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The interrelationship between service features, job satisfaction and customer satisfaction

Evidence from the transport sector

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Abstract

Purpose – The aim of this paper is to present a conceptual framework which explores the links between the two service features (physical and interactive), job satisfaction and their impact on customer satisfaction.

Design/methodology/approach – A structured questionnaire was used to collect data from a sample of 168 first line employees of a major European port. Structural equation modelling and regression analysis were used to examine and test the relationships.

Findings – The empirical data verifies structural relationships between service quality, customer satisfaction and job satisfaction, treating job satisfaction as a consequence of physical features and as an antecedent of interactive features. The direct impact of employee job satisfaction on customer satisfaction, together with its indirect influence via service features, were tested and supported by the empirical data.

Originality/value – This study extends the literature by examining the distinct role that the interactive and physical features of services play in the formation of job satisfaction, which in turn influences customer satisfaction. This perspective could improve managerial understanding of the service quality-job satisfaction relationship and lead to more focused decisions.

Keywords Service features, Employee job satisfaction, Customer satisfaction, Quality management, Employees behaviour

Paper type Research paper

1. Introduction

In a highly competitive and customer-centered market economy, service organizations are forced to provide high-quality services that generate customer satisfaction and loyalty, enlarge market share and improve their performance results. In services setting, customer satisfaction mainly depends on the process of service delivery a fact that highlights the important role of the front-line employees. These employees constitute an essential source of information for guiding the formation of services based on customer needs and have a key responsibility in increasing the customers' perception of value during the moment of truth. A key driver of achieving customer satisfaction is considered to be employee job satisfaction, as satisfied employees are more motivated, empowered, caring and engaged to firms' goals and customer desires. Along the same line with the above thoughts, many researches have examined one by one the links between service quality and customer satisfaction (Pantouvakis, 2010; Yap and Sweeney, 2007), employee job satisfaction and customer satisfaction (Hartline and Ferrell, 1996; Schneider and Bowen, 1985) as well as job satisfaction and service quality (Snipes *et al.*, 2005).



Yee *et al.* (2008) have noticed that although the impact of employee attitudes on customer satisfaction has been extensively investigated, their impact on operational performance has largely been neglected. Motivated also by Gazzoli *et al.* (2010, p. 71) who stated that “[...] further research should explore the role of job satisfaction [...] on the subdimensions of service quality instead of overall service quality. The multilevel conceptualization of service quality [...] allows analysis at several levels of thought,” it proposes that rather than using a global service quality scale, a study of individual service quality dimensions could provide researchers and managers with a better understanding of the service quality – job satisfaction linkage. In fact, this study treats job satisfaction as a consequence of physical features and as an antecedent of interactive features and not as an antecedent of service quality, as past research has argued.

In the light of the above findings and suggestions, the contribution of this work will be to build a more holistic model that incorporates the concept of employee job satisfaction to the direct impact of service features, as described by Grönroos (2001), on customer satisfaction. Furthermore all relationships emanating from the above holistic concept are examined and the mediating role of every sub-construct is identified. This perspective could improve managerial understanding of the service quality-job satisfaction relationship and lead to more focussed decisions as far as employee and customer satisfaction enhancement.

The paper is divided into six sections. Section 2 presents the conceptual framework and hypotheses of the study. Section 3 describes the implemented methodological frame. The main results of the survey are given in Section 4 and in Section 5 a summary of the main findings and the managerial implications are presented. Finally, Section 6 includes some limitations and proposals for future research.

2. Conceptual framework and hypotheses

2.1 *Service quality and customer satisfaction*

Some researchers consider the concepts of service quality and customer satisfaction to be synonymous, as a high degree of correlation has been found between them (Oliva *et al.*, 1992). Others have found notable distinctions between customer satisfaction and service quality (Sureshchandar *et al.*, 2002; Bitner and Hubbert, 1994).

Different opinions have also been expressed about the antecedents of service quality and customer satisfaction. Kotler and Levy (1969) reported that customer satisfaction is connected primarily with the concept of value and price, while service quality is related to customer needs and expectations. In addition, Cronin and Taylor (1994) specified service quality as impacting on long-term attitudes and customer satisfaction as the result of the customer evaluating a specific experience (transaction with the firm). However, more recent research has considered an opposing position, where service quality leads to customer satisfaction. In this case, service quality is regarded as the independent variable and customer satisfaction as the dependent variable (Jamal and Naser, 2002; Ting, 2004; Parker and Mathews, 2001).

Although, for many years, the arguments focus on the role of and causal relationship between service quality and customer satisfaction, recent approaches argue for the benefit of merging the two heavily debated service elements into one (Grönroos, 2001) stating that service quality dimensions should be measured alongside customer satisfaction. Quality, as such, should not be measured, because research indicates that the technical and functional features directly influence perceived customer satisfaction. In the same vein, Yap and Sweeney (2007) investigated the influence of specific service quality dimensions on two outcomes: satisfaction and

perceived value. The Grönroos conceptualization was also used by Caceres and Paparoidamis (2007), who tested the relationship among service quality, relationship satisfaction, trust, commitment and loyalty, in a business-to-business environment.

2.2 Service features

It is generally accepted that service quality is a multi-dimensional construct, but there is disagreement as to the optimal conceptualization and operationalization (Parasuraman *et al.*, 1988). Many theoretical or mathematical models have been developed in order to interpret and measure service quality. The most widely acknowledged models by both academics and practitioners are the American five-dimension SERVQUAL (Parasuraman *et al.*, 1988) and the more parsimonious European or Nordic model of physical and interactive quality (Grönroos, 1982). In spite of its high recognition and applicability in many service industries, SERVQUAL has been questioned and subjected to theoretical and operational criticism. Critiques refer among others to the number and the contextual stability of its dimensions (dimensions are contextualized, no universals, etc.). Specifically, Finn (2004, pp. 244-5) emphasizes that “the five SERVQUAL dimensions are never all distinct; rather there is a single consistent distinction between a tangibles dimension and an intangibles dimension.” Fodness and Murray (2007) argue that three of the five dimensions of SERVQUAL (responsiveness, assurance and empathy) focus on the relational (interactive) features, whereas the other two consider the physical element of the service. Survey by Nadiri and Hussain (2005) assessed the hospitality industry in North Cyprus and supported the notion that service quality consists of two dimensions (tangibles and intangibles). Previous studies in the tourism field have led to the same conclusion, that the service quality has two dimensions (Ekinci *et al.*, 2003; Karatepe and Avci, 2002; Oberoi and Hales, 1990). The use of a two-factor structure (tangibles and intangibles) is also recommended by Reimer and Kuehn (2005), who tested their model in two service industries (retail banking and restaurants).

Recent studies also supported the superiority of the two-dimensional instruments against the SERVQUAL for the specific setting of the empirical study (port industry). Specifically, a study in passenger port industry proposed a new model which directly assesses the physical and interactive elements of a service and tested it against the SERVQUAL measurement model and the Nordic conceptualization in which the five dimensions are collapsed to two second-order factors (physical and interactive quality) (Pantouvakis, 2010). Findings confirm that the five-dimensional (SERVQUAL) model and the two-factor (Nordic) higher order factorial perspective fit the data almost equally well. However, the proposed model appears to outperform both of the other models with respect to fit and explanatory power of the construct of customer satisfaction. SERVQUAL has also been tested in the commercial shipping environment by Durvasula *et al.* (1999) suggesting that the SERVQUAL model should be modified to a more parsimonious two- or three-dimensional structure.

The interactive features “relate to the nature of interaction between the service firm and its customers and the process by which the core service is delivered” (Bell *et al.*, 2005, p. 172). On the other hand, the physical features (servicescape) comprise the appearance of the facilities, the equipment, personnel and communication material.

Reimer and Kuehn (2005) took into consideration that physical quality is a directly observable variable, while the interactive feature of service is not an observable factor, physical quality represents a search quality, while the interactive feature of service represents an experience and physical quality can be judged prior to the purchase,

while interactive quality is evaluated after consumption. These qualities indicate that tangibles have a significant influence on the intangible dimension of service quality. In addition, the research established that the indirect effect of tangibles on perceived service quality is significantly greater than the direct effect which suggests a mediating role of intangible quality.

Bateson (1995) expressed a different opinion arguing that the physical elements of an organization form behaviors on the path to the service encounter. According to Nguyen (2006), servicescape should consider two types of needs: operational and marketing. Operations are important to improving employee performance, while marketing positively (or negatively) influences customer beliefs. Hence, the environment affects the interactive service features in two ways: it supports employees by providing better services and influences customers by creating expectations of a high-quality service.

Bitner (1992) also supported the notion that employee and customer responses to the firm environment influence the social interaction between them. In accordance with Namasivayam and Lin (2004), the present study adopts the view that an inadequate servicescape, or inadequate physical service feature, requires a higher level of intangible services, if a certain level of customer satisfaction is to be achieved. Consequently, the first and second hypotheses are:

- H1. Service features (interactive and physical) are directly and positively related to satisfaction with the service provided.
- H2. Perceptions of the interactive features influence perceptions of the physical features.

2.3 Employee job satisfaction

It has been established that employee job satisfaction exerts an important influence on customer satisfaction, as satisfied employees tend to be more productive, provide better services to customers, and hence, can significantly enhance business profitability. The cycle of success, proposed by Schlesinger and Heskett (1991), suggests that satisfied employees deliver high service quality. In a similar vein, the service-profit chain establishes a relationship between profitability and growth, due to customer loyalty and satisfaction which is, in turn, due to services provided by satisfied employees (Heskett *et al.*, 1994). Vilares and Coelho (2003) proposed a reformulation of the ECSI model, establishing that perceived employee satisfaction, loyalty, and commitment exert an important impact on perceived product and service quality. Apart from the abovementioned studies, other empirical studies have tested the relationship between employee job satisfaction and customer service quality to service businesses (Gil *et al.*, 2008; Schlesinger and Zornitsky, 1991). Nonetheless, some studies claim that the measurement of customer satisfaction should be based exclusively on the interactive quality, as employees cannot affect customer satisfaction with regard to physical quality which is determined by management and the available resources. More specifically, Snipes *et al.* (2005) found that some aspects of job satisfaction, such as satisfaction with customers, with benefits and with the work itself, may have a larger effect on service quality than others. Their study focussed on items that represent the employee-related aspects of service quality.

Hartline and Ferrell (1996) proposed that managers should increase employee self-efficacy and job satisfaction and reduce employee role conflict, in order to raise

customer perceptions. The measurement of perceived service quality was restricted to interactive features (not physical quality elements) which specifically assess the employee-related aspects of service quality. Gazzoli *et al.* (2010) used two samples (restaurant contact employees and their customers) to determine the effects of empowerment and job satisfaction on customer perceptions of service quality. The physical environment quality dimension was discarded from service quality measurement, on the basis that employees have little or no control over this dimension and its sub-dimensions.

In the same vein, Malhotra and Mukherjee (2004) conducted an empirical survey of the telephone call centers of a UK retail bank. They confirmed that job satisfaction influences the intrinsic dimensions of service quality delivered by contact employees (phone encounters). Tangibles were not considered, because customers did not play a role in measuring service quality because, in the specific service setting, the customer has no contact with physical quality. Thus, he/she should not attempt to evaluate it. Hence, the third hypothesis was formulated as:

H3. Job satisfaction has a significant positive effect on the interactive features.

As already mentioned, researchers have established that the physical environment plays an important role in customer evaluations of a provided service, especially in certain service settings (Baker *et al.*, 1988). The physical service features not only influence customers, they also influence employees.

Bitner (1992) emphasized the impact of physical surroundings on the behavior of both employees and customers. Parish *et al.* (2008) observed that, as the servicescape for customers is part of their consumption experience, the working environment is part of the employee experience. It should be noted that the customer spends minimal time in this environment, only as long as the duration of the transaction (immersion). According to Turley and Milliman (2000), the time spent in a particular place influences the potential to be affected by it. This affection may produce either positive or negative feelings (Mehrabian and Russell, 1974), which can trigger an employee response (e.g. job satisfaction). Parish *et al.* (2008) demonstrated that the perceived safety and pleasantness of a hospital environment has a positively sizable effect on employee job satisfaction. Other previous studies on the cognitive field of organizational behavior support the influence that a physical setting may have on employee satisfaction, productivity and motivation (Davis, 1984; Sundstrom and Sundstrom, 1986; Wineman, 1986). Accordingly, *H4* is:

H4. The physical features exert a significant positive effect on employee job satisfaction.

The literature review highlights the important role that front-line employees play in forming customer perceptions of service quality. The latter is influenced mainly by the value of services provided to customers and created by satisfied employees. Heskett *et al.* (1994) proposed a theoretical model, the “service-profit chain” which establishes relationships between customer satisfaction and job satisfaction. They stated that customer satisfaction is largely influenced by the value of services provided to customers and created by satisfied, loyal and productive employees. A substantial body of research confirms the positive relationship between employee job satisfaction and customer satisfaction. Specifically, Wiley (1991) found that customer satisfaction

was related to a variety of employee attitudes, including satisfaction with the overall job, related to customer satisfaction and intended repeat business. The same result was verified by Ugboro and Obeng (2000), who tested the relationships between top management leadership, employee empowerment, job satisfaction and customer satisfaction. They found that employee job satisfaction exerts a significant positive effect through customer satisfaction on firms which implement TQM principals. These observations are explored in *H5*:

H5. Employee job satisfaction exerts a significant positive effect on customer satisfaction.

The conceptual framework of this study, as summarized in *H1-H5* is depicted in Figure 1. Based on the above hypotheses, it was observed that interactive features influence physical features which, in turn, influence customer satisfaction. It can also be hypothesized that the physical service features have an impact both directly and indirectly through job satisfaction on customer satisfaction. Employee job satisfaction has a positive impact on the interactive features as well as on the customer perceptions of service quality. These observations yielded the following hypotheses:

H6. The physical features mediate the relationship between the interactive features and customer satisfaction.

H7. Employee job satisfaction mediates the relationship between the physical features and customer satisfaction.

H8. The interactive features mediate the relationship between employee job satisfaction and customer satisfaction.

3. Methodology

3.1 Measures

The questionnaire consisted of 27 items split into three survey instruments that measure service quality, customer satisfaction and job satisfaction. In order to measure service quality, a 12-item instrument, based on a Nordic conceptualization and developed by Pantouvakis (2010), has been used. That instrument was recently tested in an empirical survey of the same service sector and proved its superiority against SERVQUAL instrument. The instrument was adapted to the needs of the present survey. Customer satisfaction was measured with five items, based on Lam *et al.*'s

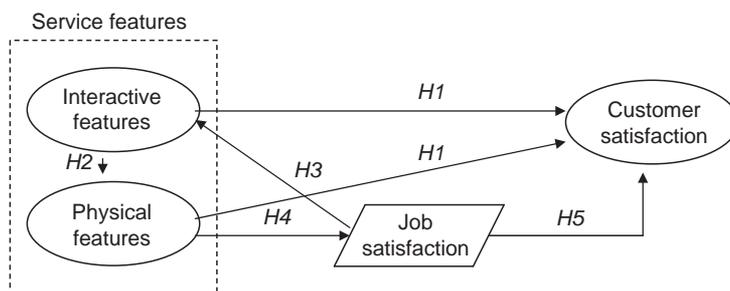


Figure 1.
Conceptual framework
of the study

(2004) instrument. The items in these two instruments took the form of a seven-point psychometric Likert scale (anchored on 1 = “strongly disagree” through 7 = “strongly agree”). The measurement of job satisfaction was based on a job satisfaction survey instrument (Spector, 1985). This instrument was chosen, because it was developed specifically for use in service organizations. The nine facets of this instrument were pay, promotion, supervision, fringe benefits, contingent rewards, operating procedures (required rules and procedures), co-workers, the nature of the work, and communication. One of these facets, fringe benefits, was omitted, as it not found to be applicable to the particular service industry. The measure asks employees how each of the eight facets affected their perceived job satisfaction. The core question was “how satisfied are you with [...]?” Respondents were asked to rate their degree of job satisfaction on a seven-point Likert scale ranging from “extremely dissatisfied” to “extremely satisfied.”

The wording of all items, along with the statistical analysis, appear in the Appendix. The self-administrated questionnaire also included a series of questions related to the demographic characteristics of the sample.

3.2 Sample

The setting for this empirical study is the shipping industry, specifically the Piraeus port authority (PPA S.A.) in Greece. This company is engaged in the management and operation of Piraeus port. Its activities include ships’ anchoring services, handling cargo, loading and unloading services, goods storage, and car transportation. The passenger port operates domestic and international passenger terminals with approximately 20 million passengers served annually. It is one of the biggest seaports in the Mediterranean Sea basin, the third largest passenger port worldwide and one of the top ten container ports in Europe. It is the main link of Greece’s mainland to the Aegean islands and Crete and the main maritime gate of the European Union to its southeast end. The company is also a major employer in the area, with more than 1,500 employees who provide services to more than 24,000 ships every year.

The questionnaire was given only to first-line employees who were identified from the HR department database. A cover letter was included in the mailing to all sample members, explaining the purpose of this academic study, along with the questionnaire and a return envelope addressed to one of the authors. Participants were assured of total confidentiality and anonymity. A sample of 175 questionnaires from the contacted employees was collected, of which seven were excluded because they provided answers that were uniformly positive or negative (skewed responses). The 168 usable questionnaires constitute the 15.6 percent of the total employee population.

In the current study, the data from first-line employees was used as a surrogate measurement of customer satisfaction based on the assumption that the perceptions of employees and customers about customer satisfaction and service quality tend to be identical, especially for repeat services. For example, the empirical findings of Johnson (1995) indicate that the two groups of employees and customers, have similar views about employee perceptions of customer satisfaction ($r = 0.46$). In the same vein, Schneider and Bowen (1985) indicated that employee perceptions of service quality are highly related to customer perceptions ($r = 0.63$).

As far as the demographic characteristics of the sample were concerned, respondents were split reasonably evenly between males (57.2 percent) and females (42.8 percent). The age groupings were 18-25 years (0.6 percent), 26-35 years (6.1 percent), 36-45 years (33.3 percent), 46-55 years (43 percent) and over 56 years of age (17 percent) (SD = 0.84).

4. Results

4.1 Assessing the dimensionality of the instruments

Following the descriptive analysis of the data, an exploratory factor analysis (EFA) was carried out for each instrument (service quality, customer satisfaction and job satisfaction). The factor analysis used principal components analysis to extract the factors. A varimax rotation was used to improve the interpretation.

As displayed in Appendix, the factor analysis of the service quality instrument revealed two factors, accounted for 67.7 percent of the variance. One item was deleted due to its multi-factor loading and 11 items remained for subsequent analysis. Re-compilation of the remaining 11 items saw an increase in the coefficient α of the physical features dimensions from 0.53 to 0.88 and the total scale reliability from 0.90 to 0.92. The Kaiser-Meyer-Olkin (KMO) index and the Bartlett test of sphericity provided satisfactory results. Especially for this instrument, confirmatory factor analysis (CFA) further supports the EFA. In fact, the results of the CFA indicated a reasonable fit of the two-factor model of service quality $\chi^2 = 2.47$, $p = 0.000$, CFI = 0.95, TLI = 0.93, RMSEA = 0.09. Thus, according to PPA employees, customers seemed to evaluate the quality of the services they received, by taking into consideration the physical (factor one; what the business offers) and the interactive features (factor two; how the business offers it). These findings enhance previous empirical studies that have supported the two-dimensional perspective.

Turning next to the customer satisfaction instrument, the factor analysis revealed a one-dimensional factor that explains 65.6 percent of total variance (Appendix). Finally, the items of the job satisfaction instrument loaded on one factor, as illustrated in Appendix which explained 57.4 percent of the variance (Appendix). The results of both tests KMO and Bartlett were considered satisfactory.

4.2 Assessing the reliability and validity of the instruments

In order to check the reliability of the measurement instruments, the Cronbach's α of the scale was calculated (Cronbach, 1951). The test of reliability for each of the instruments (Table I) provided α s that exceeded the acceptable cut off point of 0.70 (Nunnally, 1978).

The measurement of the concepts was based on previously developed instruments, so that content validity was assured. Convergent validity was tested calculating the average variance extracted (AVE) by each factor (Fornell and Larcker, 1981). The results verify the convergent validity of the measurements, indicating that the variance for each factor exceeds the proposed cut-off point of 0.5 (Appendix). Examining the discriminant validity of the instruments, it was found that the square

Hypothesis	Coefficient	CR (<i>t</i> -value)	<i>p</i> -value
<i>H1</i> a. Interactive features – customer satisfaction	0.52	6.224	0.000
b. Physical features – customer satisfaction	0.26	3.345	0.000
<i>H2</i> interactive features – physical features	0.62	6.199	0.000
<i>H3</i> employee job satisfaction – interactive features	0.37	6.224	0.000
<i>H4</i> physical features – employee job satisfaction	0.42	3.388	0.000
<i>H5</i> employee job satisfaction – customer satisfaction	0.24	3.354	0.000

Note: Critical coefficient (*t*-value) < 1.96 indicates non-significant relationship

Table I.
Hypotheses verification

root of AVE was greater than the coefficient which demonstrated discriminant validity between the constructs.

4.3 Testing the research model and hypotheses

Structural equation modelling was used to validate the proposed model (Figure 1) and the extracted hypotheses (*H1-H5*). To estimate the parameters of the model and given that the data examination revealed no semantic normality violation, the maximum likelihood method and covariance matrix were used. The results indicated that the estimates for a set of recommended indices ($\chi^2 = 1.87$, IFI = 0.92, CFI = 0.92, TLI = 0.90) were above the accepted threshold of 0.90 and the RMSEA, which was equal to 0.072, was below 0.08 (Hair *et al.*, 2006), which is considered adequate for the sample characteristics. Thus, the proposed model has an acceptable fit.

All path estimates were found to be statistically significant and in the predicted direction, with standardized residuals below the accepted limits. The hypotheses verification summary (*H1-H5*) is shown in Table I. *H1* which proposes that service-quality features are directly and positively related to satisfaction with the service provided, was thus confirmed. These findings are consistent with previous studies (Ekinci *et al.*, 2003; Pantouvakis, 2010; Reimer and Kuehn, 2005). The results also indicated that the interactive features directly and significantly influence physical features at the p -value < 0.000 level, and therefore, *H2* is supported. *H3* contends that employee job satisfaction is positively related to interactive quality. This hypothesis is supported at the 0.000 level. Physical features were found to directly and significantly influence employee job satisfaction at the 0.000 level, thus supporting *H4*. Finally, job satisfaction was found to have a significant influence on customer satisfaction, supporting *H5*.

All above constructs are significantly correlated and mediation is therefore highly indicated. Mediation has been further tested by including and deleting paths between relevant constructs. All relationships (weights) between constructs described in the *H1-H5* remain significant but reduced and models examined produce similar fits. To additionally test the mediating relationships, the linear regression approach proposed by Baron and Kenny (1986) was used and the results briefly presented in Table II. Based on this approach, regression analysis was conducted and the significance of the coefficients was examined, in order to accept or reject the hypotheses of mediation. *H6*, *H7* and *H8* have fully proved that the inclusion of the mediating variables is significantly related to the relevant constructs however at a smaller β value (described by Sobel test). Based on the above partial mediation as introduced by *H1-H5* is fully supported (Hair *et al.*, 2006).

5. Conclusions and managerial implications

The present study aimed to verify and prove structural relationships between known concepts in the service marketing literature such as service quality, customer satisfaction and job satisfaction. The fact that these relationships have been proved one by one by many researchers to different service settings did not prevent the implementation of this research which aims first to verify these relationships in “tangible action” services and secondly to highlight mediating relationships between the examined concepts.

As far as the first aim of this paper is concerned, the *H1-H5* were supported in “tangible action” service setting, such as the shipping industry. Specifically, the

<i>Testing H6</i>			
<i>y</i>	Customer satisfaction	Physical features	Customer satisfaction
R^2	0.42	0.415	0.43
F	115.24***	114.62***	60.96***
β – interactive features	0.65***	0.65***	0.56***
β – physical features			0.14**
<i>Testing H7</i>			
<i>y</i>	Customer satisfaction	Job satisfaction	Customer satisfaction
R^2	0.25	0.23	0.32
F	53.04***	47.9***	38.21***
β – physical features	0.50***	0.48***	0.35***
β – job satisfaction			0.32***
<i>Testing H8</i>			
<i>y</i>	Customer satisfaction	Interactive features	Customer satisfaction
R^2	0.22	0.21	0.46
F	47.54***	42.88***	68.85***
β – job satisfaction	0.48***	0.46***	0.25***
β – interactive features			0.54

Notes: β s reported are standardized values. *** $p < 0.000$; ** $p < 0.01$

Table II.
Results of regression equations testing *H6-H8*

two-factor model of service quality (physical and interactive features) as well as the direct relationship of these two features with customer satisfaction (*H1*) was confirmed. Moreover, it was proved that the interactive features have a positive impact on the physical features (*H2*), supporting the results from a recent study in the same service setting (Pantouvakis, 2010). The relationship between the service features and job satisfaction was also examined, treating job satisfaction as a consequence of physical features and as an antecedent of interactive features. Results verify the impact of job satisfaction to interactive service features (*H3*) as well as the effect of physical features to job satisfaction (*H4*). Finally, the direct relationship between job satisfaction and customer satisfaction (*H5*) was confirmed, in the specific service setting.

As far as it concerns the second aim of this research which refers to the mediating relationships between service features, customer satisfaction and job satisfaction (*H6-H8*), a group of new relationships between these concepts were intruded and examined, highlighting roles that have never been examined in the past. Thus, the role of the physical features to the relationship between the interactive features and customer satisfaction was stressed (*H6*). The impact of interactive features on customer satisfaction ($r = 0.52$, $p = 0.000$) is higher than that of physical features ($r = 0.26$, $p = 0.000$), highlighting their importance to customer perception of service quality. Furthermore, the interactive features have a significant positive impact on customer perception of service environment ($r = 0.62$, $p = 0.000$), thus the latter influences behavior before the service experience, and therefore negative perceptions of physical features require a higher level of interactive features to achieve the same level of customer satisfaction. Moreover, the effect of physical service features directly and indirectly via employee job satisfaction to customer satisfaction (*H7*) was examined. It was observed that the impact of physical features on customer satisfaction ($r = 0.42$, $p = 0.000$) is almost half compared with this of job satisfaction ($r = 0.24$, $p = 0.000$) and almost equal to the impact of job satisfaction on customer satisfaction ($r = 0.26$, $p = 0.000$). Finally, the results highlight the important role of front-line employee job

satisfaction in forming customer perceptions of service quality, during the moment of truth ($r = 0.37, p = 0.000$). The latter is influenced substantially by the value of services provided to customers ($r = 0.52, p = 0.000$) which is created by satisfied employees (*H8*).

Concluding, the empirical findings could support a sequence of thoughts concerning the relationships between the concepts under examination (service quality, customer satisfaction and job satisfaction). Specifically, it was found that the interactive and physical features influence external customers' satisfaction. Although, physical features comparing to the interactive features have smaller influence on customer satisfaction it was found that they have a significant impact on employee job satisfaction. As the attitude-behavior research and the result of this study have supported "people who evaluate an attitude object favorably tend to engage in behaviors that foster or support it" (Eagly and Chaiken, 1993, p. 12), which means that the employee satisfaction leads to better service quality. The improvement of interactive service quality leads to customer satisfaction as well as to the improvement of the image that the customers form about the business environment. In practice, this means that managers in shipping industry, who are interested in improving customer satisfaction, should pay sufficient attention to both the physical and interactive features, placing particular emphasis on the physical environment because of its impact on employee satisfaction. Hence, they should pay considerable attention to technological advances and capital investments and facilities. Effort and resources should be allocated to improve connections to other transportation means, more spacious facilities, lighting, security, etc. These investments will lead to improvement of employee satisfaction. Satisfied employees tend to exhibit more positive behavior, which is expressed in kindness, politeness, sensitivity and an understanding of customer needs, improving employee performance and leading to marketing needs satisfaction.

6. Limitations and future research

As with any research, this study has certain limitations that should be taken into consideration when interpreting the results. First and foremost, the study was restricted to one sector only, so that a verification of the findings in other industries is desirable. Moreover, it would be useful to test the proposed model on "intangible service acts," such as education, and to benchmark the findings.

Future studies should also investigate other psychological and contextual factors beyond job satisfaction, that may affect the relationship between service features and customer satisfaction. Other mediator variables such as work climate, employee customer orientation may be added to the analysis and yield further insights into "service quality-customer satisfaction relationship" results.

In addition, all of the constructs were measured at one point in time, essentially from a static perspective. It may be worthwhile to study the proposed model over time in order to take into account the dynamics of employee and consumer perceptions. This occurs mainly as a result of the creation and development of new services, changes in the competitive environment and finally, changes at the social level.

Another limitation of this study entails the fact that it was limited to employee perceptions. It would be advisable to examine the relationships in the model on dyadic data (e.g. by asking employees and customers to rate customer satisfaction and service quality).

However, despite these limitations, the current paper contributes significantly to the existing literature by exploring the direct and indirect impact of the subdimensions of service quality via employee job satisfaction on customer satisfaction.

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Descriptor	Mean	SD	Factor 1	Factor 2
<i>Service features (physical features) ($\alpha = 0.88$, AVE = 0.70)</i>				
This facility is spacious and convenient	4.0	1.27	0.782	
The number of electronic displays and equipment is adequate	4.34	1.30	0.779	
This facility is clean	1.14	1.32	0.770	
Connection to other transportation and parking spaces are adequate	4.10	1.52	0.752	
The level of security makes customers feel comfortable	4.55	1.42	0.734	
Materials associated with the service (pamphlets or statements) are visually appealing	3.56	1.55	0.721	
The lighting of this facility is appropriate and adequate	4.93	1.28	0.706	
The car parking is spacious and convenient			Deleted	
<i>Service features (interactive features) ($\alpha = 0.88$, AVE = 0.77)</i>				
The employees of this facility give customers prompt services	4.48	1.41		0.876
The employees of this facility are courteous	4.46	1.46		0.870
The response time to customers enquiries is satisfactory	4.14	1.43		0.815
The employees of this facility help customers	3.88	1.67		0.648
<i>Customer satisfaction ($\alpha = 0.92$, AVE = 0.72)</i>				
KMO = 0.856, $p = 0.000$				
Overall, PPA is a good company for customers to do business with	4.53	1.18	0.858	
Overall, PPA treats its customers very fairly	4.62	1.15	0.853	
Overall, the service of PPA comes up to customers' expectations	4.59	1.15	0.842	
In general, the customers are very satisfied with the services offered by PPA	4.68	1.10	0.802	
Overall, customers are very satisfied with their relationship with PPA	5.07	1.03	0.683	
<i>Job satisfaction ($\alpha = 0.90$, AVE = 0.75)</i> How satisfied are you with ...				
KMO = 0.839, $p = 0.000$				
your supervisor(s)	3.56	1.48	0.839	
your opportunities for promotion with this organization	4.26	1.63	0.820	
your fellow workers	3.93	1.52	0.808	
your contingent rewards	3.70	1.45	0.802	
the level of communication you have with others	4.01	1.59	0.715	
your salary or wages	4.36	1.56	0.714	
your work itself	4.83	1.42	0.712	
the operating procedures	4.52	1.28	0.624	

Table A1.
Measurement items with
descriptive statistics,
Cronbach α and
factor loadings

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Angelos Pantouvakis was born in Athens, Greece, in 1962, he studied Civil Engineering at the National Technical University of Athens, MEng (1985). He continued his studies at the Nottingham Business School, UK, MBA (Master's in Business Administration) (1987) and he did his PhD at the Judge Business School, University of Cambridge, (1997) He has spent more than 20 years in the professional arena in Greece and abroad in the services sector industries (leading consulting firms (Deloitte & Touche, HAY), banking (ALFA Bank, NATWEST) and health care sector and maritime sector). He is at present Assistant Professor in the University of Piraeus, Department of Maritime Studies. He has published in the field of services marketing in many

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