest quality and innovation in their products and services (Prahalad and Krishnan 2004).

Other research suggests that offshoring may have a negative impact on perceived quality, particularly in a front office function that interacts with customers. Researchers have identified five dimensions of service interactions that affect service quality: tangibles (appearance of physical facilities, equipment, personnel and communication materials used in the engagement with customers), reliability (ability to perform the promised service dependably and accurately), responsiveness (willingness to help customers and provide prompt service), assurance (knowledge and courtesy of employees and their ability to convey trust and confidence), and empathy (provision of caring individualized attention to customers)
(Parasuraman et al. 1988). Recent research has highlighted elements that are particularly relevant to voice-to-voice customer service encounters, including assurance, empathy and responsiveness (Burgers, de Ruyter, Keen and Streukens 2000; de Ruyter and Wetzels 2000; Gruber, Szmigin and Voss 2006). With the cultural, language, distance and time zone differences inherent in offshore services (Bharadwaj and Roggeveen 2008; Carmel and Agarwal 2001; Espinosa and Carmel 2003; Franke et al. 1998; Hofstede 1983, 1984, 1985; Olson and Olson 2000), one or more of the service quality dimensions above may not translate properly in the offshore setting. For example, recent research finds in a study of one firm that customers rate communication skills and problem-solving ability lower for offshore call centers than for an onshore call center (Bharadwaj and Roggeveen 2008).

2.1.2 Offshoring and Perceived Value

Offshoring has the potential to make both a positive and a negative impact to customer perceived value. In terms of the potential for a positive impact, researchers note that cost is the primary motivation for firms to pursue offshoring (Carmel and Tjia 2005). The use of global resources can provide a significant potential cost advantage to firms, as wages in developing countries are much lower than wages in developed countries. For example, in India wages for comparable educational backgrounds and skill levels are often 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 (Schmalensee 1971; Schmalensee 1976). Even if the end prices for goods do not decrease, the broad use of offshoring will slow the rate of increase in prices. In fact, globalization is credited with the current low inflationary environment (Rogoff 2003). Firms may use offshoring as a foundation to serve customer segments that it could previously not afford to serve, or may provide more services to current customers at a given price. In one example from a front office context, in early 2004 the finance company E-loan ($6 billion in home equity loans during 2003) gave customers the option whether to have their loan processed in the U.S. or India (Drucker, Brown, Davis and Maher 2004). While the loan costs would be the same for both locations, customers would receive the results from India several days faster. In responding to this offer...
of higher perceived value (compared with the price paid) from an offshore location, 86% of E-loan customers chose to have their loans processed in India during this timeframe.

Other perspectives suggest that offshoring may have a null or negative impact to perceived value. In a back office context, some firms assert that when they studied offshore software development they did not find cost savings compared with using a U.S. workforce (Kharif 2004). As firms begin to offshore functions, they incur new costs such as personnel to manage offshore contracts and travel costs to supervise and check status of offshore projects (McCartney 2003). Consistent with the quality literature (Deming 1982; Juran 1989), some firms encountered additional rework costs when projects were not coded properly upfront in an offshore setting (Kharif 2003). In a front office context, some firms have also incurred the cost of repatriating some customer service work back to North America or to new vendors when initial attempts to offshore were not successful (Alter 2005; Grantham 2004).

2.1.3 Offshoring and Customer Expectations

Compared with perceived quality and perceived value, customer expectations are less of a determinant for customer satisfaction. Recall from Fornell et al. (1996) discussed above that pre-purchase customer expectations are based on customer past consumption experience and external sources such as advertising and word of mouth. In the case of a widely-reported phenomenon such as offshoring, media coverage will also play a role in formulating customer expectations. Whether offshoring will have a positive or negative impact on customer expectations will depend on the balance of whether a customer’s prior consumption experience from a firm that is offshoring was positive or negative, whether word of mouth from other customers of the firm that is offshoring is positive or negative, and whether media coverage on firms that are offshoring is positive or negative. Some firms such as E-loan received a very positive response to their offshore customer service (Drucker et al. 2004), while other firms such as Dell and Delta Air Lines that were forced to repatriate some customer service functions because of negative consumer reaction and media coverage (Alster 2005; Grantham 2004). In recent research, Roggeveen et al. (2007) show that call center location does not impact customer expectations if the firm is reputable, but may adversely impact customer expectations for lesser-known firms. The above examples and
discussion suggest that offshoring may have a positive, negative or null impact on perceived quality, perceived value and customer expectations, and that there is a need to better understand the relationship of offshoring with customer satisfaction, customer loyalty and their determinants.

3. RESEARCH DESIGN AND METHODOLOGY

To test the relationship of offshoring with customer satisfaction, customer loyalty and their determinants, we need proper measures of the dependent and independent variables. An accepted measure of customer satisfaction is the American Customer Satisfaction Index™ (ACSI) tracked by the National Quality Research Center (NQRC) at the University of Michigan Ross School of Business. A detailed description of the ACSI is provided in Fornell et al. (1996). The ACSI includes approximately 200 Fortune 500 firms with total sales that equate to about 40% of U.S. gross domestic product. The NQRC interviews 250 customers of each firm on an annual basis, and gathers data from each customer on 15 measurement variables that are used as indicators of six latent constructs including customer satisfaction, customer loyalty, perceived quality, perceived value and customer expectations. Appendix A contains further information on the ACSI.

One challenge in performing research on the emerging topic of offshoring is gathering data on the offshoring activities of firms, as there are no regulatory requirements for firms to report their offshoring activities. Most previous research on offshoring relies on case studies from a single firm or small group of firms (Aron, Clemons and Reddi 2005; Bharadwaj and Roggeveen 2008; Carmel and Agarwal 2002), analytical models (Dutta and Roy 2005), researcher coding (Apte and Mason 1995), experimental settings (Roggeveen, Bharadwaj and Hoyer 2007), or surveys administered by the researchers or a third party (Ge, Konana and Tanriverdi 2004; Whitaker, Mithas and Krishnan 2006). Given the challenge of gathering data on front and back office offshoring for the specific set of firms in the ACSI, we gathered the offshoring data for this study directly from news reports. During late 2006 and 2007, one author performed a dedicated search primarily using Lexis Nexis on the offshoring activities of each firm in the sample. The author browsed a total of approximately 50,000 – 60,000 articles from the 1998 – 2006 timeframe, which included both investigative reporting and press releases by the ACSI firm or the
offshore outsourcing provider. The author recorded whether each firm engaged in offshoring front office and/or back office functions during each year of the study timeframe, and/or whether the firm engaged in domestic outsourcing for front office functions during the study timeframe. Appendix IB contains additional details on the coding process. Limitations of this data source are discussed in Section 4 below.

In our equations, we control for complementary and alternative explanations of customer satisfaction, customer loyalty and their determinants, including firm size, manufacturing vs. services, and industry concentration (Anderson et al. 1997; Anderson et al. 2004). Because offshoring is a more recent trend, we want to separate the effects of offshoring from other economy-wide or management trends over the same timeframe. Therefore, we also control for the time dimension, as the ACSI National Quarterly Scores suggest that there has been a steady overall upward trend in the ACSI from 1998 – 2006 (www.theacsi.org).

3.1 Variable Definition

Table 1 summarizes the variables used in this study. A more detailed description of each variable follows below the table.
Table 1. Summary Description of Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Satisfaction</td>
<td>American Customer Satisfaction Index™ (ACSI) score for a firm represents its customers’ evaluation of their purchase and consumption experience with that firm.</td>
<td>National Quality Research Center at University of Michigan</td>
</tr>
<tr>
<td>Customer Loyalty</td>
<td>Combination of the customer’s professed likelihood to repurchase from the same firm in the future, and the likelihood to purchase at various price points.</td>
<td>National Quality Research Center</td>
</tr>
<tr>
<td>Perceived Quality</td>
<td>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.</td>
<td>National Quality Research Center</td>
</tr>
<tr>
<td>Perceived Value</td>
<td>Measured by asking customers about quality relative to price, and price relative to quality.</td>
<td>National Quality Research Center</td>
</tr>
<tr>
<td>Customer Expectations</td>
<td>Customer's upfront anticipation of the quality of a company's products or services.</td>
<td>National Quality Research Center</td>
</tr>
<tr>
<td>Front Office Offshoring</td>
<td>Binary variable that indicates whether the firm engaged in offshoring front office functions during a specific year.</td>
<td>Lexis-Nexis and other news sources</td>
</tr>
<tr>
<td>Front Office Onshore Outsourcing</td>
<td>Binary variable that indicates whether the firm engaged in outsourcing front office functions in North America during a specific year.</td>
<td>Lexis-Nexis and other news sources</td>
</tr>
<tr>
<td>Back Office Offshoring</td>
<td>Binary variable that indicates whether the firm engaged in offshoring one or more back office functions during a specific year.</td>
<td>Lexis-Nexis and other news sources</td>
</tr>
<tr>
<td>Firm Size</td>
<td>Natural log of annual firm revenue.</td>
<td>Compustat, Dun &amp; Bradstreet</td>
</tr>
<tr>
<td>Industry Concentration</td>
<td>Hirschman-Herfindahl Index (HHI) measure of market concentration.</td>
<td>Standard &amp; Poors, Dun &amp; Bradstreet</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>Binary variable that indicates whether the firm is in the manufacturing industry.</td>
<td>Compustat, Dun &amp; Bradstreet</td>
</tr>
<tr>
<td>Time</td>
<td>Variable to control for each unique year in the data set from 1998 – 2006.</td>
<td>National Quality Research Center</td>
</tr>
</tbody>
</table>

**Customer Satisfaction:** The American Customer Satisfaction Index™ (ACSI) score for a firm represents its customers’ evaluation of their purchase and consumption experience with that firm. The ACSI score for a firm ranges from 0 – 100. This variable is from the National Quality Research Center (NQRC) at the University of Michigan.

**Customer Loyalty:** Customer loyalty is a combination of the customer’s professed likelihood to repurchase from the same firm in the future, and the likelihood to purchase at various price points. The customer loyalty score for a firm ranges from 0 – 100. This variable is from the National Quality Research Center.
Perceived Quality: 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. Perceived quality score for a firm ranges from 0 – 100. This variable is from the National Quality Research Center.

Perceived Value: 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. Perceived value score for a firm ranges from 0 – 100. This variable is from the National Quality Research Center.

Customer Expectations: Customer expectations is a measure of the customer's anticipation of the quality of a company's products or services. Expectations represent both prior consumption experience, which includes some non-experiential information like advertising and word of mouth, and a forecast of the company's ability to deliver quality in the future. Customer expectations score for a firm ranges from 0 – 100. This variable is from the National Quality Research Center.

Front Office Offshoring: Binary variable that indicates whether the firm engaged in offshoring front office functions during a specific year (1=yes, 0=no). Front office functions include telephone customer service call center and e-mail customer service center. This variable is from Lexis-Nexis and other news sources.

Front Office Onshore Outsourcing: Binary variable that indicates whether the firm engaged in outsourcing front office functions to a North American service provider during a specific year (1=yes, 0=no). Front office functions include telephone customer service call center and e-mail customer service center. This variable is from Lexis-Nexis and other news sources.

Back Office Offshoring: Binary variable that indicates whether the firm engaged in offshoring one or more back office functions during a specific year (1=yes, 0=no). Back office functions include IT, HR, finance and accounting, and research and development. This variable is from Lexis-Nexis and other news sources.
**Firm Size**: Natural log of annual firm revenue. This variable is based on data from Compustat and Dun & Bradstreet.

**Industry Concentration**: We compute the Hirschman-Herfindahl Index (HHI) measure of market concentration 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. The market concentration data is from Standard & Poors and Dun & Bradstreet.

**Manufacturing**: Binary variable that indicates whether the firm is in the manufacturing industry (1=yes, 0=no). Based on two-digit NAICS code. The NAICS code is from Compustat and Dun & Bradstreet.

**Time**: Variable to control for each unique year in the data set from 1998 – 2006. This value of this variable ranges from 4 – 12, is based on years since inception of the ACSI.

### 3.2 Overview of Data

For this study, we perform empirical analysis on customer satisfaction and offshoring data for the period 1998 – 2006, to include a timeframe before, during and after the maturation of offshore outsourcing (Carmel and Agarwal 2002; Pfannenstein and Tsai 2004). We analyze panel data from all 150 North American firms and business units that were included in the ACSI for at least the three most recent years of 2004, 2005 and 2006. The 150 firms include 103 services firms and 47 manufacturing firms, which is relatively consistent with the service sector’s share of the U.S. economy (Cleveland 1999). Table 2 shows how many times each firm appears in the panel. As shown in Table 2, 100 of the 150 firms appear in the panel for all nine years from 1998 – 2006, and 50 firms appear in the panel for fewer than nine years. There are 1,143 total observations across all firms and all years.

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1 While the ACSI tracks customer satisfaction for U.S. federal government and quasi-government entities, those government and quasi-government entities are not included in this analysis.
2 ACSI firms were involved in a number of mergers and acquisitions during the 1998 – 2006 timeframe, including some cases where two ACSI firms merged into one firm or one ACSI firm acquired another ACSI firm. To ensure that we consistently track ACSI firms before and after a merger or acquisition, we connect ACSI data for the largest pre-merger or pre-acquisition entity with ACSI data for the post-merger or post-acquisition entity, regardless of the firm name before or after the merger. This procedure enables us to achieve the highest possible consistency and comparability of ACSI firms during the 1998 – 2006 timeframe.
Table 2. Number of Years that Firms Appear in Longitudinal Data

<table>
<thead>
<tr>
<th>Number of Years</th>
<th>Number of Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 (1998-2006)</td>
<td>100</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total Firms</strong></td>
<td><strong>150</strong></td>
</tr>
</tbody>
</table>

Notes: 1. Maximum number of years is nine from 1998 – 2006 inclusive.
2. For firms that appear fewer than nine times, these firms were added to the NQRC American Customer Satisfaction Index™ sometime after 1998. The firm appears in our dataset for the number of years that the firm is in the ACSI from 1998 – 2006 inclusive.

Table 3 shows the number of firms that began front office offshoring, onshore front office outsourcing and back office offshoring in each year from 1998 – 2006, along with the total number of firms that engaged in each practice during the study period. As shown in Table 3, 32 of the 150 firms engaged in front office offshoring during the 1998 – 2006 timeframe, 44 firms engaged in onshore front office outsourcing, and 86 firms engaged in back office offshoring. It is also helpful to note the timing during which most firms began to engage in these management practices. Column A shows that a large number of firms (29 firms) began back offshoring during the 2000 – 2001 timeframe, consistent with the timeframe that IT offshoring reached maturity (Carmel and Agarwal 2002). Column A shows that there was then a “second wave” of 22 firms that offshored back office functions during the 2003 – 2004 timeframe, which coincided with the “first wave” of 20 firms that offshored front office functions (Column B) during the same timeframe, and is consistent with the claim by Pfannenstein and Tsai (2004) that offshore vendors built on their IT outsourcing experience to offer outsourcing for other front and back office functions. Column C shows that beginning in 1999 the number of firms engaging in onshore front office outsourcing is more evenly spread across the timeframe of the study, which is consistent with the fact that onshore front office outsourcing is a relatively more established practice compared with offshoring.
Table 3. Number of Firms That Began Offshoring in Each Year

<table>
<thead>
<tr>
<th>Number of firms that began (A, B, C) in year</th>
<th>A. Back office offshoring</th>
<th>B. Front office offshoring</th>
<th>C. Front office onshore outsourcing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>14</td>
<td>-</td>
<td>16</td>
</tr>
<tr>
<td>1999</td>
<td>6</td>
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<tr>
<td>2000</td>
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<td>2001</td>
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<td>2003</td>
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<td>8</td>
</tr>
<tr>
<td>2004</td>
<td>9</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>2005</td>
<td>2</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>2006</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Sum</td>
<td>86</td>
<td>32</td>
<td>44</td>
</tr>
<tr>
<td>Firms that did not (A, B, C)</td>
<td>64</td>
<td>118</td>
<td>106</td>
</tr>
</tbody>
</table>

Notes: 1. Begin year for offshoring based on information in news reports.
2. As discussed in Appendix B, we assume that once a firm begins offshoring, that firm continues offshoring for the duration of the timeframe in this study, unless a subsequent news report indicates that the firm discontinued offshoring.

Table 4 provides summary statistics and correlations for our model variables. Table 4 shows that of the 1,143 observations in our data, 44% of the observations include back office offshoring, 10% of the observations include front office offshoring, and 22% of the observations include onshore front office outsourcing. Among statistically significant correlations for explanatory variables, front office offshoring is negatively correlated with customer satisfaction, customer loyalty and perceived quality, and back office offshoring is positively correlated with perceived value and customer expectations. Onshore front office outsourcing is positively correlated with customer satisfaction and all three determinants of customer satisfaction. Finally, front office offshoring, back office offshoring and onshore front office outsourcing are all positively correlated, which suggests that a firm which pursues at least one of these management practices is more likely to also pursue the other two practices.
Table 4. Descriptive Statistics and Correlations for Variables

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Satisfaction</td>
<td>75.37</td>
<td>6.61</td>
<td>49.43</td>
<td>91.00</td>
<td>1.00</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Loyalty</td>
<td>71.83</td>
<td>8.26</td>
<td>46.00</td>
<td>90.00</td>
<td>0.75*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Quality</td>
<td>81.19</td>
<td>6.20</td>
<td>57.00</td>
<td>94.00</td>
<td>0.95*</td>
<td>0.67*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Value</td>
<td>75.46</td>
<td>7.52</td>
<td>43.05</td>
<td>89.85</td>
<td>0.86*</td>
<td>0.64*</td>
<td>0.73*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>5</td>
<td>Expectations</td>
<td>79.16</td>
<td>5.18</td>
<td>61.00</td>
<td>92.00</td>
<td>0.85*</td>
<td>0.48*</td>
<td>0.88*</td>
<td>0.69*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Front Offshore</td>
<td>0.10</td>
<td>0.30</td>
<td>0.00</td>
<td>1.00</td>
<td>-0.07*</td>
<td>-0.11*</td>
<td>-0.09*</td>
<td>0.03</td>
<td>0.02</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Front Onshore</td>
<td>0.22</td>
<td>0.41</td>
<td>0.00</td>
<td>1.00</td>
<td>0.08*</td>
<td>-0.06</td>
<td>0.07*</td>
<td>0.14*</td>
<td>0.20*</td>
<td>0.26*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Back Offshore</td>
<td>0.44</td>
<td>0.50</td>
<td>0.00</td>
<td>1.00</td>
<td>0.01</td>
<td>-0.03</td>
<td>0.01</td>
<td>0.11*</td>
<td>0.11*</td>
<td>0.26*</td>
<td>0.26*</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Firm Size</td>
<td>9.66</td>
<td>1.24</td>
<td>4.20</td>
<td>12.75</td>
<td>0.04</td>
<td>-0.02</td>
<td>-0.03</td>
<td>0.15*</td>
<td>0.09*</td>
<td>0.11*</td>
<td>0.35*</td>
<td>0.36*</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Concentration</td>
<td>930.38</td>
<td>1022.59</td>
<td>13.96</td>
<td>4067.68</td>
<td>0.04</td>
<td>0.10*</td>
<td>-0.02</td>
<td>0.12*</td>
<td>-0.04</td>
<td>0.05</td>
<td>0.22*</td>
<td>0.14*</td>
<td>0.43*</td>
<td>1.00</td>
</tr>
<tr>
<td>11</td>
<td>Manufacturing</td>
<td>0.36</td>
<td>0.48</td>
<td>0.00</td>
<td>1.00</td>
<td>0.60*</td>
<td>0.32*</td>
<td>0.62*</td>
<td>0.55*</td>
<td>0.65*</td>
<td>0.02</td>
<td>0.27*</td>
<td>0.17*</td>
<td>0.14*</td>
<td>0.14*</td>
</tr>
<tr>
<td>12</td>
<td>Time</td>
<td>8.40</td>
<td>2.54</td>
<td>4.00</td>
<td>12.00</td>
<td>-0.02</td>
<td>0.19*</td>
<td>-0.03</td>
<td>0.00</td>
<td>-0.01</td>
<td>0.27*</td>
<td>0.11*</td>
<td>0.27*</td>
<td>0.02</td>
<td>-0.03</td>
</tr>
</tbody>
</table>

* Correlation significant at p<0.05
3.3 Empirical Models

We test the relationship of offshoring with customer satisfaction, customer loyalty, perceived value, perceived quality and customer expectations 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, manufacturing vs. services, and market concentration. Our empirical models are as follows:

\[
\text{Satisfaction} = \alpha_{10} + \alpha_{11}\text{FrontOffshore} + \alpha_{12}\text{FrontOnshore} + \alpha_{13}\text{BackOffshore} + \alpha_{14}\text{FirmSize} + \alpha_{15}\text{Concentration} + \alpha_{16}\text{Manufacturing} + \alpha_{17}\text{Time} + \varepsilon_1
\]  
\[
\text{Loyalty} = \alpha_{20} + \alpha_{21}\text{FrontOffshore} + \alpha_{22}\text{FrontOnshore} + \alpha_{23}\text{BackOffshore} + \alpha_{24}\text{FirmSize} + \alpha_{25}\text{Concentration} + \alpha_{26}\text{Manufacturing} + \alpha_{27}\text{Time} + \varepsilon_2
\]  
\[
\text{Quality} = \alpha_{30} + \alpha_{31}\text{FrontOffshore} + \alpha_{32}\text{FrontOnshore} + \alpha_{33}\text{BackOffshore} + \alpha_{34}\text{FirmSize} + \alpha_{35}\text{Concentration} + \alpha_{36}\text{Manufacturing} + \alpha_{37}\text{Time} + \varepsilon_3
\]  
\[
\text{Value} = \alpha_{40} + \alpha_{41}\text{FrontOffshore} + \alpha_{42}\text{FrontOnshore} + \alpha_{43}\text{BackOffshore} + \alpha_{44}\text{FirmSize} + \alpha_{45}\text{Concentration} + \alpha_{46}\text{Manufacturing} + \alpha_{47}\text{Time} + \varepsilon_4
\]  
\[
\text{Expectations} = \alpha_{50} + \alpha_{51}\text{FrontOffshore} + \alpha_{52}\text{FrontOnshore} + \alpha_{53}\text{BackOffshore} + \alpha_{54}\text{FirmSize} + \alpha_{55}\text{Concentration} + \alpha_{56}\text{Manufacturing} + \alpha_{57}\text{Time} + \varepsilon_5
\]

The ordinary least squares approach for estimating equations (1) through (5) may not be appropriate for our longitudinal 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 2005). We estimated the models in equations (1) through (5) allowing the intercept to vary across individual firms (Greene 2002; Wooldridge 2002).

For longitudinal data, there are two tests that together determine whether a random effects model is more appropriate than a fixed effects model. The first test is the Breusch and Pagan (1980) Lagrange multiplier test that indicates whether random effects are significant. The null hypothesis is that random effects are not significant. For each of the equations (1) through (5), the test statistic exceeded the critical value of chi-square with one degree of freedom (prob > chi-square 0.000 for all five equations), rejecting
the null hypothesis and favoring the random effects model for our data set. The second test is the Hausman (1978) specification test that indicates whether firm-specific effects are correlated with other model variables. If firm-specific effects are not correlated with other model variables, then the random effects model will be more appropriate than the fixed effects model. The null hypothesis is that firm-specific effects are not correlated with other model variables. For each of the equations (1) through (5), the test statistic did not exceed the critical value of chi-square with k-1 degrees of freedom, failing to reject the null hypothesis and also favoring the random effects model for our data set.

4. RESULTS AND DISCUSSION

The results of estimation of equations (1) through (5) are shown in Table 5. The R square values show that the explanatory power of our models is reasonable. We now discuss the results of equations (1) through (5).

3 For equations (1) through (5), the chi-square test statistic and prob > chi-square are as follows: (1) chi-2 2.42, prob>chi-2 0.877, (2) chi-2 9.60, prob>chi-2 0.143, (3) chi-2 6.86, prob>chi-2 0.334, (4) chi-2 2.80, prob>chi-2 0.834, (5) chi-2 9.83, prob>chi-2 0.132. Note that for equation (5) the chi-2 and p-value are the Sargan-Hansen statistic (Arellano and Bond 1991), because this equation did not meet the Hausman test asymptotic assumptions.
Table 5.  Parameter Estimates for Customer Satisfaction and Determinants

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Customer Satisfaction</td>
<td>Customer Loyalty</td>
<td>Perceived Quality</td>
<td>Perceived Value</td>
<td>Customer Expectations</td>
</tr>
<tr>
<td>Front Office Offshore</td>
<td>$\alpha_{11} = -1.167^{***}$</td>
<td>$\alpha_{21} = -1.994^{***}$</td>
<td>$\alpha_{31} = -0.802^{**}$</td>
<td>$\alpha_{41} = -0.192$</td>
<td>$\alpha_{51} = -0.807^{***}$</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.000)</td>
<td>(0.012)</td>
<td>(0.657)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Front Office Onshore</td>
<td>$\alpha_{12} = -1.043^{***}$</td>
<td>$\alpha_{22} = -1.895^{***}$</td>
<td>$\alpha_{32} = -0.827^{**}$</td>
<td>$\alpha_{42} = -1.168^{**}$</td>
<td>$\alpha_{52} = -0.282$</td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.001)</td>
<td>(0.017)</td>
<td>(0.012)</td>
<td>(0.287)</td>
</tr>
<tr>
<td>Back Office Offshore</td>
<td>$\alpha_{13} = -0.395$</td>
<td>$\alpha_{23} = 0.660^{*}$</td>
<td>$\alpha_{33} = -0.301$</td>
<td>$\alpha_{43} = -0.632^{**}$</td>
<td>$\alpha_{53} = -0.153$</td>
</tr>
<tr>
<td></td>
<td>(0.117)</td>
<td>(0.067)</td>
<td>(0.175)</td>
<td>(0.035)</td>
<td>(0.365)</td>
</tr>
<tr>
<td>Firm Size</td>
<td>$\alpha_{14} = -0.013$</td>
<td>$\alpha_{24} = 0.003$</td>
<td>$\alpha_{34} = -0.278$</td>
<td>$\alpha_{44} = 0.209$</td>
<td>$\alpha_{54} = 0.220$</td>
</tr>
<tr>
<td></td>
<td>(0.955)</td>
<td>(0.992)</td>
<td>(0.189)</td>
<td>(0.464)</td>
<td>(0.179)</td>
</tr>
<tr>
<td>Industry Concentration</td>
<td>$\alpha_{15} = -0.000$</td>
<td>$\alpha_{25} = 0.000$</td>
<td>$\alpha_{35} = -0.000$</td>
<td>$\alpha_{45} = -0.000$</td>
<td>$\alpha_{55} = -0.000^{**}$</td>
</tr>
<tr>
<td></td>
<td>(0.204)</td>
<td>(0.576)</td>
<td>(0.188)</td>
<td>(0.828)</td>
<td>(0.041)</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>$\alpha_{16} = 8.736^{***}$</td>
<td>$\alpha_{26} = 6.199^{***}$</td>
<td>$\alpha_{36} = 8.575^{***}$</td>
<td>$\alpha_{46} = 8.890^{***}$</td>
<td>$\alpha_{56} = 7.187^{***}$</td>
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<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Time</td>
<td>$\alpha_{17} = 0.205^{***}$</td>
<td>$\alpha_{27} = 0.781^{***}$</td>
<td>$\alpha_{37} = 0.153^{***}$</td>
<td>$\alpha_{47} = 0.239^{***}$</td>
<td>$\alpha_{57} = 0.149^{***}$</td>
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<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Constant</td>
<td>$\alpha_{10} = 71.416^{***}$</td>
<td>$\alpha_{20} = 63.526^{***}$</td>
<td>$\alpha_{30} = 80.099^{***}$</td>
<td>$\alpha_{40} = 68.854^{***}$</td>
<td>$\alpha_{50} = 73.759^{***}$</td>
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<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>N observations</td>
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<tr>
<td>N groups</td>
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<td>150</td>
<td>150</td>
<td>150</td>
<td>150</td>
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<tr>
<td>Wald Chi square</td>
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<td>397.54</td>
<td>128.46</td>
<td>100.43</td>
<td>176.40</td>
</tr>
<tr>
<td>Prob &gt; Chi square</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Overall R squared</td>
<td>0.380</td>
<td>0.181</td>
<td>0.419</td>
<td>0.304</td>
<td>0.442</td>
</tr>
</tbody>
</table>

* significant at 10%; ** significant at 5%; *** significant at 1% (all two tailed)
4.1 Empirical Results

Equation (1) tests the relationship between offshoring and customer satisfaction. Among the explanatory variables, Table 5 shows that front office offshoring has a negative association with customer satisfaction ($\alpha_{11} = -1.167, p>0.001$). Onshore front office outsourcing also has a negative association with customer satisfaction ($\alpha_{12} = -1.043, p>0.008$). Back office offshoring does not have a statistically significant association with customer satisfaction. Results for control variables provide additional insights. Manufacturing firms have a positive association with customer satisfaction ($\alpha_{16} = 8.736, p>0.000$) compared with services firms, consistent with prior research that customer satisfaction with goods is generally higher than customer satisfaction with services (Fornell et al. 1996). The positive association of time with customer satisfaction ($\alpha_{17} = 0.205, p>0.000$) is consistent with the NQRC report that the national score for customer satisfaction has steadily increased during the 1998 – 2006 timeframe (www.theacsi.org). The consistency of these control variable findings with prior research helps to provide additional confidence in our model. Equation (2) tests the relationship between offshoring and customer loyalty. Front office offshoring ($\alpha_{21} = -1.994, p>0.000$) and onshore front office outsourcing ($\alpha_{22} = -1.895, p>0.001$) both have a negative association with customer loyalty. Back office offshoring has a positive association with customer loyalty ($\alpha_{23} = 0.660, p>0.067$), though this relationship is only moderately statistically significant.

Beginning with these results for customer satisfaction and customer loyalty, we now want to understand the relationship between offshoring and the determinants for customer satisfaction, to identify whether offshoring impacts customer satisfaction primarily in terms of perceived quality, perceived value and/or customer expectations. Because prior research shows that perceived quality is the primary determinant of customer satisfaction (Fornell et al. 1996), we start with the relationship between offshoring and perceived quality in equation (3). Table 5 shows that the results for perceived quality are similar to those for customer satisfaction, as might be expected. Front office offshoring has a negative association with perceived quality ($\alpha_{31} = -0.802, p>0.012$), and onshore front office outsourcing also has a
negative association with perceived quality ($\alpha_{32} = -0.827$, p>0.017). Back office offshoring does not have a statistically significant association with perceived quality.

Perceived value is the second leading determinant of customer satisfaction, and the results of equation (4) are in Table 5. While front office offshoring does not have a statistically significant association with perceived value, onshore front office outsourcing has a negative association with perceived value ($\alpha_{42} = -1.168$, p>0.012). Back office offshoring also has a negative association with perceived value ($\alpha_{43} = -0.632$, p>0.035). For customer expectations, while front office offshoring has a negative association with customer expectations ($\alpha_{51} = -0.807$, p>0.001), neither onshore front office outsourcing nor back office offshoring has a statistically significant association with customer expectations.

4.2 Discussion of Findings

In the Introduction we noted two primary research questions. Does front office offshoring actually have negative implications for consumers? If so, why would firms increasingly offshore in the face of evidence that offshoring has negative implications for consumers? To answer the first question, we find a negative association between front office offshoring and customer satisfaction. As might be expected because perceived quality is the largest determinant of customer satisfaction, we find a similar negative association between front office offshoring and perceived quality. These findings suggest that when customers interact with an offshore center to obtain support for a product or service offering, customers perceive lower quality from the interaction. To understand more about why customers may perceive lower quality from interaction with offshore centers, we introduce some additional data collected by CMP Media, the publishers of InformationWeek and Call Center Magazine. During 2004, CMP surveyed 555 respondents who had used an offshore call center for a personal (not business) transaction within the past six months (Weston 2004). CMP provided the customers with a list of potential issues, and asked the customers whether they experienced any of these issues in their conversations with an offshore call center. Some data from this survey is provided in Table 6.
Table 6.  *InformationWeek* Survey of Offshore Call Center Customers

<table>
<thead>
<tr>
<th>Parasuraman et al. (1998) framework</th>
<th><em>InformationWeek</em> 2004 survey of 555 customers: “What issues have you experienced in a conversation with an offshore call center?”</th>
<th>Percentage of respondents experiencing issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangibles</td>
<td>…difficulty understanding agent’s accent</td>
<td>64%</td>
</tr>
<tr>
<td>Reliability</td>
<td>…agents unable to resolve my problem</td>
<td>55%</td>
</tr>
<tr>
<td></td>
<td>…agent lacks customer history</td>
<td>26%</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>…slow response time</td>
<td>30%</td>
</tr>
<tr>
<td>Assurance</td>
<td>…poorly trained staff</td>
<td>45%</td>
</tr>
<tr>
<td>Empathy</td>
<td>…agents misunderstand customer</td>
<td>45%</td>
</tr>
</tbody>
</table>

Note: Only 12% of customers that used an offshore call center indicated that they experienced no issues.

The six issues in the CMP survey can be mapped directly onto the five dimensions in the Parasuraman et al. (1988) service quality framework discussed above. We note again that recent research has highlighted elements that are particularly relevant to voice-to-voice service customer encounters, including responsiveness, assurance and empathy (Burgers, de Ruyter, Keen and Streukens 2000; de Ruyter and Wetzels 2000; Gruber, Szmigin and Voss 2006). For example, one dimension in the framework is reliability, which includes the ability to perform the promised service dependably and accurately. A related issue in the CMP survey is worded “agents unable to resolve my problem,” which suggests that the service was not reliable. Another dimension in the framework is assurance, which includes the knowledge of employees and their ability to convey trust and confidence. A related issue in the CMP survey is worded “poorly trained staff” which suggests that the service agent was not knowledgeable. The mapping for the six issues and five dimensions is shown in Table 6. Table 6 shows that for this group of customers during this timeframe, a significant proportion of the customers experienced issues along one or more dimensions of service quality. Almost two-thirds of respondents experienced issues related to tangibles, approximately one-half experienced issues related to reliability, assurance and empathy, and almost one-third experienced issues related to responsiveness. Only 12% of respondents who interacted with an offshore call center did not experience any of these service quality issues. This analysis and discussion provides some additional insight on how front office offshoring may negatively impact perceived quality.
Front office offshoring also has a negative association with customer loyalty. To better understand the relationship between front office offshoring and customer loyalty, we introduce data from a 2007 survey conducted by CFI Group (Teodoru 2007). CFI Group surveyed 914 North American consumers who used call centers, and asked each respondent to specify whether they thought the call center was in the US, outside the US, or did not know (note that this survey relies on respondent perception of call center location rather than actual location). CFI Group compared survey responses for “US” call centers and “non US” call centers (respondent perception). Some data from this survey is in Table 7 below.

### Table 7. CFI Group Survey of Call Center Customers

<table>
<thead>
<tr>
<th>Call Center Based in US</th>
<th>Call Center Not Based in US</th>
<th>Difference US vs. non-US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effectiveness in handling issue (0 – 100 score)</td>
<td>78</td>
<td>52</td>
</tr>
<tr>
<td>Issue was resolved (percentage)</td>
<td>81%</td>
<td>66%</td>
</tr>
<tr>
<td>Will continue to do business (percentage)</td>
<td>81%</td>
<td>47%</td>
</tr>
</tbody>
</table>

Building on the Parasuraman et al. (1988) service quality framework discussed above, respondents indicated that offshore call centers were less effective than onshore call centers in handling issues, and resolved a lower percentage of issues than onshore call centers. Just as a lower percentage of issues were resolved by offshore call centers compared with onshore call centers, customers also indicated that they would be less likely to do business with the firm that offshored its call center in the future. Contact center customers perceive that poor quality service will not be effective in resolving their issues, and are less likely to recommend firms with poor quality service to other customers, and more likely to discontinue their business relationships with that firm (Teodoru 2007).

Our results indicate that offshore call centers are not the only front office operations where customers perceived lower quality leading to lower satisfaction and lower loyalty. Customers also perceived low quality from onshore call centers that were outsourced by the firm to a third-party service provider. While onshore outsource front office operations are not the primary focus of this study, prior literature suggests some reasons why customers may perceive lower quality from outsource call center service providers. Similar to any outsourcing situation, there is the potential for misalignment of
incentives between the client firm and call center service provider (Hasija, Pinker and Shumsky 2008). Some types of call center outsourcing contracts will not induce the service providers to deploy adequate capacity or exert sufficient effort to achieve high service quality (Ren and Zhou 2008). Some client firms do not provide service providers with all of the information necessary to adequately serve customers (Aron et al. 2005). Any outsourcing arrangement involves the loss of expertise from the headquarters function (Willcocks et al. 2004). These three issues – incentive misalignment that is challenging to address through contract structure, the potential lack of access to information necessary to fully serve customers, and the loss of expertise from the headquarters function – are consistent with our findings that onshore front office outsourcing is associated with a decrease in perceived quality, customer satisfaction, and customer loyalty. We note that our findings for customer satisfaction and customer loyalty in an offshore / outsource setting using actual customer satisfaction data are relatively consistent with the findings of Roggeveen et al. (2007) for customer expectations in an experimental setting.

With the difference between offshore vs. domestic labor costs, it is quite surprising that neither front office offshoring nor back office offshoring resulted in higher perceived value for customers. Back office offshoring actually resulted in lower customer perceived value. This finding suggests that if firms are saving on costs by placing front office and/or back office functions offshore, firms are either not passing on these savings to customers or not reinvesting these savings to create a perceptible increase in value for customers. Instead, firms may simply be using offshoring to reduce selling, general and administrative expenses and increase profits. While we discussed the example of E-loan above who did use front office offshoring to provide quicker response times to customers, the empirical finding suggests that E-loan is the exception rather than the rule.

While front office offshoring and onshore front office outsourcing have a negative association with customer loyalty, back office offshoring has a positive association with customer loyalty. Although we do not have additional data in this study to develop a more specific understanding of the mechanisms through which back office offshoring could impact customer loyalty, this finding suggests that the operational improvements being implemented by offshore back office providers (such as SEI CMMI
processes) may result in improved management of customer information that could eventually result in higher customer loyalty. This may be one avenue for future research.

Prior research notes the possibility that the relationship of front office offshoring with customer satisfaction could change over time as organizations learn to more effectively contract and develop relationships with offshore providers (Huber 1991; Mayer and Argyres 2004; Selnes and Sallis 2003), and to integrate the international and information technology dimensions of front office offshoring into their business operations (Autio, Sapienza and Almeida 2000; Fichman and Kemerer 1997). Accordingly, we performed additional analysis to investigate potential learning effects, such as an improvement in the relationship between front office offshoring and perceived quality over time (Li and Rajagopalan 1998). While we did not find such learning effects in our additional analysis, this may be another avenue for future research. Additional suggestions for future research are discussed in section 4.4 below.

Our findings suggest potential answers for our second research question on why firms continue to increase their level of offshoring even in the face of evidence which suggests that offshoring has negative implications for consumers. We answer this question first for front office offshoring and then for back office offshoring. For front office offshoring, firms must evaluate multiple criteria in customer acquisition and retention decisions (Thomas, Reinartz and Kumar 2004), including cost vs. revenue and short-term vs. long-term tradeoffs. In a front office sourcing decision, a firm must consider at least three items – the potential cost savings from offshoring and/or outsourcing front office functions, the risk that customers will be dissatisfied and reduce their level of business with the firm, and the marginal revenue and profit from potentially dissatisfied customers. If the firm decides that the cost savings outweigh the risk, the firm may consider offshoring and/or outsourcing the front office functions. Our findings suggest that front office offshoring and onshore front office outsourcing have a similar negative association with customer satisfaction. If the cost savings for offshoring are more attractive than the cost savings for onshore front office outsourcing, and the customer service impact is equal, firms will be more likely to increase their level of front office offshoring. For back office offshoring, note that back office offshoring does not have a negative relationship with customer satisfaction, customer loyalty, perceived quality or
customer expectations. Our findings suggest that firms are able to increase their level of back office offshoring without significant adverse implications for consumers.

4.3 Implications

There are at least three primary implications of this research. The first is that offshoring is not simply a Yes or No decision for firms. Firms must carefully consider which functions may be suitable for offshoring. Our findings suggest that the offshoring of front office functions that interface directly with customers has a negative relationship with customer satisfaction, customer loyalty, perceived quality and customer expectations. On the other hand, the offshoring of back office functions that do not directly interface with customers does not have any association with customer satisfaction or perceived quality, and actually has a positive association with customer loyalty. The finding for front office functions is consistent with the fact that at Satyam call center employees have decreased as a percentage of business process outsourcing employees from 60% in early 2005 down to 35% in mid 2006 (Kripalani, Lee and Saminather 2006). Kripalani et al. (2006) offer the explanation that the call center business is becoming commoditized, and that India vendors are less interested to pursue this business. However, our finding offers a complementary explanation that client firms may be experiencing adverse impacts to customer satisfaction from offshore call centers.

Second, if client firms do choose to offshore their front office processes, they must ensure that their vendors are properly equipped to provide high quality service to the firm’s customers. For example, in an effort to address security or strategic concerns, client firms have sometimes not allowed their vendors access to complete information on their end customers (Aron et al. 2005). While this may assist with the security or strategic concerns, it could leave the offshore customer service agent without the information necessary to solve a customer’s problem and impact the reliability of the service encounter. Client firms must balance such security concerns with the need for high quality service if they wish to maintain high customer satisfaction.
Third, in addition to using offshoring to save on internal costs, firms must also use offshoring as an opportunity to create additional value for customers. As a starting point, firms can invest some of the savings from offshoring front office and back office functions to serve customers that they previously could not afford to serve, or to provide additional services to current customers such as E-loan. As a next step, firms can use offshoring to access additional innovation in the marketplace for global resources, and pass these innovations on to their customers (Prahalad and Krishnan 2004; Martin 2006).

4.4 Limitations and Suggestions for Future Research

There are four primary limitations to this paper, all associated with the data for the offshoring variables. First, the news reports indicating offshoring 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/or Type II “false negative” errors where firms are offshoring and no news report has been produced. We did make some attempt to address this limitation. 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). Therefore, we asked NASSCOM™ (India National Association of Software and Service Companies) and to verify whether the firms reported as offshoring to India are actually offshoring to India. As the trade association for the IT and business process industry in India, NASSCOM has some knowledge of which firms have company-owned centers in India, and which firms are clients of IT and business process vendors in India. During the summer of 2005, NASSCOM assigned two members of its research staff to record whether each ACSI firm offshored to India as of that point in time. There was 80% agreement between the NASSCOM records and the news reports on whether firms are / are not offshoring to India, indicating that the news reports have some degree of consistency with the trade association. While we recognize that this verification step was not comprehensive (for example, it only involved India and only involved outsourcing at a specific point in time), it does enhance the credibility of the offshoring variables.

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4 Because of our non-disclosure commitment to NASSCOM, we are unable to disclose the name of any specific firm that is offshoring IT and/or business processes to India.
A second limitation is that 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 offshoring began. It is possible that the news report may be an announcement of future planned offshoring, or an announcement of an offshoring arrangement that has already been in place. Third, our offshoring variables did not record the extent of offshoring within the firm. The extent of offshoring for business functions differs across firms. While some firms may offshore only a small number of business functions in certain subsidiaries, other firms may offshore a larger number of business functions across the firm. Similarly, some firms may have offshoring as a small part of their operational strategy, dedicating limited managerial and financial resources to offshoring initiatives; while other firms may have offshoring as a significant component of their global sourcing strategy, dedicating significant managerial and financial resources to offshoring initiatives. Fourth and finally, while previous research has shown that process characteristics can impact outsourcing outcomes (McFarlan and Nolan 1995), the nature of our data from external news sources did not record such internal characteristics for each firm.

There are at least two opportunities for future research related to this study. The first opportunity is to gather data to address the limitations described immediately above: a.) validate the occurrence of offshoring via primary data from firms in addition to secondary data, b.) confirm through primary data the begin and end (if applicable) dates for offshoring, and c.) identify the specific number of front and back office functions offshored and the extent of offshoring for each function (for example, the total number of offshored call center seats compared with the total number of call center seats in the firm). The second opportunity is a more detailed study of the specific reasons why front office and back office offshoring impact customer satisfaction, customer loyalty and their determinants, so that firms can account for this rationale as they make or refine their offshoring decisions. Such research could be accomplished with in-depth case studies on specific firms, and/or additional questions for customers to capture their perspective on issues related to offshoring.

To conclude, our objective in this paper was to study the relationship of offshoring with customer satisfaction, customer loyalty and their determinants – perceived quality, perceived value and customer
expectations. We identified various considerations that may lead offshoring to have a positive or negative relationship with these determinants, and tested these considerations using data on 150 North America firms from 1998 – 2006. We find that the offshoring of front office processes that interface directly with the customer has a negative association with customer satisfaction, customer loyalty, perceived quality and customer expectations. On the other hand, we find that offshoring back office processes that do not interface directly with the customer has a positive association with customer loyalty. Our findings suggest that firms should consider not only whether to offshore business functions, but should also carefully consider which functions to offshore. Our findings also suggest that firms have an opportunity to use offshoring to create additional value for customers in addition to internal cost savings for the firm. These findings are important as firms more broadly incorporate the offshoring of business functions into their global sourcing strategies.
Appendix A. American Customer Satisfaction Index™ (ACSI) Measurement

The American Customer Satisfaction Index™ (ACSI) is tracked by the National Quality Research Center (NQRC) at the University of Michigan Ross School of Business. Each year, the NQRC surveys 50,000 customers who purchase products from approximately 200 companies (250 customers from each company) across a range of household consumer industries. Within each industry companies are selected based on total sales, and the measured companies represent a significant proportion of the overall industry market share. Total sales of ACSI companies equate to about 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 ACSI and its antecedents and consequences (see Figure A.1 below). 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 construct index values (0 – 100 scale) for ACSI and the other model constructs. The ACSI methodology ensures a uniform and comparable firm-level customer satisfaction measure across firms and industries. See Fornell et al. (1996) for further details.

**Figure A.1 American Customer Satisfaction Index™ (ACSI) Model**

Source: Fornell et al. (1996)
Appendix B. Process and Coding for Offshoring and Outsourcing Variables

One author performed an extensive search (primarily using Lexis Nexis) on the offshoring and outsourcing activities of each ACSI company during the 1998 – 2006 timeframe. For each ACSI company, the author began with an initial standard set of searches. The author browsed the results of the initial searches for each company, and performed additional tailored searches as necessary to follow-up on information from the initial searches. From the initial standard and subsequent tailored searches, the author archived the relevant articles that addressed the company’s offshoring and outsourcing activities. The author browsed an estimated total of 50,000 – 60,000 articles, which included both investigative reporting and company announcements. Based on the articles, the author recorded whether each ACSI company engaged in offshoring front office and/or back office functions for each year of the study timeframe, and/or whether the company engaged in onshore outsourcing for front office functions for each year.

The objective of this paper is to study front and back office business functions related to continuing North American operations that North American firms have traditionally performed in North America. The most frequently offshored front office functions are telephone customer service call center and e-mail customer contact center. The most frequently offshored back office functions are IT, HR, finance and accounting, and research and development. To be consistent with Porter and Millar (1985) and with the objective of the paper, the following items are not considered as offshoring for purposes of this paper:

- Offshore manufacturing is not considered as offshoring for this paper. Offshore manufacturing is now a long-standing management practice, and is extensively covered in prior literature (for example, see Kogut and Zander 1992).
- When a North American firm establishes an international regional call center that is dedicated to receiving calls from customers of that region (for example, a European call center dedicated to European customers), that call center is not considered as offshoring for this paper.
- Similarly, when a North American firm establishes a call center in Latin America dedicated to receiving calls from North American Spanish-speaking customers (and not from English-speaking customers), that call center is not considered as offshoring for this paper.
- When a North American firm engages an offshore firm only for outbound telemarketing calls (and not for inbound customer service calls), that service is not considered as offshoring for this paper. Telemarketing is not involved in the actual delivery of goods and services to customers.
- When a firm only licenses software developed by an offshore software provider, the software license is not considered as back office offshoring.
- When Year 2000 (Y2K) remediation was the only service performed by an offshore IT firm for a North American client, that service is not considered as continuing back office offshoring for this paper. Y2K work was substantially completed by the end of 1999.

A firm company may have multiple business units. For example, some business units could serve household customers and other business units could serve corporate customers. Whenever possible, we look at the business unit that is offshoring to determine whether the business unit is serving household customers that are the focus of the ACSI. For example, a conglomerate that offshores a business function only related to corporate customers is not considered as offshoring for purposes of this paper.

Finally, we generally assume that if a firm begins offshoring during a given year, that firm continues offshoring throughout the timeframe of this study (until 2006). The exception would be when a subsequent article indicates that offshoring was discontinued, in which case we code for the discontinuation of offshoring.
References


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