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A value perspective of service interaction quality: the case of immigrants returning to native countries as medical tourists

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Abstract

Marketing literature shows that the interaction between service encounters and customers is essential for the value creation process. However, little is known about how interaction contributes to customer value in the special context of immigrants living in more-developed countries, who return to their native countries for medical service. Based on the data collected from overseas Vietnamese, this study investigates the effects of interaction quality on different forms of service value, leading to positive word-of-mouth. The findings indicate that interaction quality strongly affects customer perception of quality value and social value and moderately affects price value. In turn, these three forms of value significantly affect positive word-of-mouth. By linking perceived quality, social and price value with word-of-mouth, the present study suggests an effective way to promote this special form of medical service to immigrants living outside the country.

Keywords: Medical tourism, Dental service, Interaction quality, Customer value, Vietnam

Introduction

During the recent years, medical tourism has been one of the fastest growing industries in the world. It involves "activities related to travel and hosting a tourist who stays at least one night at the destination region, for the purpose of maintaining, improving or restoring health through medical intervention" ([1], p.3). In Asia, several countries such as China, India, Korea, Malaysia, Singapore and Thailand have been recognized as main medical tourism destinations [2, 3]. Among several forms of medical tourism, dental tourism is a subset in which individuals actively seek and receive dental care outside their country or city of origin, coupled with a vacation [4]. It is estimated that dental tourism accounts for 42% of medical tourism globally and continues to be on the rise throughout the world, in which the main customer flow is from developed countries to developing countries [5]. Among dental tourists who seek treatment outside their living countries, many immigrants are going back to their native countries in Asia [6, 7].

Scholars have pointed out several functional reasons for immigrants to return to their native countries and use dental service, such as cheaper costs, lack of dental insurance, accessibility to the service and better quality dental treatment [8–11]. Other authors suggest social–cultural factors including language barriers and cultural and

social affinity are important reasons [6, 7, 12]. These reasons imply the important role of customer–provider interaction throughout the service in this special context.

From a theoretical lens, the interaction between a service encounter and a customer is one of the main elements in a service co-creation process [13]. Accordingly, an effective interaction between the two sides is essential for value outcome [14]. In contrast, a poor interaction may lead to value co-destruction, especially in services requiring a high level of interaction like medical care [15]. In other words, the quality of interaction is assumed to be an important part of the service process. However, scholars have remarked that there is still a paucity of research addressing the question about the role of interaction quality on key marketing objectives such as customer satisfaction, loyalty or positive word-of-mouth [9, 16]. Moreover, our review of literature indicates that the question about the effect of interaction quality on service value remains unanswered yet. Given the importance of service interaction, customer value and word-of-mouth (WOM) in the contemporary service marketing, the answers to these research questions would provide significant contributions to the literature. Particularly in the context of dental tourism for immigrants, the results would provide a basis for developing an effective way to promote this special form of medical service to immigrants living outside their countries.

In response to these research questions, the present study attempts to address two research objectives. The first objective is to explore the effects of interaction quality between service encounters and a customer (i.e. immigrant) on customer's perception of different forms of value (i.e. quality value, price value and social value) in the dental care. Secondly, it investigates the effects of these forms of value on positive WOM. Similar to other medical services, dental care is a type of credence service in which potential customers rely heavily on WOM source when they seek for service information [17]. Therefore, WOM is a very important marketing tool for service providers.

The remainder of this paper is structured as follows. The next section will present the conceptual background and review of literature related to the research topic. It will then be followed by the proposed hypotheses and research model. Next, we report the empirical study and analyses that test the hypothesized relationships. Finally, the findings are discussed and the conclusion is presented.

Conceptual background and review of literature

Interaction quality

In a broad view, Lehtinen and Lehtinen [18] conceptualize interactive quality as the interplay between a customer and interactive elements of a service provider such as interactive persons, interactive procedure and interactive equipment. In a more specific view, which is adopted by this current study, scholars focus only on the human aspect and refer interaction to the two-way interpersonal interaction that take place during the service delivery between service employees and a customer [19, 20].

Thus, interaction quality refers to the customers' perception of the manner in which the service is delivered during service encounters [21, 22]. Interaction quality is also related to customers' perception of the excellence in interactions with service providers (e.g. employees, staff, etc.) during service delivery [20, 22]. Gronroos and Voima [23] explain that interactions are situations in which customer and service encounters are

involved in each other's practices. They indicate that the core of interaction is a physical, virtual or mental contact, through which the provider creates opportunities to engage with its customers' experiences and practices and thus influences their outcomes.

Ballantyne and Varey [19] propose that interaction begins when any action generates a response and that interaction between customer and service employee may potentially occur in three forms: informational interaction, communicational interaction and dialogical interaction. The informational mode includes all message-making which has the useful intention to inform. In the communicational mode, listening and informing (i.e. opinion exchange) are both key aspects of interaction. Finally, dialogue is an advanced form of interaction where both parties discuss to reconcile what seems contrary between parties, making the reconciliation of meaning possible.

In the service-dominant logic perspective, given the notion that interaction and resource integration are two core elements of value co-creation, Ple [24] provides a detailed analysis on how the interaction between a service provider and a customer facilitates the value co-creation. Accordingly, the interaction occurs through three steps. The first step is resource access, in which customers and employees attain and provide access to specific kinds and quantities of resources of the other counterparts. The second step is resource adaptation. In this step, frontline employees customize customer resources that they have accessed to make sure that these resources actually fit their resource needs. To ensure this fit, employees also adapt their own resources simultaneously. The third step is resource combination and application. That is, the combination of the customers' resources with those of the employee, followed by their immediate application to co-create value. Combination and application are usually merged into a single step, labeled integration [24]. This analysis provides a deep insight into how interaction facilitates value co-creation. However, it mainly focuses on the resource aspect, leaving the social–cultural aspect of interaction unattended.

Consequences of interaction quality

Regarding the consequences of (service) interaction quality, scholars have asserted that interaction quality between the frontline service employee and the customer to be the most important determinant of customers' perceptions of service quality [20, 25, 26]. In relation to customer loyalty, prior studies have found that customer's perception of the excellence of face-to-face interaction (i.e. interaction quality) with the service provider is one of the strongest determinants of loyalty [27, 28]. Moreover, Lloyd and Luk [29] review literature and show that service interaction leads to customer satisfaction and positive WOM [22, 30]. In a meta-analysis of service interaction quality, Ranjan et al. [16] have affirmed that service interaction quality has a positive impact on customer satisfaction and loyalty. This review also indicates that no study tests the effect of service interaction quality on customer perceived value.

Customer value

Customer value is considered as the basis and target for a firm's marketing activities [31, 32]. In a service consumption, it refers to the customer's overall assessment of the utility of a service based on evaluation of what is received and what is given [33]. That is, it encompasses the "gives" versus the "gets" [34]. The gives include money and other

customer's intangible resources, while the gets include tangible and intangible benefits being experienced during and after the service process [35]. To emphasize the nature of value from an experience perspective, some scholars suggest to view customer value as an interactive relativistic preference experience which emerges during the interactive process, when the service becomes embedded in the customer's activities, practices and experiences together with the service company's activities [32, 36].

The abovementioned notions imply that service value is a complex construct that should be conceptualized as a multidimensional structure to capture its multi-faceted nature, in addition to the gets–gives principles [14, 37]. To this end, the current study adopts the theoretical framework developed by Sweeney and Soutar [38], who suggest that customer service value should include four dimensions, namely quality value, price value, social value and emotional value. Quality value refers to the utility derived from the perceived quality and expected performance of a service. Price value is understood as the utility derived from the service due to the reduction of its perceived short-term and longer-term costs. Social value is the utility derived from the service to enhance social self-concept. Finally, emotional value is defined as the utility derived from the feelings or affective states that the service generates [38]. However, because the customer's feelings or affective states are assumed not to endure long, the emotional value would disappear soon after the service, leaving no cue for the word-of-mouth effect. Thus, emotional value is excluded from further investigation. By this exclusion, the customer service value to be studied in this particular study includes quality value, price value and social value.

Review of literature on dental tourism

Our literature search revealed that there have been many studies on medical tourism in general, in which dental treatment is considered as one of several types of medical services being covered (e.g. [39–42]). However, as mentioned previously, dental tourism accounts for up to 42% of medical tourism globally [5]. Moreover, as described below, dental tourism has its own features compared to other types of medical tourism. Therefore, given the limited space for this paper, this literature review focuses only on dental tourism.

Given this confinement, the extant literature on dental tourism has focused on three main themes. The first theme is on the key features of this service. In terms of human need, similar dental care is needed by most people throughout their lives [43]. However, customer demand for dental care tends to be non-emergency. That is, non-immediate treatments are less likely to lead to catastrophic consequences compared to other health care [9]. This feature would widen customer choices as to where and when to use this service. On the other aspect, dental tourists may need general or specialist care. General dental care includes basic fillings, scaling, cleaning and tooth whitening. Specialist care includes restorative treatments, surgery and implant surgery. Some complex treatments such as crowns, bridges, veneers and surgical treatments including the removal of wisdom teeth and dental implants are commonly expensive in high-income countries [5]. This feature is among the reasons motivating customers to seek the service in another country as a dental tourist. To this respect, Chandu [5] identifies two main groups of dental tourists. The first group includes those who

purposefully go to a foreign country for a dental treatment, either for the sole purpose or dental treatment as part of a holiday package. The second group includes immigrants who are returning to their native country for a holiday or to visit relatives and then access dental treatment during their visit.

The second and most studied theme relates to the driving factors explaining the dental tourism decision. Several studies have identified that affordable cost and convenient access to dental care are main reasons for a growing popularity of dental tourism [4, 6, 8, 10, 11]. Moreover, the low-cost airline travel models have also facilitated this growth. Other reasons include the combination of dental treatment with some leisure activity [5, 10]. Also, many travellers are motivated by their strong connection with a destination country. This is especially the case of immigrants who travel back to native countries for dental services [44]. Communications with relatives, friends and other connection are the main sources of motivation. Moreover, language and social–cultural connections between tourists and their native countries are important motivation to encourage them to experience the dental service in their native countries [6–8, 45]. In terms of demotivating factors, Barrowman et al. [10] point out that the lack of accountability and regulation of this type of service in the host country are the main concerns, particularly when complications occur.

The third theme in the literature explores the satisfying factors during and after the dental service. For example, Musa et al. [1] find that customers are most satisfied with doctors, nurses, hospital services, hospital atmosphere and hospital facilities, of which hospital facilities and doctors are the two most important dimensions in influencing the overall satisfaction. Jaapar et al. [9] find that dental care quality, dental care information access and supporting services significantly affect dental tourist satisfaction. Horton and Cole [8] realize that satisfying factors include the rapidity of services and personal attention in the doctor–patient relationship. In a rare study employing surveyed data to test a structural model capturing elements of perceived benefits and sacrifice, Wang [46] finds that the perceived value of medical tourism products has a positive impact on the buying intention of potential customers. As for benefits, perceived medical quality, service quality and enjoyment are critical components that significantly influenced the perception of value. Regarding sacrifice, the effects of perceived risk on perceived value were significant.

In aggregation, the above review of extant literature shows that dental tourism as a specific form of medical tourism has received lesser attention of researchers. Recent studies mainly describe the key features of this tourism service, including the flow of dental tourists including source and destination countries. Two major groups of dental tourists have been identified, the tourist group with the sole purpose of dental treatment and the immigrant group returning to their native country to visit relatives and then accesses dental treatment during their visit. With regard to the immigrant group, the destination is predominantly their native countries (less-developed or developing countries). For this group, the reasons or motivations of customer decision-making to pursue a dental tourism are costs, access to service, convenience, culture/social ties and language. A few studies have explored the drivers of customer satisfaction and mentioned the same factors plus the interaction process with the service provider and the perception of the customer on service quality. In terms of the research approach, most of the studies were descriptive in nature. Few qualitative studies were also found. There is only a handful of empirical large-sample survey causal studies.

Proposed model and hypotheses

Based on the above review and given the importance of customer value in the contemporary service research and management, the current study attempts to develop and test a structural model. The model (see Fig. 1) represents the impact of the quality of interaction between the customer and service provider on different components of service value. Then, it investigates the impact of each form of value on customer positive word-of-mouth. The justification of proposed relations and the overall research model is presented in the next section.

Service interaction quality and perceived value

When customers interact with a service provider, they have opportunities to participate in the service process and thus influence the service outcomes [14, 23]. Prior studies have suggested that the core aspects of interaction are informational exchange and social exchange which are fundamental for value creation [47, 48]. Particularly, the informational mode of a provider's interaction generates customer response in terms of information sharing and opinion exchange [19]. In this respect, a high-quality interaction would enable the service provider to acquire useful information about the customer's specific needs, situation and preferences. These inputs from customers are essential for the provider to customize and perform the service appropriately and efficiently, leading to a better quality service [26]. In fact, prior empirical studies have asserted interaction quality to be the most important determinant of the perceived service quality, which in turn, is established to be the key determinant of quality value [14, 20, 25, 26].

In dental tourism, where customization is an important aspect of the service, a high-quality interaction with the dentist would enable customers to share not only the information about their health conditions, the disease's history and their personal preference to specific therapies [49], but also about their tourist situations such as time schedule and other leisure activities. These pieces of information are essential to enable the dentist to produce the most appropriate service solution that meets customer's personal needs and situation [50, 51].

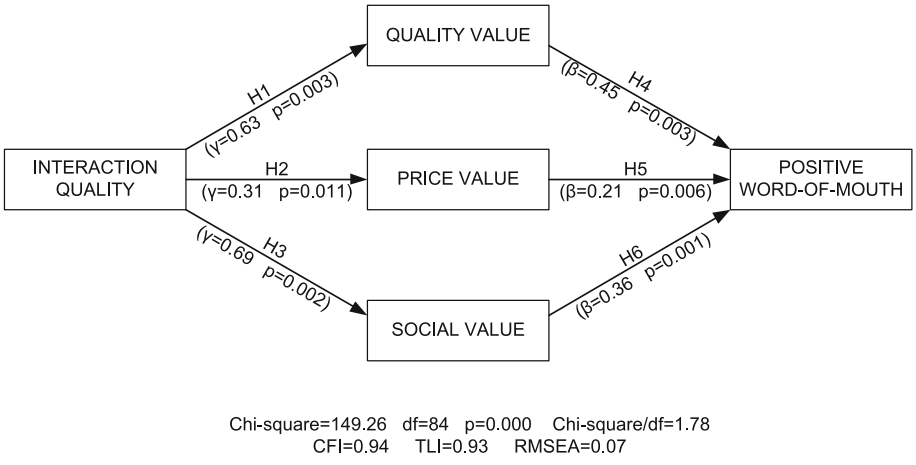

Fig. 1 Results of structural model estimation

Therefore, it is proposed that:

H1—Interaction quality between service employees and dental tourists has a positive effect on the perceived service's quality value of customers.

When immigrant customers undertake a dental treatment in their native country (e.g. less-developed one), they may initially be uncertain and not confident that the service they receive is of good quality [52]. This is especially the case of dental tourism in less-developed countries, where low price is one of the main reasons for customers to use this service. In this circumstance, a high-quality interaction between a dentist and a customer would facilitate the social exchange and mutual understanding, leading to the development of trust in customers [53]. In turn, when customers trust in the dentist and his service, they are more confident that the service they receive is worth the money, leading to better price value.

Thus, hypothesis H2 can be stated as follow:

H2—Interaction quality between service employees and dental tourists has a positive effect on the perceived service's price value of customers.

As mentioned, the interaction between a service provider and a customer includes two aspects, informational interaction and social interaction [47, 48]. Ivanova-Gongne [54] suggests that social interaction is an attribute of short-term mutual exchanges, leading to long-term social relationships between the service provider and the customer. Other scholars explain that interaction is relational in nature [55, 56]. It enables the establishment of a social relationship and practices [57]. Social practices are the key to mutual understanding, which leads to the development of trust [53]. Trust, in turn, is the basis for a social relationship of high value [58].

In this specific context of dental tourism for immigrants, the value of this social relationship is even stronger because immigrant customers can communicate with the service provider using their mother language and share the same cultural values and virtues. Additionally, immigrant customer perception of the service's social value is further enhanced after they receive the dental service which makes them feel more confident in interacting with other people during their stay in the native country.

Based on this theoretical and contextual logic, it is proposed that:

H3—Interaction quality between service employees and dental tourists has a positive effect on the perceived service's social value of customers.

Perceived value and positive word-of-mouth

Word-of-mouth is defined as informal communications directed at other consumers about the usage or characteristics of particular goods, services or their sellers [59]. Word-of-mouth can be positive, neutral or negative. This study focuses on positive word-of-mouth. Anderson [60] points out that instances of positive word-of-mouth include relating pleasant, vivid or novel experiences and recommendations to others. It requires consumers to engage in attribution analysis, recall and interpret events and communicate and share meaningful information with others [29]. Martin [61] indicates that the content of positive word-of-mouth in health care mainly relates to the positive comments on the services and/or recommendation of specific health care provider (hospital, clinic, physician) to others.

The relationship between customer perceived value and word-of-mouth has been shown in several studies (e.g. [62–64]). For example, Hartline and Jones [63] find that

when customers perceive the value of a service, they would increase their positive word-of-mouth behaviour. The authors further indicate that the effect of perceived value on positive word-of-mouth is stronger than that of perceived quality. To justify this relationship, Hinz et al. [65] explain that customers are motivated to share positive word-of-mouth by altruistic or egoistic motives. McKee et al. [64] explain that customers who perceive a high value of a service tend to become more committed to the service firm and seek to recommend others in their reference group to the same firm.

In the context of dental tourism for immigrants, the abovementioned motives to share positive comments on the services and/or the specific health care provider with other immigrants are assumed to be stronger as a consequence of the nostalgia effect among immigrants [66]. The information being shared can be communicated via different channels such as face-to-face or electronically by social network.

Based on the above analysis, this study attempts to elucidate the effect size of each form of perceived value on positive word-of-mouth in this specific research context of dental tourism.

H4—Perceived quality value has a positive effect on positive word-of-mouth of dental tourists.

H5—Perceived price value has a positive effect on positive word-of-mouth of dental tourists.

H6—Perceived social value has a positive effect on positive word-of-mouth of dental tourists.

Method

The context of the study is Vietnam, a country with an emerging economy in the Southeast Asia region. Following several countries in Asia such as India, Korea, Malaysia and Thailand [67], Vietnam has recently been attracting a large number of medical tourists to the country. According to the Vietnam National Administration of Tourism [68], among various types of medical services being offered to customers outside the country, Vietnam has gained credit on fertility, cardiology, cosmetic surgery and dental treatments. However, to develop Vietnam to be an attractive medical tourism destination, the country still has many things to improve to compete with its neighbouring countries being mentioned above. As for the current time, a large part of dental tourists to Vietnam are overseas Vietnamese. There are currently about 4.2 million overseas Vietnamese living in other countries, especially the USA, Australia and France.

The empirical data for this study were collected from overseas Vietnamese who were in Vietnam and visiting dental clinics in Ho Chi Minh City and vicinal cities in Vietnam by means of a structured questionnaire. By the courtesy of staff at 16 dental clinics, a copy of the questionnaire was delivered to a respondent if he/she was identified to be an overseas Vietnamese. The convenience sampling method was used as it was the only option. The questionnaire was initially developed in English and then translated into Vietnamese through a translation and back-translation procedure. The translators were university academics who were fluent in both languages. After comparing the two English versions, inconsistent points were discussed, and the Vietnamese version was revised accordingly.

The measurement of constructs in the research model was based on previous studies with necessary adjustments to fit with the current research context of dental service. Particularly, to measure interaction quality, three items were borrowed from [20, 22]. Quality value, price value and social value were measured by 12 items adopted from [38]. Finally, the scale measuring positive WOM included three items which were derived from [69]. All scales were in 5-point Likert type. The item wordings are presented in Table 2.

Results and discussion

Sample characteristics

As shown in Table 1, the sample consisted of 152 respondents; 59.2% of whom were female and 40.8% were male. The age groups were fairly balanced, ranging from 19.7% (46–55 years old) to 24.3% (26–35 years old), except the over-55 group (11.2%). As for respondent's country of living, most of them were from the USA (34.9%), Australia (32.2%) and France (11.8%). These numbers well reflected the reality that the majority of overseas Vietnamese are living in the USA and Australia [70]. In terms of the type of dental service, statistics show that 46.7% of respondents used specialist treatment and 21.7% used cosmetic dentistry, while 31.6% used both types. At the time of our survey, the majority of them (47.4%) were in the first-time visit to the dentist and 40.1% were in the second or third time, while 12.5% of them can be seen as familiar to the service with more than three times of visit. These statistics implied that the sample is diverse enough for further analyses.

Assessment and refinement of measurement scales

To initially assess the measurement scales, exploratory factor analysis (EFA) was applied to all scales together. The EFA estimation yielded a five-factor structure as expected, with a total extracted variance of 71.88%. However, the result led to one item measuring social value being eliminated due to low factor loadings (i.e. less than 0.40).

Table 1 Sample characteristics ($N = 152$ cases)

	Freq.	Percent		Freq.	Percent
Gender			Country of living		
Female	90	59.2	The USA	53	34.9
Male	62	40.8	Australia	49	32.2
Age group			France	18	11.8
18–25	36	23.7	Japan	11	7.2
26–35	37	24.3	Germany	8	5.3
36–45	32	21.1	Others	13	8.6
46–55	30	19.7			
Over 55	17	11.2			
Type of dental treatment			Service familiarity		
Specialist treatment	71	46.7	1st time	72	47.4
Cosmetic dental	33	21.7	2–3 times	61	40.1
Both	48	31.6	Over 3 times	19	12.5

Consequently, the remaining 17 items were qualified to submit to the next analysis which was confirmatory factor analysis (CFA) using AMOS software.

In CFA, the measurement model consisted of five first-order constructs and 17 respective reflective items. The test for normality of variables showed that the kurtosis (− 0.71 to + 1.09) and skewness (− 0.96 to − 0.09) were within acceptable ranges; thus maximum likelihood (ML) could be used to estimate the model [71]. In this analysis, two items (measuring quality value and price value) were further eliminated because they exhibited a high covariance of the error terms (see Table 2). Eventually, the fit indices were as follows: chi-square = 134.81, degree of freedom (dF) = 80, $p = 0.000$, comparative fit index (CFI) = 0.95, Tucker–Lewis index (TLI) = 0.94 and root mean square error of approximation (RMSEA) = 0.07. These results showed a good fit between the final measurement model and the data.

As shown in Table 3, the loadings of items ranged from 0.67 to 0.91, and average variance extracted (AVE) of scales ranged from 0.55 to 0.77, which were all above the acceptable 0.50 limit. The composite reliability of the scales ranged between 0.78 and 0.91, which was higher than the acceptable standard of 0.70. The squared correlation coefficients of the 10 pairs of constructs were all smaller than their respective AVEs. These statistics indicated that the refined scales are qualified in terms of reliability, convergent and discriminant validity.

Table 2 Scale items measuring five constructs in the model

Item wordings	Std. loading
Interaction quality (AVE = 0.563 comp. reliability = 0.794)	
+ I think that the quality of my interaction with X and X's personnel is excellent	0.79
+ X and X's personnel show a genuine care and interest in my circumstances	0.72
+ I believe that X and X's personnel are providing a courteous and friendly service to customers	0.74
Quality value (AVE = 0.549 comp. reliability = 0.783)	
+ The service at X has an acceptable standard of quality	0.85
+ The service at X has consistent quality	Eliminated
+ The service at X is performed consistently	0.67
+ The service at X is well performed	0.69
Price value (AVE = 0.652 comp. reliability = 0.849)	
+ The service at X is reasonably priced	Eliminated
+ The service at X offers value for money	0.76
+ I think this is a good service for the price	0.80
+ The service at X is economical	0.86
Social value (AVE = 0.635 comp. reliability = 0.839)	
+ The service at X would help me to feel acceptable	Eliminated
+ The service at X would improve the way I am perceived	0.67
+ The service at X would make a good impression on other people	0.84
+ The service at X would give me social approval	0.81
Positive WOM (AVE = 0.769 comp. reliability = 0.909)	
+ I will share my experience at X with other people	0.84
+ I will say positive things about X with others when I have chances	0.88
+ I will recommend X to others who seeks my advice	0.91

Note: X denotes the name of the dental clinic where the respondent visited

Table 3 Composite reliability, convergent and discriminant validity of scales

Construct	Composite reliability	Std. item loading	Average variance extracted (AVE) and squared correlation coefficients				
			Interaction quality	Quality value	Price value	Social value	Positive WOM
Interaction quality	0.794	0.71–0.79	*0.559*				
Quality value	0.783	0.67–0.85	0.325	*0.549*			
Price value	0.849	0.67–0.84	0.085	0.027	*0.604*		
Social value	0.839	0.77–0.83	0.393	0.348	0.076	*0.641*	
Positive WOM	0.909	0.84–0.91	0.419	0.442	0.144	0.417	*0.769*

The italicized values in the diagonal represent the average variance extracted (AVE)

Structural model estimation and hypothesis testing

The structural model was estimated employing the maximum likelihood method. The model (see Fig. 1) consisted of five first-order reflective constructs (i.e. interaction quality, quality value, price value, social value and positive WOM). The estimation yielded a good fit with chi-square = 149.26, dF = 84, $p = 0.000$, chi-square/dF = 1.78, TLI = 0.93, CFI = 0.94 and RMSEA = 0.07.

The standardized path coefficients shown in Table 4 indicate that all six hypotheses from H1 to H6 are supported. Particularly, interaction quality shows a significant effect on quality value ($\gamma = 0.63$; $p = 0.003$), on price value ($\gamma = 0.31$; $p = 0.011$) and also on social value ($\gamma = 0.69$; $p = 0.002$). Then, positive WOM is significantly affected by quality value ($\beta = 0.45$; $p = 0.003$), by price value ($\beta = 0.21$; $p = 0.006$) and by social value ($\beta = 0.36$; $p = 0.001$). These statistics also show that the three types of service value differ in their impact on positive WOM. While quality value has the highest impact, price value has the lowest impact on positive WOM. Together, they can explain up to 60% variance of positive WOM.

Discussion

In the context of medical tourism targeted to overseas Vietnamese going back to Vietnam for dental service, the current study addresses two main questions. Firstly, how does the quality of interaction between service providers (i.e. local dentists and staff) and customers (i.e. overseas Vietnamese patients) affect customer's perception of various forms of service value? Secondly, how does each form of service value influence the positive WOM?

Focusing on the direct interaction during the service process, the empirical results show that interaction quality has significant impact on all three forms of value including quality value, price value and social value. These findings emphasize that although interaction is not a professional activity being undertaken by the dentist for the benefits

Table 4 Structural model estimation and hypothesis testing results

	Path from–to			Std. Coeff.	*p* value	Test result
H1	Interaction quality	→	Quality value	0.63	0.003	Supported
H2	Interaction quality	→	Price value	0.31	0.011	Supported
H3	Interaction quality	→	Social value	0.69	0.002	Supported
H4	Quality value	→	Positive WOM	0.45	0.003	Supported
H5	Price value	→	Positive WOM	0.21	0.006	Supported
H6	Social value	→	Positive WOM	0.36	0.001	Supported

of customers, it is an essential component of the service. These findings, on the one hand, highlight the role of service encounter's interaction in medical service as documented in prior studies [14, 16, 49]. On the other hand, in this particular context, interaction does not only function as an exchange of necessary information for the service provision, but also facilitates a platform for social and cultural sharing between the two parties. It is this aspect which reflects one of the factors motivating immigrants to pursue dental service in their native country.

As mentioned in the "Review of literature on dental tourism" section, treatment quality, cost and social connection are among the factors driving customer decision to use the service. In this study, we find that interaction quality has significant impacts on quality value ($\gamma = 0.64$), social value ($\gamma = 0.69$) and price value ($\gamma = 0.31$) which correspond to the above motivating factors. These findings again confirm the importance of interaction quality because when customers are motivated by a given factor, they are likely to expect excellent performance of the service in that factor [72]. Moreover, in comparison with quality value and social value, price value is less related to interaction quality. This may be attributed to the fact that the content of both information exchange and social exchange in the interaction has little relation to cost issue, which makes the price value less sensitive to interaction quality.

Regarding the role of the three forms of value in generating WOM effect, the results indicate that quality value is the most important influencing factor ($\beta = 0.45$), followed by social value ($\beta = 0.36$) then price value ($\beta = 0.21$). Firstly, given that dental service is a kind of credence service [17], the quality of the service is among the customer's main concerns in making a decision but can only be assessed after experiencing the service. This is particularly true in the context of dental tourism, where customers will return to their resident country after the service, making the after-service care (in case of poor quality) extremely difficult. Thus, once customers highly value the functional quality, they are more motivated to share with others and their practice of positive WOM is more valuable for the providers. Secondly, the empirical finding demonstrates the contributive role of social value, which is substantially driven by interaction quality ($\gamma = 0.69$) in the positive WOM towards potential customers. This finding illuminates the idiosyncratic feature of this service' context, where social–cultural and language affinities are important in the customer–provider interaction. Thirdly, our literature review shows that low cost is one of the main reasons for immigrants to return to native countries for medical service. However, the empirical finding illustrates that price value has a relatively small impression to motivate customers to share with others in their WOM communication.

In terms of managerial implications, the findings of this study evoke some suggestions for dental service (or medical service in general) providers who want to attract overseas Vietnamese. Firstly, WOM is a very important channel of information for potential customers. Although this channel is indirect and informal, many potential customers tend to rely heavily on it due to its perceived credibility. Thus, to promote dental tourism to potential customers who are immigrants living in other countries, service providers must pay due care about the quality of interaction with customers. Secondly, customer value by itself is an important marketing outcome that every provider needs to care about. In this respect, this research findings imply that, besides due care about the quality of professional dental treatment, dental service providers

can enhance customer value by actively implementing a high-quality interaction throughout the service. The interaction should cover not only functional information to facilitate a highly customized service that satisfies customers. More importantly, provider effort must be spent on building up trust and social relationship with customers. These can be achieved by showing a caring attitude and using the mother language to share social–cultural values. These suggested measures are deemed to be more important than the current practice of emphasizing the cheap-price medical service as seen in many promotion documents offered to potential customers.

Conclusion

Based on the case of overseas Vietnamese who go back to their fatherland and use dental service, the current study investigates the effects of interaction quality between service providers and customers on different forms of service values, leading to positive WOM. The findings contribute to provide theoretical and empirical relations between service interaction and customer value in medical tourism, a less-researched topic in the literature of medical tourism. Particularly, the findings indicate that a high-quality interaction would strongly affect customer perception of quality value and social value and moderately affect price value. In turn, these three forms of value significantly affect positive WOM. By linking customer quality, social and price value with WOM, the present study suggests an effective way to promote this special form of medical service to immigrants living outside the country.

The present study is accomplished but still has a number of issues which suggest areas for further research. Firstly, it was confined within dental tourism targeting overseas Vietnamese living in more-developed countries. For more generalizable findings, further research is suggested to broaden the service context in regard to the type of medical services and target customers. Secondly, customer's familiarity with the service (i.e. first-time visit versus repeated customer) may moderate the strength of relationships under study. Unfortunately, due to the limited sample size, the current study is unable to test these effects. Thirdly, some previous studies on medical tourism mentioned the role of information technology, and since the medical tourism site is examined/selected by immigrant customers through such information, the role of information technology in the interaction between service provider and customers should be considered as well. Finally, although the topic is about dental tourism, the content of this study mainly relates to dental service. Factors related to tourism have not been included. This may be considered in future research.

Abbreviations

AMOS: Analysis of moment structures; AVE: Average variance extracted; CFA: Confirmatory factor analysis; CFI: Comparative fit index; dF: Degree of freedom; EFA: Exploratory factor analysis; RMSEA: Root mean square error of approximation; TLI: Tucker–Lewis index; WOM: Word-of-mouth

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Authors' contributions

The three authors contribute equally to this study. All authors read and approved the final manuscript.

Competing interests
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