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A MULTIPLE INDICATORS MULTIPLE CAUSES (MIMIC) MODEL OF BEHAVIORAL CONSEQUENCES OF HOTEL GUESTS

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ABSTRACT

This study aims to extend previous tourist behavior research by examining whether and how a set of covariates, including culture, social demographics, and travel behavioral patterns, can affect the behavioral consequences of hotel guests. We developed a Multiple Indicators Multiple Causes (MIMIC) model to test the effects of these covariates on the factor structure of hotel guests' behavioral consequences, which were measured by service quality, satisfaction, loyalty, and complaint intentions. The model was tested on a large sample of 2,267 Hong Kong hotel guests during the period 2010–2015. This study verified the four-factor structure of the behavioral consequences of hotel guests in the presence of the covariates. The results showed that culture, demographic variables including gender, age, education, and income, and travel experience can predict the behavioral consequences of hotel guests in Hong Kong.

Keywords: Service quality, satisfaction, culture, demographics, hotel, Multiple Indicators Multiple Causes (Mimic) model

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INTRODUCTION

Tourist behavior research has traditionally been devoted to the study of the antecedents and consequences of tourist decision marking, ranging from patronizing a restaurant to vacationing to a destination (Meng, Tepanon, & Uysal, 2008; Kim & Eves, 2012). The focus of this strand of research was primarily on service quality, tourist satisfaction, loyalty as well as behavioral intentions (Song, van der Veen, Li, & Chen, 2012; Yoon, & Uysal, 2005). This is because these behavioral consequences can indicate service performance of tourism suppliers as well as competitiveness of a destination (Chen, Chen, & Lee, 2011; Kozak & Rimmington, 1999; Song et al., 2012). For instance, various consumer satisfaction indices in tourism and other industries have been developed, aiming at gauging service performance of various industrial sectors and tourist destinations (Anderson & Fornell, 2000; Chan et al, 2003; Fornell, 1992; Song et al., 2012). It has been well understood that destination attributes and service suppliers can determine service quality and tourist satisfaction (Song et al., 2012; Yoon & Uysal, 2005), which in turn affect tourist behavioral consequences, such as loyalty and complaints (Kozak & Rimmington, 1999; Song et al., 2012). Empirical studies have also shown robust structural relationships between service quantity, satisfaction, and behavioral intentions (Kozak & Rimmington, 1999; Song et al., 2012; Yoon & Uysal, 2005).

However, behavioral consequence constructs are heterogeneous by themselves, meaning that the measurement of these constructs may vary by consumer characteristics which, nevertheless, have not been taken into consideration when modeling tourist behavior. The factors that characterize tourist behavior include culture, social demographics, and tourist behavioral patterns. For instance, Oishi's (2006) study showed that American and Chinese differed in their evaluation of life satisfaction. A seven-year study of tourist satisfaction in Hong Kong has found that Western tourists tended to report higher level of satisfaction than Eastern tourists with both tourism services and the destination of Hong Kong as a whole (Song & Chon, 2015). Social demographic, such as age, gender, and income, have been found to affect service quality even though the service quality itself was not changed from a supply point of view (Cha, McCleary, & Uysal, 1995; Engs, Diebold, & Hanson, 1996; Humara & Sherman, 1999; Mattila et al., 2001; Saad, Gill, & Nataraajan, 2005). Tourist satisfaction, emotion, and happiness also varied by tourist typologies and travel activities undertaken at destinations (Bimonte & Faralla, 2012; Gillet, Schmitz, & Mitas, 2013; Neal, 2000). These studies imply that culture, along with demographics and tourist behavioral patterns, can predict a wide range of tourist behavioral consequences.

While the effects of culture, social demographics, and travel patterns on tourist behavior have been examined (Hudson & Ritchie, 2001; Kastenholz, Carneiro, & Eusébio, 2005; Pizam & Jeong, 1996; Swanson & Horridge, 2004), little known is whether and how they affect the factor structure of consumer behavior in the hotel context, particularly in relation to service quality, satisfaction, and loyalty. An explanatory analysis in this regard might be difficult given the measurement of these variables is either at the categorical or at the nominal level. For instance, in most survey-based studies, income was measured at the ordinal level and gender was at the categorical level. This may have caused difficulties in detecting the differences of the structural relationships that might be affected by these covariates. While a multi-group analysis can be a solution, it establishes no causality between the covariates and the constructs when an analysis involves testing a bunch of covariates simultaneously. This study thus aims to extend previous research by developing a Multiple Indicators Multiple Causes (MIMIC) model to test the effects of these covariates on the factor structure of behavioral consequences of hotel guests. We look at how these covariates affect service quality, satisfaction, loyalty, and complaint intentions of hotel guests and how the structural relationships in between may vary in the presence of these covariates.

LITERATURE REVIEW

Cross-Cultural Analysis of Tourist Behavior

It can be concluded that human behavior is fundamentally shaped by culture, as culture represents a social

complex that incorporates a set of knowledge, beliefs, arts, morals, customs, capabilities and habits acquired by human beings (Tylor, 1958). Hofstede (1980, 1984, & 1991) suggested five dimensions of culture, namely power distance, uncertainty avoidance, individualism-collectivism, masculinity-femininity, and Confucian work dynamism, which can be used to measure and compare different cultures. Among them, the dichotomy of individualism-collectivism has gained extensive attention from consumer behavior researchers to conduct cross-cultural analysis of tourist behavior (e.g., Meng, 2010). The omni-present influences of culture on tourist behavior are particularly important for the global hospitality and tourism industry as culture shapes, rather than simply affects, a wide range of tourist behavior, including motivation, perception, and behavioral consequences. For instance, it has been well acknowledged that culture affects tourists' perception on destination attributes as well as their judgement on what constitutes appropriate behavior at the destination (Reisinger & Turner, 2003; You, O'leary, Morrison, & Hong, 2000).

The operationalization of culture can be manifested at multiple levels, one of which is nationality (Dawar & Parker, 1994). Representing the principal value systems, personality, social relationships, and human behaviors of a population, nationality has been found to affect a range of tourist behavioral patterns (Pizam & Sussmann, 1995; Woodside, Hsu, & Marshall, 2011). These behavioral patterns include tourist information searching and acquisition behavior, travel planning, bargaining for shopping, social interactions, and satisfaction with travel experiences (Chen, 2000; Gursoy & Chen, 2000; You et al., 2000). Nationality also affects tourist preference to choose traveling in groups or traveling alone in both individualistic (e.g., American) and collectivist (e.g., Korean) cultures (Pizam & Jeong, 1996). The variations of the effects of culture on tourist behavior can also be detected in similar cultures. For instance, Hudson and Ritchie's (2001) study showed that American and British skiers spent more than their Canadian counterparts on skiing in national parks, despite all the three being seen in individualistic cultures.

Studies have also shown that consumers with different nationalities or in different cultural backgrounds tend to rate service quality, satisfaction, and loyalty in distinct ways (Weiermair, 2000). Laroche et al.'s (2004) factorial experiment on American, Canadian, and Japanese consumers endorsed this argument. The experiment found that Japanese consumers tended to rate superior services lower than their Western counterparts while were more prone to tolerate inferior services (Laroche et al., 2004). As concluded by Weiermair (2000), culture can influence perceived service quality because consumers' expectation for, and perception of, service quality are fundamentally shaped by their corresponding cultural backgrounds. They determine how tourists behave when being exposed to distinct cultures. In addition, culture was reported to have some sort of moderating effects on the association between customer loyalty and corporate reputation (Duffy, 2003).

Social-Demographics and Tourist Behavior

In consumer behavior research, alcohol consumption and risk-taking behaviors have been reported to differ by gender (Engs et al., 1996; Humara & Sherman, 1999). Evidence from evolutionary psychology showed that age and birth order could affect individuals' personality traits and psychometric characteristics (Saad et al., 2005). In tourism, the discrepancies in travel motivation and satisfaction were often found across tourist segments (Johns & Gyimóthy, 2002). Studies showed that age affected consumer loyalty and travel motivation (Hsu, 2000; Moisey & Bichis, 1999), but did not necessarily affect tourist preference for hotel services (Lepsito & McCleary, 1988). Cha et al. (1995) found that age and education predicted Japanese travelers' behavior in outbound tourism consumption. Yet Chi (2011) did not find evidence for the effects of age and income on tourist satisfaction, loyalty, and perceptions of destination image. Gender and religion have been found to influence university students' destination choice for spring break and their expectations for the quality of hospitality services (Mattila et al., 2001).

Demographics play a pivotal role not only in segmenting markets, but also in predicting tourists' perceptual and behavioral characteristics (Lowyck, Van Langenhove, & Bollaert, 1990). Studies have shown that demographics can explain tourists' perceived destination image (Chi, 2011), resort choices (Morrison et al.,

1996), intentions to visit or revisit a destination (Etzel & Woodside, 1982). While the associations between demographics and tourist behavior have been extensive explored, the literature has not yet reached a consensus on the direction of the associations. Some studies have concluded that certain tourist behavior, such as tourist loyalty, does not vary by demographics (e.g., Chi, 2011). The reason might be that the effects of demographics on tourist behavior are moderated by the context of tourism, and these effects, if any, might be destination-specific (Kastenholz et al., 2005; Swanson & Horridge, 2004). For example, Swanson and Horridge's (2004) study on tourists in the United States suggested no significant relationships between tourists' souvenir shopping behavior and a set of demographics, such as age, gender, income, education, and state of residence. Kastenholz et al.'s (2005) study on tourists in Portugal found positive relationships between tourists' visits of museums, car rent, and expenditure and income and education.

Travel Patterns and Behavioral Consequences

Tourists' travel patterns have also been used to segment markets and portray tourist behavior (Becken, Simmons, & Frampton, 2003; Oppermann, 1995). Travel patterns are defined based on tourists' decision-making in three major travel subsectors: tourism transportation, tourism accommodation, and attraction/activities (Becken et al., 2003). From a geographical point of view, travel patterns can be categorized into intra-national and international, and both can be further divided into several sub-categories, such as single-destination and multi-destination patterns (Murphy & Keller, 1990). Different travel patterns also represent different types of tourists. For instance, Becken et al. (2003) classified inbound tourists in New Zealand into seven types based on their travel patterns: coach tourists, soft comfort travelers, auto tourists, campers, backpackers, trampers, and tourists who visit friends and relatives.

Service quality captures consumers' subjective judgment on the general excellence or superiority of a product or service (Dhar, 2015; Parsuraman, Zeithaml, & Berry, 1988; Zeithaml, 1987). The associations between service quality, satisfaction, loyalty, and complaint have been well established in both the marketing and tourism literature (Cole, Crompton, & Willson, 2002; Kandampully & Suhartanto, 2000; Ostrowski, O'Brien, & Gordon, 1993). Service quality positively influences tourist satisfaction and behavioral intentions (Cole et al., 2002; Ostrowski et al., 1993), and satisfaction can mediate the relationship between service quality and customer loyalty (Caruana, 2002). Customer satisfaction leads to customer loyalty (Kandampully & Suhartanto, 2000), which is of core importance for maintaining long-term business success. Peters (1988) pointed out that acquiring a new customer is more difficult and costly than retaining an existing one. Failing to retaining loyal customers means losing part of the high-margin sector of the customer base (Keaveney, 1995).

The relationships between travel patterns and behavioral consequences have not been adequately addressed in the hotel context. The growing hotel industry warrants attention to identify consumer behavioral patterns that are characterized by culture; yet a comprehensive cross-cultural analysis of consumer behavior is still in its infancy in the hotel industry (Hall & Mitchell, 2000; MacKay & Fesenmaier, 2000). Previous research has not addressed the possible relationships between demographics and consumers' perception of service quality, satisfaction, loyalty, and complaint in the hotel context. Empirical studies, therefore, are needed to investigate whether and how these covariates may affect behavioral consequences of hotel guests.

METHODS

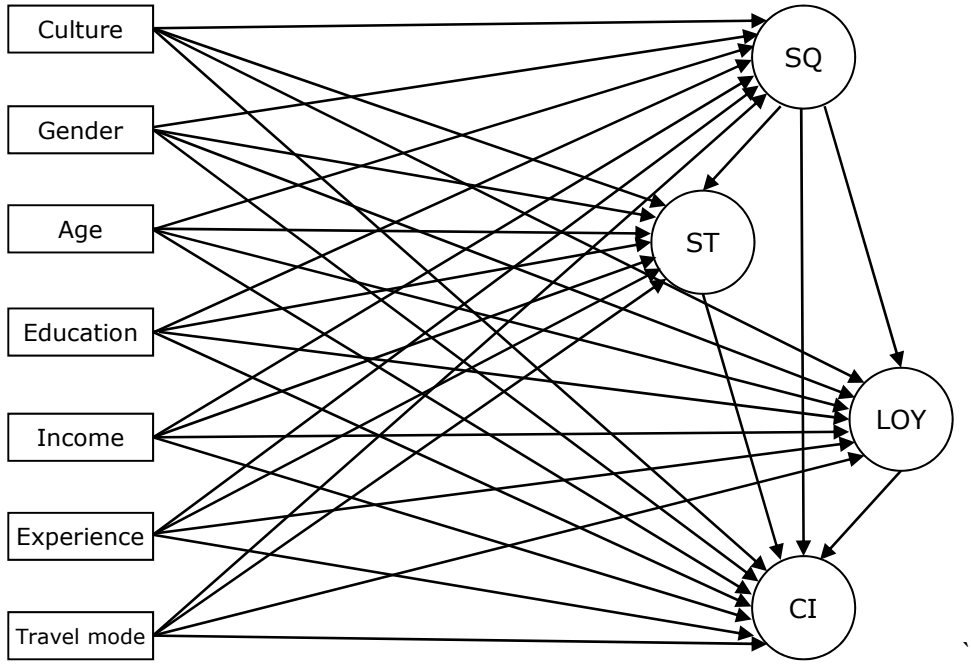
The MIMIC Model

The MIMIC model consists of two components (Figure 1). The first component models the relationships between seven covariates, which are culture, gender, age, education, income, travel experience and mode, and each of the four constructs, namely hotel guests' perceived service quality, satisfaction, loyalty, and complaint attentions. This component aims to test whether the covariates can influence the behavioral consequences of hotel guests. Specifically, whether service quality, satisfaction, loyalty, and complaint intentions vary by each

of these covariates. The relationships between the seven covariates and the four constructs are hypothesized as that each of the covariates has a significant effect on each of the four constructs, ending up with 28 hypotheses for empirical testing (Figure 1).

The second component models the structural relationships among the four constructs of behavioral consequences. This component aims to examine whether the relationships between each of the covariates and behavioral consequences can be mediated by a particular construct. Building upon the literature, we propose six hypotheses for testing the structural relationships of the four constructs in the presence of the seven covariates:

H1: Service quality has a positive effect on hotel guests' satisfaction.
H2: Service quality has a positive effect on loyalty.
H3: Service quality has a negative effect on complaint intentions.
H4: Hotel guests' satisfaction has a positive effect on loyalty.
H5: Hotel guests' satisfaction has a negative effect on complaint intentions.
H6: Complaint intentions have a negative effect on loyalty.



Notes: SQ = Service quality, ST = Satisfaction, LOY = Loyalty, and CI = Complaint intentions.

Figure 1. A MIMIC model of the behavioral consequences of hotel guests

Variables and Measurement

The seven covariates were measured at the categorical or ordinal level. Culture was measured at the categorical level, with "1" indicating hotel guests with Eastern cultural backgrounds (Mainland China, Taiwan, Macau, Japan, and Korea) and "0" indicating their Western counterparts (Americas, Europe, Africa, Middle East, Australia, New Zealand, and the Pacific). Gender was measured at the categorical level, with "1" indicating males and "0" indicating females. Age, education, income, and travel experience were measured at the ordinal level. Travel mode was measured at the categorical level, with "1" indicating hotel guests joining in group tours and "0" indicating those joining in independent tours.

Service quality was measured by three indicators, namely overall performance of hotels, customizations of hotel services, and reliability of service delivery (Bloemer, Ruyter, & Wetzels, 1999; Song et al., 2012). Since it has

been concluded that multi-item scales are more reliable than single-item scales in measuring customer satisfaction (Conner & Sparks, 1996; Fornell, 1992), hotel guests' satisfaction was measured with three indicators, namely overall satisfaction, comparison with expectations, and comparison with the ideal (Chan et al., 2003; Song et al., 2012). Loyalty was measured with two items, namely revisit intentions and recommendation to others (Chan et al., 2003; Fornell et al., 1996; Song et al., 2012). The complaint intentions of hotel guests were measured with two items, namely complaint intentions to employees and to others (Song et al., 2012).

Data

The data were collected between 2010 and 2015 for Hong Kong's inbound tourists who were overnight hotel guests during their trip in Hong Kong. Respondents were interviewed at major attraction locations in Hong Kong, and they were required to provide information of their experience at hotels when traveling in Hong Kong. A series of the surveys has been conducted annually since 2009, and we merged the datasets between 2010 and 2015 in order to generate sufficient samples to test the effects of the covariates on the constructs of behavioral consequences. While the merged dataset may cause problems of data inconsistency, we argued that this was an appropriate approach to analyzing a complicated model in our study. Evidence for using such a merged dataset can be found in the literature, especially whenever a large cross-sectional sample was required (Helliwell, Layard, & Sachs, 2015). We came up with a total of 2,267 valid responses for data analysis.

Analysis

We followed the procedure of analyzing a MIMIC model proposed by Proitsi et al. (2011). It proceeded in two steps. First, prior to including the seven covariates in the model, we performed a Confirmatory Factor Analysis (CFA) on 10 items of the constructs to verify the factor structure of the four constructs. Second, by including the seven covariates, we tested the effect of the covariates on the factor structure. The Maximum Likelihood (ML) estimation was used to estimate the model. Stata 14.1 was used to perform these analyses.

RESULTS

Descriptive Analysis

Table 1. Description of the covariates

Covariates	*N*	*%*	*Covariates*	*N*	*%*
Culture			*Education (continued)*		
Western culture	1,028	45.3	Postgraduate	477	21.0
Eastern culture	1,239	54.7	*Income*		
Gender			Less than US$1,000	215	9.5
Female	1,092	48.2	US$1,000–2,999	575	25.4
Male	1,175	51.8	US$3,000–4,999	455	20.1
Age			US$5,000–6,999	334	14.7
16–25	466	20.6	US$7,000–8,999	246	10.9
26–35	738	32.6	US$9,000 or more	442	19.5
36–45	444	19.6	*Travel Experience*		
46–55	362	16.0	Never	1,043	46.0
56–65	190	8.4	1–3 times	679	30.0
66 +	67	3.0	4–6 times	232	10.2
Education			7–9 times	67	3.0
No formal education	11	.5	10 times or more	246	10.9
Primary/elementary school	20	.9	*Travel Mode*		
Secondary/high school	326	14.4	Independent tours	1,905	84.0
College/university	1,431	63.1	Package tours	362	16.0

Notes: Western culture included Americas (14.6%), Australia, New Zealand, and the Pacific (12.4%), Europe, Africa, and the Middle East (18.4%); Eastern culture included Mainland China (21.8%), Taiwan and Macau (15.0%), and Japan and Korea (17.9%).

Table 1 shows the profile of the respondents characterized by the seven covariates. Respondents from Eastern culture accounted for nearly 55%, slightly more than their Western counterparts. Males were slightly more than females. As for age, more than 50% of the respondents were between 16 and 35 years old, followed by the age group 36–55, and approximate 10% of the respondents were above 56 years old. We found that the respondents were overwhelmingly well-educated, more than 63% having obtained college/university education and 20% obtained postgraduate degrees. Since we used a unanimous scale to collect data of income for all respondents, it was not surprising that income distribution was a bit equal on the five categories. As for travel experience prior to the current trip in Hong Kong, 46% of the respondents were first-time visitors, 30% traveled between 1 to 3 times in Hong Kong, and nearly 11% traveled to Hong Kong for more than 10 times. As for travel mode, a disproportionally higher number of the respondents were independent tourists (84%).

Confirmatory Factor Analysis

We performed a Confirmatory Factor Analysis (CFA) to verify the factor structure of the four constructs. The results showed that the measurement model had acceptable level of goodness of fit ($\chi^2 = 112.93$, $df = 28$, $p = .000$, RMSEA = .037, CFI = .997, and TLI = .995). All factor loadings of the four constructs were above .8 and statistically significant at $p < .001$ (Table 2). The Modification Indices (MI) did not show any evidence for the cross-loadings of the items on the constructs. We found that all four constructs were highly correlated, and the signs of the correlations were consistent with theories (Kozak & Rimmington, 1999; Song et al., 2012; Yoon & Uysal, 2005). The highest correlation was between service quality and hotel guests' satisfaction ($\rho = .904$, $p < .001$), followed by that between satisfaction and loyalty ($\rho = .862$, $p < .001$), and that between service quality and loyalty ($\rho = .820$, $p < .001$). Complaint intentions were negatively associated to all other three constructs, namely service quality ($\rho = -.500$, $p < .001$), satisfaction ($\rho = -.480$, $p < .001$), and loyalty ($\rho = -.446$, $p < .001$).

Table 2. Measurement model

Constructs	*Factor loadings*	*S.E.*	*z*	*p>|z|*	*[95% Conf. Interval]*
Service quality					
Overall performance	.963	.003	323.420	.000	[.957, .969]
Customizations	.941	.003	296.090	.000	[.935, .947]
Reliability	.954	.003	296.500	.000	[.948, .961]
Satisfaction					
Overall satisfaction	.895	.005	175.910	.000	[.885, .905]
Comparison with expectations	.831	.007	114.460	.000	[.817, .845]
Comparison with ideal	.914	.005	201.810	.000	[.905, .923]
Loyalty					
Revisit intentions	.920	.004	206.340	.000	[.911, .928]
Recommendation to others	.975	.003	286.100	.000	[.968, .981]
Complaint intentions					
Complain to employees	.856	.011	74.880	.000	[.833, .878]
Complain to others	.980	.011	85.770	.000	[.958, 1.003]

Notes: $\chi^2 = 112.93$, $df = 28$, $p = .000$, RMSEA = .037, CFI = .997, and TLI = .995.

Multiple Indicators Multiple Causes (MIMIC) Model

We used the Multiple Indicators Multiple Causes (MIMIC) Model to test the effects of the seven covariates on the four-factor structure confirmed by CFA. The results showed that the structural model had a good fit ($\chi^2 = 303.33$, $df = 71$, $p = .000$, RMSEA = .056, CFI = .980, and TLI = .968). Table 3 shows that the hypotheses of the structural relationships were verified in the presence of the seven covariates, except for the effect of complaint intentions on loyalty. Service quality had a positive effect on satisfaction, and also this effect was the largest among others ($\beta = .906$, $p < .001$). Service quality also had a positive effect on loyalty ($\beta = .224$, $p < .001$), while a negative effect on complaint intentions ($\beta = -.384$, $p < .001$). Satisfaction had a positive effect

on loyalty (β = .650, p < .001) while a negative effect on complaint intentions (β = -.119, p < .05). We did not find evidence for supporting the negative association between complaint intentions and loyalty.

Table 3 also shows the path coefficients for the effects of the seven covariates on the four constructs. We found that culture and most demographic variables were the significant predictors of service quality. The effect of culture on service quality suggested that hotel guests with Western cultural backgrounds tended to rate service quality higher than their Eastern counterparts (β = -.120, p < .001). While the effect of gender on service quality was quite small, we found that females tended to rate service quality higher than males (β = -.070, p < .01). Age had a positive effect on hotel guests' perception of service quality, evidenced by the result that older hotel guests tended to rate service quality higher than younger guests (β = .051, p < .05). However, this effect was also small. Income also had a positive yet small effect on hotel guests' rate of service quality (β = .057, p < .05), suggesting that service quality tended to be perceived higher by wealthy guests.

Table 3. Structural model

Constructs	*Covariates and constructs*	*β*	*S.E.*	*z*	*p > |z|*	*[95% Conf. Interval]*
Service quality	Gender	-.070	.021	-3.250	.001	[-.112, -.028]
	Age	.051	.023	2.210	.027	[.006, .097]
	Education	.015	.022	.700	.481	[-.027, .057]
	Income	.057	.024	2.370	.018	[.010, .104]
	Travel experience	.042	.023	1.830	.067	[-.003, .086]
	Travel mode	.002	.022	.090	.927	[-.042, .046]
	Culture	-.120	.024	-5.060	.000	[-.167, -.074]
Satisfaction	Service quality	.906	.006	158.080	.000	[.894, .917]
	Gender	-.006	.012	-.540	.586	[-.029, .016]
	Age	.020	.013	1.550	.121	[-.005, .044]
	Education	.018	.012	1.510	.130	[-.005, .040]
	Income	.002	.013	.120	.906	[-.024, .027]
	Travel experience	-.007	.012	-.530	.594	[-.031, .018]
	Travel mode	.011	.012	.900	.369	[-.013, .034]
	Culture	-.006	.013	-.470	.641	[-.032, .019]
Loyalty	Service quality	.224	.040	5.670	.000	[.147, .302]
	Satisfaction	.650	.038	17.330	.000	[.577, .724]
	Complaint intentions	-.026	.015	-1.800	.073	[-.055, .002]
	Gender	-.019	.012	-1.560	.119	[-.043, .005]
	Age	-.025	.013	-1.870	.061	[-.051, .001]
	Education	-.024	.012	-1.990	.047	[-.048, .000]
	Income	-.005	.014	-.380	.704	[-.032, .022]
	Travel experience	.027	.013	2.070	.039	[.001, .052]
	Travel mode	-.011	.013	-.870	.384	[-.036, .014]
	Culture	.012	.014	.890	.372	[-.015, .039]
Complaint intentions	Service quality	-.384	.057	-6.710	.000	[-.496, -.272]
	Satisfaction	-.119	.058	-2.030	.042	[-.233, -.004]
	Gender	.029	.019	1.540	.125	[-.008, .066]
	Age	.009	.021	.440	.658	[-.031, .049]
	Education	-.021	.019	-1.090	.278	[-.058, .017]
	Income	-.087	.021	-4.130	.000	[-.129, -.046]
	Travel experience	.051	.020	2.540	.011	[.012, .090]
	Travel mode	.018	.020	.920	.359	[-.021, .057]
	Culture	.032	.021	1.510	.130	[-.009, .074]

Notes: χ^2 = 303.33, *df* = 71, p = .000, RMSEA = .056, CFI = .980, and TLI = .968.

We did not find any evidence for the effects of the covariates on the satisfaction of hotel guests. This might be because the substantially high correlation between service quality and satisfaction suppressed these effects. We found that there were negative relationships between education and loyalty (β = -.024 p < .05) and between travel experience and loyalty (β = -.027, p < .05). There results indicated that both well-educated guests and

repeat guests were less loyal to hotels. In addition, repeat hotel guests also had higher complaint intentions than first-time guests ($\beta = .051$, $p < .05$). We also found that income had a negative effect on complaint intentions, suggesting that hotel guests with higher level of income tended to complain less about hotel services ($\beta = -.087$, $p < .001$).

DISCUSSION AND CONCLUSION

This study has extended previous tourist behavior research in two different ways. First, we highlighted the heterogeneity of hotel guests when comes to measuring their perception of service quality, satisfaction, loyalty, and complaint intentions. Despite that service quality and customer satisfaction have been extensively studied (Kim & Eves, 2012; Kozak & Rimmington, 1999; Song et al., 2012; Yoon & Uysal, 2005), most studies were based on samples from a single nationality, and therefore failed to uncover the relationships between tourist behavior and culture. In this regard, by using a large sample size of 2,267, we were able to investigate the heterogeneity of hotel guests' behavior which varied by culture, a set of social demographics, and travel patterns. Second, while a number of studies have shown that tourist behavior vary by social demographics, the analyses were relatively exploratory (Kastenholz et al., 2005; Lepsito & McCleary, 1988, Swanson & Horridge, 2004). By developing the MIMIC model, we extended previous research, which focused on the associations between covariates and tourist behavior, to look into a comprehensive set of causes of consumer behavioral in the hotel context consequences that were captured by the seven covariates in the model.

Having included the seven covariates, we verified the four-factor structure of hotel guests' behavioral consequences. Except for the association between complaint intentions and loyalty, we found that satisfaction was largely affected by service quality of hotels. Service quality also helps boost loyalty. These results are consistent with studies that have concluded that customer satisfaction and loyalty are the consequences of service quality (Kozak & Rimmington, 1999; Song et al., 2012; Yoon & Uysal, 2005). When it comes to hotels, service delivery is more prominent than other types of service supply in creating tourist experience. In this regard, it is not surprising that the relationships between service quality, consumer satisfaction, and loyalty are reinforced in the hotel context. Also, service quality can predict complaint intentions, suggesting that hotel guests are less likely to complain if they perceive service quality higher. While satisfaction is strongly associated with loyalty, its prediction on complaint intentions is weaker compared to that of service quality. We did not find evidence for the relationship between satisfaction and complaint intentions, perhaps because these two constructs may function independently in the hotel context. It seems reasonable that a dissatisfied guest may simply choose to switch to other hotels instead of complaining on the current one.

The effects of the seven covariates on the structural relationships of the four constructs have been largely verified by the MIMIC model. In particular, we found that culture plays an important role in affecting hotel guests' perception of service quality. Western guests tend to rate service quality higher than their Eastern counterparts. This conclusion is also consistent with consumer satisfaction and happiness research in both tourism and other disciplines (Laroche et al., 2004; Oishi, 2006). For instance, Oishi's (2006) study showed that Americans tended to be more satisfied than Chinese with their life after controlling the measurement invariance. People in Western culture are happier than their counterparts in Eastern culture (Hampton & Marshall, 2000; Kang, Shaver, Sue, Min, & Jing, 2003; Suh, Diener, Oishi, & Triandis, 1998). This indicates that service quality cannot be fully explained by service delivery itself but, at least partially, by consumers' inherent attributes that are bonded to culture. This conclusion may also help explain the satisfaction patterns in the *Hong Kong Tourist Satisfaction Index*, which has shown that tourists from North America, Europe, Australia, and New Zealand had been constantly more satisfied than their Asian counterparts over the past seven years (Song & Chon, 2015).

As for social demographics, we found that gender is a significant predictor of service quality for hotels, and specifically, females rate service quality higher than males. The reason might be that females tend to tolerate service failures, leading to a relatively positive view on hotel service delivery. This may also explain why the elderly rate service quality higher than young guests as their travel experience increases over time. Travel

experience may help increase the tolerance level of guests. Yet this theory may not explain the positive effect of income on hotel guests' perception of service quality. It is reasonable to speculate that guests with high income tend to stay in upscale hotels, which provide them with high-quality services. As this study has shown, high-income guests tend to complain less about hotel services. Interesting is that loyalty declines with education, suggesting that well-educated guests become less loyal to hotels. This might be because well-educated guests can easily get access to booking hotels, and therefore become less loyal even though they are satisfied with the services.

This study has two limitations regarding data merger and the measurement of culture, respectively. First, in order to have a sufficiently large sample size to test the effects of the covariates, we merged the data collected annually from 2010 to 2015. This may cause a problem of data inconsistency, meaning that consumer behavior may change over time, which was neither addressed in our study nor captured by the model. Second, for testing the effect of culture on hotel guests' behavior, we classified the respondents into two cultural groups, namely Western culture and Eastern Culture. While this classification may account for some group differences based on culture, each group was still culturally heterogeneous. This may have impeded us from capturing the subtle differences that may be caused by nationalities. For instance, Middle East and Africa do not belong to the conventional classification of Western culture, but were grouped with North America and Europe, as in the datasets we were unable to separate them from other Western countries. Also for the Eastern group, Chinese culture is arguably different from Japanese and Korean cultures despite their close and historical kinships.

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