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KORISNIČKO PRIHVAĆANJE DIGITALIZACIJE HOTELSKIH RESTORANA: PRIMJENA MODELA PROŠIRENOG PRIHVAĆANJA TEHNOLOGIJE

CUSTOMER ACCEPTANCE OF DIGITALISATION OF HOTEL RESTAURANTS: APPLYING AN EXTENDED TECHNOLOGY ACCEPTANCE MODEL

SAŽETAK: Model prihvaćanja tehnologije i njegovo proširenje vodeći je teorijski obrazac u istraživanju korisničkog usvajanja pametnih tehnologija općenito pa tako i u ugostiteljstvu i turizmu. U istraživanju je korišten prilagođeni model korisničkog prihvaćanja tehnologije na prihvaćenost novog koncepta digitalne vinske karte i jelovnika u hotelskim restoranima u Hrvatskoj i Srbiji. Rezultati 406 samoispunjujućih upitnika dobiveni su metodom modeliranja strukturnih jednadžbi. Analiza rezultata pokazala je da subjektivni dojam o lakoći korištenja i korisnosti te osobni užitak objašnjava znatna odstupanja u namjeri ponašanja korisnika o povratku u restoran i/ili širenju pozitivne usmene predaje kao i doživljene kvalitete usluge. Dojam rizika povezanog s korištenjem tehnologije imao je zanemariv utjecaj na dva rezultata u fokusu ovog istraživanja koji potvrđuju i proširuju prethodna istraživanja o korisničkom prihvaćanju tehnologije u ugostiteljskom sektoru. Analiziraju se implikacije ovih rezultata za menadžere te se predlažu smjernice za buduća istraživanja.

KLJUČNE RIJEČI: restoranski jelovnik, digitalni jelovnik, vinske karte, hotelski restorani, model prihvaćanja tehnologije, zadovoljstvo korisnika

ABSTRACT: The technology acceptance model and its extensions have been the leading theoretical paradigm in explaining users' acceptance of smart technologies, including in the hospitality and tourism industry. This study applied a modified technology acceptance model to customer acceptance of a novel digital wine menu application in hotel restaurants in Croatia and Serbia. The results of a self-report survey of 406 respondents analysed using partial least squares structural equation modelling indicated that the perceived ease of use, perceived usefulness and perceived enjoyment explained a substantial proportion of the variance in customers' behavioural intention to return to the restaurant and/or spread positive word-of-mouth, as well as perceived service quality. The perceived risks of using the technology had a negligible impact on the two outcomes of interest. The results confirm and extend previous research on customers' technology acceptance in the hospitality sector. The managerial implications of these findings and suggestions for future research are discussed.

KEY WORDS: restaurant menu, digital menu, wine list, technology acceptance model, customer satisfaction

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1. UVOD

Zbog sve veće konkurencije u okruženju, svaki restoran koji želi zadržati postojeće ili privući nove goste mora pronaći način na koji će se razlikovati od svojih suparnika. Pametne digitalne tehnologije ključne su za konkurentsku prednost u ugostiteljstvu i turizmu (Kim, Lee i Law, 2008). Proces digitalizacije dubinski je prisutan u ugostiteljstvu (Chen *et al*., 2021) i tijekom prošla dva desetljeća velikom je brzinom iz temelja promijenio uslužnu djelatnost (Parasuraman i Colby, 2015). Međutim, tehnološki napredak pruža dodatnu vrijednost samo ako ga korisnici smatraju uzrokom poboljšanja usluge, a ne novotarijom koja je samoj sebi svrha (Dixon, Kimes i Verma, 2009). Naglo usvajanje digitalnih sustava unutar šireg društvenog konteksta, uključujući samoposlužne kioske za prijave na letove, internetsko bankarstvo, internetsku kupovinu, e-vladine usluge, e-učenje, rad na daljinu itd., dodatno se ubrzalo zbog posljedica prouzročenih virusom COVID-19. Trenutna kriza imala je značajan utjecaj na poslovanje restorana, a restoranski su radnici zbog pandemije pretrpjeli psihološke posljedice te emocionalnu iscrpljenost zbog dileme između straha od virusa COVID-19 i straha od gubitka posla (Chen i Eyoun, 2021). S obzirom na stalne napore k poboljšanjima kontrole širenja zaraze i sigurnosti zaposlenika i gostiju, pametne tehnologije postale su jedan od temelja sprječavanja širenja zaraze, a najvažniju ulogu preuzele su aplikacije za naručivanje hrane i kućnu dostavu te druge prilagodbe tradicionalnih načina dostave usluga koji su postojali prije pandemije. U nastavku članka koristimo dokazane teorijske modele korisničkog prihvaćanja pametnih tehnologija u uslužnom sektoru na primjeru aplikacije za digitalne vinske karte i jelovnike u hotelskim restoranima.

Duga povijest jelovnika datira još iz Rimskog doba, a njihov se sadržaj otada nije puno promijenio (Lessel *et al*., 2012). Uko-

1. INTRODUCTION

Faced with an increasingly competitive environment, any restaurant wishing to retain its clientele or attract new customers must find ways to differentiate itself from its rivals. A crucial strategic asset offering competitive advantage in the hospitality and tourism industry are smart digital technologies (Kim, Lee and Law, 2008). The digitalisation process has penetrated the hospitality industry profoundly (Chen *et al*., 2021) and has over the past two decades revolutionised service delivery at an accelerating pace (Parasuraman and Colby, 2015). Yet, technological innovation offers added value only if customers perceive it as leading to improved service, rather than being a mere novelty for its own sake (Dixon, Kimes and Verma, 2009). The rapid adoption of digital systems in society more generally, with now-ubiquitous examples of digitalisation including self-service airline check-in kiosks, online banking, online shopping, e-government services, e-learning, telework etc., has rapidly accelerated in the aftermath of the COVID-19 pandemic. The current crisis has profoundly impacted the restaurant industry, and its frontline staff have suffered psychological consequences due to the pandemic, with emotional exhaustion mediating the link between the fear of COVID-19 and perceived job insecurity (Chen and Eyoun, 2021). Given the ongoing attempts to improve infection control measures to ensure customers' and employees' safety, smart technologies have become one of the cornerstones of infection prevention, with a more prominent role than ever played by online food ordering apps, home-delivery services, and other adaptations of the pre-COVID-19 traditional modes of service delivery. In the article, we apply the established theoretical models of customer acceptance of smart technologies in the hospitality industry to the case of a novel digital wine menu app in hotel restaurants.

Menus have a long history dating back to the Roman era, and their content has not

rijenjeni je stav da je jelovnik neizbježan dio interne marketinške strategije svakog restorana (Pavesic, 2005; Yim i Yoo, 2020). Međutim, današnji restorani sve učestalije digitaliziraju svoje jelovnike putem internetskih stranica, mobilnih aplikacija, kioska za samoposluživanje, digitalnih ploča za jelovnike i drugih digitalnih alata. S obzirom na takav tehnološki razvoj, jelovnik se može smatrati i eksternom marketinškom strategijom restorana. Pametne tehnologije nude brojne mogućnosti poboljšanja jelovnika i usluge dostave. Rutinsko prikupljanje *velikih podataka* o ponašanju korisnika omogućava planiranje, dizajn usluge i dostave na način koji će ispuniti zahtjeve i očekivanja korisnika te potencijalno poboljšati personalizaciju korisničkih usluga (Han *et al*., 2021). Digitalni jelovnici sadržavaju više informacija i prilagodljiviji su po pitanju prezentacije stavaka na jelovniku, jelovnike čine živopisnijima, podatke je jednostavnije ažurirati te imaju opciju automatskog prijevoda i dodatnih nutritivnih informacija kao što su količina kalorija, masti, zasićenih masti, soli, šećera i informacije o alergenima. Zbog toga što sučelje digitalnog jelovnika može sadržavati više informativnog sadržaja nego papirnati jelovnik, takav način prijenosa informacija može povećati korisničko zadovoljstvo i smanjiti njihovu nesigurnost tijekom procesa odabira (Beldona, Buchanan i Miller, 2014). Zbog prostornog ograničenja, prijašnji su jelovnici uglavnom sadržavali sažete opise stavaka na jelovniku te su se oslanjali na uslužno osoblje kako bi usmeno prenosili dodatne informacije o jelima (Zulkifly *et al*., 2016), ali to je nepouzdan proces. Izravno naručivanje putem elektroničkog uređaja smanjuje mogućnost ljudske pogreške tijekom prenošenja narudžbe od gosta preko konobara do kuhinje (Zulkifly *et al*., 2016). Interaktivni digitalni jelovnici imaju prednost dodatnog objašnjenja nepoznatih stavaka na jelovniku što je izuzetno važno za strance jer se time premošćuje često problematični komunikacijski jaz između gosta i osoblja (Torres, 2016). Poseban problem u turizmu predstav-

changed much over time (Lessel *et al*., 2012). The menu has been traditionally viewed as an integral aspect of a restaurant's internal marketing strategy (Pavesic, 2005; Yim and Yoo, 2020) but nowadays restaurants are increasingly digitalising their menus via websites, mobile apps, self-service kiosks, digital menu boards and other digital tools. Given these technological developments, the menu can now also be viewed as a restaurant's external marketing strategy. Smart technologies offer a multitude of opportunities for menu and service delivery improvements. Routine collection of customers' behavioural 'big data' facilitates planning, service design and service delivery to meet customer demands and expectations, potentially enhancing personalised customer service (Han *et al*., 2021). Digital menus offer greater informational content and flexibility of item presentation, greater presentation vividness, more up-to-date information, automatic translations, nutritional content, including calorie count, fat, saturated fat, salt, sugar, and allergy information. Since a larger amount of informational content can more easily be included in a digital menu interface than in the traditional paper format, this mode of delivery can increase information satisfaction and reduce customer uncertainty during their decision-making process (Beldona, Buchanan and Miller, 2014). In the past, due to space limitations, restaurants had typically limited the usage of written descriptions of menu items and instead relied on waitstaff to expand upon the menu verbally (Zulkifly *et al*., 2016) but this is an unreliable process. Placing an order directly through an electronic device reduces the possibility of human error in transmitting the order through the human chain from the customer, via the waiter, to the kitchen (Zulkifly *et al*., 2016). Interactive digital menus have the added advantage of explaining unfamiliar menu items, especially relevant for foreign travellers, overcoming the often-troublesome communication gap between the diner and the waitstaff (Torres, 2016). Especially problematic in the tourism sector is the lack of mul-

lja nedostatak višejezičnih opcija u jelovnicima u regijama kao što je Jadranska koja privlači turiste iz čitavoga svijeta.

Brojni dokazi upućuju na to da je uvođenje kioska za samoposluživanje u restoranima brze hrane povezano s mnogim prednostima poput brže usluge, povećanja porcija i prodaje te pouzdanijim opcijama za prilagođavanje narudžbi i povećanje prodaje (Eastwood, 2018). U popularnim lancima brze hrane prosječna zarada povećala se između 20% i 30% zbog toga što korisnici naručuju na digitalnim kioscima za samoposluživanje umjesto kod blagajnika (Eastwood, 2018). Upotreba analitike velikih podataka u stvarnom vremenu i umjetne inteligencije za povećanje prodaje mijenjanjem interaktivnih ploča za jelovnike i kioska za samoposluživanje ovisno o vremenskim uvjetima dovelo je do povećanja prodaje popularnih lanaca brze hrane između 3% i 3,5% (Haynes, 2018). Međutim, povećana interaktivnost jelovnika može biti dvosjekli mač, budući da se ona restoranskim gostima može činiti nepotrebno opterećujućom zbog dojma da im dodatne informacije, pored onih koje već posjeduju u svojim bankama znanja, nisu potrebne (Yim i Yoo, 2020).

Za vinarski posao iznimno su važni digitalni jelovnici koji omogućavaju interaktivne prijedloge za uparivanje ogovarajućih vina i drugih pića s odabranim jelom (Şahin, 2020). Vinska je karta od velikog značaja za restoran jer može povećati prodaju te čak može biti odlučujući faktor za uspjeh ili neuspjeh restorana (Oliveira-Brochado i Vinhas da Silva, 2014). Iako su digitalni jelovnici bolji od slika, opisivanja i tradicionalnih jelovnika kad je u pitanju mentalna stimulacija koja, posljedično, izaziva želju za jelom, mnogi otmjeni restorani neskloni su uvođenju multimedijske tehnologije za prikaz stavaka na jelovniku jer ne žele ostaviti dojam jeftinoće i neukusa (Lee i Kim, 2020). Međutim, u otmjenim restoranima koji su prihvatili pametne tehnologije, digitalne vinske karte sadržavaju detaljne opise

ti-language support in menus in regions such as Croatia's Adriatic coast attracting visitors from across the globe.

There is ample evidence that the introduction of self-service kiosks in fast-food restaurants is linked to faster service times, increased order size and sales, more reliable prompts for order customisation and upselling, among other benefits (Eastwood, 2018). Popular fast-food chains saw an increase in average spend of 20-30% by having customers interact with a digital self-service kiosk instead of a human cashier (Eastwood, 2018). The use of real-time big data analytics and artificial intelligence (AI) to increase sales by changing interactive menu boards and self-ordering kiosks depending on weather conditions led to an increase of 3-3.5% in sales in a popular fast-food chain (Haynes, 2018). Increased interactivity, however, can be a double-edged sword. For restaurant-goers with previous experience of a given menu item, higher levels of menu interactivity can be perceived as unnecessarily burdensome since the customer may believe that they do not require additional information beyond what they have already stored in their knowledge bank (Yim and Yoo, 2020).

Crucially for the wine business, digital menus permit interactive suggestions for pairing compatible wines and other beverages with the customer's selected meal (Şahin, 2020). The importance of a wine list to a restaurant cannot be overstated since it can lead to increased sales and even determine the overall success or failure of a restaurant (Oliveira-Brochado and Vinhas da Silva, 2014). Although digital video menus have been found to be more effective than pictures, narration and conventional menus at eliciting mental imagery, which, in turn, evokes a desire to eat, many upscale restaurants have been reluctant to implement multimedia technology to present menu items due to perceptions of cheapness or inappropriateness (Lee and Kim, 2020). In some upscale restaurants that have embraced these smart

čak do 750 vina te gostima omogućuju filtriranje vina po cijeni, okusu i regije iz koje potječu, uključujući i interaktivne karte vinograda (Kasavana, 2011).

2. TEORIJSKA POZADINA

Za uspješnost svake nove tehnologije nužno je da ju u najvećoj mjeri prihvate ciljani korisnici. Bez obzira na to koliko je koristan ili dobar, novi tehnološki sustav neće biti općeprihvaćen ako kod ciljanih korisnika ostavlja dojam pretjerane složenosti ili zahtjevne upotrebe. Model prihvaćanja tehnologije (TAM) vodeća je teorija o prihvaćanju tehnologije na radnom mjestu (Davis, 1989). Proizašla je iz *Teorije razložne akcije* (Fishbein i Ajzen, 1975) koja je nastala unutar socijalne psihologije. Nedavna proširenja i preinake modela uključuju, ali nisu ograničeni na *Jedinstvenu teoriju prihvaćanja i uporabe tehnologije* (UTAUT) (Venkatesh *et al*., 2003) i *Jedinstvenu teoriju prihvaćanja i uporabe tehnologije 2* (UTAUT2) (Venkatesh, Thong i Xu, 2012). Model prihvaćanja tehnologije obuhvaća nekoliko temeljnih odrednica uspješnog prihvaćanja tehnologije: *percipiranu korisnost* (PU), *percepciju lakoće korištenja* (PEOU) i *bihevioralnu namjeru* (BI) (Davis, 1989). U izvornoj inačici modela TAM, Davis (1989) definira *percipiranu korisnost* kao „razinu do koje osoba vjeruje da će korištenje određenog sustava poboljšati njegov ili njezin radni učinak" dok je *percepcija lakoće korištenja* zamišljena kao „razina do koje osoba misli da korištenje određenog sustava nije naporno" (str. 320). Bitno je naglasiti da su *percipirana korisnost* i *percipirana lakoća korištenja* subjektivne procjene, a ne objektivno obilježje same tehnologije (Davis, 1989). Stoga ključ prihvaćanja tehnologije leži u subjektivnoj korisničkoj procjeni korisnosti tehnologije, a ne u objektivnoj mogućnosti poboljšanja radnog učinka.

Brojni rezultati empirijskih istraživanja (uključujući i longitudinalne studije) prove-

technologies, however, digital wine menus have easily accommodated detailed descriptions of as many as 750 wines, including enabling the guest to filter the menu by price, taste or region of origin, even including interactive maps of the vineyard from which it is sourced (Kasavana, 2011).

2. THEORETICAL BACKGROUND

The success of any new technology is predicated on its widespread acceptance by its target users. No matter how useful or beneficial, a technological system will not gain widespread adoption if it is perceived to be too difficult to use and master by its intended users. The leading theoretical framework of technology acceptance in the workplace has been the Technology Acceptance Model (TAM) (Davis, 1989), an outgrowth of the Theory of Reasoned Action (Fishbein and Ajzen, 1975) whose origins are in social psychology. Its more recent modifications and extensions include, but are not limited to, the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh *et al*., 2003) and the Unified Theory of Acceptance and Use of Technology (UTAUT2) (Venkatesh, Thong and Xu, 2012). Technology Acceptance Model incorporates several fundamental determinants of successful technology adoption by users: 'perceived usefulness', 'perceived ease of use' and attitude (Davis, 1989). In the original the TAM formulation, Davis (1989) defined 'perceived usefulness' as "the degree to which a person believes that using a particular system would enhance his or her job performance" while the 'perceived ease of use' was conceived as "the degree to which a person believes that using a particular system would be free of effort" (p. 320). It is important to stress that 'perceived usefulness' and 'perceived ease of use' are technology users' subjective appraisals rather than an objective quality of the technology itself (Davis, 1989). Therefore, it is users' subjective perception of a technology's usefulness,

denih tijekom godina ukazuju na prednost modela TAM naspram drugih prethodno korištenih modela socijalne psihologije, teorije razložne akcije (Fishbein i Ajzen, 1975) i teorije planiranog ponašanja (Ajzen, 1991), za pojašnjenje značajnih varijacija (uglavnom oko 40%) u korisničkom prihvaćanju nove tehnologije i *bihevioralne namjere* za njezino korištenje (Venkatesh i Davis, 2000). S vremenom je *Model prihvaćanja tehnologije* preinačen i proširen na način da može obuhvatiti dodatne teorijske konstrukte i uključiti novije konceptualne okvire sa sve više prediktora, medijatora i moderatora za tumačenje bihevioralnih namjera i stvarnog korištenja tehnologije kao njihove varijable ishoda. Neke od kasnijih preinaka i proširenja modela TAM uključuju utjecajan model *Jedinstvene teorije prihvaćanja i uporabe tehnologije* (UTAUT) koji ima četiri osnova konstrukta: *percipirani učinak, percipirani napor, društveni utjecaj, olakšavajući uvjeti* (Venkatesh *et al*., 2003). Novija proširenja modela TAM uključuju model UTAUT 2 koji sadrži afektivnu komponentu ponašanja (npr. hedonističku motivaciju), navike i cijene (Venkatesh, Thong i Xu, 2012). Isti autori definiraju pojam hedonističke motivacije, koja se u nekim istraživanjima naziva *percipiranim užitkom* (PE), kao „zabavu ili užitak proizašlu iz korištenja tehnologije" (str. 161) i koja se pokazala ključnom za prihvaćanje i korištenje tehnologije. Uvođenje tih dodatnih koncepata rezultiralo je poboljšanjem prognostičke valjanosti modela jer objašnjava čak do 74% varijance u namjeri korištenja (Venkatesh, Thong i Xu, 2012). Nedavni sustavni pregledi literature rezultirali su sintezom mnogobrojne literature na temu korisničkog prihvaćanja i korištenja tehnologije (Dwivedi *et al*., 2019; Tamilmani *et al*., 2021) i korisničkog otpora implementaciji informacijskih tehnologija (Ali *et al*., 2016).

rather than its objective ability to improve performance, that is the key to its acceptance.

A sizeable empirical evidence base (which also includes longitudinal studies) has accumulated over the years demonstrating that the Technology Acceptance Model compares favourably to previous social psychology models, the Theory of Reasoned Action (Fishbein and Ajzen, 1975) and the Theory of Planned Behaviour (Ajzen, 1991), in terms of explaining a substantial proportion of variance (typically about 40%) in user acceptance of new technologies and the subsequent 'behavioural intention' to use it (Venkatesh and Davis, 2000). Over time, the Technology Acceptance Model has been modified and extended to incorporate additional theoretical constructs, with more recent conceptual frameworks comprising an ever-increasing number of predictors, mediators and moderators explaining 'behavioural intention' and actual technology use, which are the outcome variables in this framework. Later reformulations and extensions of the Technology Acceptance Model include the influential Unified Theory of Acceptance and Use of Technology model comprising four key constructs: performance expectancy, effort expectancy, social influence and facilitating conditions (Venkatesh *et al*., 2003). More recent the Technology Acceptance Model extensions include the Unified Theory of Acceptance and Use of Technology that also comprises the affective component (i.e., hedonic motivation) of behaviour, habit, and price value (Venkatesh Thong and Xu, 2012). The same authors (2012) define hedonic motivation (also referred to as perceived enjoyment (PE) in some studies) as "the fun or pleasure derived from using a technology" (p. 161) which has been previously shown to be a key determinant of technology acceptance and subsequent use. Incorporating these additional concepts led to an improved predictive validity of the model, explaining up to 74% of the variance in 'behavioural intention' (Venkatesh, Thong and Xu, 2012).

3. MODEL PRIHVAĆANJA TEHNOLOGIJE (TAM) U UGOSTITELJSTVU I TURIZMU

Brojna su prethodna istraživanja potvrdila korisnost primjene modela TAM za analizu prihvaćanja pametnih tehnologija od strane korisnika i zaposlenika u ugostiteljstvu i turizmu. U ugostiteljstvu se pametne tehnologije mogu podijeliti u dvije kategorije: za potporu provedbi operativnih procesa i za unaprjeđenje korisničkog iskustva (Han *et al*., 2021). Drugim riječima, neke su pametne tehnologije usmjerene poboljšanju operativne produktivnosti organizacije dok je drugima cilj poboljšanje kvalitete usluge i zadovoljstvo gostiju/turista (Han *et al*., 2021). Uspješno usvajanje potonje kategorije potencijalno povećava šansu pozitivne usmene predaje i povratak gostiju. Model TAM i/ili njegova proširenja, uključujući *Jedinstvenu teoriju prihvaćanja i uporabe tehnologije* i *Jedinstvenu teoriju prihvaćanja i uporabe tehnologije 2*, uspješno su korišteni u ugostiteljskim i turističkim aktivnostima, kao što su: kiosci u restoranima brze usluge (Seo, 2020), samoposlužna hotelska tehnologija (Kim i Qu, 2014; Kaushik, Agrawal i Rahman, 2015), aplikacije na hotelskim tabletima (Kim, 2016), sustavi za hotelsku recepciju i aplikacije za korisnike (Kim, Lee i Law, 2008), restoranski intranet (Park, Park i Heo, 2018), različiti oblici mobilnog plaćanja i mobilni novčanici (Cobanoglu *et al*., 2015; Lew *et al*., 2020), mobilne aplikacije (Tan *et al*., 2017; Okumus *et al*., 2018; Lee, Sung i Jeon, 2019; Palau-Saumell *et al*., 2019), mobilna trgovina (Kalinić *et al*., 2019), korisničko zadovoljstvo online trgovinom (Ba i Johansson, 2008), korištenje društvenih mreža luksuznih hotela (tom Dieck *et al*., 2017), *online booking* usluge turističkih agencija (Dajani, 2016), ekološki održiva putovanja (Chuang, Chen i Chen, 2018), dijeljenje vožnje (Wang *et al*., 2020), online odabir ruralnog turističkog smještaja (San Martín i Herrero, 2012), *Identifikacija radijske frekvencije* (RFID) u uslužnoj industriji (Ozturk and Hancer, Recent systematic reviews have provided a synthesis of the vast literature on users' acceptance and use of technology (Dwivedi *et al*., 2019; Tamilmani *et al*., 2021) and users' resistance to implementation of information technologies (Ali *et al*., 2016).

3. TECHNOLOGY ACCEPTANCE MODEL IN TOURISM AND HOSPITALITY

Numerous previous studies have affirmed the usefulness of the Technology Acceptance Model conceptual framework in explaining hospitality and tourism customers' and employees' acceptance of new smart technologies. In the service sector, such technologies fall into two general categories: operation-related and experience-enhancement related (Han *et al*., 2021). Some smart technologies, therefore, are aimed at enhancing the operational efficiency of an organisation while others are more directly aimed at improving service quality and guest/tourist satisfaction (Han *et al*., 2021). Successful adoption of the latter category by guests potentially increases the likelihood of repeat custom and positive word of mouth. The Technology Acceptance Model and/or its extensions including the Unified Theory of Acceptance and Use of Technology and Unified Theory of Acceptance and Use of Technology 2 have been validated in several hospitality and tourism context, including: kiosks in quick service restaurants (Seo, 2020), self-service hotel technology (Kim and Qu, 2014; Kaushik, Agrawal and Rahman, 2015), hotel tablet apps (Kim, 2016), hotel front office systems (Kim, Lee and Law, 2008), restaurant intranet (Park, Park and Heo, 2018), mobile wallets (Cobanoglu *et al*., 2015; Lew *et al*., 2020), mobile apps (Tan *et al*., 2017; Okumus *et al*., 2018; Lee, Sung and Jeon, 2019; Palau-Saumell *et al*., 2019), mobile commerce (Kalinić *et al*., 2019), customer satisfaction with online commerce (Ba and Johansson, 2008), luxury hotel use (tom Dieck *et al*., 2017), e-com-

2015), korištenje pametnih telefona tijekom turističkog putovanja (No i Kim, 2014), kupnja zrakoplovnih karata (López-Bonilla i López-Bonilla, 2013), interaktivni elektronski turistički vodič (Lai, 2013) i brojni drugi.

4. KORISNIČKO PRIHVAĆANJE DIGITALNIH JELOVNIKA U UGOSTITELJSKOM OKRUŽENJU

Godina 2010. značajna je zbog izuma i posljedičnog porasta popularnosti mobilnih tableta s ekranom osjetljivim na dodir (kao što su iPad i androidni tableti), što je dovelo do eksplozije digitalnih jelovnika za primjenu na tabletima te su u posljednjih deset godina mnogi restorani gostima počeli nuditi samoposlužne elektroničke jelovnike na tabletima. U velikoj anketi provedenoj na razini čitavog SAD-a 2008. godine, restoranski gosti odabrali su digitalne jelovnike koji sadržavaju dodatne nutritivne informacije kao najvrjedniju od 11 ponuđenih digitalnih tehnologija (Dixon, Kimrd i Verma, 2009). Ankete koje su uslijedile o korištenju digitalnih jelovnika, naručivanju hrane i aplikacijama za dostavu utvrdile su da je nekoliko značajki modela *Jedinstvena teorija prihvaćanja i uporabe tehnologije* i *Jedinstvena teorija prihvaćanja i uporabe tehnologije 2* povezanih sa stavom prema *bihevioralnom namjerom* korištenja takvih aplikacija, uključujući navike, *percipiranu učinkovitost* (konstrukt koji je sličan pojmu *percipirane korisnosti* u modelu TAM), kvalitetu informacija, i društveni utjecaj (u *Modelu teorije razborite akcije* nazvan subjektivnom normom). *Percipirana u*činkovitost (PE) ključni je prediktor prihvaćanja i korištenja tehnologije u ugostiteljstvu (Baba, Shahril i Hanafiah, 2020). Rezultati ranijih istraživanja o korištenju jelovnika na iPad-u ukazuju na to da između nekoliko odrednica modela TAM (*percipirane korisnosti, percipirane lakoće uporabe* i *percipirane kontrole* od strane korisnika) i dodatnih emocionalnih faktora (*percipirana*

merce in travel agency bookings (Dajani, 2016), pro-environmental sustainable travel (Chuang, Chen and Chen, 2018), ride-sharing services (Wang *et al*., 2020), online purchase intention of rural tourist accommodation (San Martín and Herrero, 2012), Radio Frequency Identification (RFID) technology in hospitality (Ozturk and Hancer, 2015), smartphone use in travel tourism (No and Kim, 2014), airline ticket purchase (López-Bonilla and López-Bonilla, 2013), app-based mobile tour guides (Lai, 2013), and many others.

4. CUSTOMER ACCEPTANCE OF DIGITAL MENUS IN HOSPITALITY SETTINGS

The landmark year of 2010 which marked the invention and subsequent proliferation of touchscreen mobile tablets (such as the iPad and Android-based tablets) led to an explosion of tablet-based menus as many restaurants began to implement a self-service tablet-based electronic menu over the past decade. In a large nationwide survey in the United States, as early as 2008, restaurant customers identified tableside digital menus containing nutritional information as the most valuable of the 11 presented digital technologies (Dixon, Kimes and Verma, 2009). Subsequent survey research on the use of digital menus, and food ordering and delivery applications, has found that several aspects of the Unified Theory of Acceptance and Use of Technology and Unified Theory of Acceptance and Use of Technology 2 models are associated with 'behavioural intention' to use such apps, including habit, performance expectancy (a concept analogous to the Technology Acceptance Model's 'perceived usefulness'), information quality, and social influence (referred to as subjective norm in Theory of Reasoned Action). Performance expectancy ('perceived usefulness' in the Technology Acceptance Model terminology) is a key predictor of technology acceptance and use in hospitality settings

korisnost i *percipirana novost*) postoji pozitivna veza u odnosu na percepciju vrijednosti i namjeru korištenja odnosno posjećivanja restorana (Wang i Wu, 2013). Rezultati drugih istraživanja o usvajanju digitalnih jelovnika ukazuju na pozitivni utjecaj kvalitete informacija dostupnih na samoposlužnom kiosku na nekoliko konstrukata modela TAM (*percipirana korisnost, percipirana lakoća uporabe* i zabava) (Han *et al*., 2020). Uz konstrukte originalnog modela TAM uočeni su i drugi bitni faktori, poput percepcije rizika koja ima izravni negativni utjecaj na *bihevioralnu namjeru*, kao i zadovoljstvo korisnika koje pozitivno utječe na *bihevioralnu namjeru* (Seo i Lee, 2021). Također, istraživanje koje je proveo Yang (2017) pokazuje povezanost *percipirane korisnosti* s *digitalnom usmenom predajom*.

Uz prethodno opisana istraživanja, provedeno je i nekoliko istraživanja o reakcijama korisnika na digitalne jelovnike. Prema rezultatima istraživanja provedenog u jednom restoranu (Beldona, Buchanan i Miller, 2014), ocjene korisnika koji su koristili digitalne jelovnike bile su puno više nego u slučaju korisnika koji su koristili tradicionalne, papirnate jelovnike. Ocjene korisnika obuhvaćale su tri aspekta korištenja jelovnika: upotrebljivost jelovnika, zadovoljstvo postupkom naručivanja i kvaliteta informacija. Rezultati istraživanja kojima je uspoređena percepcija korisnika tradicionalnih jelovnika u odnosu na korisnike jelovnika dostupnih na tabletima pokazali su da korištenje digitalnih jelovnika utječe na veće zadovoljstvo korisnika, omogućuje im da naručuju u kraćem vremenu te utječe na njihove pozitivne stavove prema korištenju digitalnih jelovnika (Yim i Yoo, 2020). Prema rezultatima eksperimentalnog istraživanja provedenog u restoranima različitog *statusa*, vjerojatnije je da će korištenje jelovnika na tabletima prihvatiti korisnici restorana *brze usluge* te korisnici restorana *srednjeg statusa*, dok je puno manje vjerojatno da će digitalne jelovnike prihvatiti korisnici luksuznih restorana (Suarez,

(Baba, Shahril and Hanafiah, 2020). An early survey examining the use of iPads as a menu card found that several aspects of the Technology Acceptance Model ('perceived usefulness', 'perceived ease of use', and 'perceived control') and additional emotional factors ('perceived enjoyment' and 'perceived novelty') were positively associated with perceived value and 'behavioural intention' to patronise such a restaurant (Wang and Wu, 2013). Other research evaluating the adoption of digital menus has found that information quality in self-service kiosks has a positive effect on aspects of the Technology Acceptance Model ('perceived usefulness', 'perceived ease of use', and fun) (Han *et al*., 2020). Among relevant factors not in the original the Technology Acceptance Model explaining 'behavioural intention' are perceived risk, which has been shown to have a negative direct effect on 'behavioural intention', and customer satisfaction, which was positively associated with 'behavioural intention' (Seo and Lee, 2021). The 'perceived usefulness' has also been shown to be associated with electronic word-of-mouth intention (Yang, 2017).

In addition to the survey research discussed above, several experimental studies have also examined users' reactions to digital menus. In one previous randomised study in an actual restaurant (Beldona, Buchanani and Miller, 2014), customer ratings were significantly higher using tablet-based digital menus compared to paper-based menus on all three measured aspects of diners' satisfaction: menu usability, ordering satisfaction and order information quality. A recent experimental study comparing traditional menus to tablet-based digital menus found that digital menus led to greater enjoyment, increased intention to adopt and customers ordering more in a shorter time (Yim and Yoo, 2020). In another experimental study, it was found that those randomised to the quick-service and midscale restaurant conditions were more likely to endorse intention

2015). U članku autora Hammond, Velikova i Dodda (2013) analizirani su rezultati istraživanja o utjecaju prezentacije informacija u jelovnicima (usmena naspram vizualne) na prodaju vina u restoranima. Pri tome je u obzir uzeta činjenica da korisnici kupnju vina u restoranu percipiraju kao rizičniju i stresniju nego u trgovini zbog nepredvidljivosti cijene i potencijalnog povećanja cijene (Hammond, Velikova i Dodd, 2013). U istraživanju u kojem su većinom sudjelovali milenijalci, generacija X i *baby boomeri* utvrđeno je da se kognitivni stilovi *razmišljanja* i *osjećaja* ne razlikuju između milenijalaca i ostalih generacija unatoč znatno većoj izloženosti milenijalaca digitalnim tehnologijama od rođenja nadalje. Svi ispitanici više su voljeli verbalnu vrstu jelovnika u odnosu na vizualnu prezentaciju vinske ponude (Hammond, Velikova i Dodd, 2013).

5. KONCEPTUALNI MODEL, CILJEVI ISTRAŽIVANJA I HIPOTEZE

Temeljem pregleda prethodno spomenute literature, razvijen je preinačen i proširen model TAM (Slika 1). Model je proširen ključnim elementima UTAUT2 modela: hedonistička motivacija (u modelu prikazana kraticom PE) i percipirani rizik – prikazani u modelu kao suprotnost od rizika, odnosno kao *percipirana sigurnosti* (PS) kod prihvaćanja digitalnih vinskih karata od strane restoranskih gostiju. Cilj istraživanja bio je empirijski istražiti povezanost korisničkog usvajanja novih digitalnih tehnologija u ugostiteljskoj djelatnosti – primarno na primjeru uvođenja digitalnih vinskih karti u hotelskim restoranima – i *bihevioralne namjere* korisnika za ponovni posjet ugostiteljskom objektu i prošire pozitivne informacije usmenom predajom. Treba napomenuti da je model TAM pretežno korišten u istraživanjima u zemljama zapadnjačke kulture, zbog čega je došlo do neujednačenih rezultata tijekom provedbe istraživanja u drugim kulturološ-

to adopt a tablet-based menu compared to those randomised to the upscale restaurant condition (Suarez, 2015). Studies have also examined the effect of how information is presented in menus (verbal versus visual) on wine sales in restaurant settings since wine purchase in restaurants tends to be perceived as riskier and more stressful by customers than in retail settings because of the unpredictability of price and potential mark-ups (Hammond, Velikova and Dodd, 2013). In a study of mostly Millennials, Generation X, and Baby Boomers, it was found that 'thinking' versus 'feeling' cognitive styles did not differ between Millennials and other generations despite Millennials' significantly greater exposure to digital technologies practically from birth onwards, but both cognitive styles preferred verbal menu type over visual presentation of wine menu items (Hammond, Velikova and Dodd, 2013).

5. CONCEPTUAL MODEL, STUDY AIMS AND HYPOTHESES

Based on the literature review presented above, we developed a modified and ex-tended the Technology Acceptance Model (Figure 1) incorporating an additional key concept from the Unified Theory of Acceptance and Use of Technology 2 (hedonic motivation, referred here as PE), and perceived risk – conceptualised in our model as the reverse of risk; in other words, perceived security (PS), and applied it to restaurant guests' adoption of digital wine menus. The aim of this study is to empirically investigate the relationship between customer acceptance of the implementation of new digital technologies in the hospitality service industry – namely, an interactive digital wine menu in hotel restaurants – and the 'behavioural intention' of restaurant guests to visit the same establishment again and spread positive 'word of mouth'. It should be noted that the Technology Acceptance Model's predominant Western cultural orientation has

kim okruženjima (Lee, 2016). Zbog toga je potrebno provesti dodatna ispitivanja ovog teorijskog okvira u zemljama u kojima ne prevladava zapadnjačka kultura. Namjera je ovog istraživanja popuniti prazninu u postojećoj literaturi provedbom upitnika u Republici Hrvatskoj i Srbiji gdje je do sada provedeno relativno malo istraživanja iz područja ovog rada. Prema prethodno definiranom problemu istraživanja i njegovim ciljevima, postavljene su hipoteze:

H1: *Percipirana korisnost* digitalne vinske karte ima pozitivan utjecaj na bihevioralne namjere, tj. na ponovni posjet restoranu i širenje pozitivnih informacija o restoranu usmenom predajom.

H2: *Percipirana lakoća korištenja* digitalne vinske karte ima pozitivan utjecaj na bihevioralne namjere, tj. na ponovni posjet restoranu i širenje pozitivnih informacija usmenom predajom.

H3: P*ercipirani užitak* korištenja digitalne vinske karte ima pozitivan utjecaj na bihevioralne namjere, tj. na ponovni posjet restoranu i širenje pozitivnih informacija usmenom predajom.

H4: *Percipirana sigurnost* korištenja digitalne vinske karte ima pozitivan utjecaj na *bihevioralne namjere*, tj. na ponovni posjet restoranu i širenje pozitivnih informacija usmenom predajom.

H5: *Percipirana kvaliteta usluge* ima pozitivan utjecaj na *bihevioralne namjere*, tj. na ponovni posjet restoranu i širenje pozitivnih informacija usmenom predajom

yielded inconsistent results in other cultural settings (Lee, 2016); hence, there is a need for additional studies evaluating this theoretical framework in non-Western countries. We, therefore, aimed to fill this gap in the existing literature by surveying participants in Croatia and Serbia, a previously under-researched region as far as technology acceptance is concerned. To guide our research, the following hypotheses were formulated:

H1: The 'perceived usefulness' of the digital wine menu will have a positive effect on 'behavioural intention' to revisit the restaurant and spread positive 'word of mouth'.

H2: The 'perceived ease of use' of the digital wine menu will have a positive effect on 'behavioural intention' to revisit the restaurant and spread positive 'word of mouth'.

H3: The 'perceived enjoyment' of the digital wine menu will have a positive effect on 'behavioural intention' to revisit the restaurant and spread positive 'word of mouth'.

H4: The 'perceived security' of the digital wine menu will have a positive effect on 'behavioural intention' to revisit the restaurant and spread positive 'word of mouth'.

H5: 'Perceived service quality' will have a positive effect on BI to revisit the restaurant and spread positive 'word of mouth'.

Slika 1: Konceptualni model

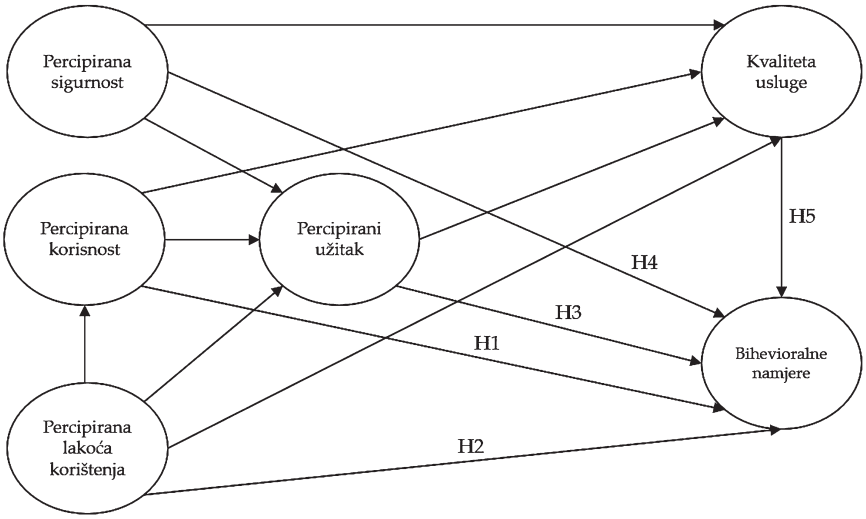
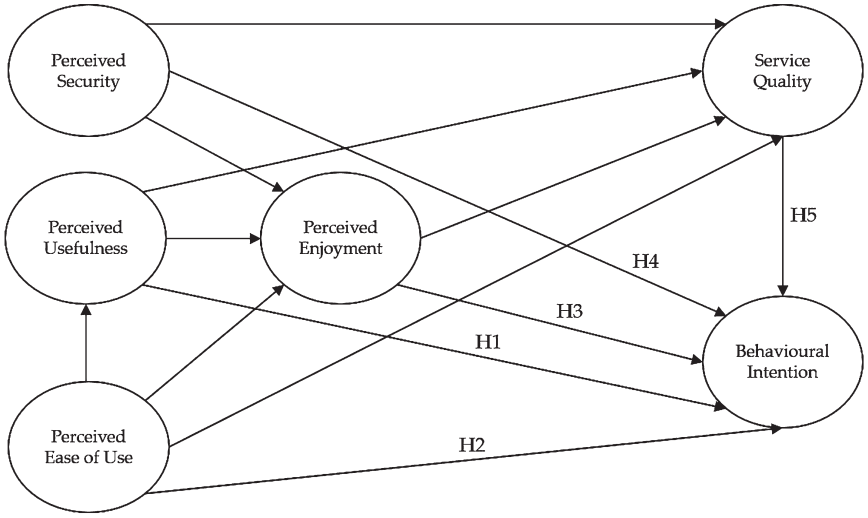


Figure 1: Conceptual model



6. MATERIJALI I METODE

6.1. Uzorak

Ispitanici su bili gosti hotelskih restorana koji su koristili digitalne vinske karte. Pri tome su odabrani oni hotelski restorani koji su imali prednosti pred drugim tipovima restorana, uključujući: izbor između tradicionalnih (papirnatih) i digitalnih vinskih karti, široku ponudu vina (u usporedbi s ponudom u restoranima brze hrane i/ili restoranima usmjerenih ponudi etničkih jela i pića) i goste različitih socioekonomskih statusa s različitim razinama znanja o vinima u odnosu na goste luksuznih restorana.

6.2. Postupak uzorkovanja

Anketiranje je provedeno uživo u hotelskim restoranima na dvije lokacije: u Splitu (Dalmacija – Hrvatska) i u Beogradu (Srbija). U Hrvatskoj je u hotelskom restoranu anketirano 270 korisnika u razdoblju od 9. srpnja 2020. godine do 3. rujna 2020. godine. Otprilike 85% gostiju bili su izvorni hrvatski govornici, ili gosti iz zemalja jugoistočne Europe (uglavnom iz Slovenije, Srbije i Bosne i Hercegovine). Ostali ispitanici bili su govornici njemačkog, engleskog, talijanskog i francuskog jezika. S obzirom na to da je upitnik bio na hrvatskome jeziku, stranim govornicima osigurano je prevođenje od strane hotelskog osoblja. U Srbiji je istraživanje provedeno u hotelskom restoranu u razdoblju od 20. ožujka do 26. travnja 2021. godine. Prikupljeni su odgovori od 150 gostiju, od čega je 95% ispitanika bilo iz Srbije ili iz zemalja bivše Jugoslavije. Preostalih 5% ispitanika bili su turisti iz Bugarske, Rumunjske i Grčke. Budući da je upitnik bio na srpskome jeziku, i u ovom je slučaju hotelsko osoblje prevodilo upitnik stranim govornicima.

Zbog pandemije, koja je za posljedicu imala zatvaranje restorana i dramatično smanjenje gostiju, provedeno je online anketiranje za ciljanu populaciju ispitanika u

6. MATERIALS AND METHODS

6.1. Target population

The population under study were hotel restaurant guests who used a digital wine menu. Hotel restaurants were chosen due to having several advantages over other types of restaurants, including availability of both classic (paper-based) and digital wine menus, broad spectrum of wine menu options compared to ethnic and/or fast-food restaurants, and a broader spectrum of guests from a variety of socioeconomic backgrounds with diverse levels of wine knowledge compared to upscale restaurants.

6.2. Sampling procedure

The in-person survey was carried out in hotel restaurants in two locations (Split-Dalmatia County, Croatia and Belgrade, Serbia). Sampling in Croatia was carried out in one hotel restaurant between July 9, 2020, and September 3, 2020. 270 hotel restaurant guests were surveyed. Approximately 85% of the guests were either native Croatians or guests from other Southeast European countries (mostly Slovenians, Serbians, and citizens from Bosnia and Herzegovina). The remaining guests were German, English, Italian, and French speakers. The questionnaire was in the Croatian language. Foreign visitors were assisted by hospitality staff who translated the questions into the guests' language. Sampling in Serbia took place in one hotel restaurant between March 20, 2021, and April 26, 2021. 150 guests returned the questionnaire. 95% of respondents were either Serbian citizens or citizens of countries from former Yugoslavia, while the remaining 5% were tourists, mostly from Bulgaria, Romania, and Greece. As the questionnaire was in Serbian the hospitality staff translated it to these visitors.

Due to the ongoing COVID-19 pandemic lockdowns, restaurant closures and

razdoblju od 17. siječnja 2021. godine do 18. ožujka 2021. godine. Od prikupljenih odgovora, 98% bilo je od državljana Hrvatske i Srbije, a preostalih 2% bili su državljani Čilea, Argentine i Sjedinjenih Američkih Država koji su emigrirali iz Jugoistočne Europe i ljubitelji su vina ili rade kao somelijeri, vlasnici su restorana ili se bave vinarstvom. Upitnik je primilo 220 ispitanika (pritom su istraživači kontaktirali ispitanike koje su im preporučili stručnjaci u vinarskom poslu). Od 640 podijeljenih upitnika, vraćeno je 406 iskoristivih odgovora (63,4% odgovora). Istraživanje je odobrilo istraživačko etičko povjerenstvo Fakulteta za informacijske studije u Novom Mestu.

6.3. Mjere

Zbog nedostatka validiranih mjera za procjenu zadovoljstva korisnika digitalnim vinskim kartama, autori su razvili samoispunjavajući upitnik o specifičnim ciljevima istraživanja i hipotezama tako da su prilagodili prethodno validirane upitnika o prihvaćanju tehnologije u širem smislu (Venkatesh, Thong i Xu, 2012). Pitanja su se odnosila na stavke poput demografskih značajki gostiju, njihovih navika posjećivanja restorana i konzumacije vina, poznavanja vina, aspekata prihvaćanja digitalnih vinskih karata (*percipirana korisnost, percipirana lakoća uporabe, percipirana sigurnost, percipirano uživanje, biehavioralna namjera*) i *percipirana kvaliteta usluge*. Za pitanja koja su se odnosila na TAM (Tablica 1) ponuđena je Likertova skala od pet stupnjeva – od 1 (*potpuno se slažem*) do 5 (*potpuno se ne slažem*).

the resulting dramatic drop in the number of restaurant visitors, the sample size was augmented via online sampling of the target population from January 17 to March 18, 2021. Of online respondents 98% were citizens of Serbia or Croatia; the remaining 2% were citizens of Chile, Argentina or the USA who emigrated from the Balkans and now live and work abroad as sommeliers, wine connoisseurs, restaurant owners, wine sellers etc.). The questionnaire was sent to 220 online respondents via the researchers' personal contacts in the wine business. Of the 640 distributed questionnaires, 406 usable responses were returned (63.4% response rate). The study was approved by the Faculty of Information Studies in Novo Mesto Research Ethics Committee.

6.3. Measures

Since no validated measures assessing satisfaction with digital wine menus were found, a self-report questionnaire addressing this study's specific research aims and hypotheses was developed by the authors by adapting items from previously validated questionnaires on technology acceptance more broadly (Venkatesh, Thong and Xu, 2012). Items covered guests' demographic characteristics, restaurant visiting habits, wine consumption habits, wine knowledge, several aspects of digital wine menu acceptance ('perceived usefulness', 'perceived ease of use', 'perceived security', 'perceived enjoyment', 'behavioural intention') and 'service quality' Items relating to the Technology Acceptance Model (Table 1) were rated on a five-point Likert scale ranging from 1 (*disagree completely*) to 5 (*agree completely*).

Tablica 1: Pitanja kojima se mjere hipotetski latentni konstrukti

Konstrukt	Šifra stavke	Opis stavke
Percipirana korisnost (PU)	PU6	Iz digitalne vinske karte naučio/la sam nove stvari
	PU7	Zbog digitalne vinske karte bolje se razumijem u vina
Percipirana lakoća uporabe (PEOU)	PEOU15	Korištenje digitalne vinske karte bilo je jednostavno
	PEOU17	Korištenjem digitalne vinske karte brže sam dobio/la potrebnu informaciju
Percipirana sigurnost (PS)	PS18	Digitalni vinski meni sigurno čuva moje podatke
	PS20(R)	Uporaba digitalne vinske karte ne ulijeva povjerenje u sigurnost podataka
Percipirano uživanje (PE)	PE1	Zabavljao/la sam se koristeći digitalnu vinsku kartu
	PE2	Osjećao/la sam zadovoljstvo prilikom uporabe digitalne vinske karte
Percipirana kvaliteta usluge (QUAL)	QUAL9	Usluga je bila brza
	QUAL10	Narudžba je stigla točno
Behavioralna namjera (BI)	BI22	Zbog digitalne usluge namjeravam ponovno posjetiti ovaj restoran
	BI23	Digitalna usluga uvjerila me je da radije posjećujem restorane koji ju imaju nego one koji ju ne nude
	BI27	Ako me pitaju za savjet, preporučit ću ovaj restoran
	BI28	Pozitivno ću drugima govoriti o digitalnoj usluzi u ovom restoranu

Bilješka. (R) označava reverzno kodiranu stavku

Table 1: Survey items measuring hypothesised latent constructs

Construct	Item code	Item description
Perceived Usefulness (PU)	PU6	The digital wine menu has helped me learn new things
	PU7	The digital wine menu has helped me to better understand wine
Perceived Ease of Use (PEOU)	PEOU15	Using the digital wine menu was straightforward
	PEOU17	Using the digital wine menu has helped me to reach information I need faster
Perceived Security (PS)	PS18	The digital wine menu keeps my data secure
	PS20(R)	I did not gain confidence in data privacy while using the digital wine menu
Perceived Enjoyment (PE)	PE1	I had fun while using the digital wine menu
	PE2	I felt happy while using the digital wine menu
Perceived Service Quality (QUAL)	QUAL9	The service was fast
	QUAL10	The order arrived correctly
Behavioural Intention (BI)	BI22	Thanks to the digital service, I intend to return to this restaurant
	BI23	I think that the digital service has compelled me to prefer visiting restaurants that use it over those that don't
	BI27	If someone asks me for advice, I will recommend this restaurant
	BI28	I will speak positively to others about the digital service at this restaurant

Note. (R) denotes reverse-coded item

6.4. Statističke analize

Za evaluaciju teoretskog modela korištena je sve popularnija tehnika analize podataka u mnogim područjima kao što su marketing i ugostiteljski menadžment, metoda parcijalnih najmanjih kvadrata modeliranja strukturnim jednadžbama (PLS-SEM) (Hair *et al*., 2019). PLS-SEM posebno je prikladna za manje razvijena područja, a glavni je cilj istraživanja predviđanje (Hair *et al*., 2017). Analize su provedene putem programa SmartPLS 3 (Ringle, Wende i Becker, 2015).

6.4. Statistical analyses

To evaluate the theoretical model partial least squares structural equation modelling (PLS-SEM) was used. This increasingly popular data analytic technique in many subject areas including marketing and hospitality management (Hair *et al*., 2019) is particularly appropriate in situations when theory is less developed, and the main purpose of the study is prediction (Hair *et al*., 2017). Analyses were carried out in SmartPLS 3 software (Ringle, Wende and Becker, 2015).

7. REZULTATI

7.1. Demografske značajke

Demografske značajke uzorka prikazane su u Tablici 2. Od 406 sudionika većina ih je odraslih zaposlena, od kojih je nešto više od polovice bilo muškaraca, a otprilike polovica ih je bilo u braku. Većinom su akademski obrazovani i u radnom odnosu. Ispitanici su uglavnom naveli da često odlaze u restorane na neformalne ručkove ili večere. Većina ih je rekla da često konzumiraju vino i naručuju vino u restoranima. Samoprocjena poznavanja vina bila je vrlo šarolika.

7. RESULTS

7.1. Demographic characteristics

Demographic characteristics of the sample are presented in Table 2. Of the 406 final participants, most were prime working-age adults, just over half were male, and roughly, half were married. A large majority were college graduates and employed. Most respondents indicated that they typically patronise casual dining restaurants. Most respondents said that they often consume wine and order wine in restaurants often. There was a broad mix of self-rated wine knowledge.

Tablica 2: Demografska obilježja uzorka (N = 406)

Varijabla	Kategorija	n (%)
Rod	Muški	224 (55,2%)
	Ženski	182 (44,8%)
Dob	18-25	46 (11,3%)
	26-35	130 (32,0%)
	36-45	92 (22,7%)
	46-55	71 (17,5%)
	>55	67 (16,5%)
Bračno stanje	Oženjen/Udata	210 (51,7%)
	Neoženjen/Neudata	120 (29,6%)
	Rastavljen/a ili udovac/ica	76 (18,7%)
Obrazovanje	Srednja škola	70 (17,2%)
	Prvostupnik/ca više škole ili sveučilišta	188 (46,3%)
	Diploma magistra	124 (30,6%)
	Doktorat	24 (5,9%)
Radni status	Zaposlen/a	336 (82,8%)
	Umirovljen/a	22 (5,4%)
	Student/ica	18 (4,4%)
	Nezaposlen/a	30 (7,4%)
Učestalost posjećivanja restorana	Rijetko	30 (7,4%)
	Tromjesečno	41 (10,1%)
	Jedanput ili dvaput mjesečno	68 (16,8%)
	Nekoliko puta mjesečno	135 (33,2%)
	Skoro svaki tjedan	132 (32,5%)
Vrsta najčešće posjećivanih restorana	Neformalni restorani	249 (61,3%)
	Etnički	30 (7,4%)
	Brza hrana ili *street food*	30 (7,4%)
	Gastronomski restorani	63 (15,5%)
	Pizzerije	34 (8,4%)
Učestalost konzumiranja vina	Rijetko	34 (8,4%)
	Katkad	118 (29,0%)
	Često	254 (62,6%)
Učestalost naručivanja vina u restoranima	Rijetko	58 (14,3%)
	Katkad	128 (31,5%)
	Često	220 (54,2%)
Samopro-cijenjeno poznavanje vina	Minimalno	75 (18,5%)
	Osnovno	139 (34,2%)
	Dobro	144 (35,5%)
	Stručno	48 (11,8%)

Table 2: Demographic characteristics of the sample (N = 406)

Variable	Category	n (%)
Gender	Male	224 (55.2%)
	Female	182 (44.8%)
Age	18-25	46 (11.3%)
	26-35	130 (32.0%)
	36-45	92 (22.7%)
	46-55	71 (17.5%)
	>55	67 (16.5%)
Marital status	Married	210 (51.7%)
	Unmarried	120 (29.6%)
	Divorced or widowed	76 (18.7%)
Education	High school	70 (17.2%)
	Associate's or Bachelor's degree	188 (46.3%)
	Master's degree	124 (30.6%)
	Doctorate	24 (5.9%)
Employment status	Employed	336 (82.8%)
	Retired	22 (5.4%)
	Student	18 (4.4%)
	Unemployed	30 (7.4%)
Frequency of dining in restaurants	Rarely	30 (7.4%)
	Quarterly	41 (10.1%)
	Once or twice per month	68 (16.8%)
	A few times per month	135 (33.2%)
	Almost every week	132 (32.5%)
Type of restaurant most frequently visited	Casual dining	249 (61.3%)
	Ethnic	30 (7.4%)
	Fast or street food	30 (7.4%)
	Fine dining	63 (15.5%)
	Pizzeria	34 (8.4%)
Wine consumption frequency	Rarely	34 (8.4%)
	Sometimes	118 (29.0%)
	Often	254 (62.6%)
Frequency of ordering wine in restaurants	Rarely	58 (14.3%)
	Sometimes	128 (31.5%)
	Often	220 (54.2%)
Self-rated wine knowledge	Minimal	75 (18.5%)
	Basic	139 (34.2%)
	Good	144 (35.5%)
	Expert	48 (11.8%)

7.2. Ocjena modela mjerenja

Prije testiranja hipotetskog strukturalnog modela, prvo su određena unutarnja pouzdanost, konvergentna validnost i diskriminantna validnost predloženih latentnih konstrukata. Za mjerenje latentnih konstrukata korišteni su reflektivni indikatori čija su faktorska opterećenja bila statistički značajna i prelazila su preporučenu referentnu točku od 0,7 (Hair *et al*., 2017) u svim slučajevima (Tablica 3). Za određivanje unutarnje pouzdanosti korišteni su Cronbachov alpha (α) i kompozitna pouzdanost (CR) koja je prelazila uobičajeni kritični prag od 0,7 (Hair *et al*., 2017; Boateng *et al*., 2018) za sve konstrukte. Za iskazivanje validnosti konvergencije izračunate su vrijednosti indeksa AVE te je uočeno da su prešle preporučeni minimalni prag od 0,5 za svaki konstrukt. Isto je tako statistika *faktora inflacije varijance* (VIF) pokazala nedostatak kolinearnosti u modelu mjerenja vrijednošću znatno ispod 5 (Hair *et al*., 2017) za sve stavke.

7.2. Measurement model evaluation

Before testing the hypothesised structural model, we first established internal reliability, convergent validity, and discriminant validity of the proposed latent constructs. Latent constructs were measured using reflective indicators whose factor loadings were statistically significant and exceeded the recommended benchmark of 0.7 (Hair *et al*., 2017) in all instances (Table 3). To establish internal reliability, we used Cronbach's alpha (α) and 'composite reliability' which exceeded the conventional critical threshold of 0.7 (Hair *et al*., 2017; Boateng *et al*., 2018) for all constructs. To demonstrate convergent validity, the 'average variance extracted' values were calculated and found to be above the recommended minimum threshold of 0.5 for every construct. There was an absence of collinearity in the measurement model as evidenced by the 'variance inflation factor' statistic which was well below 5 (Hair *et al*., 2017) for all items.

Tablica 3: Konstrukt pouzdanosti i konvergentne valjanosti

Konstrukt	Stavka	Faktorska opterećenja	Cronbachov α	CR	AVE
Percipirana korisnost	PU6	0,95	0,89	0,95	0,90
	PU7	0,95			
Percipirana lakoća korištenja	PEOU15	0,93	0,84	0,92	0,86
	PEOU17	0,93			
Percipirana sigurnost	PS18	0,93	0,76	0,89	0,80
	PS20(R)	0,86			
Percipirani užitak	PE1	0,96	0,91	0,96	0,92
	PE2	0,96			
Kvaliteta usluge	QUAL9	0,95	0,88	0,94	0,89
	QUAL10	0,94			
Namjera ponašanja	BI22	0,92	0,93	0,95	0,83
	BI23	0,91			
	BI27	0,92			
	BI28	0,90			

Bilješka. Indeks AVE = prosječna izlučena varijanca; CR = kompozitna pouzdanost

Table 3: Construct reliability and convergent validity

Construct	Item	Factor loading	Cronbach's α	CR	AVE
Perceived Usefulness	PU6	0.95	0.89	0.95	0.90
	PU7	0.95			
Perceived Ease of Use	PEOU15	0.93	0.84	0.92	0.86
	PEOU17	0.93			
Perceived Security	PS18	0.93	0.76	0.89	0.80
	PS20(R)	0.86			
Perceived Enjoyment	PE1	0.96	0.91	0.96	0.92
	PE2	0.96			
Service Quality	QUAL9	0.95	0.88	0.94	0.89
	QUAL10	0.94			
Behavioural Intention	BI22	0.92	0.93	0.95	0.83
	BI23	0.91			
	BI27	0.92			
	BI28	0.90			

Note. AVE = average variance extracted; CR = composite reliability

Diskriminantna validnost predloženih latentnih konstrukata određena je pomoću uobičajenog kriterija Fornell-Larcker (Fornell i Larcker, 1981). Kao što je prikazano u Tablici 4, kvadratni korijen indeksa AVE (prikazan podebljanim znamenkama u dijagonali korelacijske matrice) premašio je korelacije u svim slučajevima (izvan dijagonalnih znamenki) i na taj način demonstrirao zadovoljavajuću valjanost.

Discriminant validity of the proposed latent constructs was established using the conventional Fornell-Larcker criterion (Fornell and Larcker, 1981). As seen in Table 4, the square root of 'average variance extracted' (shown in boldface on the diagonal of the correlation matrix) exceeded inter-construct correlations in all instances (off-diagonal figures), thus demonstrating satisfactory discriminant validity.

Tablica 4: Diskriminantna valjanost

	BI	PEOU	PE	PS	PU	QUAL
Namjera ponašanja	**0,912**					
Percipirana lakoća korištenja	0,829	**0,927**				
Percipirani užitak	0,817	0,806	**0,957**			
Percipirana sigurnost	0,604	0,608	0,612	**0,895**		
Percipirana korisnost	0,831	0,801	0,820	0,619	**0,951**	
Kvaliteta usluge	0,728	0,799	0,784	0,549	0,750	**0,945**

Bilješka. Podebljane vrijednosti na dijagonali kvadratni su korijen indeksa AVE. Znamenke izvan dijagonale koeficijenti su korelacije između konstrukata.

Table 4: Discriminant validity

	BI	PEOU	PE	PS	PU	QUAL
Behavioural Intention	**0.912**					
Perceived Ease of Use	0.829	**0.927**				
Perceived Enjoyment	0.817	0.806	**0.957**			
Perceived Security	0.604	0.608	0.612	**0.895**		
Perceived Usefulness	0.831	0.801	0.820	0.619	**0.951**	
Service Quality	0.728	0.799	0.784	0.549	0.750	**0.945**

Note. Bolded values on the diagonal are the square root of average variance extracted. Off-diagonal figures are correlation coefficients between pairs of constructs.

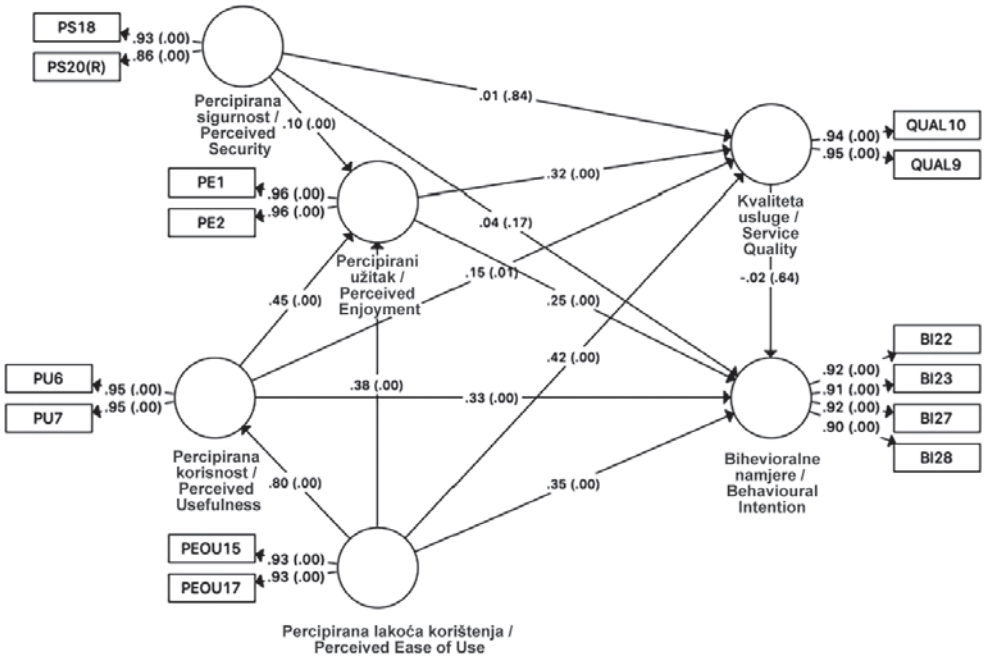
7.3. Ocjena strukturalnog modela

Nakon određivanja pouzdanosti i valjanosti modela mjerenja, slijedi ocjena strukturalnog modela (Slika 2). Vrijednost standardiziranog reziduala korijena srednjeg kvadrata (SRMR) od 0,058 spustila se ispod predložene granice od 0,08 (Henseler *et al*., 2014) i time ukazala na dobru prilagođenost ukupnog modela, iako treba imati na umu da koncept prilagodbe modela pomoću strukturalnog modeliranja temeljenog na kovarijancama nije potpuno primjenjiv na PLS-SEM budući da potonja metoda ima različit glavni cilj (predviđanje, tj. maksimizacija protumačene varijance) (Hair *et al*., 2017). Stoga, mjere valjanosti modela, kao što je standardizirani rezidual (ili ostatak) korijena srednjeg kvadrata SRMR, treba pažljivo interpretirati. Uočen je nedostatak kolinearnosti strukturalnog modela: niti jedna od vrijednosti faktora inflacije varijance VIF nije prešla preporučeni prag 5 [74]. Koeficijent determinacije za endogene latentne varijable R^2 pokazao je da prediktori u modelu objašnjavaju značajnu veličinu varijance *bihevioralne namjere* (78%) i *percipiranog užitka* (74%), a umjerenu veličinu varijance *kvalitete usluge* (70%) i *percipirane korisnosti* (64%).

7.3. Structural model evaluation

Having established the reliability and validity of the measurement model, we turn our attention to the evaluation of the structural model (Figure 2). The 'standardized root mean square residual' value of 0.058 was below the proposed cut-off of 0.08 (Henseler *et al*., 2014) indicating good overall model fit but it should be kept in mind that the concept of model fit from covariance-based structural equation modelling is not fully applicable to PLS-SEM since the latter method has a different main aim (prediction, i.e. maximisation of explained variance) (Hair *et al*., 2017). Therefore, measures of goodness-of-fit model such as the 'standardized root mean square residual' should be interpreted cautiously. There was an absence of collinearity in the structural model: none of the 'variance inflation factor' values came close to exceeding the recommended threshold of 5 [74]. R^2 coefficient of determination for endogenous latent variables indicated that predictors in the model explained a substantial amount of variance in 'behavioural intention' (78%) and 'perceived enjoyment' (74%), and a moderate amount of variance in 'service quality' (70%) and 'perceived usefulness' (64%).

Slika 2: Strukturni model / Figure 2: Structural model



7.4. Testiranje hipoteza

Testirano je pet hipoteza metodom samonadopunjavanja/ponovljenog uzorkovanja (*bootstrapping*) s 5.000 iteracija za testiranje statističke značajnosti pretpostavljenih strukturnih putanja u modelu. Tablica 5 prikazuje status svake hipoteze (tj., potvrda ili odbacivanje). Hipoteze H1, H2 i H3 pokazale su statistički značajan izravni utjecaj na *percipiranu korisnost, percipiranu lakoću uporabe* i *percipirani užitak* na *bihevioralne namjere*. Stoga se smatra da su te tri hipoteze empirijski potvrđene. Suprotno očekivanjima, *percipirana sigurnost* i *kvaliteta usluge* nisu polučili značajan direktan učinak na *bihevioralne namjere* pa su H4 i H5 odbačene. Svi koeficijenti putanje modela i njihove p-vrijednosti također su prikazane u dijagramu modela na Slici 2.

7.4. Hypothesis testing

The five hypotheses were tested using the bootstrapping method with 5,000 iterations to test the statistical significance of the hypothesised structural paths in the model. The status of each hypothesis (i.e., supported or rejected) is presented in Table 5. As hypothesised in H1, H2 and H3, there was a statistically significant direct effect of 'perceived usefulness', 'perceived ease of use' and 'perceived enjoyment' on 'behavioural intention'. Thus, these three hypotheses were empirically supported. Contrary to expectations, 'perceived security' and 'service quality' did not have a significant direct effect on 'behavioural intention', thus rejecting H4 and H5. All model path coefficients and their corresponding p values are also presented in a model diagram in Figure 2.

Tablica 5: Izravni učinci

Pretpostavljena putanja	Koeficijent putanje	*t*	*P*	Status hipoteze
H1: PU -> BI	0,333	5,899	< ,0001	Potvrđena
H2: PEOU -> BI	0,355	6,243	< ,0001	Potvrđena
H3: PE -> BI	0,253	4,168	< ,0001	Potvrđena
H4: PS -> BI	0,041	1,361	0,174	Odbačena
H5: QUAL -> BI	-0,027	0,464	0,642	Odbačena

Table 5: Direct effects

Hypothesised path	Path coefficient	*t*	*p*	Hypothesis status
H1: PU -> BI	0.333	5.899	< .0001	Supported
H2: PEOU -> BI	0.355	6.243	< .0001	Supported
H3: PE -> BI	0.253	4.168	< .0001	Supported
H4: PS -> BI	0.041	1.361	.174	Rejected
H5: QUAL -> BI	-0.027	0.464	.642	Rejected

8. DISCUSSION

8.1. Sažetak glavnih rezultata

Rezultati ovog istraživanja ukazuju na sljedeće zaključke: nekoliko je ključnih konceptualnih aspekata (*percipirana lakoća korištenja*, *percipirana korisnosti* i *percipirani užitak*) tehnološkog prihvaćanja nove aplikacije za digitalnu vinsku kartu hotelskih restorana polučilo izravne učinke na njihove poslovne rezultate, *bihevioralne namjere* gostiju za povratak u restoran i širenje pozitivne usmene predaje. Začudo, nije ustanovljeno da percipirana *kvaliteta usluge* ima izravan učinak na *bihevioralne namjere*. Isto tako su za *kvalitetu usluge* značajni izravni učinci na goste *percipirana lakoća korištenja*, *percipirana korisnost* i *percipirani užitak* kojima se objašnjavaju značajne vrijednosti varijanci kod dva izmjerena rezultata (*bihevioralne namjere* i *kvaliteta usluge*). S druge strane, učinci percipiranog rizika privatnosti i sigurnosti na *bihevioralne namjere* i *kvalitetu usluge* bili su zanemarivi. Uglavnom, ovi su rezultati sukladni i proširuju prijašnje rezultate istraživanja o prihvaćanju tehnologija u

8. DISCUSSION

8.1. Summary of key findings

The results of this study demonstrated the following key conclusions: several crucial conceptual aspects ('perceived ease of use', 'perceived usefulness' and 'perceived enjoyment') of technology acceptance of new digital wine menu apps in hotel restaurants had significant direct effects on the main outcome of interest, hotel restaurant customers' 'behavioural intention' to return and spread positive 'word of mouth' about it. Surprisingly, perceived 'service quality' had no direct effect on 'behavioural intention'. Likewise, for the second key outcome of interest (perceived 'service quality'), the 'perceived ease of use', 'perceived usefulness' and 'perceived enjoyment' had significant direct effects on customers' perceptions of a restaurant's service quality. This explains a substantial amount of variance in the two outcome measures ('behavioural intention' and 'service quality'). The effects of perceived risk to data privacy and safety on 'behavioural intention' and 'service quality'

ugostiteljstvu i turizmu. Ukratko, povećano oduševljenje gostiju za nove pametne tehnologije povezuje se s pozitivnijim percepcijama kvalitete usluge, namjere za ponovni posjet istom restoranu i pozitivne preporuke drugima. Ovi rezultati imaju nekoliko važnih implikacija za teoriju i menadžere.

8.2. Teoretske implikacije i originalnost rezultata

Iako su se modeli TAM i *Jedinstvena teorija prihvaćanja i uporabe tehnologije* i *Jedinstvena teorija prihvaćanja i uporabe tehnologije 2* već primjenjivali na različite aspekte turizma (kao što je navedeno u uvodnom odlomku o *Tehnologiji modela prihvaćanja (TAM) u turizmu i ugostiteljstvu*), ovo istraživanje daje novu primjenu ovog modela na još neistraženo područje digitalnih vinskih karata. Mali broj prethodnih istraživanja uvrstilo je digitalne menije, ali općenito i bez posebnog naglaska na vino. Ipak, naši su rezultati uglavnom sukladni s prethodnim istraživanjima. Naime, oni su u skladu sa studijom o tabletima iPadu kao digitalnim menijima (Wang i Wu, 2013) pokazujući značajne izravne učinke *percipirane korisnosti*, *percipirane lakoće korištenja* i *percipiranog užitka* na *bihevioralne namjere*. Također potvrđuju (i protežu se na novo polje) rezultate značajnog učinka *percipiranog užitka* na namjere *usmene predaje* u kontekstu mrežnih stranica osvrta na restorane (Yang, 2017). Međutim, naši rezultati ne podržavaju u potpunosti novije istraživanje samoposlužnih linija u restoranima brze usluge (Seo, 2020), što upućuje na mogućnost da *percipirana učinkovitost* (koncept sličan *percipiranoj korisnosti* u modelu TAM) ima pozitivan izravni učinak na *bihevioralnu namjeru* (što se također potvrdilo u ovoj studiji), ali i da, suprotno našim ishodima, percipirani napor (slično *percipiranoj lakoći korištenja*) i hedonistički poriv (kod nas *percipirani užitak*) nemaju utjecaja na *bihevioralnu namjeru*. Naši su rezultati također u neskladu s ishowere negligible. Overall, these results are in line with and extend previous empirical findings regarding technology acceptance in the hospitality and tourism industry. In short, increased customer enthusiasm for the new smart technology was associated with more positive perceptions of the quality of service and intention to patronise the same restaurant again and speak positively about it. The findings have several important theoretical and managerial implications.

8.2. Theoretical implications and novelty of findings

While numerous previous studies have applied the TAM and UTAUT/UTAUT2 models to various aspects of the tourism industry (as reviewed in the introductory section *TAM in the tourism and hospitality industry*), the present study offers a novel application of this classic model to a previously unexplored area of digital wine menus. A small number of previous studies have investigated digital menus more generally without a specific focus on wine. Nevertheless, our results are broadly in line with the previous research. Our findings showing significant direct effect of 'perceived usefulness', 'perceived ease of use' and 'perceived enjoyment' on 'behavioural intention' are in accordance Wang and Wu (2013) study investigating iPads as digital menus. Our results also confirm (and extend to a new field) Yang's (2017) findings of a significant effect of the 'perceived usefulness' on the 'word-of-mouth' intentions in the context of restaurant review websites. Yet, our results offer mixed support for findings of a recent survey of self-service kiosks in quick service restaurants by Seo (2020) which suggested that performance expectancy (a concept analogous to the TAM's 'perceived usefulness') had a positive direct effect on 'behavioural intention' (which was also found in the present study) while, unlike in our study, Seo's (2020) survey found that effort expectancy (analogous to 'perceived ease of use') and hedonic motiva-

dima druge novije studije na temu uvođenja u restorane robota koji poslužuju (Seo i Lee, 2021), u kojima je utvrđeno da je percipirani rizik povezan sa smanjenom namjerom za ponovni posjet. Ova studija nije pokazala pozitivan direktan učinak na *percipiranu sigurnost* (suprotno od percipiranog rizika) na *bihevioralnu namjeru*. Ove nepodudarnosti možda i nisu neočekivane jer se može tvrditi da su varijable percipiranog rizika i povjerenja puno bitnije u interakciji s uslužnim robotom nego s digitalnom vinskom kartom gdje su percipirani rizici korištenja tehnologije relativno minimalni.

8.3. Implikacije za menadžere

S obzirom na ogromne štete na blagostanje ugostiteljskih radnika (Chen i Eyoun, 2021) i profitabilnost restoranske djelatnosti (Song, Yeon i Lee, 2021), koje je prouzročila pandemija COVID-19 povećavši potrebe za digitalizacijom i automatizacijom radnih procesa, jedna važna implikacija velikog broja istraživanja u području prihvaćanja tehnologije na radnom mjestu bila je olakšati menadžerima identifikaciju prepreka prihvaćanju tehnologije i osmišljavanje načina uporabe tehnologije u organizacijama (Venkatesh i Bala, 2008).

Osnovna praktična poruka ovog rada za menadžere ugostiteljskih objekata koji žele uvesti digitalne menije je da trebaju maksimizirati *percipirani užitak* i *percipiranu lakoću korištenja* korisnika i oblikovati ih tako da potiču pozitivne emocije veselja i sreće tijekom korištenja aplikacije budući da su se ti konstrukti pokazali kao glavni poticaji *bihevioralne namjere* za ponovni posjet restoranu, davanje prednosti restoranima koji koriste digitalne menije te za širenje pozitivne *usmene predaje* o objektu i digitalnoj usluzi u ponudi. Stoga se može tvrditi da bi uvođenje digitalnih tehnologija u restorane moglo potaknuti povećanje broja gostiju, a time i povećati profitabilnost poslovanja. Menadžeri koji žele uvesti digitalne vinske

tion (formulated as 'perceived enjoyment' in our study) did not influence 'behavioural intention'. Our results are also contrary to findings of another recent study on the implementation of service robots in restaurants (Seo and Lee, 2021) where perceived risk was found to be associated with decreased intention to revisit the restaurant. In our study, there was no positive direct effect of '*perceived security*' (the opposite of perceived risk) on 'behavioural intention'. These discrepant findings are perhaps unsurprising because it could be argued that the perceived risk and trust variables are much more salient when interacting with a service robot than a digital wine menu, a situation in which perceived risks of use of the technology are relatively minimal.

8.3. Managerial implications

Considering the enormous deleterious impact of the COVID-19 pandemic on hospitality workers' well-being (Chen and Eyoun, 2021) and profitability of the restaurant industry (Song, Yeon and Lee, 2021), increasing the need for digitalisation and automation of the workflow, one important practical implication of the vast body of research on technology acceptance in the workplace has been to enable managers to identify the barriers to technology acceptance and help them devise interventions to increase technology use (Venkatesh and Bala, 2008).

The main managerial take-home message from this study is that if a dining establishment is looking to implement a digital menu, it should aim to maximise its 'perceived usefulness' and 'perceived ease of use' to the customer and design it in such a way as to trigger positive emotions of fun and happiness while using the app since these three constructs were shown to be key drivers of 'behavioural intention' to revisit the restaurant, to prefer visiting restaurants that use digital menus over those that do not, and to spread positive 'word of mouth' about the establishment and the digital service on offer. Therefore, it can

karte u svoje restorane stoga trebaju osigurati jednostavnost korištenja aplikacije te stimuliranje pozitivnih emocija. Međutim, ova studija pokazuje da *percipirana sigurnost* aplikacije nije značajan motiv za *bihevioralnu namjeru* ponovnog posjeta restoranu, što nije neobično s obzirom na vrlo ograničene osobne podatke koje korisnik daje prilikom uporabe aplikacije digitalne vinske karte. Veće iznenađenje bio je nedostatak poveznice između percipirane *kvalitete usluge* i *bihevioralne namjere*. Razlog ovome mogu biti metodološki čimbenici koje treba još istražiti pomoću različitih instrumenata.

Ovi rezultati mogu pomoći smanjenju strahova i nepovjerenja hotelijera prema uvođenju novih pametnih tehnologija u radne procese. Dugotrajne sumnje o sve većoj digitalizaciji i automatizaciji suvremenog svijeta česte su teme kvalitativnih istraživanja te bude nelagodu i nesigurnost, nepovjerenje, opasnost i zamjetne troškove, zabrinutost se za sigurnost i privatnost, potencijalno dehumanizirajući učinak, pretjeranu ovisnost o tehnologiji, smanjenje osobnih međuljudskih odnosa, ometanje, itd. (Parasuraman i Colby, 2015). Rane studije o stavovima gostiju o digitalnim kartama restorana (Lessel *et al*., 2012) često su izražavale strah od alijenacije i gubitka ljudske interakcije, remećenja atmosfere u restoranu, gubitka tradicije i teškoća u interakciji s digitalnim menijima, naročito kod starijih ljudi. Zanimljivo je ponovno pogledati ova mišljenja samo deset godina nakon što je tehnologija temeljena na tabletima stasala. Dok je 2012. godine istraživanje stavova njemačkih posjetitelja restorana otkrilo suzdržanost prema digitalnim menijima (Lessel *et al*., 2012), skoro desetljeće kasnije ono što se prije smatralo nezamislivim ili beskorisnim sada je sveprisutno i okarakterizirano kao novo normalno.

Kao i većina stvari, tehnologija digitalnih menija ima ograničenja poput dodavanja još jednog sloja kompleksnosti u poslu menadžera i zaposlenika koji može uzrokovati nedostatke usluge ili se mogu dogoditi po-

be argued that implementing digital technologies on the restaurant floor could potentially drive increased customer numbers and consequently, improve profitability of the business. Managers wishing to implement digital wine menus in their restaurants should, therefore, ensure that the app easy to use and promotes positive emotions in the user. Meanwhile, according to the results of our study, the 'perceived security' of the app is not a significant driver of 'behavioural intention' to return to the restaurant which is unsurprising given the very limited amount personal data that the user is sharing with the app while using a digital wine menu. More surprising was the lack of association between perceived service quality and 'behavioural intention'. This may be due to methodological factors and should be investigated in future studies utilising different survey instruments.

These results can help reduce fears and reservations of hoteliers who may be on the fence about implementing novel smart technologies to their workflow. Lingering doubts surround the ever-increasing digitalisation and automation of the contemporary world and common themes emerging in qualitative research are those of discomfort and insecurity, lack of confidence, risks and perceived costs, concerns with security and privacy, a potentially dehumanising effect, overdependence on technology, diminished quality of personal relationships, distraction etc. (Parasuraman and Colby, 2015). Fears of alienation and concerns about the loss of human interaction, disturbance to a restaurant atmosphere, loss of tradition, and difficulties in interacting with the digital menu, particularly for older people, were commonly voiced in early surveys of customers' views of digital menus in restaurants (Lessel *et al*., 2012). It is interesting to revisit views expressed a mere decade ago when this tablet-based technology was still in its infancy. Back in 2012, a survey of German restaurant-goes revealed scepticism regarding digital menus (Lessel *et al*., 2012). Almost a decade later, what was previously considered unthinkable

greške i nepredvidive prekide u tijeku rada ako zaposlenici ili gosti nepravilno koriste aplikaciju. Ranija istraživanja o uporabi digitalnih tehnologija u hrvatskim i talijanskim hotelima, koja su provedena na početku digitalne transformacije u hotelijerstvu, pokazala su da su reakcije gostiju na informacijsku tehnologiju bile tiše od percepcija menadžera (Šeri i Saura, 2012). Sada, nakon desetljeća, ove tehnologije postale su svakidašnja pojava i sastavni dio svakodnevnog poslovanja i slobodnog vremena. Naši ispitanici, gosti hotelskih restorana, bili su uglavnom pozitivni u svojim ocjenama korisnosti i lakoće uporabe digitalnih menija.

8.4. Ograničenja istraživanja

Nijedno istraživanje nije bez ograničenja pa tako i ovo nije iznimka. Naše je istraživanje provedeno pretežno u hotelskim restoranima i stoga se ne može generalizirati na druge vrste restorana (npr. luksuzne/gastronomske ili restorane brze hrane). Neka ranija istraživanja otkrila su, primjerice, da će oni koji posjećuju poglavito luksuzne restorane manje vjerojatno prihvatiti digitalne menije (Lessel *et al*., 2012). Treba također imati na umu da je dio ankete proveden digitalnim putem zbog ograničenja uvjetovanih pandemijom. Ti se odgovori mogu razlikovati od onih dobivenih osobno neposredno nakon konzumacije obroka. Još jedno ograničenje proizlazi iz nedostatka stvarne uporabe tehnologije kao ishoda varijable nakon bihevioralne namjere uporabe; ovdje bi longitudinalno istraživanje bilo poželjno, ali i krajnje nepraktično. Također nismo uvrstili sve konstrukte iz modela *Jedinstvene teorije prihvaćanja i uporabe tehnologije 2* zbog prosudbe da su naši sudionici imali ograničeno vrijeme za interakciju s tehnologijom (u usporedbi s djelatnicima koji tu tehnologiju koriste svakodnevno na radnom mjestu i bolje su upoznati s njom). Još nekoliko ostalih konstrukata iz proširenog modela *Jedinstvene teorije prihvaćanja i uporabe tehnologije 2* nije bilo relevantno za upotrebu

or useless is now ubiquitous and considered the new normal.

Like most things, digital menu technology has its limitations, namely adding an additional layer of complexity for the management and employees to deal with as another potential mode of service failure and chaotic disruption to the workflow in case of malfunction or incorrect use by the employees or customers. A previous study investigating the use of digital technologies in Croatian and Italian hotels, carried out in the early years of the digital transformation of the hotel industry, demonstrated that customers reaction to information technologies was more muted than managers' perceptions (Šeri and Saura, 2012). Now, a decade later, these technologies have become commonplace and an integral part of everyday business life and leisure time. Our surveyed customers of hotel restaurants were for the most part positive in their evaluations of the usefulness and ease of use of digital menus.

8.4. Research Limitations

No study is without its limitations and the present one is no exception. Our study was carried out predominantly in hotel restaurants and may, therefore, not be generalizable to other types of restaurants (e.g., fine-dining or fast-food restaurants). Some previous studies have found, for instance, that those who visit mostly fine-dining restaurants were less likely to endorse the use of digital menus (Lessel *et al*., 2012). It should also be kept in mind that due to pandemic restrictions on hospitality, a part of the sample was surveyed online. These participants' answers may differ from those who were surveyed in person immediately after a restaurant meal. Another limitation is the lack of actual use of technology as an outcome variable following 'behavioural intention' to use; here, a longitudinal study design would be preferable but extremely impractical. We also did not include every construct from the UTAUT2 model since it

digitalnih vinskih karata, a to su cijena, navike, društveni utjecaj i uvjeti provođenja ankete, jer je korištenje bilo besplatno i gosti nisu imali vremena za stjecanje navika budući da je digitalna vinska karta bila nova aplikacija za njih i nije bilo vanjskih faktora koji bi utjecali na uporabu menija poput mišljenja drugih ili kreatora javnog mnijenja, influencera iz društvenih medija, itd. Također treba uzeti u obzir da je u našem istraživanju korelacija između *percipirane lakoće korištenja* i *percipirane korisnosti* bila dovoljno visoka da dovede u pitanje diskriminantnu valjanost tih koncepata. Iako su podaci zadovoljili konvencionalne kriterije za diskriminantnu valjanost u ovom istraživanju, u ranijem *percipirana lakoća korištenja* i *percipirana korisnost* nisu imale diskriminantnu valjanost i ti su se konstrukti morali spojiti u jedan (Kim, 2016). Unatoč ovim ograničenjima, ipak se nadamo da naše istraživanje nudi značajan interdisciplinarni doprinos literaturi u području ugostiteljstva i informacijske tehnologije.

9. ZAKLJUČCI

Ovo je istraživanje pokazalo značaj prihvaćanja pametne tehnologije među gostima hotelskih restorana za poboljšanje pozitivnih percepcija kvalitete usluga i namjere ponovnog posjeta te hvale njegove kvalitete. Ono predstavlja uspješnu primjenu nove tehnologije digitalnih vinskih karata i proširenje Modela prihvaćanja tehnologije (TAM) na ranije manje istraženo kulturno i geografsko područje Jugnoistočne Europe. Buduća istraživanja trebala bi obuhvatiti druge važne odrednice ponašanja, poput osobnosti gostiju i druge psihološke značajke koje se često zanemaruju u istraživanjima u području ove teme.

was judged that due to the limited amount of time our participants had to interact with the technology (compared to employees who use this technology daily in the workplace and gains much greater familiarity with it). Several other constructs from the extended UTAUT2 model would not be as relevant for digital wine menu restaurant use, i.e. price value, habit, social influence and facilitating conditions because the use was free of charge and the guests did not have the time to develop a habit since the digital wine menu was a novel app presented to them and there were no external factors influencing the use of the menu, such as the opinion of others or opinion-makers, social media influencers etc. It should also be noted that in our study, the correlation between 'perceived ease of use' and 'perceived usefulness' was high enough to doubt the discriminant validity of these concepts. Although the data met conventional criteria for discriminant validity in this study, in a previous survey 'perceived ease of use' and 'perceived usefulness' did not have discriminant validity and these constructs had to be combined into one (Kim, 2016). Despite the limitations, our study offers an important interdisciplinary contribution to the hospitality and information technology literature.

9. CONCLUSIONS

This research demonstrated the importance of smart technology acceptance by hotel restaurant-goers in improving positive perceptions of service quality and behavioural intention to visit the establishment again and speak highly of its qualities. This represents a successful application of a novel digital wine menu technology and an extension of the Technology Acceptance Model to a previously less well-researched cultural and geographic area of Southeast Europe. Future studies should incorporate other important determinants of behaviour like customers' personality and other psychological characteristics often neglected in studies on this topic.

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