Total Quality Management in Hotel Businesses Depending on Their Category and Size

Aristides Katsaitis, Fragiskos Bersimis, and Paris Tsartas

Abstract The aim of this research was to investigate the degree of implementation of the total quality management of the hotels in terms of the quality category of the services provided (5*–4*) and the size (small–large), in a sample of hotel businesses in the Prefecture of Attica. A survey was carried out using an electronic questionnaire that included appropriate questions addressed to the HR managers of the hotel units. The results show that 5* and larger hotels show a higher degree of agreement in the attitudes that express the application of the principles of total quality management, compared to 4* and smaller hotels. In conclusion, from the research on the application of the principles of total quality management between the category of 4* and 5* hotels, there is clearly a significant differentiation. Hotels in the 5* category clearly show a better application of the principles of total quality management compared to the category of 4* hotels.

Keywords Hotels · Total quality management · Human resources

JEL Classifications Z300 tourism economics · General

1 Introduction

The objective of this research investigates the application of the principles of total quality management in 5* and 4* hotels of the Prefecture of Attica. The main research

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questions of the research concern the central question of the application of the principles of total quality by the management of the hotel business and this application in which category (5* or 4*) and in which room capacity size shows the significant differentiation/statistical significance in individual questions referring to encouragement, support, follow-up, consistency, training, teamwork, quality in operations and procedures, quality integration into the production of the hotel product, decision making and orientation of the type of incitement.

2 Literature Review

The ancient Greek philosophers, Socrates, Aristotle and Plato, developed the concept of quality as synonymous with "virtue" and "perfection", and Plato states that "virtue" is a catalytic and completed concept in a supreme form and constitutes the highest idea from the other ideas, considering that quality is ideal but not "tangible", it is not compatible and does not express daily practice (Vouzas, 1998: 19).

The philosophical view of quality improvement is mainly based on business ethics which is dominated by "virtue" and expresses "goodness". This approach can strengthen and consolidate customer confidence in the products and services it produces (Katsaitis & Papaefthimiou, 2018: 212).

Basically, quality as a concept can be easily perceived but not easily defined precisely. Etymologically, Kefis states (Kefis, 2005) that, "it comes from the ancient Greek word "poiotis" with the root "who—what kind" and means who, the nature or the inner being of a person or thing, as well as the set of properties that characterize a commodity in relation to its peers" (Kefis, 2005: 36).

The quality, as reported by Varvaresos and Sotiriadis, is a new philosophy in its management, which requires continuous search and effort to improve the entire production process up to the final product or service (Varvaresos & Sotiriadis, 2003: 4).

The orientation to the quality of the offered hotel services, with a strong personal character, will contribute to the achievement of competitiveness and business success (Samson & Terziovski, 1999: 393–409).

The strategic choice of quality, by the hotel business, must be the only way to continuously improve its offered services, maintain its dynamic competitiveness and increase its profitability even in economic crises (Motwani et al., 1996: 4–16).

Also, researchers mention the strategic importance of the concept of quality and consider that it should be the strategic choice with an organizational structure and framework, which anyway the application of total quality management alone constitutes a strategy (Stavrinoudis & Christina, 2013).

The importance of improving quality and productivity as a continuous process led to the holistic approach to quality. So, quality from 1980–1990 is approached with two main features, the total and the continuous approach of quality improvement.

The Main Theoreticians in Quality Management

Deming approaches the concept of quality with 14 specific principles in a list structure that must be strictly observed, with continuity and consistency from the beginning to the end of the list and then again from the beginning, creating an endless cycle for continuous improvement, where in each completion of the cycle process, failures and disadvantages are observed, where changes or adjustments will be made to follow a new cycle of improvement, consisting of Deming's famous 14 points are (Chytiris, 2015: 61; Chytiris & Anninos, 2015: 61; Deming, 1993; Evans & Lindsay, 2002; Montgomery, 2005; Laloumis, 2015: 65–66; Logothetis, 1992; Psomas, 2008: 87–88; Temtime & Solomon, 2002: 181–191; Deming, British Library):

Deming's 14 points W. Edwards

1. Apply consistently and steadfastly to achieve the goal with continuous effort to improve the quality of products and services.
2. Acceptance of the new philosophy by all human resources and above all the administration.
3. Create a quality product or service from the first stage of processing and production.
4. Reject the lowest-priced suppliers and leverage supplier partnerships with quality products by developing solid relationships with them.
5. Cost reduction with continuous and consistent improvement of production systems and methods to eliminate any problems.
6. Develop and implement modern on-the-job training methods for all human resources to help optimize production systems.
7. Develop effective leadership that will encourage human resources, participation, initiative, responsibility and decision making, and provide human resources with support in means and methods to perform their duties more effectively.
8. Eliminating fear in HR and encouraging two-way communication so everyone can work effectively.
9. Putting aside the obstacles between the managements and the departments so that they can communicate with each other without hindrance and solve any of their problems by participation, cooperation in group work.
10. Eliminate or even minimize numerical targets and slogans to motivate human resources. Replace these with understanding, support, knowledge training, skill development, skill enhancement.
11. Use of statistical methods to improve quality and productivity with corresponding minimization of all standards that use numerical quantities.
12. Management should "defend" the pride of human resources from their work, eliminating the causes that human resources lose their pride and their work becomes a liability.
13. Develop continuous modern and dynamic training programs for all human resources for their continuous self-improvement in matters of the subject of their work and the best possible performance of their duties, both in the management force and in the workforce.

14. Total participation to complete this transition to complete the "transformation", this effort requires absolute and complete cooperation between management and employees–workers.

Juran considered important the contribution of human resources and firmly believed in good human relations, teamwork and the commitment of the human resources themselves for the quality operation of processes in the quality production of all products or services (Juran, 1988). Also, Juran formulated the quality trilogy consisting of (Chytiris & Anninos, 2015: 62; Psomas, 2008: 90): (a) quality planning, (b) quality control, (c) improvement of quality.

While Juran and Gryna define quality as "fitness for use", Crosby defines quality as "conformance to requirements" (Crosby, 1979).

Crosby believes that quality is specific goals that must be achieved. The absence of achieving goals means the absence of quality.

Crosby believes that accepting a certain percentage of defectives in production is unacceptable and that every worker has a responsibility to do any job right from the start and to prevent mistakes.

Crosby for quality improvement mentions the slogan "zero errors". The company should act "right the first time", so that the product or service does not have a defect or problem (Psomas, 2008: 90). This is particularly important in hotel services which are characterized by the simultaneous production and consumption of service and service.

Ishikawa believes that the cause of quality problems will be solved with the right strategy. He emphasized the application of statistical techniques to improve quality by using the cause–effect diagram, which is also called the Ishikawa diagram, a well-known fishbone (Frankou Vasiliki – Eleftheria, 2013: 6–7; Psomas, 2008: 92).

Also, Cronin and Taylor define quality as a long-term attitude and customer satisfaction as the result of evaluating a specific experience experienced by the customer (Cronin & Taylor, 1994: 126).

Kefis (2005) defines quality through the satisfaction received by the customer and the repeatability of the supply of the product by the company that produces it is defined as a quality indicator (Vassilis, 2005: 37).

Undoubtedly, quality is an important issue for the hotel industry as well, whose concept is widely used in advertising and in all promotional media and techniques (Jones & Lockwood, 1989: 149–155), both to its customers and to its staff.

"Quality" in the hotel business is not about a product or service about the "best", "excellence", "expensive", "perfect", "excellent", etc., but mainly about how suitable it is to serve a particular purpose (Jones & Lockwood, 1989: 149–155).

The quality provided by the hotel business must serve a general purpose and as Gower states, "it has nothing to do with social standing, rank or class" (Gower, 2001: 18), nor with mathematical statistics. Quality is about providing the customer with what he wants and satisfies him and every time we provide him with something even better, at a price that can be met, at a cost that we can keep constant, the identification of expectation with reality (Gower, 2001: 19).

Therefore, the hotel product is mainly the provision of hospitality services, and the quality in the operational action of the hotel business is the main issue since as a central axis in the management of the hotel business, from the conception of the idea, the production and the distribution of the hotel product or service to the customer, the view of quality provision dominates and service of products and services of an overall hotel quality product, to a degree and level such that it can exceed the expectations of the customer. Also, it should be pointed out that mainly the hotels of Athens should integrate the quality characteristics of the destination Athens with intense cultural "production", with exhibits, with events and with cultural tours, which highlight the destination "Athens" as an alternative cultural destination (Efthymia & Simos, 2018: 121–134), that the cultural elements could influence the practices used, both in the operation and in the behavior of the production and distribution of the hotel products–services with authentic hospitality.

Total Quality Management

Continuous improvement and quality control, mainly from the period of industrialization of production and then with the development and evolution of sciences and technologies, various models or systems were developed in the effort to manage the quality of products and services in their production processes. Thus, the beginning was made with (a) quality inspection, then followed by (b) quality control and (c) quality assurance and evolutionarily completed with (d) total quality management (Dale et al., 1994: 5; Psomas, 2008: 32).

Also, Oakland defines total quality management as (Oakland, 1989), "an approach to improving the efficiency and flexibility of the enterprise as a whole". It is literally a way for the organization and participation of the entire company, all departments, all activities and all employees at all levels (Vouzas, 2002: 40).

The management of total quality is a new philosophy for the application of administrative practice, where all are committed to quality in dealing with problems proactively through statistical techniques and continuous improvement at the lowest possible cost, and not repressively (Psomas, 2008: 74).

Total quality management is an administrative phenomenon, a philosophy of "management" with different interpretations, but with a constant orientation to the continuous and uninterrupted effort to improve the quality, which the customer desires and "defines" it many times, for his complete and absolute satisfaction.

Total quality management should be the dynamic choice for hospitality companies to improve their services (Motwani et al., 1996: 4–16).

Thus, while total quality management over the years has become more popular in the hotel industry, studies on the application of TQM in the hotel industry are limited; however, more research is needed to fill the literature gap (Mukhles & Al-Ababneh, 2021: 27–28).

Businesses today are competing, according to Okland (1994), three main factors: quality, delivery and prices. Today consumers are turning to quality rather than being loyal to the producer. Quality is a key priority in consumer choices in industrial, service, hospitality and many other markets (Gower, 2001: 26–27).

Total quality management seeks continuous improvement of quality throughout the company and in all its functions and processes. It is the one that will enable the company to achieve employee participation, customer satisfaction and competitiveness. Also, it has as a basic orientation the needs of the customers, and the concept of the customer is expanded to cover both external customers (consumers) and internal customers (employees) (Frankou Vasiliki – Eleftheria, 2013: 11).

Total quality management is a management philosophy, which is mainly based on the fact that quality concerns the entire department that implements or develops a technical function and not itself; i.e., it has a holistic character, and not a working group of experts, who should all take care of the quality and the characteristics of the quality, which are determined by the customer–consumer and not the company itself according to its performance, and finally, the measures for the success of the quality are based on the application of the new technology (Kefis, 2005: 45).

In addition, the Witcher states that approximately 30% of companies that apply the principles of total quality management essentially fail because they either do not understand its principles or are used in the wrong way or use them for the benefits of marketing functions (Witcher, 1995: 23–24).

Various scholars report, for example, that the hotel industry is struggling and dubious results are created, between the triangular relationship of total quality management, market orientation and business performance, from insufficient information about total quality management or from obstacles that are related to market orientation (Gray et al., 2000: 149–155, Harris, & Watkins, 1998: 221–226, Lazari & Kanellopoulos, 2007: 564–571).

A survey carried out in the hotels of Athens in 2013 by Stavrinoudis and El Chanoun showed that hotels have a strategic orientation to satisfy the needs of their customers with quality services, but quality is not always integrated through models or international quality standards. Thus, a significant number of hotels operate for total quality in the context of experience, without program and organization, but hotels that have implemented integrated programs of total quality management, have sufficient experience (Stavrinoudis & El Chanoun, 2013).

Mainly, the parameters that will determine the successful implementation of total quality management are: management and leadership commit to the implementation of total quality of all involved parts of the system, both in the internal environment and in the external environment of the hotel business, as well and the application of total quality in the management of its operations and processes (Montes et al., 2003). But another important parameter comes from technology, specifically smart technology, using smart devices and software. A high percentage of hotel businesses have not been upgraded to modern infrastructure and services, as a result of which they offer low-level services. This result is also strengthened by the little experience and training of several of the hoteliers, mainly in the areas of organized holiday tourism, so that they could perceive more quickly and more effectively the necessary changes of their hotel businesses with aesthetic intervention and qualitative upgrading of their provided services (Tsartas, 2010: 358–359). The investigation of the use of new technologies provides the tourism business with new possibilities in the promotion and promotion as well as in the distribution channels of the tourist products (Tsartas

et al., 2014). The World Tourism Organization (2015) refers to smart tourism based on the intense flow of tourist information which is highly dependent on communication and information technologies (Benckendorff et al. 2014; Koo et al., 2015; Law et al., 2014; Werthner & Klein, 1999). From several points of view, smart tourism is a technological evolution from traditional tourism to technological orientation with application to global reservation systems and the use of the Internet (Buhalis, 2003; Werthner & Ricci, 2004). The technological development integrates smart applications, the end result of which gives us smart devices such as mobile phones, tablets, computers, all of which support smart functions for the tourist and hotel customer, but also a smart tourist macro-environment, which connects and disseminates to everyone and all systems for the immediate and faster information of the tourist public and, by extension, tourist businesses, with a two-way relationship of information flow with the customer's own self-management such as online platforms for hotel reservations, mass transport reservations, entertainment services, reservations in entertainment and catering businesses, payment of reservations, information about the tourist destination, hotels and other tourist businesses, tourist instructions (Ulrike et al., 2015: 181–183). Thus, technological tools and their applications create "smart" hotel businesses, which will increase their quality performance by automating their functions and processes such as marketing, supply management, human resources management and in the management of the customer and finally its quality service (Sigala & Marinidis, 2012).

In general, however, a hotel that pursues and systematically applies the principles of total quality management must have in its philosophy the continuous satisfaction of its customers, and this can be achieved by training in scientific and technical knowledge and skills, by applying the new "smart" technologies and most basic of all the acceptance and participation of all the human resources to be effective in improving the quality of the production of hotel products and services of the company (Gower, 1997).

The hotel business, due to the specificity of the hotel product and the different culture, mentality and education of the employees, is a challenge to investigate the type and degree of application of the principles of total quality management.

3 Methodology

This survey was conducted using quantitative methodology, questioning a large sample of hotel HR managers that belong to the wider region of Attica (Greece) during 2020, aiming to explore whether they apply basic principles of total quality management (Etikan & Bala, 2017). The questionnaire used was written in the Greek language. A pilot survey took place with a test questionnaire, aiming to get feedback as regards detecting errors and misunderstandings. A simple random sampling method was used for selecting. The survey was conducted by the authors of the research using an online questionnaire (Google forms). A total number of 120 answers were valid.

The sample consists of 85 hotels 4* (70.8%) and 35 hotels 5* (29.2%), as it is presented in the bar chart of Fig. 1. The distribution of hotels' room capacity is presented in the bar chart of Fig. 2, as well as the distribution of hotels' bed capacity is presented in the bar chart of Fig. 3. The majority of survey's hotels possess less than 50 rooms and less than 100 beds.

The distribution of the years of experience of hotels' HR managers is presented in the bar chart of Fig. 4, whence it appears that the majority of the HR managers (26.7%) have 11 to 15 years of experience in this position. In addition, 95.83% of hotels' HR managers hold a higher education degree or a master's degree or a doctorate (Fig. 5).

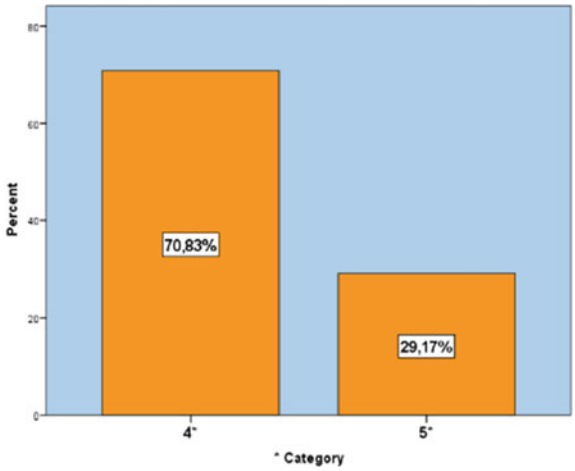

Fig. 1 Hotels' distribution according to *category

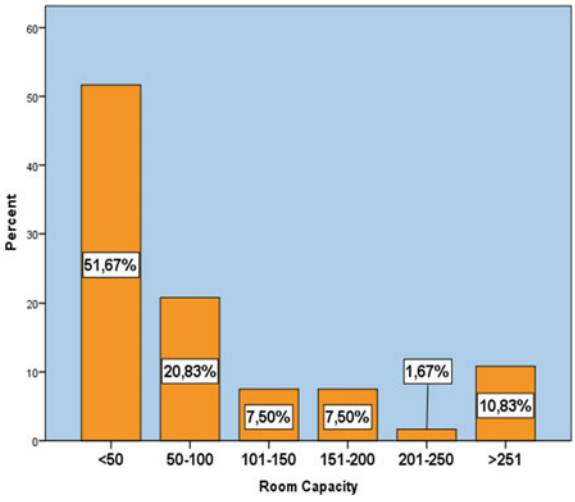

Fig. 2 Hotels' distribution according to rooms' capacity

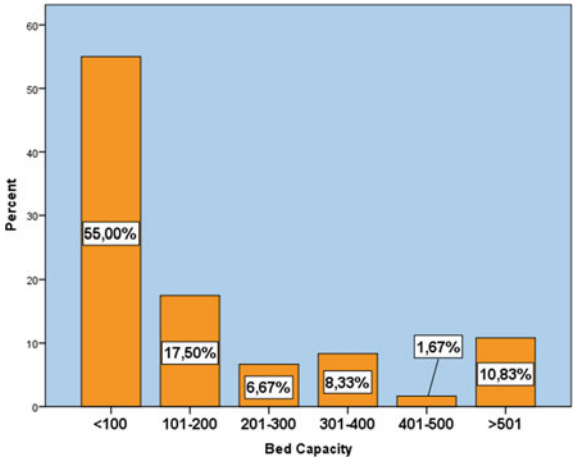

Fig. 3 Hotels' distribution according to beds' capacity

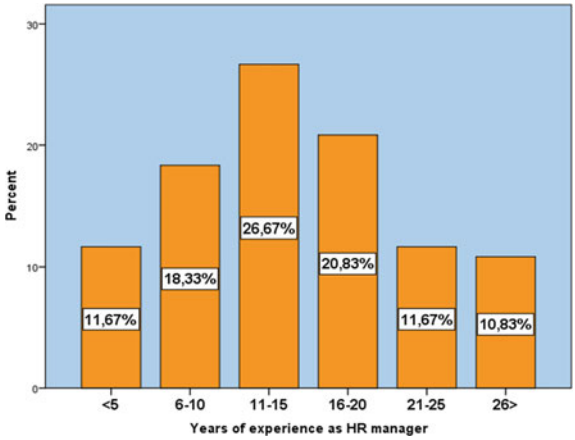

Fig. 4 Distribution of the hotels according to the years of experience of their HR manager

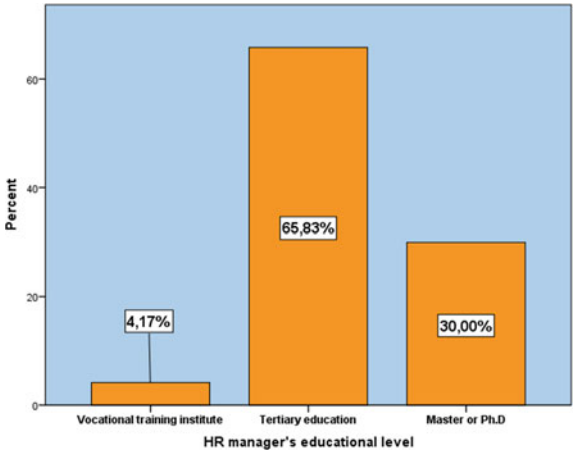

Fig. 5 Distribution of the hotels according to the educational level of their HR manager

The questionnaire's variables used in this paper aim to measure the degree/frequency of application of basic principles of total quality management. The corresponding questions were in a Likert seven-point scale, i.e., 1 corresponding to "Not at all", 2 corresponding to "Minimum", 3 corresponding to "A little bit", 4 corresponding to "Moderate", 5 corresponding to "Enough", 6 corresponding to "Very much" and 7 corresponding to "Absolutely". Questions/attitudes exploring the degree/frequency of application of basic principles of total quality management were represented by the following 14 variables "2.1 The management of the hotel business supports and encourages total quality.", "2.2. There is continuity and consistency of the effort towards total quality.", "2.3. There is a continuous investigation for any problems of the production systems of the hotel product—service.", "2.4. Teamwork is encouraged to solve the problems presented.", "2.5. Modern programs and methods of specialized training are applied with a focus on total quality.", "2.6. There is continuity and consistency of the effort to improve hotel products–services.", "2.7. The management of the hotel business supports a holistic approach to the processes and functions for the production of the hotel product.", "2.8. In the effort to improve the quality, the entire human resources participate/cooperate, regardless of the level of management (managers, supervisors, employees).", "2.9. The management of the hotel business encourages the human resources in taking initiatives and in the participation of decision making, in order to strengthen the implementation of the total quality.", "2.10. Quality is integrated into the production of the hotel product–service.", "2.11. Numerical targets are used to motivate human resources.", "2.12. Overall quality requires continuous and consistent long-term effort with long-term results.", "2.13. Stability of human resources (infrequent and unnecessary movements)" and "2.14. Management is oriented towards quality incentives instead of quantitative ones in its human resources". The reliability coefficient Cronbach's alpha was calculated to equal to 0.872 for the aforementioned variables, providing a high internal consistency of tests used (Cronbach, 1951). Collected data were analyzed using the statistical software IBM SPSS ver.23. Descriptive statistics were calculated, such as mean value and standard deviation for each variable, as well as for suitable hypothesis testing, parametric and nonparametric tests were performed (Bersimis et al., 2022). The variables were in an ordinal scale; nevertheless, the sample size was sufficiently large, and therefore parametric means' equality test was performed for one (one sample t-test with test value of 4 corresponding to the median of the scale, i.e., the neutral response) or two independent samples t-test (Derrick et al, 2017; Cox, 2006). The results from parametric tests were totally confirmed by using the nonparametric test Mann–Whitney U (Conover, 1999).

4 Results

This survey's respondents answered with a high degree of agreement in all the variables that express the application's frequency of total quality management's basic principles in hotel business, i.e., from "moderate" to "very much", meaning that the

degree of agreement was greater than the neutral attitude (Appendix 1 /$p < 0.01$). The mean values per variable expressing the application of basic principles of total quality management in hotel business are presented in Fig. 6 in ascending order. Specifically, the respondents answered with a frequency greater than moderate in the following basic principles of total quality management in hotel business: "2.5. Modern programs and methods of specialized training are applied with a focus on total quality" ("Moderate to Enough"/4.41 ± 1.30, $t = 3.442$, $p < 0.01$) and "2.11. Numerical targets are used to motivate human resources." ("Moderate to Enough"/4.55 ± 1.48, $t = 4.078$, $p < 0.01$) (Appendix 1). Additionally, the respondents answered with a frequency greater than enough in the following basic principles of total quality management in hotel business: "2.14. Management is oriented towards quality incentives instead of quantitative ones in its human resources." ("Enough to very much"/5.32 ± 0.95, $t = 15.142$, $p < 0.01$), "2.7. The management of the hotel business supports a holistic approach to the processes and functions for the production of the hotel product." ("Enough to very much"/5.47 ± 0.98, $t = 16.425$, $p < 0.01$), "2.8. In the effort to improve the quality, the entire human resources participate/cooperate, regardless of the level of management (managers, supervisors, employees)" ("Enough to very much"/5.48 ± 1.11, $t = 14.672$, $p < 0.01$), "2.2. There is continuity and consistency of the effort towards total quality." ("Enough to very much"/5.55 ± 0.94, $t = 18.016$, $p < 0.01$), "2.12. Overall quality requires continuous and consistent long-term effort with long-term results." ("Enough to very much"/5.63 ± 0.96, $t = 18.504$, $p < 0.01$), "2.9. The management of the hotel business encourages the human resources in taking initiatives and in the participation of decision making, in order to strengthen the implementation of the total quality." ("Enough to very much"/5.64 ± 0.94, $t = 19.091$, $p < 0.01$), "2.3. There is a continuous investigation for any problems of the production systems of the hotel product–service." ("Enough to very much"/5.66 ± 1.04, $t = 17.448$, $p < 0.01$), "2.1 The management of the hotel business supports and encourages total quality." ("Enough to very much"/5.71 ± 0.84, $t = 22.170$, $p < 0.01$), "2.6. There is continuity and consistency of the effort to improve hotel products–services." ("Enough to very much"/5.79 ± 1.02, $t = 19.243$, $p < 0.01$), "2.10. Quality is integrated into the production of the hotel product–service." ("very much"/5.88 ± 0.75, $t = 27.348$, $p < 0.01$), "2.13. Stability of human resources (infrequent and unnecessary movements)." ("very much"/5.88 ± 0.95, $t = 21.822$, $p < 0.01$) and "2.4. Teamwork is encouraged to solve the problems presented." ("very much"/5.94 ± 1.18, $t = 17.977$, $p < 0.01$) (Appendix 1).

As regards stars' category (4* vs 5*), HR managers of hotels with 5* responded with a higher mean value in all variables corresponding to the degree of total quality management application (TQMA). Specifically, HR managers of hotels with 5* responded with a higher mean value ("Very much"/6.06 ± 0.48) in the TQMA statement "The management of the hotel business supports and encourages total quality" than HR managers of hotels with 4* ("Enough to very much"/5.56 ± 0.92) ($t = -3.827$, $p < 0.01$). Similarly, HR managers of hotels with 5* responded with a higher mean value ("Very much"/5.83 ± 0.57) in the TQMA statement "There is continuity and consistency of the effort towards total quality" than HR managers of hotels with 4* ("Enough to very much"/5.44 ± 1.04) ($t = -2.655$, $p = 0.009$). In

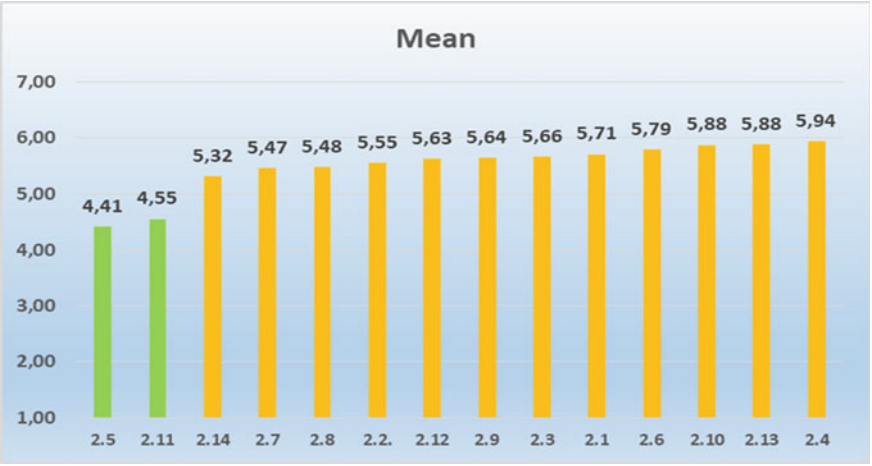

Fig. 6 Mean values of variables expressing the application of basic principles of total quality management in hotel business. Green color corresponds to variables with mean value greater than 4 and orange color corresponds to variables with mean value greater than 5

addition, HR managers of hotels with 5* responded with a higher mean value ("Very much"/5.97 ± 0.71) in the TQMA statement "There is a continuous investigation for any problems of the production systems of the hotel product–service" than HR managers of hotels with 4* ("Enough to very much"/5.53 ± 1.13) ($t = -2.584$, $p = 0.011$). Also, HR managers of hotels with 5* responded with a higher mean value ("Enough"/5.11 ± 0.83) in the TQMA statement "Modern programs and methods of specialized training are applied with a focus on total quality" than HR managers of hotels with 4* ("Moderate"/4.12 ± 1.35) ($t = -4.911$, $p < 0.01$). Additionally, HR managers of hotels with 5* responded with a higher mean value ("Very much to absolutely"/6.14 ± 0.60) in the TQMA statement "There is continuity and consistency of the effort to improve hotel products–services." than HR managers of hotels with 4* ("Enough to very much"/5.65 ± 1.12) ($t = -3.130$, $p = 0.002$). As well, HR managers of hotels with 5* responded with a higher mean value ("Very much"/5.77 ± 0.61) in the TQMA statement "The management of the hotel business supports a holistic approach to the processes and functions for the production of the hotel product" than HR managers of hotels with 4* ("Enough"/5.34 ± 1.08) ($t = -2.787$, $p = 0.006$). Similarly, HR managers of hotels with 5* responded with a higher mean value ("Enough to very much"/5.40 ± 1.01) in the TQMA statement "Numerical targets are used to motivate human resources" than HR managers of hotels with 4* ("Moderate to enough"/4.20 ± 1.50) ($t = -5.096$, $p < 0.01$). Finally, HR managers of hotels with 5* responded with a higher mean value ("Very much"/5.94 ± 0.59) in the TQMA statement "Overall quality requires continuous and consistent long-term effort with long-term results" than HR managers of hotels with 4* ("Enough to very much"/5.49 ± 1.05) ($t = -2.956$, $p = 0.004$) (Appendix 2).

As regards rooms capacity (<50 vs ≥ 50), HR managers of hotels with less than 50 rooms responded with a lower mean value ("Enough to very much"/5.71 ± 1.25) in the TQMA statement "Teamwork is encouraged to solve the problems presented" than HR managers of hotels with more than 50 rooms ("Very much to absolutely"/6.19 ± 1.25) ($t = -3.259$, $p = 0.026$). Similarly, HR managers of hotels with less than 50 rooms responded with a lower mean value ("Moderate"/4.02 ± 1.27) in the TQMA statement "Modern programs and methods of specialized training are applied with a focus on total quality" than HR managers of hotels with more than 50 rooms ("Enough"/4.83 ± 1.20) ($t = -3.591$, $p < 0.01$). In addition, HR managers of hotels with less than 50 rooms responded with a lower mean value ("Moderate"/4.05 ± 1.50) in the TQMA statement "Numerical targets are used to motivate human resources" than HR managers of hotels with more than 50 rooms ("Enough"/5.09 ± 1.01) ($t = -4.092$, $p < 0.01$). On the contrary, HR managers of hotels with less than 50 rooms responded with a higher mean value ("Very much"/5.92 ± 0.82) in the TQMA statement "The management of the hotel business encourages the human resources in taking initiatives and in the participation of decision making, in order to strengthen the implementation of the total quality" than HR managers of hotels with more than 50 rooms ("Enough to very much"/5.34 ± 0.98) ($t = 3.471$, $p < 0.01$).

5 Conclusions

In conclusion, the 5* and 4* category hotel companies that participated in the research show a significant effort for the frequency of application of the basic principles of total quality management, since the answers of the surveyed hotels ranged from "moderate" to "very" with the average to range from "quite a bit" to "a lot". This shows the importance in the decisions and actions of the management of hotel companies for the importance of the concept of quality. This result also coincides with the views of researchers on the strategic importance of the concept of quality, who believe that it should constitute the strategic choice and framework (Stavrinoudis & El Chanoun, 2013).

The research questions concern important issues for the implementation of the principles of total quality management, which is supported and with a high degree of frequency will result in a satisfactory degree of their application.

Three factors show a high degree of acceptance by the surveyed hotels according to the answers to the questionnaire, which are related to the integration of quality in the production of the hotel product and service, the encouragement of teamwork of the human resources to successfully solve the problems presented and the stability of human resources. These factors coincide perfectly with the principles of total quality management as defined by Deming in the 14 points (Deming, 1993).

Also, we have the factors that show high acceptance of the hotels, which are related to the continuous and consistent effort to improve the hotel products–services, the

encouragement and support of the hotel management for the total quality, the continuous investigation for any problems in the production systems of the hotel product–service, the encouragement to take initiative and participation, the continuous and consistent long-term effort towards total quality for long-term results, the total participation of human resources, the support of the management of the hotel business in the holistic approach to the totality of the processes and the preference of qualitative incentives over quantitative ones. These factors, in addition to their agreement with the basic principles of total quality management mentioned by Deming (1993) and other theoreticians and researchers express opinions that coincide with the above factors, such as Juran who considered the contribution of human resources to teamwork and its commitment to the quality operation of processes in all the products and services produced to be important (Juran, 1988), as well as Cronin and Taylor who define that quality that must be maintained in the long term for customer satisfaction (Cronin & Taylor, 1994: 126). Also, according to Psomas, a total commitment to quality is required in order to deal with any problems preventively and not repressively (Psomas, 2008: 74), just as Monte states that an important parameter is the commitment of management and leadership (Montes et al, 2003).

But there are also two factors that demand more importance from hotel businesses. Thus, the first factor is related to the implementation of modern programs and methods with specialized training in total quality that will strengthen the human resources for the application of the principles of total quality management that requires adaptation of its actions to the functions and processes that are constantly changing until the completion of total quality implementation. The second factor is related to the use of numerical targets to motivate human resources, since the implementation of total quality, as mentioned in Deming's 14 points, requires "removal or even minimization of numerical targets to motivate human resources" (Chytiris, & Anninos, 2015: 61; Deming, 1986; Deming, British Library; Evans & Lindsay, 2002; Psomas, 2008, 87–88). Also, training and motivation are linked because knowledge training, skill development by improving abilities replaces motivation with numerical goals. Also, the essential difference of training from the traditional application of management to the application of total quality management is, as mentioned by Kefis Vassilis, that "in traditional management, training programs incur costs. However, if it is necessary, they should be addressed only to the top management staff" (Kefis, 2005: 49), while in total quality management he states that "training is a necessity. It concerns executives and employees. Educational programs mean knowledge, motivation. Knowledge is power, and this can be seen both at the level of individuals and at the level of the company" (Kefis, 2005: 49); also, one of the basic elements of Ishikawa's philosophy is that "quality begins with education and ends with education" (Evans & Lindsay, 2002).

The above factors are important because total quality management must be the dynamic choice for hospitality businesses to improve their services (Motwani et al., 1996: 4–16). This is more important when there is a significant effort by the hotels that participated in the research to achieve a high degree in the frequency of application of the principles of total quality management since, as mentioned by Witcher, about 30% of companies that apply the principles of total quality management actually fail

because they either do not understand its principles or are used in the wrong way or use them for the benefits of marketing functions (Witcher, 1995: 23–24).

In conclusion regarding the category of 5* and 4* hotels, we notice that there is a clearly significant differentiation from the investigation for the application of the principles of total quality management between the category of 4* and 5* hotels. Hotels in the 5* category show a clearly better application of total quality management principles compared to the 4* hotel category.

The factors that show a high percentage of agreement in the answers to the questionnaire stated by the hotels belonging to the 5* category are related to the management of the hotel business to support and encourage total quality, the continuity and consistency of the effort towards total quality, the continuous investigation for any problems in the production systems of the hotel product, the implementation of specialized training programs in total quality, the continuous and consistent effort to improve the hotel products and services, the support of the management for a holistic approach to the processes and the understanding that total quality requires continuous and consistent effort with long-term results. In these factors, the 5* hotels indicate a frequency response from "fairly" to "a lot" which shows the understanding and importance of the application of these factors for quality which is an important issue for the hotel business, in order to provide the customer with what satisfies him and to improve it, so that every time he is provided with something even better (Grower, 2001: 19).

Also, training is a fundamental principle for the successful direction towards total quality, because as Ishikawa mentions, "quality begins with training and ends with training", (Evans & Lindsay, 2002) as well as numerical goals should be eliminated or minimized to motivate human resources (Deming, 1986; Deming, British Library; Temtime & Solomon, 2002: 181–191).

In these factors, we observe that the category of 5* hotels develop a stronger effort in the direction of total quality. This overall higher performance of the category of 5* hotels may be presented by the fact that several hotel companies are a "chain" of foreigners, mainly, and domestic tourism or hotel companies providing specialized hotel management with specialized training and administrative policy at an international level. Another important condition may concern the criteria, conditions and characteristics of the 5* hotel category versus the 4* hotel category. This can lead to a push for higher-quality products–services backed by an empowered workforce with specialized training in total quality.

In conclusion, regarding the capacity of the rooms of the hotels whose capacity is less than 50 rooms in relation to the hotels whose capacity is 50 rooms and more. We observe that the factor that hotel management encourages human resources to take initiatives and participate in decision making to enhance the implementation of total quality, shows a higher degree of response in hotels with a capacity of less than 50 rooms that shows flexibility, due to and their small development, in the participation and synergy of the human resources for the functions of the processes regardless of the administrative hierarchy in dealing with and solving various issues of the daily operation of the hotel business and the creation of short-term programming in order to satisfy the customer's hospitality needs. We observe this factor to a

lesser extent in hotels with a capacity of 50 rooms and more due to its larger and expanded administrative development with greater division and specialization of work. However, various theorists mention the importance of improving the efficiency and flexibility of the company as a whole, (Oakland, 1989) from the participation of the entire company, all departments and all employees at all levels (Vouzas, 2002: 40).

However, the factors that present a higher degree in hotels with 50 rooms and more are related to teamwork to be encouraged to solve the problems presented, to the application of modern programs and methods of specialized training aimed at total quality and the use of numerical objectives to motivate human resources. These factors are more likely to appear to a higher degree in hotels of 50 rooms and more due to their expanded and greater administrative development but they use more numerical targets for motivation which does not coincide with Deming's approach, which mentions the elimination or even the minimization of numerical objectives for the motivation of human resources and suggests replacing them with understanding, with knowledge training, with skill development and with the improvement of their abilities (Chytiris, 2015: 61; Deming, 1993). Also, as Kefis Vassilis mentions about education, "education is a necessity". It concerns executives and employees. Educational programs mean knowledge and motivation. Knowledge is power, and this can be seen both at the level of individuals and at the level of companies (Kefis, 2005: 49).

Appendix

Appendix 1 One-Sample t-test and One Sample Wilcoxon Signed Rank Test (test value = 4)

Total quality management application	Mean	Std. Deviation	One-Sample t-test (p value)	One sample Wilcoxon signed Rank Test
2.5. Modern programs and methods of specialized training are applied with a focus on total quality	4.41	1.30	3.442 (<0.01)	<0.01
2.11. Numerical targets are used to motivate human resources	4.55	1.48	4.078 (<0.01)	<0.01

(continued)

(continued)

Total quality management application	Mean	Std. Deviation	One-Sample t-test (p value)	One sample Wilcoxon signed Rank Test
2.14. Management is oriented towards quality incentives instead of quantitative ones in its human resources. Management is oriented towards quality incentives instead of quantitative ones in its human resources	5.32	0.95	15.142 (<0.01)	<0.01
2.7. The management of the hotel business supports a holistic approach to the processes and functions for the production of the hotel product	5.47	0.98	16.425 (<0.01)	<0.01
2.8. In the effort to improve the quality, the entire human resources participate/cooperate, regardless of the level of management (managers, supervisors, employees)	5.48	1.11	14.672 (<0.01)	<0.01
2.2. There is continuity and consistency of the effort towards total quality	5.55	0.94	18.016 (<0.01)	<0.01
2.12. Overall quality requires continuous and consistent long-term effort with long-term results	5.63	0.96	18.504 (<0.01)	<0.01
2.9. The management of the hotel business encourages the human resources in taking initiatives and in the participation of decision making, in order to strengthen the implementation of the total quality	5.64	0.94	19.091 (<0.01)	<0.01

(continued)

(continued)

Total quality management application	Mean	Std. Deviation	One-Sample t-test (p value)	One sample Wilcoxon signed Rank Test
2.3. There is a continuous investigation for any problems of the production systems of the hotel product–service	5.66	1.04	17.448 (<0.01)	<0.01
2.1 The management of the hotel business supports and encourages total quality	5.71	0.84	22.170 (<0.01)	<0.01
2.6. There is continuity and consistency of the effort to improve hotel products–services	5.79	1.02	19.243 (<0.01)	<0.01
2.10. Quality is integrated into the production of the hotel product–service	5.88	0.75	27.348 (<0.01)	<0.01
2.13. Stability of human resources (infrequent and unnecessary movements)	5.88	0.95	21.822 (<0.01)	<0.01
2.4. Teamwork is encouraged to solve the problems presented	5.94	1.18	17.977 (<0.01)	<0.01

Appendix 2 Independent Samples t-test & Mann–Whitney U (Category)*

Total quality management application	*Category	N	Mean	Std. Deviation	Independent Samples t-test (p value)	Mann–Whitney U (p value)
2.1 The management of the hotel business supports and encourages total quality	4*	85	5.56	0.92	−3.827 (<0.01)	1012 (0.002)
	5*	35	6.06	0.48		
2.2 There is continuity and consistency of the effort towards total quality	4*	85	5.44	1.04	−2.655 (0.009)	1153 (0.037)
	5*	35	5.83	0.57		
2.3. There is a continuous investigation for any problems of the production systems of the hotel product–service	4*	85	5.53	1.13	−2.584 (0.011)	1156 (0.045)
	5*	35	5.97	0.71		
2.5. Modern programs and methods of specialized training are applied with a focus on total quality	4*	85	4.12	1.35	−4.911 (<0.01)	827 (<0.01)
	5*	35	5.11	0.83		
2.6. There is continuity and consistency of the effort to improve hotel products–services	4*	85	5.65	1.12	−3.130 (0.002)	1136 (0.033)
	5*	35	6.14	0.60		
2.7. The management of the hotel business supports a holistic approach to the processes and functions for the production of the hotel product	4*	85	5.34	1.08	−2.787 (0.006)	1160 (0.043)
	5*	35	5.77	0.61		
2.11. Numerical targets are used to motivate human resources	4*	85	4.20	1.50	−5.096 (<0.01)	754 (<0.01)
	5*	35	5.40	1.01		
2.12. Overall quality requires continuous and consistent long-term effort with long-term results	4*	85	5.49	1.05	−2.956 (0.004)	1125 (0.024)
	5*	35	5.94	0.59		

Appendix 3 Independent Samples t-test and Mann–Whitney U (Rooms Capacity)

Total quality management application	Room capacity	N	Mean	Std. Deviation	Independent samples t-test (p value)	Mann–Whitney U (p value)
2.4. Teamwork is encouraged to solve the problems presented	<50	62	5.71	1.25	−3.259 (0.026)	1378 (0.019)
	≥50	58	6.19	1.07		
2.5. Modern programs and methods of specialized training are applied with a focus on total quality	<50	62	4.02	1.27	−3.591 (<0.01)	1099 (<0.01)
	≥50	58	4.83	1.20		
2.9. The management of the hotel business encourages the human resources in taking initiatives and in the participation of decision making, in order to strengthen the implementation of the total quality	<50	62	5.92	0.82	3.471 (<0.01)	1172 (<0.01)
	≥50	58	5.34	0.98		
2.11. Numerical targets are used to motivate human resources	<50	62	4.05	1.50	−4.092 (<0.01)	1042 (<0.01)
	≥50	58	5.09	1.01		

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