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Research question: While quality management literature has addressed products and services separately, the founders of total quality presented this management philosophy as universally oriented. The purpose of this study is to empirically test the Deming management model (DMM).
Research methods: We tested the proposed research model using structural equation modeling, based on data collected from golf courses and ski resorts, in three different countries.
Results and findings: The results support the application of the model to services, in general, and sports tourism, in particular.
Implications: Our conclusions reinforce the recognition of the method's effectiveness and identify the cause–effect patterns, within its basic scope, highlighting the importance of leadership in the success of a quality improvement program. Lastly, a discrepancy of this study is the incapability to support the relationship between continuous improvement and customer satisfaction. Nevertheless, the results should be interpreted while considering the presented limitations.

Keywords: quality; structural equation modeling; Deming; ski; golf; sports; tourism

Introduction

The service sector plays a dominant role in developed economies. Services are deeply rooted in most corners of the economy, certainly in the developed world and increasingly in the newly industrialized countries, such as India and China, despite the service gap relative to the advanced economies still being wide (Bryson, Rubalcaba, & Ström, 2012).

In an inspirational paper, Hill (1977) explored the singularity of services. This and later analyses have supported an approach based on the idea that services deserve a distinct treatment. This approach has been recently challenged by practitioners and academics (Bryson et al., 2012; Daniels, 2011). The dissimilarity between goods and services may become increasingly outdated and irrelevant. The integration of different types of production is growing and the traditional distinction is masking the fundamental changes that are actually emerging from modern technologies, new patterns of demand, and social behavior. Some authors indicate that the task of interpreting and understanding the contemporary context may be reaching the point where the terms 'service' and 'manufacturing' are not helping (Daniels, 2011). Proven theoretical frameworks have occasionally been analyzed simultaneously in both contexts. Literature addressing this

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united approach is scarce though. This paper aims at addressing this research gap by analyzing the applicability of a proven holistic quality management model to the context of service.

The concept of quality management in the services industry is not as developed as in the manufacturing sector. This could be due to the fact that literature discussing manufacturing has handled quality management differently when compared to the service industry approach (Sousa & Voss, 2002).

Service industry research has mainly focused on customer contact management and its impact on the quality perception process (Kellogg & Chase, 1995; Parasuraman, Zeithaml, & Berry, 1988). Some important sport academic approaches, based on the works of Taylor, Sharland, Cronin, and Bullard (1993) and Crompton, MacKay, and Fesenmaier (1991) and on specific studies on golf and ski (Alexandris, Kouthouris, & Meligdis, 2006; Dickson & Huyton, 2008; Hutchinson, Lai, & Wang, 2009; Lee, Kim, Ko, & Sagas, 2010; Matzler, Füller, & Faullant, 2007; Matzler, Füller, Renzl, Herting, & Späth, 2008), are grounded on the contact management theory. These studies have been very effective in identifying process management contact-related problems. Although imperative, these studies have failed to propose sustained and effective methods to overcome the identified gaps. Total quality management (TQM) models search for methods to sustainably, over time, identify and overcome these difficulties.

The TQM founders' opinions (i.e., Deming, Juran, Crosby, Ishikawa, etc.) are prominent in manufacturing literature, but its theoretical basis and methods support its use for both products and services (Anderson, Rungtusanatham, & Schroeder, 1994; Douglas & Fredendall, 2004; Fisher, Barfield, Li, & Mehta, 2005). Additionally, recent studies suggest that TQM positively affects services performance (Wang, Chen, & Chen, 2012), especially the aspects named as 'soft' TQM (Powell, 1995; Vouzas & Psychogios, 2007). The soft TQM dimension, or tacit dimension, is part of a bipolar classification proposed by several authors (Dotchin & Oakland, 1992) referring to a two-dimensional categorization named 'hard' (the technical dimension) and 'soft or social' (Bou-Llusar, Escrig-Tena, Roca-Puig, & Beltrán-Martín, 2009). The later focuses on human resources management and emphasizes on leadership, teamwork, and training and workers performance. The importance of managing this soft dimension on the implementation of a quality system is consensual in the literature (Vouzas & Psychogios, 2007).

Numerous works have tested and validated several quality management frameworks. Some authors contributed with their own theoretical model (Ahire, Golhar, & Waller, 1996; Black & Porter, 1996; Flynn, Schroeder, & Sakakibara, 1994; Foster, Howard, & Shannon, 2002; Montes, Del Mar Fuentes Fuentes, & Fernández, 2003; Motwani, 2001; Powell, 1995; Rao, Solis, & Raghunathan, 1999; Saraph, Benson, & Schroeder, 1989; Zeitz, Johannesson, & Ritchie, 1997), while others use largely disseminated prescribing models, like the European Foundation for Quality Management (EFQM) or the Malcolm Baldrige National Quality Award (Chong & Prybutok, 2002; Flynn & Saladin, 2001, 2006) or models that derived from practice and were later theorized by academics. This is the case of the DMM proposed by Anderson et al. (1994).

We based the present study on the Deming method approach; therefore, we will not discuss other frameworks. We found this theoretical model specially interesting due to its unique features that distinguish it from other models, namely it results from a conceptualization of a proven practical method that has been successfully adopted in different cultures through a long period of time; it has an holistic approach; it is centered in the soft aspects of TQM; it has been successfully empirically tested in different

industries, in the manufacturing sector; and it is applicable to services. Despite its proven efficiency, literature on this model is limited and extremely scarce in services. This paper represents, to the best of our knowledge, the first attempt to empirically test its applicability on tourism, sport, or sports tourism (ST) reality.

The Deming method is better known as a set of 14 prescriptive points which are intended to overcome the 'seven deadly diseases' and the 'obstacles' that prevent the organization from achieving a greater performance (Deming, 1982, 1986). This method developed on the basis of Dr Deming's experiences with the aim that it could be generalized to different contexts (Rungtusanatham, Ogden, & Wu, 2003; Walton, 1986), specially within the contexts of Japan and the USA. Despite its acceptance as an efficient management method, in several contexts and cultures, some authors state that this method is a set of teachings by Deming with no empirical proof or verification. However, two theoretical trends based on the Deming management method have been developed: the profound knowledge and the Deming-based theory of TQM. The concept of profound knowledge constitutes the basis for articulating Deming's transformation principles and it will not be covered in this study. The Deming-based theory of TQM, that supports this research on ST, is a result of the pragmatic need to explain the efficiency of the Deming method. Initially proposed by Anderson et al. (1994), the Deming management model (DMM) results from a process where the authors examine and evaluate the TQM created by Deming and develop a theory based on Deming's writings, literature on the Deming method, and observations of organizations using Deming's method. More specifically, the authors resorted to a seven-member Delphi panel of experts on Deming's management method that identified and defined 37 concepts from Deming's 14 points. Anderson et al. (1994) refined these down to seven more abstract concepts using 'cluster analysis.' The seven concepts are as follows: *Visionary Leadership* (VL); *Internal and External Cooperation* (IEC); *Learning*; *Process Management* (PM); *Continuous Improvement* (CI); *Employee Fulfilment* (EF); and *Customer Satisfaction* (CS). All of them are linked by causal relations (Figure 1).

The relationship between sport and tourism is an idea that is increasingly attracting interest from the academia. A clear indicator that ST is a mature discipline becomes evident with the publishing of articles with meta-reviews and highlights for future research (Weed,

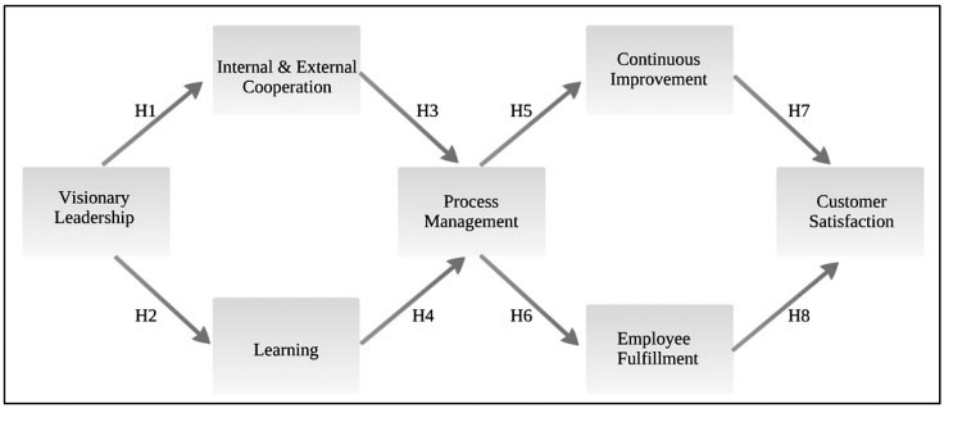

Figure 1. Deming management model.
Source: Anderson et al. (1994).

2006, 2009). From a practical stance, ST is considered a global multimillion dollar business and the fastest growing sector, within the tourism industry (Tassiopoulos & Haydam, 2008). Modern history of the tourism industry demonstrates that it is the area with the fastest changes and the greatest development in mass markets. This fact, which has been widely discussed in tourism literature, shows interesting parallelisms with the modern development of sport. Over the last decades, both have been open to mass participation, transforming ST into a sector with little reliable figures. Nevertheless, it allows to recognize the sector's magnitude and the call for a deeper study. In this study, we aim at contributing to the coverage of this literature gap, more specifically to test the DMM in the context of golf courses and mountain resorts.

This association is not completely original and is inspired by both management practices in ST organizations and previous research. The continuous attempt to minimize seasonality effects leads to the joint offer of these sports. Regarding this aspect, Coy and Haralson (2004) state that 37% of the ski resorts in the USA had added courses to their offer, aiming at diversifying their services and therefore increase revenues outside the winter season. Chalip (2001), Gibson (2007), and Jackson and Weed (2003) mention golf tourism and ski tourism as key examples of what Gibson (2002) classified as 'active sport tourism' and what Weed and Bull (2004) would call 'sports tourism participation.' 'This is not surprising, once these are two important industries in their own right' (Weed, 2009, p. 621). The systematic review of Weed (2006) shows that these are the two most researched products in 'sports tourism participation.' Organizations that manage golf- and skiing-related activities are the focus of this empirical study.

It is estimated that there are between 25,000 (Wheeler & Nauright, 2006) and 32,000 golf courses worldwide (KPMG, 2007). Approximately, 18,000 courses are located in the USA and 6400 championship courses are registered in Europe. World data on the organizations dedicated to mountain resorts are few and unreliable (Hudson, 2000). According to Hudson (2003, p. 95), there are an estimated 6000 mountain resorts worldwide, distributed across 78 countries, with a total of 25,700 installed mechanic means that serve around 380 million annual visits. According to the official lists presented by several organizations (ATUDEM, 2010; FPG, 2010; RFEG, 2010), there were 552 ST centers (506 golf courses and 46 mountain resorts) in the Iberian Peninsula (Spain, Portugal, and Andorra).

There have been very few empirical studies regarding DMM. First, Anderson, Rungtusanatham, Schroeder, and Devaraj (1995), using measures identified from the world-class manufacturing research project, found support for most of the hypotheses, followed by the work of Rungtusanatham, Forza, Filippini, and Anderson (1998) and Rungtusanatham, Forza, Koka, Salvador, and Nie (2005). Douglas and Fredendall (2004) and Fisher et al. (2005) replicated the first study, this time incorporating services. These studies manage to demonstrate most of the model's relationships, but none of them does it completely. Furthermore, Hales and Chakravorty (2006) worked on a case study in which they analyzed the application of the model to a plastic production company. All the studies suggest that further testing of the DMM in other industries is necessary in order to grant credibility to the theory. Thus, the present study will try to demonstrate it in a new sector.

To assess and test this model in ST, we first analyzed the constructs and their relationships with the aim of validating their relevance in the service industry, in general, and in the ST sector, in particular. To achieve this, theoretical and practical contributions emerging from recent studies are presented.

The use of a model like the DMM in industries such as golf or ski can help managers of these organizations in providing an effective management model, applicable to their organizations.

The present article, therefore, is an attempt to relate both subjects: quality management and ST. First, the study demonstrates that the DMM developed by Anderson et al. (1994) and tested mainly in manufacturing industries is theoretically applicable to the service sector. Second, this article tests the DMM using data collected from sports organizations, with the aim of demonstrating its validity in ST. Third, the cause–effect relationships within the basic scope of the model are examined.

Literature review and hypotheses

The conceptualization and measurement of total quality in the sport services are still at an early stage (Tsitskari, Tsiotras, & Tsiotras, 2006). In the context of sports, as in services in general, the issue of quality management is widely considered as the management of customer contact and the way it influences the process of quality perception and CS.

Recommendations to adopt TQM methods and practices by organizations that offer leisure (Robinson, 1997, 1999, 2002; Williams, 1998) and sport activities are nevertheless abundant (Buján, 2004; De Knop, Hoecke, & Bosscher, 2004; Knop, Van Hoecke, & Bosscher, 2004; Mawson, 1993; Senlle, Gallardo, & Dorado, 2004; Soares, Serôdio-Fernandes, & Machado-Santos, 2007). Papers describing case studies of implementation in sports services are also found, more specifically in organizations that manage sports facilities (Buján, 2004; Mawson, 1993; Senlle et al., 2004; Soares et al., 2007), municipalities, fitness centers (Senlle et al., 2004), and sports federations (Van Hoecke, De Knop, & Schoukens, 2009).

The tourism sector has long been interested in quality management because of its recognized significance to the long-term business success (Johns, 1996). According to Sutton (2009), in a highly competitive environment, quality management has become a key performance goal for tourism businesses. The literature related to TQM in the contexts of tourism and sport presents similarities. Although more advanced, TQM literature on the tourism industry is also at an early stage of development and the TQM framework is not common. The importance of quality management in the tourism industry, driven by customer expectations and competition, is recognized by scholars (Fernández, 2002), managers (Harrington & Akehurst, 1996), and politicians (Williams, 1998). Despite the awareness of some implementation issues (Breiter & Bloomquist, 1998; Meyer et al., 1999; Sila & Ebrahimpour, 2004; Williams, 1998), several authors advocate the applicability of holistic quality models to the tourism sector (García, Brea, & del Río Rama, 2013; Kozak, 2004; Meyer et al., 1999; Mohsen, 2010; Patiar, Davidson, & Wang, 2012; Sila & Ebrahimpour, 2004; Soriano, 1999; Williams, 1998). Although the importance of TQM in hospitality and tourism services is being recognized, empirical studies on TQM in this industry are scarce. The existing literature focuses on specific aspects of TQM, particularly on human resources variables instead of holistic approaches.

As expected, academic papers addressing the issue of TQM in ST using empirical data with a holistic approach are scarce. We only found three studies meeting these requirements. Crilley, Murray, Howat, March, and Adamson (2002) identify and develop external performance and quality service indicators, using consumer perceptions in Australian golf courses. The authors propose an instrument to measure operational performance and service quality. Quaresma (2008) validates a model of quality assessment

extended to managers, employees, and customers, using data from 45 golf courses. Finally, De Knop (2004), in his case study on the regulation and setting standards of risk control activities in ST, already anticipated that the issue of TQM would be among the topics that would raise huge interest in the context of ST.

As several authors argue, TQM comes out as an important issue to ST but it has yet a long path to develop. Existent research based on total quality appears to be largely exploratory and there is a need for a wider, more theoretically based and rigorously conducted research agenda for sport management (Kauppi, Moxham, & Bamford, 2013; Tsitskari et al., 2006).

Deming management model

The DMM proposed by Anderson et al. (1994) was developed by these authors on the basis of Deming's writings and resulted in the seven concepts listed in Table 1. Anderson et al. (1994, p. 474) summarized the theoretical model as follows (Figure 1):

> The effectiveness of the Deming Management Method arises from leadership efforts towards the simultaneous creation of a cooperative and learning organization, to facilitate the implementation of process management practices, which, when implemented, support customer satisfaction and organizational survival through sustained employee fulfillment and continuous improvement of processes, products and services.

Visionary leadership

Customer focus is crucial to this model and plays a central role in the quality management process which underlies the entire DMM (Anderson et al., 1994). According to Anderson et al. (1994), VL finds support in several works previously published and implies a constant search for CI, which requires transformational leadership as opposed to transactional leadership. This is also defended by more recent bibliography reviews such as Lakshman's (2006, p. 58). This type of leadership is encouraged for services, in

Table 1. Concepts underlying the Deming management method.

Visionary leadership (VL)	The ability of management to establish, practice, and lead a long-term vision for the organization, driven by changing customer requirements, as opposed to an internal management control role.
Internal and external cooperation (IEC)	The propensity of the organization to engage in non-competitive activities internally among employees and externally with respect to suppliers.
Learning (L)	The organizational capability to recognize and nurture the development of its skills, abilities, and knowledge base.
Process management (PM)	The set of methodological and behavioral practices emphasizing the management of process, or means of actions, rather than results.
Continuous improvement (CI)	The propensity of the organization to pursue incremental and innovative improvements of its processes, products, and services.
Employee fulfillment (EF)	The degree to which employees of an organization feel that the organization continually satisfies their need.
Customer satisfaction (CS)	The degree to which an organization's customers continually perceive that their needs are being met by the organization's products and services.

Source: Anderson et al. (1994, p. 480).

general, by Eiglier, Langeard, and Dageville (1989) and several authors defend its implementation in service-specific contexts (Guest & Taylor, 1999; Tsang & Antony, 2001). Leadership is one of the most frequently studied issues in sport management literature (Barrows & Ridout, 2010; Paton, 1987; Weese, 1995) and there are numerous studies that confirm the validity of the used concept, within the context of sport and tourism (Honari, Goudarzi, Heidari, & Emami, 2010; Hoye, 2004; Hsu, Bell, & Cheng, 2002; Kent & Chelladurai, 2001; Patiar & Mia, 2008; Yusof & Shah, 2008).

Internal and external cooperation

Cooperation, in this context, is a synonym for collaboration among different individuals, groups, or organizations where all the entities engage in noncompetitive activities which are mutually beneficial. Deming, according to Anderson et al. (1994), opposes competitive and conflictive environments that generate fear in individuals. The fear to make mistakes is a factor that conditions innovation, as confirmed by Perdomo-Ortiz, González-Benito, and Galende (2009). The concepts contemplated in the bibliography referring to sport services are very similar to the ones used in the model. As an example, we can refer to the studies on cooperation in the organization of ST events or the need to manage human resources internal relationships in golf courses (Yang & Coates, 2010). Concerning external cooperation, we can also find studies that support its applicability within the ST context (Gerbaux & Marcelpoil, 2006; Nordin & Svensson, 2007; Odgen & Wilson, 2001).

VL is the core of the Deming model, since it is essential to create IEC in service organizations (Douglas & Fredendall, 2004). Deming (1986) attributes importance to leadership since it enables a lower level of fear to improve processes, thus causing an improvement on the degree of cooperation. The direct influence of VL on IEC is supported by several empirical studies, both for manufacturing (Anderson et al., 1995; Fisher et al., 2005; Rungtusanatham et al., 1998) and services (Banerji, Gundersen, & Behara, 2005; Douglas & Fredendall, 2004; Fisher et al., 2005). Using this reasoning, we believe the same can take place in ST organizations, therefore, advancing Hypothesis 1 (H1): VL is positively related to IEC. The hypotheses are presented in Table 2.

Learning

Similar to IEC, *Learning* is considered critical when it comes to the implementation of PM practices. In the proposed model, *Learning* is considered as the organization's ability and willingness to allocate resources to learning or knowledge-seeking activities at individual, group, and organizational levels. Learning plays an important role for service company

Table 2. Hypothesis.

Hypothesis 1 (H1)	Visionary leadership is positively related to internal and external cooperation.
Hypothesis 2 (H2)	Visionary leadership is positively related to learning.
Hypothesis 3 (H3)	Internal and external cooperation is positively related to process management.
Hypothesis 4 (H4)	Learning is positively related to process management.
Hypothesis 5 (H5)	Process management is positively related to continuous improvement.
Hypothesis 6 (H6)	Process management is positively related to employee fulfillment.
Hypothesis 7 (H7)	Continuous improvement is positively related to customer satisfaction.
Hypothesis 8 (H8)	Employee fulfillment is positively related to customer satisfaction.

employees. Most of the services are provided through contact with the staff and, as a result, learning should have a significant impact on service quality. Although there are several studies that highlight the importance of organizational learning and its influence on a TQM model (Flynn & Saladin, 2006; Foster et al., 2002), empirical research about this impact is still scarce (Douglas & Fredendall, 2004; Heim & Ketzenberg, 2011). Apparently, the concept at stake is applicable to services (Darr, Argote, & Epple, 1995; Lapré & Tsikriktsis, 2006), tourism (Baum & Ingram, 1998), and sport organizations (Heim & Ketzenberg, 2011).

Leaders control organizational learning through the allocation of resources and choosing whether or not to recognize and reward the occurred learning (Douglas & Fredendall, 2004). This link shows a similarity between manufacturing and services and has been empirically demonstrated in several studies (Anderson et al., 1995; Fisher et al., 2005; Rungtusanatham et al., 1998). We propose Hypothesis 2 (H2): VL is positively related to *Learning*.

Process management

There are three major research streams on PM in the service industry. The first one considers the service process design through the use of tools such as blueprinting (Shostack, 1984) and quality function deployment. A second stream assesses how customer contact is managed and how it impacts the service process and the customers' perception of quality (Kellogg & Chase, 1995; Parasuraman et al., 1988). The third stream examines quality management techniques such as statistical quality control (Sureshchandar, Rajendran, & Anantharaman, 2001) and mistake proofing in services (Stewart & Richard, 1999).

In the sport context, studies focus mainly on the second research line, identified as contact management. We highlight, due to their pioneering and their methodological solidity, the early studies by Crompton et al. (1991) and Taylor et al. (1993); and, more recently, we find specific studies such as the ones by Alexandris et al. (2006), Matzler and Renzl (2007), Dickson and Huyton (2008), Matzler et al. (2007), Hutchinson et al. (2009), Lee et al. (2010), and Byon, Zhang, and Baker (2013). Academic studies belonging to the first and third streams are fewer, a fact that does not prevent the underlying action methodology from being applicable within the context of golf courses or ski resorts. Usually, in these cases, and as mentioned by several authors (Heim & Ketzenberg, 2011; Mayer, 2009), the process design activities are outsourced (initial and remodeling projects). On what the third line is concerned, we can find several studies on the definition of quality standards in ski resorts (Brey, Klenosky, Lehto, & Morrison, 2008; Needham & Rollins, 2005; Needham, Rollins, & Wood, 2004; Ormiston, Gilbert, & Manning, 1998) and golf courses (Warnken, Thompson, & Zakus, 2001).

IEC is important to PM, in manufacturing (Anderson et al., 1995; Fisher et al., 2005; Rungtusanatham et al., 1998) and services (Banerji et al., 2005; Douglas & Fredendall, 2004; Fisher et al., 2005). Internal cooperation should facilitate data exchange, processes standardization, visual error tracking, and the use of statistical tools to identify problems, all of vital importance in PM (Douglas & Fredendall, 2004). On the other hand, external cooperation, understood as the cooperation with suppliers, must be based on stable and long-lasting relationships that should also result in an improvement on PM (Anderson et al., 1994, p. 484). These justify Hypothesis 3 (H3): IEC is positively related to PM.

The model proposed by Anderson et al. (1994) suggests that *Learning* has an impact on PM. Anderson et al. (1995) and Rungtusanatham et al. (1998) could not find empirical

evidence of this relationship. Nevertheless, more recent studies (Douglas & Fredendall, 2004; Fisher et al., 2005), with slight methodological variations, did find support for this relationship. Douglas and Fredendall (2004) suggest that training in quality implies a learning process for employees who, when given information regarding clients, offer a more appropriate response. This learning should influence process management, so we propose Hypothesis 4 (H4): *Learning* is positively related to PM.

Continuous improvement

The concept of CI has received a lot of attention from academics and managers. Global competitiveness requires constant improvement in the quality of products, services, and processes (Sousa & Voss, 2002). CI is the main objective of the Deming method. It is involved in the chain reaction proposed by the author, establishing the following connection: a higher quality implies lower costs and greater market share, thus providing the organization with a rational logic to engage in continuous quality improvement. In the bibliography on TQM in sport services, the concept of CI also plays a key role. In the last few years, sport organizations have become exposed to an increased competition and to greater demands from consumers and suppliers. CI systems are strategic in order to capture and increase client loyalty, and constitute a tool for differentiation (Mayer, 2009; Mulligan & Llinares, 2003).

Satisfying customer expectations, which are constantly changing, exerts pressure to continuously improve the services provided. For many researchers, PM is essential for CI. PM means analyzing present performance and taking appropriate measures which are required to achieve CI (Douglas & Fredendall, 2004). According to the model by Anderson et al. (1994), PM impacts CI, a fact that is confirmed in empirical studies by Anderson et al. (1995) and Rungtusanatham et al. (1998) for the industrial sector, by Douglas and Fredendall (2004) for services, and by Fisher et al. (2005) for both, industry and services. Hence, we believe this relationship should also be significant in our study, and consequently, we propose Hypothesis (H5): PM is positively related to CI.

Employee fulfillment

Employee behavior determines, to a great extent, the results of the adopted management systems (Ortner, 2000). Moreover, service organizations must focus on EF since there is a strong correlation between the employees' perception of well-being and the customer's perception of service quality (Kristensen & Westlund, 2004; Sureshchandar et al., 2001). This relation presents an increased significance in the service industry, in general, and in the tourism services industry, in particular (Ismert & Petrick, 2004; Kim & Brymer, 2011; Ma & Qu, 2011). The relation between PM and EF proposed by Anderson et al. (1994) is not supported by Rungtusanatham et al. (1998) or Fisher et al. (2005). In the study by Anderson et al. (1995), the relationship found is described as not very reliable, even though the study by Douglas and Fredendall (2004), with a different operational approach of concepts, did find a strong link between both concepts. For these reasons, we consider Hypothesis (H6): PM is positively related to EF.

Customer satisfaction

Anderson et al. (1994) define the concept of CS as the degree of satisfaction shown by customers regarding the continuous fulfillment of their needs by the organization. Its importance within the quality management theory is agreed upon (Nair, 2006) and underlies the entire DMM.

Several authors have concluded that internal quality practices influence CS (Ferrand & Vecchiatini, 2002; Nilsson, Johnson, & Gustafsson, 2001). In line with other service sectors, most of the published articles maintain that high levels of perceived service quality imply positive consequences for the performance of organizations (Arawati, 2004). In the fitness industry, the perception of service quality predicts CS and loyalty (Makover, 2003), although the last is controversial in the tourism industry (Eusébio & Vieira, 2011; McKercher, Denizci-Guillet, & Ng, 2012). Theodorakis, Kambitsis, & Laios (2001), in their study of two sport events in Greece, conclude that all the dimensions of perceived service quality are positively correlated with CS. Moreover, according to Williams and Soutar (2009), value dimensions have a strong, positive influence on CS and behavioral intentions in the setting of adventure tourism. Lee et al. (2010) analyze the relationship between perceived quality and satisfaction in golf players and conclude that the dimensions 'tangible elements' and 'empathy' are determinant in 'CS.' On this issue, Matzler et al. (2008) in their study on ski resorts and Petrick, Backman, and Bixler (1999) on golf courses also conclude that CS is influenced by personal factors, product characteristics, and/or specific temporal features. On the other hand, Hutchinson et al. (2009) partly disagree with this assumption. Using data collected from golf players, these authors conclude that 'service quality' does not have a significant direct impact on the 'perceived value' or on 'CS,' but it influences 'equity' which is considered an intermediate variable.

It is expected that CI will lead to CS (Douglas & Fredendall, 2004). The bibliography supporting this premise is extensive, although scientific evidence is scarce. The link between CI and CS is only indisputably supported in the study by Fisher et al. (2005). Rungtusanatham et al. (1998) only found a weak support in their results. Even so, considering what has been previously presented, we regarded as relevant to verify the following Hypothesis 7 (H7): CI is positively related to CS.

Although Deming does not explicitly propose the connection between EF and CS, Anderson et al. (1994) consider it as implicit in Deming's practices. Similar to H7, this statement seems logical and is widely supported in the bibliography (Douglas & Fredendall, 2004; Oakland & Oakland, 1998; Voss, Tsikriktsis, Funk, Yarrow, & Owen, 2005), but unlike H7, we do come across evidence in empirical studies. The connection between EF and CS, according to the proposed model, finds strong support in the studies by Anderson et al. (1995) and Douglas and Fredendall (2004). Therefore, we believe that this link could also be significant in our study, leading to the last Hypothesis 8 (H8): EF is positively related to CS.

Until now, five empirical studies that examine the applicability of the DMM proposed by Anderson et al. (1994) were found. In addition, Hales and Chakravorty (2006) worked on a case study in which they analyzed the implementation of the DMM on a plastic production company. The prior works support most of the relationships proposed by the DMM, but the authors suggest that more studies in different industries are necessary. Table 3 summarizes their methodology, data analysis, and results. A theory requires multiple tests for its credibility to be established, which is why, in our opinion, and within

Table 3. Empirical studies on the Deming management model.

	Anderson et al. (1995)	Rungtusanatham et al. (1998)	Douglas and Fredendall (2004)	Fisher et al. (2005)	Rungtusanatham et al. (2005)	Hales and Chakravorty (2006)
Sample	Companies in machinery, electronics and transportation parts (N = 41, USA and Japan)	Companies in machinery, electronics and transportation parts (N = 43, Italy)	Healthcare services (N = 193, USA)	Manufacturing and services, companies of different sizes, profit and non-profit organizations (N = 101, USA and Canada)	Companies in machinery, electronics and transportation parts (N = 143, Germany, Italy, Japan and USA)	Case study in a production of plastics listed in 'Fortune 500 group'
Study participants	Several employees with different jobs and responsibilities completed the questionnaire	Several employees with different jobs and responsibilities completed the questionnaire	General managers and quality managers	An executive per organization	Multiple individuals	
Data analysis	Pat analysis	Pat analysis	Structural equations modeling	Pat analysis	MANOVA and regression analysis	
VL→IEC	Strong	Strong	Strong	Strong	Strong for all countries	
VL→L	Strong	Weak	Strong	Strong	Strong for all countries	
IEC→PM	Strong	Strong	Moderate	Strong	Strong for all countries	
L→PM	None	None	Moderate	Strong	Strong for all countries	
PM→CI	Moderate	Strong	Strong	Strong	Strong for all countries	
PM→EF	Moderate	None	Strong	None	None for Germany and Italy; Strong for Japan and USA	
CI→CS	None	Weak	None	Strong	Strong for all countries	
EF→CS	Strong	None	Moderate	None	None for Germany and Italy; Strong for Japan and USA	

the current context, the DMM proposed by Anderson et al. (1994) needs more empirical studies. The next section presents the empirical study that intends to expand the support for its applicability to the context of ST.

Methodology

Measures

Whenever possible, we operationalized the underlying constructs of the DMM using previously published scales. We predominantly used scales that were originally developed and tested by Saraph et al. (1989) and later adopted in several studies (Anderson et al., 1995; Rungtusanatham et al., 1998, 2003). To improve the content validity of the measurements, we took a number of steps. First, we went through an intensive study of the previously published scales to identify valid measures for the related constructs. Second, a panel of eight experts in sport and tourism management evaluated the scales. We revised the questionnaire according to the received feedback. Minor changes were introduced after the inputs provided.

Third, we conducted an exploratory factor analysis (equamax rotation with Eigenvalues > 1) using data from 72 ST center managers from Ireland, the UK, and the USA. This resulted in 22 items, divided in a seven-factor structure that explained approximately 62% of the variance (goodness of the fit [GOF]: $\chi^2 = 117.5$, $df = 129$, $p = 0.757$), which is considered acceptable for the context of social sciences (Hair, Black, Babin, & Anderson, 2009). The various scales show acceptable correlation (item-item and item-total) and reliability values ($0.72 < \alpha > 0.87$). Preliminary exploratory factor analysis confirms the seven expected factors (Kaiser-Meyer Olkin [KMO] = 0.779, $p > 0.5$ and Bartlett's test $\chi^2 = 883.2$, $df = 276$, $p < 0.000$). The changes operated in the various scales are proposed according to the theoretical framework and the appropriate number of items per factor.

Forth, we translated scales (*translate-translate back method*) into Portuguese and Spanish and pilot tested with a sample of 52 service managers. At this stage, we introduced minor changes.

The final questionnaire is divided into three sections. The seven scales that assess the variables in the model (22 items with 5-point Likert-type scales) constitute the first section. The second assesses the stage of TQM implementation. Finally, the third section characterizes the organization's size (Appendix).

Sampling procedure and data collection

We accomplished data collection on both a primary and secondary basis. We collected secondary data using industry-specific publications (facility size, offered services, and contacts). We also collected two sets of email addresses in order to invite managers to participate in the study. We used complementary sources in the collecting process, namely secondary databases (specialized publications and national federations), combining and subsequently updating using official webpage information. Group 1 included 500 golf and mountain resorts managers randomly selected from a list of the UK, Ireland, and the USA. Group 2 used all the golf and mountain resorts managers (552) from the sample of Spain, Portugal, and Andorra. The invitation included the study's presentation and the online survey link. The follow-up actions for both samples included an email reminder one month later and a phone call for sample 2. These procedures resulted in two samples.

Sample 1 comprises data of 72 managers (75% golf managers) included in group 1 (6% from Ireland, 46% UK, and 49% USA).

Sample 2, in total, as a result of the communication efforts, collected 144 answers (26%; 132 golf course managers and 12 mountain resort managers) which slightly exceeds, according to Hung and Law (2011), the response rates from previous hospitality and tourism studies. The majority of the participants were male (85%), the average age was 40.2 years old (26–67), and 73% held the general director position, 22% were operational directors and approximately 5% were quality managers. This convenience sample mimics the strata presented by the universe (91% of golf courses).

The golf facilities' (GF) offer is relatively homogeneous: 85% offer a regular golf course; 7% offer Pitch and Putt, followed by those that offer 'regulatory fields and Par 3' (3.8%); and rustic golf offer represents only 1.5% of the sample. Additionally, it underlines the fact that 24% of the GF offer hotel accommodation. Among these organizations, 34% had committed with the implementation of TQM or a similar total quality program, and 25% felt that they were 'a little more advanced' or 'much more advanced' in the implementation of these programs than most organizations.

With respect to the mountain resorts, the sample emphasizes that there are predominantly alpine resorts (92%) that offer 305 km ($\bar{X} = 27.7$ km) of marked trails, 104 mechanical lifts ($\bar{X} = 10$), and 1595 snow cannons ($\bar{X} = 145$). Among these organizations, 33% had committed to the implementation of TQM, or a similar total quality program, and 51% felt that they were 'a little more advanced' or 'much more advanced' in the implementation of these programs, in comparison to most organizations.

Data analysis and results

Survey data were combined with secondary data in an effort to assess the potential for response bias. The mean results of nonrespondent organizations did not differ significantly on what concerns facility size and offered services. As a result, there does not appear to be a systematic response bias in the operating characteristics of the sample. We first inspected the data for missing values. No case had missing data due to non-item response, and the pattern of non-item response was not systematic across cases. However, 18 cases presented more than 50% of missing values. These replies were removed from the subsequent analysis. The Mahalanobis distances analysis detected no multivariate outliers (D2/df < 2.5). After this process, the final sample was n = 126. Minimum sample sizes have varied (Kim & Brymer, 2011; Wang et al., 2012) and recent simulation studies support the general idea that larger samples, more indicators per factor, and strong factor loadings generally improve model convergence and parameter estimation. However, the notion of an absolute minimum n is not supported nor the notion of a critical ratio of sample size to number of indicators, or even the sample size to number of free parameters. 'It seems instead that combining p/f [p –measured variables and f – latent variables] and loading magnitudes into a measure of construct reliability is a more effective way of explaining the relation between sample size and facets of the model' (Gagne & Hancock, 2006, p. 79). For a recent discussion on this, please see the studies by Jackson, Voth, and Frey (2013). According to these authors and also Gagne and Hancock (2006), our study, with an average loading of 0.75 and a p/f of 3.14, would require a minimum sample size to achieve convergence and parameter estimation in the interval of 50–100 cases. Maximum Likelihood estimation combined with high

communalities can guarantee a stable solution with samples that range from 100 to 150 (Hair et al., 2009). Our study fulfills these requirements.

We chose structural equation modeling (SEM) using AMOS (V. 21, SPSS Inc., Chicago, IL) to conduct the data analysis in this study. This method, with its aptitude to handle abstract concepts, multiple indicators, error measurements, multiple dependable variables, along with its capacity of generating general adjustment measures of the model to the data, is more appropriate for the model analysis than path analysis and/or multiple regression analysis. Finally, when using SEM, there is no need to aggregate data to produce constructs' compound estimations, thus avoiding drawbacks such as variability and specificity loss. As suggested by Anderson and Gerbing (1988), we adopted a two-step model-building approach that emphasizes the analysis of the two conceptual distinct models: the measurement model and the structural model. We cross-validated the measurement model with the two independent samples.

Measurement model

We validated the measurement model through confirmatory factor analysis (CFA). Variables present a normal univariate distribution (Kolmogorov–Smirnov $p \geq 0.000$). Despite this, they do not present a normal multivariate distribution (Mardia estimator = 22.6), being a possible cause of the moderately deviation from homoscedasticity (M = 820.7, $F(435.3) = 1.315$, $p = 0.000$). The bivariate correlation matrix analysis, the dispersion graphs and the significance of the Pearson test leads to the conclusion that the variables are linear. In this context, we believed it was appropriate to use estimation through Maximum Likelihood due to its wide use in the bibliography, appropriateness for the sample size and solidity, and relative robustness to the non-normality distribution (Andreassen, Lorentzen, & Olsson, 2006; Hair et al., 2009; Olsson, Foss, & Breivik, 2004; Olsson, Foss, Troye, & Howell, 2000). The model presents appropriate factor loadings (Table 4) confirmed by several GOF indices (Table 5).

As observed in Table 4, concept reliability values, which range between 0.76 and 0.94, allow us to infer that the model presents convergent validity (Fornell & Larcker, 1981). The comparison of average variance extracted (AVE) and the square of the factor correlations (E^2) indicates that six out of seven concepts present evidence of discriminant validity. However, the concept IEC lacks this evidence concerning VL, IEC, and CI. In this case, discriminant validity was tested through a comparative analysis of adjustment values of the identified concurrent models (Table 5). All the concurrent models present poorer fit indices values than the initial, thus providing evidence of discriminant validity, as suggested by several authors (Anderson & Gerbing, 1988; Bagozzi & Phillips, 1982) and recommended by Hair et al. (2009). These results associated to the inexistence of significant cross-factor loadings (modification indices lower than 6.21) and standardized residual covariances values under |2.57| indicate that the measurement model presents good measuring properties, it is consistent with good practices and reliable on what the theoretical model is concerned.

Structural model

The main result is that the DMM is applicable to the ST industry. We have used a set of indices. Amongst those, three are absolute fit indices (χ^2; χ^2/df; and Root Mean Squared Error of Approximation [RMSEA]) and two incremental fit indices (Comparative Fit

Table 4. Confirmatory factor analysis results including standardized loading estimates.

	VL	IEC	L	PM	CI	EF	CS
X1	0.79						
X2	0.79						
X3	0.61						
Y9		0.57					
Y12		0.60					
Y18		0.59					
Y23			0.78				
Y27			0.86				
Y28			0.64				
Y29				0.64			
Y31				0.80			
Y32				0.75			
Y34					0.76		
Y36					0.77		
Y39					0.76		
Y44						0.86	
Y45						0.89	
Y46						0.83	
Y47						0.93	
Y48							0.66
Y49							0.94
Y50							0.80
CR	0.87	0.91	0.88	0.76	0.88	0.94	0.86
VE	0.54	0.34	0.59	0.53	0.58	0.77	0.65
Factor correlations							
VL	1.000						
IEC	0.799	1.000					
L	0.665	0.709	1.000				
PM	0.496	0.517	0.587	1.000			
CI	0.530	0.680	0.509	0.484	1.000		
EF	0.381	0.460	0.389	0.231	0.687	1.000	
CS	0.101	0.199	0.151	0.182	0.527	0.823	1.000

Source: Authors' compilation

Index [CFI] and Tucker Lewis Index [TLI]). As recommended in the literature, we used an indicator of bad fit, RMSEA, which in this case tries to correct for both model complexity and sample size. The structural model presents GOF indices that reveal a good fit ($\chi^2 = 323.7$, $\chi^2/df = 1.61$, RMSEA = 0.07, CFI = 0.92, TLI = 0.90) and seven out

Table 5. Concurrent measuring model.

	MM	Mod1 VL+IEC	Mod2 IEC+L	Mod3 IEC+CI
χ^2	244.8	294.2	296.8	295.9
df	188	189	189	189
χ^2/df	1.3	1.56	1.57	1.56
GFI	0.85	0.83	0.83	0.83
RMSEA	0.048	0.067	0.068	0.067
CFI	0.96	0.93	0.92	0.93
TLI	0.95	0.91	0.9	0.91
PGFI	0.63	0.62	0.67	0.67

Source: Authors' compilation.

of the eight structural parametric estimations are appropriate and meet the expectations with regard to size, direction, and significance (Figure 2). These results support the theoretical model, with a warning for the nonsupported path. Therefore, the general hypothesis, 'The proposed model is applicable to organizations that provide services in Golf Courses and Ski Resorts,' is confirmed.

Additionally, by analyzing Table 6, we can extract the following results that provide confirmation for the proposed hypotheses. VL carries out a significantly positive influence on both IEC ($\gamma_{11} = 0.86$; $p < 0.001$) and *Learning* ($\gamma_{21} = 0.86$; $p < 0.001$); therefore, hypotheses H1 and H2 are supported. VL is fundamental in the Deming model and essential to establish IEC. In both cases, the results seem to corroborate that the proposed connections are verified within the context of ST centers. IEC performs a modest positive influence ($\beta_{31} = 0.36$; $p = 0.034$) on the PM variable. Similarly, we also found that *Learning* positively influences PM ($\beta_{32} = 0.44$; $p = 0.005$); thus, H3 and H4 are equally supported. The results also ratify H5 and H6. PM is highly positively related ($\beta_{43} = 0.66$; $p < 0.001$) to the CI variable and, as in the preceding causal relationship, the PM influences, although to a lower degree, EF ($\beta_{53} = 0.43$; $p < 0.001$).

Finally, parameter matrices β_{64} and β_{65} explain the intensity of the causal effects between the endogenous latent variables, CI and EF, on CS. According to our results, the relationship β_{65} allows us to confirm that EF is related, significantly and positive, to CS ($\beta_{65} = 0.84$; $p < 0.001$), therefore sustaining H8.

Meanwhile, H7 is not confirmed; CI does not show a positive influence on the CS variable ($\beta_{64} = –0.03$; CR = –0.4).

Empirical evidence of the relationship proposed in H7 is limited although there is an extensive literature that supports this claim. The suggested relationship between CI and CS, in the context of DMM, is supported by the study of Fisher et al. (2005) and reveals consistency between industries in different countries, in the work of Rungtusanatham et al. (2005). The discrepancy found is consistent with the works of Rungtusanatham et al. (1998) and Anderson et al. (1995) that conclude that the relationship is weak. Accordingly, the only work on services developed by Douglas and Fredendall (2004) did not support this bond. Some of the possible explanations are discussed in the next section.

Discussion and conclusions

The authors who had previously studied the applicability of the DMM suggest its empirical verification in different contexts as a precondition to achieve conclusions that can be generalized. This is the main aim of the present study: to achieve an additional verification of the theoretical model within a different context from the ones used in previous works, namely ST. Looking at the context's specificity, the model's complexity, and the sample size, the measurement model presents a high GOF and specific evidence of concept validity. Together, these characteristics allow us to conclude that the proposed measurement model is valid for the context of ST centers, therefore contributing to the discussion concerning its generalizability.

Concerning the overall fit, our results suggest a higher fit than the only previous study that used SEM, Douglas and Fredendall (2004). These authors present two fit indices results, the normed chi-square (1.683) and a CFI (0.86) indicating an acceptable fit. When compared, both indices suggest that this study presents a slightly higher fit ($\chi^2/df = 1.61$, CFI = 0.92) providing added credibility to these results. Regarding the specific relationships between constructs, seven out of the eight links are consistent with the

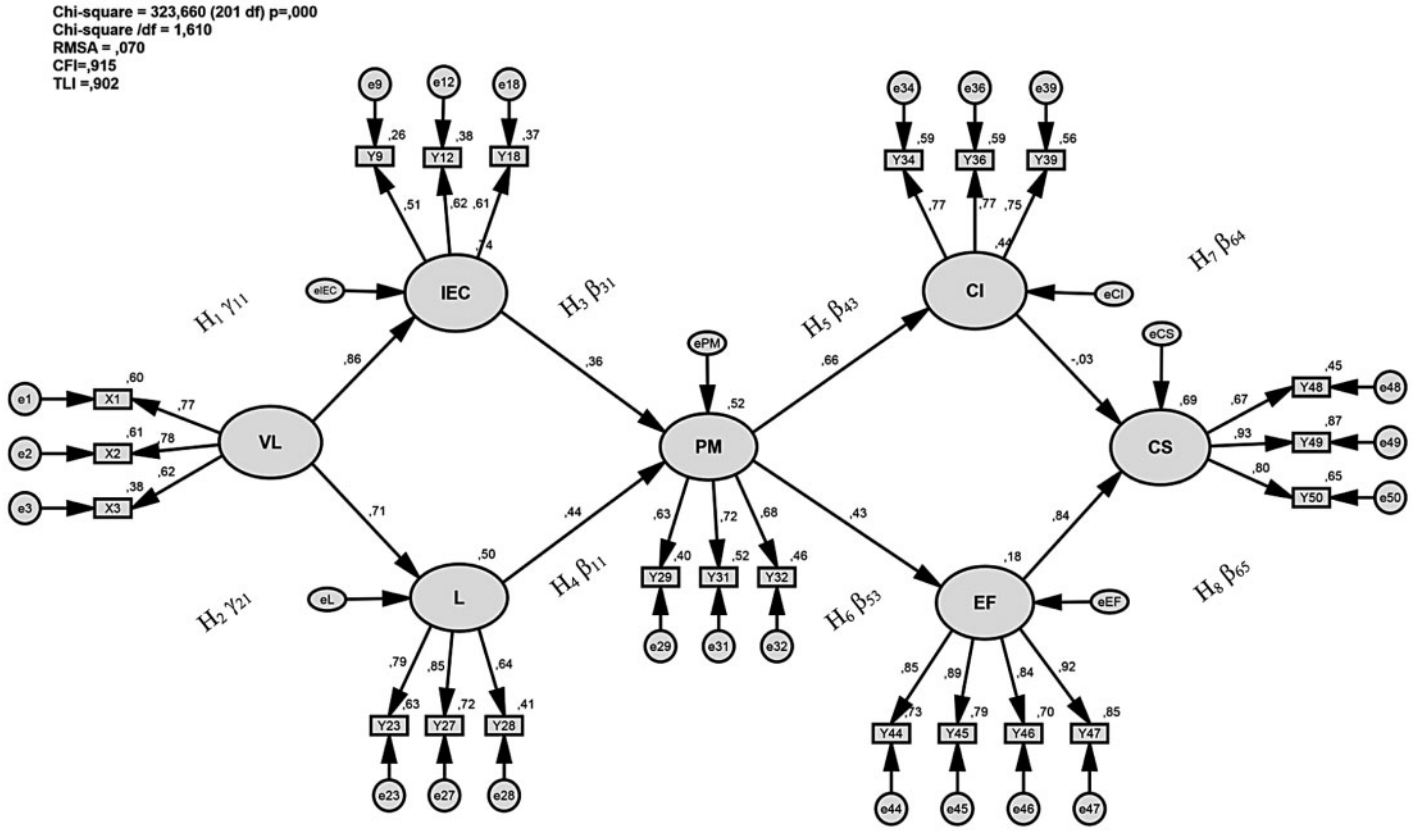

Figure 2. Standardized theoretical path coefficients.
Source: Authors' compilation.

Table 6. Structural model regression weights and critical ratios.

			Estimate	SE	CR	*p*	Standardized regression weights
IEC	←	VL	0.409	0.09	4.733	*	0.857
L	←	VL	0.739	0.12	5.98	*	0.707
PM	←	L	0.575	0.2	2.815	0.01	0.443
PM	←	IEC	1.024	0.48	2.118	0.03	0.36
CI	←	PM	0.509	0.11	4.465	*	0.661
EF	←	PM	0.392	0.12	3.363	*	0.429
CS	←	EF	0.835	0.13	6.677	*	0.839
CS	←	CI	−0.041	0.1	−0.402	0.69	−0.035
X1	←	VL	1				0.774
X2	←	VL	1.001	0.12	8.52	*	0.778
X3	←	VL	0.702	0.12	6.096	*	0.619
Y9	←	IEC	1				0.513
Y12	←	IEC	1.351	0.31	4.398	*	0.617
Y18	←	IEC	1.804	0.41	4.449	*	0.611
Y23	←	L	1				0.792
Y27	←	L	1.172	0.13	9.113	*	0.848
Y28	←	L	0.885	0.13	6.847	*	0.642
Y29	←	PM	1				0.629
Y31	←	PM	0.96	0.16	6.052	*	0.72
Y32	←	PM	1.022	0.17	5.951	*	0.676
Y34	←	CI	1				0.767
Y36	←	CI	0.95	0.12	8.087	*	0.769
Y39	←	CI	1.127	0.16	6.902	*	0.752
Y44	←	EF	1				0.854
Y45	←	EF	1.116	0.08	13.24	*	0.887
Y46	←	EF	1.026	0.09	11.91	*	0.839
Y47	←	EF	1.086	0.08	14.47	*	0.923
Y48	←	CS	1				0.671
Y49	←	CS	1.088	0.13	8.651	*	0.932
Y50	←	CS	1.023	0.13	7.86	*	0.804

*$p < 0.001$.
Source: Authors' compilation.

hypotheses and we can state that the results confirm the theoretical model, with a warning for the nonsupported path. These results provide additional sustainability for the proposed management theory and for the relations that had previously presented inconsistency. More specifically, the influence that *Learning* has on PM, the one of PM on EF and, lastly, the effect of the later on CS. The work by Douglas and Fredendall (2004), the only study that uses data exclusively from the service sector, only found moderate support for H3, H4, and H8. Our findings provide strong support for these propositions, a fact that reinforces the possible generalization of the management model.

Our results support the assumption that VL is central to DMM and essential to establish *Cooperation* and to control the *Learning* process. These results indicate that in the context of ST these effects are similar, in line with the proposed model and previous studies.

Although empirical studies in manufacturing observe that PM is conducted by IEC and *Learning*, Douglas and Fredendall (2004), in their study in the context of services, only found moderate support for both relations. Our results strongly support these relations and point toward the confirmation of these relations in ST services.

Simultaneously, the results enlarge the support of the notion that PM leads to CI. This has been confirmed in previous studies on manufacturing and services (Anderson et al.,

1995; Douglas & Fredendall, 2004; Fisher et al., 2005; Rungtusanatham et al., 1998), and extends the notion that, especially in services (Douglas & Fredendall, 2004), PM also influences EF.

Even though additional empirical tests are required, the present results extend the support of these assumptions to the context of ST centers. Most of the ski and golf services are offered through contact with the staff. Therefore, leadership, cooperation, and learning (indirectly) and PM (directly) seem to be important drivers for the enhancement of EF and, in consequence, CS.

Among the original contributions, we point out the strong support for the association between *Learning* and PM; and the possible relation of the EF variable with CS. The first link finds only moderate support within the service sector (Douglas & Fredendall, 2004). With regard to the second one, it finds a relatively weak support in prior works (Anderson et al., 1995; Rungtusanatham et al., 2005) and nonexistent in the studies by Rungtusanatham et al. (1998) and Fisher et al. (2005).

With respect to the unconfirmed hypothesis (CI–CS), several studies support this relation in theory (Audretsch, Martínez-Fuentes, & Pardo-del-Val, 2011; Bhuiyan & Baghel, 2005; George, 2002), although empirical evidence is insufficient. This is consistent with the work of Mayer (2009). The concept of CI incorporates the notion of incremental innovation. In his study on innovation of lifts systems in mountain resorts in Austria, the author concluded that some innovations do not influence CS. The author supports his conclusion on the argument that incremental technical innovations, due to their rapid diffusion, are quickly established. Therefore, they become global standards, which make them basic characteristics, when perceived by the customer. Another admissible justification for this inconsistency may be the time gap between the implementation of quality practices and the shifting of the results on the CS, as suggested by several authors (Kristensen & Westlund, 2004; Matzler, Hinterhuber, Daxer, & Huber, 2005; Sureshchandar, Rajendran, & Anantharaman, 2003). There may also be new mediating relationships between variables that researchers have not identified yet, such as the mediator role of EF, between CI and CS.

In conclusion, according to these results, we can infer that the DMM is applicable to organizations that provide services in golf courses and mountain resorts. Specifically, it seems that, in this context, leadership has an influence on CS through the system. Leadership indirectly affects PM, through simultaneous influence on the learning process and the promotion of a cooperative environment (internal and external). Meanwhile, PM determines the customer's level of satisfaction, due to its influence on EF.

Our results are admissible, especially in comparison with the existent literature, for several reasons. First, the measurement model was previously validated through an autonomous process, independent from the structural model and was cross-validated using two independent samples. Second, we collected sample 2 from three different countries, Spain, Portugal, and Andorra. Although we used convenience sampling, we found no significant differences between participants and nonparticipants, regarding organizations size. Third, sample size lies within the recommended values for the analysis methods used ($n = 126$), being a larger sample than the average of the previous studies ($\bar{X} = 104$). Such studies have always presented small samples because of the need to conduct surveys with managers and executives with knowledge, time, and availability to answer the surveyor. In this research, the sample is sufficient for the number of variables and the estimation method.

Recommendations for managers

The presented results do provide certain useful indications for directors and/or managers, in their task of constant search for quality services improvement in an extremely competitive environment, such as the tourist destinations market. First, the application of the different quality programs is not homogeneous; participants in our study use a large variety of quality program applications that go from in-house systems to the application of specific standards or the application of global systems such as the EFQM model. Our results may help directors in better assessing the different available models and in focusing their energy on the most effective management models. Second, the study's outcomes lead to the conclusion that leadership may influence system performance. This influence seems to determine the levels of CS, although it should be indirectly carried out through a system. Third, the results indicate that leadership influences management process through its simultaneous impact on the creation of a work context of cooperation and learning. Simultaneously and equally, management ought to allocate resources to learning or knowledge-seeking activities, with the aim of improving PM. Fourth, a PM that places particular emphasis on task development rather than one that emphasizes on results leads to an increased propensity to achieve improvement in processes, products, and services. Fifth, in turn, CI of processes, products, and services does not seem to have direct repercussions on CS. Sixth, the degree of satisfaction reported by employees seems to have a high positive impact on the degree of CS.

Limitations and future research

This study presents some limitations that are shared with other previous studies (Anderson et al., 1995; Douglas & Fredendall, 2004; Fisher et al., 2005; Rungtusanatham et al., 1998; Rungtusanatham et al., 2005). The used scales, adapted from the bibliography, had already been tested by various authors as far as their validity and reliability are concerned; however, they have not been originally developed to assess the DMM. It would be desirable, in future studies, to consider specifically designed scales to evaluate the concepts at issue. It would also be interesting to integrate the contact management related knowledge, for example, *SERVQUAL* and/or others, which may be appropriate and enable a better understanding of the DMM.

Despite being a usual practice in this type of study, another limitation is the data collection through individually answered surveys, since the organizational differences provided may be biased due to perceptual differences (Saraph et al., 1989; Zeitz et al., 1997).

The indirect assessment of the variables EF and CS is another possible limitation and implies the proposal of its direct assessment in future works. Additionally, sample size can, in some cases, be considered a limitation, as previously discussed. Therefore, results should be interpreted considering these limitations as well.

One of the advantages presented by this study relies on the fact that all participants belong to the same industry, namely ST; nevertheless, this fact, simultaneously, limits the generalization of results to other service industries.

As suggested by Reeves and Bednar (1994), a concept as complex as managing service quality can only be understood through its cumulative analysis in multiple industries.

As previously mentioned, the unverified hypothesis between CI and CS, may result from various causes and these may constitute several future research lines. The rapid spread of incremental innovations, which become basic characteristics over time, or the time lag between the implementation of quality practices and results in CS can only be

verified through longitudinal studies. Additionally, possible explanations may include undetected mediating variables between constructs or new relations between constructs of the model that can be studied with the available data.

Additionally, the respecification process suggests the need for further work to clarify the direct influence of CI on CS and/or other performance indicators, such as financial results; CI on EF; PM on EF; and the influence that IEC holds on PM.

Moreover, within the same framework, it could be interesting to evaluate the differences/similarities on different countries/cultures, the degree of implementation of the different concepts of total quality, and the degree of achieved success.

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Appendix. Questionnaire

	Please classify to which extent the following items are practiced in your organization	
	1 Never true 2 Rarely 3 Some times 4 Often 5 Always true 0 Not applicable	
	Visionary Leadership	
X1	All major department heads in my company accept responsibility for quality.	Anderson et al. (1995)
X2	Management provides personal leadership for quality products and quality improvement.	
X3	Our top management strongly encourages employee involvement.	
	Internal and External Cooperation	
Y9	Generally speaking, in the departments everyone works well together.	Anderson et al. (1995) and Saraph et al. (1989)
Y12	Management works well together on all important decisions.	
Y18	The organization's supplier rating system is thorough	
	Learning	
Y23	Employees receive training to perform multiple tasks.	Anderson et al. (1995) and Saraph et al. (1989)
Y27	Top management is committed to employee training	
Y28	In our organization there are enough resources available for employee training	
	Process Management	
Y29	Charts showing defect rates are posted/circulated.	Anderson et al. (1995) and Saraph et al. (1989)
Y31	We have standardized process instructions, which are given to personnel.	
Y32	A large percentage of our processes are currently under statistical quality control.	
	Continuous Improvement	
Y34	All employees believe that it is their responsibility to improve quality in the firm.	Zeitz et al. (1997) and Douglas and Fredendall (2004)
Y36	People in my work unit try to improve the quality of their service	
Y39	My organization develops adequate plans and schedules for the implementation of new ideas	
	Employee Fulfillment	
Y44	Employees, in general, are satisfied with their working conditions	Anderson et al. (1995) and Evers, Frese, and Cooper (2000)
Y45	Conflicts, generally speaking, are, solved in the best way possible.	
Y46	The dominant working environment at the organization is pleasant.	

Appendix (*Continued***)**

		Please classify to which extent the following items are practiced in your organization	
	Y47	The employees are satisfied whit the style of supervision of their jobs.	
		Customer Satisfaction	
R	*Y48*	In general, our firm's level of quality performance over the past three years has been low relative to industry norms.	Anderson et al. (1995)
	Y49	Our customers have been well satisfied with the quality of our products/services overall.	
	Y50	Our firm is better than the competition in customer relations.	
		General TQM questions	Douglas and Fredendall (2004)
	51	Has your organization ever made a significant commitment to total quality management or similar Total Quality program? A Yes B NO	
	52	Please tell us how advanced the implementation of the program is compared to quality programs of other organizations you are familiar with. A - FAR MORE ADVANCED in implementation that most other organizations I am familiar with. B - SOMEWHAT MORE ADVANCED in implementation that most other organizations I am familiar with. C - ABOUT EQUALLY ADVANCED in implementation that most other organizations I am familiar with. D - SOMEWHAT LESS ADVANCED in implementation that most other organizations I am familiar with. E - FAR LESS ADVANCED in implementation than most other organizations I am familiar with. F - NO SIGNIFICANT INVOLVEMENT with Quality program.	
	53	Total number of employees in the previous year	
	54	Number of Part Time employees	
	55	Number of fulltime employees	
	56	Total revenue in the previous year (Currency)	
	57	Net result in the previous year	
	58	Number of green fees sold in the previous year/ Entrances sold in the previous year	
	59	Green fees average price in the previous year/ Entrance average price in the previous year	