Innovation in the hospitality industry - Firm or location?

Mikaela Backman, Johan Klaesson & Özge Öner

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Abstract

The hospitality industry is a rapidly growing revenue generator in many countries and is becoming economically important for generating employment and for integrating of immigrants into the labor market. As an industry where firms face fierce competition, it is important for the firms to maintain their competitiveness by distinguishing themselves from others through continuous improvements and innovations. In this paper, we investigate the determinants of innovation in the hospitality industry by analyzing survey data gathered from over 900 firms in Sweden. In the analysis, we differentiate between firm-specific and location-specific features. We conclude that the most important characteristics that explain innovation lie within the firm itself, not the location. These results provide important insights regarding firm- versus location-placed innovation policies.

[a] Centre of Entrepreneurship and Spatial Economics (CEnSE), Jönköping International Business School, Jönköping, Sweden

[b] Research Institute of Industrial Economics (IFN), Stockholm, Sweden

[c] corresponding author, mikaela.backman@ju.se, +46 (0)36-101746.

1. Introduction

Innovation is identified as important for a firm's development and ability to grow (Audretsch, 1995; Hashi and Stojčić, 2013) and has been extensively discussed by both policymakers and academics. Innovations are highlighted in numerous policy documents, ranging from local policies to those at the level of the European Union (Castellaci et al., 2005; Fagerberg and Verspagen, 2009; and Fagerberg et al., 2013).

The hospitality industry is characterized by a high degree of competition (Blum, 1996) where innovation is a key resource to keep or attain a competitive advantage (Cooper and Edgett, 1999). This sector is currently underrepresented in the innovation literature and does not receive much attention from policy makers regarding its innovative capacity. This is unfortunate since the industry is a vital force for increasing employment in general, as well as for helping integrate individuals with a foreign background into society. The industry has also been identified as particularly important for employment in rural locations (Cánoves et al., 2004) in an era where urbanization forces dominate the demographic landscape in many advanced countries. Thus, knowledge about innovation in the hospitality sector is a keystone in understanding the growth and development of the sector.

The purpose of this study is to fill a gap in the literature by analyzing the firm- and location-specific determinants of innovation in the hospitality industry. This dual perspective on the firm itself as well as the inclusion of its surrounding location is a clear contribution to the literature. So far, there are only a few studies focusing on firm-characteristics influencing innovation in firms in the hospitality sector (Camisón and Monfort-Mir, 2012) and to the authors knowledge no study on the potential importance of the characteristics of the location. In view of the many innovation policies that are introduced in which there is a distinction between firm- and location-based policies, this dual aspect is important to analyze. In order to develop successful policies aimed at promoting innovation in the hospitality industry, it is crucial to have knowledge and an understanding about

the innovation processes and how these interact with the surrounding milieu. We can do this using an extensive survey covering approximately 900 firms belonging to the hospitality industry in Sweden. There are two types of firms included in our sample: hotels and restaurants.

The need for empirical evidence regarding innovation activities in the hospitality industry has been acknowledged by several authors (Camisón and Monfort-Mir, 2012; Hall and Williams, 2008; Hjalager, 2010). There are however several methodological problems connected to the analysis of innovation in the hospitality sector. First and foremost, it is not easy or straightforward to define what constitutes innovation in this industry. The approach of using scoreboards to capture firm-level innovation as in the manufacturing or general service industry is not applicable to the hospitality sector (Camisón and Monfort-Mir, 2012).

Using secondary data designed for the manufacturing sector is problematic and few studies in the hospitality literature has been able to use these secondary sources. One of the most important secondary source of innovation surveys in the EU is the Community Innovation Survey (CIS). In CIS the hospitality industry is not classified as a core activity. Hence, the data is only collected on a voluntary basis in member states and therefore the industry is neglected in some countries, one such country is Sweden (Comission, 2012). The hospitality sector was first covered in the 2014 CIS round for Sweden but covers only firms employing at least ten individuals. This means that many firms in the sector are disregarded.

It is not only empirical problems that have hampered the number of innovation studies in the hospitality and tourism industry but there are also theoretical problems. Innovation in service industries are characterized by dynamic features that require the development of new theories and concepts (Djellal and Gallouj, 2001; Gadrey et al., 1995).

To analyze the respective roles of firm-specific versus locational factors for innovative efforts in the hospitality sector, we test the applicability of using a multi-level model that allows us to divide the variation in innovation that can be explained by attributes of the firm or of the location. Our results show that firm characteristics explain the lion's share of a firm's innovation propensity,

while the regional milieu is of less importance. Thus, since the data showed that there was essentially no multi-level variance in the dependent variable we ended up using an ordinary logit analysis in the empirical estimations regarding the importance of the firm- and municipal-specific variables respectively. When analyzing the determinants of innovation, our result show that the most robust and consistent firm-level variable that increase innovation activity is the engagement in collaboration with other actors in the sector. To the extent that collaboration is easier in some regions or that collaboration propensity is influenced by distance between prospective collaborators it may be regarded as a combination of a firm and region variable.

The outline of the rest of this paper is as follows. In Section 2, we present our definition of the hospitality industry and innovations in it. Section 3 develops a conceptual model relating internal and external factors to innovation in firms. In section 4 the data collection procedure is explained. Section 5 introduce variables and shows descriptive statistics. Section 6 present the empirical model built on the conceptual model and gives the main empirical results. Section 7 concludes the paper by relating it to the extant literature and suggests possible future research directions.

2. The hospitality industry: Industry and innovation definitions

Before defining innovation in the hospitality industry, we need to define what constitutes the industry itself. We classify firms that belong to either the hotel (defined as firms with SIC-codes: 55 101-55 900) or the restaurant industry (defined as firms with SIC-codes: 56 100-56 299) as comprising the hospitality industry. (For a study extensively discussing the definition the hospitality industry, see Ottenbacher et al. (2009)). In Sweden the hospitality sector has, like in many other developed countries, experienced a drastic boom in terms of both employment establishment numbers. The number of employees grew by 37 percent from 2003 to 2013 and the number of establishments by 55 percent. The sector is important too for its potential in facilitating employment and integration of individuals with foreign backgrounds into Sweden. In the UK, approximately 35 percent of all immigrants work in the hospitality industry (Dustmann et al., 2003). In Sweden, between 2000 and 2010, an average of 30 percent of all individuals that work in restaurants or hotels have a foreign background. The hospitality sector is also important for

Sweden as it creates employment opportunities for individuals living in more rural areas where many job-opportunities in other sectors have reduced. This development is shared with other European countries (Dustmann et al., 2003; Hegarty and Przezborska, 2005). Thus, even though the results in this paper are derived from Swedish firms, they can very well be generalized to other countries in Europe. One distinction that do exist is the level of rurality that can be found in Sweden which is not typically found in many other countries.

Innovation is a multifaceted concept that is widely discussed in both academia and elsewhere. It is often defined differently in different settings. Many times, however, innovations have been measured and quantified using patents (Marklund, 2000). This approach is convenient from the perspective that it provides a measurement on how innovative a firm, industry, region or country is.

Yet, there are many instances when new products or services are not patented, particularly in the service sector. The OSLO manual, published in 1992, covered more aspects and allowed for a broader definition of innovation than had been envisioned previously. Nonetheless, a precise measurement of innovation in the service sector is still lacking (Camacho and Rodriguez, 2008). The reason why it is hard to find proxies for innovation in the service (hospitality) sector is that the measurement of inputs and outputs of innovation is more difficult since the product is often intangible. A service cannot be stored, which implies that production and consumption take place simultaneously, and that consumption involves personal interaction with the employees of the firm (Weiermair, 2004).

In this paper, we follow the innovation typology by Hjalager (2002; 2010) as it is a well-defined and recognized typology used for service innovation, in particular tourism innovation which is closely related to and overlapping with the hospitality industry. The typology was used as an important input when constructing the survey used when collecting data for the present study. The innovation typology for service innovations includes product and service, process, managerial, marketing, and institutional innovations. In the hospitality industry product or service innovations

are products and services that are new to the customer, i.e., either new in an absolute sense or new to the firm. In terms of hotels, this type of innovation comprises hotels that are niched or design hotels where everything within the hotel follows a theme, but also services such as spa facilities (Jacob et al., 2003; Pikkemaat, 2008). Process innovation focuses on improving the productivity and efficiency of a firm. Process innovations are many times implemented through new investments in information and communication technology. In the hospitality industry, examples of process innovations are self-check-in systems that aid both customers and employees, apps where you can place your order, and booking services. Examples of process innovations in the restaurant sector are faster methods of preparing food, labor and/or energy saving technologies, and waste reduction (Rodgers, 2007). Firms in the hospitality industry may also implement managerial innovations, such as new ways of organizing and compensating the firm's employees. This might include empowering employees to make decisions, training on the job, encouragement schemes through benefits and wage increases, or reorganizing the tasks of the employees (Hochschild, 1983; Ottenbacher and Gnoth, 2005). Marketing innovations in the hospitality industry include new ways of marketing as well as new channels. Most of the marketing innovations have been carried through using the internet where marketing costs can be reduced (Hankinson, 2004). Institutional innovations take place outside the hospitality firm and deal with the regulatory and legal framework. One aspect captured in the typology by Hjalager (2002;2010) but not explicit is the focus on design innovation which is a crucial aspect for hospitality firms. This aspect is part of product innovations. However, since design-driven innovation also signals renewal and innovation in a firm it is added as a separate innovation type in this paper. In this paper, design-driven innovation is defined as a new or a significantly improved design, interior, and/or atmosphere in the firm. Thus, the innovation does not have to be radical in the sense of Verganti (2009) where the design-driven innovation change the meaning of an object. Rather, hospitality firms facing a competitive environment use variations in their design as a basic means for creating a competitive advantage and an ability to differentiate itself from other firms in the same local industry. By introducing design-driven innovations, firms are able to find new

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customers in the face of demographic, and economic change (Johnson and Scholes, 1984; Robertson, 1971).

3. Determinants of innovation activities in the hospitality industry

In order to understand the innovation drivers in the hospitality industry we build a conceptual model. The most important factors for innovation are found to be within the firm, i.e. internal resources (Backman, 2014; Johansson and Lööf, 2008; Weiermair, 2004). A hospitality firm is however also embedded in the regional milieu, through various networks (personal and professional) and innovation systems (Hall and Williams, 2008). It is also dependent on the scale and scope of the resources available in the surrounding environment. Thus, the model builds on firm- and locational- specific characteristics and their mutual interdependence expressed in the following figure.
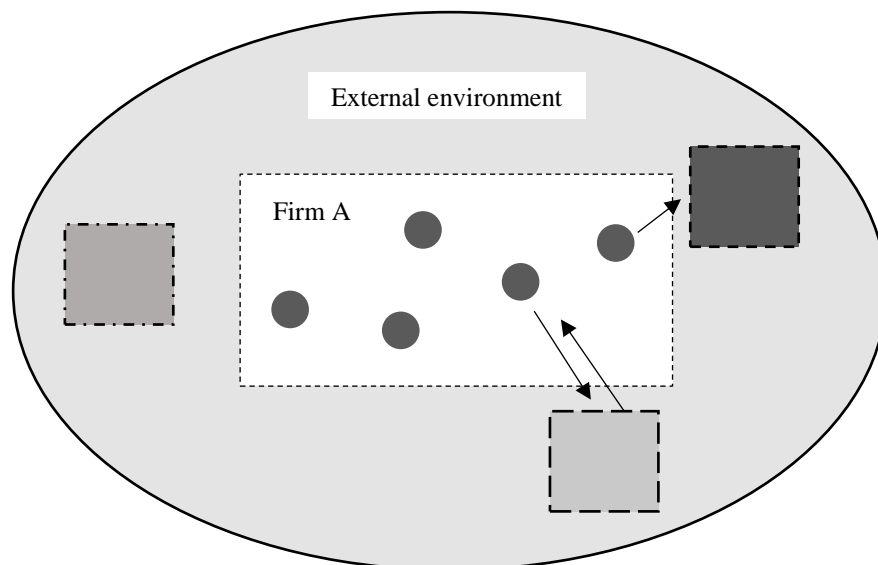
Figure 1. Draft of the conceptual model.

Starting with the firm, according to the resource-based view it is constituted by a bundle of resources, skills and knowledge that are embedded within the firm. The firm's assets generate a competitive advantage and augment firm performance. The core assets that act as fundamental drivers of the firm's performance and renewal are firm-specific, valuable, non-substitutable, and difficult to imitate, such as knowledge, skills and learning-by-doing (Penrose, 1959; Bharadwaj,

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2000). Innovation in the hospitality firm is not primarily a function of R&D intensity, market research, production or commercialization but rather based on the knowledge stock in the firm acquired through learning by doing, using and interacting. Thus, firm specific knowledge is created by the human capital of the employees (education, experience, ability to solve problems etc.). To be innovative, it is not only the stock of resources that are of importance for how the firm allocates and combine the resources in order to innovate. Thus, innovation is both an outcome of the stock of resources in a firm and of how the resources are used and redefined in a dynamic setting of renewal and learning (Eisenhardt and Martin, 2000). In markets characterized by rapid change and volatility, such as the hospitality industry, the ability to combine, adapt and adopt internal and external knowledge is of vital importance (Teece et al., 1997).

In the knowledge creation of a firm it is not only important to create internal knowledge that can be utilized for innovation absorption of external knowledge is equally important. The innovation process works through the combining of ideas, information, knowledge, and resources. Usually, firms are not able to rely solely on their own information, knowledge, resources and talent to address the problems and difficulties involved in innovation. External contacts facilitate innovation activities where inter-firm collaboration is an important part of the innovation activities (Rothwell, 1992; Vega-Jurado and Gutiérrez-Garcia, 2008; Bjerke and Johansson, 2015). An important aspect of service innovations in the hospitality and tourism industry is the level of interaction between customers and suppliers and with other actors within the value chain (Coombs and Miles, 2000; Lovelock and Young, 1979). Cooperation also enhances the possibility for learning by interaction (Cooke et al., 1997). Thus, collaboration becomes a key resource for hospitality firms in their innovation process since it facilities new combinations of ideas, knowledge creation and knowledge diffusion. Thus, in this way we envisage the innovation process as a process working in a mode that can be labeled as open. We build our conceptual model that leads to the empirical model along the lines of Chesbroughs (2006) paradigm of open innovation. Further, underpinnings come from Storper (1995) and Lundvall (1992) who both emphasize the influence that the external environment has on a firm's ability to innovate and finds that the region itself is a key component

for building up the structure needed for both learning and innovation. Thus, since innovation is an interactive process, where information and knowledge are found and compiled from different sources, be they internal or external to the firm, the external environment is crucial as it sets the rules and the structure for the potential interactions that can take place. The fact that firms are embedded in a location combined with the interactions that takes place there means that it is part of a regional innovation system (RIS). RIS's builds on the interaction, both economic and social, between economic actors within the private and public sectors and works to produce and diffuse innovations in regions (Asheim et al., 2011). The geographical scale at which clustering of actors and collaboration between them takes place also matters for knowledge transfer and spillovers. Weidenfeld et al. (2010) finds that spatial proximity, product similarity and market similarity generally facilitate knowledge transfers and innovation spillovers, within the regional innovation systems. Firms operating in environments that support and facilities the RIS thus gain a competitive advantage.

The regional capital, i.e. firms, individuals, formal and informal institutions, cannot easily be reproduced and so contributes to a location's durable soft dimensions that influence the attraction of innovative individuals and enhance the creativity in a region (Florida, 2002; Marinova and Phillimore, 2003). These features are location-specific public goods, which generate positive spillovers, and help determine its attraction as a tourist destination (Dwyer and Kim, 2003).

4. Our definition: Innovation in Hotels and Restaurants

The data used in this paper originates from a survey constructed by the authors and handled by CSM Research in November-December, 2015. The survey is based on telephone interviews. The survey is constructed as a one-time survey where the interviewer called the hospitality firm and asked to talk to the manager/owner/CEO. Thus, the firm was not contacted a second time to verify the results or to ask further questions. The resulting data consists of 903 establishments (153 hotels and 750 restaurants) constituting a representative sample of the hospitality sector in three Swedish counties: Jämtland, Jönköping, and Stockholm. It would have been preferable of course to include

all counties in Sweden but this was prohibitively expensive given our research budget. To be able to generalize results, we selected three counties with different characteristics when it comes to the hospitality industry. Thus, the three counties represent one metropolitan region (Stockholm), one county with a middle-sized town and surrounding rural areas (Jönköping), and one rural county with a strong focus on tourism (Jämtland).

Table 1 summarizes the definition of innovation for each sector. We classify innovations as does Hjalager (2002; 2010) into product and service, process, managerial and marketing innovations. For the restaurant sector, we also add one innovation category: design innovation. The questions solely focusing on design innovation is only measured for restaurants. This can at first glance seem surprising as there are many hotels that also focus on renewal in terms of design and interior. In the review process of the creation of the survey where we met restaurants and hotels to discuss the proposed questions this feature was stressed by the restaurants but not by the hotels. In addition, this aspect is included for hotels in the question concerning product innovation where we include in the explanation "Significant changes to the aesthetic design of the rooms, lobby or other premises" in the survey. Note that we follow the CIS-survey categorization in that the innovation does not have to be new to the market in order to be classified as an innovation; it is enough if it is new to a firm. Thus, we do not know from the survey if the innovation is radical or more incremental in nature.

Table 1. Definitions of innovations in the Hotel and Restaurant sector (categories, and questions)

Innovation	Question asked in the survey
Hotel sector	
Product and service innovation	
Innovation, product	Did your company, during the years 2012-2014, introduce at least one new or significantly improved product?
	Did your company, during the years 2012-2014, improve your product range?
Innovation, service	Did your company, during the years 2012-2014, introduce at least one new or significantly improved service?
Process innovation	
Innovation, process	Did your company, during the years 2012-2014, use new methods for product placement or sales channels?
	Did your company, during 2012-2014, introduce any guest feedback systems?
	Did your company, during the years 2012-2014, established some benchmarking systems?
	Did your company, during the years 2012-2014, use new media or techniques for product promotion?

	Did your company, during the years 2012-2014, use new methods for pricing goods or services?
Managerial innovation	
Innovation, organization	Did your company, during the years 2012-2014, introduce new or significantly improved methods of how you organize your company?
Marketing innovation	
Innovation, marketing	Did your company, during the years 2012-2014, develop the company's marketing?
Restaurant sector	
Product and service innovation	
Innovation, product	Did your company, during the years 2012-2014, do any improvement in your core/primary product?
	Did your company, during the years 2012-2014, improve your product range?
Innovation, service	Did your company, during the years 2012-2014, improve your range of services?
Process innovation	
Innovation, process	Did your company, during the years 2012-2014, use new methods for product placement or sales channels?
	Did your company, during the years 2012-2014, established some benchmarking systems?
	Did your company, during the years 2012-2014, use new media or techniques for product promotion?
	Did your company, during the years 2012-2014, use new methods for pricing goods or services?
Managerial innovation	
Innovation, organization	Did your company, during the years 2012-2014, introduce new or significantly improved methods of how you organize your company?
Marketing innovation	
Innovation, marketing	Did your company, during the years 2012-2014, develop the company's marketing?
Design innovation	
Innovation, interior	Did your company, during the years 2012-2014, do any improvement of the restaurant's interior?
Innovation, experience	Did your company, during the years 2012-2014, make any improvement in the area "The total experience of the meeting between staff and customers"?
Innovation, atmosphere	Did your company, during the years 2012-2014, make any improvement in the restaurant's atmosphere?

The questions are used for constructing our dependent variables. In the cases where several questions are categorized under one innovation type (such as Product innovation, Process innovation and Design innovation) it is enough to answer yes on one of the questions to be classified as an innovator. Thus, we do not account for the variation within these kinds of innovation and lose information. As only few of the innovation typologies were constructed out of several questions it was not possible to construct a count variable for all dependent variables. Thus, we decided, for the sake of consistency, to define the dependent variables as binary.

When conducting these kinds of surveys where firms are asked to differentiate between different kinds of innovations a concern is that firms are unable to distinguish one innovation from another. To mitigate this response bias, we met with the CSM Research (the firm who ran the survey) several

times to explain the questions carefully and gave the interviewers additional information and examples of all different innovation types so that they were able to clarify this to the responding person if needed. We also made a test-run of interviews and collected feed-back on the survey questions and the on way the questions were asked. To confirm that the respondents actually were able to differentiate between the different kinds of innovations, we present the bivariate correlation matrix for the innovation variables in table 2.

Table 2. Correlation matrix among the different innovation variables; all firms and separated into hotels (marked in bold) and restaurants (marked in italics).

Innovation	Product	Service	Process	Organization	Marketing
Product	1 **1** *1*				
Service	0.523 **0.433** *0.217*	1 **1** *1*			
Process	0.457 **0.300** *0.182*	0.541 **0.302** *0.307*	1 **1** *1*		
Organization	0.409 **0.168** *0.246*	0.471 **0.281** *0.307*	0.439 **0.309** *0.277*	1 **1** *1*	
Marketing	0.413 **0.251** *0.177*	0.482 **0.303** *0.265*	0.708 **0.847** *0.552*	0.400 **0.248** *0.258*	1 **1** *1*

All correlations are significant at 5 percent level

The table shows that the firms do differentiate among the different type of innovations as the bivariate correlations are generally below 0.5 for all firms and even lower once separated into hotels and restaurants. The highest correlation is found between firms that are engaged in process innovation and marketing innovation. This is not surprising since these types of innovations often involve using different ICT systems. It is likely that firms that have a clear strategy in developing their ICT engage not only in process innovations but also marketing innovations as well, given that most marketing in the hospitality sector are using new channels or/and forms of ICT. Though the bivariate correlation is somewhat high we still analyze them separately in the empirical estimation as they can provide different indications.

5. Variables

Firm-specific variables

The dependent variables in the empirical analyses are based on the innovation survey and the questions asked (detailed in Table 1). Variables measuring innovations are constructed as binary variables. The independent variables are grouped as either firm-specific or municipality-specific. The group of municipal variables characterize the location where the firm is located. The logic and motivation of the firm- and municipality-specific investigation are explained in the previous section and will not be deliberated on here. The firm-specific variables are based on separate questions in the survey. The full description of the questionnaire can be found in Table A1 in the Appendix. To account for the size and age of the firms is a standard approach when evaluating performance. This holds for firms in the hospitality sector too (Chang et al., 2011; Jacob and Groizard, 2007; Jacob et al., 2003; López-Fernández et al., 2011; Pikkemaat, 2008; Sundbo et al., 2007). The same applies to the internal knowledge, i.e. human capital in the firm (Harrison and Enz, 2005; Jiménez-Jiménez and Sanz-Valle, 2005; Warech and Tracey, 2004). We define human capital as the share of employees with a college/university degree. Human capital can be proxied in several ways e.g. as the occupations of the employees, grade from higher education or using IQ-tests. We have chosen to use education as it correlates with abilities, skills and the occupations of individuals (Brakman et al., 2005; Glaeser, 2005; Hansen, 2007).

The ownership of the firm is important for the functioning of the firm and its innovation ability (Guadalupe et al., 2012; Love et al., 1996; Ortega-Argilés et al., 2005). Ownership is captured using three variables: i) being part of a company-group in Sweden, i.e. a multi-establishment firm, ii) being part of a company-group with a presence in at least two countries, i.e. a MNE, and iii) family ownership. There are several ways to define family firms (Garcia-Castro and Aguilera, 2014). We are unable to capture the management and ownership of the family firm, and rely on what the firms self-report about the ownership structure of the firm.

The collaboration variable is based on a question to the firm relating to development efforts of the firm and is intended to capture the innovation behavior of the firm. Thus, it is not collaboration in

general but collaboration with the purpose to enable innovation or develop the firm in other ways. We do not ask about the nature of the collaboration, i.e. if it was an occasional event or a more permanent effort.

We do not control directly for innovation inputs i.e. financial investment dedicated for firm renewal such as R&D spending due to lack of information. We do however proxy innovation-inputs by other available variables. For example, innovation-inputs such as R&D spending or number of scientist employed are not relevant for the hospitality sector as it builds on other factors and principles. To capture the knowledge (innovation)-inputs, we do control for number of employees with a college or university degree (see above). We proxy the size of financial investments by the size of firms since they are highly correlated (Janz et al., 2003). In addition, Hjalager (2002) finds that innovation in the tourism industry are not determined by regular R&D indicators, patents or similar measures. Thus, by indirectly controlling for the most common innovation-inputs the estimations ought to be efficient and preventing bias to the extent possible.

Locational-specific variables

A larger size of a location has been found to bring many advantages (different sorts of agglomeration economies) which holds for innovation activities in general (Carlino and Kerr, 2014; Feldman, 1999; Karlsson et al., 2009), and for the hospitality industry in particular (Enz and Harrison, 2008; Prats et al., 2008). At the municipal level, we control for the density and size of the location using population per km^2.

Natural resources are of particular importance for activities in the hospitality industry since they are used as a base and point of departure when firms in the hospitality industry generate innovations (Hall and Williams, 2008). In this study, natural amenities are measured by the share of land dedicated to mown meadows and natural pastures, preserved forests (deciduous forests, pine forests), and green spaces. These are declared national areas of interest by the Swedish Environmental Protection Agency in cooperation with the county administrative boards and the Swedish Environmental Code regulates the use of these areas.

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The regional abundance of social capital—enterprise culture, trust, habits, norms and networks—can also influence the innovation activities in a region (Morgan, 2007). Social capital is the lubrication in personal coordination and cooperation, and enhances the benefits of investments in physical and human capital (Putnam, 1993). Social capital facilitates collaboration between firms, as well as between firms and other actors in the location (Morgan, 2007). These can enhance the learning capability of a region leading to innovation. Social capital is measured using a survey that is sent out to a representative sample of all firms in each municipality.

Another factor that differs across regions and influences the type of innovation and renewal that takes place is the role played by the local policy makers. If they can increase information about economic opportunities, and combine this with financial support, this have the possibility to impact innovation in a local industry. To measure the investments guided by local policy towards the hospitality sector we have collected data from the municipal annual accounts. Industry dynamics in the hospitality sector is captured by the change in employment. Definitions of the firm-specific and locational-specific variables are given in Table A2 in the Appendix. Descriptive statistics of all variables are presented in the same table. Based on theory and the variables used to capture the internal and external environment of the firm, we summarize their expected interdependencies with the different types of innovations in Table 3. The table highlights the hypothesized most relevant variables for each of the innovation typologies.

Table 3. Mapping over the most relevant factors for different innovation typologies. + (-) indicates a positive (negative) relationship.

Variables/innovation typology	Product	Service	Process	Organization	Marketing	Design
Size	+	+				
Age						-
Human capital			+			
Multi-establishment firm				+	+	
MNE				+		
Family firm				+		
Collaboration	+	+	+			
Size, municipality					+	
Natural amenities	+	+				
Social capital			+			
Money spent on tourism	+	+				
Industry dynamics	+	+				
Urban dummy					+	

To further describe the innovation behavior of firms we present more detailed descriptive statistics about this in Table 4.

Table 4. Description of innovation variables

Innovation	All firms					Hotels				
	Mean	St.dev	Median	Min	Max	Mean	St.dev	Median	Min	Max
Product	0.694	0.461	1	0	1	0.627	0.485	1	0	1
Service	0.741	0.438	1	0	1	0.608	0.489	1	0	1
Process	0.687	0.464	1	0	1	0.719	0.450	1	0	1
Organization	0.482	0.499	0	0	1	0.405	0.492	0	0	1
Marketing	0.598	0.491	0	0	1	0.647	0.479	1	0	1
Design[a]	0.732	0.443	1	0	1	NA	NA	NA	NA	NA
	Restaurants									
	Mean		St.dev		Median		Min		Max	
Product	0.708		0.455		1		0		1	
Service	0.768		0.422		1		0		1	
Process	0.680		0.467		1		0		1	
Organization	0.497		0.500		0		0		1	
Marketing	0.588		0.493		1		0		1	
Sesign[a]	0.881		0.324		1		0		1	

[a] only applicable to restaurants.

The table shows that the hospitality sector continuously is renewing itself since a majority of the firms are introducing innovations. Approximately seven out of ten firms in the hospitality sector are introducing new products or services. Thus, based on these numbers there are no general obstacles at the industry level that enforces a low level of innovation in the sector. The low levels of innovation that are found in secondary data, such as the CIS 2014 for Sweden where approximately 35 percent of the hospitality firms were regarded as innovative, are conceivably due to a bias in the innovation measurement since it is based on general services or manufacturing measures. Similar arguments are brought forward by Camisón and Monfort-Mir (2012).

The lowest level of innovation is recorded for the organizational type, albeit a value close to 0.5 is indicating that almost half of the firms have changed the way they structure their organization or how they reward employees. Comparing across hotels and restaurants we observe that restaurants overall tend to be more innovative in regards to new products, services and in the way they organize. Of particular importance is the design innovation where almost nine out of ten restaurants have changed their interior, atmosphere or the total experience of the customer. The high level of renewal in this respect indicate that restaurants are continuously trying to differentiate themselves from their competitors by changing the visual impression.

6. Method and results: Innovations in the hospitality industry

Since the dependent variable is binary and denotes if the firm is innovative or not, we use a logit model as expressed in equation 1.

$$\Pr(Innovation_i = 1) = 1/(1 + exp\{-[\alpha + X'\beta + Y'\delta]\}) \qquad (1)$$

where *Innovation* signifies a dummy variable indicating if an innovative activity has taken place or not in firm *i*. The firm characteristics are denoted by X while Y represents the municipal-level variables. β and δ represents the parameters to be estimated. Dealing with survey data, there is the potential problem of introducing bias due to a mismatch between the sample distribution and the true population in the counties. To lessen this problem, we use sample weights based on the true size distribution of the firms in the population. The method used is a standard procedure designed to attain an unbiased sample with weights adjusting to the differences across firm sizes.[1]

Our objective is to analyze the impact that firm-specific vs. location-specific variables have on the probability that a firm can be regarded as innovative. Since the data are made up of different levels, i.e., it is hierarchal, we test a multilevel approach in the first step. In this way, we can find out how much of the variance in the dependent variable is explained by the different levels. Multilevel models, or mixed effects models, are based on classical regression models, but add on and use the information that can be extracted when data can be structured into levels. The levels are used in the statistical modelling, which implies that the method allows for drawing inference on the importance of the different levels in explaining the outcome.

To find the share of the variance that can be explained by each level, we first estimate an unconditional model, which shows the effect from each level without including any regressors. In this analysis, we use the tool of calculating the intra-class correlation coefficient (ICC) which shows the correlation within the different levels. The ICC also shows the proportion of the total

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[1] We use eight firm sizes: 0 employees, 1-4 employees, 5-9 employees, 10-19 employees, 20-49 employees, 50-99 employees, 100-199 employees and firms with more than 200 employees. The geographical distribution in the sample and in the total population does not differ.

variance in the dependent variable that can be explained by the different levels. The ICC for the municipal level is obtained by:

$$ICC = \frac{\sigma_j^2}{\sigma_j^2 + \sigma_i^2}$$

(2)

where σ^2 is the innovation variance at firm i, and municipality j level, respectively. The ICC ranges from zero to 1. Having an ICC equal to zero indicates that the different levels do not give any additional information, e.g. firms in the same municipality do not share similarities. An ICC equal to 1 indicates that all firms within a municipality are identical. The result from the unconditional model is presented in Table 5.

Table 5. Estimation results unconditional model (without any independent variables), innovation in the hospitality industry (all firms; Hotels; Restaurants (Rest.)).

	Innovation, product			Innovation, service			Innovation, process		
	All firms	Hotels	Rest.	All firms	Hotels	Rest.	All firms	Hotels	Rest.
ICC firm	0.9112	0.9999	0.9607	0.9895	0.9999	0.9999	0.9831	0.9999	0.9961
ICC municipality	0.0888	0.0001	0.0393	0.0105	0.0001	0.0001	0.0169	0.0001	0.0039
N	903	153	750	903	153	750	903	153	750
	Innovation, organization			Innovation, marketing			Innovation, design		
	All firms	Hotel	Rest.	All firms	Hotel	Rest.	Rest.		
ICC firm	0.9904	0.9999	0.9985	0.9999	0.9999	0.9999	0.9999		
ICC municipality	0.0096	0.0001	0.0015	0.0001	0.0001	0.0001	0.0001		
N	903	153	750	903	153	750	750		

The result from running the unconditional model shows that the lion's share of the variance in the dependent variable across all types of innovation is explained at the firm level, while only a very small fraction can be assigned to the municipal level. This corresponds to the studies by Backman (2014), Johansson and Lööf (2008) and Weiermair (2004) who find that the resources internal to the firm are the most important factors in determining the success and innovation of firms. Thus, it is not particularly important where the hospitality firm is located but rather what is available in the firm in terms of firm-specific resources. A successful innovative firm can be found both in

urban and in rural places if they possess advantageous firm properties. Thus, in the case of innovation in hospitality firms the benefits associated with urbanity and urban proximity is of less importance regarding innovation opportunities. This results might indicate that innovative firms in the hospitality sector are similar irrespective of location. However, it is not likely that a firm in the hospitality sector would choose to locate in a municipality lacking valuable surroundings such as perhaps policy support, access to natural amenities etc. desired by firms in the hospitality sector. The economic environment can, however, still be important and location-specific variables will be analyzed as separate independent variables in the next step.

Given the low share of the variance that is explained by the municipal level, there is no empirical reason to use a multilevel model. Thus, we use an ordinary (single-level) logit model to run the estimations that include all the independent variables. The results are given in Table 6, showing the odds ratios. An odds ratio above (below) 1 implies that there is a positive (negative) relationship between the dependent and independent variable. A value of 1 implies no relationship. We run the estimations for the whole sample and also separated into restaurants and hotels. We acknowledge that there are some differences in the way the innovation variables are constructed between hotels and restaurants but we want to establish the overall patterns for the hospitality sector too.

Table 6. Estimation results, innovation in the hospitality industry (all firms; Hotels, Restaurants (Rest.)). Logit model. Odds ratios. Significant coefficients are indicated in bold.

	Innovation, *product*			Innovation, *service*			Innovation, *process*		
	All firms	Hotels	Rest.	All firms	Hotels	Rest.	All firms	Hotels	Rest.
Size	**1.027****	**1.041****	**1.028****	**1.013***	0.993	**1.041***	1.001	1.029	1.001
	[0.007]	[0.016]	[0.010]	[0.006]	[0.010]	[0.020]	[0.001]	[0.021]	[0.001]
Age	0.992	0.988	0.993	1.000	1.001	1.000	**0.996***	0.991	0.996
	[0.004]	[0.009]	[0.005]	[0.002]	[0.0060]	[0.001]	[0.002]	[0.006]	[0.002]
Human Capital	0.790	2.024	0.597	**2.085***	0.839	**2.908****	0.977	0.729	0.993
	[0.191]	[1.876]	[0.185]	[0.616]	[0.413]	[1.114]	[0.222]	[0.556]	[0.221]
Multi-establishment firm	1.104	0.606	1.195	**2.043***	3.148	1.846	**1.797****	1.440	**1.747***
	[0.267]	[0.459]	[0.532]	[0.723]	[1.873]	[0.832]	[0.391]	[0.548]	[0.439]
MNE	1.003	0.747	1.264	0.915	1.067	0.857	1.518	0.413	**2.296***
	[0.408]	[0.459]	[0.861]	[0.245]	[0.637]	[0.372]	[0.513]	[0.325]	[0.901]
Family firm	1.206	1.504	1.085	0.903	1.173	0.868	**1.340***	1.197	**1.330***
	[0.164]	[0.716]	[0.155]	[0.109]	[0.532]	[0.105]	[0.187]	[0.642]	[0.193]
Collaboration	**1.815****	1.214	**1.868****	**1.897****	2.198	**1.893***	**1.932****	3.121	**1.772****
	[0.248]	[0.496]	[0.294]	[0.407]	[1.112]	[0.551]	[0.285]	[1.819]	[0.326]
Municipal market size	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	[6.38e-05]	[0.0001]	[7.93e-05]	[4.38e-05]	[0.0002]	[5.17e-05]	[5.29e-05]	[0.0001]	[5.59e-05]
Natural amenities	4.113	0.852	7.511	2.043	3.231	2.139	1.092	1.789	0.952
	[3.570]	[1.083]	[7.914]	[1.141]	[3.973]	[1.375]	[0.532]	[1.893]	[0.551]
Social capital	0.930	0.581	1.128	1.230	1.818	1.083	0.819	0.719	0.827
	[0.406]	[0.512]	[0.582]	[0.375]	[1.361]	[0.379]	[0.360]	[0.482]	[0.370]
Money spent on tourism	0.999	0.999	0.999	0.999	1.000	0.999	1.000	1.001	0.999
	[0.001]	[0.002]	[0.001]	[0.001]	[0.002]	[0.001]	[0.001]	[0.002]	[0.001]
Industry dynamics	0.229	0.108	0.267	0.571	0.406	0.523	1.700	8.459	1.237
	[0.246]	[0.210]	[0.374]	[0.480]	[0.825]	[0.553]	[1.323]	[14.86]	[1.032]
Urban dummy	1.393	1.118	1.571	1.119	0.960	1.100	1.204	1.312	1.222
	[0.317]	[0.383]	[0.417]	[0.161]	[0.444]	[0.193]	[0.215]	[0.378]	[0.241]
Observations	852	140	712	842	140	702	852	140	712
Wald chi^2	225.3	66.41	1790	231.6	38.89	390.3	233.7	24.73	172
Pseudo R^2	0.057	0.102	0.061	0.077	0.085	0.077	0.054	0.136	0.050

	Innovation, *organisation*			Innovation, *marketing*			Innovation, *design*		
	All firms	Hotels	Rest.	All firms	Hotels	Rest.	Rest.		
Size	1.000	1.005	1.000	**1.025****	1.020	**1.028****	1.028		
	[0.001]	[0.007]	[0.001]	[0.009]	[0.015]	[0.011]	[0.030]		
Age	1.002	1.005	1.002	**0.997***	0.999	**0.996***	1.004		

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	[0.002]	[0.009]	[0.002]	[0.002]	[0.006]	[0.002]	[0.005]
Human Capital	0.875	0.329	1.054	**1.974****	0.722	**2.400****	1.490
	[0.227]	[0.228]	[0.264]	[0.471]	[0.544]	[0.683]	[0.693]
Multi-establishment firm	**2.241****	**4.456****	**1.923****	1.339	1.167	1.388	1.390
	[0.500]	[2.023]	[0.434]	[0.286]	[0.503]	[0.334]	[0.615]
MNE	1.317	0.930	1.684	0.897	0.694	1.032	0.761
	[0.344]	[0.435]	[0.481]	[0.380]	[0.632]	[0.504]	[0.372]
Family firm	1.078	1.492	1.041	1.184	1.178	1.182	1.115
	[0.163]	[0.844]	[0.156]	[0.167]	[0.462]	[0.186]	[0.206]
Collaboration	**1.637****	1.533	**1.627****	**1.749****	**4.459****	**1.581****	**2.649****
	[0.240]	[0.791]	[0.282]	[0.304]	[2.295]	[0.278]	[0.799]
Municipal market size	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	[4.78e-05]	[8.59e-05]	[5.77e-05]	[3.88e-05]	[0.0001]	[5.00e-05]	[7.99e-05]
Natural amenities	0.844	1.012	1.061	0.530	1.055	**0.402***	0.778
	[0.371]	[1.070]	[0.494]	[0.250]	[0.906]	[0.202]	[0.705]
Social capital	1.075	1.205	1.135	0.681	1.223	0.555*	**3.305****
	[0.348]	[0.850]	[0.379]	[0.188]	[0.613]	[0.172]	[1.331]
Money spent on tourism	1.000	1.000	1.000	0.999	1.001	0.999	0.999
	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Industry dynamics	1.836	0.153	2.922	1.235	2.500	1.092	0.736
	[1.587]	[0.221]	[2.842]	[0.980]	[4.015]	[1.119]	[0.870]
Urban dummy	1.051	0.767	1.128	1.157	**2.156****	1.026	1.514
	[0.181]	[0.232]	[0.241]	[0.159]	[0.541]	[0.163]	[0.359]
Observations	852	140	712	852	140	712	690
Wald chi^2	433.7	72.93	569	270	84.22	295.4	135.1
Pseudo R^2	0.052	0.103	0.050	0.062	0.164	0.057	0.077

**, and * significant at 1 and 5 percent level. The estimations control for industry.

From this, we observe that the firm-level variables largely explain the probability of a firm being engaged in innovation activities across the board, consistent with the findings in Table 5. In the following bullet list, we elucidate the results presented in the above table. In doing this we highlight the statistically significant results. Each bullet point represents each type of innovation we study.

- *Product* – firm size is important for both hotels and restaurants; collaboration is positive for restaurants.

- *Service* – firm size and collaboration is important for restaurants only.

- *Process* – for process innovations several factors come out as important, but for restaurants only. These factors are: belonging to a multi establishment firm, belonging to a multinational firm, being a family firm and collaboration. Firm age come out as negative for hotels and restaurants taken together.

- *Organization* – belonging to a multi-establishment firm is positive for both hotels and restaurants, collaboration is important for restaurants.

- *Marketing* – firm size, firm age (negative effect), the amount of human capital is important for restaurants, collaboration is important for both hotels and restaurants, the urban dummy (located in a central municipality) is positive for hotels.

- *Design* – collaboration and the amount of social capital is important for restaurants.

These results lend support for innovation policies that are targeting the firm rather than the location since the location-specific variables tend to be of little importance for estimating if a firm will innovate or not. The results regarding the size of firms confirm earlier findings in the innovation literature for firms in general (López-Fernández et al., 2011; Pikkemaat, 2008; Sundbo et al., 2007). Large firms tend to be more prone to engage in innovative activities since they have more internal resources and financial capital to support them. These results seem to hold relative to all firms in the hospitality industry.

The main contribution of our analysis is that we can distinguish between different types of innovations and are thereby able to evaluate more precisely each firm-specific and location-specific

factor, relative to the different types of innovations. As stated in the Oslo Manual, it is not enough to know if the firm is innovative but also what type of innovation the firm engages in (OECD 2005). That a single factor, such as size, has the same effect across all types of innovations is a strong assumption. Nevertheless, this is assumed in many studies. But as shown in Table 6, as an example, firm size does not influence all types of innovations by the same amount, with its effect limited to product, service and marketing innovations. Thus, this study confirms the notion of heterogeneity within service industries and in particular within the hospitality industry, as stated by among others Drejer (2004) and Gallouj and Weinstein (1997).

A few other interesting results reflecting the specificity of our findings on each type of innovation are as follows. The results indicate that larger firms innovate more in regards to product, service and marketing innovations. The size of a firm enhances its innovative propensity due to greater financial resources, more diverse resources, higher technical potential and knowledge, larger ability to manage risks, and greater ability to raise capital (Jacob and Groizard, 2007; Jacob et al., 2003; López-Fernández et al., 2011; Pikkemaat, 2008; Sundbo et al., 2007). The literature tends to say that older firms are less innovative (Chang et al., 2011; Hansen, 1992; Huergo and Jaumandreu, 2004). This finding is partly confirmed in this study too where the odds ratio for the age variable is less than 1 and significant. The effect is, however, small and is limited to process and marketing innovations. However, in no case do we find an odds ratio larger than 1. Thus, there is no strong evidence that firms later in their life-cycle are less prone to innovate than younger firms. One explanation might be that the competitive environment firms face today forces them to renew themselves to attract customers. There are few firms that can rely on old merits only.

A factor often attributed to be very influential for innovation activities is the knowledge and skills of the employees, i.e., the human capital. Studies analyzing the human capital of firms tend to focus on the management and their role in influencing the innovation propensity of their firms (among others, Baum, 2002; Chang et al., 2011; Ottenbacher and Gnoth, 2005; Ottenbacher, 2007). Traditionally firms in the hospitality sector have employed individuals with lower education-levels

and this still characterize the industry in Sweden today, even though the education level has increased. In this paper, we find evidence that human capital is important for innovation activities in the hospitality industry, but only for certain types. Where human capital seems to contribute, the most are service and marketing innovations. This confirms previous studies by Harrison and Enz (2005), Jiménez-Jiménez and Sanz-Valle (2005), and Warech and Tracey (2004). However, a high level of human capital captured by the employee's formal education does not seem to be the key that leads to all types of innovations, albeit service innovation can be argued to be the most important type of innovation in these sectors. Human capital in the form of education may still important, but perhaps it is informal training, learning-by-doing and on-the-job training that are the most important keys to innovation. To reach this conclusion further investigations are needed and in-depth studies to measure these effects.

The plant structure (single-plant or multi-plant) of a firm has some valuable implications on the different types of innovations investigated. Firms that form a conglomerate of many plants tend to be better at renewing themselves in terms of their process and organization. Establishments that are part of the same firm can share knowledge and information about different systems and provide feedback that can be applied and used throughout the organization. The exchange of knowledge and information then take place across establishments belonging to the same firm, i.e., internal horizontal exchange. As part of a multi-establishment firm, the individual establishments can share fixed costs that arise from innovation activities. This is particularly important for smaller establishments that have less internal resources, and therefore are more dependent on accessing these through a network of establishments. Such an ownership structure allows hospitality firms to benefit from management know-how and access information flows, as well as intangible assets such as brand image and prestige (Jacob and Groizard, 2007; Jacob et al., 2003; Orfila-Sintes et al., 2005; Orfila-Sintes and Mattsson, 2009).

The ownership of the firm does not seem to play a major role. If the firm is part of a multinational enterprise or owned by a family does not influence its innovation probability. The only significant effect here is found for process innovation.

The variable that has the most robust and consistent positive impact on the probability of firms to innovate in the hospitality industry is being engaged in collaboration with another economic actor. The descriptive statistics show that a high share of the firm engage in collaboration, opposite to the findings by Camisón and Monfort-Mir (2012). In order for a firm to innovate it needs to combine different types of knowledge and competences. Thus, innovation is a process where different inputs are pooled. The type of knowledge and information that is shared between the actors is often tacit. This indicate that it cannot easily be transferred in writing but must instead be communicated through personal interactions. Collaboration can be the means of sharing knowledge and networks that are otherwise not accessible to the firm. The findings show that the external access to information and knowledge is of importance in the process of creating innovation and renewal. The findings confirm previous studies (Rothwell, 1992; Vega-Jurado and Gutiérrez-Garcia, 2008; Bjerke and Johansson, 2015). For these firms, collaboration becomes a cost-efficient alternative. In essence, collaboration can be an efficient way to share fixed costs. This is probably especially true for firms with limited internal resources, such as smaller establishments that are more dependent on accessing resources through contacts. By being part of different innovation/knowledge networks smaller firms can mimic larger firms in terms of their access to resources and internal knowledge base.

The collaboration of firms further indicates the level of embeddedness of a firm in a region, or in this context it may be interpreted as in a regional innovation system. Innovation systems can be viewed as institutional settings that act as a facilitator for a firm's collaboration with different economic actors, such as suppliers, customers, competitors and research organizations. Innovation systems are built of economic actors who share and create knowledge and information (Fischer and Fröhlich, 2001). If collaboration is more straightforward in some regions it may be regarded as a combination of a firm and region variable.

The robust finding of the importance of collaboration for innovation within the hospitality industry points to the fact that innovations are made in a dynamic setting where internal and external knowledge creation and absorption is of importance. We interpret this finding as supporting that in

this sense (i.e. collaboration with external actors) innovation is done in an open mode (Chesbrough, 2006).

Related to benefits associated with collaboration among the hospitality sector actors, previous research argues that there is a lack of coordination and cohesion in the tourism industry due to that the sector is highly fragmentized (Jamal and Getz, 1995). Based on the *Collaboration Theory* of Gray (1989), several of the previous studies on collaboration among the tourism actors suggest that joint decision making may mitigate problems associated with community-based tourism planning, where a community is defined as actors that are in the same area (Roberts and Bradley 1991; Wood and Gray 1991). Such interaction between the stakeholders at the community level, probably lessens problems with coordination and asymmetric information.

In our case, the collaboration variable captures all types of links and nodes in a network. Thus, we do not separate between geographically bounded collaborations (Anselin et al., 1997) or if they rely on organizational, institutional, social or cognitive similarities (Boschma 2005; Boschma and Frenken 2010; Ponds et al., 2007). Studies of the relationship between collaboration and innovation in Sweden find that cognitive proximity is of vital importance where collaborations among firms of which there is a common knowledge base spur innovations (Bjerke and Johansson, 2015). To test this for firms in the hospitality sector we separate the collaboration variable into different types of collaborations (cognitive) regarding the geographical aspect. The results are presented in Table 7. We only present the collaboration variables as the control variables are robust and similar to the results presented in table 6.

Table 7. Estimation results focusing on the collaboration variables, innovation in the hospitality industry (all firms; Hotels, Restaurants (Rest.)). Logit model. Marginal effects.

	Innovation, *product*			Innovation, *service*			Innovation, *process*		
Collaboration (who)	All firms	Hotels	Rest.	All firms	Hotels	Rest.	All firms	Hotels	Rest.
Firms in the same company group	0.172**	0.259**	0.157**	0.145**	0.243	0.109**	0.207**	0.157	0.224**
Firms in the same industry	0.124**	0.128	0.119**	0.064**	0.040	0.066	0.148**	0.208**	0.129**
Suppliers	0.166**	0.343**	0.137**	0.114**	0.322**	0.076	0.101**	0.141	0.089**
Customers	0.132**	0.111	0.138**	0.117**	0.227*	0.087**	0.108**	0.188**	0.094**
Competitors	0.077**	0.006	0.084**	0.025	0.003	0.029	0.090**	0.174*	0.062
Collaboration (where)									
In the same municipality	0.137**	0.105	0.134**	0.104**	0.151	0.089*	0.125**	0.199	0.110**
In the same county	0.129**	0.131	0.117**	0.089**	0.222**	0.053*	0.078*	0.082	0.069*
In the rest of Sweden	0.130**	0.267**	0.093**	0.083**	0.249*	0.048	0.099**	0.305**	0.047
Outside Sweden	0.153**	0.185**	0.132**	0.069	0.196	0.023	0.039	0.084	0.002
	Innovation, *organisation*			Innovation, *marketing*			Innovation, *design*		
Collaboration (who)	All firms	Hotels	Rest.	All firms	Hotels	Rest.	Rest.		
Firms in the same company group	0.272**	0.169	0.291**	0.204**	0.251*	0.195**	-		
Firms in the same industry	0.038	0.018	0.042	0.131*	0.321**	0.096*	0.031		
Suppliers	0.143**	0.179	0.130**	0.111**	0.228*	0.093*	0.078*		
Customers	0.185**	0.277**	0.176**	0.083*	0.258**	0.043	0.055**		
Competitors	0.097*	0.160	0.086*	0.085*	0.261**	0.038	0.027		
Collaboration (where)									
In the same municipality	0.121**	0.032	0.133**	0.104*	0.257*	0.083	0.089**		
In the same county	0.130**	-0.025	0.156**	0.075*	0.202*	0.046	0.058*		
In the rest of Sweden	0.135**	0.258*	0.105**	0.065*	0.393**	0.003	0.016		
Outside Sweden	0.154**	0.216	0.156**	0.122*	0.194	0.080	0.010		

**, and * significant at 1 and 5 percent level. The estimations control for industry.

The table show that collaboration within a company group is of importance for all types of innovation. The exchange of knowledge and information take place across establishments belonging to the same firm, i.e. internal horizontal exchange. As part of a multi-establishment firm, the individual establishments can share fixed costs that arise from innovation activities. This is particularly important for smaller establishments that have less of internal resources, and therefore are more dependent on accessing these through a network of establishments. This kind of ownership structure allows hospitality firms to benefit from management know-how and access information flows, as well as intangible assets such as brand image and prestige (Jacob and Groizard, 2007; Jacob et al., 2003; Orfila-Sintes et al., 2005; Orfila-Sintes and Mattsson, 2009). Collaboration within multinational enterprises (MNE) exist between establishments located in several countries. Therefore they have access to a broader set of national markets and the possibility of accessing a more diversified knowledge base, compared to ME firms in one nation. This structural setting gives rise to both horizontal and vertical integration of knowledge and

information flows, which is beneficial for firm's innovative capabilities (Andersson and Lööf, 2011; Castellani and Zanfei, 2006). It is hard to observe any general patterns regarding the geographical context.

As expected, few variables at the municipal level explain the probability of firm's innovativeness. Neither the municipal size, amount of resources spent on the tourism sector, nor the level of competition within the municipality seem to influence any type of innovation activity. Of all the municipal level variables measuring natural amenities, only for social capital and whether the municipality is the center of the larger region do we find significant results in a few instances.

7. Conclusions

This research fills a gap in the innovation literature by adding empirical evidence by using a large dataset and econometric techniques. This enables us to find generalizable results concerning the innovation activities in the hospitality sector. Previous studies tend to focus on the managerial aspect of innovation whereas we aim to find firm- and locational-specific variables that enhances innovation activities within the sector. We define this industry as comprised by firms active in the hotel and restaurant sector. Previously, this industry has been underrepresented in the literature because of the problems of defining innovation, not being a core industry in the Community Innovation Survey (CIS) and having had less focus from policy makers. The consequence is a lack of innovation data for the hospitality industry which has led to fewer studies.

The lack of interest from both parts of academia and policy makers is surprising. One can observe a similar bias in the lack of focus from policy makers for the rest of the service sector as well. This is since innovation and knowledge-intensity are bundled together cognitively. The argument that a clear majority of the consumer services, including hospitality services, have low-knowledge intensity leads to a bias that these sectors do not accommodate innovative efforts. The lack of focus is surprising since this sector is experiencing a growing economic importance and employment growth. Another characteristic of the hospitality industry is that it is very competitive and the ability to innovate can be the difference for a firm between staying in business or being forced out from the market. Given the increased flow of individuals across national borders, it is very likely that

the importance and perhaps the competitiveness of the hospitality sector will increase over time and that the ability to innovate will be a crucial factor for any individual firm's survival.

In this study, we focus on firm-specific versus location-specific variables to explain the innovation propensity of a firm. The data is constructed using a survey based on approximately 900 firms. In the survey, innovations are defined in a broad way and we use six different innovation measures (product, service, process, organization, marketing and design). We find that innovations are mainly explained by the observed and unobserved characteristics of the firm. The regional level, which is defined as the municipal level, explain a small fraction of the innovations. Of the observable firm-features, we find that size in terms of number of employees, human capital in terms of educational levels of employees, firm structure (if it is a multi-establishment firm or belongs to an MNE) and if the firm collaborates all influence whether the firm innovates or not. Few variables at the municipal level show any significant influence on the firm's level of innovation. Regarding policy conclusions, the findings in this paper support innovation policies targeting the firm rather than the location.

There is a lack of systematic empirical studies that focus on and analyze innovation propensity in the hospitality industry via quantitative methods. A natural next step is to analyze if these results hold for other countries. Another possible route to further this research is to analyze if there are differences within the hospitality industry, i.e., might a more disaggregated approach (than just separate hotel and restaurants) can be used to find, for example, if the same set of variables are important regardless of the type of restaurant. Even though municipalities do not seem to explain much of the variance, the location of innovative firms and their influence are of importance and deserve further research. This is especially so in view of the findings regarding different forms of collaborations and collaborators. In addition, by using count dependent variables (where it is not only important if they innovate but how often they innovate) it would be possible to establish more information about innovation in the hospitality sector.

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Appendix

Table A1. Description of firm-specific variables used in the empirical estimations and the respective question in the questionnaire

Firm category		
Variables	Description	Question in questionnaire
Size	Number of employees	How many employees, expressed in full-time jobs, did the firm have in 2012?
Age	Number of years since year of foundation	What year was the firm founded?
Human capital	Share of employees with three or more years at university	Approximately what percentage of your employees have a college or university education?
Multi-establishment firm	Binary variable: 1 if the firm is a multi-establishment firm, 0 otherwise	Is the firm part of a company-group, that is, a group of companies with subsidiaries and a parent company?
MNE	Binary variable: 1 if the firm belongs to a multinational enterprise, 0 otherwise	Is the firm part of a company-group, that is, a group of companies with subsidiaries and a parent company and operates in at least two countries?
Family firm	Binary variable: 1 if the firm is a family firm, 0 otherwise	Is the firm family-owned? Family-owned means that a family (siblings, parents, cousins, etc.) own at least 50 percent of the firm
Collaboration	Binary variable: 1 if the firm collaborated with another firm, customer or supplier, 0 otherwise	Has your firm collaborated with various actors to develop the firm's operations during the period 2012-2014?

Table A2. Description of variables used in the empirical estimations and summary statistics

Firm category		All firms		Hotels		Restaurants	
Variables	Description	Mean	St.dev	Mean	St.dev	Mean	St.dev
Innovation, product	Binary variable: 1 if the firm introduced or significantly improved their product, 0 otherwise	0.694	0.461	0.627	0.485	0.708	0.455
Innovation, service	Binary variable: 1 if the firm introduced or significantly improved their services, 0 otherwise	0.741	0.438	0.608	0.489	0.768	0.422
Innovation, process	Binary variable: 1 if the firm introduced or significantly improved their process, 0 otherwise	0.687	0.464	0.719	0.450	0.680	0.467
Innovation, organization	Binary variable: 1 if the firm significantly improved their organizational structure, 0 otherwise	0.482	0.499	0.405	0.492	0.497	0.500
Innovation, marketing	Binary variable: 1 if the firm introduced or significantly improved their marketing, 0 otherwise	0.598	0.491	0.647	0.479	0.588	0.493
Innovation, design[a]	Binary variable: 1 if the firm introduced or significantly improved their design, 0 otherwise	0.732	0.443	NA	NA	0.881	0.324
Firm-specific variables							
Size	Number of employees	13.716	89.579	14.053	20.605	13.645	97.833
Age	Number of years since year of foundation	16.138	39.184	23.856	25.035	14.564	41.318
Human capital	Share of employees a college or university degree	0.181	0.274	0.241	0.307	0.169	0.266
Multi-establishment firm	Binary variable: 1 if the firm is a multi-establishment firm, 0 otherwise	0.243	0.429	0.353	0.479	0.220	0.415
MNE	Binary variable: 1 if the firm belongs to a multinational enterprise, 0 otherwise	0.099	0.298	0.163	0.370	0.085	0.280
Family firm	Binary variable: 1 if the firm is a family firm, 0 otherwise	0.543	0.505	0.588	0.494	0.533	0.507
Collaboration	Binary variable: 1 if the firm collaborated with another firm, customer or supplier, 0 otherwise	0.629	0.483	0.745	0.437	0.605	0.489

Industry	Dummies based on the industry classification code (SIC, 5-digit level), 10 in total	NA	NA	NA	NA	NA	NA
Municipal-specific variables (from 2012)							
Size, municipality	Inhabitants per km^2	535			1103		
Natural amenities	Share of land used for recreational purposes	0.138			0.165		
Social capital	Weighted index based on the firms' view of the support, attitudes in the municipality. Based on a survey by the Confederation of Swedish Enterprise	3.558			0.383		
Money spent on tourism	Investment per capita spent on the tourism sector by the public sector at the municipality level	90.630			130.28		
Industry dynamics	Relative change in employment in the hospitality industry between 2008 and 2012, $\ln(emp_{2012})-\ln(Emp_{2008})$	-0.08			0.24		
Urban dummy	Dummy if the firm is located in Jönköping, Östersund, Åre or Stockholm, 0 otherwise	0.07			0.25		

[a] only applicable to restaurants.