

An Examination of Customers' Adoption of Restaurant
Search Mobile Applications

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ATTESTATION OF AUTHORSHIP

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Signed _____

Date _____

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ABSTRACT

Mobile applications (apps) have been increasingly popular among consumers in various fields in recent years. In the hospitality and tourism context, more and more consumers have adopted a variety of mobile apps to facilitate their dining and travelling experience. However, restaurant-related mobile apps have rarely been discussed in the literature. This study investigates how dining customers adopt restaurant search mobile apps in the Chinese market.

An integrated model incorporating the Technology Acceptance Model (TAM) and motivation theory was developed to examine antecedents of technology adoption behaviour. The integrated model proposes that both extrinsic motivations (e.g., perceived usefulness and perceived ease of use) and intrinsic motivations (e.g., personal innovativeness and independence) are potentially important predictors of the customers' intention to use a particular technology. The customers' attitude towards using the technology plays a mediating role between the motivations and adoption intention. Confirmatory Factor Analysis (CFA) using LISREL and multiple regression analysis using SPSS were performed to test the research hypotheses.

The study was conducted through an online questionnaire. Data was collected from 209 Chinese dining customers who use mobile apps in their daily life. Most of the study samples were frequent mobile app users with experience using restaurant search mobile apps in their everyday lives. The findings of this study revealed that the strongest predictor of intentions to use restaurant search mobile apps was 'perceived usefulness,' followed by 'personal innovativeness.' The relationships between motivational factors and the behavioural intentions were partially mediated by the kinds of attitudes towards using the mobile app. The model explained 60% of the total variance of intention to use

restaurant search mobile apps.

The original contribution this study makes is to investigate restaurant search mobile apps from the perspectives of customers. The study also addresses the gap in literature about mobile technology adoption in the Chinese dining industry. The empirical results contribute to the validation of TAM and offer new perspectives for examining mobile technology adoption in hospitality contexts. In addition to the functionality of technology, consumers' personal traits can also be significant antecedents to technology adoption. Practically, the findings of the study provide restaurant managers and decision makers some valuable insights into contemporary Chinese dining customers and information about the motivations of their adoption behaviour. The study's findings can be used to guide restaurant organisations to apply appropriate restaurant search mobile apps as effective marketing tools.

Chapter 1. Introduction

1.1 Background

Mobile commerce has been growing rapidly with the unprecedented expansion of smartphone usage among contemporary consumers all over the world. Mobile applications (apps) are the prevailing forms of mobile technology to have achieved popularity in recent years. In the hospitality and tourism context, mobile apps have not only penetrated various stages of business but also affect consumers' behaviour (Morosan, 2014). For business operators, mobile apps can be employed as an extension of e-marketing strategies and as a source of competitive advantage for companies. Many major hotel organisations have launched their own mobile apps (for example, the Hilton Worldwide and its Hilton app) to help them with advertising, sales promotion, customer data collection and establishing electronic word of mouth (eWOM) (Kwon, Bae, & Blum, 2013; Litvin, Goldsmith, & Pan, 2008). Meanwhile, mobile apps have significantly changed consumers' consumption behaviour because of their ubiquity and portability. These qualities enable smartphone users to receive and diffuse information much more quickly and easily than ever before (Islam, Low, & Hasan, 2013). For instance, many tourists today use mobile apps such as TripAdvisor[®] to facilitate their travel experience by searching for travel information, booking tickets online, reviewing accommodation and so on (Morosan, 2014).

Mobile apps are defined as software or programmes that are designed to perform specific tasks, which can usually be downloaded onto users' mobile devices (Kwon et al., 2013; Mozeik, Beldona, Cobanoglu, & Poorani, 2009; Wang, Zheng, Law, & Tang, 2015). In this case, restaurant search mobile apps (e.g., Zomato app, Yelp app, Urbanspoon app) can be defined as mobile programs that provide customers with restaurant-related electronic services such as restaurant searching, restaurant reviewing,

directions, booking and so forth. These can be downloaded from diverse online app stores (e.g., Apple, Android and Google) to operate on mobile devices such as smartphones and tablets.

This study uses Zomato as an example of these types of mobile apps. Zomato is an online search tool offering millions of its users restaurant information and recommendation services across 22 countries. The mobile app is designed to improve dining experiences for all users. As summarised on the website, Zomato enables its users, among other things, to find the best restaurants nearby, view restaurant information and menus, discover new restaurants according to the mood of the user and to comment on and rate the dining experience (“About Zomato,” n.d.).

Restaurant-related mobile apps have gradually replaced computer-based restaurant service websites in China. Many restaurant operators have realised the importance of developing restaurant-related mobile apps to meet consumers’ needs for personalised and diversified services. In the competitive Chinese dining market, new restaurant search mobile apps emerge continually, examples of which include the Dazhongdianping app, the Meituan app, and the Eleme app.

Restaurant search mobile apps enjoy enormous popularity among Chinese consumers. According to the annual report of the catering industry in China 2015, the Dazhongdianping app was downloaded 230,000 times within a week and total downloads exceeded 54 million by the end of 2012 (“Chinese Catering Industry,” 2015). The Meituan app has been run around 128.3 million times during the first quarter of 2015 according BigData-Research (“China Catering App,” 2015). Notwithstanding the proliferation of restaurant search mobile apps in the Chinese dining industry, very little investigation into restaurant-related mobile apps in China has been conducted by academics.

Mobile commerce has received substantial attention from researchers and practitioners from different industries (Kwon et al., 2013; Morosan, 2014; Mozeik et al., 2009). For instance, consumer adoptions of various forms of mobile commerce (e.g., mobile shopping, mobile banking, mobile booking, etc.) have been studied in leisure and business contexts (Lu, Yao, & Yu, 2005; Tojib & Tsarenko, 2012). However, few studies have focused on mobile apps as the research subject. Mobile apps are an interesting area for research because of their relative novelty and rapid dispersion in consumer markets (Wang et al., 2015). This study, therefore, investigates customers' intentions to use restaurant search mobile apps in China.

1.2 Problem statement and objectives

Law, Leung, Au, and Lee (2013) found in their review of Information Technology (IT) development in hospitality that the majority of published articles in "Cornell Hospitality Quarterly" examined IT applications in hospitality organisations as they related to business performance, revenue management, strategic competitiveness and customer satisfaction. Most of the reviewed articles investigated IT implementation from the perspectives of business operators rather than customers. This study explores customer behaviour when adopting restaurant search mobile apps to address the dearth of research on customers' perspectives.

Researchers have applied various technology adoption theories to examine IT technology acceptance at organisational and individual levels (Ozturk, 2010). For example, at individual levels, the Theory of Reasoned Action (TRA) and Technology Acceptance Model (TAM) deal with the intention of individuals to adopt a new technology, while Innovation Diffusion Theory investigates the actual adoption behaviour of individuals.

This study applies the TAM to examine customers' intentions to use restaurant search

mobile apps. TAM is an important framework developed by Davis (1989) for investigating technology adoption among organisations and individuals and has been empirically examined by many studies (Morosan, 2014; Ozturk, 2010). TAM was derived from the Theory of Reasoned Action developed by Ajzen and Fishbein (1975). To date, technology adoption studies grounded in the TAM predominantly recognised ‘perceived usefulness’ and ‘ease of use’ as the determinants of technology adoption (Chong, 2013; Morosan, 2014). This study extends the TAM by incorporating motivation theory, which proposes that a consumer’s personal traits (e.g., drives towards innovation and independence) can be potential predictors of an individual’s technology adoption behaviour.

In sum, although many studies have examined mobile technology adoption in lodging and tourism industries, as yet few investigations have been carried out on mobile apps in the dining industry. Furthermore, technology adoption literature in hospitality contexts has focused mainly on organisations, while individual aspects of technology adoption have been relatively under-researched. Finally, China is a competitive market for restaurant-related mobile apps. Despite the proliferation of restaurant search mobile apps in the Chinese market and their enormous numbers of users, little academic research has been carried out in this field.

As such, the purpose of this study is to explore customers’ adoption of restaurant search mobile apps in the Chinese dining industry based on an extended model of TAM. In other words, this study will answer the research question: “What factors affect customers’ intentions to adopt restaurant search mobile apps?” More specifically, it seeks to establish what the relationship between customers’ extrinsic motivations and their intention to adopt apps is, as well as that relationship between their intrinsic motivations and intentions to adopt the same. Accordingly, this study has the following

objectives:

- 1) To develop a research model integrating the TAM and motivation theory. A detailed literature review of past studies grounded in TAM needs to be carried out to understand the theoretical framework for investigating customer adoption of restaurant search mobile apps. Motivation theories elaborating human behaviour are used to explain the adoption of technology from motivational perspectives. The proposed research model bridges the TAM and motivation theory.
- 2) To employ an exploratory perspective to investigate the antecedents of customers' adoption behaviour based on the integrated model. This study proposes that both extrinsic and intrinsic motivations can affect individual technology adoption behaviour. In addition to instrumentality beliefs identified by the TAM as antecedents to technology adoption, the proposed model suggests that customers' personal traits can be the potential antecedents of adoption behaviour.
- 3) To conduct a questionnaire survey, that empirically tests research hypotheses. This quantitative study employs an online questionnaire to investigate the intentions of contemporary Chinese dining customers to use restaurant search mobile apps. The questionnaire is based on the proposed research model and research hypotheses can be tested after data collection.

1.3 Potential contribution

This study will potentially enrich the existing literature of mobile technology adoption in the dining industry. Empirically, the results of the research model will add to the evidence validating the TAM and support new perspectives that explore technology adoption. Thus, the proposed model can be an appropriate theoretical model for investigating mobile apps in the dining industry. The study would address the dearth of research about how individuals adopt restaurant-related mobile apps in the Chinese

dining industry. Practically, this study would offer restaurant practitioners information about ways in which contemporary Chinese diners perceive restaurant search mobile apps and what drives them to adopt technologies. The findings of this study can be useful when guiding restaurant managers and decision makers to use restaurant search mobile apps effectively to enhance their marketing strategies.

1.4 Dissertation preview

This dissertation comprises six chapters. This first chapter introduces the background to this study, identifying research question and objectives.

The second chapter refers to the literature review and research model construction. First, previous research about technology adoption in hospitality contexts and motivation theories is discussed in-depth as theoretical background. Next, a research model is designed, drawing from the integration of motivational theories with the Technology Acceptance Model (TAM). Four factors that influence the ways in which individuals intend to make use of technology are included in the model. Hypotheses are then derived from the research model.

The third chapter explains the methodology applied in this quantitative study. The instrument design and data collection processes are discussed. The statistical methods used for data analysis are briefly introduced.

The fourth chapter presents research findings that include reliability, validity and hypotheses tests, demographic data analysis and descriptive statistics for study constructs.

The fifth chapter discusses the research findings and significant implications drawn from the results. Research limitations and directions for future research are also presented.

The conclusion provides an overview of the entire study by summarising the research topic, methodology, research findings and future research directions.

Chapter 2. Literature Review

This chapter reviews the previous literature on technology adoption in the hospitality context and builds a research model for the study. The first section critically examines the Technology Acceptance Model (Davis, 1989) to understand the fundamental antecedents (namely, the instrumental beliefs) of technology adoption. The next section discusses intrinsic and extrinsic motivation based on a coincidence of motivation theories. The third section presents an integrated model, which incorporates personality traits (intrinsic motivations) into TAM. Hypotheses derived from the integrated model are proposed at the end.

2.1 Mobile technology and mobile apps

Mobile-based online services are similar to computer-based online services in terms of functionality. However, mobile technology has unique features that differentiate a mobile service from its computer-based counterpart (Mozeik et al., 2009). Mobile technology operates through the wireless internet which provides a higher level of mobility and coverage than conventional desktop computers or laptops (Kim, Chan, & Gupta, 2007). The ubiquitous nature of mobile technology allows users to gain access to the internet and communicate with the system almost anytime and anywhere (Tojib & Tsarenko, 2012). As Wang et al. (2015) maintain “Today’s mobile technologies are known to possess the capabilities to satisfy users’ entertainment and spontaneous needs, help fulfilling one’s efficiency desires, assist in making time-critical arrangements, and cater to mobility-related situational needs” (pp. 5-6).

By 2014, the number of mobile users in China reached over 600 million and there is clear indication the growth will continue. According to data usage statistics, more than 50% of mobile data usage was spent on mobile shopping, social media and video websites. It is safe to say, therefore, that the online activities of Chinese consumers have

transformed from the computer-based platform to the mobile-based platform, where mobile apps are the dominant form of mobile internet content (“China Mobile Application”, 2015).

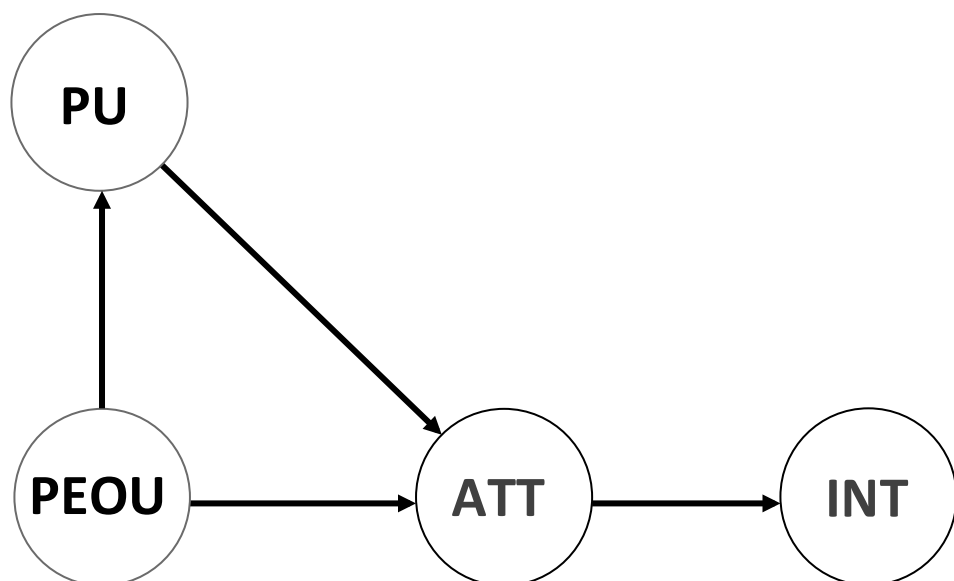
Restaurant search mobile apps, like other online service platforms, employ an online-to-offline (O2O) business model. The O2O model assists business operators in expanding business opportunities through the Internet in terms of bringing offline services online (Du & Tang, 2014). Consumers can search services and products, make reservations, and even make complete transactions online. Based on the rapid growth of mobile internet applications among Chinese consumers, the mobile terminal is becoming the likeliest market for O2O development, particularly for the service industry in China (Du & Tang, 2014). According to the O2O market report, the estimated figure of the O2O market scale in China will reach around 419 billion RMB in 2015 (as cited in Du & Tang, 2014).

In the hospitality industry, many major organisations have launched their own mobile apps (e.g., Starwood Hotels & Resorts launched the SPG app; Air Zealand Limited launched the Air NZ app) to effectively cut marketing budgets and reach out to more potential customers (Kwon et al., 2013). These mobile apps offer customers a variety of services; for instance, the Air NZ app lets its clients manage their travel plans by making bookings, selecting seats, receiving weather notifications, participating in rewards points programmes, as well as offering them mobile check-in and electronic boarding pass services (“Air New Zealand”, n.d.). In summary, mobile apps have penetrated various stages of business development and gradually changed customers’ consumption behaviour.

2.2 Technology acceptance model

Ozturk (2010) suggests that theories about the individual level of technology adoption

mainly focus on explaining and predicting an individual's behavioural intention as well as the actual adoption behaviour. The Technology Acceptance Model was developed by Davis (1989) and has become a widely accepted theoretical foundation for investigating an individual's intention to use a certain technology (Hong, Thong, & Tam, 2006). The TAM (Figure 1) proposes that, for users, the perceived usefulness (PU) and perceived ease of use (PEOU) of the technology are the fundamental determinants of users' intentions (INT) to adopt a new technology. These relationships are mediated by users' attitudes (ATT) towards using the technology (Davis, 1989). Perceived usefulness was defined as the extent to which users believe that a certain technology would improve job performance, and perceived ease of use refers to the degree to which users think the use of a particular technology is free of effort (Davis, 1989).



Note: PU=Perceived usefulness; PEOU=Perceived ease of use; ATT= Attitude toward using the technology; INT= Intention to use the technology.

Figure 1: Technology acceptance model

While there are alternative theories regarding technology adoption (e.g., Theory of Reasoned Action; Theory of Planned Behaviour) and updated versions of the TAM (e.g., TAM2; Unified Theory of Acceptance and Use of Technology), the original TAM remains the predominant theoretical underpinning for technology adoption research

(Morosan, 2014). This study adopts the TAM because of the literature demonstrating the rich empirical evidence supporting the model (Morosan, 2011, 2014; Mozeik et al., 2009; Wang et al., 2015) and the parsimoniousness of core constructs proposed in the model (Morosan, 2011, 2014). Parsimony and clarity are essential for the falsifiability and empirical operationalization of constructs (Bacharach, 1989).

However, Legris, Ingham, and Colletette (2003) argued that the TAM is constrained by its specificity and explanatory capability as the original TAM was used to explain and predict adoption behaviour in workplaces. As Lu et al. (2005) maintains, an individual's technology adoption intention varies significantly from non-work settings to work-related contexts. For example, an employee's computer technology adoption is likely affected by managerial decisions or peer influences (Lu et al., 2005), while technology adoption in a consumer context relies almost solely on an individual's decision. Therefore, a considerable number of studies have extended the TAM in order to fit the more complex consumer environment and reflect on the nature of a particular technology (Kwon et al., 2013; Lu et al., 2005; Morosan, 2011). When considering the features of mobile apps and consumer contexts, this study modifies the TAM by incorporating motivation theories to examine consumers' adoption of mobile apps.

2.3 Motivation theory

Intrinsic and extrinsic motivations are distinguished as subsystems of Self-Determination Theory (SDT) which elaborate on human behaviour based on individual psychology (Deci & Ryan, 2000). Extrinsic motivation is defined as the antecedent of performing an activity to achieve value-added outcomes such as gaining rewards or avoiding losses (Deci & Ryan, 2008). On the other hand, intrinsic motivation leads to the performance of an activity out of inherent self-interest and satisfaction which is a natural form of stimulus that exists independently from external incentives

(Ryan & Deci, 2000b). For example, some students study hard to get good marks or to avoid failure in exams, while some others study hard because of an inner desire for knowledge. In general, individual behaviour is motivated by either intrinsic and extrinsic factors together, or intrinsic and extrinsic factors separately. That is, one may choose to satisfy one's internal or external needs over the other, dependent upon the consumption context (Oh, Jeong, & Baloglu, 2013).

The rationale behind intrinsic and extrinsic motivations is highly coherent with push-and-pull motivational factors in tourism literature. According to Uysal and Jurowski (1994), travellers' decision-making was based on both push and pull factors. Travellers are pushed by their inner desires (e.g., desires for escape, relaxation, health, adventure, etc.) to satisfy their inherent interests. Travellers are also pulled by external stimuli, which are the attributes of tourism destinations, including tangible resources and cultural attractions.

In the case of technology adoption, pull factors can be understood as the instrumental nature of the technology that informs the customers' adoption behaviour. For instance, restaurant search mobile apps that offer discounts and vouchers can potentially attract more customers to use the app. Push factors for technology adoption can be understood as the customers' internal desires for such things as novelty or self-fulfilment. For example, tech-savvy individuals can be more interested in trying out new mobile apps than people who are less tech-savvy.

Consumers' intrinsic and extrinsic motivations suggest significant influences on the intention to adopt a new technology (Kim et al., 2007). However, the existing literature on technology adoption focuses primarily on extrinsic rather than intrinsic motivations as the antecedents of individual technology adoption behaviour (Agarwal & Karahanna, 2000; Chong, 2013; Lu et al., 2005). Individuals' internal motivations, such as personal

traits, are rarely investigated. This study, then, examines motivations both extrinsic and intrinsic to consumers' adoption of restaurant search mobile apps.

2.4 The proposed research model and hypotheses

Based on the discussion of motivation theories and TAM, an integrated research model is proposed at the end of this chapter. The following section expands on reasons for containing the constructs in the research model and the rationale of the hypothesised causal relationships between constructs.

Diverse factors influence an individual's adoption intention towards a mobile technology such as perceived security and trust (Morosan, 2014), social anxiety (Dabholkar & Bagozzi, 2002), self-efficacy (Thatcher & Perrewé, 2002), perceived enjoyment (Davis, Bagozzi, & Warshaw, 1992), social factors (Agarwal & Prasad, 1998), and so on. This current research focuses only on extrinsic motivation that links directly to instrumental beliefs about the specific technology and intrinsic motivations associated with personal traits.

2.4.1 Extrinsic motivations and hypotheses

This study proposes that extrinsic motivations (i.e., pull factors) be positively related to technology adoption. Within the TAM, the extrinsic motivation for technology adoption is related to the instrumentality of a specific technology (Venkatesh, 1999). 'Perceived usefulness' and 'perceived ease of use' are frequently and consistently recognised as extrinsic stimuli for technology adoption in previous studies, because these two components can more efficiently facilitate an individual's completion of tasks (Tojib & Tsarenko, 2012; Venkatesh, Morris, & Ackerman, 2000; Venkatesh, Morris, Davis, & Davis, 2003)

Perceived usefulness

Perceived usefulness is defined as the extent to which users believe a certain technology

can improve job performance (Davis, 1989). The higher the potential usefulness of the technology, the more likely the technology will be adopted (Lim, 2009; Morosan, 2011). Restaurant search mobile apps are likely to outperform computer-based restaurant search websites in terms of perceived usefulness, because the ubiquitous characteristics of mobile technology enable customer control of when and where to purchase products and services through their smartphones (Tojib & Tsarenko, 2012). Moreover, mobile commerce can deliver services that are personalised, timely, location-specific and focus on customer relationships (Tojib & Tsarenko, 2012).

Based on the TAM, perceived usefulness is the paramount determinant of an intention to use. A great number of empirical studies also demonstrate a strong and consistent relationship between perceived usefulness and the intention to adopt technology (Mathieson, 1991; Mohamed Gamal, 2010; Morosan, 2014; Szajna, 1996; Teo, Lim, & Lai, 1999). Therefore, the following hypothesis is proposed:

Hypothesis 1. There is a positive relationship between the customer's perceived usefulness of restaurant search mobile apps and their intention to adopt the apps.

Perceived ease of use

Perceived ease of use refers to users' perceptions that using a particular technology is free of effort (Davis, 1989). The more convenient it is to use a certain technology, the more likely it is to be deployed by users (Lim, 2009; Morosan, 2011).

The updated hardware and software of contemporary mobile phones have contributed to the perceived ease of using mobile apps (Morosan, 2014). First, most mobile phones are now equipped with touchscreens which allow easy access and control (Morosan, 2014). Customers may feel that it is more convenient and timesaving to retrieve restaurant searching services by tapping on the screens of smartphones rather than using the computer platform (Tojib & Tsarenko, 2012). Second, mobile apps focus more on

user-friendly interfaces and the customisation of services which assist interactions between customers. The system becomes simpler than traditional websites (Morosan, 2014). Third, internet connections are now faster than ever for smartphones which, in turn, strengthen the efficiency of using mobile apps to receive personalised services (Morosan, 2014).

In discussion of the measurement of perceived ease of use of mobile technology, different standards are used in the existing literature. On the one hand, some research tends to measure the perceived ease of use of the smartphones in general as the antecedent of consumers' intention to accept smartphones in learning (Yong Wee, Siong Hoe, Kung Keat, Check Yee, & Parumo, 2011), mobile banking (Yoon & Occeña, 2014) and buying ancillary airline services (Morosan, 2014). On the other hand, some studies were more specific in measuring the perceived ease of use of particular mobile software and applications such as the mobile-based social network games (Park, Baek, Ohm, & Chang, 2014) and social software (Chinomona, 2013). Given the purpose of the current study, the perceived ease of use of the restaurant search mobile apps, rather than the smartphones in general, is investigated. In particular, such questions as how fast consumers can learn to operate restaurant search mobile apps and how easily these apps can enable them to find a favourable restaurant are explored. Consequently, this study proposes that:

Hypothesis 2. There is a positive relationship between customers' perceived ease of use of restaurant search mobile apps and their intention to adopt the apps.

The relationship between perceived ease of use and the intention to use the technology based on the TAM is validated in many studies (Venkatesh & Davis, 2000). Davis (1989) pointed out that the perceived ease of use is also a causal antecedent of perceived usefulness. Venkatesh, Speier, and Morris (2002) hypothesise that when two types of

technology have similar utility, the technology that is perceived to be easier to use increases in its own use and task implementation. This current study proposes that customers' perceived ease of use of restaurant search mobile apps affects their perception of usefulness and thus their intention to use the mobile apps.

Hypothesis 3. There is a positive relationship between customers' perceived ease of use and the perceived usefulness of restaurant search mobile apps.

2.4.2 Intrinsic motivations and hypotheses

Personal traits are suggested to be significant potential antecedents to adoption in behavioural science and psychology (Lu et al., 2005). Personal traits refer to individuals' psychological predispositions which influence human attitude, cognition and behaviour. Personality factors are well-recorded and researched in management and psychology literature but ignored in technology acceptance research (Devaraj, Easley, & Crant, 2008; Zhou & Lu, 2011). This current study examines personal traits as internal motivations for restaurant search mobile app adoption among customers.

With regard to the relationship between intrinsic and extrinsic motivations for technology adoption, Venkatesh (2000) argues that the technology adoption literature has long focused, and limitedly so, on the system characteristics of the technology when assessing users' perceived ease of use. The research of Venkatesh (2000) and Venkatesh and Bala (2008) research indicates that individual differences in intrinsic motivations can positively impact on employees' perspectives of perceived ease of use of computer systems in the workplace. For example, computer anxiety, computer playfulness and computer self-efficacy, which are independent from the system characteristics, are found to be significant predictors of perceived ease of use (Venkatesh, 2000; Venkatesh & Bala, 2008). Therefore, the intrinsic motivational factors proposed in this study (i.e., personal innovativeness and independence) are highly likely to affect perceived ease of

use of the restaurant search mobile apps. However, as the purpose of the current study is to examine how intrinsic and extrinsic motivations influence technology intention (Kamarulzaman, 2007), the causal relationships between intrinsic motivations and perceived ease of use are not examined herein.

Personal innovativeness

Agarwal and Prasad (1998) initially refer to personal innovativeness as an individual's willingness to experiment with new information technology. The innovation diffusion literature has long believed that individuals with innovative characteristics are more active when seeking new ideas, more open to risk-taking and less concerned about uncertainty. This leads to a stronger tendency to accept new technology than less innovative individuals (Lu et al., 2005). For the purpose of market research, considering personal innovativeness in this study can help hospitality marketers to better understand the innovative customer market segment (Generation Y, for instance, is usually considered tech-savvy) (Wind & Mahajan, 2002). It is believed that individuals with a stronger sense of innovation are more likely to generate positive attitudes towards using restaurant search mobile apps and are less worried about the changes applied when adopting mobile apps.

Past empirical studies demonstrate that innovativeness has both direct and indirect effects on customers' attitudes towards making Internet purchases, as well as their adoption intentions towards Internet shopping (Alka Varma, David, Steven, & Donald, 2000; Limayem, Khalifa, & Frini, 2000). The current study proposes that personal attitudes towards innovation are predictors of technology adoption.

Hypothesis 4. There is a positive relationship between customers' personal innovativeness and their intention to adopt restaurant search mobile apps.

Independence

Independence is closely related to autonomy, which refers to an individual's inherent psychological desire to improve self-motivation and well-being, and to become more self-controlled and self-dependent in various situations (Oyedele & Simpson, 2007). Independence is interpreted as perceived control in the service industry, the degree to which the individual feels in control of service encounters (Dabholkar, as cited in Oh et al., 2013). In the case of self-service technology adoption in hotels, independent and autonomous individuals tend to be more motivated to achieve their desired goals when working with self-service technology since they tend to avoid interaction with service providers and maintain a high level of control during the service process (Oh et al., 2013).

Restaurant search mobile apps are believed to contain similar features to self-service technology (e.g., mobile payment and mobile reservation), providing a non-traditional method of service transaction (Mozeik et al., 2009). Hotel customers can check in and out through a self-service kiosk installed in hotels. Similarly, the users of restaurant search mobile apps can maintain independence and experience control over the service process by performing various functions with the mobile apps to achieve their desired goals. Personal interactions with service staff can be avoided by using mobile apps to purchase products and services, which is also an important indicator of independence. Thus, this study proposes, first, that restaurant search mobile apps share common features with self-service technology; and, second, that personal traits of independence, as an influential predictor of self-service technology adoption, can also potentially affect the adoption of restaurant search mobile apps.

Hypothesis 5. There is a positive relationship between customers' independence and their intention to use restaurant search mobile apps.

2.4.3 The mediating role of attitudes and hypotheses

Attitudes towards using a technology can be defined as the extent to which an individual positively or negatively evaluates the behaviour of using a certain technology (Venkatesh et al., 2000). Bruner and Kumar (2005) maintain that attitude towards using a technology is an overall assessment of the desirability of using that technology, which involves both utilitarian (e.g., PU and PEOU) and hedonic (e.g., fun) perceptions of the technology. Davis's final TAM omits consideration of attitudes towards using technology. The major reason for the omission is that the mediating influence of attitudes towards users' intentions is weak (Kim et al., 2007; Venkatesh, Thong, & Xu, 2012). Kim et al. (2007) assert that individuals might adopt a technology because of its utility even if they have a negative attitude towards using it.

However, the current research model attempts to test attitudes towards using restaurant search mobile apps as a form of mediation between the motivational factors and adoption intention. In the most generic manner, Woodworth (1928) defines the mediation relationship in terms of an organism that actively intervenes between stimulus and response (as cited in Baron & Kenny, 1986). There is a fundamental causal chain within the mediation relationship. First, there is direct link between the predictors and the mediator (Path *a*); second, the mediator directly impacts on the outcome (Path *b*); third, there are direct effects of the predictor on the outcome (Path *c*); finally, the indirect relationship between predictors and the outcome that is mediated by the mediator is named as Path *c'* (Baron & Kenny, 1986).

According to the Theory of Reasoned Action (Fishbein & Ajzen, 1975), people are more likely to generate behavioural intention to perform an activity when they hold a positive attitude towards it (as cited in Bruner & Kumar, 2005). Therefore, some researchers ascertain that the attitude variable mediates the effects of the systematic beliefs (e.g., PU and PEOU) on the adoption intention within the TAM (Agarwal &

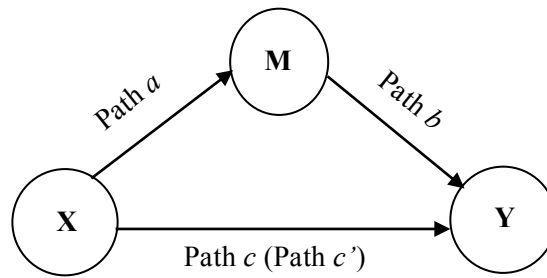


Figure 2: The mediation relationship

Based on a careful review of the past technology adoption literature, very many TAM studies justify the direct relationships between the antecedent variables and attitude variable, and between them and the outcome variable. For example, as for the direct path from antecedent variables to the attitudinal variable (i.e. path *a*), Agarwal and Prasad (1999) , Dabholkar and Bagozzi (2002) and Morosan (2014) indicate that attitude is determined by utility beliefs (e.g., PU and PEOU) and intrinsic beliefs (e.g., fun). Their studies also suggest that there is a direct and positive relationship between attitude and behavioural intention (i.e., Path *b*), which is evidenced in a broad range of attitudinal research (Agarwal & Prasad, 1999; Dabholkar & Bagozzi, 2002; Morosan, 2014). As for the direct effects of the antecedent variables on the outcome variable (i.e., Path *c*), perceived usefulness and perceived enjoyment are examined and found to be significant predictors of adoption intention (Agarwal & Prasad, 1999; Gamal Aboelmaged, 2010; Teo et al., 1999). Compared to the direct path tests, little TAM research looks into the indirect path (i.e., Path *c'*) from antecedent variables to outcome variables through the mediating role of the attitude variable (Bruner & Kumar, 2005; Gentry & Calantone, 2002). To fill this gap in the literature, the current research model attempts to test attitudes towards using restaurant search mobile apps as a form of mediation between motivations and adoption intention and proposes that:

Hypothesis 6: The relationship between perceived usefulness and intention to use is mediated by customers' attitudes towards using the restaurant search mobile apps.

Hypothesis 7: The relationship between perceived ease of use and intention to use is mediated by customers' attitudes toward using the restaurant search mobile apps.

Hypothesis 8: The relationship between personal innovativeness and intention to use is mediated by customers' attitudes toward using the restaurant search mobile apps.

Hypothesis 9: The relationship between independence and intention to use is mediated by customers' attitudes toward using restaurant search mobile apps.

2.4.4 The research model

The proposed research model (Figure 3) summarises hypothesised relationships between constructs. Perceived usefulness and perceived ease of use (extrinsic factors) have positive relationships with the intention to use (*H1, H2*), which are mediated by the attitude towards using (*H6, H7*). Personal innovativeness and independence (intrinsic factors) are positively related to the intention to use (*H4, H5*), which is also mediated by users' attitudes (*H7, H8*). Moreover, perceived ease of use is considered to have positive effects on perceived usefulness (*H3*).

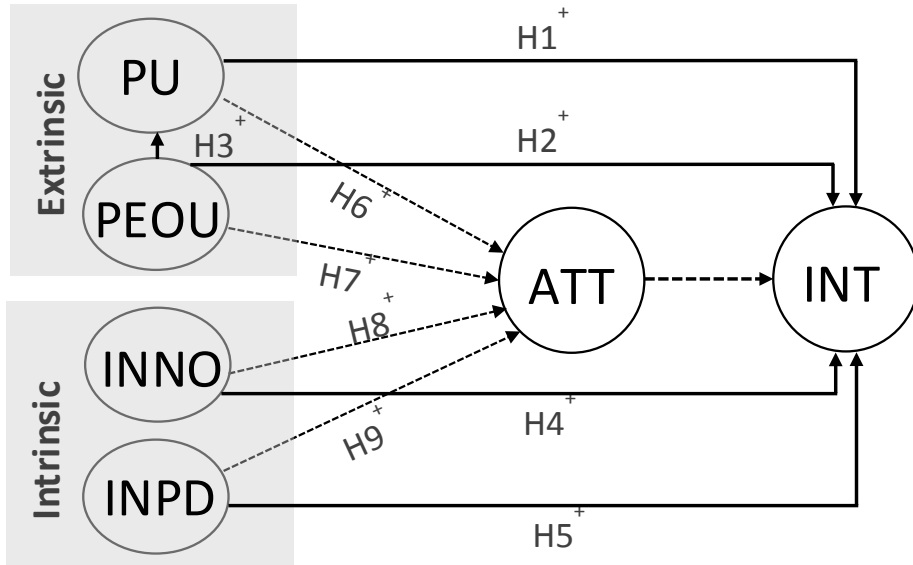


Figure 3: The research model

Note: PU=Perceived usefulness; PEOU=Perceived ease of use; INPD= Independence; INNO= Personal innovativeness; ATT= Attitude toward using the technology; INT= Intention to use the technology

Chapter 3. Methodology

This chapter addresses the methodology adopted in this study. Instrument design, measurement and data collection methods are elaborated on in the first part. Following this is a brief introduction to the statistical methods applied in data analysis.

3.1 Research methodology

This study applies a positivist paradigm grounded in ontological realism and an objectivist epistemology. Positivists consider that reality consists of sensible facts that can be investigated through empirical enquiry based on scientific observations (Gray, 2004). The objectivist epistemology believes the meaningful reality exists objectively, regardless of individuals' awareness of its existence or not (Crotty, 1998).

Within a positivist paradigm, researchers focus on the external facts and aim to explain the causality between constructs by measuring the operationalised indicators of the constructs. The research question for this study reflects the author's assumptions about reality and human knowledge. That is, reality exists independently of an individual's consciousness and there are patterns and rules of customers' attitudes and intentions towards using a specific technology.

This study employs a survey research methodology which is also embedded in positivist theoretical perspectives and an epistemological objectivist stance (Crotty, 1998). A deductive approach is adopted to test the research model, and a questionnaire is used to collect data from participants (Bryman & Bell, 2007).

3.2 Instrument development

This study adopts an online questionnaire as the main research instrument to collect primary data. The questionnaire contains two parts: research model testing (see Appendix C), and respondents' demographic profiles (see Appendix D). Both parts

were designed in English and then translated into Chinese for the purpose of collecting data in China (refer to Appendices E and F). To ensure the equivalence of meaning, the contents of both versions were checked by an experienced researcher who is fluent in both languages (Adler, 1983).

Prior to the first section, two screening questions are designed to help eliminate respondents who were either under 18 or did not use mobile apps in their everyday lives. The first part informing the research model testing is designed based on the research model. The second section of the questionnaire is used to collect the respondents' demographic data, such as age, sex and education level. In addition, questions about customers' behaviour, including the frequency of mobile apps use and the frequency of dining out, are asked at the end of the questionnaire. Such information enables us to explore other potential factors (e.g., age, sex, education, etc.) influencing the customers' adoption of the restaurant search mobile app (refer to Appendix D).

3.3 Measures

The first section of the questionnaire is based on the research model. There are 18 questions derived from the study which were assessed using a seven-point Likert Scale ranging from one (strongly disagree) to seven (strongly agree). An exception is made for the questions on attitude which applies a seven-point semantic differential scale.

Measurements for the research model constructs are adjusted based on previous TAM research. Items measuring perceived usefulness and perceived ease of use are consistent with the previous study of Davis (1989). Three items measuring attitude are adapted from the research of Hsu, Yen, Chiu, and Chang (2006) as well as Spears and Singh (2004). Behavioural intention is measured through three items adapted from the study of Venkatesh et al. (2012) and Gu, Lee, and Suh (2009). Measurements of independence are adopted from the work of Oh et al. (2013) and personal innovativeness

measurements from the studies of Agarwal and Karahanna (2000). Table 1 lists the detailed measurements used to operationalise each construct.

Table 1: Constructs measurement

Constructs	Reference
Perceived usefulness - PU 1. Using this mobile app would improve my performance in seeking restaurants 2. Using this mobile app will enhance my effectiveness as a whole 3. This mobile app is generally useful	Davis (1989)
Perceived ease of use – PEOU 1. Learning to use this mobile app is easy 2. It is easy to use this mobile app to find the restaurant I want 3. In general, this restaurant search mobile app is easy to use	Davis (1989)
Attitude toward using - ATT 1. Using this restaurant search mobile app is a good/bad idea 2. I am interested/uninterested in using this mobile app 3. The overall feeling about using this mobile app is positive/negative	Hsu et al. (2006); Spears & Singh (2004)
Intention to use - INT 1. I am likely to download and use this restaurant search mobile app 2. I will probably keep using this restaurant search mobile app in daily life 3. I would recommend this restaurant search mobile app to my friends	Venkatesh et al. (2012); Gu et al. (2009)
Personal innovativeness - INNO 1. I want to handle my own needs 2. I want to do things by myself to minimize problems 3. I want to make my own choices and decisions	Agarwal & Karahanna, (2000)
Independence - INPD 1. I like to experiment with new mobile apps 2. Among my peers, I am usually the first to explore new mobile apps 3. In general, I hesitate to try new mobile apps	Oh et al. (2013)

Respondents are asked to state their specific age instead of choosing from age groups. Education levels are measured according to the Chinese education level standards, including “nine-year compulsory education,” high school and the academic degrees of bachelor’s, master’s and doctorate. The frequency of dining out is measured in terms of number of times per week. The frequency of mobile app usage is measured using a five-point scale that ranged from “very infrequently” to “very frequently.” The frequency of restaurant search mobile apps usage ranges from “never” to “very frequently” (Appendix D).

3.4 Data collection

Before data collection, a pilot test consisting of 15 respondents was administered to the students and lecturers in the school of hospitality and tourism at Auckland University of Technology (AUT). The purpose was to verify the survey questions. An invitation e-mail containing respondent information sheets in Chinese (Appendix B) and English (Appendix A) and the link to the survey website on Qualtrics.com was sent to potential participants. The respondent information sheet included a brief research introduction, the time needed to complete the questionnaire, ethical principles that would ensure voluntary, anonymous and confidential participation, and contact details for the author and her supervisor in case of any need for further enquiry. Invitation letters and the survey link were sent to members of online social groups on mainstream social network websites and apps in China (e.g., WeChat app, QQ app, Renren.com).

A snowball sampling strategy was adopted for data collection. Snowball sampling takes advantage of the personal network of the identified respondents to attain more potential respondents in the targeted population (Atkinson & Flint, 2001). However, Griffiths, Gossop, Powis and Strang (1993) argue that most snowball samples are biased because the samples are not randomly selected which may limit the validity of the data and constrains the generalisability of the results (as cited in Atkinson & Flint, 2001). This study applies snowball sampling strategy mainly because of economic and convenience considerations. The data was gathered mainly in two metropolitan cities in China: Shanghai and Shenzhen, Guangdong province. These cities were chosen because they are two of the most developed cities in China with a large population of smartphone and mobile app users. Catering industry revenue in Guangdong was 2.84 trillion RMB in 2014, an increase of 8.3% over the previous year. Shanghai catering income alone was 84 billion RMB in 2014, an increase of 5.7% over 2013 (“Chinese Catering Industry,” 2015). The questionnaire distribution started in May 2015 and was completed in three

weeks.

3.5 Data analysis

Data analysis was mainly carried out in LISREL 8.8 and SPSS 20th (Statistical Packages for Social Science). All of the measurement scales were properly coded from 1 to 7. The question “In general, I hesitate trying new mobile apps” was reverse-coded. Descriptive statistics, Confirmatory Factor Analysis (CFA) and multiple regression analysis were run to test the hypotheses.

Chapter 4. Results

The methodology and specific instrument design employed by this study was introduced in the previous chapter. This chapter delineates the results of a statistical analysis of the data collected in the form of narratives, tables and figures. First, a table of the demographic profile of the respondents is presented in terms of frequency and percentage followed by a descriptive analysis of the frequency of respondents' dining experiences and use of mobile apps. Study construct descriptions, including mean, standard deviation, skew and kurtosis are identified next. Based on Confirmatory Factor Analysis (CFA), the construct reliability and validity are then discussed. The final section provides the results of the hypothesis test.

4.1 Respondents' profiles

Four hundred respondents accessed the online questionnaire and 321 questionnaires were completed. Excluding responses that contained too many missing values, there were 209 responses retained for data analysis.

Table 2 provides a demographic profile of the respondents. There were 134 female and 74 male respondents, with only one questionnaire missing the gender value. The age of the respondents ranged from 18 to 47 years old ($M = 28.0$, $SD = 5.04$). Age was non-normally distributed, with a skewness of 1.26 ($SE = 0.13$) and a kurtosis of 2.23 ($SE = 0.38$). Nearly 70% of respondents ($N = 129$) were aged from 23 to 30, the second largest age group was between 31 to 39 years old ($N = 33$). With regard to the education level, 73% of respondents ($N = 153$) had a bachelor's degrees, 20% of respondents had a master's degrees or higher and 7% of respondents reported either completing or not completing high school education. Around 35% of the respondents dine in a restaurant two to four times a week and 23% eat out more than five times a week. In terms of mobile app usage, approximately 70% of the respondents use mobile apps frequently.

Only five respondents have never used a restaurant search mobile app while 51% of the respondents are frequent users of restaurant search mobile apps.

Table 2: Respondent profile

	Frequency (N)	Percentage (%)
Gender (N=208)		
Males	74	35.4
Females	134	64.1
Age (N=184)		
18-22	14	7.6
23-30	129	70.1
31-39	33	18.0
>=40	8	4.0
Education Level (N=208)		
Nine-years compulsory education	1	.5
High school	14	6.7
Undergraduate	153	73.2
Postgraduate	38	18.2
Ph.D.	2	1.0
Dining-out frequency (N=205)		
<=1 time a week	85	41.5
2-4 times a week	71	34.6
5-7 times a week	38	18.5
> 7 times a week	11	5.0
Mobile app usage (N=207)		
Very infrequently	9	4.3
Infrequently	17	8.1
Sometimes	36	17.4
Frequently	100	48.3
Very frequently	45	21.7
Restaurant search mobile app usage (N=207)		
Never	5	2.4
Rarely	22	10.5
Sometimes	73	34.9
Frequently	94	45.0
Very frequently	13	6.2

Based on the respondent profile, one-way ANOVA and post-hoc statistics applying Tukey's HSD were performed to test the different patterns of adoption intention among different demographic groups on the basis of age, gender, education, etc. Results revealed that there were no statistically significant differences of adoption intention between different gender groups, age groups, and educational groups. Results of variance analysis of mobile apps usage groups demonstrated that adoption intention was lower for respondents who never used restaurant search mobile apps compared to those

who were frequent users of restaurant search mobile apps ($F(4, 206) = 10.251, p < .001$).

4.2 Descriptive statistics for the study constructs

Table 3 provides the descriptive statistics for the study constructs, including a number of responses, minimum and maximum values, means and standard deviation, standard errors, skew and kurtosis statistics. The highest average score was independence followed by perceived usefulness. The lowest mean was personal innovativeness. The mean score of intrinsic motivators was 5.11, which is slightly lower than extrinsic motivators ($M = 5.54$).

Skewness and kurtosis statistics enabled access to the norms of data distribution. Skew depicted the asymmetrical nature of data distributed around the mean score while kurtosis demonstrated ways in which data was gathered at the central point of distribution (Čisar & Čisar, 2010; Field, 2005). All of the study constructs showed a negative skew. Kurtosis statistics indicated the relatively peaked distributions of the study constructs, with the exception of attitudinal construct, which shows a flattened distribution with a kurtosis of -0.272 ($SE = 0.36$). According to Kline (2010), a skewness value larger than 3.0 is described as ‘extremely’ skewed and an absolute value larger than 8.0 of the kurtosis index is considered as ‘extreme’ kurtosis. Tabachnick and Fidell (2007) suggest that effects of skewness and kurtosis on analysis and variance can be reduced with a reasonable sample size containing more than 200 (as cited in Pallant, 2013). In this case, the skewness and kurtosis scores of the study constructs are acceptable in terms of the data distribution.

Table 3: Descriptive statistics for study constructs

Constructs	N	Minimum	Maximum	Mean	SD	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
PU	209	1	7	5.57	1.375	-1.912	.181	3.909	.359
PEOU	209	1	7	5.52	1.397	-1.909	.181	3.923	.359
INPD	209	1	7	5.83	1.084	-1.877	.181	5.273	.359
INNO	209	1	6	4.39	.923	-.577	.181	1.297	.359
ATT	209	2	7	5.66	1.081	-.625	.181	-.272	.359
INT	209	1	7	5.30	1.263	-1.198	.181	1.851	.359

Note. PU=Perceived usefulness; PEOU=Perceived ease of use; INPD= Independence; INNO= Personal innovativeness; ATT= Attitude toward using the technology; INT= Intention to use the technology

4.2.1 Correlation, reliability and validity of the study constructs

Pearson correlation coefficients (Table 4) reveal that the constructs were positively related ($p < .01$). The dependent construct has a positive relationship with both extrinsic and intrinsic motivational factors. Among independent constructs, perceived usefulness has the highest correlation with an intention to use the technology ($r = .61, p < .01$). Independent constructs are also positively correlated with each other. A perceived ease of use significantly correlates to perceived usefulness ($r = .94, p < .01$). Personal innovativeness is related to independence ($r = .57, p < .01$). The independent constructs are more strongly related to the dependent constructs than the mediator construct (i.e. attitude towards using the technology) with a correlation coefficient above .54, which may imply weak mediating effects.

Table 4: Bivariate correlation for study constructs

Constructs	PU	PEOU	INNO	INPD	ATT	INT
1. PU	.92					
2. PEOU	.94**	.95				
3. INNO	.38**	.40**	.87			
4. INPD	.54**	.52**	.57**	.92		
5. ATT	.29**	.29**	.34**	.32**	.88	
6. INT	.61**	.60**	.56**	.57**	.54**	.93

Note: The square root of AVE appear on the diagonal in bold; significance at $**p < 0.01$ (2-tailed); $N = 209$ (pair-wise); PU=Perceived usefulness; PEOU=Perceived ease of use; INPD= Independence; INNO= Personal innovativeness; ATT= Attitude toward using the technology; INT= Intention to use the technology

Confirmatory Factor Analysis (Table 5) was performed to test the convergent and discriminant validity of study constructs. Bacharach (1989) maintains that construct validity is critical for the falsifiability of the construct and thus the theory. By dropping one item of personal innovativeness, the measurement model resulted in a good fit (Chi-square = 187.31, $p < .001$; GFI = 0.90; CFI = 0.99; RMSEA = 0.062). All of the factor loadings were greater than 0.50, which implied that all items converge on their corresponding latent constructs. AVE (Average Variance Extracted) calculates the variance explained by the construct, which should be at least 0.50 (Fornell & Larcker,

as cited in Zait & Berteau, 2011). The AVE of study constructs were situated between 0.75 and 0.90, evidencing a convergence of constructs (Morosan, 2011).

Construct reliability was assessed using Cronbach's alpha and Composite Construct Reliability (CCR). According to Lu et al. (2005), internal consistency coefficients above 0.70 would be acceptable in the research. The results revealed that all of the study constructs were reliable, with the alpha value greater than 0.83. In conclusion (based on the above analysis of factor loading, AVE and reliability tests) the convergent validity of study constructs was verified.

Construct discriminant validity can be tested by contrasting the square root of the AVE value of a construct with its corresponding inter-constructed correlations (Morosan, 2014; Zait & Berteau, 2011). Discriminant validity was evidenced when the square root of the AVE value surpassed all of the correlations with the construct. All of the study constructs evidenced discrimination from each other, except for perceived usefulness (PU) and perceived ease of use (PEOU). The discriminant validity between PU and PEOU was questionable because of the high correlation between two constructs ($r = .935, p < .001$). Field (2005) suggests that inter-constructs correlation above .80 or .90 would be a sign of multicollinearity, which is a concern when performing multiple regression statistics. Pallant (2013) maintains that when multicollinearity exists between two independent variables for multiple regression analysis, a possible solution might lie in omitting one of the highly correlated independent variables. As the proposed research model hypothesises the causal relationships between extrinsic motivations and adoption intention of restaurant search mobile apps, it is expected that one of the extrinsic predictors (i.e., PU and PEOU) is very likely to be an insignificant predictor of the behavioural intention, due to the potential multicollinearity between the two variables.

Table 5: Properties of the research model (N = 209)

Constructs and Indicators	Item loading	t-value	Cronbach's α	CCR	AVE
Perceived usefulness - PU			0.93	0.94	0.84
PU1	0.90				
PU2	0.89	19.51			
PU3	0.95	23.29			
Perceived ease of use - PEOU			0.96	0.96	0.90
PEOU1	0.95				
PEOU2	0.94	28.78			
PEOU3	0.95	29.96			
Innovativeness - INNO			0.83	0.85	0.75
INNO2	0.72				
INNO3	0.99	10.44			
Independence - INPD			0.94	0.94	0.85
INPD1	0.91				
INPD2	0.92	22.10			
INPD3	0.93	22.51			
Attitudes - ATT			0.91	0.91	0.77
ATT1	0.83				
ATT2	0.89	15.93			
ATT3	0.91	16.22			
Intention - INT			0.95	0.95	0.87
INT1	0.95				
INT2	0.97	30.56			
INT3	0.87	21.62			

Note. Fit indices: Chi-square (104) = 187.31, $p = .000$; Goodness of Fit Index (GFI) = .90; Adjusted Goodness of Fit Index (AGFI) = 0.86; Comparative Fit Index (CFI) = 0.99; Root Mean Square Residual (RMR) = .073; Root Mean Square Error of Approximation (RMSEA) = .062

4.3 Hypotheses tests

4.3.1 Hypotheses 1, 2, 3, 4 and 5

Multiple regression analysis was run to test hypothesised relationships. The standardised regression coefficients for each predictor, with their significance value, were presented to indicate predictive power. Based on the research model, all predictors have been entered using forced entry methods in SPSS.

Table 6 shows that the research model accounted for 60% of the variance in adoption intention ($F = 59.72, p < .001$). Table 7 indicates that PU ($t = 2.073, p = .039$), INNO ($t = 4.195, p < .001$) and INPD ($t = 2.471, p = .014$) had made significant contributions towards predicting INT. Therefore, *H1*, *H4*, and *H5* are supported. However, PEOU ($t =$

0.75, $p = .454$) appeared to be a non-significant predictor of the outcome. Thus, the null hypotheses of $H2$ were supported.

Table 6: Summary of regression analysis (PU, PEOU, INNO, INPD, ATT)

<i>R</i>	<i>R</i> ²	Adjusted <i>R</i> ²	df	<i>F</i>	Sig.
.772 ^a	.595	.585	5	59.721	.000**

Note: a. Predictors: (Constant) ATT, PU, INNO, INPD, PEOU; Dependent Variable: intention to use; Significant at: * $p < .05$ and ** $p < .01$; $n=209$

Table 7: Significance of regression coefficients (PU, PEOU, INNO, INPD)

Model	Unstandardized coefficients		Standardized coefficients		Sig.
	Beta	SE	Beta	<i>t</i>	
PU	.248	.120	.266	2.073	.039*
PEOU	.077	.117	.083	.653	.514
INNO	.231	.055	.235	4.195	.000**
INPD	.168	.068	.149	2.471	.014*
ATT	.396	.062	.312	6.419	.000**

Note: Significant at: * $p < .05$ and ** $p < .01$; $n=209$; dependent variable: intention to use

Linear regression was applied to examine the relationship between PEOU and PU. Table 8 reveals that the perceived ease of use of the restaurant search mobile app accounts for 88% of perceived usefulness ($F = 1654.3$, $p < .001$). PEOU had a significant positive relationship with PU ($t = 40.673$, $p < .001$), which lends support to $H3$ (Table 9).

Table 8: Summary of regression analysis (PEOU)

<i>R</i>	<i>R</i> ²	Adjusted <i>R</i> ²	df	<i>F</i>	Sig.
.939 ^a	.881	.881	1	1654.3	.000**

Note: a. Predictor: (Constant), PEOU; Significant at: * $p < .05$ and ** $p < .01$; $n=209$; dependent variable: perceived usefulness.

Table 9: Significance of regression coefficients (PEOU)

Model	Unstandardized coefficients		Standardized coefficients		Sig.
	Beta	SE	Beta	<i>t</i>	
PEOU	.932	.023	.939	40.673	.000**

Note: Significant at: * $p < .05$ and ** $p < .01$; $n=209$; dependent variable: perceived usefulness

In summary, hypothesized causal relationships derived from the research model are

supported (*H1, H3, H4, H5*) except for the relationship between customers' perceived ease of use of restaurant search mobile apps and their intention to use the apps (*H2*).

4.3.2 Hypotheses 5, 6, 7 and 8

To test the hypothesised mediation relationships statistically, the path coefficients between the three variables (i.e., predictor, mediating, and outcome) should be assessed. As discussed in section 2.4.3, path *c* refers to the direct connection between the predictor and the outcome variable, path *a* refers to a direct relationship between the predictor and mediator variables and path *b* represents direct relationships between the mediator and outcome variables, while path *c'* is the indirect relationship between the predictor variable and the outcome variable, which is mediated by the mediator variable. When the mediator variable is controlled, the path coefficients of the indirect relationship (path *c'*) should no longer be significant (Baron & Kenny, 1986). When the path *c'* coefficient decreases significantly or becomes close to zero, this suggests the persuasive mediating effects of the mediator on the relationship between the predictor and outcome variables (Baron & Kenny, 1986).

Follow Baron and Kenny's (1986) four steps, linear regression and multiple regression statistics were performed to examine the mediation hypotheses. The results are illustrated in the Figures below.

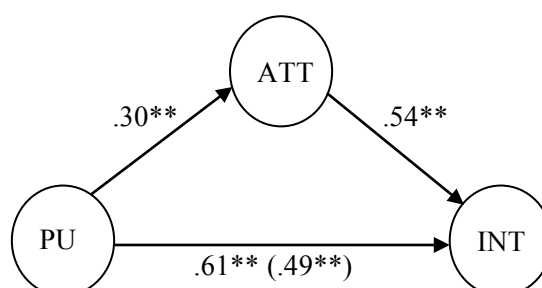


Figure 4: Mediation (PU-ATT-INT)

Figure 4 demonstrates that the standardized regression coefficients of direct relationships (i.e. path *a*, path *b* and path *c*) among PU, ATT, and INT were all

statistically significant. The standardised coefficient of path c' did not reduce substantially yet remained statistically significant ($p < .001$), which suggests a partial mediation of ATT (MacKinnon, 2008). Other hypothesised mediation relationships came to similar conclusions.

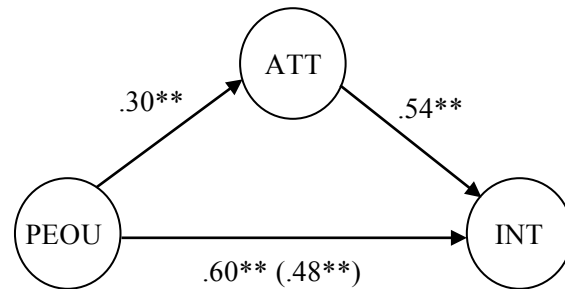


Figure 5: Mediation (PEOU-ATT-INT)

Figure 5 shows that the direct and indirect relationships between perceived ease of use and intentions to use are statistically significant ($p < .001$). The standardised coefficient of indirect effects has not reduced substantially, which indicates a partial mediation of attitudes towards using the technology and the relationship between perceived ease of use and intentions to use restaurant search mobile apps.

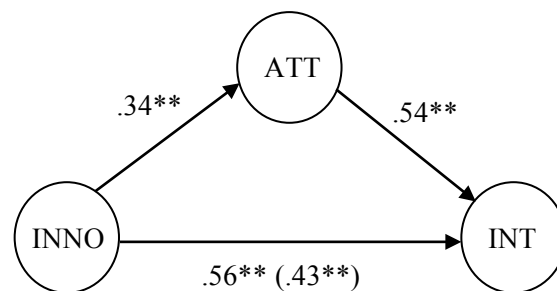


Figure 6: Mediation (INNO-ATT-INT)

Figure 6 shows that direct and indirect relationships between personal innovativeness and intention to use the technology are statistically significant ($p < .001$). The standardised coefficient of indirect effects has not reduced substantially, which indicates a partial mediation of attitude toward the relationship between personal innovativeness and intentions to use restaurant search mobile apps.

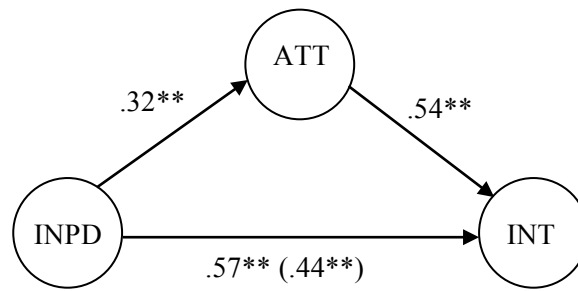


Figure 7: Mediation (INPD-ATT-INT)

Figure 7 shows that the direct and indirect relationships between independence and intention to use the technology are statistically significant ($p < .001$). The standardised coefficient of indirect effects has not reduced substantially, indicating a partial mediation of attitude towards using in terms of the relationship between independence and intentions to use restaurant search mobile apps.

After testing mediation relationships, the actual indirect effect can be calculated by subtracting the indirect unstandardised coefficient of the predictor from the direct unstandardised coefficient, which is called as Difference of Coefficients Approach (Judd & Kenny, 1981). The indirect effects of each predictor were measured as .109 for PU, .109 for PEOU, .133 for INNO, and 0.144 for INPD. Having applied Preacher and Hayes (2004) Sobel test, results indicated that the indirect effect of the predictors on the outcome variable through the mediator variable was statistically significant ($p < .001$).

In agreement with the previous studies (e.g. (Agarwal & Prasad, 1999; Dabholkar & Bagozzi, 2002; Gamal Aboelmaged, 2010; Morosan, 2014; Teo et al., 1999), the direct paths (i.e., path *a*, path *b* and path *c*) are all indicated to be valid. As for the mediating hypotheses, all predictors remained significant in the indirect relationship (path *c'*), which evidenced partial mediation effects of attitude on the hypothesised mediation relationships (MacKinnon, 2008). Thus, the hypotheses *H6*, *H7*, *H8*, *H9* are partially supported.

Chapter 5. Discussion

This study was inspired by the increasing popularity of smartphone usage among consumers. The study also attempted to fill a gap in the existing literature of restaurant-related mobile technology research. The proposed research model has extended the original TAM by grounding personal traits of innovativeness and independence, and applying them to investigate customers' adoption of restaurant search mobile apps. The empirical results may contribute to the validation of the TAM research in non-working settings and may lend support to the extended model for mobile application studies. This chapter provides a summary of the research findings and a few implications for future researchers and industry practitioners. Finally, the limitations of this study and directions for future research are identified.

5.1 Summary of key findings

The results of hypothesis testing indicate that there are positive relationships between motivational factors and intentions towards technology adoption. Specifically, perceived usefulness is the most powerful predictor of customers' adoption intentions towards the restaurant search mobile app ($\beta = .27, p < .05$) in the proposed research model; thus *H1* is supported. The regression coefficient of perceived ease of use appears non-significant ($p > .05$); thus *H2* is rejected. As Bruner and Kumar (2005) posit that whenever an intrinsic factor such as perceived enjoyment is included in a research model based on TAM, then PEOU is very likely to have indirect influence on behavioural intention..

Hypothesis 3 is supported because the perceived ease of use effectively predicts the perceived usefulness of restaurant search mobile apps, which is consistent with the studies of Kwon et al. (2013) and Morosan (2014). Davis (1989) suggests that the necessary condition for perceived usefulness is perceived ease of use, which may imply

that if customers believe a restaurant search mobile app is easy to use, then the app is considered to be useful. Conversely, if a restaurant search mobile app is difficult to use, then its usefulness might be questioned.

Outside the TAM, intrinsic motivations are found to be effective predictors of adoption intentions as well. Both personal innovativeness ($\beta = .24, p < .001$) and independence ($\beta = .15, p < .05$) are significant determinants of restaurant search mobile apps adoption, thus *H4* and *H5* are supported. In sum, the proposed research model explains approximately 60 percent of the total variance in restaurant search mobile apps adoption, which may add to the validation of the TAM in consumer contexts and lend support to the extended research model.

The mediation relationships (*H6, H7, H8* and *H9*) are all partially supported, given that the standardised coefficients of the indirect path (path *c'*) are statistically significant yet do not reduce substantially. The results imply that customers' attitudes towards using restaurant search mobile apps are likely to be weak mediators on their intentions to use these apps.

5.2 Research implications

There is some controversy regarding the importance of perceived usefulness and perceived ease of use on users' technology adoption in the extant TAM literature. According to the hypotheses tested in this study, perceived usefulness is the most significant predictor of technology adoption within the proposed research model. Similarly, Morosan (2011, 2014) suggests that perceived usefulness has stronger positive relationships with customers' attitudes towards using restaurant biometric systems and mobile phones for buying ancillary airline services than perceived ease of use. However, Mozeik et al. (2009) argue that perceived ease of use is more influential than perceived usefulness when determining a customer's inclination to use mobile

technology. For example, Kwon et al. (2013) evidence that perceived ease of use of mobile applications for the hospitality industry explain more variance than perceived usefulness in consumers' intention to download the mobile apps. These conflicting results are likely owing to the different features of the investigated technologies and the specific contexts within which the technologies were adopted (Morosan, 2014). This might provide an interesting avenue by which future studies could explore the differences and similarities among the various types of mobile applications in the hospitality industry.

This study also suggests the important latent roles played by personal innovativeness and independence as intrinsic motivations for customers' acceptance of restaurant search mobile apps. Legris et al. (2003) argue that the original TAM was limited in explanatory power and lacked specificity because of the research context constraints within certain working environments. The proposed research model integrates two personal traits with TAM and explains approximately 60% of the total variance of adoption intention of restaurant search mobile apps. Future researchers attempting to investigate consumers' mobile application adoption must consider individual difference variables such as technology-related personal traits as well as the system characteristics of the technology.

Personal innovativeness is recognised as an important construct for innovation diffusion studies (Agarwal & Prasad, 1998). This study examines the direct and indirect effects of personal innovativeness on customers' intention to adopt restaurant search mobile apps through the attitude variable. While some previous studies have proposed personal innovativeness as a moderating factor which moderates either an individual's instrumental beliefs in the technology or his intention to use the technology (Agarwal & Prasad, 1998; Morosan, 2014), future studies might examine the different role played by

personal innovativeness as a moderator or a determinant of technology adoption.

The results of mediating hypotheses in this study indicate that the relationships between motivational factors and adoption intention are partially mediated by attitudes towards using the restaurant search mobile apps. The original TAM implies that individuals have a stronger intention to perform behaviours that they feel positive about, given that other conditions are equal (Davis, Bagozzi, & Warshaw, 1989). Thus, some researchers (e.g., Agarwal & Prasad, 1998; Bruner & Kumar, 2005; Gentry & Calantone, 2002) believe that the attitude variable mediates the effects of extrinsic and intrinsic motivations on behavioural intention. However, it should be taken into account that employees may adopt technology that can improve their job performance, regardless of the positive or negative attitudes that they hold towards an adoption behaviour in work settings. Kim et al. (2007) argue that individuals might adopt a new technology just for the utility, even if they feel negative about using it. In the case of using restaurant search mobile apps, customers can potentially form adoption intentions based on their understanding that using the apps would improve their performance when seeking out restaurants. This occurs over and above their attitudes towards using the apps. Venkatesh et al. (2003) conclude that the attitude construct plays a significant role in technology adoption only when constructs of performance and effort expectancies (i.e., perceived usefulness and perceived ease of use) are excluded from the model.

5.3 Practical implications

The findings of the study also identify practical implications for restaurant managers and marketers. First, the respondent profiles offer some insights into contemporary dining customers' habits in China. The majority of study samples are aged between 23 and 35 (84%) and had relatively higher education levels compared to other age groups, with 92% having obtained a bachelor's degree or higher. People of this age group can

be working-class or university graduates. They usually have the knowledge and skills to operate smartphones and the financial wherewithal to afford smartphones.

Moreover, nearly 70% of the respondents report that they are frequent users of mobile apps, which reflects the fact that mobile apps have become a widely adopted and indispensable technology for the everyday lives of contemporary Chinese consumers, especially young consumers. With an ever-growing consumer need in mobile application, restaurant owners might seize this opportunity to make use of restaurant search mobile apps as marketing tools to reach out to the large population of mobile apps users in China.

Second, the dining behaviour profile shows that more than half of the respondents eat out at least twice a week and around 26% eat out more than five times per week. Among these diners, 98% have used restaurant search mobile apps before, and about half of them are frequent users of the restaurant search mobile apps. This extremely high rate of usage suggests that restaurant search mobile apps are very common and have even become essential for Chinese diners. With the proliferation of restaurant search mobile apps among diners, restaurant managers and marketers might start to consider how to differentiate their services and products from thousands of others to form a competitive advantage.

Third, both the instrumentality of mobile apps and the personal traits of consumers affect individuals' decisions to adopt restaurant search mobile apps as the hypothesis tests indicate. This finding implies that restaurant operators consider not only the utilities of the technology but also the personality of potential customers when designing restaurant search mobile apps. For example, smartphone users with personal innovativeness are more likely try a new mobile app because of curiosity and interest, regardless of the functionality of the app. Consumers with independent personalities are

more likely to use mobile apps to arrange events (e.g., book tables) by themselves instead of calling or visiting the service centre. Therefore, it is important for restaurateurs to know the particular market segmentation of innovative consumers (e.g., the young user group is relatively more innovative than the older group), as well as independent consumers. Future mobile app designers might consider developing different versions for user groups with different characteristics. For instance, a mobile app for booking restaurants can have both a self-service interface and semi-self-service interface, including online assistance.

5.4 Limitations and future research

This study is not free from limitations. As presented earlier in the methodology, snowball sampling can be biased due to its non-random sample selection technique (Atkinson & Flint, 2001). Although this study adopts popular Chinese social networks (i.e., WeChat, QQ, Weibo and Renren.com) for convenience and economic considerations, there are limitations associated with these networks. First of all, the survey invitations sent to these social groups are often regarded as spam which reduces the rate of participation (Baltar & Brunet, 2012). Secondly, as the study was carried out among Chinese dining customers through online questionnaires, the study samples are limited to Internet users and particularly to the users of popular social networks (Baltar & Brunet, 2012). Thus, the study must take the representativeness of the study samples and the generalisation of the statistic results into account. For instance, approximately 77% of the respondents are aged less than 40, which implies that the results may not be generalisable to other age groups.

The proposed research model validity is threatened by the presence of multicollinearity between the predictors of PU and PEOU. Multicollinearity may affect variance accounted for by the research model and increase the instability of predicting equations

(Field, 2005).

Based on the finding and limitations of this study, several directions are provided for future research. First, the proposed research model explains almost 60% of the total variance, which suggests that the research model is appropriate overall and capable of examining the individual adoption of restaurant search mobile apps. The research model might be applied to future mobile app adoption studies in other hospitality industries, such as travel, airline, lodging, etc. For example, future studies may focus on customers' adoption of mobile applications for airline ancillary services and hotel bookings. Future research might also apply the research model to explore consumers' mobile app adoption in different cultural contexts.

Second, from a theoretical perspective, future research might modify this research model by incorporating more intrinsic motivational variables for mobile app adoption study. Future studies on mobile technology adoption might examine the determinant as well as moderating role served by personal innovativeness on behavioural intentions. The significance of attitudinal constructs in the TAM also requires further investigation.

Third, this study finds that individual differences (e.g., age, gender, education level, dining frequency and mobile app usage) does not greatly affect customer adoption of restaurant search mobile apps based on ANOVA analysis, given the limitation of snowball sampling and limited sample size. Future research might be conducted on a larger scale with a larger sample size to explore further individual differences in mobile application adoption.

5.5 Conclusions

Restaurant search mobile apps have been commonly accepted and used among contemporary Chinese consumers. However, little academic research has been conducted to examine the motivations that inform restaurant-related mobile app

adoption. This study has contributed towards addressing the literature gap informing mobile application adoption in the Chinese dining industry. An integrated research model grounded in the personal traits of consumers as well as the TAM has been developed. The original TAM suggests two fundamental determinants of technology adoption: perceived usefulness and perceived ease of use. The personal traits that intrinsically motivate technology acceptance have been identified in this study, including personal innovativeness and independence.

This proposed model was then applied to investigate the intentions of contemporary Chinese customers when adopting restaurant search mobile apps. A deductive research approach was employed to test research hypotheses. An online questionnaire was used to collect data from two major cities in China: Shanghai and Shenzhen.

The research findings validate the extended model of TAM and produce evidence that intrinsic motivations derived from personality traits are potentially important antecedents to an individual's decision to adopt a restaurant search mobile app. Perceived usefulness is the strongest predictor of intentions to adopt these apps, followed by personal innovativeness and independence. Perceived ease of use was considered insignificant when predicting the outcome variable of behavioural intention. Future research may apply this model to investigate the adoption of mobile apps in different hospitality industries and further validate the proposed research model. Future research may also potentially modify this research model by engaging other personal characteristics variables as internal motivators. The design features of a mobile app and its direct and indirect impacts on customer decisions may also warrant further research.

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Participant Information Sheet



27 April 2015

Dear participant,

My name is Hui Bai, a Master's student, studying in International Hospitality Management at Auckland University of Technology (AUT) in New Zealand. I am currently undertaking a research project concerning customers' attitude and adoption intentions toward restaurant search mobile applications (i.e. apps). The project is a part of my dissertation to complete my qualification.

The research aims to explore customers' perspectives in using restaurant search mobile apps. The study will focus on the functionality of the restaurant search mobile apps as external motivation and customers' personality traits as internal motivation for the mobile apps adoption behaviour. The research project will contribute to a better understanding of individuals' technology acceptance behaviour.

I cordially invite you to participate in this **10-minutes** survey. Thank you for your understanding and support for my study.

Your participation in this study is entirely **voluntary** and **anonymous**, and there will be no personal identifiable information to be collected. If you feel uncomfortable with any question, you can skip the question or withdraw from the survey at any stage. All data collected are confidential and used for the purpose of this project only. The research outcomes will be available on the website of New Zealand Tourism Research Institute <http://www.nztri.org> by December 2015. You are welcome to visit the website and view the research findings.

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, Dr Peter BeomCheol Kim, pkim@aut.ac.nz; Tel: 921 9999 ext 6105. Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEK, Kate O'Connor, ethics@aut.ac.nz; Tel: 921 9999 ext 6038.

For any further information about this project, please feel free to contact the researcher: Hui Bai, xdg1004@aut.ac.nz. Primary supervisor: Dr. Peter Beom Cheol Kim, pkim@aut.ac.nz.

If you are willing to be a part of the questionnaire survey, please complete the online questionnaire by **31 May 2015**. Thank you for your support.

调查问卷信息表



2015 年 4 月 27 日

亲爱的参与者：

我是白慧，就读于新西兰奥克兰理工大学酒店管理专业硕士学位。由于毕业论文和学位的需要，目前我正在进行一项关于“消费者对餐厅搜索手机应用（简称：apps）的满意度和使用倾向”的调查研究。

这次研究的主要目的是为了了解消费者对使用餐厅搜索类手机应用的想法。研究的重点在于消费者使用餐厅搜索手机应用的外在动机（手机应用的功能性）和内在动机（个人的性格因素）。研究结果将有助于进一步理解个人在接受新的科技时的行为。

我真诚地邀请您参加此次问卷调查。这份问卷将会花费您约 **15** 分钟时间。感谢您对我学习和工作的理解和支持。

此次问卷调查将完全基于**自愿**的原则，在**匿名**的基础上进行，不会收集任何您的个人信息。如果您对任一问题感到不适，您可以跳过该问题或选择在任何环节中退出。另本次问卷所有资料只用于本次课题研究，整个过程将严格遵循保密原则。调查的结果将会在 2015 年 12 月公布于新西兰旅游研究机构的网站：<http://www.nztri.org>。欢迎您上网浏览和查看结果。

如果您对此课题本质有任何疑问，欢迎与项目负责人/第一导师 Dr. Peter BeomCheol Kim 博士联系，邮箱 pkim@aut.ac.nz，电话：64 921 9999 转 6105。对此次调查的执行有任何疑问请联系 AUTEK 执行秘书 Kate O'Connor，邮箱 ethics@aut.ac.nz，电话：64 921 9999 转 6038。

如果您想进一步了解此次课题，欢迎联系课题调研人：白慧（邮箱：xdg1004@aut.ac.nz）和她第一导师：Peter BeomCheol Kim（邮箱：pkim@aut.ac.nz）

如果您愿意加入问卷调查，请于 2015 年 5 月 31 号之前完成在线问卷。

再次感谢您对本人的学习和工作的支持！

Appendix C – Questionnaire (English)

Please select the extent of your agreement with each statements of the functionality of the reviewed restaurant search mobile app.

1. Using this restaurant search mobile app would improve my performance in seeking restaurants.

strongly disagree	disagree	somewhat disagree	neither agree or disagree	somewhat agree	agree	strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Using this restaurant search mobile app would enhance my effectiveness as a whole.

strongly disagree	disagree	somewhat disagree	neither agree or disagree	somewhat agree	agree	strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. This restaurant search mobile app is useful in general.

strongly disagree	disagree	somewhat disagree	neither agree or disagree	somewhat agree	agree	strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Learning to use this restaurant search mobile app is easy.

strongly disagree	disagree	somewhat disagree	neither agree or disagree	somewhat agree	agree	strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. It is easy to use this restaurant search mobile app to find the restaurant I want.

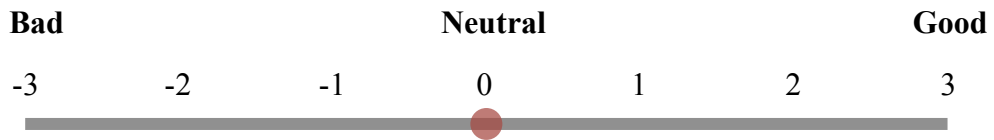
strongly disagree	disagree	somewhat disagree	neither agree or disagree	somewhat agree	agree	strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. In general, this restaurant search mobile app is easy to use.

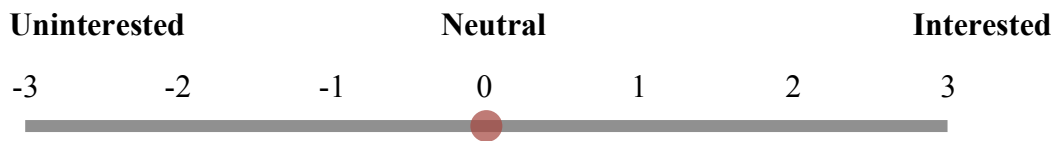
strongly disagree	disagree	somewhat disagree	neither agree or disagree	somewhat agree	agree	strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please select the extent of your agreement with the following statements of your attitude toward using the reviewed restaurant search mobile app

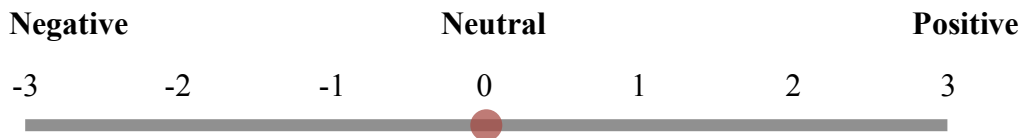
1. I think using this restaurant search mobile app is a good / bad idea



2. I am interested / uninterested in using this restaurant search mobile app.



3. My overall feeling of using this restaurant search mobile app is a positive/negative.



Please select your agreement of the following statements of your behavioral intention with the reviewed restaurant search mobile app.

1. I am likely to download and use this restaurant search mobile app.

strongly disagree	disagree	somewhat disagree	neither agree or disagree	somewhat agree	agree	strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. I will probably keep using this restaurant search mobile app in daily life.

strongly disagree	disagree	somewhat disagree	neither agree or disagree	somewhat agree	agree	strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. I would recommend this restaurant search mobile app to my friends.

strongly disagree	disagree	somewhat disagree	neither agree or disagree	somewhat agree	agree	strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please select the extent of your agreement with the following statement of your personality

1. I want to be handle my own needs

strongly disagree	disagree	somewhat disagree	neither agree or disagree	somewhat agree	agree	strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. I want to do things by my own to minimize problems

strongly disagree	disagree	somewhat disagree	neither agree or disagree	somewhat agree	agree	strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. I want to make my own choices and decisions

strongly disagree	disagree	somewhat disagree	neither agree or disagree	somewhat agree	agree	strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. I like to experiment with new mobile apps

strongly disagree	disagree	somewhat disagree	neither agree or disagree	somewhat agree	agree	strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Among my peers, I am usually the first to explore new mobile apps

strongly disagree	disagree	somewhat disagree	neither agree or disagree	somewhat agree	agree	strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. In general, I hesitate to try new mobile apps

strongly disagree	disagree	somewhat disagree	neither agree or disagree	somewhat agree	agree	strongly agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix D – Demographic Questions (English)

Please answer the following demographic questions

1. Please state your age

_____ years old

2. Please select your gender

- Female
- Male

3. Please select your education level

- Nine-year compulsory education
- High school
- Undergraduate
- Postgraduate
- PhD

4. Please state your frequency of dining out.

_____ times a week OR

_____ times a month OR

_____ others (e.g. 3 times a year)

5. How often do you use the third party mobile apps (apps that are not default in your smartphones, e.g. games apps, social media apps, health apps, etc.) in daily life?

- Very infrequently
- Infrequently
- Sometimes
- Frequently
- Very frequently

6. How often do you use restaurant search apps in daily life?

- Never
- Rarely
- Sometimes
- Frequently
- Very frequently

Appendix E – Questionnaire (Chinese)

以下关于这款餐厅搜索手机应用的功能性的陈述，请选择您的同意程度

1. 使用这款应用可以让我更好地搜索餐厅。

完全不同意 不同意 基本不同意 不确定 基本同意 同意 完全同意

2. 使用这款应用可以提高我的整体办事效率。

完全不同意 不同意 基本不同意 不确定 基本同意 同意 完全同意

3. 这款应用总体来说很有用。

完全不同意 不同意 基本不同意 不确定 基本同意 同意 完全同意

4. 这款手机应用很容易上手。

完全不同意 不同意 基本不同意 不确定 基本同意 同意 完全同意

5. 利用这款应用找到想要的餐厅很容易。

完全不同意 不同意 基本不同意 不确定 基本同意 同意 完全同意

6. 总体来说，这款应用操作起来很简单。

完全不同意 不同意 基本不同意 不确定 基本同意 同意 完全同意

对于使用这款餐厅搜索手机应用，请选择您的态度

1. 我认为使用这款餐厅搜索手机应用会是一个好 / 不好的主意。



2. 我对使用这款餐厅搜索手机应用感兴趣 / 不感兴趣。



3. 我对使用这款餐厅搜索手机应用的总体看法是积极的 / 消极的。



以下和这款餐厅搜索手机应用相关的行为倾向，请选择您的同意程度

1. 我可能会下载并使用这款餐厅搜索手机应用。

完全不同意 不同意 基本不同意 不确定 基本同意 同意 完全同意

2. 我可能会在日常生活中经常使用这款餐厅搜索手机应用。

完全不同意 不同意 基本不同意 不确定 基本同意 同意 完全同意

3. 我可能会把这款餐厅搜索手机应用推荐给其他人。

完全不同意 不同意 基本不同意 不确定 基本同意 同意 完全同意

以下关于性格的陈述，请选择您的同意程度

1. 我喜欢自己处理自己的事情。

完全不同意 不同意 基本不同意 不确定 基本同意 同意 完全同意

2. 我喜欢自己完成任务来减少麻烦。

完全不同意 不同意 基本不同意 不确定 基本同意 同意 完全同意

3. 我喜欢为自己做决定。

完全不同意 不同意 基本不同意 不确定 基本同意 同意 完全同意

4. 我喜欢尝试新的手机应用。

完全不同意 不同意 基本不同意 不确定 基本同意 同意 完全同意

5. 在我的同伴中，我通常是最先尝试新的手机应用的。

完全不同意 不同意 基本不同意 不确定 基本同意 同意 完全同意

6. 总的来说，我对尝试新的手机应用比较犹豫。

完全不同意 不同意 基本不同意 不确定 基本同意 同意 完全同意

Appendix F – Demographic Question (Chinese)

请回答以下基本信息问题

1. 请选择您的年龄

_____ 岁

2. 请选择您的性别

- 女
 男

3. 请选择您的学历

- 初中
 高中
 本科
 硕士
 博士

4. 请填写您外出就餐的频率

_____ 次 / 星期 或者 _____ 次 / 月 或者 _____ 其他（例如：一年 3 次）

5. 请问您平时使用第三方手机应用（指除去手机默认应用之外的其他应用，例如：游戏应用，社交应用，健康应用等）的频率？

- 基本不用
 非常少用
 偶尔用
 经常用
 非常频繁

6. 您在日常生活中使用餐厅搜索类的手机应用的频率？

- 从不
 极少用
 偶尔用
 经常用
 非常频繁