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# Assessing service quality and customer behavioral responses in hospital outpatient services

## A formative measurement approach

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### Abstract

**Purpose** – In contrast to the reflective approach of service quality measurement, this paper aims to propose and validate a parsimonious multidimensional second-order formatively measured model of service quality for primary health-care services provided by hospital outpatient departments. The index's empirical validity is examined by investigating the strength of its relationship with certain behavioral responses such as patient satisfaction and behavioral intentions.

**Design/methodology/approach** – Data were collected through a stratified random sampling from eight hospital outpatient departments in Greece. Covariance-based structural equation modeling techniques were used to validate the proposed service quality index and further investigate its effect on patient satisfaction and behavioral intention.

**Findings** – The data analysis indicated that the proposed formative index is fully functional with medical care being the factor and mostly contributes to service quality perception, followed by administrative service and staff performance, and facilities condition and nursing care. It, further, confirmed the partial mediating role of satisfaction, as it enhances the high impact of service quality on behavioral intentions.

**Research limitations/implications** – The relationships among hospital outpatient departments service quality, patient satisfaction and behavioral intentions were validated with data from one country and a health-care system which is state driven and funded.



**Practical implications** – An understanding of hospital primary health-care service quality formation is important to health-care decision makers because it offers them the opportunity to consider patients' needs and wants, and takes the appropriate actions for improving the relevant underlying procedures in a more efficient manner to achieve favorable behavioral responses.

**Originality/value** – The paper manages to propose and empirically evaluate a formatively measured approach of service quality and investigate the effects of the proposed index on patient satisfaction and behavioral intention, especially in the hospital outpatient services context in Greece.

**Keywords** Satisfaction, Efficiency, Service quality, Patient satisfaction, Behavioural intentions, Services management, Formative measurement, Nursing care, Hospital outpatient services, Medical care, Facilities condition

**Paper type** Research paper

## 1. Introduction

Primary health-care services are a major element of any health-care system (Raposo *et al.*, 2009), as it brings health care closer to citizens' place of residence and work, operating as their first level of contact with health-care system (Cueto, 2004). Public primary health-care services in Greece are delivered through a dual system of primary health-care centres, and hospital outpatient services, which are part of the National Healthcare System and Social Insurance Organization (Papanikolaou and Zygiaris, 2014; Fotiadis and Vassiliadis, 2013).

Despite the efforts that have been undertaken over the past decade to modernize and improve the national health-care services (Papanikolaou and Ntani, 2008), its structural and functional efficiency needs to be further improved by upgrading the quality of the relevant services offered (Oikonomou *et al.*, 2015). The ongoing recession puts even more to find ways to balance out the deteriorating government spending on public health system via an effective mechanism that will improve these services. This becomes even more important as the vast majority of individuals, due to tight economic conditions, report to the public system first, leaving the private as the last resort.

For the state and health-care organizations to plan and deliver better primary health-care services, it is fundamental to identify and assess which service factors should be improved to meet some high standards and gain positive behavioral responses (Raposo *et al.*, 2009; Meesala and Paul, 2016). Our intention is to go beyond the study of individual factors and their effect on the health-care system by measuring the quality of the delivered primary health-care services from hospital outpatient departments and especially the customer-oriented quality assessment measures where several behavioral responses are rooted (Dagger *et al.*, 2007; Oikonomou *et al.*, 2015).

Despite the fact that primary health-care services are a vital substance for a well-functioning society, there are only a few reliable and valid instruments to effectively measure service quality and tackle the complexities of the primary health-care service setting. Previous service quality conceptualization efforts usually use multidimensional models to assess service quality in the health-care context (Otani and Kurz, 2003; Dagger *et al.*, 2007; Raposo *et al.*, 2009; Sumaedi *et al.*, 2016; Miranda *et al.*, 2012; Shabbir *et al.*, 2016). Based on the fact that customers tend to judge their experience as a whole rather than evaluating each single sub-process separately (Sousa and Voss, 2012), many studies consider service quality as a multidimensional reflectively measured higher-order construct (Sumaedi *et al.*, 2016; Hossain *et al.*, 2015). However, existing literature argues that the formative measurement approach with composite indicators might be more appropriate to uncover the formation of service quality perception (Collier and Bienstock, 2006; Carlson and O'Cass, 2011; Sousa and Voss, 2012). As inappropriate use of the reflective or formative measurement perspective causes significant specification errors which affect the legitimacy

of the higher-order construct and the accuracy of its relationships with other constructs, the justification of the appropriate measurement perspective in service quality for primary health-care services is of paramount importance (Diamantopoulos and Winklhofer, 2001). Miranda *et al.* (2012) are the first who proposed a formative perspective to measure the service quality of primary health-care services. They relied on partial least squares (PLS) approach to specify and estimate the structural model. However, the appropriateness of PLS in validating models containing formative variables is questionable, as it does not provide an overall goodness-of-fit measure and is more suitable for exploratory studies (Rönkkö *et al.*, 2016). Diamantopoulos (2011) provided justification about the restrictions of PLS methodology and highlighted the benefits of employing covariance structure analysis (CSA) when investigating structural equation models with formative constructs.

This paper contributes to the existing literature by:

- providing an overview regarding the conceptualization of service quality in the primary health-care service context and discussing the available measurement approaches;
- proposing and validating a parsimonious multidimensional second-order formatively measured service quality model of primary health-care services provided by hospital outpatient departments – the index's empirical validity is examined by investigating the strength of its relationship with certain behavioral responses, such as patient satisfaction and behavioral intentions; and
- discussing theoretical and managerial implications of the service quality index – the results of this paper are expected to help managers of hospital outpatient departments to improve perceived service quality and increase favorable patients' responses.

The paper is structured as follows. First, we review the literature on service quality and its relationships with various behavioral responses. Second, the study methodology is explained. Third, we present empirical results, and we conclude with managerial implications, limitations and suggestions for future research.

## **2. Perspectives of primary health-care service quality conceptualization – literature review**

Researchers agree that perceived service quality is an attitude toward or a global judgment about the superiority or inferiority of a service. In health care, high-quality service delivery is critical toward sustaining a high level of performance (Kashif *et al.*, 2014; Kashif *et al.*, 2016). Donabedian (1980) argues that health-care services quality assessments should include an analysis of the structure that is necessary to achieve a given level of quality (the characteristics of doctors, hospitals and staff); the process (interaction with the structure); and the result (what happens to the patient after the medical act). Although, the result/outcome dimension of health-care services is considered the most important element for patients, it is not very well studied. This happens mainly because this dimension of service quality is difficult to measure, as service provision happens long before the service results become apparent (Choi *et al.*, 2005). Moreover, Boller *et al.* (2003) consider the results of health-care services as a consequence of service quality, and not one of its components, stressing the need to focus on structure and process when analyzing service quality in health-care services. Finally, Peyrot *et al.* (1992) argue that it is possible to improve satisfaction through the improvement of aspects that are not related to service outcome quality, but aspects related to process quality.

In the general service context, SERVQUAL instrument, proposed by [Berry \*et al.\* \(1988\)](#) is used to measure process-related aspects of service quality including tangibles, reliability, responsiveness, assurance and empathy ([Kang and James, 2004](#)). Based on that, previous research used SERVQUAL to measure the quality of service in the health-care services context ([Kara \*et al.\*, 2005](#); [Wicks and Chin, 2008](#); [Ladhari and Rigaux-Bricmont, 2013](#); [Papanikolaou and Zygiaris, 2014](#); [Yousapronpaiboon and Johnson, 2013](#); [Lee, 2016](#); [Turan and Bozaykut-Buk, 2016](#); [Meesala and Paul, 2016](#)). [Wicks and Chin \(2008\)](#) investigated the importance of SERVQUAL's original 11 health-care service attributes in three different stages of the service process: pre-process stage (outpatients' preadmission experience), process stage (outpatients' stay experience) and post-process experience (outpatients' after-discharge experience). The authors conclude that the process stage is the most influential determinant of overall patient satisfaction, while the impact of service quality dimensions differs among stages.

Despite the fact that SERVQUAL is a well-known instrument to measure service quality, several studies raised criticism concerning the stability of its dimensions and the problems resulting from the items' measurement using the differences between expectations and perceptions scores ([Brady and Cronin, 2001](#); [Miranda \*et al.\*, 2012](#)). As a result, other studies propose specific instruments to measure health-care service quality. [Carr-Hill \(1992\)](#) finds that patients' evaluations mainly concerned six structural and process dimensions including medical care and information, food and physical facilities, non-tangible environment, nursing care, quantity of food and appointment bookings. [Chahal \(2000\)](#) proposed that there are three key-drivers of patients' loyalty in India: physicians care services, nursing care services and operational quality/facilities. [Shabbir \*et al.\* \(2016\)](#) used five factors to measure health-care service quality, namely, physician care, nurses care, support staff, operational activities and physical maintenance, to investigate their direct and indirect (through patient satisfaction) effects on patient loyalty in Pakistan. Finally, [Dagger \*et al.\* \(2007\)](#) and [Sumaedi \*et al.\* \(2016\)](#) developed multidimensional hierarchical scales for measuring health service quality that have interpersonal quality, technical/outcome quality, environmental quality and administrative quality as primary dimensions.

In primary health-care services, [Bryant \*et al.\* \(1998\)](#) refer to a number of key parameters regarding the quality of service. Specifically, they include socio-emotional variables, referring to the perceptions that patients have about the communication and interpersonal capacities of health-care services (affection, empathy, politeness); system variables, referring to the physical or technical aspects of the local organization in which the service is provided (e.g. waiting time for the appointment, access to services, technical quality of services, costs, comfort of equipment and the appointment's duration); influential variables, such as list of contacts (family and friends); and moderating variables, referring to socio-demographic variables and state of health. [Haddad \*et al.\* \(1998\)](#) argue that health-care delivery, personnel and facility should be the main dimensions of patient perceptions regarding the quality of primary health-care services in developing countries. Similarly, [Otani and Kurz \(2003\)](#), in their study of hospital services in the USA, identify six key service quality dimensions: admission process, physician care, nursing care, compassion to family/friends, pleasantness of the surroundings and discharge process. Also, [Miranda \*et al.\* \(2012\)](#), in their research of primary health-care service quality in Spain, proposed a tailor-made SERVQUAL scale to health-care context which includes four dimensions: facilities conditions, health staff quality, no health staff quality and operations efficiency. In the same context, [Raposo \*et al.\* \(2009\)](#) identified medical care, nursing care, administrative services and staff and facilities conditions as key determinants of primary health-care service quality. Moreover, [Giovanis and Pierrakos \(2015\)](#) used the four service quality attributes, which were proposed by

Raposo *et al.* (2009), to investigate the asymmetric effects of primary health-care service quality on patient satisfaction including the role of patients' characteristics on the nature of these relationships. Finally, Zarei (2015) identified eight dimensions of primary health-care service quality including physician consultation, information to patient, physical environment, service cost and efficiency of administration services (i.e. appointment, accessibility, perceived waiting time and admission process). Therefore, researchers agree that primary health-care service quality is a multi-dimensional concept.

### 3. A new service quality index for primary health-care services – conceptualization, measurement and validation

The majority of the aforementioned studies of primary health-care service quality assessment try to validate the proposed service quality conceptualization by investigating the individual effects of service quality dimensions on certain measures expressing patient behavioral responses. However, many researchers in the field of services in general (Caceres and Paparoidamis, 2007; Collier and Bienstock, 2006; Carlson and O'Cass, 2011; Sousa and Voss, 2012) and in that of health-care services in particular (Dagger *et al.*, 2007; Miranda *et al.*, 2012; Sumaedi *et al.*, 2016), consider the service quality as a more abstract concept by using a higher-order construct for its measurement. This is based on the fact that perceived service quality is the result of a customer's view of a bundle of service dimensions/components, some of which are technical and some of which are functional in nature (Sousa and Voss, 2012).

Based on the discussion above, this study proposes a second-order construct to model overall service quality of primary health-care services, which in turn is related to the four first-order service quality constructs that were proposed by Raposo *et al.* (2009): medical care, nursing care, administrative services and staff and facilities conditions. This scale was selected because it is the most integrative one to measure primary health-care service quality, as its dimensions can be found in several other studies concerning service quality in the health-care context (Chahal, 2000; Dagger *et al.*, 2007).

The definition of the causality between the first-order constructs of service quality and the overall perceived service quality determines the construct's measurement perspective (Diamantopoulos and Winklhofer, 2001). The selection of the appropriate measurement method is a very important task given that an inappropriate selection results in construct specification errors and jeopardizes the constructs' validity. There are two different measurement perspectives for higher-order constructs such as service quality. In a reflective relationship, the high-order construct exists independently of the lower-order constructs used, and the direction of causality is from the higher-order construct to its lower-order dimensions. In this case, the dimensions of the higher-order construct are themselves constructs that function as specific manifestations of the latter (Edwards, 2001). In a formative relationship, the higher-order construct is formed as a combination of its lower-order components, and the direction of causality is from the lower-order components to the higher-order construct (Jarvis *et al.*, 2003). Coltman *et al.* (2008) propose a two-step justification process (i.e. theoretical and empirical) to decide whether a construct should be measured as formative or reflective.

#### 3.1 Theoretical justification of the service quality index

Given that a model's theoretical specification is guided by five conditions that should prevail for a construct to be measured as formative (Jarvis *et al.*, 2003), the current study proposes a second-order formatively measured construct for service quality of primary health-care services which are provided by hospital outpatient departments, comprising four service

quality components of primary health-care services, proposed by [Raposo et al. \(2009\)](#), for the following reasons:

- the four constructs proposed by [Raposo et al. \(2009\)](#): medical care, nursing care, administrative services and staff and facilities conditions are defining characteristics of overall service quality, as they can be found in several aforementioned proposals aiming to conceptualize health-care service quality ([Chahal, 2000](#); [Dagger et al., 2007](#), [Miranda et al., 2012](#));
- Changes in any of these four components are expected to cause changes in overall service quality – according to [Brady and Cronin \(2001\)](#), overall service quality relates to an overall summative assessment by users based on their perception for the above four components, and thus, the direction of causality flows from the four first-order constructs to the second-order construct;
- The four components of overall perceived service quality do not share a common theme as they express totally different aspects of service quality (i.e. interactions, processes, tangibles) and, hence, need not to be interchangeable and correlated – for example, facilities conditions have nothing to do with the quality of medical or nursing care;
- Eliminating one service quality component will alter the conceptual domain of perceived service quality – the literature suggests that the four components comprise important aspects of perceived service quality, and thereby elimination of any one would alter the meaning of perceived service quality; and
- The four service quality components do not have the same antecedents and consequences. The four components are determined by different processes (i.e. medical and nursing care may be affected by education, training procedures and organizational cultural, whereas facilities conditions may be affected by disposable funding). Moreover, some components (i.e. medical care) are expected to be more related to transaction-specific constructs (i.e. satisfaction), while others (i.e. nursing care) with relational-specific constructs (i.e. commitment) ([Giovannis and Pierrakos, 2015](#)). Based on the above discussion, the use of a formative measurement approach for perceived service quality of primary health-care services provided by hospital outpatient departments is more appropriate.

### *3.2 Empirical justification of the service quality index*

Apart from the theoretical justification of service quality measurement provided in the previous section, the empirical justification of the validity of the proposed index is necessary ([Coltman et al., 2008](#)). As the assessment of the proposed index appropriateness is problematic, as it is not possible to empirically assess the reliability of the service quality index ([Coltman et al., 2008](#), [Bagozzi \(1994\)](#) proposes a process that requires the investigation of the relationship between the proposed service quality index and at least two feasible, theory-based out-of-index variables ([Diamantopoulos and Winklhofer, 2001](#)). In this study, customers' behavioral responses expressing patient satisfaction and behavioral intentions are used to test the empirical validity of the proposed service quality index. The statistical significance of the four proposed components in determining the second-order construct, as well as the examination of their intercorrelations and collinearity, are required at this stage ([Diamantopoulos and Winklhofer, 2001](#); [Baumann et al., 2012](#)). The next step concerns the external/nomological validity of the proposed index by investigating the significance of its

relationships with patient satisfaction and behavioral intentions and as well as its predictive ability to explain the two external variables' variability.

There are several approaches to defining satisfaction in the health-care services context. For some researchers, satisfaction is defined as the gap between the expected and perceived features of a service (Fitzpatrick and Hopkins 1983), while for others, satisfaction is a special form of attitude, reflecting the extent to which a patient liked or disliked the experienced service (Woodside *et al.*, 1989). In general, satisfaction can be viewed either as an attitude resulting from the confirmation or disconfirmation of expectations (result perspective), or as a process which represents customer perception of the interaction that takes place during service delivery (process perspective). According to MacStravic (1991), satisfaction tracking is a significant input for planning processes assessments, as a satisfied patient is more inclined to follow a doctor's prescription, which, in turn, will affect the customer's satisfaction relative to the service outcome (e.g. symptoms relief). This will probably demotivate possible conflicts like complains and lawsuits (Ahorony and Strasser, 1993), providing positive referrals about the service provider (Chang *et al.*, 2013). On the other hand, there is a connection between customer satisfaction and staff satisfaction (Welch, 2010). Thus, it is not only important to know the result from the service experience but also what are the causes and dimensions that will raise the satisfaction.

Services research has put considerable effort into deciding the causality direction between service quality and customer satisfaction. A review of the literature suggests two alternative perspectives regarding the relationship between service quality and satisfaction. The first is the transaction-specific, whereby satisfaction antecedes service quality. In health-care services, most empirical work corroborates the dominant quality-affects-satisfaction view (Dagger *et al.*, 2007; Raposo *et al.*, 2009; Chahal and Kumari, 2012; Ladhari and Rigaux-Bricmont, 2013; Chen and Fu, 2015; Giovanis and Pierrakos, 2015; Shabbir *et al.*, 2016; Meesala and Paul, 2016). The theoretical support is based on Bagozzi's (1992) appraisal-emotional response-coping attitudinal framework, as service quality is conceptualized as a cognitively oriented construct, while satisfaction is mainly conceptualized as an affective construct (Brady *et al.*, 2005). Bagozzi's attitudinal framework suggests that consumers, after evaluating a service cognitively, develop emotional reactions to this appraisal, which finally drive behavioral intentions. Based on the above the following hypothesis is posed:

*H1.* Perceived service quality of primary health-care services has a significant positive effect on satisfaction.

Behavioral intentions "[...] signal whether customers will remain with or defect from the company" (Zeithaml *et al.*, 1996, p. 33), and they are closely associated with customer loyalty. More specifically, behavioral intentions, alternatively labeled as conative loyalty in the cognition-affect-connection-action link of the loyalty chain (Oliver, 1999), is closer to real action (action loyalty). Zeithaml *et al.* (1996) have proposed repurchase intentions and word of mouth as the more frequently determinants of behavioral intentions adopted in studies of service evaluation processes in different service settings. Chahal (2000) proposed a tri-component model to measure patient's intentional loyalty including:

- using the providers again for the same treatment (UPAS);
- using the providers again for different treatments (UPAD); and
- referring the providers to others.



Today, behavioral intentions are considered as a better predictor of service providers' performance than satisfaction. [Oliver \(1999\)](#) suggests that not all satisfied customers remain loyal, and that satisfaction represents only the first step in loyalty formation, which is ultimately affected by other mechanisms such as personal fortitude, social bonding and their synergistic effects. In recent studies, behavioral intentions are usually explored within the cognitive-affective-conative framework ([Brady et al., 2005](#); [Dagger et al., 2007](#); [Meesala and Paul, 2016](#)), which is theoretically justified by Bagozzi's self-regulatory mechanisms model. In summary, the cognitive component (attribute appraisal) normally precedes emotional responses, which ultimately lead to behavioral intentions ([Bagozzi, 1992](#)).

Empirical research offers strong support for such causality in different service settings. For instance, the study of [Brady et al. \(2005\)](#), conducted in a multi-industry and multi-country setting, found that satisfaction (affective component) mediates the effect of service quality (cognitive component) on behavioral intentions (conative component). In the health-care service setting in particular, [Dagger et al. \(2007\)](#); [Chahal and Kumari \(2012\)](#) and [Shabbir et al. \(2016\)](#) find that satisfaction is largely affected by perceived service quality, and that satisfaction enhances the impact of service quality on behavioral intentions, while [Ng and Russell-Bennett \(2015\)](#) and [Meesala and Paul \(2016\)](#) revealed that patients' positive and negative emotions fully mediates the service quality-loyalty link. Given that primary health-care services are a critical concern for service customers, service quality is expected to be directly and indirectly (through satisfaction) related to patients' behavioral intentions. Based on these findings, we propose the following testable hypotheses:

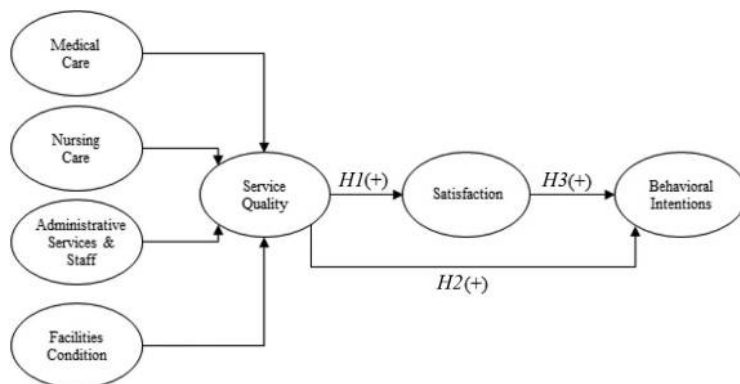
- H2.* Perceived service quality of primary health-care services has a significant positive effect on behavioral intentions.
- H3.* Customer satisfaction has a significant positive impact on behavioral intentions.

[Figure 1](#) depicts the proposed model reflecting the proposed relationships among the six constructs.

## 4. Research methodology

### 4.1 Measures and survey instrument design

Data were collected through a questionnaire which was developed to understand patients' perception about service quality of hospital outpatient departments as well as their patients' satisfaction and behavioral intentions. The questionnaire was divided into five sections: the



**Figure 1.**  
Proposed model

first addresses general information about respondents' demographics and primary health-care usage pattern (frequency and motives). The next four sections address specific questions about patients' perception regarding hospitals' facilities, administrative processes, medical and nursing care.

The scales used to measure the four primary health-care service components were adapted from the studies of [Dagger et al. \(2007\)](#) and [Raposo et al. \(2009\)](#). The scales proposed by [Dagger et al. \(2007\)](#) were adopted to measure patient satisfaction, reflecting general satisfaction, pleasure and delight from service experiences, and behavioral intentions, reflecting patients' revisit intentions and likelihood to recommend the service provider to their surroundings. An English version questionnaire was translated into Greek by a bilingual research assistant and then back-translated by another research assistant who was not related to the study. No major discrepancies were observed between the original and the back-translated version. All items were measured on five-point Likert scales anchored at 1 (strongly disagree) and 5 (strongly agree).

#### *4.2 Sample and data collection*

The target population of this study was users of primary health-care services in the district of Athens. As the capital of Greece is highly populated (half of the total population), the demand for primary health-care services is representative for the whole country. Eight main public hospitals providing outpatient services were selected for data collection. Four of them were specific disease hospitals, and the others were general hospitals. A stratified random sampling was used with a sampling ratio of 1:5, meaning that for every five patients that left the clinics, one was interviewed. Seven hundred questionnaires were distributed. The fieldwork was conducted in October 2015. Contacts were made at different times of the day and days of the week for day- and time-related bias to be eliminated. The fieldwork resulted in 420 filled questionnaires of which 407 usable questionnaires were coded for data analysis, yielding a net response rate of about 58 per cent.

Using the [Armstrong's and Overton's \(1977\)](#) procedure, nonresponse bias was evaluated by comparing early respondents with late respondents for all constructs considered in this study. No significant differences were recorded at the 0.05 level of significance.

#### *4.3 Data analysis method*

SPSS 19.0 and AMOS 18.0 statistical and structural equation modeling software packages were used for data analysis purposes. [Miranda et al. \(2012\)](#) proposed a similar index for primary health-care services quality in Spain, and used PLS to test it. While the PLS approach has several features that make it attractive ([Hair et al., 2011](#)), several recent studies have questioned its appropriateness in validating formative models, as it does not provide an overall goodness-of-fit measure. [Rönkkö et al. \(2016\)](#) provide an overview of PLS approach related problematic areas, and for this reason, CSA was preferred over PLS to validate the service quality index. Constructs measured with composite indicators, in contrast to those measured with causal indicators (the other measurement option for formative constructs) do not have an error term ([Diamantopoulos and Winklhofer, 2001](#)), and as such, the indicators act as contributors to a construct rather than causing it ([Bollen, 2011](#)). Data analysis involves a two-phase approach. The first phase aims to assess the reliability and validity of the first-order constructs before using them in the research model, and the second phase tests the empirical validity of the service quality index by investigating the significance of its structural effects on patients' satisfaction and behavioral intentions as well, as its predictive ability to explain the variability of the two external variables ([Diamantopoulos and Winklhofer, 2001](#)).

## 5. Empirical results

### 5.1 Sample profile

The key sample's characteristics are given in [Table I](#). Participants of the study were composed of 57 per cent female and 43 per cent male. In relation to age, 14 per cent of respondents were in the 18-24 age group; 19 per cent in the 25-34 age group; 19 per cent in the 35-44 age group; 21 per cent in the 45-54 age group; 13 per cent in the 55-64 age group; and 14 per cent were above 65 years. In total, 55 per cent of the respondents were married, 35 per cent were single and 10 per cent were widow/widower or divorced. In terms of monthly income, 50 per cent of the respondents' monthly salary is less than €1,000; 36 per cent earns between €1,000 and €2,000; and 14 per cent gets more than €2,000. In terms of educational background, 34 per cent of respondents have at least a university degree. Finally, 62 per cent of the respondents have visited primary health-care services less than three times during the past 12 months; 27 per cent between four and ten times and 11 per cent more than twenty times.

Characteristics	Responses ( $N = 407$ )	Sample distribution (%)
<i>Gender</i>		
Male	172	43
Female	231	57
<i>Age</i>		
18-24	56	14
25-34	79	19
35-44	78	19
45-54	85	21
55-64	55	13
65+	54	14
<i>Education</i>		
Primary	135	33
Secondary	133	33
University degree	111	27
Postgraduate degree	28	7
<i>Marital status</i>		
Single	144	35
Married	222	55
Other	41	10
<i>Monthly income (€)</i>		
0-999	202	50
1,000-1,999	147	36
2,000+	58	14
<i>Last year visit frequency</i>		
1-3	253	62
4-10	109	27
10+	45	11

**Table I.**  
Sample profile

### 5.2 Measurement model assessment – first-order constructs

Confirmatory factor analysis via AMOS 18.0 was used to examine the first-order research measures and their internal reliability and validity. First, the measurement model's fitting performance was assessed using a series of goodness-of-fit indices. As it is shown in Table II, all indices' ( $\chi^2/df$ , RMSEA, SRMR, NFI, TLI, CFI) values satisfy the recommended cut-off criteria (Hu and Bentler, 1999), indicating that the hypothesized model fits the sample data well. Second, the convergent and discriminant validity of the constructs were examined. All standardized factor loadings, provided in Table II, were greater than 0.70 and statistically significant at 1 per cent level. Moreover, the average variance extracted values for all constructs range from 0.61 to 0.85, well above the 0.50 cut-off. The results of the above two tests provide evidence of convergent validity (Fornell and Larcker, 1981). Internal reliability of each construct was assessed with the composite reliability (CR) index and the Cronbach's alpha (CA). The CR and CA values for all constructs, ranging from 0.85 to 0.96 and 0.86 to 0.96, respectively, exceeded the cut-off value of 0.7, indicating good internal reliability (Fornell and Larcker, 1981).

Finally, discriminant validity was assessed by comparing the square root of AVE extracted from each construct with the correlations among constructs. As indicated in Table III, the square roots of AVE for all constructs are higher than their shared variances, providing evidence of discriminant validity (Fornell and Larcker, 1981).

### 5.3 Service quality index empirical validation

Amos 18.0 was again used to assess the empirical validity of the service quality index. Given that the assessment of convergent validity and construct reliability is irrelevant for formatively measured constructs (Coltman *et al.*, 2008), the examination of how well the service quality index is related to other variables is proposed to test its validity. Incremental and stand-alone fit indices, included in Figure 2, show that the model fits the data well. The values of CFI, NFI and TLI are 0.94, 0.90 and 0.93, respectively ( $>0.9$ ). Root mean square error of approximation (RMSEA) is satisfactory (0.06).

The empirical justification to define service quality as a second-order formative construct begins with testing the first-order constructs intercorrelations, significance and collinearity (Diamantopoulos and Winklhofer, 2001; Baumann *et al.*, 2012). First, the correlations among the four first-order components were examined. As shown in Table III, the correlations among the four first-order service quality-related components range from 0.43 to 0.69 with an average of 0.59. This indicates that service quality is better represented as a formative, rather than a reflective, second-order construct, as the latter usually exhibits extremely high correlations ( $>0.80$ ) among first-order factors (Pavlou and El Sawy, 2006). Furthermore, as it is shown in Figure 2, the first-order service quality-related components were all found to have significant path coefficients in forming customers' perception about the quality of the delivered services. The examination of the proposed formative measure of service quality indicates that medical care ( $\beta = 0.53$ ;  $p < 0.001$ ); nursing care ( $\beta = 0.16$ ;  $p < 0.05$ ); administrative services & staff ( $\beta = 0.25$ ;  $p < 0.05$ ) and facility conditions ( $\beta = 0.24$ ;  $p < 0.001$ ) return significant coefficients. Multicollinearity assessment requires the computation of variance inflation factors (VIF) for the four first-order components of service quality. VIF values above 10 would suggest the existence of excessive multicollinearity and raise doubts about the validity of the formative measurement (Diamantopoulos and Winklhofer, 2001). The VIF values for the first-order service quality components range from 1.75 to 2.22. Therefore, multicollinearity is not a matter of concern for the service quality construct. These results confirm the validity of the proposed formative index for service quality of primary health-care services.

Items per construct	MV	SD	Loadings	CR	CA	AVE
<i>Medical care</i>						
Time spend with the patient	3.69	0.88	0.77	0.92	0.93	0.61
Accurate info about illness	3.80	0.90	0.81			
Medication instructions given	3.87	0.91	0.73			
Lifestyle instructions given	3.77	1.01	0.70			
Kindness	3.89	0.93	0.81			
Communication	3.85	0.97	0.80			
Interest	3.86	1.00	0.81			
<i>Nursing care</i>						
Willingness to serve	3.49	0.98	0.84	0.96	0.96	0.76
Kindness	3.48	1.03	0.84			
Communication	3.41	1.08	0.87			
Family support given	3.52	1.00	0.91			
Personal support given	3.35	1.06	0.92			
Service speed	3.34	1.04	0.81			
Interest	3.37	1.04	0.90			
<i>Administrative services and staff</i>						
Admittance procedures	3.28	1.02	0.73	0.93	0.93	0.61
Discharge procedures	3.42	0.95	0.75			
Staff's service speed	3.25	1.01	0.82			
Staff's behavior	3.41	0.98	0.84			
Waiting time	2.98	1.10	0.71			
Time consistency	3.17	1.09	0.82			
Staff interest	3.21	0.99	0.80			
Staff communication	3.30	0.98	0.78			
<i>Facilities conditions</i>						
Premises cleanliness	3.46	1.10	0.81	0.93	0.94	0.64
Toilet cleanliness	3.17	1.20	0.76			
Waiting areas' comfort	3.28	1.14	0.89			
Premises adequacy	3.31	1.12	0.89			
Room temperature	3.55	1.00	0.82			
Access for disable people	3.41	1.08	0.76			
Signing	3.67	1.08	0.77			
Operation time comfort	3.36	1.05	0.69			
<i>Satisfaction</i>						
General satisfaction	3.59	0.84	0.79	0.85	0.86	0.66
Happiness	3.58	0.91	0.88			
Delight	3.48	0.92	0.77			
<i>Behavioral intentions</i>						
Revisit intentions	3.37	1.10	0.94	0.92	0.92	0.85
Positive referrals	3.35	1.16	0.90			
Model fit measures						
			Value			Cut-off
$\chi^2$			1,264.65			
df			540			
<i>p</i> -value			0.00			
$\chi^2/df$			2.34			<3.0 or <5.0
RMSEA			0.06			<0.08
SRMR			0.05			<0.08
NFI			0.90			>0.90
TLI			0.93			>0.90
CFI			0.94			>0.90

**Notes:** Mean value (MV); Std. deviation (SD); Composite reliability (CR), Cronbach's alpha (CA), Average variance extracted (AVE)

**Table II.**  
Descriptive statistics  
of items and  
psychographic  
properties of first-  
order constructs

Next, investigating the results of the structural part (paths between the formative index and two reflective concepts) provides nomological validation of the proposed service quality index. Diamantopoulos and Winklhofer (2001) suggest linking the index to reflective constructs with which they normally would be linked with. Patient satisfaction and behavioral intentions, two closely related, albeit different, constructs to service quality were selected for this purpose. The results show positive effects of service quality on customer satisfaction ( $\beta = 0.71; p < 0.001$ ) and behavioral intentions ( $\beta = 0.46; p < 0.001$ ). These results confirm *H1* and *H2*. In line with *H3*, satisfaction has a direct, positive effect on behavioral intentions ( $\beta = 0.36; p < 0.001$ ). The model also demonstrates a high level of explanatory power ( $R^2$ ) because the model's constructs explain 50 per cent of variance in satisfaction and 57 per cent of variance in behavioral intentions. The relatively high values of  $R^2$  indicate that sizeable portions of the variances in the dependent variables are explained by the chosen independent variables. These results confirm the proposed formative index for service quality of primary health-care services provided by hospital outpatient departments.

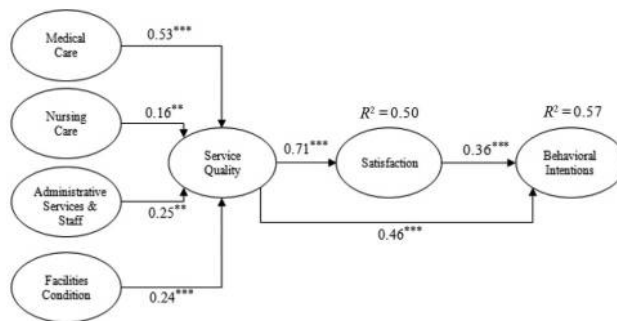
5.4 Mediation effects

The study also investigates the mediating role of satisfaction in the service quality-behavioral intentions link to understand how the cognitive (service quality) and the affective

**Table III.**  
Correlations among first-order constructs (discriminant validity assessment)

Construct	MC	NC	ASS	FC	PS	BI
Medical care (MC)	<i>0.78</i>					
Nursing care (NC)	0.65	<i>0.87</i>				
Administrative services and staff (ASS)	0.69	0.55	<i>0.78</i>			
Facilities conditions (FC)	0.56	0.43	0.68	<i>0.79</i>		
Satisfaction (PS)	0.68	0.47	0.62	0.52	<i>0.81</i>	
Behavioral intentions (BI)	0.64	0.56	0.60	0.57	0.68	<i>0.92</i>

**Notes:** Diagonal values in italic represent square root of AVE, and off-diagonal values are inter-construct correlations



Fit indices for structural model								
$\chi^2$	df	p-value	$\chi^2/df$	RMSEA	SRMR	NFI	TLI	CFI
1,277.89	543	0.00	2.35	0.06	0.05	0.90	0.93	0.94

**Figure 2.**  
Structural equation model's results

**Notes:** \*\*\* $p < 0.001$ ; \*\* $p < 0.05$

(satisfaction) aspects of the service evaluation process affect behavioral intentions (Brady *et al.*, 2005). For this purpose, a procedure proposed by Baron and Kenny (1986) was adopted. In the first stage, the relationships of service quality-satisfaction and service quality-behavioral intentions are examined. Service quality significantly affects satisfaction ( $\beta = 0.71$ ;  $p < 0.001$ ) and behavioral intentions ( $\beta = 0.71$ ;  $p < 0.001$ ) explaining 51 per cent in variance of both external variables. Also, if service quality and satisfaction are put together, the latter significantly affects behavioral intentions ( $\beta = 0.36$ ;  $p < 0.001$ ), but there is also a large reduction in the coefficient of service quality on behavioral intentions ( $\beta = 0.46$ ;  $p < 0.001$ ), with respect to that of the non-mediated relationship ( $0.46 \ll 0.71$ ). There is also a significant improvement in variance explanation of behavioral intentions ( $R^2 = 0.57$  vs 0.51) when satisfaction is included in the model. The large coefficient reduction and the model explanatory power improvement provide evidence that satisfaction partially mediates the relationship between service quality and behavioral intentions (Baron and Kenny, 1986). To calculate the value and the statistical significance of the indirect effect of service quality on behavioral intentions, the maximum likelihood bootstrapping procedure with a bootstrap sample of 1,000 and a bias correction confidence interval of 95 per cent was used (Kashif *et al.*, 2016). The result indicated that service quality indirectly affects behavioral intentions ( $\beta = 0.25$ ;  $t = 3.17$ ), which in combination with the significant effect of satisfaction on behavioral intentions ( $\beta = 0.36$ ;  $t = 3.66$ ), confirms the partial mediation effect of satisfaction in the service quality – behavioral intentions link.

## 6. Conclusions and implications

The objective of the current study is the development of a service quality instrument to monitor and improve the functional service quality aspects of primary health-care services provided by hospital outpatient departments in Greece. The findings, in accordance with those of Miranda *et al.* (2012), suggest that customers evaluate hospital outpatient service quality at an overall level, which is composed by four primary components: medical care, nursing care, administrative services and staff and facilities conditions. In particular, the results indicate that patients' perception of service quality delivered by medical staff mostly contributes to the overall service quality perception. The perceptions about facilities and administrative services and staff effectiveness appear to be the second and third contributors to overall service quality assessment. Nursing care is the least significant contributor to perceived service quality formulation. This is in accordance with the findings of Otani *et al.* (2003) and Raposo *et al.* (2009) and can be attributed to the fact that, in hospital outpatient services, patients interact much more with physicians and administrative staff than with nursing staff. The proposed index can be used by managers as a tool to measure the performance of services provided by hospital outpatient departments to determine their contribution on overall service quality perception and make the appropriate interventions towards improving overall services efficiency.

The findings of the current study also suggest that hospital outpatient service quality is an important driver of patients' satisfaction and behavioral intentions, underscoring its importance as a patients' decision-making variable (Ng and Russell-Bennett, 2015; Shabbir *et al.*, 2016; Meesala and Paul, 2016). The stronger effect of service quality on behavioural intentions, compared to that of satisfaction, indicates that the cognitively assessed aspects of primary health-care service quality are more important than that of the affective ones in determining future behavior. This result is in line with the findings of Chang *et al.* (2013) who suggested that "high satisfaction" by itself is not a good predictor of future intentions. Satisfaction is also enhancing the effect of service quality acting as mediator, as they both affect behavioral intentions (Dagger *et al.*, 2007). These findings suggest that decision

makers should consider both service quality and satisfaction as important strategic objectives, as these two concepts provide a way of attaining favorable patients' behavioral intentions.

### 7. Limitations and future research

This study has some limitations that should be considered when interpreting its findings. First, the findings and the implications of this research were obtained using a cross-sectional study. This reduces the ability of the study to reflect the temporal changes in the research constructs. As a result, longitudinal studies are needed to clarify the effects of temporal changes on service quality index formation. Second, the model was developed and validated with data from a country which is under tight economic conditions and has a health-care system that is state driven and funded. Replicating the study across different countries would provide evidence about the generalizability of the service quality index and the robustness of its relationships with the constructs determining customers' behavioral responses.

### References

- Ahorony, I. and Strasser, S. (1993), "Patient satisfaction: what we know about and what we still need to explore", *Medical Care Review*, Vol. 50 No. 1, pp. 49-79.
- Armstrong, J.S. and Overton, T.S. (1977), "Estimating nonresponse bias in mail surveys", *Journal of Marketing Research*, Vol. 14 No. 3, pp. 396-402.
- Bagozzi, R.P. (1992), "The self-regulation of attitudes, intentions, and behavior", *Social Psychology Quarterly*, Vol. 55 No. 2, pp. 178-204.
- Bagozzi, R.P. (1994), "Structural equation models in marketing research: basic principles", in Bagozzi, R.P. (Ed.), *Principles of Marketing Research*, Blackwell Publishers, Cambridge, MA, pp. 317-385.
- 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. 1173-1182.
- Baumann, C., Elliott, G. and Burton, S. (2012), "Modeling customer satisfaction and loyalty: survey data versus data mining", *Journal of Services Marketing*, Vol. 26 No. 3, pp. 148-157.
- Berry, L.L., Parasuraman, A. and Zeithaml, V.A. (1988), "The service quality puzzle", *Business Horizon*, Vol. 31 No. 5, pp. 35-43.
- Boller, C., Wyss, K., Mtasiwa, D. and Tanner, M. (2003), "Quality and comparison of antenatal care in public and private providers in the United Republic of Tanzania", *Bulletin of the World Health Organization*, Vol. 81 No. 2, pp. 116-122.
- Bollen, K.A. (2011), "Evaluating effect, composite, and causal indicators in structural equation models", *MIS Quarterly*, pp. 359-372.
- Brady, M.K. and Cronin, J.J. Jr. (2001), "Some new thoughts on conceptualizing perceived service quality: a hierarchical approach", *Journal of Marketing*, Vol. 65 No. 3, pp. 34-49.
- Brady, M.K., Knight, G.A., Cronin, J.J., Hult, G.T.M. and Keillor, B.D. (2005), "Removing the contextual lens: a multinational multi-setting comparison of service evaluation models", *Journal of Retailing*, Vol. 81 No. 3, pp. 215-230.
- Bryant, C., Kent, E.B., Lindenberger, J., Schreiher, J.M., Canright, M.W., Cole, S. and Bustillo-Hernandez, M. M. (1998), "Increasing consumer satisfaction", *Marketing Health Services*, Vol. 18 No. 4, pp. 5-18.
- Caceres, C.R. and Papatoidamis, N.G. (2007), "Service quality, relationship satisfaction, trust, commitment and business-to-business loyalty", *European Journal of Marketing*, Vol. 41 Nos 7/8, pp. 836-867.



- Carlson, J. and O'Casey, A. (2011), "Developing a framework for understanding e-service quality, its antecedents, consequences, and mediators", *Managing Service Quality: An International Journal*, Vol. 21 No. 3, pp. 264-286.
- Carr-Hill, R.A. (1992), "The measurement of patient satisfaction", *Journal of Public Health*, Vol. 14 No. 3, pp. 236-249.
- Chahal, H. (2000), "Predicting patient loyalty and service quality relationship: a case study of civil Hospital, Ahmedabad, India", *Vision: The Journal of Business Perspective*, Vol. 12 No. 4, pp. 25-46.
- Chahal, H. and Kumari, N. (2012), "Service quality and performance in the public health-care sector", *Health Marketing Quarterly*, Vol. 29 No. 3, pp. 181-205.
- Chang, C.W., Tseng, T.H. and Woodside, A.G. (2013), "Configural algorithms of patient satisfaction, participation in diagnostics, and treatment decisions' influences on hospital loyalty", *Journal of Services Marketing*, Vol. 27 No. 2, pp. 91-103.
- Coltman, T., Devinney, T.M., Midgley, D.F. and Venaik, S. (2008), "Formative versus reflective measurement models: two applications of formative measurement", *Journal of Business Research*, Vol. 61 No. 12, pp. 1250-1262.
- Chen, Y. and Fu, F.Q. (2015), "The behavioral consequences of service quality: an empirical study in the Chinese retail pharmacy industry", *Health Marketing Quarterly*, Vol. 32 No. 1, pp. 14-30.
- Choi, K.-S., Lee, H., Kim, C. and Lee, S. (2005), "The service quality dimensions and patient satisfaction relationships in South Korea: comparisons across gender, age and types of service", *Journal of Services Marketing*, Vol. 19 No. 3, pp. 140-149.
- Collier, J.E. and Bienstock, C.C. (2006), "Measuring service quality in e-retailing", *Journal of Service Research*, Vol. 8 No. 3, pp. 260-275.
- Cueto, M. (2004), "Origins of primary health care and selective primary health care", *American Journal of Public Health*, Vol. 94 No. 11, pp. 1864-1874.
- Dagger, T.S., Sweeney, J.C. and Johnson, L.W. (2007), "A hierarchical model of health service quality scale development and investigation of an integrated model", *Journal of Service Research*, Vol. 10 No. 2, pp. 123-142.
- Diamantopoulos, A. (2011), "Incorporating formative measures into covariance-based structural equation models", *MIS Quarterly*, Vol. 35 No. 2, pp. 335-358.
- Diamantopoulos, A. and Winklhofer, H. (2001), "Index construction with formative indicators: an alternative to scale development", *Journal of Marketing Research*, Vol. 38 No. 2, pp. 269-277.
- Donabedian, A.K. (1980), *Explorations in Quality Assessment and Monitoring: The Definition of Quality and Approaches to Its Assessment*, Health Administration Press, Ann Arbor, MI.
- Edwards, J.R. (2001), "Multidimensional constructs in organizational behavior research: an integrative analytical framework", *Organizational Research Methods*, Vol. 4 No. 2, pp. 144-192.
- Fitzpatrick, R. and Hopkins, A. (1983), "Problems in the conceptual framework of patient satisfaction research: an empirical exploration", *Sociology of Health and Illness*, Vol. 5 No. 3, pp. 297-311.
- Fornell, C. and Larcker, D.F. (1981), "Structural equation models with unobservable variables and measurement error: algebra and statistics", *Journal of Marketing Research*, Vol. 18 No. 3, pp. 382-388.
- Fotiadis, A.K. and Vassiliadis, C.A. (2013), "The effects of a transfer to new premises on patients' perceptions of service quality in a general hospital in Greece", *Total Quality Management & Business Excellence*, Vol. 24 Nos 9/10, pp. 1022-1034.
- Haddad, S., Fournier, P. and Potvin, L. (1998), "Measuring lay people's perceptions of the quality of primary health care services in developing countries. validation of a 20-item scale", *International Journal for Quality in Health Care*, Vol. 10 No. 2, pp. 93-104.

- Hossain, M.A., Dwivedi, Y.K. and Naseem, S.B. (2015), "Developing and validating a hierarchical model of service quality of retail banks", *Total Quality Management & Business Excellence*, Vol. 26 Nos 5/6, pp. 534-549.
- Giovanis, A.N. and Pierrakos, G. (2015), "Symmetric and asymmetric effects of primary healthcare attributes on patient satisfaction: do they vary across patients?", *The Marketing Review*, Vol. 15 No. 4, pp. 439-463.
- Hair, J.F., Ringle, C.M. and Sarstedt, M. (2011), "PLS-SEM: indeed a silver bullet", *The Journal of Marketing Theory and Practice*, Vol. 19 No. 2, pp. 139-152.
- 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.
- Jarvis, C.B., MacKenzie, S.B. and Podsakoff, P.M. (2003), "A critical review of construct indicators and measurement model misspecification in marketing and consumer research", *Journal of Consumer Research*, Vol. 30 No. 2, pp. 199-218.
- Kang, G.D. and James, J. (2004), "Service quality dimensions: an examination of Grönroos's service quality model", *Managing Service Quality: An International Journal*, Vol. 14 No. 4, pp. 266-277.
- Kara, A., Lonial, S., Tarim, M. and Zaim, S. (2005), "A paradox of service quality in Turkey: the seemingly contradictory relative importance of tangible and intangible determinants of service quality", *European Business Review*, Vol. 17 No. 1, pp. 5-20.
- Kashif, M., Altaf, U., Ayub, H.M., Asif, U. and Walsh, J.C. (2014), "Customer satisfaction at public hospitals in Pakistan: PAKSERV application", *Global Business Review*, Vol. 15 No. 4, pp. 677-693.
- Kashif, M., Samsi, S.Z.M., Awang, Z. and Mohamad, M. (2016), "EXQ: measurement of healthcare experience quality in Malaysian settings: a contextualist perspective", *International Journal of Pharmaceutical and Healthcare Marketing*, Vol. 10 No. 1, pp. 27-47.
- Ladhari, R. and Rigaux-Bricmont, B. (2013), "Determinants of patient satisfaction with public hospital services", *Health Marketing Quarterly*, Vol. 30 No. 4, pp. 299-318.
- Lee, D. (2016), "HEALTHQUAL: a multi-item scale for assessing healthcare service quality", *Service Business*, Vol. 11 No. 3, available at: <http://dx.doi.org/10.1007/s11628-016-0317-2> (accessed 2 February 2017).
- MacStravic, R. (1991), *Beyond Patient Satisfaction: Building Patient Loyalty*, Health Administration Press, Ann Arbor, MI.
- Meesala, A. and Paul, J. (2016), "Service quality, consumer satisfaction and loyalty in hospitals: Thinking for the future", *Journal of Retailing and Consumer Services*, available at: <http://dx.doi.org/10.1016/j.jretconser.2016.10.011> (accessed 2 February 2017).
- Miranda, F.J., Chamorro, A., Murillo, L.R. and Vega, J. (2012), "Primary health care services quality in Spain: a formative measurement approach using PLS path modeling", *International Journal of Quality and Service Sciences*, Vol. 4 No. 4, pp. 387-398.
- Ng, S. and Russell-Bennett, R. (2015), "The role of affect in consumer evaluation of health care services", *Health Marketing Quarterly*, Vol. 32 No. 1, pp. 31-47.
- Oikonomou, N., Tountas, Y., Mariolis, A., Souliotis, K., Athanasakis, K. and Kyriopoulos, J. (2015), "Measuring the efficiency of the Greek rural primary health care using a restricted DEA model; the case of Southern and Western Greece", *Health Care Management Science*, Vol. 19 No. 4, pp. 313-325.
- Oliver, R.L. (1999), "Whence consumer loyalty?", *Journal of Marketing*, Vol. 63, pp. 33-44.
- Otani, K. and Kurz, R.S. (2003), "The impact of nursing care and other healthcare attributes on hospitalized patient satisfaction and behavioral intentions", *Journal of Healthcare Management/ American College of Healthcare Executives*, Vol. 49 No. 3, pp. 181-196.
- Papanikolaou, V. and Ntani, S. (2008), "Addressing the paradoxes of satisfaction with hospital care", *International Journal of Health Care Quality Assurance*, Vol. 21 No. 6, pp. 548-561.

- Papanikolaou, V. and Zygiaris, S. (2014), "Service quality perceptions in primary health care centres in Greece", *Health Expectations*, Vol. 17 No. 2, pp. 197-207.
- Pavlou, P.A. and El Sawy, O.A. (2006), "From IT leveraging competence to competitive advantage in turbulent environments: the case of new product development", *Information Systems Research*, Vol. 17 No. 3, pp. 198-227.
- Peyrot, M., Cooper, P.D. and Schnapf, D. (1992), "Consumer satisfaction and perceived quality of outpatient health services", *Journal of Health Care Marketing*, Vol. 13 No. 1, pp. 24-33.
- Raposo, M.L., Alves, H.M. and Duarte, P.A. (2009), "Dimensions of service quality and satisfaction in healthcare: a patient's satisfaction index", *Service Business*, Vol. 3 No. 1, pp. 85-100.
- Rönkkö, M., McIntosh, C.N., Antonakis, J. and Edwards, J.R. (2016), "Partial least squares path modeling: time for some serious second thoughts", *Journal of Operations Management*, Vol. 47/48, pp. 9-27.
- Shabbir, A., Malik, S.A. and Malik, S.A. (2016), "Measuring patients' healthcare service quality perceptions, satisfaction, and loyalty in public and private sector hospitals in Pakistan", *International Journal of Quality & Reliability Management*, Vol. 33 No. 5, pp. 538-557.
- Sousa, R. and Voss, C. (2012), "The impacts of e-service quality on customer behaviour in multi-channel e-services", *Total Quality Management & Business Excellence*, Vol. 23 Nos 7/8, pp. 789-806.
- Sumaedi, S., Yarmen, M. and Yuda Bakti, I.G.M. (2016), "Healthcare service quality model: a multi-level approach with empirical evidence from a developing country", *International Journal of Productivity and Performance Management*, Vol. 65 No. 8, pp. 1007-1024.
- Turan, A. and Bozaykut-Buk, T. (2016), "Analyzing perceived healthcare service quality on patient related outcomes", *International Journal of Quality and Service Sciences*, Vol. 8 No. 4, pp. 478-497.
- Welch, S.J. (2010), "Twenty years of patient satisfaction research applies to the emergency department: a qualitative review", *American Journal of Medical Quality*, Vol. 25 No. 1, pp. 64-72.
- Wicks, A.M. and Chin, W.W. (2008), "Measuring the three process segments of a customer's service experience for an out-patient surgery center", *International Journal of Health Care Quality Assurance*, Vol. 21 No. 1, pp. 24-38.
- Woodside, A.G., Frey, L.L. and Daly, R.T. (1989), "Linking service quality, customer satisfaction, and behavioral intention", *Journal of Health Care Marketing*, Vol. 9 No. 4, pp. 5-17.
- Yousapronpaiboon, K. and Johnson, C.W. (2013), "Measuring hospital out-patient service quality in Thailand", *Leadership in Health Services*, Vol. 26 No. 4, pp. 338-355.
- Zarei, E. (2015), "Service quality of hospital outpatient departments: patients' perspective", *International Journal of Health Care Quality Assurance*, Vol. 28 No. 8, pp. 778-790.
- Zeithaml, V., Berry, L. and Parasuraman, A. (1996), "The behavioral consequences of service quality", *Journal of Marketing*, Vol. 60 No. 2, pp. 31-47.

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