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Abstract

The development of knowledge-based business opportunities in many economic sectors worldwide is often conceived through a silo-mentality, whereby efforts are focused in either industry or government entities in isolation. Without a systemic or holistic understanding of connections between these, any present or future project evaluation becomes either input- or output-based instead of having a comprehensive understanding of its impact. In order to address such a challenge, this empirical study focuses on the Spanish hospitality sector, which currently thrives by continuously accessing external and internal sources of knowledge, thus offering opportunities to conceptualise it as a knowledge ecosystem. Lessons learned from the Spanish hospitality sector have the potential to inform the design of online government services as part of a knowledge ecosystem. This can, in turn, yield further opportunities for innovation in the hospitality sector. A structural equation model validated by factor analysis of 130 hotels is used to assess the extent to which hotels currently benefit from online government services. This study concludes that online government services can be better fostered by nurturing external communities while also setting up internal working communities and practices. The model and its implications can also inform initiatives which seek to pursue ecosystem-oriented research and practice, as well as future policy and technology transfer initiatives.

Keywords: online government services; knowledge structures; project evaluation; hospitality sector.

1. Introduction

The development of economic growth through the use of information and communication technologies is often based on initiatives pursued by either government or industry players, with little collaboration between them. A significant volume of investments in technology for government initiatives are now being called into question in terms of their perceived economic impact, let alone benefits for businesses (Irani & Love, 2008). Part of the problem seems to be derived from the way evaluation of investments is currently done. Dominant paradigms on project evaluation focus on government as a mere supplier of services. This leads to a narrow view whereby the quality of outputs are assessed in terms of service adoption, penetration diffusion and satisfaction by users. This focus contrasts with the diversity of ideas about what electronic government services are, and the variety of such services currently being provided not only to citizens but also to businesses.

An earlier research to fill that gap sought to conceptualise a more business-oriented way of evaluating the effectiveness of electronic government services to businesses proposed that evaluation initiatives needed to broaden its boundaries (Córdoba & Cegarra, 2010). In this paper, the authors adopt the approach proposed by Córdoba and Cegarra and relate it to emerging literature on the links between government and business innovations to then propose an ecosystem-oriented perspective which includes governments as key actors in enabling business collaboration and innovation. In doing so, the authors also intend to contribute to the emerging debate on the roles that other actors such as the civil society and universities can play in enabling technology transfer to flourish and be sustained through deeper structural change (Carayannis & Rakhmatullin, 2014).

To achieve its aims, this paper adopts a knowledge-based perspective of government services and capitalises on insights gained through an understanding of these as knowledge systems (Cegarra *et al.*, 2007). A framework to facilitate knowledge exchange between government and industry partners is proposed and tested taking as a reference the Spanish hospitality sector. The framework proposes three key structures to facilitate knowledge exchange between government and businesses, namely external communities, workplace communities and organisational context. Through an empirical study of 130 Spanish hotels, this paper examines how these three key structures can help the hospitality sector benefit from electronic government services.

This paper has been structured as follows: Section 2 studies some of the key variables considered to be relevant for a successful knowledge exchange between government and industry partners. Potential relationships between such variables are then outlined. Section 3 focuses on the methodological approach adopted by describing the sample population involved in the research and the measurements adopted for each of the variables. Section 4 presents the main results, while Section 5 highlights the conclusions and lessons learned.

2. The proposed research model

2.1 Online government services and knowledge structures

In the context of the global information society and following more neoliberal ideas, businesses play a prevalent role in the pursuit of innovation and economic growth whilst the role of governments is seen more in terms of appropriately enabling and regulating markets with punctual interventions (Lee & Turban, 2001). With a growing conception of knowledge

as an economic asset, knowledge intensive industries have become the focus of attention when it comes to innovation. However, the role of governments is still seen as a facilitator which formulates enabling policies, with limited intervention in the innovation process. This dominant view contrasts with important investments made by some governments to extend their service delivery to the online environment and lean their way of operating (Janssen & Kuk, 2007) whilst also promoting direct business investment and using social media to enable better communications with their citizens (Lee & Kwak, 2012).

There could be many different avenues to pursue in the future development of online government services. As governments improve their online service delivery and information provision, they are less able to focus on transaction and more on interaction. Thus, the landscape of traditional roles of governments and businesses becomes more dynamic. Governments are now seen as important actors of ecosystems or ecologies (Bertot *et al.*, 2012). An ecosystem is defined as a 'system of people, practices, values and technologies in a particular environment' (Nardi & O'Day, 1999). Within this type of system there are key groups of people (mediators) who perform vital functions of boundary spanning across institutions, including the development of platforms of data and services to be used by other people within the system (Harrison *et al.*, 2012). Mediators introduce innovations in the ecosystem and therefore can contribute to add value to the services provided by it (Harrison *et al.* 2012). In this value adding process, Carayannis et *al.* (2001) assert that the spread of computing power, combined with the ability of users to communicate through computing devices, can lead to a different form of business transactions and relationships.

Views like the above can be used to review the ways in which the use of technology has been conceived in government and business sectors. It suggests gradual or even radical shifts in ways of working towards collaboration and interaction. Partially in line with these views, early work by Córdoba and Cegarra (2010) proposed a conceptual framework to bring small and medium enterprises (SMEs) closer to electronic government platforms and services. The framework placed its emphasis on how online government services could facilitate knowledge acquisition and renewal in SMEs. The framework proposed considering online services as enablers of both knowledge exploration and exploitation activities in SMEs (Palacios-Marqués et. al, 2015). To achieve this, it was seen necessary to work at the SME level in order to develop better capabilities and governance of online services. The partial alignment still focused on online services provision instead of bi-directional interaction given that working more closely with SMEs would also require governments to acknowledge that other actors (citizens, businesses) could be at the centre of innovation (Carayannis & Rakhmatullin, 2014) and therefore governments could support rather than lead innovation.

This research contributes to better understand how innovation can be fostered through bringing together different actors of political and knowledge systems, as previously stated by authors such as Carayannis & Rakhmatullin (2014), Campanella et al. (2013) and Soto-Acosta et al. (2015). In line with the above, the aim is to assess the mutual impacts between knowledge-related practices in businesses and the successful adoption and use of online government services. We identify and evaluate ways in which both actors (i.e. businesses and government) can improve their knowledge activities for mutual benefit and for the benefit of other actors such as the civil society and academia. This paper also contributes to develop a holistic approach to online service evaluation from the perspective of active users. Before formulating an extended framework, the key characteristics of the hospitality sector in Spain are outlined.

2.2. Learning and communities of practice in the Spanish hospitality sector

The hospitality industry is a very relevant sector within the Spanish economy (Cadarso, 2005). The Spanish hospitality industry serves approximately 52.7 million tourists every year, representing a potential revenue of close to 41.61 billion Euros (Domínguez-Vila *et al*., 2015). Spain was 2nd in tourism earnings worldwide (and 1st in Europe) with US$ 65 billion in 2014, and 3rd in arrivals with 65 million overnight visitors, according to the United Nations World Tourism Organization (UNWTO, 2015).

The Spanish tourism sector is very complex and requires intensive use of knowledge resources to effectively operate in a competitive market and satisfy its customer needs (Gómez-Loscos & González, 2014). Although hotels have recognised their need for change and their required flexibility for long-term business endurance, only a small proportion of European companies have started using available outsourced technologies (e.g. online government services). This 'barrier' to change can be related to issues such as uncertainty, trust and lack of knowledge, which in turn impede adoption of online government services (Xu *et al*., 2007).

For technological advances to facilitate business opportunities for hotels, intangible assets such as new skills, new forms of integration and intensive relationships with external entities must be developed (Carmona *et al*., 2004). It is with this in mind that this research sees the Spanish tourism sector as an appropriate setting for an investigation into the importance and significance of knowledge structures on online government services. For organisations such as hotels, learning does (and should) not be restrained to organisational boundaries. Part of the process of learning consists of acquiring knowledge that is 'external' to an organisation, that is, knowledge that has been developed both within and across organisations (Wenger, *et al*., 2002). Hotels must acquire new sets of perceptions and knowledge held by customers, channels, or even public servants (McKnight & Chervany, 2001). Based on this perspective, the present study focuses on three important knowledge structures which are based on the concept of communities of practice (CP) for hotels, and relate to the existence of organisational context, external communities and working communities and the use of online government services at three different levels, according to their degree of complexity.

Wenger, *et al*. (2002) suggest that learning is a social process in communities of practice. A community of practice (CP) is a form of continuous interaction between individuals who pursue shared enterprises or goals through developing and negotiating knowledge about topics of their interest (Wenger, *et al*., 2002). Through socialising in such communities, individuals acquire, use and negotiate knowledge by participating in different groups and by using other people's expertise to solve their problems. An individual or group of individuals would not be able to deal with every type of contingency at work if there was not a community of colleagues or peers who could provide suggestions, support, feedback and guidance. Communities of practice do not emerge by the imposition of rules of interaction or formal structures. They are the result of continuous processes of learning in which individuals engage and sustain through time. This participation can involve according to Wenger *et al*. (2002) three elements:

1. Recognising and developing a *domain of knowledge* (set of enterprises or questions and issues that motivate and sustain individuals' participation).
2. Having a *sense of community* that allows sharing particular values and norms to sustain activity.

3. A *practice* or knowledge in the forms of resources that are continuously created, negotiated, shared and developed.

The above aspects become more relevant if organisations have never used 'any' electronic means of communication (Nath *et al*., 1998). The interweaving of these aspects results in situated learning processes in which some elements can be distinguished and nurtured and a combination of senses of negotiated meanings, membership and identity emerge (Wenger, 1999). The above knowledge structures have pervaded research on government online services. For instance, Irani *et al*. (2005) conduct an interpretation of their online services experience with local authorities and conclude that the issue of user meaning attributed to is a crucial aspect to make evaluation of online services effective.

2.4 Linking knowledge structures with business to government services

The considerations above imply that in order to support online services, a key issue to be addressed is the understanding of the processes through which users create knowledge within businesses using online services. It is important to understand how users who work in different groups and organisations can join a community of practice and how online services could support the emergence and operation of such communities (Córdoba, 2005). Regarding this, Selz and Schubert (1997) developed a Web Assessment (WA) tool based on the three phases of a transaction, namely information, agreement, and settlement, augmented through a community phase. Based on the idea of learning in communities, Cegarra, Dewhurst and Briones's research (2007) characterised an online government model as having three business process renovation steps:

- External, where organisations open up new possibilities for government agencies to be more transparent to them, giving access to a greater range of information collected and generated by their external and internal agents. For example, visiting government websites enables hotels to have instantly available information (e.g. legal issues, economic data, and regional grants) at any time.
- Relational, where online government services adoption may enable fundamental changes to the relationships between businesses and their government. Vertical and horizontal integration of services can be realised, enabling the integration of information and services from various government agencies to help businesses and other stakeholders get seamless services (e.g. procurement of goods and services between government institutions and businesses).
- Internal, which refers to the extent that government services are re-engineered from an off-line to an e-service (e.g. on-line assessment and payment of taxes, registration of new companies).

Business to government implementation (e.g. online government services) is thus a gradual and ongoing process that has the overall objective of fine tuning the fit or match between the organisations' current knowledge structures and the external environment (Hibbard & Carillo, 1998). Regarding this, Nonaka and Konno (1998) assert that the implementation of new administrative procedures requires individual autonomy and useful knowledge, but it will only occur if it is fostered by knowledge structures. For both government and business employees, this means that through the presence of knowledge structures individuals become aware of public e-services and their benefits, including increased flexibility, control over process, time saved (Grimsley & Meehan, 2007).

The notion of community learning has also been used to explore relationships between different groups of individuals (e.g. customers and employees). Dewhurst and Cegarra (2004) identify the existence of external communities as groups formed by company clients and employees with the purpose of learning. Such communities may be fostered through socialisation activities between customers and employees such as formal meetings or informal meetings, where customers and sellers interact through interdependent works for the achievement of a particular objective. According to research by Barnes and Vidgen (2001), it can be argued that the successful use of online government services depends on the existence and development of 'trust' between groups of individuals inside and across organisations, and that such trust can be supported by external communities. In other cases the existence of external communities offers opportunities for customers and employees to provide their own ideas and suggestions (Dewhurst & Cegarra, 2004). These considerations lead this study to frame the first hypothesis of the work:

H1: The presence of external communities of learning and practice are positively related to online services

A subgroup of a community is that of workplace communities as groups formed by employees. Janis (1982) suggests some approaches to organisational design that have the potential to increase the likelihood of the emergence of workplace communities. For example, Janis (1982) suggests personal rotation of staff across different functional areas, with the purpose of enabling the organisation to further benefit from staff meetings by facilitating the sharing of multidisciplinary perspectives, a greater fluency of knowledge and the creation of conflict. Porter *et al*. (1987) suggest that workplace communities can be distinguished by the degree to which all the members are enabled to participate in decision making. For example, through workplace communities, managers make information available as and when needed, and therefore it is easier to find the e-services and websites they are looking for (Davenport & Grover, 2001; Del Giudice and Maggioni, 2014). Self-directed work and participation can thus contribute to increasing the efficiency of the workplace communities, as a result of an increase in the level of commitment of their members derived from their sense of ownership of the tasks. Hence, the study proposes the following hypothesis:

H2: The presence of working communities of learning and practice are positively related to online services

Teece (2000) refers to knowledge as information in context. According to Cohen (1998), context means a wider view, a setting, statement, or body of information that explains or gives meaning to words, ideas or actions. The environment provided by an organisation to facilitate learning among its members is defined by Szulanski (1996) as the shared organisational context. Egan (1994) argues that the shared organisational context is comprised of four main components: shared patterns, shared assumptions and beliefs, shared values, and shared norms. Ideally then, appropriate context alignment between businesses and government would allow for an online government service provision to benefit from knowledge that is created by and expected to flow between both parties. Organisational contexts which are aligned with policies and regulations put in place by government departments and related agencies and public bodies enable organisations to access, retrieve and use relevant knowledge in their decision-making (Cohen, 1998). Therefore, this study proposes the following hypothesis:

H3: The presence of learning oriented organisational contexts is positively related to online services

Kambil *et al.* (1999) indicate that the implementation of an e-business strategy can generate internal efficiency and external co-ordination through changes in intra or inter organisational integrative processes. Similarly, the ability to successfully mobilise technology resources in conjunction with other resources has been described as critical for performance (Mahmood *et al.*, 2004; Zhuang & Lederer, 2003). Based on Hammer and Mangurian (1987), Riggins (1999) distinguishes three categories of value creation for e-business. These are (1) improving time- and cost-related efficiency; (2) improving effectiveness of communication; and (3) strategic benefits related to products, markets and services. By applying these principles, when an online government service is considered as a particular form of e-business, the use of technologies to deliver online services is expected to have a positive effect on operational performance. This can take the form of a variety of new services (e.g. transactions or advice) being offered to businesses, which could contribute to their efforts to improve efficiency and reduce costs (Pavlou, 2003). Given that such efficiency directly influences firm performance, this study seeks to apply the above principles to the Spanish hospitality industry by proposing the following hypothesis:

H4: Online services provision is positively related to business performance in the Spanish Hotel Sector

Figure 1 illustrates the proposed model, which suggests that potential opportunities exist for governments that provide online services to have a positive impact on businesses whilst improving the quality of such services. Furthermore, by taking an system-wide perspective of knowledge it can be argued that indirect benefits could result from business engagement with government through the use of online services. This in turn could lead to increase business performance. However, in the case of the Spanish Hotel sector some proxy measures could offer an insight on the extent to which organisations would benefit from using online government services. Such proxies could include the availability of online services specifically designed for hotels and -indirectly, the relationship between those services and any perceived increase in the quality of hotel services, reduced costs or increased efficiency (Rambøll, 2004).

Insert Figure 1 about here

3. Method

3.1. Data collection

The data collection process was focused on the Spanish hospitality industry. The unit of analysis for this study was the organisation, on the assumption that any attempt to improve the processes of knowledge creation and organisational learning would be relevant to study at an organisational level rather than at an individual or industry levels. From an initial list of 4441 organisations included in the Spanish National Classification of Economic Activities 552 (CNAE-552) a list of hotel operators was created, including those which employed ten or more individuals. For practical reasons in preparation for the process of data collection, those organisations for which telephone contact details were not available were removed from the list. On these basis, there were 560 companies listed in the Iberian Balance Sheets Analysis System (Sistema de Análisis de Balances Ibéricos) data.

Before conducting any data collection, all businesses were contacted by telephone and senior management were invited to participate in the study. They were informed of the objectives of the research assured of its strictly scientific and confidential nature, as well as the fact that any data collected would be handled in an anonymous manner. A total of 245 organisations agreed to participate in the study. A survey was administered over a period of two months, from early November to early December 2011. From a sample of 245 organisations, a total of 164 engaged in the research by responding to the survey. However, of these, only 130 responses were complete. This resulted in a response rate of 23.21% with a factor of error of 7.52% for p=q=50% and a reliability level of 95.5%. This is within the average response rate of 15 to 25 percent suggested by Menon *et al.* (1996) for surveys involving senior management, and was therefore considered as valid.

To examine potential non-response bias, organisations that engaged in the research were compared to the population by using the following three key variables: turnover, total assets and number of employees. A significance level of 0.05 meant that none of the three t-tests for differences between the sample and the population means was statistically significant. Such an absence of significant differences shows that response bias was not a major problem in this case (Armstrong & Overton, 1977).

3.2. Measures

The initial measures relating to the existence of knowledge structures scales consisted of 9 items, three for each of the three knowledge structures being studied. These were adapted from a scale designed by Dewhurst and Cegarra (2004) to measure the constructs of organisational learning and external communities. According to Dewhurst and Cegarra (2004), items that tapped the 'external communities' were interwoven with issues related to encouraging individuals in the organisation to track changing markets and share market intelligence with customers. 'Organisational context' items acknowledge support from policies, rules and reporting structures which encourage the dissemination of experiences between individuals (e.g. formal meetings, inter-functional communication, circulation of documents, and reports). 'Working communities' focuses on the generation of new insights, taking actions that are experimental in nature, breaking out of traditional mindsets to see things in new and different ways, and developing the competencies for doing one's job. The items had 7-point scales ranging from 1 (high disagreement) to 7 (high agreement).

The information about online government services in use by every hotel was collected by using a structured questionnaire. Respondents were asked to indicate whether the business had ever visited any public service websites (1 - no, 2 - yes) and if yes, had they used the Internet to communicate with the public service websites (3 - yes) and had they completed any online forms or transactions within any of the public service websites (4 - yes). The category measures of online government services were then transformed into a new variable with a minimum value of one and a maximum value of four to facilitate comparison.

The initial measures relating to the existence of an organisational performance scale consisted of 3 items. Several measures of business performance have appeared in the literature and we adopt the growth-based measures proposed by McDougall *et al.* (1994), Roth and Ricks (1994), and Bontis *et al.* (2000) for sales, profits and profitability on total assets. Finally, the continuous measures of business performance in Table 3 (items Y2-Y4) were collected using data from the Iberian Balance Sheets Analysis System database.

3.3. Assessment of the measures

The items of the proposed model were evaluated by using exploratory techniques to assess the reliability and dimensionality of the measures. At a first stage, each construct was assessed using the item-to-total correlation, Cronbach's alpha and exploratory factor analysis. In order to get a more robust evaluation of the quality of the measures, a confirmatory analysis was achieved using the correlation matrix as input via LISREL 8.50 (Jöreskog & Sörbom, 2001) maximum likelihood method. Furthermore, fit indices that are less sensitive to non-normal data (Satorra-Bentler χ^2, comparative fit index and incremental-fit Index) were used to interpret the model fit.

Table 1 summarises the results of the confirmatory factor analysis. The fit statistics for the resulting 13 items were: Satorra-Bentler $\chi^2_{(55)}$=57.99; goodness-of-fit Index [GFI]= 0.93; comparative fit index [CFI]= 0.98; incremental-fit Index [IFI]= 0.98; root mean square error of approximation [RMSEA]= 0.029. The fit index of RMSEA is below 0.08, and indices of GFI, CFI and IFI are above the common standard of 0.9 (Hair *et al.*, 1998). Although a significant chi-square value indicates that the model is an inadequate fit, the sensitivity of this test to sample size refuses this finding and makes rejection of the model on the basis of evidence alone inappropriate (Bagozzi, 1980). However, a ratio less than three ($\chi^2/df<3$) indicates a good fit for the hypothesised model (Carmines & McIver, 1981).

The reliability of the measures was calculated using Bagozzi and Yi´s (1998) composite reliability index and with Fornell and Larker´s (1981) average variance extracted index. For all the measures both indices are higher than the evaluation criteria of 0.7 for the composite reliability and 0.5 for the average variance extracted (Bagozzi & Yi, 1988). Based on these results, it is concluded that the reliability and the convergent validity of the selected measurements are assured. These results suggest the use of three items to measure the business performance (p_c^{SCR}=0.815, p_c^{AVE}=0.601), three items to measure external communities (p_c^{SCR}=0.752, p_c^{AVE}=0.505), three items to measure working communities (p_c^{SCR}=0.755, p_c^{AVE}=0.516) and finally three more items to measure the organisational context (p_c^{SCR}=0.850, p_c^{AVE}=0.658).

Insert Table 1 about here

Discriminant validity was assessed by calculating the shared variance between pairs of constructs and then verifying that such variance was lower than the average variance extracted for the individual construct (Fornell & Larcker, 1981). The shared variances between pairs of all possible scale combination indicated that the variances extracted were higher than the associated shared variances in all cases. In the interest of thoroughly discriminant validity, an additional test was examined. This supported the assumption since the confidence interval ($\pm$ 2 standard errors) around the correlation estimated between any two latent indicators never includes 1.0 (Anderson & Gerbing, 1988). The constructs correlation matrix, shared variances, means and standard deviations are showed in Table 2.

Insert Table 2 about here
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4. Results

Once the psychometric properties of the measures had been assessed, the next step was the evaluation of the hypothesised relationships developed from consideration of the relevant

literature (see Figure 1), presented in this paper as H1, H2, H3 and H4. The fit of the model is satisfactory (Satorra-Bentler $\chi^2_{(58)}$=60.29; χ^2/df =1.04; GFI=0.93; CFI=0.99; IFI=0.99; RMSEA= 0.022), therefore suggesting that the nomological network of relationships fits the data collected. This is yet another indicator supporting the validity of these scales (Churchill, 1979). Table 3 shows that external communities had a positive influence on the online government services implementation at a level of $p<0.05$.

Table 3 also shows that workplace communities at a level of $p<0.01$ had a significant effect on the online government services implementation. This analysis provides full support for H_1 (external communities → online government services), and also for H_2 (workplace communities → online government services). By testing the third hypothesis, Table 3 shows that the effect of the organisational context on the online government services implementation had a standardised coefficient of (γ_{13}=0.24), thus suggesting a positive influence on the online government services implementation at a level of ($p<0.01$), this analysis provides full support for H_3 (organizational context → online government services). The effect of the online government services on business performance had a standardised coefficient of (β_{21}=0.40), thus suggesting a positive influence on business performance at a level of ($p<0.05$), this analysis provides full support for H_4: (online government services → business performance).

Insert Table 3 about here
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5. Discussion

The first contribution of this research has been the examination of the relationship between three different kinds of knowledge structures that could affect businesses (i.e. external communities, workplace communities and organisational context) and online services provision, as well as representing these relationships in a comprehensive model shown in Figure 1. The study has also investigated how 'online government services' contributes to increasing business performance through an empirical study of 130 hotels in the Spanish hospitality sector. The results of the research support the argument that online government services may be considered as an intermediate variable and mediating factor between knowledge structures and business performance. A plausible explanation for this is that in order to implement online government services, organisations require a level of transparency, efficiency and effectiveness which needs to come from their own knowledge structures and practices. By adopting practices aligned with these values, businesses could become more competent and motivated, and this could foster their willingness to use online government services (Gonzalez & Carcaba, 2004).

The above considerations also imply that the process of creating a successful online government service solution requires the creation of knowledge as a prior step, which is necessarily affected by the characteristics of the context in which the users (members of the organisation) acquire information and perform their work. In this regard the results of this study are suggesting to tune knowledge related practices in both business and government sectors. It should be noted, however, that the information offered by governments through different mechanisms such as websites might be different from the knowledge learnt and used by the hotel for their business operations as well as for their 'physical' dealings with government, for example in the submission of data to the statistical office, customs declaration, public procurements etc. Therefore, if these two sources of knowledge are significantly different, online government services might neither become attractive nor be considered as good learning resources. Innovation would then be limited to what can be achieved at a transactional level rather than a more collaborative and synergetic one. It is necessary to open up existing innovation models to collaboration between government, businesses and other actors (Carayannis & Rakhmatullin, 2014) not only to improve the uptake of online services but to develop new ways to innovate which could use such services.

The second contribution of this research derives from the results of the empirical test of the hypotheses. Theoretical and managerial of implications are discussed in further detail in the following paragraphs.

With regard to H1, the results support the argument that there is a positive relationship between external communities and online government services. These findings suggest that, in order to benefit from online government services, organisations should provide and support the development of external connections between members of the organisation and their customers. The same can be applied to the value of connections between hotels and government, and should help hotels as well as government institutions to implement appropriate online government services design and use. This finding is consistent with Gilbert and Cordey-Hays' (1996) conceptualisation of collective knowledge acquisition as the facilitator of successful technological innovation. Through external communities, customers or governments can help employees to find out related problems more effectively. In this regard, Rust and Lemon (2001) argue that when individuals consider alternatives and show curiosity about understanding related issues, their ability to discover new and novel practices

increases. This in turn may affect the creation of new knowledge and the implementation of online government services to support innovation.

Regarding H2, the data indicates that a working community is a key component to strengthen online government services provision. These results are consistent with Curry and Stancich´s (2000) findings, and suggest that although communication and collaboration for knowledge creation in companies requires an appropriate technology infrastructure, it also requires a high level of commitment to technologies among stakeholders. Because of the inherent complexity of online government services, working communities should potentially enable employees to scale initial hurdles to acceptance and usage, leading to greater firm adoption of online government services (Lin & Lee, 2005). This implies that, for example, rather than engaging in an extensive search through the Internet, employees turn first to friends and peers to learn where to find relevant knowledge. Therefore, by using workplace communities, the human creativity needed for the implementation of online services can be increased and thus users increase their ability to use spontaneous interactions to interpret, integrate, and take coherent actions.

With regard to H3, the findings also highlight that having appropriate organisational contexts for learning (i.e. organisational context) in place can support organisations and government in an adequate transit from structural understandings of online services towards enabling customers to take control over their government affairs (Grimsley & Meehan, 2007). Thus, attitudes, behaviours, emotional reactions and motivations that individuals maintain within their organisational contexts should be considered in order to adapt new tools such as online government services to the requirements of the organisation and its customers. By having an appropriate organisational context, individuals could consider the advantages and disadvantages of many alternative solutions including an increase in flexibility, better control over process, time saved, etc. These could in turn facilitate the retrieval of relevant knowledge and its application in the implementation of online government services within the company.

Concerning H4, the findings corroborate the fact that the presence of online government services contributes positively to help hotels to achieve higher levels of performance. This accomplishes what authors such as Barua *et al*. (2004) meant when they highlighted that the provision of active help towards achieving their goals (e.g. online government services implementation) drives technology users to achieve higher levels of business performance. An effective online government application is expected to improve performance through a reduction in costs, improvements in operational efficiency and enabling organisations to become more knowledgeable about their own relationships with governments. However, if poorly planned and developed or if implemented without due recognition of the need to increase human resource effectiveness, an online government service application could hinder individual and/or group performance.

Managerial implications

The above discussion suggests that governments may be over-investing in the development of technically sophisticated services websites, while underestimating the importance of encouraging other mechanisms. External communities, workplace communities and the nurturing of the right organisational contexts could facilitate the external, relational and internal implementation of online government services among hotel managers. Ultimately, managers are responsible for the planning, marketing, coordinating and administering hotel

services as well as their employees. Governments therefore should strive to create an environment in which hotel managers could continuously learn about and use online government services. Considerations should be given to how knowledge management can foster the utilisation of online government services to improve business performance, and how the use of online government services can enhance as well as be enhanced by knowledge structures.

Future studies which focus on the interaction between hotel managers and government may help improve the rigour of the results of this research. In this regard, communities of practice highlight the relevance of 'boundary objects' in this context (Wenger *et al*., 2002). Boundary objects help individuals of communities to co-ordinate their activities. They can also define the limits of workplace communities (e.g. who should be involved in completing a particular task). Identifying and making available boundary objects through online services could help hotel managers to review their internal and external connections.

Additionally, an issue that needs further exploration in the potential failure of hotel managers to benefit from online government services is the lack of integration of online government services in hotel business operations which begins with lack of awareness in hotel managers about potential benefits of online government services for their business, clients, individuals and teams. If the integration of online government in hotel operations is to be pursued in the future, there might not be a need to implement every existing government service 'online' (Tan & Pan, 2003). In countries like Spain, this integration could consider a common platform or structure so that governments can delegate or syndicate the design and implementation of online government services to the private sector. If this is the case, considerations about learning capabilities of hotel SMEs should be taken into account.

6. Conclusions

An online government service is considered as a method through which organisations can "transform the way they do business with governments" (Heichlinger, 2004). And transformation comes not from moving services online, but from fundamentally restructuring the public administration's organisation and integrating work processes across agencies to put citizens at the centre and simplify interaction, reduce cost and improve service provision. As firm's resource online government services are valuable only if they help the organisation reduce the costs or increase its revenues. This idea has worked so far for governments and to some extent to businesses. It now becomes necessary to develop ways to enhance business engagement with online government services and promote collaboration, joined up thinking and ultimately knowledge based innovation.

This study has provided an initial model to evaluate online government services use by organisations based on knowledge structures. The main conclusion from this empirical study is that online government services provision could be fostered by nurturing external communities while also setting up internal working communities and practices in specific settings (i.e. hotels). The model and its insights can also inform initiatives which seek to pursue ecosystem-oriented research and practice, as well as future policy and technology transfer initiatives.

Results from the Spanish hospitality sector indicate the need to foster mutual learning and to consider the possibilities that in the future online government services can offer businesses to improve their performance. Businesses and more particularly hotels can be seen as learning

organisations. By using online government services they could improve their efficiency and business outcomes (Gonzalez & Carcaba, 2004). This in turn requires for government institutions to consider how they could foster collaborative learning between themselves and with businesses.

With the model an initial approach to ecological thinking for innovation has been made. The approach identified and tested empirically influences between business practices/results and online government services. After, we approached this set of relationships in a reverse way, e.g. considering the influences between online services and business performance. Managers might also benefit from this study in several ways. From a practical point of view, we would suggest that managers should consider a government online service as a source for improving performance and not just a cost reduction opportunity. As we have noted, the use of government online services as a method of learning increases the capacity to improve the efficiency and flexibility of hospitality companies. Benefits can also accrue for managers from the utilization of our framework and the related knowledge structures, which support that online government services can be better fostered nurturing external communities while also setting up internal working communities and learning oriented organisational contexts.

The proposed framework is an opportunity to inform organizational employees, listen to them and answer their questions and concerns related to government online services. Understating these three knowledge structures helps to avoid many misunderstandings in the process of building a partnership between governments and companies. The full potential of ecological and systemic thinking could also be realised by involving new stakeholders as well as challenging existing ways to develop and assess performance. In the context of the Spanish hotel sector and considering the ideas of ecologies of Nardi and O'Day (1999), a possible strategy to follow is to explore in more detail who could act as a *keystone species*, in other words actors who could educate both government and business stakeholders on the importance of sharing information and thus knowledge. In an ecosystem, keystone species continuously translate ideas and possibilities between others. They also facilitate adoption of new ideas and practices. They could then act as mediators to bring together innovation possibilities. Together with fostering and nurturing communities of learning and practice through enabling knowledge boundary objects to be shared, this could also be a task that keystone species could undertake for the benefit of the knowledge ecosystem as a whole as discussed above. Following the suggestions made by Carayannis and Rakhmatullin (2014) to pursue innovation through more participative models, one particular actor that could enter into the picture of knowledge ecologies in the case considered in this paper is universities. Through promoting entrepreneurship and systemic thinking, universities could assume this role of mediation and contribute to knowledge in this system. The possibility of including universities as keystone species and mediating actors could be explored in further research and also in consideration of sustainability imperatives for the hospitality sector in Spain. Universities could participate in providing spaces for dialogue and interaction as well as valuable knowledge to review and redesign practices as well as metrics of success of the ecosystem as a whole.

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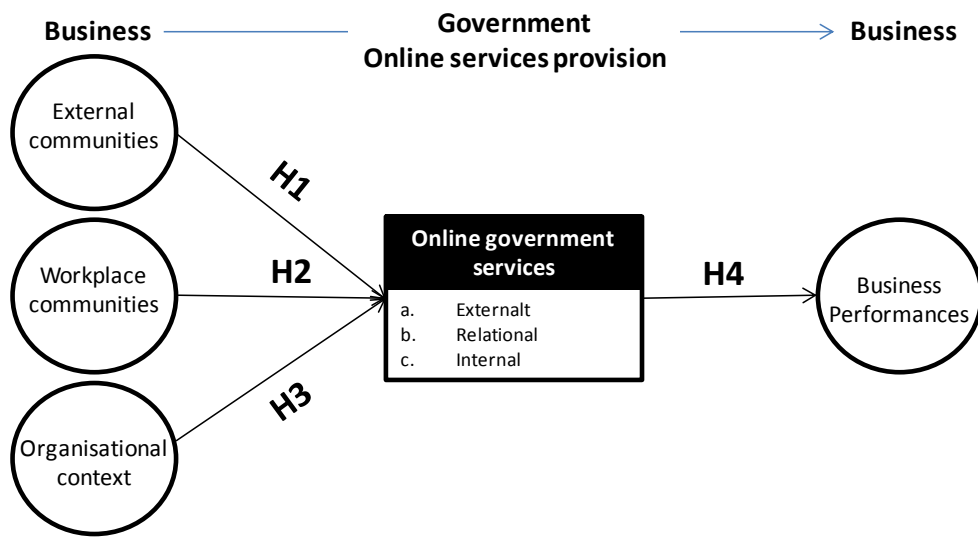
Figure 1: The conceptual framework

Table 1: Construct summary, confirmatory factor analysis and scale reliability

Construct	Standardized loading	t-value	Reliability (SCR[a]., AVE[b])
Y_1: **Online government services:** (1) not services; (2) external governance; (3) relational governance; and (4) internal governance.	0.72	8.35	
Business Performances			
Y_2: Growth rate of sales	0.81	9.94	SCR=0.815
Y_3: Growth rate of profits	0.61	7.14	AVE=0.601
Y_4: Profitability rate on total assets	0.88	11.08	
External communities			
X_1: Your employees maintain frequently work meetings with customers	0.82	8.44	SCR=0.752
X_2: Your employees maintain frequently collaboration with customers to accomplish and/or to improve the products and services	0.60	6.37	AVE=0.505
X_3: Co-operation agreements with other companies, universities, technical colleges, etc. are fomented	0.66	7.40	
Workplace communities			
X_4: Teamwork is a very common practice in the company	0.62	6.61	SCR=0.755
X_5: Employees do not conceal their mistakes	0.86	8.99	AVE=0.516
X_6: The company develops internal rotation programs so as to facilitate the shift of the employees from one department or function to another	0.56	5.96	
Organisational context			
X_7: All members are informed about the aims of the company	0.86	11.22	SCR=0.850
X_8: Meetings are periodically held to inform all the employees about the latest innovations in the company	0.90	11.82	AVE=0.658
X_9: The company has formal mechanisms to guarantee the sharing of the best practices among the different fields of the activity	0.66	8.00	

Notes:

The fit statistics for the 13 measurement constructs were:

Satorra-Bentler $\chi^2_{(55)}$=57.99; GFI=0.93; CFI=0.98; IFI=0.98; RMSEA= 0.029.

[a] Scale Composite Reliability (SCR) of $p_c= (\Sigma\lambda_i)^2 \text{ var } (\xi) / [(\Sigma\lambda_i)^2 \text{ var } (\xi) +\Sigma \theta_{ii}]$ (Bagozzi and Yi, 1998).

[b] Average variance extracted (AVE) of $p_c= (\sum\lambda i2 \text{ var } (\xi))/[\sum\lambda i2 \text{ var } (\xi) + \sum\theta ii]$ (Fornell and Larcker, 1981).

Table 2: Construct correlation matrix

	Mean	Standard deviation	Correlation matrix				
			1	**2**	**3**	**4**	**5**
1. Online government services	2.469	1.142	*n.a.*	0.49	0.17	0.42	0.31
2. Business Performances	-0.310	0.976	0.359 [a]	*0.601*	0.00	0.05	0.01
3. External communities	5.751	1.108	0.256 [a]	0.052	*0.505*	0.01	0.00
4. Workplace communities	4.644	1.717	0.356 [a]	0.171 [b]	0.027	*0.516*	0.07
5. Organisational context	4.241	1.769	0.350 [a]	0.090	0.053	0.116	*0.658*

Notes:

[a] <0.01; [b] $p<0.05$.

n.a. = not applicable. Intercorrelations are presented in the lower triangle of the matrix. The Average Variance Extracted (AVE) is depicted on the diagonal. Shared variances are given in the upper triangle of the matrix

Linkages in the model	R^2	Sign	Standardized parameter estimates		
			Parameter	Estimate	t-value
Hypotheses					
H₁: External communities → Online government services	0.34	+	γ_{11}	0.21	2.18 [b]
H₂: Workplace communities → Online government services	0.34	+	γ_{12}	0.36	3.54 [a]
H₃: Organizational context→ Online government services	0.34	+	γ_{13}	0.24	2.60 [a]
H₄ Online government services → Business performance	0.16	+	β_{21}	0.40	2.30 [b]
Indirect effects					
external communities → business performance		+	κ_{21}	0.08	1.72 [a]
workplace communities → business performance		+	κ_{22}	0.14	2.19 [b]
organizational context→ business performance		+	κ_{23}	0.10	1.90 [c]

Notes:
[a] <0.01; [b] p<0.05; [c] p<0.1
The fit statistics for the 13 measurement constructs were:
Satorra-Bentler $\chi^2_{(58)}$=60.29; χ^2/df =1.04; GFI=0.93; CFI=0.99; IFI=0.99; RMSEA= 0.022