

# SERVICE AUGMENTATION AND CUSTOMER SATISFACTION: AN ANALYSIS OF CELL PHONE SERVICES IN BASE-OF-THE-PYRAMID MARKETS

*Completed Research Paper*

## **Jiban Khuntia**

School of Business Administration  
342 Elliott Hall  
Oakland University  
Rochester, MI 48309  
([khuntia@oakland.edu](mailto:khuntia@oakland.edu))

## **Sunil Mithas**

Robert H. Smith School of Business  
4324 Van Munching Hall  
University of Maryland  
College Park, MD 20742  
([smithas@rhsmith.umd.edu](mailto:smithas@rhsmith.umd.edu))

## **Ritu Agarwal**

Robert H. Smith School of Business  
University of Maryland  
Van Munching Hall  
College Park, MD 20742  
([ragarwal@rhsmith.umd.edu](mailto:ragarwal@rhsmith.umd.edu))

## **Prasanto K. Roy**

President and Chief Editor  
ICT Publications  
B-35 Sector 32, Gurgaon,  
Haryana 122001, India  
([pkrcybermedia.co.in](mailto:pkrcybermedia.co.in))

## **Abstract**

*In this study, we investigate how IT-enabled service augmentation influences customer satisfaction for cell phone services in Base-of-the-Pyramid (BOP) markets. We conceptualize value added service and customer care as two components of service augmentation. In spite of the acknowledged competitive significance of digital services, the impact of service augmentation on customer satisfaction remains an unexplored area of research. Arguing for price- and relational- evaluations, we develop hypotheses for a substitution effect of value added services, and a complementary effect of customer care, on the relationship between core service and customer satisfaction. Specific to the BOP market context, we argue for a differentiated influence of service augmentation for different categories of providers. We empirically examine and find support for the hypothesized relationships using an archival data set from surveys of cell phone customers in seven South Asian BOP markets. We discuss the managerial implications and contributions of the findings.*

**Keywords:** *Cell phone service, digital service, BOP market, service augmentation, core service, peripheral services, value added service, customer care, customer satisfaction.*

## **Introduction**

Cell phone services have grown rapidly in the last few decades, reaching 5.9 billion active mobile phone user accounts, and an aggregate annual revenue of \$1.02 trillion in 2011 (Ahonen 2012). Globally, voice service grew by 4% in 2010-2011 accounting for \$0.65 trillion in revenue, while value added services accelerated by 21% accounting for \$0.37 trillion of revenue in 2011 (Ahonen 2012). More than 50% of World's population has access to a cell phone, with market penetration varying from an almost 100% saturated market in Europe, to 25% in Africa, and 30% in Asian countries. Not surprisingly, the rapid growth has been accompanied by intensified price competition, resulting in increasingly smaller average revenue per user (ARPU) from voice services providers in some markets. In contrast to the steadily declining voice-ARPU in the past years, IT-enabled value added services such as messaging, internet access, entertainment services (e.g., games, ring-tones, audio and video) and mobile commerce solutions (e.g., maps, banking, purchases, booking systems) are emerging as the source of potential growth for cell phone service providers (Niculescu and Whang 2011). While managing a digitized service is inherently complex (Rai and Sambamurthy 2006), low-ARPU and value-based service differentiation have further exacerbated the complexity of management for cell phone service providers in some markets.

Base-of-the-pyramid (BOP) markets are low-ARPU voice and value-based cell phone service markets. They consist of the 4 billion people living in poverty, with incomes below \$3,000 (in 2002 U.S. dollars) in local purchasing power; estimated as \$3.35 a day in Brazil, \$2.11 in China, and \$1.56 in India, in current U.S. dollars. Together the BOP markets have substantial annual purchasing power of 5 trillion dollars, and are estimated to account for 30-32% of the increase in world population by 2050 (Hammond et al. 2007; Prahalad 2008). The opportunity in BOP markets has propelled cell phone providers to reduce basic voice prices to make them affordable for low-income customers. As a result, cell phone subscriptions have grown tremendously in some BOP markets, for instance, India has seen a 12% annual growth in 2011, reaching approximately 900 million subscribers by December 2011 (TRAI 2012). Further, to attract the low- and middle-income customers, providers are offering innovative value added services, such as mobile money transfer, and agricultural supply disintermediation services (for a review, see Donner and Escobari 2010). Industry reports indicate that currently non-voice value added services contribute to 15-30% of net revenue per user for mobile services in many BOP markets (Deloitte-Assocham 2011), and researchers note that value added services are emerging as significant differentiators across providers (Kim et al. 2010).

Despite differentiation of services in BOP markets, providers are “struggling with the chronic churners”; for instance, with a 11% monthly churn rate in India, compared to only 1% to 3% churn rates in the US, UK or Japan (Bellman 2011). Providers are concerned whether value added services are profitable in the churn-prone market (mostly ascribed to competitive ARPUs). Often, justifying investments for some of value added services, such as next-generation internet connectivity or location services, which need large outlays, becomes difficult for providers. Some also raise the question whether value added services are perceived as unnecessary by customers (Reinartz and Ulaga 2008). Therefore, cell phone service providers need to understand the effect of the additional service offerings on customer satisfaction (Ahn et al. 2006; Kim et al. 2004) to develop appropriate strategies to operate in the BOP markets (Karamchandani et al. 2011).

In this study, we investigate how service augmentation influences customer satisfaction for cell phone services in BOP markets. We conceptualize two dimensions of “service augmentation”: (1) the “value added service” component, that includes the additional offerings beyond the core service product (Bolton et al. 2000), and (2) the “customer care” component that reflects the enhanced support provided through information technology (IT) enabled customer service management systems (Orman 2007; Ray et al. 2005). Based on theoretical arguments for price- and relational- evaluation effects, we develop hypotheses for a substitutive effect of value added services, and a complementary effect of customer care on the core service and customer satisfaction relationship. Grounding our logic in the BOP market context, we predict and test for differentiated influence of service augmentation for global, local, private and public providers. We use an archival data set constructed from a survey conducted in 2008 by a leading market research firm. The survey has 3542 cell phone user respondents across seven South Asian countries (India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan, and Maldives), that represent the base-of-the-pyramid (BOP) markets. Results of our empirical analysis support the substitution hypothesis for

value added service, and complementarity hypothesis for customer care. Further, we find that the moderating effects are contingent on provider characteristics. The findings of this study contribute to the literature on service management and customer satisfaction in the context of digital services. Given the dearth of rigorous study on this subject, investigation of influence of different components of service augmentation provides useful insights to service providers.

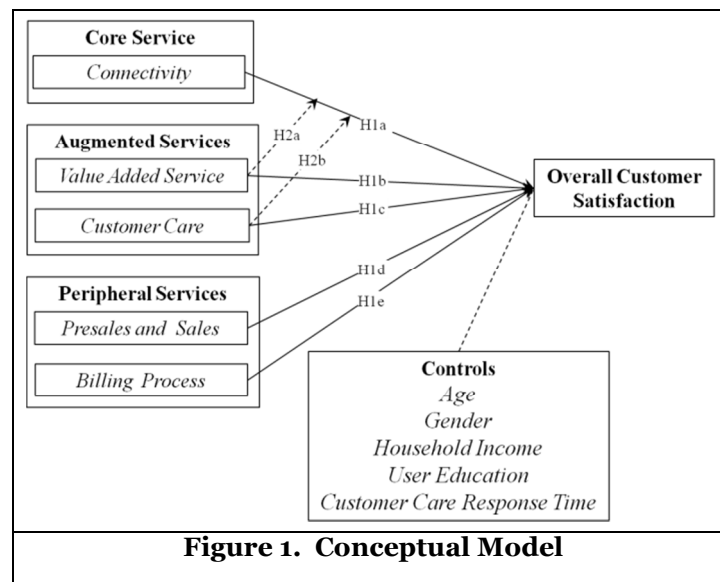
## Prior Literature

Prior research in the context of cell phone services has explored the interaction between voice and SMS (Short Message Services) (see Andersson et al. 2009; Grzybowski and Pereira 2008; Kim et al. 2010). Findings with respect to a substitution or complementary impact of SMS services on the pricing and revenue of voice services are equivocal. Although some studies highlight the importance of voice or core service on customer satisfaction with cell phone services, to suggest that high quality connectivity has a positive association with higher levels of customer satisfaction (Gerpott et al. 2001; Kim and Yoon 2004), nonetheless, the impact of value added services on indicators of service performance such as customer satisfaction remains unexplored in the existing literature.

Customer satisfaction is an important outcome measure for cell phone service providers, as prior research has established customer satisfaction as a key metric of service performance (Anderson et al. 1994; Fornell 1992), that in turn has favorable effects on usage behaviours and levels (Bolton et al. 2000), revenues (Rust et al. 2002), and cash flows (Gruca and Rego 2005). In the context of digital services, prior studies have examined the antecedents of customer satisfaction with software products (Krishnan and Subramanyam 2004), enterprise software systems (Ramasubbu et al. 2008), business-to-consumer channels (Devaraj et al. 2002); and the influence of customer satisfaction on firm performance (Mithas et al. 2005). However, the relationship between service augmentation and customer satisfaction in the context of digital services in BOP markets is an unexplored area of research that this study addresses.

## Theory and Hypotheses

Drawing on prior work on the augmented service offering (ASO) model (Grönroos 2000) and the theoretical foundations of service dominant logic (S-D logic) (Vargo and Lusch 2004; Vargo and Lusch 2008), we argue that core, peripheral and augmented service exchanges have cumulative and interactive effects on customer satisfaction (Figure 1 shows the conceptual model).



The ASO model includes core service and peripheral services as the main components in the integrated package of service exchanges, along with a set of service-supporting activities (e.g., customer interaction and communication, service delivery, branding, and promotion). Conceptually, a “core” service is defined

by the distinctive and fundamental value received by customers from an offering (e.g., a restaurant offers a meal as a core service, a hotel provides a room), whereas peripheral services are facilitative or ancillary to the core service (Ozment and Morash 1994). We extend the existing ASO model to add service augmentation as a third dimension along with core and peripheral dimensions, to the integrated package of service exchanges. We define service augmentation as the “extra enrichment to the core service consumption” that is differentiated from other service-process-supporting activities by two attributes: (1) dependency on the existence of the core service, and (2) value addition or enhancement to the consumption experience of the core service. Augmentation may be offered as a paid or free service to customers.

The S-D logic asserts that service exchanges are encounters during the service rendering process between the provider and the customer, that create value for both parties (Vargo and Lusch 2008). Prior literature suggests that customers assess all categories of service interactions to cumulatively evaluate their consumption experience and subsequent satisfaction (Bitner and Hubbert 1994). To the extent that service augmentation is dependent on the core service for its delivery, these services are likely to be evaluated in an interdependent way with the core service. Due to the price sensitivity of customers and in the presence of infrastructural and quality issues in BOP markets, the value added service component has a substitutive effect on the core service-customer satisfaction linkage. By contrast, the customer care component complements the relationship between the core service and satisfaction via its relational effect and service enhancement that comes free of charge to the customers.

### ***Dimensions of Service Exchanges for Cell Phones***

The prime purpose of a phone is to make a call. Therefore, “connectivity” is the core service for cell phone providers and is reflected in network coverage, strength, call drops, and voice quality during calls. Peripheral services support the initiation, offering and management of core service. We include two peripheral services in the conceptual model: (1) sale and presale process, and (2) the billing process. Further, we consider two components of service augmentation: (1) value added service, and (2) customer care.

The value added service component is the price based additional service offering to an existing voice plan. These offerings serve four objectives for cell phone customers: (1) communication through text based messaging services such as SMS and MMS, (2) entertainment, such as songs, games, cartoons, or videos, (3) provision of updated information, such as news, and weather, and (4) facilitation of information exchange, such as banking, finance or brokering services. Often, a set of value added service suppliers create content, design applications, and enable these services for the cell phone service provider, with the latter offering network infrastructure, management capability, brand and existing subscriber base. While the provider might have a financial collaboration with suppliers, exclusive contractual arrangements to enforce service quality parameters are hard to find in these collaborations (Chen and Cheng 2009).

The customer care component is free of charge and focused on supporting customers for resolving issues with service delivery. It is characterized by three attributes: (1) easy access using interactive voice response menu; (2) efficient response with an appropriate solution to the customer’s issues; and (3) the ability and courtesy shown by customer care representative to understand and deal with customer’s issues (Chesbrough 2007; Ostrom 2005). Either the service provider firm handles the customer support, or if outsourced, the provider frequently monitors and controls the quality of activities of customer care.

### ***Direct Effects of Service Exchanges***

Existing literature in service management suggests that both core and peripheral service failures can be detrimental to service quality and customer satisfaction evaluations, with empirical evidence for the positive influence of core and peripheral services on customer satisfaction (Anderson et al. 2008; Butcher et al. 2003). Similarly, prior studies note that customers are impressed with enhanced service offerings that might facilitate and support the core and peripheral services, or assist in efficient delivery of the services (Grönroos 2000; Ozment and Morash 1994). We suggest that customers derive value from core, peripheral and augmented service exchanges, although the value perception of the customer from these services may be different depending on the service quality (Woodruff and Flint 2006). Extending

arguments in the existing literature, we predict that each of the three categories of service exchanges, viz., core, peripheral and augmented services, will influence customer satisfaction. Thus, we test:

- H1a: Satisfaction with core service is positively associated with overall customer satisfaction.*  
*H1b: Satisfaction with value added service component of service augmentation is positively associated with overall customer satisfaction.*  
*H1c: Satisfaction with customer care component of service augmentation is positively associated with overall customer satisfaction.*  
*H1d: Satisfaction with presales and sales component of peripheral services is positively associated with overall customer satisfaction.*  
*H1e: Satisfaction with billing component of peripheral services is positively associated with overall customer satisfaction.*

### **Moderating Effects of Dimensions of Service Augmentation**

S-D logic suggests that service exchange is a culmination of transaction and relational interaction between customers and providers (Lusch et al. 2010). To the extent that value added services are monetized by providers and are being “paid” for, they are transactional service exchanges. By contrast, customer care is free and thus, a relational service exchange. Further, as noted, value added services are additional offerings with enhanced features, whereas customer care is constructed to be support oriented. Although both services are delivered and offered in the same IT-enabled cell phone service context, due to the inherent price and relational differentiation, we suggest that they yield different overall value propositions for customers.

Customers evaluate value added services stringently as they are offered at a price. Prior research suggests that price premium based transaction specific satisfaction is not perfectly correlated with overall satisfaction, since service quality *vis-à-vis* price-premium assessment varies with each additional experience of customers (Jones and Suh 2000; Parasuraman et al. 1994). Therefore, when the quality of a value added service is low, the additional consumption experience would reduce overall satisfaction of customers. Because cell phone service providers do not enforce quality parameters on the value added services that are offered by third party suppliers (Chen and Cheng 2009), the quality alignment and seamless integration of value added services with the core service of cell phone (e.g., connectivity) becomes a concern. For example, a low quality data-service enabler not only reduces the speed of browsing, but also keeps the phone engaged for a longer duration, making it unavailable for calls. A virus-laden game may make the phone unusable for a period. Thus, paid value added services that command a premium might influence the overall service consumption negatively, in the realm of the stringent assessment by the customer, and without specific quality reinforcement mechanisms on the part of the provider.

In the context of BOP markets, the negative influence of value added services on the relationship between core service and customer satisfaction arises due to three reasons. First, in BOP markets, investments needed for updated infrastructure to manage the volume of value added services, along with aggressive customer acquisitions, is a challenge for most service providers (Gruber 2005). High subscription density in certain areas requires high bandwidth capacity. To add, information and entertainment oriented value added services increase demands on bandwidth, especially when the bandwidth dependencies or streaming technologies for these services are not optimized for cell phones. As a result, customers frequently face slow speeds, delays, drops, and overall low quality service delivery.

Second, service providers aggressively market value added services to gain revenue. Industry reports note that service providers often try to offset the low voice-ARPU through high-priced value added services (Telecoms.com 2009). Providers add subscribers to value added offerings with specific opt-out options, such as an option to dial and follow specific instructions to stop the service. Unless the customer is alert, the failure to opt-out leads to a recurring charge in the subsequent billing cycles. Such a “push sell” creates a burden on the customer to monitor subscription-add-on options to the core service, and creates a detrimental effect on existing customer satisfaction with the core service.

Finally, from the consumer decision-making perspective, when customers are exposed to cross-category dependencies, they often substitute the basic options with the augmented options. Prior literature shows that customers’ decision of whether or how much to buy in one category depends on the corresponding

decision in a related category (Niraj et al. 2008; Seetharaman et al. 2005). In the case of cell phones, a prior study finds that SMS and voice service are small substitutes, since a 10% increase in the price of voice minutes induces about a 0.8% increase in the demand for SMS (Kim et al. 2010). In other words, SMS decreases the consumption of voice service. Similarly, other value added services, such as emails or chat features, result in a reduction in the consumption of core voice service. As the core service consumption decreases, the resulting experience and satisfaction associated with the core service might decrease due to limited consumption experience.

In sum, we suggest that infrastructural and quality issues in BOP markets, the intention to earn high revenue through high-priced value added services, and cross-category substitution effect of some value added services on core service usage, negatively influence the price-sensitive evaluation of these services by customers. Based on these arguments, we hypothesize:

*H2a: Value added service component of service augmentation has a negative moderation (substitution) effect on the relationship between core service and customer satisfaction.*

In comparison to the value added services, customer care is relational and unpaid augmentation for the customers. Existing studies suggest that relational components during the service delivery inherently create a positive experience for the customer (Chen and Dubinsky 2003; Sirdeshmukh et al. 2002). For example, providers try to identify service gaps and potential solutions to customers' issues through customer care, thereby creating a positive experience for the core service consumption (Khanna and Palepu 1997; Xu and Shenkar 2002). We extend these existing discussions in the literature, and argue that customer care component of the service augmentation creates a positive moderation effect on the core service and customer satisfaction relationship. The underlying mechanisms are two-fold (1) the personnel relational effect on the customer's core service experience, and (2) the IT based system improvement for customer support.

The personnel relational effect is an outcome of the highly trained and effective manpower deployed in the customer care, while the IT based improvement is a result of the use of IT based customer management systems. Providers recruit appropriate customer care personnel, train them, and motivate them to be responsive and efficient in resolving customers' issues (Gonsalves et al. 1999; Piccoli et al. 2004). IT based systems such as the pre-recorded voice response, call scheduling and menu based response systems help customer care to address customer's issues efficiently (Khanna and Palepu 1997). Trained customer care personnel use knowledge repositories designed for the purpose of rapid response to customers' issues (Kankanhalli et al. 2011). Using IT based systems, the provider firm overcomes service failures such as customers waiting in line, or customers being transferred to multiple lines, or the experience of talking to an employee who is not empowered to provide service (Lusch et al. 2008). Thus, customer care helps the provider to focus on the efficiency and effectiveness of customer service in responding to the customer needs and resolving their issues.

The personnel relational effect and IT based support systems used by customer care act in an interrelated way to create a positive effect on the consumption of core services. Efficient and effective customer care creates a long-lasting perception that the provider is proactive to provide solutions to customers, that motivates the customer to participate with the provider's value creation process within the service setting (Dong et al. 2008). Therefore, we argue that the customer care component of service augmentation complements the satisfaction derived from the core services. We test:

*H2b: Customer care component of service augmentation has a positive moderation (complementary) effect on the relationship between core service and customer satisfaction.*

### ***Institutional Contexts of BOP markets and Service Augmentation***

BOP markets are attractive for multinational companies due to the huge market potential. However, multinational entities are challenged by "institutional distance" in BOP markets, e.g., the differences between institutional settings, formalized laws, regulations, and monitoring enforcement approaches between the developed and BOP market settings (Xu and Shenkar 2002). The BOP markets suffer from the deficiencies of under- or un-developed formal institutional structures, such as lack of property rights, difficulty in enforcing contracts and laws, and bribery inflicted regulating bodies, that lead to the high institutional distances (Khanna et al. 2005; London and Hart 2004).

S-D logic suggests that institutional structures of a market create unique context for services, and providers respond to the institutional settings differently in offering their services (Vargo and Lusch 2008; Lusch et al. 2010). A market with high institutional distances creates implementation and execution challenges for global service providers compared to local providers in the BOP markets, although some global providers attempt to offer innovative value add services suited to the needs of customers in these markets, such as money transfer through cell phones, or agricultural supply chain disintermediation services (Gruber and Verboven 2001). However, often the regulatory framework creates a barrier for success of these services. Due to the implementation and execution challenges, providers fail in seamless delivery of services that in turn reduces customer satisfaction. In comparison, local providers have a greater local knowledge and deeper understanding of the institutional contexts, and therefore can operate with ease in these markets. In general, local providers may have limited ambition compared to the worldwide customer acquisition plans of global providers by differentiating their niche services. As a result, local providers often wait for the market to mature before offering new or value added services; thereby offsetting the barriers posed by the institutional context for new services. Similar to global providers, the private players being aggressive in their customer acquisition process confront the BOP institutional contexts more compared to the public providers. Bureaucracy inflicted public providers often are limited in their scopes, growth plans and market orientations; and therefore respond slowly to market needs and trends.

The widely discussed case of M-PESA, a mobile-phone based money transfer service, exemplifies the institutional distance challenges in the BOP markets. M-PESA is currently offered by the global provider Vodafone in Kenya; with plans to extend to Tanzania, India and Afghanistan. Although M-PESA was launched by Safaricom, an affiliate of Vodafone, in March 2003 in Kenya; the institutional settings and bank-government lobbies against the global provider posed significant challenge for the uptake of M-PESA for over five years in Kenya. Vodafone is facing similar challenges in other three countries, although the value potential of the service in a BOP market was recognized as early as in 2003 (Hughes and Lonie 2007).

Similarly, the example of an Indian provider, Bharti Telecom's outsourcing of network, infrastructure and operational services to global quality solution providers demonstrates a "lesser institutional distance" case in favor of a local provider. Bharti's competency lies in understanding customers' requirements, and driving the outsourcing collaboration to be successful in the Indian institutional context (Martínez-Jerez and Narayanan 2007). Therefore, the company decided to outsource the capital-intensive network services, while focusing on offering additional value-added services such as music services through cell phones to create supplementary revenue streams.

We suggest that the challenge of confronting BOP markets is intensified due to the institutional contexts for global and private providers. Value added service delivery faces implementation issues and inefficient delivery due to the institutional distance constraints. As a result, the extent to which value added services contribute towards deterioration of core service becomes higher for global and private players, than local and public providers, respectively. Therefore, we hypothesize:

- H3a: The substitution effect of value added service on the relationship between core service and customer satisfaction is higher for global providers than for local providers.*
- H3b: The substitution effect of value added service on the relationship between core service and customer satisfaction is higher for private providers than for public providers.*

Global providers typically have multi-national experience in customer support services that is unavailable with local providers. Similarly, capital availability with global and private providers helps them to set up customer care centers in high population density segments of BOP markets with a strategic plan to gain high market realization. Global and private players often focus on a highly efficient and effective customer care with large investments for expedited take-off of their services.

The case of Vodafone entry and take-off in India is an example of leveraging customer support strategy in a BOP market. In 2007, Vodafone entered Indian cell phone market, with the acquisition of 67% stake in Hutchison Essar – a provider mainly operating in large metropolitan areas such as Mumbai, Delhi and Kolkata. Initially, Vodafone built up the existing base of Hutchison Essar and strengthened its business in the densely populated urban cities of India, with a strong focus on the customer care to establish a reputed customer friendly brand. Once its reputation was established, Vodafone spread out to the rural

areas to gain more customer base, with very low ARPU models, such as a 0.01\$ charge per minute airtime, 3\$ sim cards, and a 0.25\$ recharge system. While sophisticated users in cities provided high revenue, the rural areas helped to gain customers, reaching to a 150 million customer base by 2011 (Medianama Report 2011). A similar aggressive market penetration strategy is not observed in cases of local and public providers, such as MTNL or BSNL – two prominent public providers in India.

While global and private players use customer care as a competitive strategy, local and public providers suffer from deficiencies of good customer support, partly due to a lack of funding, expertise and experience in customer support management. Thus, we expect that the global and private players will be able to leverage the complementary effect of customer care more than the local and public providers. Therefore, we hypothesize:

*H3c: The complementary effect of customer care on the relationship between core service and customer satisfaction is higher for global providers than local providers.*

*H3d: The complementary effect of customer care on the relationship between core service and customer satisfaction is higher for private providers than public providers.*

## **Method**

### ***Data and Variables***

We obtained the data used in this study from a survey conducted by a leading market research firm headquartered in India. The market research firm conducted an online survey for cell phone users across seven South Asian countries that represent BOP markets (India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan, and Maldives) in 2008. The firm validated the survey telephonically for about 50% of the respondents by dialing the mobile numbers that respondents shared in the online survey. The surveys covered 3542 respondents who rated 34 mobile phone service providers in the seven countries. We coded the variables for this study from the survey (see Appendix A for the survey questionnaire, items, coding scheme for variables, and the Cronbach alphas for the multi item variables). In addition, we collected provider characteristics data (e.g., global, local, private or public) from publicly available sources and reports. India has maximum number of cell phone providers (13), followed by Pakistan (7), Bangladesh (5), and other countries (Sri Lanka-4, Nepal-2, Bhutan-1, Maldives-2).

Table 1 provides a description of variables used in this study. The dependent variable in our models is RSATO, a single item measuring the overall customer satisfaction with the current mobile service provider. Prior research suggests that overall customer satisfaction is a robust indicator of service performance in IT-enabled service settings (Kekre et al. 1995; Ramasubbu et al. 2008), and is an appropriate measure of service outcome in the cell phone context with wide customer base.

The five independent variables measure satisfaction with the core service (RSATCONN), the two dimensions of augmented services (value added service: RSATVA, customer care: RSATCUST) and the two components of peripheral services (sales and support: RSATSALE and billing account: RSATBILAC). Our use of these independent variables focusing on different aspects of customer satisfaction is consistent with the approach in prior work (Krishnan et al. 1999).

We controlled for demographic characteristics of the customers, such as age (AGE), gender (GENDER), monthly household income (HH\_INC), and mobile user's education (USR\_EDN). We include a control variable measuring the average wait time on hold in minutes before the customer care's response (WTIMECR), in the models to account for any influence of systemic service delays or interruptions on customer satisfaction.

Table 2 provides descriptive statistics and correlations between the focal variables. Survey respondents' age ranges from 13 years to 72 years, with an average age of about 27 year. Approximately 87% of respondents are male. The average monthly income is approximately 3500 in local currencies (e.g., Rupees 3500 in India). The average education of users is a college degree.



## Estimation Models

We used the ordinary least squares (OLS) estimation method to estimate overall satisfaction models, because the RSATO is an interval scale variable. The main OLS specification is as follows:

$$Y_i = \beta X_i + \epsilon \quad (1)$$

Where,  $Y_i$  is the dependent variable,  $X_i$  is a set of explanatory variables,  $\beta$  is a vector of parameters and  $\epsilon$  are disturbances associated with each observation.

## Results

Table 3 provides parameter estimates of customer satisfaction models. We find support for the hypotheses H1a, H1b, H1c, H1d and H1e. The estimated coefficients of satisfaction with connectivity (RSATCONN) (Column1, Table 3,  $\beta=0.267$ ,  $p<0.01$ ), satisfaction with value added services (RSATVA) (Column1, Table 3,  $\beta=0.138$ ,  $p<0.01$ ), satisfaction with customer care (RSATCUST) (Column1, Table 3,  $\beta=0.177$ ,  $p<0.01$ ), satisfaction with presale and sale process (RSATSALE) (Column1, Table 3,  $\beta=0.125$ ,  $p<0.01$ ), and satisfaction with billing process (RSATBILAC) (Column1, Table 3,  $\beta=0.168$ ,  $p<0.01$ ) are all positive and highly significant in the model. The comparison of coefficients across the independent variables shows that satisfaction with core service ( $\beta=0.267$  for RSATCONN) has the highest magnitude, followed by customer care ( $\beta=0.177$  for RSATCUST), indicating the relative high importance of core service and customer care on customer satisfaction.

We find support for hypotheses H2a and H2b. In the service augmentation interaction model, the estimated coefficient of the interaction term between RSATCONN and RSATVA is negative and highly significant (Column 2, Table 3,  $\beta=-0.058$ ,  $p<0.001$ ), and the estimated coefficient of the interaction term between RSATCONN and RSATCUST is positive and significant (Column 2, Table 3,  $\beta = 0.029$ ,  $p<0.1$ ). The negative interaction effect implies the substitution effect of value added service (RSATVA) on core service of connectivity (RSATCONN), and the positive interaction effect implies a complementary effect of customer care (RSATCUST) on connectivity (RSATCONN).

Columns 3, 4, 5, and 6 of Table 3 provide results from the interaction models differentiated by global, local, public and private providers. To compare the coefficients of the substitution and complementary effects across global and local providers, we coded a GLOBAL variable (e.g., global providers=1 and local=0). We then created two interaction terms; i.e., RSATVA X RSATCONN X GLOBAL and RSATCUST X RSATCONN X GLOBAL. We checked the T values of these two interaction terms by introducing them in the model. Similarly, to compare the coefficients across public and private providers, we checked the results of RSATVA X RSATCONN X PUBLIC and RSATCUST X RSATCONN X PUBLIC terms.

We find that value added service and core service interaction is significant and negative for both global and local providers, but the value of coefficient for global providers is less than the coefficient for local providers (e.g., Column 3, Table 3,  $\beta = -0.063$  for global, and Column 4, Table 3,  $\beta = -0.051$  for local providers). Comparison of the coefficients of value added service and core service interaction terms amongst the two groups of providers (e.g., global and local) indicates that the coefficients are significantly different (T-value is 2.13 and is significant at  $p=0.03$  level). These results support hypothesis H3a.

We also find that value added service and core service interaction is significant and negative for private providers (Column 5, Table 3,  $\beta = -0.089$ ,  $p<0.01$ ), but not significant for public providers (Columns 5 and 6 of Table 3). These results partially support hypothesis H3b. Comparison of the coefficients of value added service and core service interaction terms amongst the two groups of providers (e.g., private and public) indicates that the coefficients are significantly different (T-value is 1.78 with  $p=0.08$ ). These results partially support hypothesis H3b.

In case of customer care and core service interaction, we find that the interaction term is significant for global and private providers (Columns 3 and 5 of Table 3), but not significant for private and public providers (Columns 4 and 6 of Table 4). The coefficients of customer care and core service interaction terms amongst global and local providers differ significantly with T-value of 1.96 at  $p=0.05$  level. These results partially support hypothesis H3c. Among public and private providers the coefficients do not differ significantly with T-value of -0.86 at  $p=0.4$  level. These results partially support hypothesis H3d.

We tested for multi-collinearity by computing condition indices for all our estimation models. The highest variance inflation factor (VIF) was 2.07 in the direct effect models, indicating that multicollinearity is not a serious concern. The variables are mean-centered in the interaction models. The mean VIF was less than 2.0 in the interaction models after mean centering the variables that indicates that multicollinearity is not a major issue. The results are also similar in the interaction models with centered and non-centered independent variables. Because the dependent and independent variables came from the same survey instrument, we conducted Harman's one-factor test to assess the sensitivity of our results to common method bias. The factor analysis for key variables yielded multiple factors, some with eigen-values exceeding one. Because no single factor emerged dominant in accounting for most of the variance, common method variance does not appear to be a serious problem. In addition, the impact of method variance was tested by creating one marker variable (with all used indicators) and linking it to both independent and dependent variables. The impact of this method variable is insignificant which suggests that the common method bias should not be problematic in this study.

### ***Additional Analyses***

We conducted additional analyses to account for the effects of user heterogeneity in terms of age, income and education (the tables are not included for brevity). We checked the parameter estimates with the sample segmented by customer age into three categories, (e.g., Age less than 25, 25 to 35, above 35). The findings of the interaction effects are similar across the groups, in that value added service has a positive and customer care has a negative interaction effect across the age groups. Likewise, the interaction effects are similar across gender (e.g., male and female) and segments of customers differentiated by education (e.g., below high school and above high school level). However, for income, we find that interaction terms are significant only for the lower to middle-income group of customers, but not for higher income groups (e.g., above an income of 6000 in local currency); indicating the importance of middle and lower income group of customers in BOP markets in determining the value of service augmentation.

## **Discussion**

The main goal of this study was to examine how two dimensions of IT enabled service augmentation, e.g., value added service and customer care, interplay with core services to influence customer satisfaction. Along with the direct effects of the three sets of service exchanges, the core, augmented and peripheral services, we argued for the conditional value of service augmentation with respect to the core service, and proposed hypotheses for a substitutive effect for value added service and a complementary effect for customer care on the linkage between core service and customer satisfaction. The study is contextualized to cell phone services in BOP markets that are strategically challenging for providers due to the hyper-competition and high customer churn that characterizes these markets.

In terms of direct effects, we find that three sets of service exchanges, the core, augmented and peripheral services have positive and cumulative effect on the overall customer satisfaction, with the core service having maximum influence. This supports the widely held belief that a firm's core service is highly important, but other service exchanges cannot be ignored for their role in customer satisfaction. Further, we find that value added service has a substitutive effect on the relationship between core service and customer satisfaction, while customer care has a complementary effect. Thus, offering a number of low-quality value added services might be highly detrimental, and improving customer care can be highly influential for increasing satisfaction by mitigating customers' issues with the core service.

With respect to provider characteristics, we find that value added service has a higher substitution effect in the case of global providers than local providers, and for private providers than public providers. These findings indicate that while global providers may be better equipped financially and experientially to offer value added services, local providers may have an advantage due to their better understanding of the local institutional contexts. Similarly, private providers may be aggressive in offering more value added services to accrue more revenue than public providers do. We also find that customer care complements the core service on customer satisfaction in the case of global and private providers, but not in the case of local and public providers. These findings indicate the relative lack of success that local and public providers experience in focusing customer care to support core service delivery.

This study makes several contributions. First we extend prior literature that suggests that augmented service offerings play a significant role in customer satisfaction (Grönroos 1990), by empirically validating the direct significance and moderating effects of two dimensions of service augmentation, e.g., value added service and customer care, on overall customer satisfaction. In examining the relative influence of service augmentation on overall customer satisfaction, we contribute to the existing literature that has established linkage between customer service parameters (Ramasubbu et al. 2008), and service dimensions (Anderson et al. 2008; Krishnan et al. 1999) to influence overall customer satisfaction. Second, this study contributes to emerging research that suggests that measuring granular levels of service satisfaction provides a richer explanation of the differences of performance across different providers (Butcher et al. 2003). We contribute to this stream of literature by measuring and examining how the two dimension of service augmentation differ across different categories of providers (e.g., local, global; and private, public) in the context of cell phone services. Further, the findings contribute to the emerging literature on service dominant logic; in identifying how a dominant additional value based service can contribute towards value creation, in a low-tariff based service setting such as the low-ARPU based cell phone service (Vargo and Lusch 2008). Finally, we contribute to existing discussions in the information systems literature on service management strategy in the context of digitized services in BOP markets, and how different institutional factors play a role towards service differentiation in delivering digitized services (Rai and Sambamurthy 2006).

We acknowledge some limitations of the study that future research should seek to overcome. First, because of data limitations and the use of a cross-sectional design, our results are associational in nature. Longitudinal data across a number of years can help to determine the causal effect of service augmentation on customer satisfaction. Second, the empirical analysis was conducted in the context of one specific IT enabled service that may limit the generalizability of the results of the study to other contexts. Third, this study is limited to exploring the effects of two components of service augmentation on customer satisfaction that should motivate future studies to seek more nuanced factors related to service augmentation on customer satisfaction, such as the relative importance of entertainment, information or exchange related value added services, or personalized and automate customer care response systems on customer satisfaction.

We offer three managerial implications. First, the findings that the core, peripheral and augmented services have direct influence on overall customer satisfaction suggests that managers need to focus on all dimensions of their service offerings, rather than an exclusive focus on the core service or value added services. While the core service is important, ignoring the quality of augmented services might lead to a higher degree of customer dissatisfaction and eventually high attrition rates. Second, the negative moderating effect of value added services, and a positive moderating effect of customer care on the core service-customer satisfaction linkage should motivate managers to plan and strategize the provision of different augmented service offerings. Third, the provider characteristics with respect to being a global and local firm, or a private or public firm, have a bearing on the customers' evaluation of the quality of services. This is indicated by the differential influence of service augmentation for the different categories of providers. Overall, our findings imply that managers need to consider their positioning in a market, contextual and institutional factors, and practical implementation issues before offering a set of value added services in a market.

In conclusion, this study provides one of the first empirical tests to explore how two components of service augmentation- value added service and customer care, influence customer satisfaction with cell phone services. Our theoretical conceptualization is grounded in the service management literature, specifically to the service dominant logic conceptualization. We find that along with the direct effects of the components of service augmentation there is a negative moderation effect of value added service, and a positive moderation effect of customer care on the core service-customer satisfaction linkage. Moreover, we find that the moderating effects of service augmentation on core service are contingent on the provider characteristics and customer demographics. The study contributes to the literature that examines the importance of various service dimensions in affecting customer satisfaction.

**Table 1: Description of Variables**

Variable	Description
RSATO	Overall customer satisfaction with the service provider
RSATCONN	Satisfaction with the core service of the cell phone service (connection quality)
RSATVA	Satisfaction with value added services
RSATCUST	Satisfaction with customer care of the service provider
RSATSALE	Satisfaction with presale and sale process
RSATBILAC	Satisfaction with billing process of the service provider
AGE	Age of the cell phone user
GENDER	Gender (male=1, female=0)
HH_INC	Monthly household income in thousands of local currency, scale: 1=5k, to 8=100 k
USR_EDN	Cell phone user's education, in a scale of 1=no schooling to 7= postgraduate
WTIMECR	Wait time on hold in average minutes before customer response during interactions

**Table 2: Descriptive Statistics and Correlation amongst Variables**

	Variable	Obs	Mean	Std. Dev.	Min	Max	1	2	3	4	5	6	7	8	9	10	12
1	RSATO	3542	3.42	0.67	1	4	1.00										
2	RSATCONN	3523	3.33	0.68	1	4	0.56	1.00									
3	RSATVA	3452	3.36	0.67	1	4	0.51	0.46	1.00								
4	RSATCUST	3505	3.18	0.78	1	4	0.55	0.49	0.49	1.00							
5	RSATSALE	3506	3.52	0.60	1	4	0.42	0.38	0.39	0.35	1.00						
6	RSATBILAC	3428	3.23	0.86	1	4	0.53	0.38	0.42	0.47	0.37	1.00					
7	AGE	3542	27.45	8.44	13	72	0.02	0.03	0.06	0.01	-0.04	0.06	1.00				
8	GENDER	3542	0.87	0.34	0	1	0.00	0.01	0.01	-0.02	0.01	0.01	-0.03	1.00			
9	HH_INC	3466	3.47	2.07	1	8	-0.02	-0.03	-0.01	-0.07	-0.07	-0.01	0.18	0.02	1.00		
10	USR_EDN	3542	5.70	1.20	1	7	0.00	-0.02	0.01	-0.04	-0.02	0.02	0.17	0.03	0.25	1.00	
12	WTIMECR	3536	5.87	8.62	1	90	-0.11	-0.08	-0.11	-0.17	-0.04	-0.07	-0.03	0.00	-0.06	-0.06	1.00

All correlations greater than 0.10 are statistically significant at  $p < 0.001$ .

**Table 3: Service Augmentation and Customer Satisfaction**

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	Direct Effects	Service Augmentation Interaction Effects Models				
		All Providers	Global Providers	Local Providers	Private Providers	Public Providers
	RSATO	RSATO	RSATO	RSATO	RSATO	RSATO
RSATCONN	0.267*** (0.015)	0.265*** (0.016)	0.248*** (0.023)	0.285*** (0.021)	0.247*** (0.018)	0.301*** (0.034)
RSATVA	0.138*** (0.015)	0.126*** (0.016)	0.130*** (0.023)	0.115*** (0.021)	0.138*** (0.017)	0.084** (0.037)
RSATCUST	0.177*** (0.013)	0.184*** (0.013)	0.189*** (0.020)	0.179*** (0.018)	0.190*** (0.015)	0.168*** (0.031)
RSATSALE	0.125*** (0.016)	0.123*** (0.016)	0.123*** (0.022)	0.121*** (0.022)	0.161*** (0.017)	0.012 (0.035)
RSATBILAC	0.168*** (0.011)	0.168*** (0.011)	0.142*** (0.017)	0.186*** (0.015)	0.158*** (0.013)	0.195*** (0.025)
Interaction term (RSATCONN X RSATVA)		-0.058*** (0.019)	-0.063** (0.030)	-0.051** (0.025)	-0.089*** (0.022)	-0.001 (0.041)
Interaction term (RSATCONN X RSATCUST)		0.029* (0.017)	0.047* (0.026)	0.020 (0.022)	0.056*** (0.020)	-0.030 (0.033)
AGE	-0.001 (0.001)	-0.001 (0.001)	-0.002 (0.001)	0.001 (0.001)	-0.000 (0.001)	-0.002 (0.002)
GENDER	0.019 (0.024)	0.017 (0.024)	-0.006 (0.037)	0.031 (0.032)	0.021 (0.027)	0.009 (0.054)
HH_INC	0.004 (0.004)	0.004 (0.004)	-0.003 (0.006)	0.009 (0.006)	0.006 (0.004)	-0.000 (0.009)
USR_EDN	0.004 (0.007)	0.004 (0.007)	0.023 (0.011)	-0.008 (0.009)	0.003 (0.008)	0.011 (0.016)
WTIMECR	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.002 (0.001)	0.001 (0.002)
Constant	0.515*** (0.080)	3.423*** (0.052)	3.411*** (0.079)	3.410*** (0.070)	3.399*** (0.059)	3.462*** (0.115)
Observations	3,263	3,263	1,417	1,846	2,525	738
R-squared	0.514	0.515	0.504	0.529	0.533	0.480
Adj. R-squared	0.512	0.513	0.499	0.525	0.530	0.467
F stat./Chi-square	214.57***	191.66***	95.07***	114.22***	168.61***	39.02***

Standard errors in parentheses  
 Models 1 and 2 include country dummies  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix A: Survey Questionnaire and Coding Scheme for Variables

Variable	Survey Questions/Data and Coding
RSATO	Overall customer satisfaction with the service provider Question: At an overall level how satisfied are you with your current mobile service provider? Scale: 1=very dissatisfied, 2=somewhat dissatisfied, 3=somewhat satisfied, 4=very satisfied.
RSATCONN	Satisfaction with the core service (connection) of cell phone services Questions: How satisfied are you with: (1) overall network coverage & accessibility across city/ town/ state and less network down time, (2) strength of connection & calls not dropping (outdoor/ in building/ in vehicle), (3) voice quality (e.g., cross connection / humming / noise, etc.). Scale: 1=very dissatisfied, 2=somewhat dissatisfied, 3=somewhat satisfied, 4=very satisfied. Cronbach's alpha = 0.81
RSATVA	Satisfaction with the value added services Questions: How satisfied are you with: (1) time taken for activation of value added services (e.g., Roaming/STD/ISD/ Voice Mail), and (2) relevance of value added services on offer (e.g., SMS, clip, call forward/ call divert/ email/ ring tone/ caller tune etc.). Scale: 1=very dissatisfied, 2=somewhat dissatisfied, 3=somewhat satisfied, 4=very satisfied. Cronbach's alpha = 0.70
RSATCUST	Satisfaction with customer care of the service provider Questions: How satisfied are you with: (1) accessibility of the customer care representative (pre-recorded voice response menu, number and clarity of choices, time taken to speak to a representative), (2) time taken and the appropriateness of the solution provided to resolve the issues. (3) the ability and courtesy shown by customer care representative to understand and deal with your issues Scale: 1=very dissatisfied, 2=somewhat dissatisfied, 3=somewhat satisfied, 4=very satisfied. Cronbach's alpha = 0.85
RSATSALE	Satisfaction with presale and sale process Questions: How satisfied are you with, (1) the ease of locating a dealer to get a pre-paid connection/ re-charge coupons, (2) getting the desired denomination of re-charge/ top-ups coupons. Scale: 1=very dissatisfied, 2=somewhat dissatisfied, 3=somewhat satisfied, 4=very satisfied. Cronbach's alpha = 0.73
RSATBILAC	Satisfaction with the billing process Questions: How satisfied are you with: (1) the accuracy and integrity of the operator in deducting money for the calls you made. Scale: 1=very dissatisfied, 2=somewhat dissatisfied, 3=somewhat satisfied, 4=very satisfied.
AGE	Age of the respondent.
GENDER	Gender (male=1, female=0).
HH_INC	Monthly household income in thousands of local currency. Coding: 1=less than 5k, 2=5-10 k, 3=10-20 k, 4=20-30 k, 5=30-50 k, 6=50-75 k, 7=75-100 k, 8=more than 100 k. This was a bracketed variable with ranges, and we converted the bracketed variable to a continuous one by using end or mid-point values appropriately.
USR_EDN	User's education. Coding: 1=no schooling, 2=up to 4 years of schooling, 3= 5-9 years of schooling 4=up to 12 years, high school level of schooling, 5=some college, 6=graduate or post-graduate level of education in general stream, 7= graduate or postgraduate level of education in professional stream of education.
WTIMECR	Average wait time on hold in minutes before customer response. Question: What is the average waiting time (in minutes) for which you have to hold the phone and wait before you are actually been able to speak to the customer care representative.
<i>Provider characteristics data, collected from publicly available reports.</i>	
Provider Characteristics	Distribution of global, local, private, public, and total providers in countries: India : global=5, local=8, private=1, public=2, total=13 Pakistan : global=5, local=2, private=6, public=1, total=7 Bangladesh : global=3, local=2, private=4, public=1, total =5 Sri Lanka : global=3, local=1, private=3, public=1, total=4 Nepal : global=1, local=1, private=1, public=1, total=2 Bhutan : global=0, local=1, private=0, public=1, total=1 Maldives : global=2, local=0, private=2, public=0, total=2

## References

- Ahn, J.-H., Han, S.-P., and Lee, Y.-S. 2006. "Customer Churn Analysis: Churn Determinants and Mediation Effects of Partial Defection in the Korean Mobile Telecommunications Service Industry," *Telecommunications Policy* (30:10-11), pp. 552-568.
- Ahonen, T.T. 2012. *Tomi Ahonen Almanac 2012: The Mobile Telecoms Industry Annual Review for 2012*. TomiAhonen Consulting.
- Anderson, E.W., Fornell, C., and Lehmann, D.R. 1994. "Customer Satisfaction, Market Share, and Profitability: Findings from Sweden," *Journal of Marketing* (58:3), pp. 53-66.
- Anderson, S., Pearo, L.K., and Widener, S.K. 2008. "Drivers of Service Satisfaction," *Journal of Service Research* (10:4), pp. 365-381.
- Andersson, K., Foros, Å., and Steen, F. 2009. "Text and Voice: Complements, Substitutes or Both?," *Industrial and Corporate Change* (18:6), pp. 1231-1247.
- Bellman, E. 2011. "Cellphone Jugglers Seek Best Deals," in: *Wall Street Journal*. New York.
- Bitner, M., and Hubbert, A. 1994. "Encounter Satisfaction Versus Overall Satisfaction Versus Quality," in *Service Quality: New Directions in Theory and Practice*, Rust, R. (ed.). Thousand Oaks, CA: Sage.
- Bolton, R.N., Kannan, P.K., and Bramlett, M.D. 2000. "Implications of Loyalty Program Membership and Service Experiences for Customer Retention and Value," *Journal of the Academy of Marketing Science* (28:1), pp. 95-108.
- Butcher, K., Sparks, B., and O'Callaghan, F. 2003. "Beyond Core Service," *Psychology and Marketing* (20:3), pp. 187-208.
- Chen, P.-T., and Cheng, J.Z. 2009. "Unlocking the Promise of Mobile Value-Added Services by Applying New Collaborative Business Models," *Technological Forecasting and Social Change* (77:4), pp. 678-693.
- Chen, Z., and Dubinsky, A.J. 2003. "A Conceptual Model of Perceived Customer Value in E-Commerce: A Preliminary Investigation," *Psychology and Marketing* (20:4), pp. 323-347.
- Chesbrough, H. 2007. "Business Model Innovation: It's Not Just About Technology Anymore," *Strategy & Leadership* (35:6), pp. 12-17.
- Deloitte-Assocham. 2011. "Mobile Value Added Services (MVAS) - a Vehicle to Usher in Inclusive Growth and Bridge the Digital Divide." Available at : [http://www.traf.gov.in/WriteReadData/traf/upload/StudyPapers/17/ASSOCHAMMVAS\\_STUDY\\_paperfinal.pdf](http://www.traf.gov.in/WriteReadData/traf/upload/StudyPapers/17/ASSOCHAMMVAS_STUDY_paperfinal.pdf).
- Devaraj, S., Fan, M., and Kohli, R. 2002. "Antecedents of B2C Channel Satisfaction and Preference: Validating E-Commerce Metrics," *Information Systems Research* (13:3), pp. 316-333.
- Dong, B., Evans, K., and Zou, S. 2008. "The Effects of Customer Participation in Co-Created Service Recovery," *Journal of the Academy of Marketing Science* (36:1), pp. 123-137.
- Donner, J., and Escobari, M.X. 2010. "A Review of Evidence on Mobile Use by Micro and Small Enterprises in Developing Countries," *Journal of International Development* (22:5), pp. 641-658.
- Fornell, C. 1992. "A National Customer Satisfaction Barometer: The Swedish Experience," *Journal of Marketing* (56:1), pp. 6-22.
- Gerpott, T.J., Rams, W., and Schindler, A. 2001. "Customer Retention, Loyalty, and Satisfaction in the German Mobile Cellular Telecommunications Market," *Telecommunications Policy* (25:4), pp. 249-269.
- Gonsalves, G.C., Lederer, A.L., Mahaney, R.C., and Newkirk, H.E. 1999. "The Customer Resource Life Cycle: An Empirical Validation," *AMCIS 1999 Proceedings*.
- Grönroos, C. 1990. *Service Management and Marketing*. Lexington, MA: Lexington Books.
- Grönroos, C. 2000. *Service Management and Marketing: A Customer Relationship Management Approach*. Wiley.
- Gruber, H. 2005. *The Economics of Mobile Telecommunications*. Cambridge University Press.
- Gruber, H., and Verboven, F. 2001. "The Evolution of Markets under Entry and Standards Regulation -- the Case of Global Mobile Telecommunications," *International Journal of Industrial Organization* (19:7), pp. 1189-1212.
- Gruca, T., and Rego, L. 2005. "Customer Satisfaction, Cash Flow and Shareholder Value," *Journal of Marketing* (69:3), pp. 115-130.
- Grzybowski, L., and Pereira, P. 2008. "The Complementarity between Calls and Messages in Mobile Telephony," *Information Economics and Policy* (20:3), pp. 279-287.

- Hammond, A.L., World Resources, I., and International Finance, C. 2007. *The Next 4 Billion : Market Size and Business Strategy at the Base of the Pyramid*. Washington, DC: World Resources Institute, International Finance Corp.
- Hughes, N., and Lonie, S. 2007. "M-Pesa: Mobile Money for "Unbanked" Turning Cellphones into 24-Hour Tellers in Kenya," *Innovations: Technology, Governance, Globalization* (2:1-2), pp. 63-81.
- Jones, M.A., and Suh, J. 2000. "Transaction-Specific Satisfaction and Overall Satisfaction: An Empirical Analysis," *Journal of Services Marketing* (14:2), pp. 147-159.
- Kankanhalli, A., Lee, O.-K., and Lim, K.H. 2011. "Knowledge Reuse through Electronic Repositories: A Study in the Context of Customer Service Support," *Information & Management* (48:2-3), pp. 106-113.
- Karamchandani, A., Kubzansky, M., and Lalwani, N. 2011. "Is the Bottom of the Pyramid Really for You?," *Harvard Business Review* (89:3), pp. 107-111.
- Kekre, S., Krishnan, M.S., and Srinivasan, K. 1995. "Drivers of Customer Satisfaction for Software Products: Implications for Design and Service Support," *Management Science* (41:9), pp. 1456-1470.
- Khanna, T., and Palepu, K. 1997. "Why Focused Strategies May Be Wrong for Emerging Markets," *Harvard Business Review* (75:4), pp. 41-51.
- Khanna, T., Palepu, K.G., and Sinha, J. 2005. "Strategies That Fit Emerging Markets," *Harvard Business Review* (83:6), pp. 63-76.
- Kim, H.-S., and Yoon, C.-H. 2004. "Determinants of Subscriber Churn and Customer Loyalty in the Korean Mobile Telephony Market," *Telecommunications Policy* (28:9-10), pp. 751-765.
- Kim, M.-K., Park, M.-C., and Jeong, D.-H. 2004. "The Effects of Customer Satisfaction and Switching Barrier on Customer Loyalty in Korean Mobile Telecommunication Services," *Telecommunications Policy* (28:2), pp. 145-159.
- Kim, Y., Telang, R., Vogt, W.B., and Krishnan, R. 2010. "An Empirical Analysis of Mobile Voice Service and SMS: A Structural Model," *Management Science* (56:2), pp. 234-252.
- Krishnan, M.S., Ramaswamy, V., Meyer, M.C., and Damien, P. 1999. "Customer Satisfaction for Financial Services: The Role of Products, Services, and Information Technology," *Management Science* (45:9), pp. 1194-1209.
- Krishnan, M.S., and Subramanyam, R. 2004. "Quality Dimensions in E-Commerce Software Tools: An Empirical Analysis of North American and Japanese Markets," *Journal of Organizational Computing and Electronic Commerce* (14:4), pp. 223-241.
- London, T., and Hart, S.L. 2004. "Reinventing Strategies for Emerging Markets: Beyond the Transnational Model," *Journal of International Business Studies* (35:5), pp. 350-370.
- Lusch, R.F., Vargo, S.L., and Wessels, G. 2008. "Toward a Conceptual Foundation for Service Science: Contributions from Service-Dominant Logic," *IBM Systems Journal* (47:1), pp. 5-14.
- Martínez-Jerez, F.A., and Narayanan, V.G. 2007. "Strategic Outsourcing at Bharti Airtel Limited." Harvard Business Review Case No. 9-107-003, pp. 1-20.
- Medianama Report. 2011. "Fy11: Vodafone India Data & VAS Revenues up, Arpu Down; Voip & Net Neutrality, by Nikhil Pahwa, Available at <http://www.Medianama.Com/2011/05/223-Fy11-Vodafone-India-Data-Voip-Net-Neutrality>."
- Mithas, S., Krishnan, M.S., and Fornell, C. 2005. "Why Do Customer Relationship Management Applications Affect Customer Satisfaction?," *Journal of Marketing* (69:4), pp. 201-209.
- Niculescu, M.F., and Whang, S. 2011. "Codiffusion of Wireless Voice and Data Services: An Empirical Analysis of the Japanese Mobile Telecommunications Market," *Information Systems Research* (Articles in Advance ), pp. 1-20.
- Niraj, R., Padmanabhan, V., and Seetharaman, P.B. 2008. "A Cross-Category Model of Households' Incidence and Quantity Decisions," *Marketing Science* (27:2), pp. 225-235.
- Orman, L.V. 2007. "Consumer Support Systems," *Communications of the ACM* (50:4), pp. 49-54.
- Ostrom, E. 2005. *Understanding Institutional Diversity*. Princeton: Princeton University Press.
- Ozment, J., and Morash, E. 1994. "The Augmented Service Offering for Perceived and Actual Service Quality," *Journal of the Academy of Marketing Science* (22:4), pp. 352-363.
- Parasuraman, A., Zeithaml, V.A., and Berry, L.L. 1994. "Reassessment of Expectations as a Comparison Standard in Measuring Service Quality: Implications for Further Research," *The Journal of Marketing* (58:1), pp. 111-124.
- Piccoli, G., Brohman, M.K., Watson, R.T., and Parasuraman, A. 2004. "Net-Based Customer Service Systems: Evolution and Revolution in Web Site Functionalities," *Decision Sciences* (35:3), pp. 423-455.



- Prahalad, C.K. 2008. *The Fortune at the Bottom of the Pyramid*. Upper Saddle River, NJ: Wharton School Publ.
- Rai, A., and Sambamurthy, V. 2006. "Editorial Notes--the Growth of Interest in Services Management: Opportunities for Information Systems Scholars," *Information Systems Research* (17:4), pp. 327-331.
- Ramasubbu, N., Mithas, S., and Krishnan, M.S. 2008. "High Tech, High Touch: The Effect of Employee Skills and Customer Heterogeneity on Customer Satisfaction with Enterprise System Support Services" *Decision Support Systems* (44:2), pp. 509-523.
- Ray, G., Muhanna, W.A., and Barney, J.B. 2005. "Information Technology and the Performance of the Customer Service Process: A Resource-Based Analysis," *MIS Quarterly* (29:4), pp. 625-652.
- Reinartz, W., and Ulaga, W. 2008. "How to Sell Services More Profitably," *Harvard Business Review* (86:5), pp. 90-96.
- Rust, R.T., Moorman, C., and Dickson, P.R. 2002. "Getting Return on Quality: Revenue Expansion, Cost Reduction, or Both?," *Journal of Marketing* (66:4), pp. 7-24.
- Seetharaman, P.B., Chib, S., Ainslie, A., Boatwright, P., Chan, T., Gupta, S., Mehta, N., Rao, V., and Strijnev, A. 2005. "Models of Multi-Category Choice Behavior," *Marketing Letters* (16:3/4), pp. 239-254.
- Sirdeshmukh, D., Singh, J., and Sabol, B. 2002. "Consumer Trust, Value, and Loyalty in Relational Exchanges," *The Journal of Marketing* (66:1), pp. 15-37.
- Telecoms.com. 2009. "Value Added Services Provide Arpu Boost in Middle East." *telecoms.com*, Deceperber 7, from <http://www.telecoms.com/16834/value-added-services-provide-arpu-boost-in-middle-east/>
- TRAI. 2012. "Highlights of Telecom Subscription Data as on 31st December 2011," in: *Telecom Regulatory Authority of India*. New Delhi, India.
- Vargo, S.L., and Lusch, R.F. 2004. "Evolving to a New Dominant Logic for Marketing," *Journal of Marketing* (68), pp. 1-17.
- Vargo, S.L., and Lusch, R.F. 2008. "Service-Dominant Logic: Continuing the Evolution," *Journal of the Academy of Marketing Science* (36:1), pp. 1-10.
- Woodruff, R.B., and Flint, D.J. 2006. "Marketing's Service-Dominant Logic and Customer Value," in *The Service-Dominant Logic of Marketing: Dialog, Debate, and Directions*, R.F. Lusch and S.L. Vargo (eds.). Armonk, NY: M.E. Sharpe, pp. 183-195.
- Xu, D., and Shenkar, O. 2002. "Institutional Distance and the Multinational Enterprise," *The Academy of Management Review* (27:4), pp. 608-618.