

## Marketing Mix Drivers of Clients Satisfaction in Technology-enabled Service: Study of Nigerian GSM Subscribers

Aminu Ahmad, School of Management Technology, Tafawa Balewa University, Nigeria, [aminu\\_aa@yahoo.com](mailto:aminu_aa@yahoo.com)  
Hartini Ahmad PhD, College of Business, Universiti Utara Malaysia, [hartini@uum.edu.my](mailto:hartini@uum.edu.my)

### Abstract

*Rapid diffusion of mobile telephone services is accompanied with low satisfaction and high switching behavior many markets. Despite the popularity of technology diffusion studies in marketing literature, limited research concentrate on the impact of marketing mix variables vis-à-vis clients' satisfaction. Much fewer studies were conducted in developing nations. This paper investigates the influence of marketing mix on clients' satisfaction with innovation adoption in Nigerian GSM market. Building on Technology Adoption Life-Cycle Model and extensive literature review, six constructs were theoretically developed and statistically validated. Multiple regression run on a sample of 373 subscribers drawn from four universities, indicates the five marketing mix variables predict 52% of the variance on clients' satisfaction. Furthermore beta coefficients revealed Core Service (0.38) makes the strongest unique contribution in explaining clients' Satisfaction followed by Pricing at 0.22, while Distribution (0.072) is the only variable not making significant contribution to the model.*

Keywords: client satisfaction, telecommunications, mobile, Nigeria.

### 1. Introduction

The pace of technology innovation has reached an unusually high proportion especially in the last few decades where progress witnessed matched that of the entire nineteenth century (Kurzweil, 1998). However, while breakthrough innovations are recorded in space, bio and computing technologies almost on daily basis, few industries match the rate of diffusion taking place in telecommunication. Theoretically, diffusion pattern is influence by a number of factors notably; consumer behaviour, customer sophistication and per capita income (Puumalainen and Sundqvist, 2005) nonetheless telecommunication (particularly mobile telephony) services are receiving rapid diffusion irrespective of country characteristics. In Nigeria for example from little less than 100,000 telephone subscribers in early 2001 (before GSM roll-out) to whopping 25 million in 2006 (Ahmad, 2007).

Despite rapid diffusion however, mobile telephone represents an industry where consumers' perceptions and satisfaction judgements are continuously changing due to intense competition (Busacca and Padula, 2005, p. 544). Survey 'on US consumers' perceptions of mobile service show that the level of satisfaction is much lower for mobile service carriers compared to other service sectors. In fact, 35 percent of US mobile subscribers in 2004 reported that they were considering switching mobile service carriers' (Lim et al., 2006, p. 208). As a result telecommunications firms are losing 2-4 percent of their customers monthly, leading to loss of millions in revenue (Aydin and Özer, 2005). It becomes imperative for telecom firms to ensure clients' satisfaction, as it leads to loyalty, continuous patronage, positive word of mouth, paying less attention to advertisements of competitors, delivers more ideas and suggestions (Hesselink and Wiele, 2003), and ultimately

increased market share, profitability, and customer retention (Anderson, Fornell and Lehman, 1994; Ittner and Larcker, 1998; Rust and Zahorik, 1993). Effective marketing becomes an essential ingredient for success in mobile telephony industry. However, despite numerous technology diffusion research in marketing literature, there are limited studies conducted in developing nations (Talukdar et al., 2002). Similarly previous studies ignored the impact of marketing-mix variables in diffusion of technological innovations (Danaher et al., 2001). There are also few studies on customer service encounters through technological interfaces (Meuter et al., 2000), yet they mainly concentrate on internet interface (Bansal et al., 2004). As such Ba and Johansson (2006) express the need for research on managing technology-based service process vis-à-vis customer satisfaction. Against this background the paper aims to evaluate the overall and relative influence of marketing mix variables on clients' satisfaction with technology adoption in Nigerian GSM market.

### 2. Theoretical Framework

Rogers (1995) the major proponent of the *Diffusion Theory*, argued that four variables collectively influence diffusion process: the innovation; how information about the innovation is communicated; time; and the nature of social system. Building on *Individual Innovativeness theory* one of the subset of the meta-theory of diffusion (Surry, 1997), Norman (1998) and Moore (1991 & 1995) proposed Technology Adoption Life Cycle Model (TALCM). The model argued success in marketing technology products entails applying appropriate marketing strategies to different categories of adopters. Hence, unless technology vendors match stages/customers with appropriate marketing strategies, customers' satisfaction, market share and sustainable profit are compromised. This theoretical premise encourage

extensive literature review in marketing technology-enabled services with special interest in telecommunication/mobile telephony in order to customize the model since most innovation studies concentrates on tangible technology (Puumalainen and Sundqvist, 2005).

Against this background Grönroos (1990 & 1994) points the need to perform tasks other than traditional marketing mix when dealing with products that require repairs; maintenance; delivery; installation; interactivity; long-term relationship among others. As a result he encourages the inclusion of customer support as an integral part of marketing effort. Obviously GSM services share at least some of the aforementioned features. Likewise Meldrum (1995) observed that technology vendors need to invest in both technology infrastructures such as efficient offering, design capabilities, compatibility among others, as well as marketing infrastructure to 'enable the efficient sale, distribution, support and promotion' (p.55), to excel in the challenging high-tech environment. In a nutshell it's increasingly clear that the traditional marketing mix variable requires fine turning to be effective in marketing technology products (Grønhaug and Möller, 2005), as the popular 4Ps version has been heavily criticize for its inability to address different marketing contexts (Rafiq and Ahmed, 1995). Extensive review of literature and focus group analysis revealed nine marketing mix variables; core service, pricing, promotion, informational and transactional. Others are distribution, reliability, customer service and personalization that influence client's satisfaction. However, Factor Analysis (FA) performed on pilot data set only validates five out of the nine theoretical dimensions as well a dimension of client satisfaction, viz;

**Core Service:** (Athanasopoulos and Iliakopoulos, 2003; Francis and Abu El-Ata, 2003; Fernandez and Kakani, 2006; Gaski and Etzel, 1986; Lim et al., 2006; Steward, 1993).

**Pricing:** (Asaari and Karia, 2001 & 2003; Gaski and Etzel, 1986; Joo et al., 2002; Danaher et al., 2001).

**Distribution:** (Asaari and Karia, 2001 & 2003; Athanasopoulos and Iliakopoulos, 2003; Francis and Abu El-Ata, 2003; Meuter et al., 2000).

**Value-Added Service:** (Cheng and Liao, 2007; Francis and Abu El-Ata, 2003; Fernandez and Kakani, 2006; Gilbert and Kendall, 2003; Kennedy, 2006; Lim et al., 2006).

**Customer Service:** (Asaari and Karia, 2001 & 2003; Athanasopoulos and Iliakopoulos, 2003; Bansal et al., 2004; Fernandez and Kakani, 2006; Gummesson, 1994; Lim et al., 2006; Mittal and Lassar, 1996).

**Clients Satisfaction:** (Athanasopoulos and Iliakopoulos, 2003; Ba and Johansson, 2006; Cronin et al., 2000; Lim et al., 2006; Zeithaml et al., 1996).

Hence we hypothesise a positive relationship between marketing mix variables and clients'

satisfaction with GSM adoption in Nigeria. Specifically previous studies (Bolton and Drew, 1991; Lim et al., 2006; Varki and Colgate, 2001; Woo and Fock, 1999) establish positive relationship with varying influence level between transmission/network quality; network coverage; pricing/billing; data services; and customer service on clients' satisfaction/loyalty judgments, largely in developed nations and/or early market. Hence we also hypothesize that marketing mix variables have different level of influence on clients' satisfaction.

### 3. Methodological Issues

#### *Pilot Results*

Since there was no explicit existing scale measuring customer's perception of GSM provider's marketing mix variables-more especially that takes into cognisance the operating environment, new items were adopted, adapted or supported from myriad of previous studies and focus group analysis. Focus group analysis with 18 (3 staff and 15 students) randomly selected GSM users lead to re-phrasing and inclusion of a number of items particularly relevant to the local environment. This was followed by a pilot study from 120 conveniently sample from Abubakar Tafawa Balewa University (ATBU), Nigeria. All items were measured on five-point likert scales anchored from "strongly disagree" (1) to "strongly agree" (5). Exploratory Factor Analysis (EFA), via a Principal Component Factoring (PCF) was run to explore correlations among 77 independent variable items (Core Service 09; Pricing 10; Distribution 09; Informational 08; Promotion 10; Customer Service 09; Transactional 07; Personalization 08; and Reliability 07) in one group and eleven items in clients satisfaction to discover groups of related items in line with Lewis (2002) and Netemeyer et al., (2003). KMO measure of sampling adequacy for marketing mix-independent variables 0.726 and 0.916 for clients' Satisfaction-dependent variable as well as significant Bartlette's tests of sphericity at 0.000 for both categories provided support for the factorability of the pilot data.

When items with a loading of less than 0.30 or with significant cross loadings on two or more factors were dropped, a 5-factor solution explaining around 41% of the total variance emerged. Although initial eigenvalues supported more factors, however *Kaiser Criterion* often exaggerates the true number of factors (Lance et al., 2006). Hence, the underlying model, literatures as well as statistical results reported influence the reliance on five factors. PCF for Client Satisfaction revealed a much cleaner result, after deleting only two items a one factor solution emerged on the basis of eigenvalues that explained over 60% of the total variance. Therefore the final instrument is a much shorter version with a total of 60 items, 51 measuring the five marketing mix constructs (Core Service 09; Pricing 08; Distribution 10; Value-Added Service 11; Customer Service 13) and nine items measuring clients' Satisfaction.

*Population and Sampling*

The research was conducted among the university subscribers of GSM service in Nigeria. A total of 600 questionnaires were distributed at four Nigerian universities using stratified sampling. University of Lagos and University of Port-Harcourt from south, while Bayero University Kano and University of Abuja in the northern part of the country. The spread is consistent with the views of Athanassopoulos and Iliakopoulos (2003) regarding the importance of geographic coverage in telecommunication discourse and the dependent nature of the range and quality of GSM offering on regional technologies. Out of which 481 were retrieved however, only 390 were considered fit for further analysis after removing unfilled and morbidity cases. Similarly normality test lead to the deletion of 17 univariate outliers. Below is a summary of the sample:

Table 1 Sample Characteristics

Category	Sub-divisions/Frequencies/Percentage
Gender	Male 241(64.6%); Female 129(34.6%); Not Declared 3(0.8%)
Age	<18yrs 74(19.8%); 18-36yrs 258(69.2%); 37-55yrs 37(9.9%); > 55yrs 4(1.1%)
Status	Students 314(84.2%); Academic Staff 59(15.8%)
University	BUK 111(29.8%); UOA 77(20.6%); UOL 78(20.9%); UOP 107(28.7%)
Education	Diploma 23(6.2%); Degree 218(58.4%); Masters 97(26.0%); PhD 25(6.7%); Others 10(2.7%)
GSM Providers	Celtel 49(13.1%); Glo Mobile 84(22.5); Mtel 23(6.2%); MTN 217(58.2%)
Experience	<2yrs 84(22.5%); 2-5yrs 237(63.5%); >5yrs 52(13.9%)
Subscription	Contract/Post paid 20(5.4%); Prepaid 353(94.6%)
Source of Income	Dependent 168(45.0%); Salary 130(34.9%); Self-Employed 72(19.3%); Others 3(0.8%)
Monthly Income	<N10,000 140(37.5%); N10,000-N64,999 165 (44.2%); >N65, 000 68(18.2%)
Monthly Usage	<N1,000 118(31.6%); N1000-N5,999 184(49.3%); >N6000 71(19.0%)

The profile indicate sampling adequacy, as virtually all indices reflect marketplace figures, for example gender and academic pursuit reflects the actual statistics. In the same way status of subscription and service providers also mirror the real market share, indicating a sort of sampling validity in line with Aydin and Özer (2005).

**4. Analyses***Constructs Validity*

Principle Axis Factoring (PAF), correlation of constructs and reliability analysis were used to examine constructs validity. Unidimensionality was assessed via eigenvalues, factor loading and eigenvalues ratio. For example, with regard to eigenvalues, none of the six factors have a second

eigenvalue reaching one, hence evidence of absolute unidimensionality, while on the basis of factor loading all constructs exceed the 0.30 loading given the sample size (Hair et al., 2006), after deleting some items. Finally on the basis of eigenvalues ratio Pricing, Value-added Service and Client satisfaction meet the stringent 4.0 cut-off indicating strict unidimensionality (Hattie, 1985) while other constructs Core Service (3.641), Distribution (3.508) and Customer Service (3.237) have eigenvalues ratios exceeding 3.0 indicating essential unidimensionality. Likewise, convergent validity is evidence based on aforementioned factor loading. Although statistically significant however, not all the factors meet the stringent cut-off of 0.45 (Joreskog and Sorbom, 1989). However, clean factor structure and internal consistency further justify convergent validity.

Discriminant validity is evident as the highest correlations between marketing mix variables of 0.495 between Core Service and Value-added Service is lower than the benchmark of 0.70 (Sekaran, 2003). Correspondingly, TALCM assumed the five marketing mix dimensions are related to each other and together influence clients Satisfaction. These relationships are supported by the correlations, demonstrating evidence of nomological validity. Additionally recent studies (see for example, Beck and Wade, 2002; Fernandez and Kakani, 2006; Picard, 2005; Wong and Hiew, 2005) suggest Core Service and Value-added Service as most important elements of GSM service. These theoretical postulations are also supported by the correlation; accordingly Value-added Service come second to Core Service in strength of correlation with Clients Satisfaction at 0.512 and 0.645 respectively, justifying nomological validity in both direction and strength of relationship. Results of reliability analysis indicate constructs internal consistency exceeds the 0.70 (Nunnally, 1978) acceptable cut-off point.

*Constructs Reliability and Items Loadings**Core Service  $\alpha=0.749$* 

Offers optimal service in terms of call clarity 0.599

Offers good SMS service in terms of certainty/speed of delivery 0.627

My GSM provider don't care enough about how well their services perform (R) 0.423

Offers good quality Multi-media services MMS (sound, pictures, video) 0.464

My GSM provider offers the best call/voice services in the industry 0.480

Many of the services offered by my GSM provider are defective (static calls/undelivered SMS) (R) 0.587

The quality of services offered by my GSM provider has consistently improve overtime 0.595

I am very satisfied with the core services (call & Messages) offered by my GSM Provider 0.531

*Pricing  $\alpha=0.759$* 

Charges low tariff/bills for call/air time 0.780

Charges low tariff for SMS 0.576

In, general I am satisfied with the pricing policy of my GSM provider 0.673

Charges appropriate price for international roaming service 0.495

Charges low price for its value-added services (news, sports, weather, movie guide etc) 0.413

My GSM provider's charges are reasonable considering the high cost of doing business 0.615

*Distribution  $\alpha=0.714$*

Limited coverage of the major road networks in the country (R) 0.473

Adequately covers the rural areas 0.431

Regularly experience system failure leading to service failure (R) 0.693

Frequent service failure due to extreme whether (rainfall, storm, heavy wind) (R) 0.567

Frequently witness weak signal strength (R) 0.691

The service coverage (geographic/availability) of my GSM provider is below standard (R) 0.472

*Value-Added Service  $\alpha=0.794$*

Readily available commercial information (stock price, foreign exchange & interest rates) 0.613

Provides extensive coverage of sport results and headlines 0.715

Offers full range of entertainment news (movie & cinema guide, music charts) 0.672

Information provided is generally accurate 0.502

Provides information about location area identity 0.425

Offers Internet services (browsing, email) 0.590

Offers facilities for downloads (music/ring tone, movie, games, photographic, logo) 0.540

Offers direct link to stock monitoring/trading 0.444

Generally, the informational services of my GSM provider are commendable 0.444

*Customer Service  $\alpha=0.721$*

Highly responsive customer support staff in handling subscribers' problems 0.575

Long delay before talking to customer service representative (R) 0.465

Customer support centre staff lack the technical competence to solve most problems (R) 0.451

Speedy response to request such as SIM replacement 0.429

Customer support centers are located in all part of the country 0.469

Unfriendly customer support staff (R) 0.539

Provides effective avenue for registering complain and displeasure 0.458

Regularly inform/apologizes for impending service failure 0.554

Never apologizes for sudden service failure (R) 0.471

*Overall Satisfaction  $\alpha=0.879$*

I consider my GSM provider as the first choice for mobile telephony 0.658

I have said positive things about my GSM provider 0.821

It is a poor choice to use this GSM operator (R) 0.715

I will continue my subscription with my GSM provider 0.676

The service of my GSM provider meets my expectations 0.678

I would never use this GSM provider again (R) 0.694

I have great confidence on my GSM provider 0.653

I consider my GSM provider as the most reliable operator in the industry 0.690

(R)=Reverse Items

When cross and low loading items were deleted the final scale only includes 46 items as shown above. The foregoing analysis provides preliminary evidence to support the meaningfulness and appropriateness for using the five marketing mix dimensions and Clients Satisfaction in Nigerian GSM market (Ahmad and Ahmad, 2007).

*Evaluating the Model*

Examination of multiple regression assumptions revealed none was violated, after deleting four cases, two residual values and multivariate outliers each, hence the appropriateness of the dataset for regression model. From table 2 the five independent variables (Core Service, Pricing, Distribution, Value-added Service and Customer Service) together explain 52% of the dependent (Client Satisfaction) variable. This means that the model i.e. marketing mix explains 52% of the variance in Clients Satisfaction which is highly significant (Sig. =.000 i.e.  $p<.0005$ ) as indicated by the F-value of 80.35,

Table 2 Model Summary, Beta & Collinearity Statistics

	F	Sig.	R	R <sup>2</sup>	Adjusted R <sup>2</sup>
Model Summary	80.35	.000 <sup>a</sup>	.725 <sup>a</sup>	.525	.519
Predictors	CS	P	D	VAS	CTS
Standardized $\beta$ Coefficients	0.380	.224	0.072	0.215	0.098
$\beta$ Sig.	.000	.000	.094	.000	.024
Tolerance Level	.566	.837	.705	.733	.696

therefore the null hypothesis which states there is no relationship between the marketing mix variables and Clients' Satisfaction in Nigerian GSM industry is rejected. Next section sought to find the relative importance of each variable.

*Evaluating Independent Variables*

Beta coefficient presented in Table 2 revealed the relative importance of each of the variables. Inspection of the Sig. column revealed except Distribution all the marketing mix variables under study makes significant unique contribution to Clients Satisfaction. Furthermore standardized Beta coefficients indicate Core Service has the largest coefficients of 0.38; hence it makes the strongest contribution in explaining Clients Satisfaction, when the variance explained by all other variables in the model is controlled for. Pricing makes the second largest contribution at 0.224, closely followed by Value-added Service at 0.215. Customer Service makes a significant but trifling contribution of 0.098; finally Distribution is making an insignificant contribution of only 0.072. Hence, the second alternate hypothesis is upheld i.e. marketing mix variables have different level of influence on Clients Satisfaction.

### 5. Discussion & Implication

Findings of this research are consistent with TALCM and recent trend. The model postulates that appropriate marketing of technological innovation significantly influence its diffusion and hence market share and profitability (Moore, 1991&1995; Norman, 1998). Especially since market share is a function of Clients Satisfaction due to high switching behaviour (Asaari and Karia, 2001 & 2003 Lee et al., 2001; Lim et al., 2006). Likewise while price considerations have been key to loyalty and customer satisfaction in mobile telecom (Athanasopoulos, 2000; Bolton and Drew, 1991; Varki and Colgate, 2001), recent studies (Beck and Wade, 2003; Fernandez and Kakani, 2006; Picard, 2005; Wong and Hiew, 2005) suggest Core Service and Value-added Service are the critical part of GSM offering. Finding of this research expressed in beta coefficients indicate Core Service, Pricing and Value-added Service as the most important drivers of Clients' Satisfaction. With youth constituting 69.2% (age 18 to 36yrs) the relative importance of Value-Added Service can be explain in the light of the demographic distribution of this research. This is because youth are the most fertile group for absorbing innovative services in mobile communications (Gilbert and Kendall, 2005; Wong and Hiew, 2005), largely offered via Value-added Service.

On the other Picard (2005) observed mobile broadcasting services will succeed only when clients are willing to invest in new hardware and software, pay service charges, and use their time differently. However, in addition to the fact that new handsets made it possible for clients to enjoy broadcasting services without making special investment in hardware and/or software, the demographics of this study (youth and educated) are also more likely to demand services such as sports news, music chart alert, music/ringtones download among others. Similarly the pay per service pricing strategy adopted by Nigerian operators' also engenders adoption of the service. Hence, evolving handsets, appropriate segmentation and pricing are critical for the adoption of Value-added service.

Research on drivers of customer satisfaction among Hong Kong mobile telecommunication subscribers found transmission quality and network coverage at top (Woo and Fork, 1999). This research however founds distribution having insignificant contribution; this can be due to two related points. First; Woo and Fork (1999) studied relatively early stage of mobile telecommunication, theoretically this stage is dominated by enthusiasts/visionaries and their major concern is product availability (Moore, 1991 & 1995; Norman, 1998) hence distribution (network coverage) is critical. However, this research surveyed middle stage where pragmatists dominate the market, a stage where network coverage is taking for granted, and the critical factors are product quality and wise pricing strategy (Moore, 1991 & 1995; Norman,

1998). Second, at second stage it is assume that all serious operators must have virtually covered the market.

In synopsis, findings of this study provide helpful guidelines for GSM providers in understanding the overall and relative importance of marketing mix variables in engendering satisfactory adoption of technology innovation. Theoretically, the research empirically expand literature on TALCM to four under represented areas/circumstances: developing nations, intangible offering, oligopolistic market and highly regulated sector.

The sample of this only research represents a segment of GSM subscribers from one sector of technology-enabled service, scales used were also only subjected to EFA. Hence, further research need to confirm the scales and explore other segments of subscribers as well as technology-enabled services.

### 6. References

- [1] Ahmad, A. "Technology Adoption Life Cycle Model and Market Share of Global System for Mobile Communication (GSM) Firms in Nigerian: An Appraisal," *Journal of League of Researchers in Nigeria* (8:2), December 2007, pp. 89-95.
- [2] Ahmad, A., and Ahmad, H. "Validation Study on Marketing Mix and Customer Satisfaction in Technology-enabled Services: Evidence from Nigerian GSM Market," *Nigerian Journal of Management Technology* (1:1), July 2007, pp.1-13.
- [3] Anderson, E. W., Fornell, C., and Lehman, D. R. "Customer Satisfaction, Market Share, and Profitability: Findings from Sweden," *Journal of Marketing* (58), July 1994, pp. 53-66.
- [4] Asaari, M. H. A. H., and Karia, N. *Behavior of Cellular Subscribers: Demands and Satisfactions*, Refereed Proceeding, International Seminar on Consumer and Consumerism: Issues and Challenge, Universiti Utara Malaysia, Kedah, Malaysia, October 2001, pp. 23-25.
- [5] Asaari, M. H. A. H., and Karia, N. *Business Strategy: Customer Satisfaction among Cellular Providers in Malaysia*, The European Applied Business Research Conference, Refereed Proceeding, Venice, Italy, June 2003, pp. 9-13.
- [6] Athanasopoulos, A. D., and Iliakopoulos, A. "Modeling Customer Satisfaction in Telecommunications: Assessing The Effects Of Multiple Transaction Points On The Perceived Overall Performance Of The Provider," *Production and Operations Management* (12:2), January 2003, pp. 224-245.
- [7] Aydin, S., and Özer, G. "The analysis of antecedents of customer loyalty in the Turkish mobile telecommunication market," *European Journal of Marketing* (39:7/8), July 2005, p. 910-925.
- [8] Ba, S., & Johansson, W. C. "An Exploratory Study of the Impact of e-Service Process on Online Customer Satisfaction," *Social Science Research Network*, 2006, Retrieved March 20, 2007, from <http://ssrn.com/abstract=951731>



- [9] Bansal, H. S., McDougall, G., Dikolli, S.S., and Sedatole K. L. "Relating E-satisfaction to Behavioral Outcomes: An Empirical Study," *Journal of Services Marketing* (18:4), 2004, pp. 290-302
- [10] Beck, J.C., and Wade, M.E. *DoCoMo – "Japan's Wireless Tsunami: How One Telecom Created a New Market and Became a Global Force"*, AMACOM, NY, 2002.
- [11] Bolton, R. N., and Drew, J. H. "A Multistage of Customers' Assessment of Service Quality and Value," *Journal of Consumer Research* (17), 1991, pp. 375-384. In Athanassopoulos, A. D., and Iliakopoulos, A. "Modeling Customer Satisfaction in Telecommunications: Assessing The Effects Of Multiple Transaction Points On The Perceived Overall Performance Of The Provider," *Production and Operations Management* (12:2), January 2003, pp. 224-245.
- [12] Busacca, B., and Padula, G. "Understanding the relationship between attribute performance and overall satisfaction: Theory, measurement and implications," *Marketing Intelligence & Planning* (23:6/7), June 2005, pp. 543-562.
- [13] Cheng, C-J., and Liao, S. "Congruence/Incongruence Perception of Product Strategy and Business Performance: By Contrasting Organizations and Consumers from Taiwanese Telecommunications Industry," *Journal of American Academy of Business* (10:2), March 2007, pp. 275-282.
- [14] Cronin, JR. J. J., Brady, M. K., and Hult, G. T. M. "Assessing the Effects of Quality, Value, and Customer Satisfaction on Consumer Behavioral Intentions in Service Environments," *Journal of Retailing* (76:2), 2002, pp. 193-218.
- [15] Danaher, P. J., Hardie, B. G. S., and Putsis, Jr. W. P. "Marketing-Mix Variables and the Diffusion of Successive Generations of a Technological Innovation," *Journal of Marketing Research* (38:4), November 2001, pp. 501-514.
- [16] Fernandez, J., and Kakani, R. K. (2006). Understanding Industry Dynamics and Scenario Prediction in an Emerging Environment: Convergence of Media & Telecom. *XLRI Working Paper* (06:19), December 2006, pp.1-37.
- [17] Francis, J. C., and Abu El-Ata, M. *Benchmarking Mobile Network QoS*, Proceedings of the 36th Hawaii International Conference on System Sciences, Big Island, HI, USA, January 2003,
- [18] Gaski, J. F., and Etzel, M. J. "The index of Consumer sentiment toward marketing," *Journal of Marketing* (50), July 1986, pp. 71-81.
- [19] Gilbert, A., and Kendall, J. D. *A Marketing Model for Mobile Wireless Services*. Proceedings of the 36th Hawaii International Conference on System Sciences, Big Island, HI, USA, January 2003, pp. 89-98.
- [20] Grønhaug, K., and Möller, K. "High-tech Marketing: Fact or Fiction?" *Finnish Journal of Business Economics* (1:05) 2005, pp. 91-104.
- [21] Grönroos, C. *Service Management and Marketing: Managing the Moments of Truth in Service Competition*, Lexington Books, Lexington, MA, 1990.
- [22] Grönroos, C. "From marketing mix to relationship marketing: towards a paradigm shift in marketing," *Management Decision* (32:2), 1994, pp. 4-20. In Aijo, T. S. "The theoretical and philosophical underpinnings of relationship marketing: Environmental factors behind the changing marketing paradigm," *European Journal of Marketing* (30:2), 1996, pp. 8-18.
- [23] Gummesson, E. "Making Relationship Marketing Operational," *International Journal of Service Industry Management* (5:5), 1994, pp. 5-20.
- [24] Hair, J. F. Jr., Black, W. C., Babin, B. J., Anderson, R. E., and Tatham, R. L. *Multivariate Data Analysis*. Prentice Hall, NJ, 2006.
- [25] Hattie, J. "An empirical study of the various indices for determining unidimensionality," *Multivariate Behavioral Research*, 19, 1985, pp. 49-78.
- [26] Hesselink, M., and Wiele, T. "Mystery Shopping: In-depth measurement of customer satisfaction," *ERIM Report Series Research in Management*, ERS-2003-020-ORG, 2003, Retrieved November 17, 2006 from <http://www.erim.eur.nl>
- [27] Ittner, C. D., and Larcker, D. F. "Are Nonfinancial Measures Leading Indicators of Financial Performance? An Analysis of Customer Satisfaction," *Journal of Accounting Research* (36), 1998, pp. 1-35.
- [28] Joo, Y-H., Jun, J-J., and Kim, B-Do. Encouraging customers to pay less for mobile telecommunication services. *Journal of Database Management* (9:4), 2002, pp. 350-359.
- [29] Joreskog, K. G., and Sorbom, D. *LISREL 7: A guide to the program and applications*, SPSS Inc., Chicago, IL, 1989
- [30] Kennedy, A. (2006) "Electronic Customer Relationship Management (eCRM): Opportunities and Challenges in a Digital World," *Irish Marketing Review* (18:1/2), November 2006, pp. 58-69.
- [30] Kurzweil, R. *The Age of Spiritual Machines: When Computers Exceed Human Intelligence*, Viking Press, NY, 1998.
- [31] Lance, C. E., Butts, M. M., and Michels, L. C. "The sources of four commonly reported cutoff criteria: What did they really say?" *Organizational Research Methods* (9:2), April 2006, pp. 202-220.
- [32] Lewis, J. R. "Psychometric Evaluation of the PSSUQ Using Data from Five Years of Usability Studies," *International Journal of Human-Computer Interaction* (14:3/4), September 2002, pp. 463-488.
- [33] Lim, H., Widdows, R., and Park, J. "M-loyalty: winning strategies for mobile carriers," *Journal of Consumer Marketing* (23:4), 2006, pp. 208-218.
- [34] Meldrum, M.J. "Marketing high-tech products: the emerging themes," *European Journal of Marketing* (29:10), November 1995, pp. 45-58.
- [35] Meuter, M., Ostrom, A., Roundtree, R. I., and M. J. Bitner. "Self-service technologies: understanding customer satisfaction with technology-

- based service encounters,” *Journal of Marketing* (64:3), July 2000, pp. 50-64.
- [36] Mittal, B., and W. M. Lassar. “The role of personalization in service encounters,” *Journal of Retailing* (72:1), spring 1996, pp. 95-109.
- [37] Moore, G.A. *Crossing the chasm: Marketing and selling high-tech goods to mainstream customers*, HarperBusiness, NY, 1991.
- [38] Moore, G.A. *Inside the tornado: Marketing strategies from Silicon Valley's cutting edge*, HarperBusiness, NY, 1995.
- [39] Netemeyer, R. G., Bearden, W. O., and Sharma, S. *Scaling Procedures: Issues and Applications*, Sage Publications, CA, 2003.
- [40] Norman, D.A. *The invisible computer: Why Good Products Can Fail, the Personal Computer Is So Complex, and Information Appliances Are the Solution*, MIT Press Cambridge, MA, 1998,
- [41] Nunnally, J.L. *Psychometric Theory*, McGraw-Hill, NY, 1978.
- [42] Picard, R.G. “Mobile telephony and broadcasting: are they compatible for consumers,” *International Journal of Mobile Communications* (3:1), 2005, pp. 19–28.
- [43] Puumalainen, K., and Sundqvist, S. “Global diffusion of telecommunications innovations: a cross-cultural review,” *International Journal of Technology Marketing* (1:1), 2005, pp. 22-36.
- [44] Rafiq, M., and Ahmed, P. K. “Using the 7Ps as a generic marketing mix: an exploratory survey of UK and European marketing academics,” *Marketing Intelligence & Planning* (13:9), 1995, pp. 4-15.
- [45] Rogers, E. M. *Diffusion of innovations*, The Free Press, NY, 1995.
- [46] Rust, R. T., and Zahorik, A. J. “Customer Satisfaction, Customer Retention, and Market Share”. *Journal of Retailing*, (69:2), summer 1993, pp. 193-215.
- [47] Sekaran, U. *Research Methods for Business: A Skill-Building Approach*, John Wiley & Sons, Singapore, 2003.
- [48] Steward, S. “Testing Equipment Roundup,” *Cellular Business*, (10:9) September 1993.
- [49] Surry, D. W. (1997). Diffusion Theory and Instructional Technology. Paper presented at the Annual Conference of the Association for Educational Communications and Technology (AECT), Albuquerque, New Mexico February 12 - 15, Retrieved September 25, 2006 from <http://intro.base.org/docs/diffusion>
- [50] Talukdar, D., Sudhir, K., and Ainslie A. “Investigating New Product Diffusion Across Products and Countries,” *Yale School of Management Working paper Series* No. 06, SSRN, 2002, Retrieved November 17, 2006 from <http://papers.ssrn.com/abstract=286155>
- [51] Varki, S., and Colgate, M. “The role of Price Perception in an Integrated Model of Behavioural Intentions,” *Journal of Service Research* (3), 2001, pp. 232-240. In Athanassopoulos, A. D., and Iliakopoulos, A. “Modeling Customer Satisfaction in Telecommunications: Assessing The Effects Of Multiple Transaction Points On The Perceived Overall Performance Of The Provider,” *Production and Operations Management* (12:2), January 2003, pp. 224-245.
- [52] Wong, C. C., and Hiew, P. L. (2005). Correlations between Factors Affecting the Diffusion of Mobile Entertainment in Malaysia. *Proceedings of the 7th international conference on Electronic commerce Xi'an, China, (ICEC'05)*, 615-62, August 15–17,
- [53] Woo, K., and Fock, H. “Customer Satisfaction in the Hong Kong Mobile Phone Industry” *The Service Industry Journal*, (19:3), 1999, pp. 162-174.
- [54] Zeithaml, V. A., Berry, L. L., and A. Parasuraman. “The Behavioral Consequences of Service Quality,” *Journal of Marketing* (60:2), April 1996, pp. 31-46.

Copyright © 2008 by the International Business Information Management Association. All rights reserved. No part or all of this work should be copied or reproduced in digital, hard, or any other format for commercial use without written permission. To purchase reprints of this article please e-mail: [admin@ibima.org](mailto:admin@ibima.org)