eGovernment Implementation and TQM Adoption: An Empirical Study in the Portuguese Municipalities

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Abstract: The paper investigates the potential link between eGovernment implementation and TQM adoption in the Local Government context. Although most research studies point out the importance of adopting citizen-oriented organisational practices to successfully implement eGovernment initiatives, the present study is original in specifically investigating the role that TQM may have in driving eGovernment adoption. From a theoretical standpoint, not only do eGovernment and TQM pursue some identical purposes, but they also share an important set of core concepts and principles, a fact which suggests a reinforcing link between these two approaches. This potential link was investigated by means of a questionnaire survey, complemented with the analysis of the institutional web pages of the 308 municipalities existing in Portugal. The findings reveal that municipalities where eGovernment initiatives are more mature are simultaneously those that implement TQM. 'Soft' elements of TQM are particularly associated with the implementation of more sophisticated forms of eGovernment. Certification, on the other hand, apparently does not have an impact on eGovernment adoption. Exploiting the synergies that might exist between these approaches seems to be essential to really bring about institutional change, essential to enhance sustainability and produce long-term results.

Keywords: TQM; eGovernment; local government; organisational change; certification

1. Introduction

The quality movement in Public Administration is part of reform and modernisation efforts aimed at replacing the bureaucratic model by a more citizen-oriented paradigm (Parker & Bradley, 2001; Lawton & Rose, 1991). And underpinning much of politicians' modernisation of government strategies worldwide has been the adoption of new technologies (Martin & Byrne, 2003; Verdegem & Verleye, 2009).

Broadly defined, eGovernment embraces "the use of information and communication technologies in public administrations combined with organisational change and new skills in order to improve public services and democratic processes and strengthen support to public policies" (European Commission 2003, p. 7). This definition clearly states the importance of organisational change in bringing about the benefits of eGovernment implementation.

At the core of eGovernment adoption is the idea of creating a government that is closer to the citizens it serves and more open to their participation at all levels. In fact, as Meltiski (2004) emphasises, "eGovernment consists of internet-driven innovations that improve citizen access to government information … services, and ultimately equitable participation in government".

Several studies have investigated the factors that explain the successes and failures of eGovernment initiatives in different contexts (Moon, 2002; Nour et al., 2008; Saxena, 2005. The vast majority concentrate either on technical issues, on country-based features or on individual user characteristics. This is not the focus of the current research, which considers instead the organisational-specific conditions that might provide a fertile ground to the expansion of eGovernment. These organisational characteristics are associated with the management philosophy adopted and the organisational culture that emerges.

The main theoretical argument behind this paper is that because TQM and eGovernment share the purposes of effectiveness, efficiency and accountability through principles such as customer/citizen orientation and process management, they reinforce each other and should be simultaneously implemented if their full potential is to be achieved.

This issue is somehow neglected in the literature that tends to concentrate on the measurement of service quality in online services (Kumar et al, 2007), without considering the role that TQM may play on creating the 'right' organisational environment to fully implement eGovernment initiatives. The lack of studies is even more noticeable at the local government level.

Although most research studies point out the importance of adopting citizen-oriented organisational practices to successfully implement eGovernment initiatives, the present study is original in specifically investigating the role that TQM may have in driving eGovernment adoption.

In the next two sections, the requirements of eGovernment implementation and the principles of TQM are briefly reviewed. Based on this literature review, a model of analysis was derived, which is described in section 5. The hypotheses associated with such model were tested by means of a questionnaire designed and administered to the 308 Portuguese municipalities, complemented by information obtained via an examination of their institutional web pages. One hundred and fifteen (115) usable questionnaires were returned. The main findings are discussed in section 6, and the conclusions drawn are presented in section 7.

2. eGovernment benefits and requirements

The development of eGovernment is clearly embedded in this new citizen-oriented paradigm, offering the promise of 24/7 accessibility, responsiveness, and greater efficiency. Its potential benefits have been promoted by the EU through its e-Europe programme. If, over the last decade, more and more services have been available online, the uses of eGovernment to enhance citizen participation in decision-making and policy formulation are much less developed.

It is usual to distinguish between different levels of development of eGovernment, roughly defined as informative, interactive and transactional. These distinctions are behind the levels proposed by the EU in the e-Europe plan, which correspond to different degrees of maturity of eGovernment initiatives:

- Level 0: complete absence of a site accessible to public users;
- Level 1 - INFORMATION: information necessary to go through the procedure is available on-line;
- Level 2 – ONE WAY INTERACTION: the site offers the possibility of obtaining on-line (download) the forms needed;
- Level 3 – TWO WAY INTERACTION: the site offers the possibility of initiating the procedure, giving the user the chance to complete forms on-line using a system of authentication;
- Level 4 - TRANSACTION: full electronic case handling.

This scale is seen to be almost exclusively focused on the provision of eServices and does not specifically address the issues more closely related to the application of ICT to democratic processes.

Several advantages of eGovernment have been pointed out in the literature (Kumar et al, 2007; Luk, 2009; Verdegem & Verleye, 2009):

- Simplification of service provision, especially in the cases where documentation and data processing activities are a burden;
- Increased accessibility of Government and Public Administration to the citizens they serve;
- Opportunities for more efficiency and cost reduction through the integration of different systems and service units;
- Increased responsiveness to citizens' demands facilitated by the possibility of continuous feedback;
- More transparency and fewer opportunities for corruption;
- Increased co-operation and co-ordination between different Public Administration units, avoiding redundancy and promoting rationality in the use of the resources available;
- Communities' empowerment through the removal of bureaucratic obstacles to citizens' participation.

Many citizen-government transactions occur at the local government level, making it a natural candidate for innovative initiatives in this area (Damodaran et al, 2005; Kunstelj & Decman, 2005). Furthermore, local government tends to be closer to the citizens it serves than central government, which represents a great chance to test new models of interaction.

Moreover, the possibilities created by eGovernment are regarded as an important instrument to promote citizen empowerment and improve the quality of democracy (Brewer et al, 2006; Moon, 2002). In fact, the use of ICT can be applied to different forms of relationship between governmental

authorities and the citizens they serve: it facilitates the access to information at low cost; it allows the creation of discussion groups (*forums*) and the collection of feedback through surveys; and above all, it permits real time interaction between them, thus promoting active citizen participation. Korac-Kakabadse and Korac-Kakabadse (1999, cited in Carrizales 2008) define eDemocracy as the capacity for ICTs to enhance the degree and quality of participation in government and highlight the possibility for direct-democracy on a large scale. Thus, ultimately, eDemocracy improves transparency and facilitates the implementation of policies due to the process of legitimating the measures which are to be undertaken and to the increase of trust on the part of citizens (Brewer et al, 2006).

As highlighted in a United Nations' report (UNO, 2003, p.10), the full concretisation of the eGovernment benefits requires a change in the culture of Public Administration. In the new paradigm, not only is the citizen the focus of all activities, but also Government officers are expected to assume more transversal roles as process owners. This business process re-engineering of internal government operations corresponds to the last stage of eGovernment implementation described by several researchers (Affisco & Soliman, 2006) as 'transformation'.

Sound technological infrastructure is vital to eGovernment, but it is by no means sufficient to drive its success (Luk, 2009). The biggest challenge is probably that of achieving organisational change and process reengineering in Public Administration (Holden et al, 2003; Martin & Byrne, 2003).

Additionally, attention has been almost exclusively directed towards the supply side factors of electronic public services (Henriksen, 2006; Kumar et al, 2007) neglecting the importance that customers have on its success (Verdegem & Verleye, 2009). Public agencies need to evaluate the impact of their strategies on the customers and promote the benefits of speed, cost and convenience. Additionally, to promote citizens' adhesion to eGovernment initiatives, it is not only necessary to take into consideration privacy and security issues, but also to truly involve them in the conception stages, taking into account user characteristics and website design (Kumar et al, 2007).

3. TQM principles

Over the last decades, concerns with Quality in Public Administration have been at the core of the discourses and strategies of governments in developed countries. Quality management, in particular, has been regarded as essential to cope with economy, efficiency, effectiveness and equity demands and to respond to the rise in citizen/customer expectations.

Total Quality Management (TQM) can be defined as "a management philosophy that fosters an organizational culture committed to customer satisfaction through continuous improvement" (Kanji 2002). TQM, therefore, embraces a set of principles and tools that aim to mobilise the whole organisation in the pursuit of the highest level of customer satisfaction at the lowest cost. In order to achieve this, people involvement and continuous improvement need to be practised on a daily basis.

The Common Assessment Framework (CAF), based on the European Excellence Model (EFQM/BEM), recognises the following excellence drivers – results orientation, customer focus, process management, data based decision-making, people involvement, continuous improvement and innovation, partnerships for mutual benefit and corporate social responsibility – which correspond to key TQM principles.

The ISO standards also identify a set of eight quality management principles that, once implemented, will be responsible for increasing performance, namely: customer focus, leadership, involvement of people, process approach, system approach to management, continual improvement, factual approach to decision making and mutually beneficial supplier partnerships.

Throughout the continuous improvement process, quality tools are essential to identify customer needs and expectations and set improvement goals, as well as to involve all employees in accomplishing them. TQM calls for the use of customer and employee surveys, complaints-solving mechanisms, and suggestions schemes.

Furthermore, TQM establishes an organisational infrastructure crucial to make the most of these tools. Leadership, teamwork and education and training are the basic pillars of such organisational

infrastructure, since only with them is it is possible to develop within the organisation an active listening attitude and a continuous improvement culture.

4. Preliminary notes on the implementation of TQM and eGovernment in the Portuguese Local Government

With the aim of supporting the shift from a self-centred Public Administration, authoritarian and focused on administrative and legal procedures, to a Public Administration concerned with and closer to the citizens it serves, over the last two decades successive Portuguese governments have stressed their commitment to invest in quality by establishing programmes to train and educate public servants and renovate public institutions.

Administrative modernisation initiatives have contributed to the diffusion of TQM principles through their emphasis on decentralisation and autonomy, procedures simplification, and partnerships.

The Quality Programme initiated in 1993 sets three main targets: transparency, simplification, and participation (Araújo, 2001).

In 1999, the Quality System for Public Services (QSPS) was formally established (Law-Decree 166-A/99), certification within this system being achieved by organisations demonstrating compliance with a set of requirements associated with the EFQM/BEM. However, the system was never implemented and public service organisations ended up by using the ISO 900O standards as guidelines to implement their quality assurance systems.

In Portugal, the certification of Local Government services began in 2003 since when it has continually expanded.

In relation to the adoption of the CAF, statistics show its increasing popularity among Local Government organisations. In Portugal, the General Directorate for Local Administration (DGAL) uses the CAF criteria to select the winners of the Good Practices of Public Administration Award. Organisations that achieve a certain score against the CAF criteria are also acknowledged.

A high priority has been given to the provision of public services online. Efficiency gains and enhanced citizen participation are the main arguments behind the so-called Action Plan for the Information Society (Ministerial Resolution nº 107/2003), which aims to establish a national strategy for eGovernment implementation.

Comparisons between the supply and demand of online public services reveal a considerable gap in almost every country. Portugal is one of the countries where the gap is larger: the online sophistication index is 75% (showing that the two-way interaction level is the general pattern), but only 13% of the citizens actually use eGovernment solutions. Similarly, according to the UN 2008 survey, Portugal is in 49th position e-participation index.

According to a recent study, conducted by the Observatory for the Information and Knowledge Society and the UMIC in 2005, by means of a postal and internet survey, 96% of the 253 municipalities that answered the questionnaire have a website and 69% update its content regularly (Observatório da Sociedade da Informação e do Conhecimento, 2008). The same study reports that municipalities mainly offer online email addresses for citizens to complain or raise questions (91%) and the possibility of downloading and printing forms (70%). It is worthwhile to mention that 36% of the municipalities affirm that they undertake processes of public consultation through their websites.

5. Methodological approach

Quality management principles can be summarised in three main pillars, namely: customer focus, people involvement, and continuous improvement. By correctly implementing such pillars, quality management is expected to contribute to a more efficient Public Administration which is closer to the citizens it serves.

Some critical factors of successful eGovernment implementation have been identified (Luk, 2009) that are closely associated with the TQM principles described earlier, namely customer focus, co-ordination and collaboration across organisational boundaries and stakeholder involvement.

At the same time, the adoption of quality management principles creates an organisational culture that facilitates the implementation of eGovernment. In fact, quality management calls for the use of a set of mechanisms to collect and analyse customer feedback (surveys, complaints, suggestions for improvement, etc.), which are essential to design effective and easy-to-use eServices. Similarly, people involvement is usually translated into teamwork and education and training so that autonomy and co-operation are fostered. EGovernment benefits from process-thinking and from the new skills that emerge as consequences of teamwork and education and training. Finally, continuous improvement is crucial to develop better eServices and to move towards more advanced forms of eGovernment.

Figure 1 depicts the model of analysis proposed in this paper.

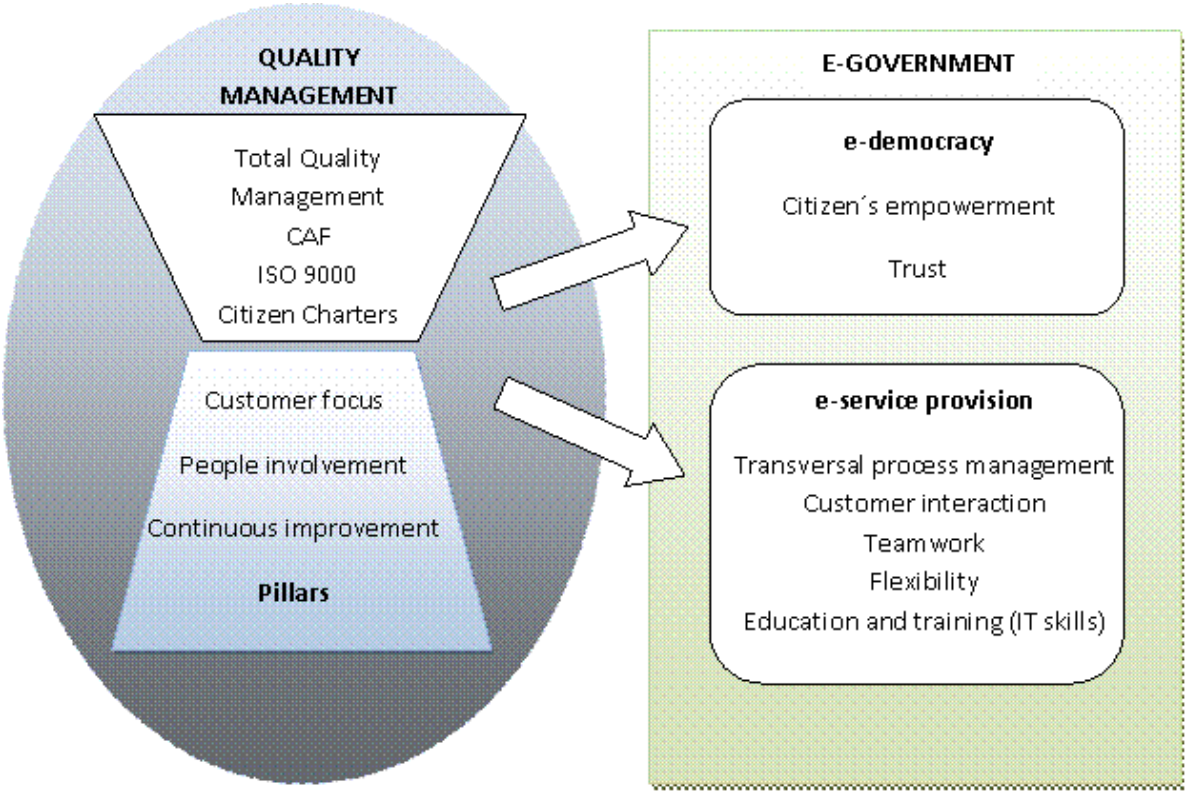

Figure 1: Model of analysis

From the model of analysis described above a main hypothesis was derived:

- H1: Municipalities that implement TQM approaches rank higher on the level of eGovernment implementation, compared to those that do not adopt such approaches.

Additionally, given the requirements associated with certification, particularly in terms of identifying citizen/customer needs and measuring satisfaction levels, which call for increased interaction between the municipality and its stakeholders, a second hypothesis emerged:

- H2: Municipalities that have services certified according to the ISO 9000 standard rank higher on the level of eGovernment implementation, compared to those that do not have such certification.

With the purpose of identifying some quality approaches that have been implemented, a postal questionnaire was designed and administered in 2006 to the 308 municipalities that exist in Portugal. One hundred and fifteen (115) questionnaires were successfully returned, representing a response rate of 37%. The questionnaire explored the level of implementation and maturity of quality initiatives such as: quality systems, quality charters, measurement of customer/citizen satisfaction, education and training on quality tools, as well as their extent (organisation-wide, departments, particular projects). Additionally, the instrument included questions regarding the interaction with citizens (e.g. channels used, frontline services, mechanisms of feedback provided). Information was collected for each municipality concerning the number of employees, average number of citizens attending per week, etc.

In order to assess the level of eGovernment implementation, the institutional websites of all municipalities were analysed in 2007, and the maturity of service provision evaluated based on the scale proposed by the e-Europe programme. In addition, to assess the use of the technological capabilities in developing eDemocracy three indicators were used: (1) the existence of email/online forms to send complaints and/or suggestions for improvement; (2) the use of online consultation mechanisms (namely surveys); and (3) the existence of online active forums. Clearly, eDemocracy goes much further than these indicators suggest, but they tend to be generally accepted measures in the early stages of eDemocracy (Carrizales, 2008).

6. Main findings and discussion

As mentioned above, a postal survey was conducted in 2006 to identify some quality approaches implemented by the municipalities. One hundred and fifteen (115) usable questionnaires were returned.

Of the municipalities that participated in the study, 58% (i.e. 67) were implementing quality management approaches. In March 2008, according to certification bodies, 28 of these had one or more services certified (full certification remains very rare).

The analysis of the websites of the 308 Portuguese municipalities (see Table 1) confirms that information still prevails over interaction and that transactions fully online are very unusual. As a matter of fact, at the beginning of 2007 the level 4 was only assigned to one municipality. The majority of the municipalities were at the preliminary stages of website development. That said, a significant number of websites (82) already allowed forms to be downloaded, and in 12% of the cases, it was additionally possible to submit online requests for several services.

Table 1: eServices implementation

Maturity Level of eServices Provision	Overall (308 Municipalities)		115 Participant Municipalities	
	Number	%	Number	%
Level 0 (site not existent or not accessible)	55	17.7	13	11.3
Level 1 (information)	133	43	46	40
Level 2 (one-way interaction)	82	27	38	33
Level 3 (two-way interaction)	37	12	17	14.8
Level 4 (transaction)	1	0.3	1	0.9

Considering the participating municipalities in our quality management survey, the scenario is seen to be not much different. Nevertheless, it is interesting to notice that the percentage of the municipalities with higher levels of e-service implementation is slightly superior and that the weight of the municipalities that do not have an accessible website is lower if compared to the national score.

Municipalities were classified into groups, according to the following scheme:

- Group A: municipalities that implement quality management approaches
- Group B. municipalities that do not implement quality management approaches
- Group A1: municipalities that have services certified
- Group A2: municipalities that do not have services certified

The average maturity level of eServices provision was computed for each group and the corresponding t-tests performed. Because levels 3 and 4 put considerable more pressure on the municipalities to substantially change the way they operate, it was decided to analyse separately if there was any association between these higher levels of e-service provision and the implementation of quality management.

As the results in Table 2 suggest, municipalities that adopt quality management are indeed ahead in the delivery of online services. It is particularly relevant to observe that high levels of maturity in eServices implementation occur almost exclusively in those municipalities that belong to Group A. Statistics confirm the proposed relationship.

Table 2: Association between eServices provision and quality management implementation

	Group A (QM) 67 municipalities	Group B 38 municipalities	Group A1 (certified) 28 municipalities	Group A2 39 municipalities
Average level of eServices provision (e-Europe scale)	1,731	1,210	1,82	1,67
	☑☑☑ t = 2.8162 p value: 0.0058		— t = 0.6571 p value: 0.5135	
High maturity (levels 3 and 4)	16 cases	2 cases	9 cases	7 cases
	☑☑☑ Fisher p value: 0.0157 Pearson's chi-square = 5.917		— Fisher p value: 0.2468 Pearson's chi-square = 1.806	

☑☑☑ significant at 99%; **-** Not existent

On the contrary, certification does not emerge as a key determinant in what concerns eServices provision. The proportion of municipalities that implement more sophisticated forms of electronic services is roughly the same for A1 and A2 groups.

Regarding the three indicators of eDemocracy selected, it is possible to observe that, with the exception of the use of email as a conduit for suggestions and complaints, the other two are very scarcely implemented (see Table 3).

Table 3: Instruments of eDemocracy

	115 Participant Municipalities
e-mail/online forms to send complaints and/or suggestions for improvement	64 (56%)
online consultation mechanisms	26 (23%)
online active forums	6 (5%)

Even these numbers might be optimistic, since most consultations online refer only to the degree of satisfaction with the municipality website and remain active for a long time. There is no regular search for new consultation topics, which might discourage citizen participation. Online forums also have a small number of posts and comments.

All in all, this suggests that the adoption of eDemocracy mechanisms in the Portuguese municipalities is very embryonic.

Yet, it is worthwhile to consider the differences in the use of these instruments between municipalities. Table 4 indicates that whilst their use is consistently higher among municipalities that adopt quality management, only in the case of e-mail/online forms asking for complaints and comments is the association statistically significant. Certification apparently does not distinguish municipalities in this regard. Indeed, the implementation of some eDemocracy tools is even higher in Group A2.

Table 4: Association between eDemocracy mechanisms and quality management implementation

	Group A (QM) 67 municipalities	Group B 38 municipalities	Group A1 (certified) 28 municipalities	Group A2 39 municipalities
e-mail/online forms to send complaints and/or suggestions for improvement	44 cases	17 cases	17 cases	27 cases
	☑☑ Fisher p value: 0.0420 Pearson's chi-square = 4.365		— Fisher p value: 0.6028 Pearson's chi-square = 0.524	
online consultation mechanisms	18 cases	6 cases	4 cases	14 cases
	— Fisher p value: 0.2328 Pearson's chi-square = 1,687		X Fisher p value: 0.0567 Pearson's chi-square = 3.874	
online active forums	5 cases	1 case	4 cases	0
	— Fisher p value: 0.414 Pearson's chi-square: not applicable		— Fisher p value: 0.134 Pearson's chi-square: not applicable	

☑☑ significant at 95%; X contrary to what was expected; **-** Not existent

The three eDemocracy indicators were combined to compute an 'eDemocracy score'. Once again, results show (see Table 5) a significant difference between municipalities that implement quality management and those that do not. Contrary to what would be expected, the eDemocracy score is higher among municipalities that do not have services certified. Theory does not support a negative association, but it is possible to assume that formalisation (as required in certification processes) may inhibit the use of more unstructured forms of citizen participation. Additionally, eDemocracy instruments demand investments that might otherwise be directed towards certification.

Table 5: eDemocracy score and quality management implementation

	Group A (QM) 67 municipalities	Group B 38 municipalities	Group A1 (certified) 28 municipalities	Group A2 39 municipalities
eDemocracy score	1,00	0,63	0,75	1,15
	☑☑ t = 2.40 p value: 0.0182		X t = 2,1809 p value: 0.0328	

☑☑ significant at 95%; X contrary to what was expected

Finally, an overall eGovernment index was calculated by adding the maturity level of eServices provision and the eDemocracy score.

Table 6 shows that the difference between Group A and Group B in terms of eGovernment implementation is statistically relevant, whereas certification is not contributing to higher levels of eGovernment implementation.

Table 6: eGovernment index and quality management implementation

	Group A (QM) 67 municipalities	Group B 38 municipalities	Group A1 (certified) 28 municipalities	Group A2 39 municipalities
eGovernment index	2.73	1.89	2.57	2.82
	☑☑☑ t = 3.19 p value: 0.0019		— t = 0.7041 p value: 0.4839	

☑☑☑ significant at 99%; **-** Not existent

All in all, findings corroborate H1, which suggested a positive association between the adoption of TQM approaches and the implementation of eGovernment. H2, which proposed an association between services certification and eGovernment implementation, found no support from the data.

7. Conclusion

This paper explores the potential link between eGovernment implementation and quality management adoption. TQM principles are expected to create an organisational environment that fosters eGovernment initiatives by encouraging the search for new forms of citizen interaction, promoting the development of new competencies and skills on the part of local government officers and facilitating innovation and learning.

To address the issue, a study was conducted by means of a postal survey combined with the analysis of the institutional websites of the 308 Portuguese municipalities.

Based on the usable 115 questionnaires that were returned, it is possible to state that the majority of the municipalities adopt quality management approaches, guided by the TQM principles and ISO standards.

Empirical evidence also shows that, while eGovernment initiatives are increasingly being implemented, they tend to be focused on information provision and the level of interaction between government and citizens through public websites is still low.

More advanced forms of eGovernment, namely those associated with eDemocracy, are in the early days. Online consulting systems and online communities are still rare.

Findings reveal that municipalities implementing quality management are indeed ahead of those that do not, both in terms of the provision of eServices and in their use of eDemocracy tools. Our main hypothesis was, therefore, confirmed.

On the other hand, contrary to what we would expect, certification is not contributing to the implementation of eGovernment.

This scenario suggests that 'soft' quality management elements, associated with customer focus and people involvement, are more important than 'hard' components, namely formalisation and quality assurance, in what concerns the development of eGovernment. Certification may, in this regard, inhibit the use of more unstructured forms of citizen participation and direct attention towards compliance with rules and procedures rather than towards empowerment and active listening attitudes.

Some limitations of the current research have to be acknowledged. Firstly, the study measures TQM adoption and eGovernment implementation in a single moment, making causal links difficult to establish. Additionally, the survey does not explore in detail the organisational context in which TQM and eGovernment initiatives take place. Case studies using longitudinal approaches could overcome these limitations.

Although the empirical study concerns a single country and, thus, generalising the findings to other contexts becomes questionable, given both the universality of TQM elements and eGovernment strategies, there is enough evidence to suggest that policy implications and recommendations can be applicable to other countries in terms of the importance of considering organisational practices when implementing eGovernment initiatives.

Further investigation on the subject is relevant, since the existence of a link between TQM and eGovernment has important implications. Whereas relatively high levels of awareness of TQM and eGovernment instruments among public administration organisations have resulted in isolated (and often sporadic) initiatives, it seems to be essential to exploit the synergies that might exist between approaches in order to really bring about institutional change, enhance sustainability and produce long-term results.

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