

Do e-skills enhance use of e-services in the hospitality industry? A conditional mixed-process approach

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ABSTRACT

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Increasingly, e-skills are required to enable effective use of digital technologies. The present paper examines the influence of e-skills on use of e-services in the hospitality industry. We employ a conditional mixed-process approach and the results of a residential survey in Kosovo to investigate whether e-skills boost e-services in hospitality. Our findings suggest that e-skills are important to explain different behaviors related to use of e-services. The facilitating conditions, expected performance, social influences and perceived value of the services have a positive impact while perceived risks to privacy have a negative impact on behavioral intention. We also find that gender and income have a positive effect on both behavioral use and behavioral intention while age has no effect on either dimension.

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1. Introduction

Information and communication technologies (ICTs) have changed our society profoundly. The magnitude of the changes wrought by use of digital technologies has disrupted long established economic models and had unprecedented effects on the hospitality industry and consumers' choices and preferences. Technology has changed consumers' social networking and connectedness behaviors (Woodward, 2017), personality formation, interests, education and opinions (Ryan and Xenos, 2011; Belk, 2013; Allcott and Gentzkow, 2017; van Laar et al., 2020) and preferences (Cochoy et al., 2017; Leban et al., 2020). The rapid integration of ICTs and emergence of a global knowledge society have made acquisition of digital skills imperative for participation in society. Research on and concepts related to digitalization have evolved over time and have revealed acquisition of digital skills as a fundamental factor. Some studies highlight techniques or "button knowledge" related to use of the Internet (Bunz et al. 2007; Hargittai and Hsieh, 2012; Krueger, 2006; Potosky, 2007). However, over time, the broader concept of digital skills has emerged as important; for instance, Abascal et al. (2016) state that even if people have access to the technology, some basic knowledge is required to use it. There is a stream of research examining the different skills needed to use digital technologies (Ben Youssef et al., 2013; van Deursen et al. 2014; van Deursen & van Dijk, 2010). It has been shown that digital technologies are used differently by individuals with different backgrounds and different skills (Hargittai et al., 2019; van Dijk, 2005). Some studies focus on the link between socio-economic variables, experience and intensity of use, and digital knowledge and skills (Litt, 2013; Surian & Sciandra, 2019) and show that young people tend to excel at basic tasks while good performance on complex tasks tends to be confined to graduates (Gui & Argentin, 2011; van Deursen & van

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Diepen, 2013; van Deursen & van Dijk, 2014). Different activities on the internet require different e-skills. There is a strand of work that identifies the skills needed to use digital technologies in the education sector (Ben Youssef et al., 2015), the government sector (Khan et al., 2010), and the tourism industry (Braun and Hollick, 2006). Although the literature describes different e-skills components (Claro et al., 2012; Jara et al., 2015; Siddiq et al., 2017; van Deursen et al., 2016) they do not clearly identify the variables that influence these skills. To our knowledge, no previous work explores e-skills in the context of the hospitality industry in Kosovo. Thus, our paper provides several contributions. First, it contributes to the literature on e-skills by focusing on the hospitality sector. Second, it uses quantitative analysis of data from a survey of 528 individuals which suggests that e-skills are important to explain behavioral use. Facilitating conditions, performance expectancy, social influence and perceived value have a positive impact on behavioral intention while perceived privacy risk has a negative impact on behavioral intention. Our analysis also shows that gender and income have a positive effect on both behavioral use and behavioral intention, but that age has no impact on either variable. Third, it investigates the e-skills needed to use e-services in the context of the hospitality industry in Kosovo.

The paper is organized as follows: section 2 reviews the literature on e-services consumption and e-skills; section 3 describes the empirical strategy and estimation methods; section 4 discusses the data, the variables, and the descriptive statistics; section 5 presents the main results and discusses the findings; and section 6 offers some concluding remarks.

2. Literature Review

2.1. E-services consumption

Information technology plays an important role in daily life by enabling people to communicate, seek online information, and buy online. There are several reasons why people choose to buy online including availability of products or services anywhere and anytime with no need to visit a store and have face to face interactions with sellers, the possibility to compare prices offered on different websites, availability of information online, time saving based on not having to queue to make payments, etc. Online purchasing provides access to more information and alternative goods, which saves time and access at any time (Perea Y Monsuwé et al., 2004). Wang et al. (2005) show that convenience is a major motivation for willingness to buy online. Sorce et al. (2005) endorse this finding and highlight that it is one of the main reasons why younger consumers prefer to buy online. Childers et al. (2001) show also that enjoyment is a strong and consistent determinant of online shopping. Consumers search online for both products and e-services. Avoidance of face-to-face interaction reduces any pressure or discomfort or feeling of being manipulated associated with buying from a physical store (Goldsmith & Flynn, 2005). However, online shoppers must ensure that the site is secure since online shopping requires card payments (Lim & Dubinsky, 2004). Online shopping is optimum for (Perea Y Monsuwé et al., 2004) people with busy lives and not enough time to visit physical stores. Online stores provide a range of products and services, while online shopping allows consumers to compare prices easily (Lim and Dubinsky, 2004). It avoids travel to a store or stores, time spent stuck in traffic and searching for parking spaces (Childers et al., 2001). Thus, online stores reduce psychological costs (Prasad & Aryasri, 2009).

2.2. Use of e-services in the hospitality industry

Digital technologies and Industry 4.0 have changed tourist behaviors and provision of tourist services. The emergence of Industry 4.0 has led to applications expected to make significant changes in many sectors (Almada-Lobo, 2015). The previous industrial revolutions were characterized by mechanization, high use of electricity, and automation and electronics. The fourth industrial revolution is characterized by use of cyber physical systems, smart factories, and service innovations (Lee et al., 2014; Shamim et al., 2016). Hospitality services are affected continuously by new technologies, and consumers are adopting new ways to prepare for and spend their holidays using new technologies, that is, smart hospitality services. Kabadayi et al. (2019, p.330) define smart services as “*personalized and proactive services that are enabled by the integrated technology and intelligent use of data that can anticipate and fulfill customer needs at specific times and/or locations based on changing customer feedback and circumstances*”. The introduction of smartphone-based mobile check-ins, keyless entry to hotel rooms, mobile boarding passes, and robots serving as butlers, bellhops and customer service assistants can be considered the forerunners of a full hospitality industry 4.0, while industry practitioners are being expected to increase their smart services (Kabadayi et al., 2019). According to Buhalis et al. (2019), industry 4.0 technologies such as: 5G mobile networks, artificial intelligence (AI), radio frequency identification (RFID), mobile devices, smartphones and wearables, applications or apps (along with APIs), cryptocurrency and blockchain, will support current service innovations affecting firm-customer interactions. Travel planning activities are being facilitated by the ubiquitous internet access enabled by mobile devices (Wang and Fesenmaier, 2013), which are allowing people to plan their vacations at anytime, anywhere (Meehan et al., 2016). In this context augmented reality (AR) is allowing location-based real-world objects to be experienced (Pierdicca et al., 2019). In addition, tourists can check flight information and purchase travel tickets, navigate travel routes and use the navigation apps on their smartphones (Wang et al., 2014). Tourists visiting a new destination will be more likely to use these technologies to access information (Buhalis and Foerste, 2015). Smart hospitality services and experience using them can create value for consumers in several ways. Kabadayi et al. (2019) suggests the following value types from use of smart hospitality services: convenience value, information value, identity value, social and emotional value. Convenience value has several dimensions (Kabadayi et al., 2019) including time saving, speedier decisions based on greater information on consumer preferences, appropriateness based on consumer data, and easy accessibility. A certain level of expertise is required to use the new technologies. Perea Y Monsuwé et al. (2004) define expertise as the “*individual’s level of knowledge or skill*”. In addition to the

basic knowledge related to using a computer, consumers need to learn how to search for information on the Internet. Buying online can be costly and time consuming for computer illiterate consumers; thus, users must estimate the related costs and benefits of acquiring the necessary skills (Perea Y Monsuwé et al., 2004). Learning-by-doing is important with the result that those individuals with more experience of purchasing online tend to be the most skilled (Ratchford et al., 2001).

2.3. E-skills

According to Mossberger et al. (2003), internet skills include technical competence, experience of searching on the Internet, and ability to distinguish useful information. Internet skills are an important factor explaining differences in individuals' internet usage (van Dijk, 2005). Several studies examine internet skills (Mossberger et al., 2003; Ben Youssef et al., 2013; Ben Youssef et al., 2015; van Deursen et al. 2014, 2016; van Deursen and van Dijk, 2009, 2010). van Deursen and van Dijk (2010, 2009) examine medium- and content-related internet skills and propose several types of skills including technical skills. Medium-related internet skills include operational internet skills and formal internet skills; content-related internet skills refer to information and strategic internet skills (van Deursen et al., 2014). van Deursen et al. (2014) propose five categories of skills: operational, information navigation, social, creative and mobile. We focus on operational internet skills, mobile internet skills, information navigation skills and social skills. Using the construct of e-skills we measure their impact on usage of e-hospitality services. Using 'new' technologies and online services, requires internet skills (van Deursen et al., 2014). Operational skills are the basic skills required to use the internet (van Deursen and van Dijk, 2015). The ability to search, find, select and evaluate information requires information navigation skills. These are described also as Web 1.0 activities or skills (de Boer et al. 2019). These skills are required to use mobile devices, and to download and install applications and monitor the costs of data usage (van Deursen et al., 2016). Web 1.0 skills are the basis for Web 2.0 or social and creative skills. Social skills enable use of online communication and interactions and exchanges including searching, selecting, evaluating, and acting on online contacts (de Boer et al., 2019). Ben Youssef et al. (2013) found that facilitating conditions have a significant impact on internet skills.

3. Empirical strategy and estimation methods

3.1. Empirical strategy

To identify how e-skills affect usage of e-services in the hospitality industry, we estimate the following model:

$$UB_i = \eta_i BI_i + \delta_i COMP_i + \xi_i X_i + v_i, \quad (1)$$

where UB_i represents usage of e-services in the hospitality industry. BI_i is an ordinal variable representing behavioral intention to use e-services in the hospitality industry. The vector $COMP_i$ contains ICT skills and competencies variables which might influence usage of e-services in the hospitality industry. INS is information navigation skills, MIS is mobile internet skills, OIS is operational internet skills and SES is social e-skills. X_i is a vector of the control variables expected to affect usage of e-services. η_i , δ_i and ξ_i are the parameters to be estimated. v_i is a random error term. In Eq. (1), the effects of behavioral intention to use e-services in the hospitality industry on the usage of these e-services are captured by the parameter η_i . If the behavioral intention variable BI_i is exogenous, we can employ an ordered probit model to estimate Eq. (1). However, behavioral intention as one of the explanatory variables is assumed to be exogenous but is potentially endogenous. Thus, while behavioral intention explains variation in actual usage of e-services, it is itself explained by other variables. Thus, not accounting for endogeneity will lead to biased and inconsistent estimates. The endogeneity of behavioral intention and the use behavior variables can lead to under- or over-estimation of the true impact of behavioral intention on actual use of e-services. To account for this possibility, Eq. (1) is estimated using the conditional mixed-process (CMP) approach proposed by Roodman (2011). The main advantage of the CMP approach is that different equations can have different kinds of dependent variables. Also, it controls for endogeneity, selectivity bias and simultaneity; consistent estimates result from a recursive system with all the endogenous variables included on both sides of the equation (Roodman, 2011). The CMP is based on a seemingly unrelated regression (SUR) framework where cross-equations of the error terms are correlated (Makate et al., 2016). Based on these characteristics and on the empirical structure, the research relies on this approach to conduct the analysis.

3.2. Estimation methods: the conditional mixed-process approach

Given that previous studies using the TAM and UTAUT models (Venkatesh et al., 2003; Tarhini et al 2016; Martins et al., 2014; Alwahaishi & Snásel, 2013) generally find that performance expectancy, effort expectancy, social influence and facilitating conditions are the main factors influencing behavioral intention. Eq. 2 explains the possible explanatory power of these variables for behavioral intention. Since the values of the dependent variable (BI_i) are ordinal, we use an ordered probit model:

$$BI_i^* = \alpha_i + \beta_i INT_i + \varphi_i X_i + \varepsilon_i, BI_i = \begin{cases} 1 & \text{if } BI_i^* \leq c_1 \\ 2 & \text{if } c_1 < BI_i^* < c_2 \\ \dots & \\ k & \text{if } c_{k-1} \leq BI_i^* \end{cases} \quad (2)$$

where BI_i^* is a latent variable representing user i 's behavioral intention level, represented by an observed categorical variable BI_i . This is determined by the unknown cutoffs c_1, c_2, \dots, c_{k-1} , which satisfy the condition that $c_1 < c_2 < \dots < c_{k-1}$. As discussed earlier, the vector INT_i includes other potentially important factors explaining the behavioral intention such as facilitating conditions (FC), social influence (SI); effort expectancy (EE), perceived value (PV), perceived money saving (PMS) and perceived privacy risk (PPR). X_i is a vector of the control variables (e.g., gender, age, education, employment, and income). α_i, β_i and ϕ_i are the parameters to be estimated, and ε_i is an error term. In the second stage of the CMP estimation, the outcome equation (i.e., in our case usage of e-services in the hospitality industry) is estimated as a function of the same control variables used in the first stage (Eq. 2) and the estimated behavioral (BI_i^*) intention and e-skills ($COMP_i$) variables, which are included as additional regressors. Specifically, Eq. (1) can be rewritten as follows:

$$UB_i = \psi_i BI_i^* + \phi_i COMP_i + \tau_i X_i + \zeta_i \tag{3}$$

where $UB_i, BI_i^*, COMP_i$ and X_i are the previously defined variables. $\psi_i, \phi_i,$ and τ_i are the parameters to be estimated. ζ_i is an error term.

4. Data, variables and descriptive statistics

4.1. Data

The basic data for this study come from a conducted between February and July 2019 to identify the determinants of Kosovo citizens' use of e-services in the hospitality industry. The survey asked about the user's experience of different websites and applications related to hospitality products or services, user's gender, age, education level, employment status, and monthly income. The survey also asked about the user's e-skills, determinants of the intention to adopt e-services in the hospitality industry, perceived value from using e-hospitality services, and consumer satisfaction with e-hospitality services. We conducted a pilot survey which resulted in some modifications to the final questionnaire. Fig. 1 presents the demographic characteristics of the questionnaire respondents. Fig. 1 shows that the sample includes slightly more women than men; 51.7% of the 528 respondents were female and 48.3% were male. 55.3% of the respondents were aged between 18 and 30; 26.70% were aged 31 to 45; 14.2% were aged 46 to 59; and 3.8% said they were 60 or older. The majority, 87.12% of respondents, had higher level university education, 10.61% had secondary education and 2.27% had only primary school education. Approximately 67% of respondents were employed, the remainder were unemployed (or retired). Nearly a quarter (24.8%) of the sample were in receipt of a monthly income of €500 or less, 29.55% received €500 to €1,000, 20.45% received €1,000 to €1,500, 22.16% received €1,500 to €2,000 and only 2.27% declared receiving more than €2,000 per month.

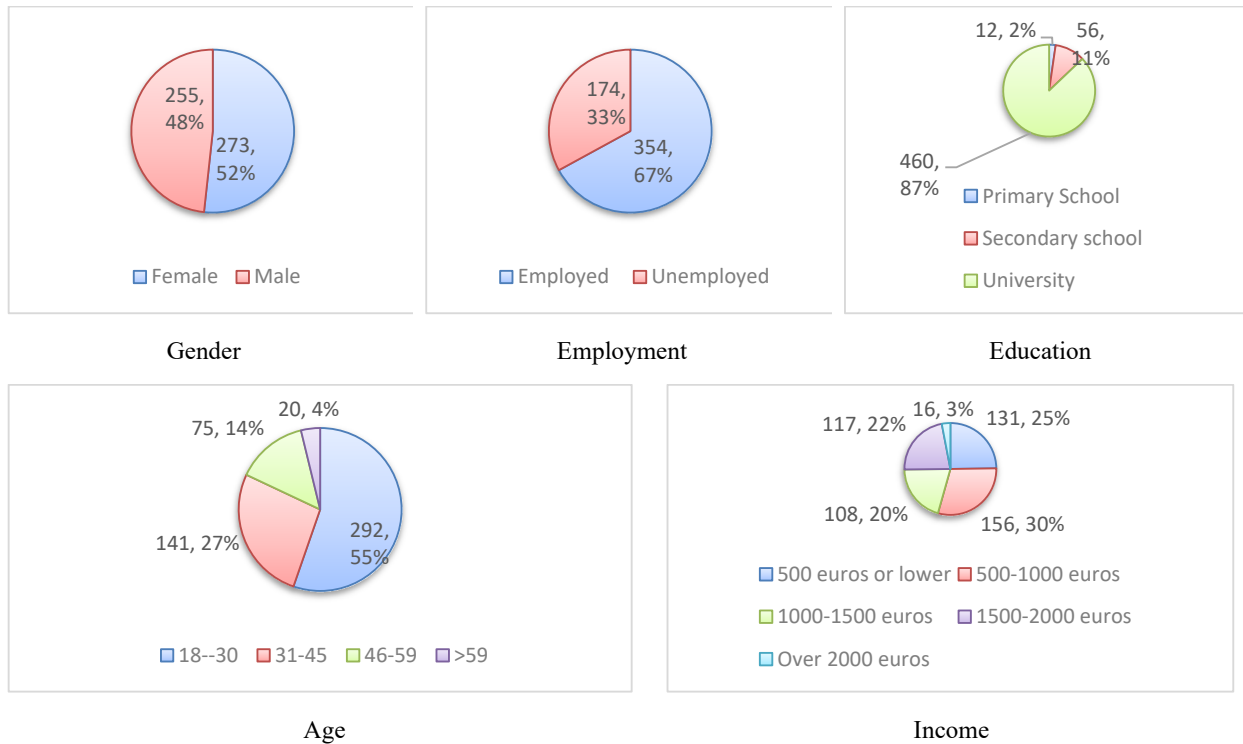


Fig. 1. Descriptive statistics

4.2. Variable Measurements

4.2.1. Behavioral use

The key dependent variable refers to the usage of e-services in hospitality industry measured on a 5-point scale from 1 = strongly disagree to 5 = strongly agree.

Behavioral intention and actual use behavior are highly correlated and behavioral intention is a predictor of actual use behavior (Bhattacharjee & Hikmet, 2008). Also, behavioral intention predicts use of a new technological service (Delone & McLean, 2003). Turner et al. (2010) found that behavioral intention was correlated strongly with actual usage and confirmed the presence of an intention-behavior gap among participants.

4.2.2. Behavioral intention

Based on the theory of planned behavior (Fishbein and Ajzen, 1975), behavioral intention to use information systems is defined as a person's readiness to use the information system to receive purchasing advice.

4.2.3. Information navigation skills

Information skills relate to the ability to decode, sort, understand, prioritize, cross-reference, and store information. These are skills that are not easily acquired, and some studies show that a sizable proportion of the population is unable to carry out effective research on the internet (Du & Evans, 2011). Digital media require information skills related to computers and telephones and management of the information available. This requires information management skills and evaluation information skills. Information management skills refer to the ability to organize information effectively, while information evaluation skills refer to the ability to evaluate the validity and reliability of an information source and its content (van Laar et al., 2020).

4.2.4. Mobile internet skills

The spread of digital technologies and the use of smartphones requires some mobile internet skills. Mobile skills allow use of mobile devices to download and install applications and monitor data costs (se et al., 2016).

4.2.5. Operational internet skills

In addition to the definition of e-skills proposed by Mossberger et al. (2003), and van Dijk (2005), the literature describes some basic e-skills needed to use digital technologies, that is, operational internet skills. Operational internet skills are required to operate computers and use the internet. According to van Deursen and van Dijk (2016) operational internet skills include the ability to open and save files, use online forms, bookmark websites and execute search operations.

4.2.6. Social e-skills

Social skills enable online communication and interactions to understand and exchange meaning, involving searching, selecting, evaluating, and acting on online contacts (Boer et al. 2019). In the service sector, online communication and identification of the relevant audience are crucial. Also, the information transmitted needs to be understood, which requires consideration of the audience and the communication medium (Katz, 2007). Digital communication skills allow people to express themselves, interact socially, and communicate with others across any distance and at any time (Yu et al., 2010; Hwang, 2011).

4.2.7. Facilitating conditions

Facilitating conditions refer to “*the organization and technical infrastructure that exists to support the use of the system*” (Venkatesh et al., 2003, p. 453). Aggelidis and Chatzoglou (2009) suggest that facilitating conditions significantly affect behavioral intention to use information systems. Yi et al. (2006) report that facilitating conditions have a direct impact on behavioral intention and use of technology.

4.2.8. Social influence

Societal preferences and values tend to change users' perceptions and viewpoints profoundly (Rana et al., 2015). Technology adoption relies heavily on both individual beliefs and social influence (Yang et al., 2009; Hsu and Lu, 2004). Social influencing factors such as affiliation and perceived popularity of a new technology, also have an impact (Kim et al., 2014). In addition, online customers are influenced by their peer groups (Chen and Lin, 2018; Al-maghrabi et al., 2011). Several studies (Hew et al., 2015; Leong et al., 2013) provide evidence of a relationship between social influence and behavioral intention.

4.2.9. Effort expectancy

Users tend to consider the effort required to use information systems. Effort expectancy refers to “*the degree of ease associated with the use of the system*” (Venkatesh et al., 2003, p. 428). Users are more attracted to convenient and simple to use technol-

ogies (Ozturk et al., 2016; Shareef et al., 2017). Easy accessibility to the technology tends to motivate the user and the inclination to adopt the technology (Martins et al., 2014). It refers to the effort involved in using the technology and the benefits derived which varies usually with user age (Venkatesh et al., 2003; Jara et al., 2018).

4.2.10. Perceived money savings

Perceived money savings refers to finding a good price and good value for money (Sweeney and Soutar, 2001). Chen and Chan (2011) note that many studies ignore the cost of technology adoption, although it seems to be critical for determining older adults' use of technology. In general, mobile services are perceived to save money and often are priced lower than alternatives. In the health case, mobile services can provide more cost-effective delivery of healthcare through a reduction in in-person visits, attendance at emergency departments, and hospitalizations (Meuter et al., 2000). Steele et al., (2009) show that cost is a major determinant of technology adoption.

4.2.11. Perceived privacy risk

Most individuals' estimate the risks and benefits if asked to provide personal information. Following Gao et al. (2015), we include privacy calculus in our framework, since wearable devices can increase individuals' concerns about privacy and potential misuse of data (Li et al., 2016). The decision to adopt wearable technology involves a privacy calculus where users estimate the trade-offs from between perceived privacy risks and perceived benefits (Xu et al., 2009).

Table 1

Description of variables

Variables	Definitions	Mean (S.D.) ^a
Dependent variables		
Behavioral intention	Self-reported perceived value: from 1 = strongly disagree to 5 = strongly agree)	3.040 (0.897)
Behavioral use	Self-reported perceived value (from 1 = strongly disagree to 5 = strongly agree)	2.945 (0.875)
Key explanatory variables		
Information navigation skills	Self-reported information navigation skills (from 1 = strongly disagree to 5 = strongly agree)	3.208 (1.037)
Mobile internet skills	Self-reported mobile internet skills (from 1 = strongly disagree to 5 = strongly agree)	3.117 (1.048)
Operational internet skills	Self-reported operational internet skills (from 1 = strongly disagree to 5 = strongly agree)	4.083 (1.016)
Social e-skills	Self-reported social e-skills (from 1 = strongly disagree to 5 = strongly agree)	3.975 (1.041)
Facilitating conditions	Self-reported facilitating conditions (from 1 = strongly disagree to 5 = strongly agree)	3.852 (0.935)
Social influence	Self-reported social influence (from 1 = strongly disagree to 5 = strongly agree)	3.716 (0.998)
Effort expectancy	Self-reported effort expectancy (from 1 = strongly disagree to 5 = strongly agree)	4.068 (0.894)
Perceived value	Self-reported perceived value: from 1 = strongly disagree to 5 = strongly agree)	3.879 (0.934)
Perceived money savings	Self-reported perceived money savings: from 1 = strongly disagree to 5 = strongly agree)	3.788 (1.007)
Perceived privacy risk	Self-reported perceived privacy risk: from 1 = strongly disagree to 5 = strongly agree)	2.919 (1.063)
Control variables		
Gender	Gender of respondent: 1 if respondent is male, 0 otherwise	0.517 (0.500)
Age	Age of the respondent: 1 = 18-30, 2 = 31-45, 3 = 46-59 and 4 = 54-74 years	1.664 (0.858)
Education	Educational level of the respondent: 1 = primary school, 2 = secondary school and 3 = higher education	2.848 (0.418)
Employment	Respondent's employment status: 1 if respondent is employed, 0 otherwise	0.670 (0.470)
Income	Monthly income of the respondent: 1 = 500 euros or lower, 2 = 500-1000 euros, 3 = 1000-1500 euros, 4 = 1500-2000 euros and 5 = over 2000 euros	2.491 (1.172)

Note: ^a S.D. refers to standard deviation.

5. Empirical results and discussion

5.1. Results from the estimation of the CMP model

Table 2 presents the estimates for the effects of e-skills and behavioral intention on usage of e-services in the hospitality industry using the CMP approach. Among the test statistics assessing the validity of the CMP model, the significance of the atanhrho_{12} statistic which measures the covariance among the error terms in equations (2) and (3) ($\text{cov}(\epsilon_i, \zeta_i)$) indicates that behavioral intention should be viewed as endogenous to behavior use satisfaction and that the CMP approach performs better than an ordered probit model. Lower Bayesian information criterion (BIC) and Akaike information criterion (AIC) values indicate a better model fit. The results of the CMP estimations shows that 7 of the 10 explanatory variables hypothesized to influence behavior use are statistically significant; 3 predictors including age, education and employment status are not significant. The likelihood of obtaining the highest level (5 = strongly agree) of reported agreements with regular use of e-services in the hospitality industry is more sensitive to behavioral intention, operational internet skills, social e-skills and being male. Behavioral intention has a positive and significant effect at 1% on behavior use with a probability of 0.29 for every additional unit increase in the user's behavioral intention all other factors being constant. Information navigation skills, mobile internet skills, operational internet skills and social e-skills also have a positive and significant impact on behavioral use. Information navigation skills and operational internet skills are significant at the 5% level, mobile internet skills are significant for behavioral use at the 10% level, and social e-skills are significant at the 1% level. Facilitating conditions, social influence, effort expectancy and perceived value have a positive significant effect at the 1% level on behavioral intention with respective probabilities of 0.081, 0.037, 0.046 and 0.145 for everyone additional unit increase in the facilitating conditions, social influence, effort expectancy and perceived value of the respondent, all other factors being constant. Perceived privacy risk has a negative impact at the 5% level on behavioral intention, while perceived money savings has no impact on behavioral

intention to use e-services in hospitality. The estimated marginal effects for gender and income are significant and positive for behavioral use, while age, education and employment have no effect on behavioral use. Gender, employment and income have positive and significant impacts on behavioral intention, and education has a negative and significant impact on behavioral intention. Age has no impact on the behavioral intention to use e-services in the hospitality industry.

Table 2
Determinants of the usage of e-services in the hospitality industry

Variables	Behavioral intention		Behavioral use	
	Coefficients	Marginal effects	Coefficients	Marginal effects
Behavioral intention			1.342*** (0.106)	0.293*** (0.017)
Gender	0.269*** (0.102)	0.072*** (0.027)	0.223** (0.108)	0.049** (0.024)
Age	-0.029 (0.064)	-0.008 (0.017)	-0.045 (0.079)	-0.010 (0.017)
Education	-0.324** (0.150)	-0.086** (0.040)	-0.050 (0.175)	-0.011 (0.038)
Employment	0.214** (0.110)	0.057** (0.029)	-0.143 (0.113)	-0.031 (0.025)
Income	0.144*** (0.047)	0.038*** (0.013)	0.115** (0.051)	0.025** (0.011)
Information navigation skills			0.096** (0.049)	0.021** (0.011)
Mobile internet skills			0.119* (0.064)	0.026* (0.014)
Operational internet skills			0.152** (0.069)	0.033** (0.015)
Social e-skills			0.250*** (0.071)	0.055*** (0.015)
Facilitating conditions	0.304*** (0.076)	0.081*** (0.019)		
Social influence	0.139*** (0.056)	0.037*** (0.015)		
Effort expectancy	0.173*** (0.073)	0.046*** (0.019)		
Perceived value	0.546*** (0.087)	0.145*** (0.020)		
Perceived money savings	0.083 (0.060)	0.022 (0.016)		
Perceived privacy risk	-0.121** (0.052)	-0.032** (0.014)		
Number of observations	528			
Wald χ^2 (21)	535.66.	$p > \chi^2 = 0.000$		
Log-pseudolikelihood	-886.474			
atanrho_12	-0.606***			
AIC	1832.949			
BIC	1961.022			

Notes: The notation ***, **, and * denotes significance at the 1%, 5% and 10%. Robust standard errors are presented in parentheses (with exception for marginal effects when delta-method standard errors are reported). Marginal effects are reported for high levels of agreement (strongly agree).

5.2. Main findings and discussion

Information navigation skills, mobile internet skills, operational internet skills and social e-skills were found to have a positive and significant impact on behavior use. People need some level of skills to use the technology, to find information about hospitality services, to buy online, to use different apps, to decide which information to share and not to share, to communicate, and so on. Use of the hospitality e-services increases with more advanced skills; according to previous studies skills are developed through experience (Agarwal & Prasad, 1998; Dishaw & Strong, 1999; Jackson et al. 1997; Venkatesh, 2000; Venkatesh & Morris, 2000). The e-skills required to use hospitality industry e-services are positively linked to the use of new technologies; previous studies indicate that experience is positively linked to behavioral use of information systems (Jackson et al., 1997). Moreover, behavioral use is affected by behavioral intention which supports the finding in Venkatesh et al. (2003). Facilitating conditions, social influence, effort expectancy and perceived value have a positive and significant impact on behavioral intention to use e-services in the hospitality industry. People tend to use the new technologies if they consider that they have the appropriate resources. Facilitating conditions have a positive significant effect on behavioral intention which is in line with the literature (Alwahaishi & Snásel, 2013; Venkatesh et al., 2003). Use of particular technologies is influenced also by society, that is by the experiences of friends, family, colleagues. Our finding of a relationship between social influence and behavioral intention supports previous work (Hew et al., 2015; Leong et al., 2013; Lu and Yu-Jen Su, 2009; Yang, 2010). Customers prefer easy to use and efficient technology (Godoe & Johansen, 2012). If the consumer finds hospitality e-services easy to use he or she will be likely to use them in the future. So, greater use of technology depends on the effort required and the benefits that can be obtained (Kang, 2014). Perceived value is linked to behavioral intention which confirms previous findings (Liu et al., 2015).

Perceived privacy risk has negative impact on the behavioral intention to use e-services in the hospitality industry. The decision to use a new technology is accompanied by some perception of risk. This perceived risk can be related to lack of previous experience and lack of trust. Buying online requires the sharing of some personal data with the online provider which makes many hesitate to use the technology (Khalilzadeh et al., 2017). Therefore, perceived privacy risk is linked negatively to behavioral intention which is in line with the findings in Kleijnen et al. (2007). However, perceived money savings have no significant impact on the behavioral intention to use e-services in the hospitality industry. We also found that age has no impact on behavioral use and behavioral intention. However, our sample includes most younger individuals. Previous work shows that younger adults are more likely to use new technologies, to search for new products online and search for information online, and compare and evaluate alternatives (Wood, 2002). Older aged consumers may perceive the cost of investing in the skills needed to purchase online to be greater than the perceived benefits (Ratchford et al., 2001). We found that neither gender nor income has an impact on either behavioral intention or behavioral use. Men are more interested in using different types of technology and are more positive about buying online; women buyers prefer a physical catalog (Perea y Monsuwé et al., 2004). However, women who buy online tend to buy more often than their male counterparts (Burke, 2002; Li et al., 1999). Moreover, more affluent consumers are more likely than those with a low income to shop online (Perea y Monsuwé et al., 2004). We found that employment and education have a positive impact on behavioral intention but no impact on behavioral use. More highly educated individuals tend to be more skilled in using technologies. Their education and work experience of using digital technologies results in their being more digitally literate. However, their use of digital technologies varies. More highly educated consumers are more comfortable with shopping online (Burke, 2002), because there is often a positive correlation between education and level of internet literacy of an individual (Li et al., 1999).

6. Conclusions and policy implications

The paper set out to investigate whether e-skills enhanced use of e-services in the hospitality industry. Our findings show that information navigation skills, mobile internet skills, operational internet skills and social e-skills are important for use of e-services in the hospitality industry. The behavioral intention to use these e-services is influenced positively by the facilitating conditions, social influence, effort expectancy and perceived value. However, although people perceive that technology as easy to use and as providing benefits, even if they had the means to use the technology, their perceived risk had a negative effect on behavioral intention. Gender and income have a positive impact on both behavioral use and behavioral intention. Our study has some policy implications. First, the tourism sector should consider how it presents its e-services to consumers. Our results show that people tend to be attracted to easy-to-use services whose benefits are obvious. Therefore, e-services need to be simple, and easily understood, and should be accompanied by clear instructions on their use. The e-services should offer a clear value to persuade people to use them. Second, protection of consumer data should be a priority. Cyber-attacks are common, and their frequency can deter use of online services. Third, e-skills are important for use of e-services in the hospitality industry. Building e-skills should start during primary education. This would allow everyone to use the new technologies and gain the benefits they offer and would help people searching the labor market for potential employment. Our study has some limitations. First, the survey population was confined to outbound Kosovo tourists. It would be interesting to survey people in the neighboring countries in order and compare the findings with the findings from this survey. Second, we examine only four e-skills. Future research should include more e-skills to better identify those required to use e-services in the hospitality industry. Third, we examined a set of determinants of use of e-services in the hospitality sector. There may be other factors that affect use of e-services in hospitality, and these should be the subject of future research.

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