Service innovation and customer satisfaction: The role of customer value creation

Article *in* European Journal of Innovation Management · December 2017

CITATIONS
0

READS
273

3 authors:

Mahmoud Abdulai Mahmoud
University of Ghana
18 PUBLICATIONS **179** CITATIONS

SEE PROFILE

Robert Hinson
University of Ghana
86 PUBLICATIONS **970** CITATIONS

SEE PROFILE

Patrick Amfo Anim
University of Ghana
7 PUBLICATIONS **27** CITATIONS

SEE PROFILE

Service innovation and customer satisfaction: the role of customer value creation

Mahmoud Abdulai Mahmoud
Department of Marketing and Entrepreneurship, University of Ghana, Accra, Ghana
Robert Ebo Hinson
Department of Marketing and Entrepreneurship, University of Ghana, Accra, Ghana and
University of the Free State Business School, Bloemfontein, South Africa, and
Patrick Amfo Anim
Department of Marketing and Entrepreneurship, University of Ghana, Accra, Ghana

Received 7 September 2017
Revised 20 November 2017
Accepted 20 November 2017

Abstract

Purpose – The purpose of this paper is to explore the relationships between service innovation, customer value creation (CVC) and customer satisfaction (CS) with specific emphasis to Ghanaian telecommunication operators.
Design/methodology/approach – Assuming a positivist philosophical approach with a quantitative data analysis technique, the study samples 510 registered adult customers of at least one telecommunication network in Ghana. An exploratory factor analysis, confirmatory factor analysis and structural equation modeling were used to assess and confirm the proposed scales validity and the relationships of the research model.
Findings – The study unveiled that a service firm's ability to achieve CS is dependent on how telecommunication operators harness and deploy their service innovation activities. In addition, the study showed that CVC mediates the relationship between service innovation and CS. Thus, service innovation must create value for customers in order to enhance CS.
Practical implications – By relating the study findings to firms' innovation strategies, managers can improve the strength of their service offerings to achieve CS by spending more on consumer research, market research and increased customer interactions.
Originality/value – Considering the uniqueness of this study in a Ghanaian context, the research draws on two influential theories, which are signaling theory and expectation disconfirmation theory to examine the differential role played by service innovation in enabling telecommunication operators in Ghana, to create customer value in order to achieve CS amidst the constraints in the business environment.

Keywords Innovation, Ghana, Customer satisfaction, Telecommunication industry, Service innovation, Customer value creation

Paper type Research paper

1. Introduction

In a global competitive market place where consumers seek value in their daily purchases, innovation has become contemporarily essential in both theory and practice. Innovation is all about offering new or adapted solutions to customer needs or problems in such a way that adds value as defined and used by customers (Vargo and Lusch, 2004; Michel *et al.*, 2008). In Sub-Saharan African countries, for which Ghana is not an exception, the continuous growth in technology and its sophistication, coupled with the proliferation of mobile phones, especially in the telecommunication industry (Aker and Mbiti, 2010), have pushed many mobile network operators to build robust innovative service products in order to gain consumer satisfaction.

Evidently, it can be seen that operators within the Ghanaian telecom sector have introduced several innovative services in order to offer customers with variety of choices,

European Journal of Innovation Management

1460-1060
DOI 10.1108/EJIM-09-2017-0117

aside simply receiving and making phone calls (Mahmoud and Hinson, 2012). The purpose of this move is to increase the satisfaction of customers toward their service offerings.

The strength of achieving customer satisfaction (CS) is therefore acknowledged as a significant indicator of a service innovation success. Despite the tremendous benefits firms acquire from satisfied customers, and the heavy investments made toward innovation to achieve these benefits, Wilke and Sorvillo (2005) explain that a vast majority of innovations fail within the first three years of their introduction into the market place. In recognition of this challenge, one key issue championed by marketing scholars, academics and practitioners is acknowledging that the success of service innovation to achieve CS greatly depends on customer value creation (CVC).

In the past, there have been some erroneous perceptions that innovation was a preserve of manufacturing businesses, reflecting the fact that innovation theory has its roots in a time where manufacturing was the major economic activity (Drejer, 2004). While services are seen to be generating a lot more to support nations' GDP and have outdistanced manufacturing from an employment perspective (Menor *et al.*, 2002), manufacturing has continued to dominate innovation studies (Jaw *et al.*, 2010; McDermott and Prajogo, 2012). Quite profoundly, an earlier taxonomical review of literature on innovation studies revealed a paucity of research in the area of services, with little clear coverage of the subject area (Küpper, 2001; Hauser *et al.*, 2006; Jaw *et al.*, 2010). Scholars such as Ettlie and Rosenthal (2012) and Ostrom *et al.* (2010) have therefore championed a call for further extensively research into the area of innovation in services. In an attempt to catch up with the pace of manufacturing innovation, scholars have looked at different aspects of service innovation subject to the view of bridging this gap (Flint *et al.*, 2005; Oke, 2007; Yusif, 2012; Carlborg *et al.*, 2014). In spite of these attempts, a major area of service innovation literature that has not yet received massive attention is the service innovation measurement, particularly from the customers perspective (Janssen, 2011), as the above-mentioned studies mainly focused on management's perception.

With respect to CVC, despite its centrality to marketing thought, research on the concept is still nascent and in the early stages of conceptual development (Zhao *et al.*, 2015; Cheng and Chen, 2009; Brodie *et al.*, 2009; Palmatier, 2008; Woodruff and Flint, 2006). Many companies fail to meet customer expectations with respect to creating customer value (Cheng and Chen, 2009; Klingmann, 2007; Van Riel and Lievens, 2004), probably because managers are not completely sure of what brings value to the customer, or how it is created. The apparent confusion of how value is defined by different scholars lend to the fact that there is a real importance for a study in value creation. This study makes an attempt to fill this gap by investigating into the value creation process and consumption of value by the customer.

Contextually, the study is conducted in an emerging economy. The study sees a contextual gap in the literature as empirical tests of potential business outcomes of innovation in service firms are heavily biased to data originating in developed nations' settings (e.g. Sundbo, 1997; Grawe *et al.*, 2009; Carlborg *et al.*, 2014), meaning the benefits or costs of investing in innovation in less developed societies are unknown. The study sees the scanty research into innovation in service firms in emerging market contexts as telling, since the literature indicates that the beneficial effects of a firm's strategic orientation such as an innovation may be context specific as opposed to being universally applicable (e.g. Li and Zhou, 2010).

This study is opportune, as there is increasing call by scholars for an extensive study that focuses on innovation in services, which has arguable received scanty research focus and its impact on CS within the African context (e.g. Li and Zhou, 2010). This paper, therefore, sought to find answers to the following questions:

RQ1. What is the effect of service innovation in terms of new service concept (NSC), new service process (NSP) and new technological systems (NTSs) on CS in Ghana's telecommunication industry?

RQ2. What is the relationship between service innovations, customer value creating and CS in the telecommunication industry in Ghana?

RQ3. Does CVC have a negative or positive effect on CS in the telecommunication industry in Ghana?

2. Theoretical foundation and hypotheses development

The theoretical foundation of this study is based on two influential theories. They are as follows:

(1) signaling theory (ST); and

(2) expectation disconfirmation theory (EDT).

2.1 ST

ST and EDT have since become dominant contemporary approaches to the analysis of innovation and satisfaction research (Pappu and Quester, 2016; Henard and Dacin, 2010; Boulding and Kirmani, 1993; Kirmani, 1990; Erdem and Swait, 1998; Giese and Cote, 2000). Far back from the time of Spence (1974), who was the first to formally model the signaling equilibria, the theory as of today, has become the basis of many models, ideas, other theories and hypotheses. Importantly, the ST provides a parsimonious clarification amongst frameworks used in extant literature to explain the innovativeness-satisfaction relationship (Henard and Dacin, 2010). This is so because of the complex nature of other theories, such as the exchange theory, cues utilization theory and many others (Eisingerich and Rubera, 2010; Kunz *et al.*, 2011). The basic premise of the ST, as suggested by prominent scholars like Spence (1974, 2002) and Stigler (1961), is that the market place is characterized by information asymmetry or imperfect information. Thus, unlike the firm, consumers do not have the full information required for judging the quality or value of an innovation in services newly introduced into the market (Stiglitz, 2000). Firms therefore attempt to convey information about the quality and value of their innovations to the market using signals. Consumers therefore rely on variables such as advertising (Kirmani, 1990), brand name (Erdem and Swait, 1998; Rao *et al.*, 1999), price (Dawar and Sarvary, 1997) and warranty (Boulding and Kirmani, 1993), as signals to infer value of these communicated innovations, to determine their satisfaction or dissatisfaction levels.

2.2 EDT

EDT further provides explanation to how customers become satisfied with an introduction of a new product or service offering. Expectancy disconfirmation theory is built on the base of cognitive dissonance theory definition, which was developed by Leon Festinger in 1957, to explain how dissonance between an individual's cognition and reality influence his/her subsequent cognition and/or behavior (Bhattacherjee and Premkumar, 2004). EDT measures CS from the difference between customer's expectation and experience in perceived products or services (Oliver, 1980; Patterson *et al.*, 1996). EDT has been used severally to examine various field of study, such as marketing (Oliver, 1977, 1980; Diehl and Poynor, 2010; Santos and Boote, 2003), tourism (Fallon and Schofield, 2003), psychology (Gotlieb *et al.*, 1994), information technology (Bhattacherjee and Premkumar, 2004; Bhattacherjee, 2001a, b; Hsu *et al.*, 2006; Khalifa and Liu, 2002), repurchase behavior and retention (Bhattacherjee and Premkumar, 2004; Hsu *et al.*, 2006; Patterson *et al.*, 1996), and the airline industry (Chen, 2008) for a better understanding of customer's expectations and requirements for attracting their satisfaction. The basic premise of the EDT model is that customers form expectation

before the purchase or use of an offering. These expectations are used as a frame of reference in the evaluation/judgment of the actual performance perception. CS therefore emerges after the comparison between the perceived performance and pre-purchase/use expectations. Three possible outcomes occur at this stage: the customer becomes satisfied, neutral or dissatisfied toward the new product or service offering.

2.3 Service innovation and CS

The key to remaining competitive and surviving in the market is the firm's ability to provide products tailored to meet the needs of its customers. In a chain relationship, scholars have suggested that the key to remaining competitive through meeting customer needs is innovation (Darroch and McNaughton, 2002), as trends, customer needs and perceptions keep evolving with the passage of time. In this respect, firms in attempt to produce superior value at all times have to adopt the practice and culture of innovation. This is to say that innovation explicably increases the chances of the firm producing to meet the very need of customers, consequently offering opportunity for the firm to satisfy its customers.

2.4 Service innovation and CVC

In today's competitive global market, companies should focus on their customers' needs to gain an understanding of the buyer's entire value chain (holistic needs), referring to not only as it is today (the current needs), but also as it changes/evolves over time (anticipated needs) (Slater and Narver, 1994). Companies should then use the understanding of the buyer's value chain to mix and match their various products and/or services (service package/bundle), refer to adaptations of existing services or newly launched services, and adjust or evolve the processes to deliver and maintain these services (like improved service delivery rates), to meet the customer's needs with the goal to influence the customers perceived value of the offering. Service innovations can be regarded as a value creating activity (Slater and Narver, 1995).

For service providers, innovating services in such a way that enables them to serve their customer's present and future needs which adds to their perceived value is what establishes a firm's competitive advantage (Kandampully and Duddy, 1999). Besides, innovation on its own is of lesser significance, as it is the value of the innovation as perceived by the customer that provides the advantage of the offering (Chapman *et al.*, 2002). According to Tether *et al.* (2001), service innovations typically transform the state of the customer's perceptions (De Jong *et al.*, 2003). This influence will add to the customer's perception of the value of the service, as has also been suggested in other studies (Flint *et al.*, 1997; Kandampully and Duddy, 1999). The view of service innovation as a value creating activity or one that influences/adds to the perceived value of the offering is important, as it suggests and emphasizes the interrelation between service innovation and perceived customer value.

2.5 Service innovation, CVC and CS

Within this study, CS has been defined as a response to an evaluation of perceived product or service performance, based on the customer's judgments of the value that has been created for them (Flint *et al.*, 1997). While perceived customer value has been defined as the customer's assessment of the value that has been created for them by a supplier, given the trade-offs between all relevant benefits and sacrifices in a specific use situation (Flint *et al.*, 2002). When looking at these definitions, one can easily confuse one with the other. Although they show similarities, they are different.

Based on the comparison of the definitions, theoretically, perceived customer value antecedes CS, as the value judgment (perceived value) comes before the evaluation response (satisfaction). The theoretical relation between perceived customer value and CS has been empirically confirmed as several service marketing literature have shown the CVC concept

to be an important factor in gaining CS (Zeithaml, 1988; McDougall and Levesque, 2000; Cronin *et al.*, 2000; Wang and Ahmed, 2004; Turel and Serenko, 2006; Hume and Sullivan Mort, 2008; Kuo *et al.*, 2009). The argument for creating customer value as a significant driver of CS is that when customers perceive higher levels of value in an offering they are likely to feel positive about their consumption experience and purchase decision (Oh, 2000; Zeithaml, 1988).

From the ensuing discussion, the researchers propose a conceptual model presented in Figure 1, which theorizes that firm's innovation in services acts as an antecedent to CVC to enable firms gain CS. It can, therefore, be hypothesized that:

H1. A NSC innovation has a positive and significant relationship on CS.

H2. A NSP has a positive and significant relationship on CS.

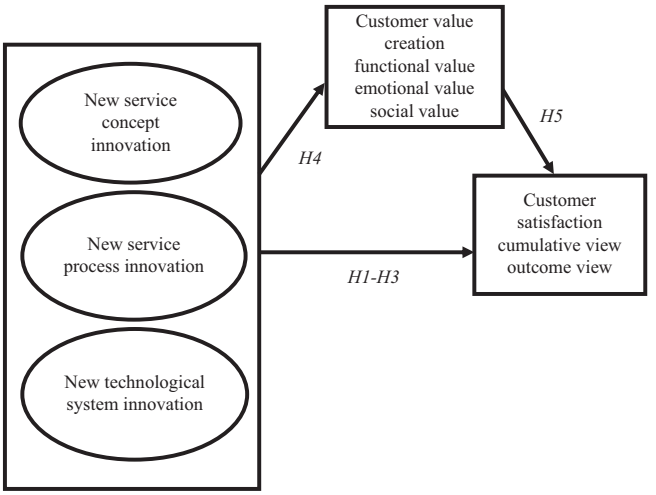
H3. A NTS innovation has a positive and significant relationship on CS.

H4. The greater the fit between a service firm's CVC and service innovation, the greater the CS.

H5. There is a positive and significant relationship between CVC and CS.

3. Methodology

This paper adopts a positivist methodological paradigm in formulating research questions, hypothesis and empirically testing constructs under careful controlled circumstances (Boateng, 2016). In this quantitative study, a survey design was used with a semi-structured questionnaire as the primary data collection instrument. The survey strategy is deemed appropriate due to the fact that it is usually associated with a deductive approach and explanatory research of this nature. Adopting a convenience sampling technique, the study sampled 510 registered adult customers of at least one telecommunication network in the Greater Accra metropolitan area out of a target population of all registered adult subscribers of mobile telecommunication network in Greater Accra.



Source: Researchers' own construct (2017)

Figure 1.
Conceptual framework

Statistical Package for Social Sciences (SPSS V.20) was used for the preliminary coding and inputting of the raw data as well as for data cleaning and exploratory factor analysis (EFA). Drawing on the view of Pallant (2011), three main steps were followed in carrying out the EFA: "(1) Assessment of the suitability of the data for factor analysis, (2) Factor extraction, and (3) Factor rotation and interpretation." After EFA, a confirmatory factor analysis (CFA) was performed before onward transferal to AMOS 22 for further analysis. It must be mentioned that there were two different sets of data responses used for the EFA and CFA; 200 responses were used for the EFA while 310 were used for the CFA. Thus, two major phases were undergone in carrying out the analysis. The proposed model was, therefore, assessed for model fitness using the structural equation modeling (SEM) via Amos 22. Assessing model fit involves the interpretation of how well the conceptualized model fits the empirical research. The process is comparative in nature because it involves choosing between numerous fit indices that subjectively indicate whether the data fit the theoretically postulated model (Bagozzi and Yi, 2012; Hair *et al.*, 2010; Schumacker and Lomax, 2004). Scholars have proposed a number of fit indices. However, there are at least two main conventions for the assessment of model fit that are apparent in literature; thus, the assessment of the absolute fit of the model and the assessment of the comparative fit (Tanaka, 1993).

Model fit criteria commonly used in absolute fit are χ^2, goodness-of-fit index (GFI), adjusted goodness-of-fit index, root mean square residual and root mean square error of approximation (RMSEA). These criteria are based on differences between the observed and model-implied correlation or covariance matrix (Hair *et al.*, 2014). Comparative fit deals with whether the model being considered is better than a competing model in accounting for observed data. Comparative fit assessment is based on the examination of a "baseline" model in comparison with theoretically derived models (Kelloway, 1998). Some criteria in this category include normed fit index (NFI), comparative fit index (CFI) and the relative non-centrality index. The following fit indexes were used to evaluate how well the measurement model fit the data collected, with each one having conventionally acceptable values: RMSEA $\leqslant 0.08$, GFI $\geqslant 0.90$, NFI $\geqslant 0.90$ and CFI $\geqslant 0.90$ (Hair *et al.*, 2014; Bagozzi and Yi, 2012; Hu and Bentler, 1999). The sufficiency of the theorized model's creation of a covariance matrix is evaluated by the χ^2 goodness-of-fit value; it also estimates coefficients compared with the observed covariance matrix. However, since the value of χ^2 is affected by the sample size, a large number of participants can cause χ^2 to be inflated when assessing model fit (Hu and Bentler, 1999). Many researchers have applied the method that divides the value of χ^2 by degrees of freedom instead of relying only on the overall $\chi^2$and its associated test of significance. It is typically suggested that a normed χ^2 of less than 3 is favorable for a large sample. These fit indices were employed to assess the strength and acceptability of the construct measurements. The selection of these fit indices was based on the classification proposed by Kline (2015) and Byrne (2013) as being the most commonly accepted criteria in social sciences.

To ensure reliability of the current study, two main criteria were adopted which include Cronbach's α and composite reliability (CR), which are widely and mostly used in SEM (Hair *et al.*, 2016). To ensure validity in this study, construct validity measures such as convergent validity (Rezaei and Ghodsi, 2014; Rezaei, 2015) and discriminant validity (Rezaei, 2015; Rezaei and Ghodsi, 2014) were employed. Discriminant validity used construct correlations and cross-loading criterion while convergent validity employed average variance extracted (AVE) and factor loadings (Kim *et al.*, 2016; Rezaei, 2015).

4. Results

Before performing the actual analysis of the main data, preliminary data analysis (PDA) was done. During the PDA, data sets and variables were cleaned and cleansed to eliminate unengaged responses, outliers and replace missing data. Data analysis was then conducted

in different distinct phases. First the paper shows the descriptive statistics of measurement items; depicts the exploratory and CFA; tests for hypothesis; examines the mediating effect of CVC on service innovation and CS; and finally discusses the findings.

4.1 Descriptive statistics of measurement items

Table I shows the means and standard deviations of the various variables used. The highest mean was 4.033 (my mobile service has automated service options) while the lowest was 2.868 (using my mobile service gives me pleasure). This gives an indication that telecommunication network subscribers are satisfied with their network providers automated service options that give them adequate and frequent information through ATM alerts, SMS alerts and many others. However, subscribers indicated that they gain very little pleasure with their mobile service. The 35 variables displayed in Table I represented the components of the five main constructs depicted in the conceptual framework for the study: NSC, NSP, NTS, CVC and CS.

4.2 EFA

The 35 items used for the scales on the conceptual constructs were factor analyzed and subjected to principal component analysis (PCA) using SPSS version 22. Prior to performing PCA, the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was 0.878, exceeding the recommended value of 0.6 (Kaiser, 1970) and Bartlett's (1954) test of sphericity reached statistical significance (approx.: $\chi^2 = 5{,}469.993$, df 595, sig. 0.000). This confirms that there was a significant correlation among the variables; thus, factor analysis was appropriate. The PCA revealed the presence of seven components with eigenvalues exceeding 1. The seven-component solution altogether explained 63.088 percent of the variance, with the highest component contributing 10.842 percent and the lowest component contributing 7.923 percent.

To assist in the interpretation of these seven components, varimax method of rotation was performed on the 35 variables to examine the number of strong loadings and ascertain the specific variables which loaded substantially onto the various components. The variable loadings for EFA are considered high if they are all 0.7 or greater to be retained for analysis, although some scholars suggest a considerable loading value of 0.5 to be adequately strong (Hair *et al.*, 2014). Out of 35 variables rotated, 33 loaded perfectly onto 7 components with a threshold of 0.6. Table II presents a comparison of the principal component extraction of the various rotation methods as well as the internal consistency measures on the final retained variables of the various constructs.

Having established an internal consistency in the final structures of the construct scales through the EFA, the second phase of the study was conducted. The surviving items were designed into a new questionnaire in order to test the relationships among the constructs of the study. A 33-item questionnaire was therefore re-designed to collect data from 310 adult registered subscribers of at least one telecommunication network in Greater Accra, exclusive of those used for the exploratory design. The subsequent section presents the results obtained from the CFA analysis for the purpose of establishing the best possible underlying structure for the conceptual model of the study.

4.3 CFA

The measurement models of the five constructs (NSC, NTS, NSP, CVC and CS) were assessed through a CFA. It must be noted that the variable codes stipulated in the EFA were maintained in the confirmatory stage. As a result, the codes represent the scale statements indicated earlier in this paper. Consequently, the original measurement model was then subjected to modification according to the sizes of factor loadings, cross-loadings,

Scale items	Variable codes	Mean	SE mean	SD
My mobile service has creative service packages (voice, SMS and internet combinations)	NSC1	3.454	0.069	1.207
My mobile service has flexible service package options (client customization)	NSC2	3.391	0.067	1.169
My mobile service is noticeably different in concept and design, compared to preceding services	NSC3	3.266	0.068	1.179
My mobile service is a totally different service experience compared to preceding services	NSC4	3.194	0.064	1.122
My mobile service is noticeably different in concept and design, compared to competing services	NSC5	3.197	0.070	1.216
My mobile service has online service options (procedures, support and usage history)	NSP1	4.003	0.055	0.956
My mobile service has automated service options	NSP2	4.033	0.046	0.804
My mobile service provider uses modern interaction media (creative website, social media)	NSP3	3.934	0.050	0.869
My mobile service provider has mobile shops at special occasions or events	NSP4	3.655	0.054	0.93
My mobile service provider offers quick and easy call center support	NSP5	3.599	0.060	1.048
My mobile service has many innovative features (SMS to e-mail, calling circles)	NTS1	3.484	0.058	1.015
My mobile service provider offers the latest user equipment	NTS2	3.112	0.063	1.096
My mobile service provider is always the first on the market with the latest technology	NTS3	3.589	0.054	0.947
My mobile service is based on the latest technology applications	NTS4	3.635	0.054	0.934
My mobile service provider shows its efforts for service quality improvement	NTS5	3.474	0.059	1.024
My mobile service usage makes me feel good	CVCEM1	3.375	0.063	1.092
I find my mobile network service engaging	CVCEM2	3.030	0.063	1.097
Using my mobile service gives me pleasure	CVCEM3	2.868	0.063	1.103
Using my mobile service makes me feel relaxed	CVCEM4	3.247	0.062	1.079
Using my mobile service is an enjoyment	CVCEM5	3.135	0.063	1.092
My mobile service is worth the price I pay	CVCFU1	3.763	0.061	1.064
My mobile service is worth the technical quality	CVCFU2	3.530	0.062	1.087
My mobile service is worth the customer service	CVCFU3	3.424	0.061	1.069
My mobile service offers consistent quality of service	CVCFU4	3.595	0.059	1.026
Using my mobile service is not a financial burden or stress	CVCFU5	3.434	0.060	1.054
My mobile service usage makes a good impression in my social group	CVCSO1	3.530	0.056	0.974
My mobile service usage gives me a sense of belonging	CVCSO2	3.480	0.057	0.992
My mobile service usage helps me to feel accepted by others	CVCSO3	3.151	0.061	1.064
Using my mobile service gives me social approval and recognition	CVCSO4	3.526	0.058	1.008
My mobile service usage improves the way I am perceived by other people	CVCSO5	3.319	0.059	1.025
What is your overall satisfaction level regarding the mobile call service (voice)?	CSO1	3.500	0.059	1.037
What is your overall satisfaction level regarding the mobile internet service?	CSO2	3.454	0.060	1.043
What is your overall satisfaction level regarding the additional mobile services (SMS, voice mail)?	CSO3	3.434	0.058	1.013
What is your overall satisfaction level regarding the customer service?	CSO4	3.217	0.061	1.056
What is your overall satisfaction level regarding the total mobile service offering?	CSO5	3.171	0.063	1.104

Table I.
Descriptive statistics of variables

measurement errors and correlation between measurement errors. In the case of this investigation, the AMOS software output suggested modification of some items via stage-by-stage re-specifications of some weak variables. As a result, scale items were rather dropped systematically to ensure that the deletion of each item was necessary. During the modification of the original unfitted model, six items (CVCF1, CVCFU3, CVCEM3, CVCEM5,

Items	Variable codes	Principal component loadings and internal consistencies: Varimax loadings	Variance explained	Cronbach's α	KMO	Item-total correlation	α if item is deleted
Factor 1	NSC1	0.810	74.066	0.912	0.846	0.756	0.896
	NSC2	0.840				0.796	0.888
	NSC3	0.860				0.810	0.885
	NSC4	0.843				0.785	0.891
	NSC5	0.809				0.736	0.901
Factor 2	CVCFU1	0.757	61.994	0.846	0.836	0.661	0.812
	CVCFU2	0.788				0.748	0.788
	CVCFU3	0.707				0.580	0.834
	CVCFU4	0.669				0.642	0.818
	CVCFU5	0.696				0.638	0.818
Factor 3	CVCEM1	0.638	63.674	0.856	0.842	0.630	0.836
	CVCEM2	0.800				0.732	0.810
	CVCEM3	0.693				0.570	0.852
	CVCEM4	0.790				0.716	0.814
	CVCEM5	0.780				0.706	0.817
Factor 4	NSP1	0.670	59.149	0.822	0.827	0.578	0.798
	NSP2	0.801				0.681	0.773
	NSP3	0.789				0.649	0.778
	NSP4	0.694				0.578	0.798
	NSP5	0.685				0.618	0.789
Factor 5	CS1	0.711	64.170	0.812	0.764	0.617	0.770
	CS2	0.778				0.680	0.739
	CS3	0.808				0.691	0.735
	CS4	0.734				0.537	0.807
Factor 6	CVCSO2	0.715	63.511	0.807	0.757	0.661	0.739
	CVCSO3	0.625				0.585	0.776
	CVCSO4	0.707				0.687	0.726
	CVCSO5	0.687				0.561	0.786
Factor 7	NTS1	0.705	54.503	0.790	0.782	0.563	0.752
	NTS2	0.687				0.572	0.751
	NTS3	0.636				0.581	0.747
	NTS4	0.638				0.544	0.759
	NTS5	0.685				0.587	0.745

Table II.
Rotated component matrix and internal consistencies

CVCSO3 and CVCSO5) were deleted from CVC, two items (NSP1, NSP4) from NSP, another two items (NSC4, NSC5) from the NSC and one item (CS4) from CS. Thus, 11 items were eliminated after the CFA which left the new purified constructs with 22 items which provided the best fit indices.

4.4 Reliability and validity test

Research scholars such as Bagozzi and Yi (2012) have specifically suggested that "testing of a structural model may be meaningless unless it is established that the measurement model holds; if the chosen indicators for a construct do not measure that construct, the specified theory must be modified before it can be tested." Table III shows the robustness test result of the study constructs for the model to check for model fit.

Table III depicts the PCA which revealed the presence of seven components, internal consistencies of items, reliability test and validity test. Data reliability was tested via Cronbach's α and CR. For CR, the values recorded a range between 0.70 and 0.90. Evidently, all CR values were above 0.6 meeting the acceptable recommended limits stipulated by extant renowned research scholars (Hair *et al.*, 2016). Again, the Cronbach's α coefficients

Constructs	Items	Standardized loadings	CR	AVE	Cronbach's α
New technological system (NEWTS)	NTS1	0.750	0.902	0.649	0.913
	NTS2	0.800			
	NTS3	0.900			
	NTS4	0.810			
	NTS5	0.760			
Emotional value creation (EMVC)	CVCEM1	0.770	0.810	0.588	0.805
	CVCEM2	0.830			
	CVCEM4	0.690			
Functional value creation (FUNVC)	CVCFU2	0.750	0.834	0.626	0.832
	CVCFU4	0.830			
	CVCFU5	0.800			
New service process (NEWSP)	NSP2	0.730	0.769	0.525	0.759
	NSP3	0.730			
	NSP5	0.720			
Customer satisfaction (CUSTSA)	CS1	0.750	0.812	0.591	0.810
	CS2	0.850			
	CS3	0.710			
Social value creation (SOCVC)	CVCS02	0.750	0.707	0.547	0.705
	CVCSO4	0.730			
New service concept (NEWSC)	NSC1	0.790	0.796	0.566	0.794
	NSC2	0.710			
	NSC3	0.760			

Table III.
Validity and reliability results for CFA final measurement model

ranged from 0.70 to 0.91. The result indicates appreciable values above the accepted 0.5 desirable level (Coakes *et al.*, 2008; Nunnally, 1978). The researchers ascertained the internal consistency to draw validity conclusions for the data using AVE and factor loadings. The AVE values fell between 0.50 and 0.65, exceeding the acceptable stipulated limits of 0.5 (Fornell and Larcker, 1981; Hair *et al.*, 2016). The factor loadings ranged from 0.69 to 0.90, which exceeded the acceptable limit of 0.6, showing a strong reliability status of the items (Hair *et al.*, 2016).

4.5 Measurement model fit indices

In evaluating the appropriateness of the measurement model fit in relation to the data collected, conventionally acceptable values including RMSEA $\leqslant 0.08$, GFI $\geqslant 0.90$, NFI $\geqslant 0.90$ and CFI $\geqslant 0.90$ (Hair *et al.*, 2016; Bagozzi and Yi, 2012; Hu and Bentler, 1999) were used. The sufficiency of most theorized model's creation of a covariance matrix is evaluated by the χ^2 goodness-of-fit value; it also estimates coefficients compared with the observed covariance matrix. The selection of these fit indices was based on the classifications proposed by Kline (2015) and Byrne (2013) as being the most commonly and widely accepted criteria in social science research. The model fit indices revealed a good fit to the data (RMSEA = 0.04, NFI = 0.92, RFI = 0.90, IFI = 0.97 and CFI = 0.97). The χ^2-statistic was 1.45 representing the normed χ^2 value. This value fell within the acceptable limit between 0 and 3. Figure 2 shows the final measurement model.

4.6 Second-order construct measurements model

This study also modeled one second-order constructs, namely, service innovation, and assessed its measurement model. The outer loadings for NTS innovation (0.799), NSP innovation (0.878) and NSC innovation (0.853), AVE (0.559), Cronbach's α (0.898) and CR (0.868) were evaluated for the second-order reflective constructs. Composite reliabilities

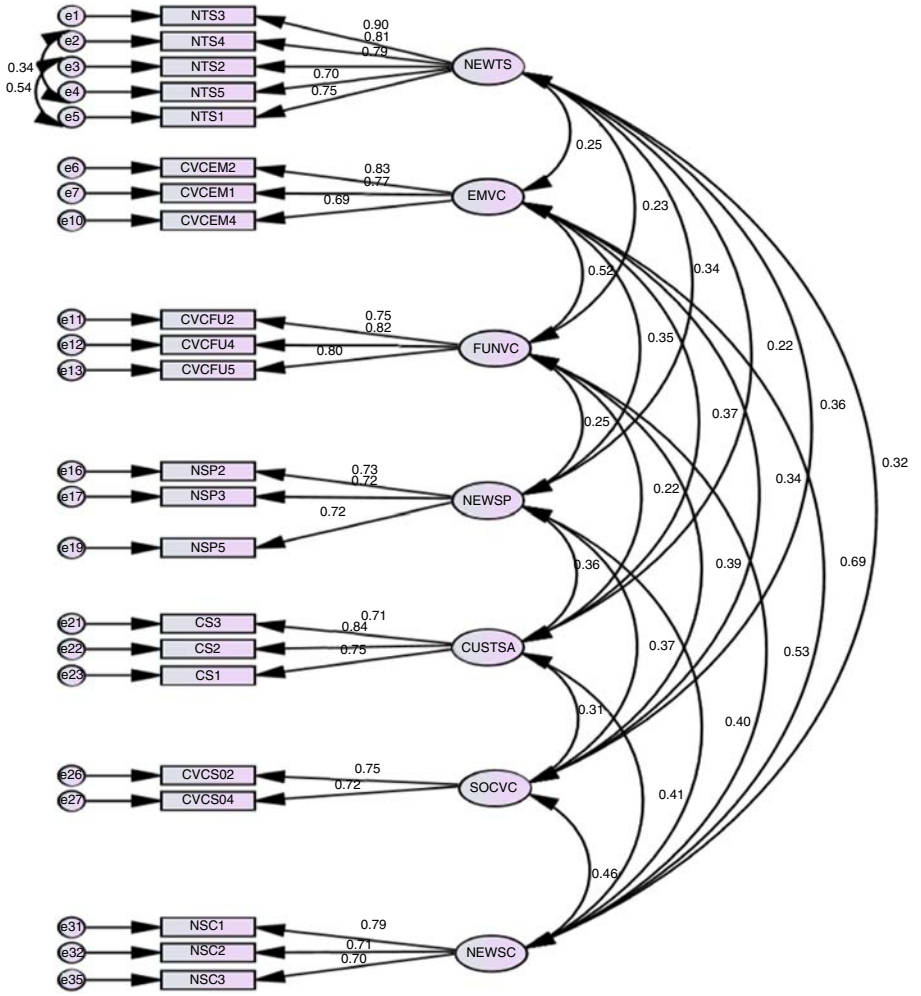


Figure 2.
Final measurement model

exceeded the 0.6 benchmark and Cronbach's α exceeds 0.70 (Fornell and Larcker, 1981; Vandenbosch, 1996).

The researchers also assessed the fit indices of the second-order construct modeled. The model fit indices revealed a good fit to the data (RMSEA = 0.042, NFI = 0.966, RFI = 0.952, IFI = 0.988 and CFI = 0.988). The χ^2-statistic was 1.545 representing the normed χ^2 value. This value fell within the acceptable limit between 0 and 3.

4.7 The structural model

The structural model conducted in this study was intended to test some hypothetical propositions based on the conceptual framework for this research. For this study, the R^2 value for service innovation, NSC, NSP and NTS was 0.221 for CS. The R^2 values show that a service firm's innovation in NSC, NSP and NTS could have a moderate predictive capacity in determining CS. The path coefficients were assessed based on signs and magnitude. The path coefficient and t-value for significant (α) level of 0.05 is 1.96 and

α level of 0.01 is 2.575. Specifically, a service firms NSC innovation related significantly to CS ($\beta = 0.31$, $p < 0.01$) with a t-value > 2.575 (3.932). This indicates that an innovation in a firm's service concept significantly influences CS. Customers are satisfied with their mobile network provider's new ideas or solutions to a problem. Therefore, *H1* was supported. Also, a service firm's NSP innovation related significantly to CS ($\beta = 0.22$, $p < 0.01$) with a t-value > 2.575 (2.797). This indicates that an innovation in a firm's service process significantly influences CS. Customers are satisfied with the extent to which their mobile service providers alter their service systems to enhance value delivery. Therefore, *H2* was also supported. However, a service firm's NTS innovation failed to relate significantly to CS ($\beta = 0.05$, $p > 0.05$) with a t-value < 2.575 (0.700). This indicates that an innovation in a service firm's technological systems has no significant influence on CS. Customers are not satisfied with their mobile networks latest technological options. Therefore, *H3* was not supported. The extent of variance of the endogenous variables accounted for by the hypothesized influences was as follows: R^2 for CS = 0.22. This is also displayed in Table IV.

4.8 Test for mediation

In testing for the mediation, the second-order construct modeled above was used as it combined all the three individual construct, which are NSC, NSP and NTSs to comprise of service innovation as operationalized earlier for this study. To establish meditation effects, all significant parameters were tested using guidelines from Baron and Kenny (1986) for partial and full mediation conditions. A number of regression equations were estimated. In this study, first, CVC (mediator) was regressed on service innovation (independent variable) and it showed a significant effect (service innovation → CVC, $\beta = 0.60$, $p = 0.000$). Second, CS (dependent variable) was regressed on service innovation (independent variable) and this showed a significant effect (service innovation → CS, $\beta = 0.59$, $p = 0.000$). Third, CS (dependent variable) was regressed on the service innovation (independent variable) and CVC (mediator) and the effect was significant (service innovation → CVC → CS, $\beta = 0.60$, $p = 0.000$ was recorded for the first path, $\beta = 0.24$, $p = 0.000$ was recorded for the second path). The results of the regressions are presented in Table V.

The assumption was that if all the three relationships are significant, then mediation testing would be possible. From Table V, all three relationships tested were significant.

Hypothesis	Unstandardized regression path	β estimate	t-value	p-value	Hypothesis results
H1	New service concept → customer satisfaction	0.31	3.93	***	Supported
H2	New service process → customer satisfaction	0.22	2.80	0.01	Supported
H3	New technological system → customer satisfaction	0.05	0.70	*0.48*	Not supported

Table IV. Hypothesis testing

Notes: RMSEA = 0.039, NFI = 0.953, RFI = 0.939, CFI = 0.984, $\chi^2/df = 1.472$. p-values of ***Represent 0.000 significance level

Model	Unstandardized regression path	β estimate	t-value	p-value
1	Service innovation → customer value creation	0.60	8.31	***
2	Service innovation → customer satisfaction	0.59	8.16	***
3	Service innovation → customer satisfaction	0.59	8.16	0.02
4	Customer value creation → customer satisfaction	0.24	4.21	***

Table V. Mediation possibility test

Notes: p-values of ***Represent 0.000 significance level

Now, determining the type of relationship, if service innovation on CS is less in the third model than in the second model, then the mediation is said to be partial. Full mediation holds if the service innovation has no effect when the CVC is controlled. Even though the *t*-values in the third and second models were the same (8.16), the significant level for model two (p-value = 0.00) was stronger than that of model 3 (p-value = 0.02). This indicates a partial mediation.

After determining that a customer value created by a service firm partially mediates the relationship between their service innovation and CS, a systematic analysis was applied to the structural model to provide a comprehensive representation of *H4* and *H5*. First, the path coefficients for the relationships service innovation and the CS was examined. The effect of service innovation on CS was positive and statistically significant ($\beta = 0.59$, p-value = 0.02) with a *t*-value > 2.575 (8.16). Second was the inclusion of the mediator. The second and third objectives of this study were to identify the mediating role of CVC and the relationship between CVC and CS.

The results indicate that CVC partially mediated the relationship between service innovation and CS as both the direct effect with mediator (service innovation → CVC → CS, path 1: $\beta = 0.48$, $p = 0.00$; path 2: $\beta = 0.24$, $p = 0.02$) and the indirect effect with mediator (service innovation → CS, $\beta = 0.59$, $p = 0.00$) were significant. The results imply that service innovation influences CS even without creating customer value. However, CVC improves the relationship between service innovation and CS since it has a significant positive relationship with CS ($\beta = 0.24$, $p = 0.00$). This provides support for *H4* and *H5*. Table VI presents a summary of the mediation test.

5. Discussions

The key objective of this study is primarily to explore the utilization of service firms' innovation to achieve CS on service firms' CVC efforts. The fundamental question underlying the current study is thus articulated as: How do service firms realize CS through the deployment of their service innovations amidst the constraints of their environment? In an attempt to address this question, the study sought to evaluate three key questions which cumulated into both theoretical and empirical investigations in the previous chapters.

5.1 Influence of service innovation on CS

The first objective of this study sought to examine the influence of Ghanaian telecommunication operators' innovation, that is, in a NSC (*H1*), or a NSP (*H2*), or a NTS

	Unstandardized regression path	β estimate	*t*-value	*p*-value	Hypothesis results
(Direct effect) without mediator	Service innovation → customer satisfaction	0.59	8.16	***	Supported
H4 (direct effect) with mediator	Service innovation → customer satisfaction	0.59	8.16	0.02	Supported partial mediation as both direct and indirect paths are significant
	Customer value creation → customer satisfaction	0.24	4.21	***	
H5 (indirect effect) with mediator	Service innovation → customer satisfaction	0.59	8.16	***	Supported
	Customer value creation → customer satisfaction	0.24	4.21	***	

Notes: RMSEA = 0.043, NFI = 0.95, GFI = 0.98, TLI = 0.96, CFI = 0.99, χ^2/df = 1.43. ***p-value: 0.001 (two-tailed)

Table VI. Summary of mediation test

(*H3*) on CS. Supporting *H1*, the findings of the study showed that Ghanaian telecommunication operators' innovation in a NSC has a positive and significant effect on CS ($p < 0.01$). Thus, as firms continuously innovate and strive for the creation of new ideas, products and services that have the potential of solving customer problems satisfactorily, customers' consideration to repurchase the service/product is assured. This finding is congruent to that of some scholars (Edvardsson *et al.*, 1995, 2005), who posit that for a service firm to increase CS, a service concept innovation that has a higher degree of solving customer problems, not only providing information on the service system, must be implemented.

Supporting the proposed *H2*, the results revealed that Ghanaian telecommunication operators' outstanding service process innovations have a positive and significant effect on CS ($p < 0.05$). The results could be interpreted as "a service firm's deployment of an enhanced way of customer interaction and outstanding service delivery process to meet customer needs, guarantees customer satisfaction." This finding confirms Iacobucci *et al.*'s (1994) assertion that during interactions and service delivery that take place between a customer and a firm, customers form perceptions about their service encounter, and subsequently evaluate whether the service experience met their expectations by providing value for them before they consider repurchase intentions.

Disconfirming the proposed *H3*, the findings indicated that Ghanaian telecommunication operator's NTS innovation does not significantly relate to CS ($p > 0.05$). The possible translation for this outcome would be that just the mere introduction of a new technology application does not guarantee CS. In order to enhance CS in a more significant manner, innovation in technological systems must be able to meet customer needs satisfactorily, as well as provide outstanding value to customers. Confirming this finding, Joseph and Stone (2003) postulate that an organization's technological innovations will engender CS if only they are responsive to advances in the technological environment and meet the expectations and needs of customers.

5.2 Mediating role of CVC on service innovation and CS

The second objective of the study sought to examine the mediating role of CVC on the relationship between their service innovation and CS. To achieve this objective, the researcher first modeled a second-order construct named service innovation, which combined all three construct, that is, NSC, NSP and NTS, to examine its effect as a whole on CS. It was not surprising that service innovation positively and significantly influenced CS ($p < 0.01$). This empirical result therefore can be interpreted that the more Ghanaian telecommunication operators engage in robust service innovation practices that meet customer needs, the higher the level of their CS toward their service offering. This conclusion is consistent with previous studies (Georghious and Keenan, 2006; Georgantzas and Acar, 1995; Auluck, 2002). Confirming the findings of earlier studies, Byerlee *et al.* (2002) suggest that through service innovation, companies can create highly satisfied customers who are loyal to an organization.

For the mediation effect, the researcher followed the suggestion of Baron and Kenny (1986). From the study, CVC was found to have a mediating effect on the relationship between service innovation and CS. Concerning the type of mediation, the results of the study showed that CVC partially and significantly mediates the relationship between service innovation and CS ($p < 0.01$). This indicates that telecommunication operators' innovations alone can influence CS even without creating customer value. However, a service innovation that creates value for customers can better improve and increase CS toward the service operator's offerings. Confirming this result, the findings of Chapman *et al.* (2002) indicate that innovation on its own is of lesser significance, as it is the value created by the innovation as perceived by the customer that provides the advantage of

the offering. According to Tether *et al.* (2001), service innovations typically transform the state of the customer's perceptions (De Jong *et al.*, 2003). This influence will add to the customer's perception of the value of the service, as has also been suggested in other studies (Flint *et al.*, 1997; Kandampully and Duddy, 1999). Additionally, Kandampully and Duddy (1999) severally suggest that a service firms' innovation that create, serve and add value to their customers' present and future needs is what establishes the firms' competitive advantage through increased CS.

5.3 The influence of CVC on CS

The third objective of the study sought to examine the influence of CVC on CS. The findings of the study suggested that creating value for customers through a service innovation could positively and significantly influence CS ($p < 0.00$). This result could be interpreted that when customers perceive to gain high social value, emotional value and functional value from a telecommunication operator's innovation, they are more likely to feel positive about their consumption experience, purchase decision and satisfaction toward the offering. This finding is similar to the findings of numerous scholars in different studies within marketing literature (Zeithaml, 1988; Rust and Oliver, 1993; McDougall and Levesque, 2000; Cronin *et al.*, 2000) who found out that CVC is a significant driver of CS. This finding also confirms earlier suggestions that when customers recognize higher levels of value in an offering, they are likely to feel positive about their consumption experience and purchase decision (Oh, 2000; Zeithaml, 1988).

6. Managerial implications

From the research objectives and results, it was found that firms are better positioned if they have consumers' top of the mind consideration to continuously repurchase their products and services. This infers that service firms must invest wisely and co-ordinate their service innovation activities well, so as to deliver outstanding innovative services that provide satisfaction to customers. This will enable companies to gain consumers' top of the mind consideration to build and enhance loyalty.

Furthermore, this research also identified three interrelated constructs which characterize the strategic process through which service firms can harness and deploy their service innovations to achieve CS. The conceptual framework for this study suggests that NSP, NSC and NTSs should be given astute consideration by managers if they want to increase CS toward their service offerings. In this regard, service providers should take into account the multi-dimensional nature of service innovation, as the different dimensions encompass very different service innovation aspects, offering varying possibilities for them to innovate on.

Service companies should also be aware that the service innovation dimensions are interrelated. Hence, changes within one service innovation dimension usually coincide or require relating or fitting changes in one or more of the other dimensions. In light of the significant results pertaining to service innovation and CVC influencing CS, managers should keep up the constant process of service innovation enhancement in order to create value for customers.

Practically, it is logical to realize that customers accepting a service product and their intentions to repurchase are essential to gaining higher market share. "Intentions to repurchase" is a viable indicator in estimating the number of re-acquisitions of the customer. It is therefore essential for managers to need to balance the two very well in order to maintain their market share through repeat patronage. Managers can therefore create very smart marketing strategies with outstanding service innovations to capture the market while leveraging on CVC to maintain their market share.

7. Conclusion and further research directions

The first objective of the study provided evidence for the justification that service innovation aid in achieving some level of CS. Thus, service innovation in a NSC and a NSP positively and significantly influences CS. However, service firm's NTS innovation had a feeble influence on CS. Results from the second objective saw a very strong and significant relationship between service innovation, CVC and CS. The third objective revealed a positive and significant relationship between CVC and CS.

From the various analysis and discussions, the study established that service innovation in creating customer value has a strong and positive influence on CS. This is essentially rational, as a firm's ability to put together innovative services that meet customers' functional, social and emotional value expectations will lead to CS. The study further established three major dimensions of service innovation (NSC, NSP and NTS) that are very effective in influencing CS.

The results from this current study are largely in accord with theoretical expectations. However, as with any scientific research, there are a number of study limitations and future direction which need to be pointed out. This research primarily used a specific service type, namely, mobile telecommunication service. This forms a certain limitation, as it may not yet be enough to derive conclusions for different types of services within the sector. However, this does form a basis for further research, in which other service types, such as hospitality, insurance, banking and many others can be assessed, offering data for cross-comparisons within the services sector.

References

Aker, J.C. and Mbiti, I.M. (2010), "Mobile phones and economic development in Africa", *The Journal of Economic Perspectives*, Vol. 24 No. 3, pp. 207-232.

Auluck, R. (2002), "Benchmarking: a tool for facilitating organizational learning?", *Public Administration and Development*, Vol. 22 No. 2, pp. 109-122.

Bagozzi, R.P. and Yi, Y. (2012), "Specification, evaluation, and interpretation of structural equation models", *Journal of the Academy of Marketing Science*, Vol. 40 No. 1, pp. 8-34.

Baron, R.M. and Kenny, D.A. (1986), "The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations", *Journal of Personality and Social Psychology*, Vol. 51 No. 6, pp. 1173-1179.

Bartlett, M.S. (1954), "A note on the multiplying factors for various χ^2 approximations", *Journal of the Royal Statistical Society: Series B (Methodological)*, Vol. 16 No. 2, pp. 296-298.

Bhattacherjee, A. (2001a), "An empirical analysis of the antecedents of electronic commerce service continuance", *Decision Support Systems*, Vol. 32 No. 2, pp. 201-214.

Bhattacherjee, A. (2001b), "Understanding information systems continuance: an expectation confirmation model", *MIS Quarterly*, Vol. 25 No. 3, pp. 351-370.

Bhattacherjee, A. and Premkumar, G. (2004), "Understanding changes in belief and attitude toward information technology usage: a theoretical model and longitudinal test", *MIS Quarterly*, Vol. 28 No. 2, pp. 229-254.

Boateng, R. (2016), *Research Made Easy*, CreateSpace Independent Publishing Platform, Accra.

Boulding, W. and Kirmani, A. (1993), "A consumer-side experimental examination of signaling theory: do consumers perceive warranties as signals of quality?", *Journal of Consumer Research*, Vol. 20 No. 1, pp. 111-123.

Brodie, R.J., Whittome, J.R. and Brush, G.J. (2009), "Investigating the service brand: a customer value perspective", *Journal of Business Research*, Vol. 62 No. 3, pp. 345-355.

Byerlee, D., Alex, G. and Echeverría, R.G. (2002), "The evolution of public research systems in developing countries: facing new challenges", *Agricultural Research Policy in an Era of Privatization*, CABI Publishing, Washinton, DC.

Byrne, B.M. (2013), *Structural Equation Modeling with LISREL, PRELIS, and SIMPLIS: Basic Concepts, Applications, and Programming*, Psychology Press.

Carlborg, P., Kindström, D. and Kowalkowski, C. (2014), "The evolution of service innovation research: a critical review and synthesis", *The Service Industries Journal*, Vol. 34 No. 5, pp. 373-398.

Chapman, R.L., Soosay, C. and Kandampully, J. (2002), "Innovation in logistic services and the new business model: a conceptual framework", *Managing Service Quality: An International Journal*, Vol. 12 No. 6, pp. 358-371.

Chen, C.F. (2008), "Investigating structural relationships between service quality, perceived value, satisfaction, and behavioral intentions for air passengers: evidence from Taiwan", *Transportation Research Part A: Policy and Practice*, Vol. 42 No. 4, pp. 709-717.

Cheng, C.H. and Chen, Y.S. (2009), "Classifying the segmentation of customer value via RFM model and RS theory", *Expert Systems with Applications*, Vol. 36 No. 3, pp. 4176-4184.

Coakes, E.W., Coakes, J.M. and Rosenberg, D. (2008), "Co-operative work practices and knowledge sharing issues: a comparison of viewpoints", *International Journal of Information Management*, Vol. 28 No. 1, pp. 12-25.

Cronin, J.J., Brady, M.K. and Hult, G.T.M. (2000), "Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments", *Journal of Retailing*, Vol. 76 No. 2, pp. 193-218.

Darroch, J. and McNaughton, R. (2002), "Examining the link between knowledge management practices and types of innovation", *Journal of Intellectual Capital*, Vol. 3 No. 3, pp. 210-222.

Dawar, N. and Sarvary, M. (1997), "The signaling impact of low introductory price on perceived quality and trial", *Marketing Letters*, Vol. 8 No. 3, pp. 251-259.

De Jong, J.P., Bruins, A., Dolfsma, W. and Meijaard, J. (2003), "Innovation in service firms explored: what, how and why", Business and Policy Research (EIM), Zoetermeer.

Diehl, K. and Poynor, C. (2010), "Great expectations?! Assortment size, expectations, and satisfaction", *Journal of Marketing Research*, Vol. 47 No. 2, pp. 312-322.

Drejer, I. (2004), "Identifying innovation in surveys of services: a Schumpeterian perspective", *Research Policy*, Vol. 33 No. 3, pp. 551-562.

Edvardsson, B., Gustafsson, A. and Roos, I. (2005), "Service portraits in service research: a critical review", *International Journal of Service Industry Management*, Vol. 16 No. 1, pp. 107-121.

Edvardsson, B., Haglund, L. and Mattsson, J. (1995), "Analysis, planning, improvisation and control in the development of new services", *International Journal of Service Industry Management*, Vol. 6 No. 2, pp. 24-35.

Eisingerich, A.B. and Rubera, G. (2010), "Drivers of brand commitment: a cross-national investigation", *Journal of International Marketing*, Vol. 18 No. 2, pp. 64-79.

Erdem, T. and Swait, J. (1998), "Brand equity as a signaling phenomenon", *Journal of Consumer Psychology*, Vol. 7 No. 2, pp. 131-157.

Ettlie, J.E. and Rosenthal, S.R. (2012), "Service innovation in manufacturing", *Journal of Service Management*, Vol. 23 No. 3, pp. 440-454.

Fallon, P. and Schofield, P. (2003), "First-timer versus repeat visitor satisfaction: the case of Orlando, Florida", *Tourism Analysis*, Vol. 8 No. 2, pp. 205-210.

Flint, D.J., Woodruff, R.B. and Gardial, S.F. (1997), "Customer value change in industrial marketing relationships: a call for new strategies and research", *Industrial Marketing Management*, Vol. 26 No. 2, pp. 163-175.

Flint, D.J., Woodruff, R.B. and Gardial, S.F. (2002), "Exploring the phenomenon of customers' desired value change in a business-to-business context", *Journal of Marketing*, Vol. 66 No. 4, pp. 102-117.

Flint, D.J., Larsson, E., Gammelgaard, B. and Mentzer, J.T. (2005), "Logistics innovation: a customer value-oriented social process", *Journal of Business Logistics*, Vol. 26 No. 1, pp. 113-147.

Fornell, C. and Larcker, D.F. (1981), "Evaluating structural equation models with unobservable variables and measurement error", *Journal of Marketing Research*, Vol. 18 No. 1, pp. 39-50.

Georgantzas, N.C. and Acar, W. (1995), *Scenario-Driven Planning: Learning to Manage Strategic Uncertainty*, Praeger, Cambridge.

Georghiou, L. and Keenan, M. (2006), "Evaluation of national foresight activities: assessing rationale, process and impact", *Technological Forecasting and Social Change*, Vol. 73 No. 7, pp. 761-777.

Giese, J.L. and Cote, J.A. (2000), "Defining consumer satisfaction", *Academy of Marketing Science Review*, Vol. 2000 No. 1, pp. 1-27.

Gotlieb, J.B., Grewal, D. and Brown, S.W. (1994), "Consumer satisfaction and perceived quality: complementary or divergent constructs?", *Journal of Applied Psychology*, Vol. 79 No. 6, pp. 875-885.

Hair, J.F. Jr, Hult, G.T.M., Ringle, C. and Sarstedt, M. (2016), *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, Sage Publications, New York, NY.

Hair, F.J. Jr, Sarstedt, M., Hopkins, L. and Kuppelwieser, V.G. (2014), "Partial least squares structural equation modeling (PLS-SEM) an emerging tool in business research", *European Business Review*, Vol. 26 No. 2, pp. 106-121.

Grawe, S.J., Chen, H. and Daugherty, P.J. (2009), "The relationship between strategic orientation, service innovation, and performance", *International Journal of Physical Distribution & Logistics Management*, Vol. 39 No. 4, pp. 282-300.

Hair, J.F. Jr, Black, W.C., Babin, B.J., Anderson, R.E. and Tatham, R.L. (2010), "SEM: an introduction", *Multivariate Data Analysis: A Global Perspective*, Pearson Education, Upper Saddle River, NJ.

Hauser, J., Tellis, G.J. and Griffin, A. (2006), "Research on innovation: a review and agenda for marketing science", *Marketing Science*, Vol. 25 No. 6, pp. 687-717.

Henard, D.H. and Dacin, P.A. (2010), "Reputation for product innovation: its impact on consumers", *Journal of Product Innovation Management*, Vol. 27 No. 3, pp. 321-335.

Hsu, M.H., Yen, C.H., Chiu, C.M. and Chang, C.M. (2006), "A longitudinal investigation of continued online shopping behavior: an extension of the theory of planned behavior", *International Journal of Human-Computer Studies*, Vol. 64 No. 9, pp. 889-904.

Hu, L.T. and Bentler, P.M. (1999), "Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives", *Structural Equation Modeling: A Multidisciplinary Journal*, Vol. 6 No. 1, pp. 1-55.

Hume, M. and Sullivan Mort, G. (2008), "Satisfaction in performing arts: the role of value?", *European Journal of Marketing*, Vol. 42 Nos 3/4, pp. 311-326.

Iacobucci, D., Grayson, K.A. and Ostrom, A.L. (1994), "The calculus of service quality and customer satisfaction: theoretical and empirical differentiation and integration", *Advances in Services Marketing and Management*, Vol. 3 No. 1, pp. 1-68.

Janssen, M.M. (2011), "Managing service innovation: measuring and modelling dynamic service innovation capabilities", Working Paper No. 14.07, Eindhoven Centre for Innovation Studies (ECIS), Technische Universiteit, Eindhoven.

Jaw, C., Lo, J.Y. and Lin, Y.H. (2010), "The determinants of new service development: service characteristics, market orientation, and actualizing innovation effort", *Technovation*, Vol. 30 No. 4, pp. 265-277.

Joseph, M. and Stone, G. (2003), "An empirical evaluation of US bank customer perceptions of the impact of technology on service delivery in the banking sector", *International Journal of Retail & Distribution Management*, Vol. 31 No. 4, pp. 190-202.

Kaiser, H.F. (1970), "A second generation little jiffy", *Psychometrika*, Vol. 35 No. 4, pp. 401-415.

Kandampully, J. and Duddy, R. (1999), "Competitive advantage through anticipation, innovation and relationships", *Management Decision*, Vol. 37 No. 1, pp. 51-56.

Kelloway, E.K. (1998), *Using LISREL for Structural Equation Modeling: A Researcher's Guide*, Sage Publications, Thousand Oaks, CA.

Khalifa, M. and Liu, V. (2002), "Satisfaction with internet-based services: the role of expectations and desires", *International Journal of Electronic Commerce*, Vol. 7 No. 2, pp. 31-49.

Kim, K., Hwang, J., Zo, H. and Lee, H. (2016), "Understanding users' continuance intention toward smartphone augmented reality applications", *Information Development*, Vol. 32 No. 2, pp. 161-174.

Kirmani, A. (1990), "The effect of perceived advertising costs on brand perceptions", *Journal of Consumer Research*, Vol. 17 No. 2, pp. 160-171.

Kline, R.B. (2015), *Principles and Practice of Structural Equation Modeling*, Guilford Publications, Quebec.

Klingmann, A. (2007), *Brandscapes: Architecture in the Experience Economy*, MIT Press, Cambridge.

Kunz, W., Schmitt, B. and Meyer, A. (2011), "How does perceived firm innovativeness affect the consumer?", *Journal of Business Research*, Vol. 64 No. 8, pp. 816-822.

Kuo, Y.F., Wu, C.M. and Deng, W.J. (2009), "The relationships among service quality, perceived value, customer satisfaction, and post-purchased intention in mobile value-added services", *Computers in Human Behavior*, Vol. 25 No. 4, pp. 887-896.

Küpper, C. (2001), "Service innovation – a review of the state of the art", Institute of Innovation Research and Technology Management, Munich.

Li, J.J. and Zhou, K.Z. (2010), "How foreign firms achieve competitive advantage in the Chinese emerging economy: managerial ties and market orientation", *Journal of Business Research*, Vol. 63 No. 8, pp. 856-862.

McDermott, C.M. and Prajogo, D.I. (2012), "Service innovation and performance in SMEs", *International Journal of Operations & Production Management*, Vol. 32 No. 2, pp. 216-237.

McDougall, G.H. and Levesque, T. (2000), "Customer satisfaction with services: putting perceived value into the equation", *Journal of Services Marketing*, Vol. 14 No. 5, pp. 392-410.

Mahmoud, M.A. and Hinson, R.E. (2012), "Market orientation, innovation and corporate social responsibility practices in Ghana's telecommunication sector", *Social Responsibility Journal*, Vol. 8 No. 3, pp. 327-346.

Menor, L.J., Tatikonda, M.V. and Sampson, S.E. (2002), "New service development: areas for exploitation and exploration", *Journal of Operations Management*, Vol. 20 No. 2, pp. 135-157.

Michel, S., Brown, S.W. and Gallan, A.S. (2008), "Service-logic innovations: how to innovate customers, not products", *California Management Review*, Vol. 50 No. 3, pp. 49-65.

Nunnally, J.C. (1978), "Psychometric methods", McGraw Hill, New York, NY.

Oh, H. (2000), "The effect of brand class, brand awareness, and price on customer value and behavioral intentions", *Journal of Hospitality & Tourism Research*, Vol. 24 No. 2, pp. 136-162.

Oke, A. (2007), "Innovation types and innovation management practices in service companies", *International Journal of Operations & Production Management*, Vol. 27 No. 6, pp. 564-587.

Oliver, R.L. (1977), "Effect of expectation and disconfirmation on postexposure product evaluations: an alternative interpretation", *Journal of Applied Psychology*, Vol. 62 No. 4, pp. 480-486.

Oliver, R.L. (1980), "A cognitive model of the antecedents and consequences of satisfaction decisions", *Journal of Marketing Research*, Vol. 17 No. 4, pp. 460-469.

Ostrom, A.L., Bitner, M.J., Brown, S.W., Burkhard, K.A., Goul, M., Smith-Daniels, V., Demirkan, H. and Rabinovich, E. (2010), "Moving forward and making a difference: research priorities for the science of service", *Journal of Service Research*, Vol. 13 No. 1, pp. 4-36.

Pallant, J. (2011), "Multivariate analysis of variance", *SPSS Survival Manual. Crows Nest: Allen & Unwin*, Vol. 20 No. 11, pp. 283-296.

Palmatier, R.W. (2008), "Interfirm relational drivers of customer value", *Journal of Marketing*, Vol. 72 No. 4, pp. 76-89.

Pappu, R. and Quester, P.G. (2016), "How does brand innovativeness affect brand loyalty?", *European Journal of Marketing*, Vol. 50 Nos 1/2, pp. 2-28.

Patterson, P.G., Johnson, L.W. and Spreng, R.A. (1996), "Modeling the determinants of customer satisfaction for business-to-business professional services", *Journal of the Academy of Marketing Science*, Vol. 25 No. 1, pp. 4-17.

Rao, A.R., Qu, L. and Ruekert, R.W. (1999), "Signaling unobservable product quality through a brand ally", *Journal of Marketing Research*, Vol. 36 No. 2, pp. 258-268.

Rezaei, S. (2015), "Segmenting consumer decision-making styles (CDMS) toward marketing practice: a partial least squares (PLS) path modeling approach", *Journal of Retailing and Consumer Services*, Vol. 22 No. 8, pp. 1-15.

Rezaei, S. and Ghodsi, S.S. (2014), "Does value matters in playing online game? An empirical study among massively multiplayer online role-playing games (MMORPGs)", *Computers in Human Behavior*, Vol. 35 No. 6, pp. 252-266.

Rust, R.T. and Oliver, R.L. (Eds) (1993), *Service Quality: New Directions in Theory and Practice*, Sage Publications, Thousand Oaks, CA.

Santos, J. and Boote, J. (2003), "A theoretical exploration and model of consumer expectations, post-purchase affective states and affective behaviour", *Journal of Consumer Behaviour*, Vol. 3 No. 2, pp. 142-156.

Schumacker, R.E. and Lomax, R.G. (2004), *A Beginner's Guide to Structural Equation Modeling*, Psychology Press, OH.

Slater, S.F. and Narver, J.C. (1994), "Market orientation, customer value, and superior performance", *Business Horizons*, Vol. 37 No. 2, pp. 22-28.

Slater, S.F. and Narver, J.C. (1995), "Market orientation and the learning organization", *The Journal of Marketing*, Vol. 59 No. 3, pp. 63-74.

Spence, A.M. (1974), *Market Signaling: Informational Transfer in Hiring and Related Screening Processes*, Vol. 143, Harvard University Press, Cambridge.

Spence, M. (2002), "Signaling in retrospect and the informational structure of markets", *The American Economic Review*, Vol. 92 No. 3, pp. 434-459.

Stigler, G.J. (1961), "The economics of information", *Journal of Political Economy*, Vol. 69 No. 3, pp. 213-225.

Stiglitz, J.E. (2000), "The contributions of the economics of information to twentieth century economics", *The Quarterly Journal of Economics*, Vol. 115 No. 4, pp. 1441-1478.

Sundbo, J. (1997), "Management of innovation in services", *Service Industries Journal*, Vol. 17 No. 3, pp. 432-455.

Tanaka, J.S. (1993), "Multifaceted conceptions of fit in structural equation models", *Sage Focus Editions*, SAGE Publications, Inc., Los Angeles, CA.

Tether, B., Metcalfe, J.S. and Miles, I. (2001), "Horndal at Heathrow?: Co-operation, learning and innovation: investigating the processes of runway capacity creation at Europe's most congested airports", Centre for Research on Innovation and Competition, University of Manchester.

Turel, O. and Serenko, A. (2006), "Satisfaction with mobile services in Canada: an empirical investigation", *Telecommunications Policy*, Vol. 30 No. 5, pp. 314-331.

Vandenbosch, M.B. (1996), "Confirmatory compositional approaches to the development of product spaces", *European Journal of Marketing*, Vol. 30 No. 3, pp. 23-46.

Van Riel, A.C. and Lievens, A. (2004), "New service development in high tech sectors: a decision-making perspective", *International Journal of Service Industry Management*, Vol. 15 No. 1, pp. 72-101.

Vargo, S.L. and Lusch, R.F. (2004), "Evolving to a new dominant logic for marketing", *Journal of Marketing*, Vol. 68 No. 1, pp. 1-17.

Wang, C.L. and Ahmed, P.K. (2004), "The development and validation of the organisational innovativeness construct using confirmatory factor analysis", *European Journal of Innovation Management*, Vol. 7 No. 4, pp. 303-313.

Wilke, J. and Sorvillo, N. (2005), *Targeting Early Adopters – A Means for New Product Survival*, ACNielsen BASES Publication, New York, NY.

Woodruff, R.B. and Flint, D.J. (2006), "Marketing's service-dominant logic and customer value", *The Service-Dominant Logic of Marketing: Dialog, Debate, and Directions*, Routledge, Oxford.

Yusif, B. (2012), "Adopting a specific innovation type versus composition of different innovation types: case study of a Ghanaian bank", *International Journal of Bank Marketing*, Vol. 30 No. 3, pp. 218-240.

Zeithaml, V.A. (1988), "Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence", *The Journal of Marketing*, Vol. 52 No. 3, pp. 2-22.

Zhao, J., Wang, T. and Fan, X. (2015), "Patient value co-creation in online health communities: social identity effects on customer knowledge contributions and membership continuance intentions in online health communities", *Journal of Service Management*, Vol. 26 No. 1, pp. 72-96.

Further reading

Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.C. (1998), *Multivariate Data Analysis*, 5th ed., Prentice Hall International, New York, NY.

Corresponding author

Mahmoud Abdulai Mahmoud can be contacted at: mamahmoud@ug.edu.gh