

Agility, organisational learning culture and relationship quality in the port sector

Angelos Pantouvakis & Nancy Bouranta

To cite this article: Angelos Pantouvakis & Nancy Bouranta (2017) Agility, organisational learning culture and relationship quality in the port sector, Total Quality Management & Business Excellence, 28:3-4, 366-378, DOI: [10.1080/14783363.2015.1084871](https://doi.org/10.1080/14783363.2015.1084871)

To link to this article: <http://dx.doi.org/10.1080/14783363.2015.1084871>



Published online: 14 Sep 2015.



Submit your article to this journal [↗](#)



Article views: 182



View related articles [↗](#)



View Crossmark data [↗](#)

Agility, organisational learning culture and relationship quality in the port sector

Angelos Pantouvakis^{a*} and Nancy Bouranta^b

^a*Department of Maritime Studies, University of Piraeus, Piraeus, Greece;* ^b*School of Business Administration, University of Patras, Patras, Greece*

This paper introduces and investigates the potential mediating role of agility in the relationship between organisational learning culture and customer relationship quality (RQ). The proposed model and its relationships were tested on a sample of 168 employees from a major European port using structural equation modelling. The results corroborated that the capacity of a firm to develop a quality relationship with its customers is indirectly associated through agility with its learning culture. This study, following the organic view of the firm, highlights that employee and organisation learning is a necessary but not sufficient condition to enhance RQ, especially in unpredictable and fast-changing environments. Firms should also have the ability to be agile, or to continually adjust their internal structures and systems to respond to change and build quality relationships with their customers.

Keywords: agility; organisational learning culture; relationship quality; shipping

1. Introduction

Dynamic environments, new technologies and shifting customer needs are likely to both present opportunities and introduce threats for any service company. Structural and organisational changes and adaptation to new market conditions may be complex and difficult due to the system's inertia, but are crucial for survival and success. A firm's ability to adapt, especially in fast-changing environments, relies to a great extent on peoples' thoughts, and behaviour, as well as on 'good organisational culture' and 'excellent management teams' (Yang, 2015). Knowing this, service firms should no longer focus only on 'training in new skills' their employees but shift towards 'learning', which will benefit both the individual and the organisation. An organisational learning culture (OLC) encourages employees to refresh their knowledge, to become skilled in new technologies and to enhance their capabilities following environmental changes. In the service management era, workers at almost every level of the hierarchy are in a predominant position to contribute to and assist with the creation of systems and processes that are required for successful agility (Beresford, Gardner, Pettit, Naniopoulos, & Wooldridge, 2004; Lee & Song, 2010). Agility is the ability of 'using market knowledge and a virtual corporation to exploit profitable opportunities in a volatile market place' (Naylor, Naim, & Berry, 1999, p. 108). Marlow and Paixão (2003) highlighted that agility implies flexibility and a structure that allows for rapid response to changes in customer demand. Firms should understand their customers' needs and respond to them as quickly as possible (Ugboma, Ogwude, Ugboma, & Nnadi, 2007). Therefore, learning culture and agility should create the vision that a firm needs to perform its services quickly and effectively and to

*Corresponding author. Email: angelos@pantouvakis.eu

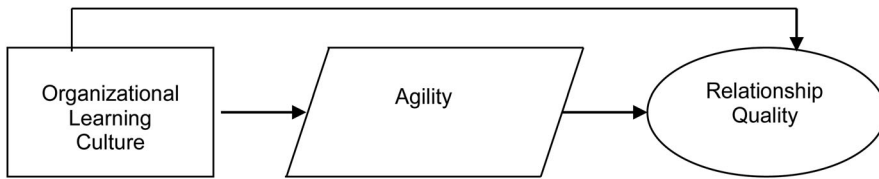


Figure 1. Conceptual framework of the study.

develop and maintain a high degree of relationship quality (RQ) with its customers (Nguyen & Nguyen, 2010; Zhang et al., 2005).

Based on the above thoughts, a theoretical framework is here developed in which OLC is a necessary but not sufficient condition for firms to pursue in this turbulent environment. Moreover, OLC, through agility, determines the level of RQ that enables firms to respond speedily and efficiently to changing customer needs.

Thus, this paper examines the mediating role of agility between OLC and RQ from the organisational perspective; or in other words, how a service-providing organisation responds to unpredictable, dynamic and constantly changing environments, as well as the way in which its OLC affects customer RQ. The use of these concepts follows the behavioural or organic approach of organisation theory, which argues that in unpredictable, unstable and changing environments, less formal and less mechanistic structures should be apparent (Vecchio, 2006). Figure 1 depicts the conceptual framework of this study.

The proposed model was tested in the port industry. This service industry was chosen because the need for learning, agility and RQ in this service sector has become more intense over the last decades due to the great cost of technological and organisational changes, the liberalisation of world markets and the shift of political attitudes in favour of less state intervention in the economy (Chlomoudis, Karalis, & Pallis, 2003). These changes deepen competition and heighten customer expectations, forcing the port industry to be more responsive to changing demands (Demirkan & Spohrer, 2010). Further research in this field is needed, since despite the obvious influence of quality on customer choice of terminals and ports, and the intensive need for firm adaptability to cope with global changes, scientific research on these topics in the port service industry are still lacking (Chlomoudis & Lampridis, 2006; Vinh & Grewal, 2006).

This introduction is followed by a brief literature review in which the conceptual framework and hypotheses are presented. The next section describes the methodology used in this research. The main results of the survey follow, and the paper closes by outlining the managerial implications and some limitations and proposals for future research.

2. Conceptual background

2.1. Organisational learning culture

OLC is a type of organisational culture that integrates organisational learning as it ‘... supports the acquisition of information, the distribution and sharing of learning ...’ and ‘... reinforces and supports continuous learning and its application to organizational improvement ...’ (Bates & Khasawneh, 2005, p. 99). OLC is also defined as ‘an organization skilled at creating, acquiring, and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights’ (Garvin, 1993, p. 80) and has been further supported that it significantly contributes to the continuous improvement of a firm, as it facilitates efficient adaptations to challenging environments (Cunningham & Gerrard,

2000), self-transformation (Watkins & Marsick, 1993) and expanded capacity to shape its own future (Senge, 1990).

OLC has been linked to both non-financial and financial outcomes. Some studies point out that OLC organisations encourage and promote individual learning and development and respond more quickly and effectively to customers' needs, thus creating a competitive advantage that is difficult for competitors to imitate (Goh & Ryan, 2008). On the other hand, several studies highlight only the impact of OLC on firms' financial performance (Chien, Lin, & Lien, 2015; Ellinger, Ellinger, Yang, & Howton, 2002).

The assessment of ports' performance was traditionally based on quantitative measures (Marlow & Paixão, 2003). However, quantitative measures, necessarily evaluated over time, reduce the speediness of feedback, which is especially important in a rapidly changing business environment (Eccles & Philip, 1992). Only a handful of studies have attempted to assess the relationship between OLC and non-financial outcomes, such as RQ (Chang & Ku, 2009; Nguyen, Barrett, & Nguyen, 2006) or customer satisfaction (Pantouvakis & Bouranta, 2013).

In the light of the above limited findings, the present research investigates the impact of OLC on a non-financial measure such as RQ.

2.2. Relationship quality

RQ is defined as '... an overall assessment of the strength of a relationship and the extent to which it meets the needs or expectations of the parties based on a history of successful or unsuccessful events ...' (Smith, 1998, p. 78). Many studies have examined the conceptualisation of RQ, but there was no clear consensus in the literature on the number and the nature of its dimensions; they varied according to the field of application and the methodological objectives of each research. However, most of them considered RQ as a higher order construct made of related but distinct dimensions. In this aspect, Crosby, Evans, and Cowles (1990) considered RQ as a construct composed of satisfaction and trust, while Morgan and Hunt (1994) considered it as including 'trust' and 'commitment', Lee and Kim (1999) decomposed RQ into 'trust', 'business understanding', 'benefit and risk sharing', 'conflict' and 'commitment' components, whereas Hennig-Thurau and Klee (1997) suggested that RQ reflects 'service quality', 'trust' and 'affective commitment'. Finally, Lages, Lages, and Lages (2005) examined RQ from the organisational perspective rather than from the consumer/buyer viewpoint and proposed a multidimensional scale named RELQUAL. The RELQUAL instrument introduces four dimensions: (a) the amount of information sharing, (b) communication quality, (c) long-term orientation and (d) satisfaction with the relationship. RELQUAL is adopted in the current study since the proposed model was tested in a business-to-business environment.

2.3. Agility

The concept of agility was originally coined in a manufacturing context and was defined by its creators (Iacocca Institute) as a characteristic of a manufacturing system with the capabilities to meet the rapidly changing needs of the marketplace (Yusuf, Sarhadi, & Gunasekaran, 1999). Later, the agility concept also encompassed service-level and quality improvements, which are recognised as requirements to succeed in the competitive international marketplace (Brave, 2011; Pantouvakis & Dimas, 2013). The importance of agility to the service industry is equal to, if not greater than, its importance to the manufacturing industry, because the creation and development of new services, the rapid

development of technology, the modification in a competitive field and the globalisation of the customer market continuously modify and expand customers' requirements.

The concept of agility is not yet clearly and unanimously defined or even conceptualised in the relevant literature mainly because agility is applicable to complex organisational structures such as enterprises (Sherehiy, Karwowski, & Layer, 2007). However, many scholars focus on 'speed' and 'flexibility', whereas others highlight 'high quality' and 'customized products or services' as the primary attributes of agility. In the same vein, Prince and Kay (2003, p. 307) defined agility as '... the ability to reconfigure itself in response to sudden changes in ways that are cost effective, timely, robust and of broad scope ...'

Based on the different definitions of the agility concept, several frameworks enabling organisations to be agile have been developed, mainly in the manufacturing field. Most of them highlight the importance of an organisational culture that encourages training, education and knowledge of employees as significant prerequisites of agility. For example, the Goldman, Nagel, and Preiss (1995) model identifies four key strategic dimensions to create an agile organisation: (a) enriching the customer or rapidly responding to the customer's special needs, (b) cooperating to enhance competitiveness, (c) organising to handle environmental changes and allow rapid reconfiguration and (d) leveraging the impact of people and information. Furthermore, Jackson and Johansson (2003) considered agility to be divided into four main dimensions: product-related change capabilities, change competency within operations, internal and external cooperation and finally people, knowledge and creativity.

Moreover, as Sherehiy et al. (2007) support, most agility-related publications focus on the theoretical description of agility; they are based on pure 'production' aspects of an organisation and they discuss only strategies and techniques. Only a handful of studies address the agile concept holistically and were empirically investigated in the real environment. A further contribution of this study is that it examines these concepts in the business environment of the port industry.

2.4. The triad: OLC, agility and RQ

It has been widely supported that OLC encourages employees to refresh their knowledge, become skilled in new technologies and enhance their capabilities. This enables them to respond more rapidly and effectively to continuously changing customer requirements and to satisfy them (Laudon & Laudon, 2006; Zhang et al., 2005). This market-oriented behaviour, which is generated from the learning orientation, stimulates and positively affects the establishment of long-term relationships with clients through the creation of feelings of trust and affective commitment (Santos-Vijande, Sanzo-Perez, Alvarez-Gonzalez, & Vazquez-Casielles, 2005). Moreover, it has been supported that organisation learning and business process reengineering significantly and directly contribute to RQ improvements and organisational performance (Chang, 2007). It was also suggested that a learning culture creates the insight that a firm needs to perform its services quickly and effectively, to deepen the relationship with its customers, and to improve their satisfaction (Zhang et al., 2005). Finally, positive relationships have been identified in service- or knowledge-intensive companies between total quality management practices and learning organisations (Martinez-Costa & Jimenez-Jimenez, 2008) and service quality and learning organisations (Cho, Kim, Park, & Cho, 2013).

Although it is generally supported that OLC directly influences business performance, whether in financial or non-financial terms, recent research endeavours highlight the

mediating role of other organisational variables on the OLC–performance link (Egan, Yang, & Bartlett, 2004; Pantouvakis & Bouranta, 2013; Rose, Kumar, & Pak, 2009). For example, Hung, Yang, Lien, Mclean, and Kuo (2010) argued for the mediating role of dynamic capability¹ on the relationship between OLC and performance. They contended that ‘... OLC exerts its influence through enhancing dynamic capability with accumulated knowledge and innovation ...’ (p. 288). In the same line of thought, Gunasekaran and Yusuf (2002) and Abdehgah and Safari (2014) recognised the important role of OLC for developing agility, arguing that an agile organisation should possess the capability of learnedness and that agility enhances customer service (Damen, 2001), thus advocating for the mediating role of agility between OLC and RQ.

2.5. OLC, agility and RQ in the port industry

Containerisation prevails in today’s port operations and dramatically intensifies the competition between ports. Technological and organisational changes, the liberalisation of world markets and the shift of political attitudes in favour of less state intervention in the economy (Chlomoudis et al., 2003) deepen competition and heighten customer expectations, forcing the port industry to respond to changing demands. Big ports, especially during the last 20 years, mainly focus on tangible aspects, and invest heavily in their infrastructure by extending berth length, deepening water depth, expanding yard area, modernising cranes, improving connections with the hinterland, etc. (Verhoeven, 2010). However, this endless and unlimited expansion causes diseconomies of scale, amplifies complexity of operations, increases logistics costs and decreases customer satisfaction (Haralambides & Veenstra, 2002).

To cope with these requirements and respond to an unpredictable and unstable environment, ports should evolve to focus on other than simply servicescape elements. This way they will better accommodate customer needs in a more flexible and cost-conscious way in order to ensure their survival and prosperity (Haralambides & Veenstra, 2002). Adoption of market-oriented management systems is required, clearly grounded on goals and targets, liberated from traditional structures, complex processes and political influences (Notteboom & Winkelmann, 2001). To survive and thrive in such a competitive and unpredictable environment, ports have to be agile. The organisation must introduce knowledge-based strategies that allow understanding and quick response to the new conditions of the economic environment. Knowledge and the learning initiative give ports a hard-to-imitate competitive factor and motivate employees to improve their performance to their internal (other employees or other links of the supply chain) or external customers (RQ).

A recent survey in the corporate shipping sector explored the relationship between service quality, customer satisfaction, corporate agility and perceived price (Pantouvakis & Dimas, 2013). It was found that agility fully mediates assurance/empathy, tangibles and perceived price dimensions on customer satisfaction, and partially mediates the reliability/responsiveness dimension. Moreover, corporate agility partially mediates the relationship between reliability/responsiveness and customer satisfaction dimensions.

Based on the previous literature and taking into consideration the above review on the relationship between OLC, agility and RQ, this study introduces the following hypotheses:

- H1: OLC has a direct and positive effect on agility.
- H2: Agility has a direct and positive effect on RQ.
- H3: Agility partially mediates the OLC to create RQ.

3. Methodology

3.1. Measures

The questionnaire consisted of 31 items split into three survey instruments that measure OLC, agility and RQ. The measurement of OLC was based on a shortened version of the dimensions of the learning organization questionnaire instrument, originally developed by Watkins and Marsick (1997), which identifies seven action imperatives of a learning organisation culture: (a) continuous learning, (b) inquiry and dialogue, (c) team learning, (d) embedded systems, (e) empowerment, (f) connection to environment and (g) strategic leadership.

In order to measure agility, we used a 10-item instrument following Sharifi and Zhang's (1999) proposal based on the four distinct capabilities that a company must use to achieve and maintain agility (responsiveness, competency, flexibility and quickness), adapted to the port sector by Pantouvakis and Dimas (2013).

Finally, for the measurement of RQ, an adapted form of the RELQUAL instrument was employed (Lages et al., 2005), which reflects the intensity of information sharing, communication quality, long-term orientation and satisfaction with the relationship. A number of mostly semantic modifications were carried out in order to attune the instrument to employee perspective and to the specific service setting. Following many scholars' robust view that the perceptions of employees and customers tend to be identical about similar concepts such as customer satisfaction and service quality, especially for repeat services (Johnson, 1995; Schneider & Bowen, 1985, and others), opinions from first-line employees were used as a surrogate measurement of RQ.

The items in these instruments took the form of a 7-point Likert scale (anchored on 1 = 'strongly disagree' through 7 = 'strongly agree'). The wording of all items, along with the statistical analysis, appears in the appendix. The self-administrated questionnaire also included a series of questions related to the demographic characteristics of the sample.

3.2. Sample

The setting for this empirical study is the port industry, specifically the Piraeus Port Authority (PPA S.A.) in Greece. This company is engaged in the management and operation of Piraeus port. Its activities include ships' anchoring services, handling cargo, loading and unloading services, goods storage and car transportation. Piraeus is one of the biggest seaports in the Mediterranean Sea basin, the 3rd largest passenger port worldwide and 1 of the top 10 container ports in Europe with more than 24,000 ships served every year.

The questionnaire was given only to first-line employees who were identified from the HR department database. The population pull includes employees and supervisors who deal with customers and work in various front-line positions (port agents, operations managers, port engineers, workers, etc.).

The mailing to all sample members included a cover letter explaining the purpose of this academic study, the questionnaire and a return envelope addressed to one of the authors. Participants were assured of total confidentiality and anonymity. One hundred and seventy-five questionnaires from the contacted employees were collected, of which seven were excluded because they provided answers that were uniformly positive or negative (skewed responses). The 168 usable questionnaires constitute 15.6% of the total employee population.

As far as the demographic characteristics of the sample were concerned, respondents were split reasonably evenly between males (57.2%) and females (42.8%). The age

groupings were 18–25 years (0.6%), 26–35 years (6.1%), 36–45 years (33.3%), 46–55 years (43%) and over 56 years of age (17%) (SD = 0.84).

4. Results and discussion

4.1. Assessing the dimensionality, reliability and validity of the instruments

Following the descriptive analysis of the data, an exploratory factor analysis (EFA) with principal component analysis and varimax rotation was carried out for each instrument (OLC, agility and RQ) to extract the factors. As displayed in the appendix, the factor analysis of the OLC instrument revealed a one-dimensional factor that explains 66.9% of total variance. The agility instrument also revealed one factor and accounted for 60.4% of the variance, whereas the RQ instrument revealed two factors, explaining 63.2% of the total variance after the deletion of four items due to its multifactor loading. The Kaiser–Meyer–Olkin (KMO) and sphericity statistics exceeded suggested cut-off points in all cases, thus indicating very good relationships among items.

Following the EFA, a confirmatory factor analysis also proved a very good fit for the RQ instrument ($\chi^2 = 2.39$, $p = .000$; comparative fit index (CFI) = .95; Tucker–Lewis index (TLI) = .94; root mean square error of approximation (RMSEA) = .09) (Hair, Black, Babin, Anderson, & Tatham, 2006), further advocating for the two factorial structure (communication and satisfaction) of the RQ instrument in the port industry.

The Cronbach alpha of the scale was calculated to check the reliability of the scale. Reliability was high, verifying the good scaling of the instrument (appendix). Convergent validity was also tested, by calculating the average variance extracted (AVE) by each factor, indicating that the variance for each factor exceeds the proposed cut-off point of .5 (appendix). In examining the discriminant validity of the instruments, it was found that the square root of AVE was greater than the coefficient, which demonstrated discriminant validity between the constructs as presented in Table 1.

4.2. Testing the proposed models

Structural equation modelling was used to validate the proposed models and verify the hypothesised relationships among OLC, agility and RQ in two distinct ways: the first examining the direct relationship between OLC and RQ, and the second introducing and examining the mediating effects of agility in the relationship. Since the data exhibit normal characteristics and no serious (>10%) missing data are evident, the maximum likelihood method was selected to estimate the parameters of the model, as it has been found to provide valid results even for very small samples (around 50 observations) (Hair et al., 2006).

A series of steps have been followed to examine the mediating effect of agility on the OLC–RQ relationship (Cohen & Cohen, 1983) and the results are briefly described below:

Table 1. Convergent and discriminant validity of the constructs.

Latent factors – performance dimensions	AVE ^a	(Corr) ^{2b}
OLC	0.78	0.454
Agility	0.72	0.472
RQ	0.68	0.472

^aAVE = $\sum \lambda_i^2 / n$ (number of items $i = 1, \dots, n$, λ_i = standardised factor loading).

^bThe highest squared correlation between the factor of interest and the remaining factors.

Table 2. Structural equation path coefficients.

Relationships	Coefficient	Critical ratio (<i>t</i> value)	<i>p</i> -Value	Result
OLC–agility	0.719	7.100	.000	<i>H1</i> supported
Agility–RQ	0.562	6.832	.000	<i>H2</i> supported
OLC–RQ	0.093	1.212	.228	<i>H3</i> not supported

Note: *t*-Values greater than 2.00 are significant ($p < .05$).

first, all correlations among OLC, agility and RQ have been examined and all proved to be significant. Following this, the direct relationship between the two constructs (OLC and RQ) has been tested. Results showed a statistically significant result (β value .508) with an adj $R^2 = .294$, thus establishing a direct link between OLC and RQ. However, when agility was brought into the equation, the link between OLC and RQ β value reduced to .092 and is not statistically significant ($t = .228$). On the other hand, significant relationships between OLC and agility (β value = .719***) and agility and RQ (β value = .562***) have been revealed, supporting thus our first and second hypotheses. Results further support a full mediation effect of agility on the OLC–RQ link, thus rejecting any partial mediation considerations of agility on the OLC–RQ link strongly advocating for a full mediation outcome and rejecting our third hypothesis for a partial mediation between constructs.

The final model (OLC \rightarrow agility \rightarrow RQ) presents a good fit with a χ^2 of 522.355 with 270 dfs ($p < .000$), supporting the assertion that the χ^2 relative value to degree of freedom (χ^2/df) does not exceed the proposed cut-off point of 3. Suggested indices demonstrating the good fit of our model (Hair et al., 2006) include incremental fit index = .92, CFI = .91 and TLI = .90, and were above the accepted threshold of .90. The RMSEA was equal to .07, which is considered adequate for the sample characteristics. Thus, the proposed model has an acceptable fit (Table 2).

Previous research provided evidence supporting the influence of learning orientation on RQ from the consumer/buyer viewpoint. Specifically, the studies of Nguyen et al. (2006) and Chang and Ku (2009) indicated a positive direct effect of learning orientation on RQ. Contradictorily, the results of this study, which was conducted from the organisational perspective, reveal an indirect effect of OLC on RQ when agility enters the equation.

5. Conclusions and managerial implications

Paixão and Marlow (2003) were among the first to note the ‘certainty of uncertainty’, especially in the port environment, calling for proactive rather than reactive responses to change and introducing agility as a possible key competitive differentiator for ports. However, although their work recognises that knowledge efficiency and human resources constitute a competitive factor in the pursuit of market and customer excellence, it is theoretical and lacks any empirical evidence. It also focuses only on the improvement of the production phase – lean production – or operations efficiency, clearly grounded on the mechanistic view of the firm that dominated the shipping and the global industry at that time.

This study deviates from their view, supporting – in line with the contingency theory – that there is no universal way to organise companies. Instead, size and organisational strategies are formed as required by the environment and the organisation (Donaldson, 2001) and thus less formal, less hierarchical, more flexible and holistic approaches should be followed (Sharifi, Colquhoun, Barclay, & Dann, 2001; Vecchio, 2006). Hence, this work adopts the view that agility should not be pursued as an end, but

rather as a means to maintain competitiveness. In line with Sanchez and Nagi (2001), we support that an agile organisation is not *only* a lean organisation that focuses solely on productive use of resources. It should also include a whole strategy of integrating knowledge and OLC to RQ. Knowledge and learning culture are regarded as the prime and differentiating weapons for firms to offer quality services. However, in order to continually perform as expected, agility methods and characteristics have to be introduced and supported that enable instant or very rapid response to radically changing environments (Chlomoudis et al., 2003; Demirkan & Spohrer, 2010; Marlow & Paixão, 2003).

The present study examines further a rather neglected relationship in the quality management and marketing literature, the one between OLC and RQ that supports a fully mediating role of agility. Specifically, the study finds that the capacity of a service organisation to develop a quality relationship with its customers is indirectly associated through agility with the firm's learning culture. The learning organisation facilitates knowledge capture and distribution, enabling firms to use this knowledge to improve their organisational practices and processes (Mann & Götz, 2006). Their ability to be adaptive encourages flexibility, collaborative decision-making and customisation, which support extensive relationships with customers (Gillespie, Denison, Haaland, Smerek, & Neale, 2008). The results of this work suggest that it is not enough for a company to have up-to-date information about its external and internal environment, but that it should also have the ability to reengineer to improve its services based on this new knowledge.

The findings of this research also have essential implications for practitioners. Managers who recognise the importance of service quality, customer satisfaction and loyalty should first of all create an agile environment that promotes and supports learning and tracing market changes rather than one that just focuses on process improvements or expensive quality systems. They should assist the development of a 'culture of change' to create an organisation that supports experimentation and innovation more than simply obeying rules and filling in process maps. Thus, employees should be encouraged to learn new skills, be alert to any external changes, be empowered and have the authority to make decisions (Lee & Song, 2010).

As with any research, this study has certain limitations that should be taken into consideration when interpreting the results. Since it is among the very few studies that offer a theoretical conceptualisation of agility combined with empirical evidence, future works that confirm these findings are welcomed, whether in the same sector internationally or in other sectors or countries. Finally, it may be of value to replicate this study by examining the relationships in the model on dyadic data (e.g. by asking employees and customers to rate RQ).

Disclosure statement

No potential conflict of interest was reported by the authors.

Note

1. 'A dynamic capability is the firm's ability to integrate, build and reconfigure internal and external competencies to address rapidly change environments' (Teece, Pisano, & Shuen, 1997, p. 516).

References

- Abdehghah, E. F., & Safari, H. (2014). The impact of information technology on organizational agility: The mediating role of knowledge management and learning culture case study: Saman Bank employees. *Nationa lpar k-Forschung in Der Schweiz*, 103, 295–305.

- Bates, R., & Khasawneh, S. (2005). Organizational learning culture, learning transfer climate and perceived innovation in Jordanian organizations. *International Journal of Training and Development*, 9, 96–109.
- Beresford, A. K. C., Gardner, B. M., Pettit, S. J., Naniopoulos, A., & Wooldridge, C. F. (2004). The UNCTAD and WORKPORT models of port development: Evolution or revolution? *Maritime Policy & Management*, 31, 93–107.
- Brave, A. (2011). *Impact of supply chains agility on customer satisfaction international conference on e-business, management and economics IPEDR* (Vol. 3). Hong Kong: IACSIT Press.
- Chang, H. H. (2007). Critical factors and benefits in the implementation of customer relationship management. *Total Quality Management*, 18, 483–508.
- Chang, H. H., & Ku, P. W. (2009). Implementation of relationship quality for CRM performance: Acquisition of BPR and organisational learning. *Total Quality Management & Business Excellence*, 20, 327–348.
- Chien, C. C., Lin, H. C., & Lien, B. Y. H. (2015). Capability contingent: The impact of organisational learning styles on innovation performance. *Total Quality Management & Business Excellence*, 26, 1–15.
- Chlomoudis, C. I., Karalis, V. A., & Pallis, A. A. (2003). Port reorganisation and the worlds of production theory. *European Journal of Transport and Infrastructure Research*, 3, 77–94.
- Chlomoudis, C. I., & Lampridis, C. D. (2006). *A business excellence approach for the port industry*. Paper presented at the international conference “Shipping in the era of social responsibility” (1925–1996), Cephalonia, pp. 14–16. Retrieved September 2006, from <http://www.stt.acegean.gr/metaxasconf/publications.htm>
- Cho, I., Kim, J. K., Park, H., & Cho, N. H. (2013). The relationship between organisational culture and service quality through organisational learning framework. *Total Quality Management & Business Excellence*, 24, 753–768.
- Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Crosby, L. A., Evans, K. R., & Cowles, D. (1990). Relationship quality in services selling: An interpersonal influence perspective. *Journal of Marketing*, 54, 68–81.
- Cunningham, J. B., & Gerrard, P. (2000). Characteristics of well-performing organizations in Singapore. *Singapore Management Review*, 22, 35–64.
- Damen, J. T. W. (2001). Service-controlled agile logistics. *Logistics Information Management*, 14, 185–195.
- Demirkan, H., & Spohrer, J. C. (2010). Servitized enterprises for distributed collaborative commerce. *International Journal of Service Science, Management, Engineering, and Technology*, 1, 68–81.
- Donaldson, L. (2001). *Foundations for organizational science: The contingency theory of organizations*. Thousand Oaks, CA: SAGE Publications.
- Eccles, R. G., & Philip, J. P. (1992). Creating a comprehensive performance measurement system. *Management Accounting*, 74, 41–44.
- Egan, T. M., Yang, B., & Bartlett, K. (2004). The effects of organizational learning culture and job satisfaction on motivation to transfer learning and turnover intention. *Human Resource Development Quarterly*, 15, 279–301.
- Ellinger, A. D., Ellinger, A. E., Yang, B., & Howton, S. W. (2002). The relationship between the learning organization concept and firms’ financial performance: An empirical assessment. *Human Resource Development Quarterly*, 13, 5–22.
- Garvin, D. A. (1993). Building a learning organization. *Harvard Business Review*, 71, 78–91.
- Gillespie, M. A., Denison, D. R., Haaland, S., Smerek, R., & Neale, W. S. (2008). Linking organizational culture and customer satisfaction: Results from two companies in different industries. *European Journal of Work and Organizational Psychology*, 17, 112–132.
- Goh, S. C., & Ryan, P. J. (2008). The organizational performance of learning companies: A longitudinal and competitor analysis using market and accounting financial data. *The Learning Organization*, 15, 225–239.
- Goldman, S. L., Nagel, R. N., & Preiss, K. (1995). *Agile competitors and virtual organizations – Strategies for enriching the customer*. New York, NY: Van Nostrand Reinhold.
- Gunasekaran, A., & Yusuf, Y. (2002). Agile manufacturing: A taxonomy of strategic and technological imperatives. *International Journal of Production Research*, 40, 1357–1385.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis* (6th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

- Haralambides, H., & Veenstra, A. (2002). Port pricing. In C. Th. Grammenos (Ed.), *The handbook of maritime economics and business* (pp. 782–802). London: Lloyds of London Press.
- Hennig-Thurau, T., & Klee, A. (1997). The impact of customer satisfaction and relationship quality on customer retention – A critical reassessment and model development. *Psychology & Marketing, 14*, 737–765.
- Hung, R. Y. Y., Yang, B., Lien, B. Y.-H., Mclean, G. N., & Kuo, Y. M. (2010). Dynamic capability: Impact of process alignment and organizational learning culture on performance. *Journal of World Business, 45*, 285–294.
- Jackson, M., & Johansson, C. (2003). An agility analysis from a production system perspective. *Journal of Manufacturing Systems, 14*, 482–488.
- Johnson, J. W. (1995). *Linking management practices and service orientation to customer satisfaction*, Tenth annual conference of the society of industrial and organizational psychology, Orlando, FL.
- Lages, C., Lages, C. R., & Lages, L. F. (2005). The RELQUAL scale: A measure of relationship quality in export market ventures. *Journal of Business Research, 58*, 1040–1048.
- Laudon, K. C., & Laudon, J. P. (2006). *Management information systems*. Upper Saddle River, NJ: Prentice Hall.
- Lee, E.-S., & Song, D.-W. (2010). Knowledge management for maritime logistics value: Discussing conceptual issues. *Maritime Policy & Management, 37*, 563–583.
- Lee, J. N., & Kim, Y. G. (1999). Effect of partnership quality on IS outsourcing success: Conceptual framework and empirical validation. *Journal of Management Information Systems, 15*, 29–61.
- Mann, C. J., & Götz, K. (2006). *Borderless business: Managing the far-flung enterprise*. Westport, CT: Praeger.
- Marlow, P. B., & Paixão, A. C. (2003). Measuring lean ports performance. *International Journal of Transport Management, 1*, 189–202.
- Martinez-Costa, M., & Jimenez-Jimenez, D. (2008). Are companies that implement TQM better learning organizations? An empirical study. *Total Quality Management & Business Excellence, 19*, 1101–1115.
- Morgan, R. M., & Hunt, S. D. (1994). The commitment and trust theory of relationship marketing. *Journal of Marketing, 58*, 20–38.
- Naylor, J. B., Naim, M. M., & Berry, D. (1999). Leagility: Integration the lean and agile manufacturing paradigms in the total supply chain. *International Journal of Production Economics, 62*, 107–118.
- Nguyen, A., & Nguyen, N. (2010). *Vietnam industrial policy and large economic Group: A discussion*. MPRA Paper 63461, University Library of Munich, Germany.
- Nguyen, T. T. M., Barrett, N. J., & Nguyen, T. D. (2006). The role of market and learning orientations in relationship quality: Evidence from Vietnamese exporters and their foreign importers. In A. Rialp & J. Rialp (Eds.), *International marketing research (Advances in International Marketing)* (Vol. 17, pp. 107–133). Bingley, West Yorkshire: Emerald Group Publishing Limited.
- Notteboom, T. E., & Winkelmann, W. (2001). Structural changes in logistics: How will port authorities face the challenge? *Maritime Policy and Management, 28*, 71–89.
- Paixão, A. C., & Marlow, P. B. (2003). Fourth generation ports – A question of agility? *International Journal of Physical Distribution and Materials Management, 33*, 355–376.
- Pantouvakis, A., & Bouranta, N. (2013). The link between organizational learning culture and customer satisfaction: Confirming relationship and exploring moderating effect. *The Learning Organization, 20*, 48–64.
- Pantouvakis, A., & Dimas, A. (2013). The role of corporate agility and perceived price on the service quality customer satisfaction link. *Some preliminary evidence from the port industry*. *International Journal of Shipping and Transport Logistics, 5*, 421–431.
- Prince, J., & Kay, J. (2003). Combining lean and agile characteristics creation of virtual groups by enhanced production flow analysis. *International Journal of Production Economics, 85*, 305–318.
- Rose, R. C., Kumar, N., & Pak, O. G. (2009). The effect of organizational learning on organizational commitment, job satisfaction and work performance. *The Journal of Applied Business Research, 25*, 55–65.

- Sanchez, L. M., & Nagi, R. (2001). A review of agile manufacturing systems. *International Journal of Production Research*, 39, 3561–3600.
- Santos-Vijande, M. L., Sanzo-Perez, M. J., Alvarez-Gonzalez, L. I., & Vazquez-Casielles, R. (2005). Organizational learning and market orientation: Interface and effects on performance. *Industrial Marketing Management*, 34, 187–202.
- Schneider, B., & Bowen, D. E. (1985). Employee and customer perceptions of service in banks: Replication and extension. *Journal of Applied Psychology*, 70, 423–433.
- Senge, P. M. (1990). *The fifth discipline: The art and practice of the learning organization*. New York, NY: Doubleday.
- Sharifi, H., Colquhoun, G., Barclay, I., & Dann, Z. (2001). Agile manufacturing: A management and operational framework. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, 215, 857–869.
- Sharifi, H., & Zhang, Z. (1999). A methodology for achieving agility in manufacturing organizations: An introduction. *International Journal of Production Economics*, 62, 7–22.
- Sherehiy, B., Karwowski, W., & Layer, J. (2007). A review of enterprise agility: Concepts, frameworks, and attributes. *International Journal of Industrial Ergonomics*, 37, 445–460.
- Smith, J. B. (1998). Buyer–seller relationships: Bonds, relationship management, and sex-type. *Canadian Journal of Administrative Sciences*, 15, 76–92.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18, 509–533.
- Ugboma, C., Ogwude, I. C., Ugboma, O., & Nnadi, K. (2007). Service quality and satisfaction measurements in Nigerian ports: An exploration. *Maritime Policy & Management*, 34, 331–346.
- Vecchio, R. P. (2006). *Organizational behavior: Core concepts* (6th ed.). Mason, OH: South Western/Thomson.
- Verhoeven, P. (2010). A review of port authority functions: Towards a renaissance? *Maritime Policy and Management*, 37, 247–270.
- Vinh, T., & Grewal, D. (2006). The maritime safety management system (MSMS): A survey of the international shipping community. *Maritime Economics and Logistics*, 8, 287–310.
- Watkins, K. E., & Marsick, V. J. (1993). *Sculpting the learning organization*. San Francisco, CA: Jossey-Bass.
- Watkins, K. E., & Marsick, V. J. (1997). *Dimensions of the learning organization*. Warwick, RI: Partners for the Learning Organization.
- Yang, C. C. (2015). The integrated model of core competence and core capability. *Total Quality Management & Business Excellence*, 26, 1–17.
- Yusuf, Y., Sarhadi, M., & Gunasekaran, A. (1999). Agile manufacturing: The drivers, concepts & attributes. *International Journal of Production Economics*, 62, 33–43.
- Zhang, Q., Alfara, M. R., Worsnop, D. R., Allan, J. D., Coe, H., Canagaratna, M. R., & Jimenez, J. L. (2005). Deconvolution and quantification of hydrocarbon-like and oxygenated organic aerosols based on aerosol mass spectrometry. *Environment Science Technology*, 39, 4938–4952.

Appendix. Measurement items with descriptive statistics

Cronbach's α and factor loadings.

Descriptor	Mean	Std. dev.	Factor 1
<i>Learning organisation culture</i> ($\alpha = .92$, $AVE = .78$)			
$KMO = .89$, $p = .000$			
In my organisation, leaders continually look for opportunities to learn	3.81	1.58	0.90
My organisation recognises people for taking initiative	3.95	1.62	0.87
In my organisation, teams/groups revise their thinking as a result of group	3.27	1.60	0.85
My organisation works together with the outside community to meet mutual needs	4.11	1.38	0.84

(Continued)

Appendix Continued.

Descriptor	Mean	Std. dev.	Factor 1
In my organisation, people are rewarded for learning	3.50	1.59	0.84
My organisation makes its lessons learned available to all employees	4.16	1.46	0.72
In my organisation, people spend time building trust with each other	4.54	1.45	0.68
<i>Agility ($\alpha = 0.92$, $AVE = 0.72$)</i>		<i>KMO = .92, $p = .000$</i>	
PPA keep service delivery quickness and timeliness	4.59	1.20	0.88
PPA sensing, perceiving and anticipating changes	4.35	1.19	0.87
PPA has the flexibility to bring off customers' requirements	4.61	1.18	0.82
The cooperation with PPA comes up to customers' expectations	4.45	1.21	0.81
PPA keep fast operation time	4.60	1.13	0.80
PPA has the flexibility to respond to customers' special needs	4.79	1.20	0.78
PPA provides quality services	4.62	1.14	0.74
PPA has sufficient technological ability	4.34	1.30	0.71
PPA immediately reacts to changes in b2b environment	4.33	1.27	0.69
PPA has the strategic vision to respond to the market needs	3.80	1.51	0.63

	Mean	Std. dev.	Factor 1	Factor 2
<i>RQ ($\alpha = .88$, $AVE = .68$ and $AVE = .65$, respectively)</i>		<i>KMO = .87, $p = .000$</i>		
The port frequently discussed strategic issues with its customers	4.86	1.08	0.87	
The port openly shared confidential information with its customers	4.65	1.14	0.79	
The port rarely talked with its customers about its business strategy (R)	4.57	1.39	0.78	
The parties involved had continuous interaction during implementation of the port strategy	4.86	1.07	0.77	
There was extensive formal and informal communication during implementation	4.72	1.04	0.64	
The strategy's objectives and goals of the port were communicated clearly to involved and concerned parties	3.97	1.37	0.62	
Over the long run, the relationship with our customers will be profitable	4.96	1.17		0.79
Customers' association with us has been a highly successful one	4.87	1.16		0.75
Overall, the results of our relationship with our customers were far short of expectations (R)	4.70	1.18		0.72
We focus on long-term goals in the relationship with customers	4.27	0.81		0.61