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Word-of-mouth intent in the restaurant industry of Mexico, a structural equation modeling approach mediated by customer satisfaction.

(La intención de la recomendación de boca en boca en la industria restaurantera en México, un enfoque de ecuaciones estructurales mediada por la satisfacción del cliente.)

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Abstract. This research aims to analyze the variables that are related to word-of-mouth intention in a context of full-service restaurants, considering as a mediating variable customer's satisfaction. Partial least squares- structural equation modeling was the chosen approach to test hypotheses. Regarding results, customer's satisfaction indeed mediates the direct effects of the variables related to word-of-mouth intention thus, these variables impact both customer satisfaction and word-of-mouth intention, the aim of this research was Monterrey's metropolitan area.

Keywords: restaurants, word-of-mouth, customer satisfaction, structural equation modelling

JEL: M10. M31

Resumen. Esta investigación busca analizar las variables que están relacionadas con la intención de recomendación de boca en boca en el contexto de restaurantes de tipo servicio completo, considerando como una variable mediadora la satisfacción del cliente. El enfoque elegido para poner aprueba las hipótesis para esta investigación es por ecuaciones estructurales por mínimos cuadrados parciales. En referencia a los resultados, la satisfacción del cliente efectivamente logra mediar los efectos directos de las variables relacionadas a la recomendación de boca en boca, por esta razón las variables estudiadas impactan tanto en la satisfacción del cliente como en la intención de recomendación de boca en boca, el alcance de este estudio se limitó a Monterrey y su área metropolitana.

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Introduction

The hospitality industry, including restaurateurs, is forecasting an important global growth, despite the effects of the coronavirus world pandemic. Statista (2021) projects that this sector will recover to 2019 consumption levels by 2024, estimating a market size of 3,693 billion dollars worldwide.

The National Restaurant Association (2020) estimates that in 2020, more than one million establishments registered as restaurants in the United States alone, thereby generating more than 899 billion dollars in revenue and creating 14.7 million jobs.

In Mexico, the National Institute of Statistics, Geography and Informatics (INEGI) reports that more than 451 thousand establishments are registered in food and beverage preparation, thereby making it one of the most important productive sectors. Those businesses represent 10.7% of the total economic units in the country, creating more than 1.4 million jobs (INEGI, 2014).

In general terms, the Mexican restaurateur aims to grow revenue, which is an ongoing challenge in the industry considering the surplus offering options, the complicated restrictions due to the current pandemic, and most importantly, the usual constraints that imply a limited budget for marketing efforts. These factors suggest that to thrive, restaurant managers rely on customer loyalty, willingness to recommend, word-of-mouth (WOM), and repurchase behavior from customer bases (Keller, 2007).

As WOM is vital for restaurants' success, the following research question is formulated: What factors influence word-of-mouth intention, considering customer satisfaction as a mediator variable, in northern Mexico's restaurant industry?

Literature review

Restaurant industry definition

In the context of this research, the National Institute of Statistics, Geography and Informatics (INEGI, 2014) defines the restaurant industry as the preparation and service of food and beverage for immediate consumption, whether on-premise or off-premise.

The North American Industrial Classification System defines the fullservice restaurant category (code 722511) as establishments where the main activity involves providing food to clients who order while sitting at a table, are served by wait staff, and pay after consumption. To delimitate this investigation, this study limits subjects to clients that visited full-service restaurants.

Depended variable: Word-of-mouth

A classic WOM definition consists of face-to-face communication regarding products or companies among persons that do not work as commercial entities (Arndt, 1967).

Baloglu and McCleary (1999) imply that WOM has an important impact on purchase decisions, generates credibility with receptors, and is perceived as honest and sincere communication, superior to other strategies, such as advertising. Balter (2005) suggests that WOM communication influences up to 76% of purchase decisions.

Mediator variable: Satisfaction

Satisfaction is a central concept in marketing due to its importance in satisfying the wishes and needs of clients (Spreng, Mackenzie, and Ohlshavsky, 1996; Yi, 1990). Companies deliver products in the same way they generate client satisfaction, creating revenue as a consequence (Yi, 1990).

Storbacka et al. (1994) propose that customer satisfaction is a consequence of service quality; in the same fashion, generating trust between clients and service providers, resulting in customer loyalty, repurchase likelihood, and profitability (see Figure 1).

Service quality Customer satisfaction Strong relationship Customer Loyalty Profitability

Figure 1: The loyalty chain

Source: Storback, Strandik y Grönroos, 1994

Based on the above, this research proposes that satisfaction is a mediator variable to assess the impact of independent variables on WOM variance.

Independent variables

Quality of food

The quality of food is considered a very important dimension to assess the quality of a restaurant (Ha and Jang, 2012). Mattila (2001) reported that food quality was the most important attribute in the quality of a restaurant to predict customer loyalty, behavior that is closely related to WOM.

Kivela (1999) acknowledges temperature, presentation, variety in the menu, and taste as the four dimensions of quality of food (QF). Namkung and Jang (2007), however, proposed six dimensions: presentation, variety, taste, healthy options, freshness, and temperature.

The following hypotheses are stated regarding QF:

- H1: The quality of the food has a direct and positive impact on WOM intention.
- H2: The quality of the food has a positive impact on WOM through satisfaction.

Personal interaction quality

Kim, Han, and Lee (2013) found a relationship between personal interaction quality (PIQ) and customer satisfaction (SAT); a positive experience can

generate, as a consequence, customer loyalty, which is closely related to WOM

Harker and Egan (2006) suggest that the interaction between buyer and seller is a key element in a marketing relationship. The relationship between clients and suppliers is beneficial for a profitable company and should be maintained. Furthermore, generating repurchases is more viable than acquiring new ones. Regarding PIQ, the following hypotheses are stated:

H3: The personal interaction quality has a direct and positive impact on WOM intention.

H4: The personal interaction quality has a positive impact on word-of-mouth through satisfaction.

Perceived value

Longart (2010) identified WOM and other behavior intentions, such as loyalty and propensity to pay more, when clients perceive good value regarding the received service.

This research defines perceived value as the client's evaluation mediating the service, the perception of quality, and the price. When this evaluation has a positive outcome, it is suggested that this result will impact positive behavior, such as WOM. The following hypotheses are stated:

H5: Perceived value has a direct and positive impact on word-of-mouth intention.

H6: Perceived value has a positive impact on word-of-mouth through satisfaction

Physical environment quality

Chow (2007) proposed that one key element in how a client evaluates a restaurant experience is the establishment's physical environment.

There is a discussion among authors about the impact physical environment quality (PEQ) can have on some behaviors, such as WOM (Andreassen and Lindestad, 1998). Some researchers have found that PEQ positively impacts the company's image, influencing the customer's perceived

value and satisfaction, which affect loyalty (Lai, 2009). This variable is tested with the following hypotheses:

- H7: Physical environment quality has a direct and positive impact on word-of-mouth intention.
- H8: Physical environment quality has a positive impact on word-of-mouth through satisfaction.
- H9: Satisfaction has a direct and positive impact on word-of-mouth intention.

Figure 2 represents a conceptual framework for this paper's hypotheses.

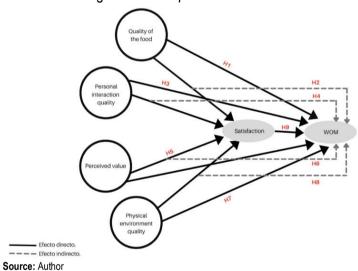


Figure 2: Conceptual framework1

Methodology

The methodology used in this paper is exploratory, descriptive, and explicative. The design is not experimental, and the research technique is documental and quantitative. The contrast of hypotheses included partial least squares structural equation modeling (PLS-SEM).

Instrument

Interviews with three academic and field experts were conducted to validate the research instrument. Later, 14 observations were taken from a pilot test. The questionnaire is divided into two sections:

- 1. Demographic profile questions: Last visited restaurant (to determine if it is a full-service type), age, gender, and city of residence.
- 2. The questionnaire performs 31 items that operationalize the independent, mediator, and independent variables; these questions are in metric scales, using a 5-point Likert scale in the form of smiley icons. Table 1 shows the instrument structure.

Table 1: Questionaire structure.

	Concepts	Number of questions.
1.	Demographics section (Age, gender, city of residence)	3
2.	Quality of the food section	7
3.	Personal interaction quality section	4
4.	Perceived value section	3
5.	Physical environment quality section	10
6.	Satisfaction section	1
7.	Word-of-mouth section	3

Source: Author

This instrument considers previously validated scales with adaptations; the operationalization of the variables is shown in Table 2.

Table 2: Operationalization of the variables in the instrument

Variable	Items
Quality of the food (QF) Adapted from Namkung and Jang (2007)	QF1 Is food presentation visually attractive? QF2 Does the restaurant offer a variety of menu items? QF3 Does the restaurant offer healthy options? QF4 Does the restaurant offer tasty food? QF5 Does the restaurant offer fresh food? QF6 Is food served at the appropriate temperature? QF7 Do you like the food served in this restaurant?
Personal interaction quality (PIQ) adapted from Vesel and Zabkar (2010)	PIQ1 Would you say that the staff served you in an excellent way? PIQ2 Would you say that the staff is kind? PIQ3 Would you say that the staff served you in a reasonable time? PIQ4 Would you say that the interaction with the staff is appropriate?
Perceived Value (PV) adapted from Chen (2012)	PV1 This restaurant offered good value for money. PV2 I would think that the prices that I pay for the services of this restaurant are worthwhile. PV3 I would rate my overall experience at this restaurant "extremely good value."
Physical Environment quality (PEQ) adapted from Meng and Elliot (2008)	PEQ1 Is the restaurant physically attractive? PEQ2 Does the restaurant have an appropriate parking space? PEQ3 Is the restaurant interior comfortable? PEQ4 Does the restaurant have an appropriate atmosphere? PEQ5 Does the restaurant have a visually attractive building exterior? PEQ6 Is the restaurant interior visually attractive? PEQ7 Does the restaurant have appropriate music to maintain its atmosphere? PEQ8 Does the restaurant have appropriate lighting to maintain its atmosphere? PEQ9 Is the restaurant equipped in an appropriate way? PEQ10 is the restaurant clean?
Word-of-mouth (WOM) adapted from Jalilvand et al. (2012)	WOM1 I say positive things about the restaurant to other people. WOM2 I recommend the restaurant to someone who seeks your advice. WOM3 I encourage friends and relatives to refer the restaurant.
Satisfacción (SAT) adapted from Kim and Lee (2013)	SAT I considered my overall satisfaction in this visit.

Source: Author

Sampling

The subjects of study are consumers in the north of Mexico. Since the definition of the population, we used the size sampling formula considering an infinite population, with a margin of error of 5% and 95% of the confidence interval, obtaining a sample size of 385 observations. The final sampling considered 460

distributed in proportion to Monterrey metropolitan area's most important cities; Table 3 shows specifics on sampling.

Table 3: Sampling

City	Population	Proportion	Sampling plan	Actual sampling
Apodaca	597,207	16.30%	63	64
Escobedo	425,148	11.60%	45	46
Guadalupe	682,880	18.63%	72	74
Monterrey	1,109,171	30.27%	116	140
San Nicolás de los Garza	430,143	11.74%	45	55
San Pedro Garza García	123,156	3.36%	13	18
Santa Catarina	296,954	8.10%	31	39
Other cities	N/A	0.00%	0	24
TOTAL ZMM	3,664,659	100.00%	385	460

Source: INEGI. La industria restaurantera en México.

The questionnaire was delivered online using Kindorse Surveys software, and it was self-administrated. The sampling method was non-probabilistic in a conventional approach; all 460 responses were validated by removing responses that could represent potential bias.

Results

This study used PLS-Smart software version 3.3 and SPSS software version 22 to process the results. In a quantitative approach, the items were validated through Cronbach's alpha in the pilot test. Furthermore, this section provides the descriptive statistics, the model assessment, and the contrast of hypotheses.

Pilot test

Before recollecting the complete data, a pilot test was performed using 14 observations. The objective of this test is to make clear that the questions are easy to understand to respondents and quantitatively validate the constructs. Table 4 presents Cronbach's alpha of each construct from this pilot test.

Table 4: Pilot

Variable	Items	Cronbach's alpha
Word-of-Mouth (WOM)	3	0.82
Satisfaction (SAT)	1	1.00
Quality of the food (QF)	7	0.73
Physical environment quality (PEQ)	10	0.82
Personal interaction quality (PIQ)	4	0.78
Perceived value (PV)	3	0.85

Source: Author, from SPSS 22 outcome.

Common method variance

The common method variance consists of potential spurious relations that might be caused because the dependent and independent variables' source comes from the same source in auto administrate questionnaires (Podsakoff et al., 2003). Harman's approach was used to assess this (Harman, 1976). This approach performs a principal components analysis through exploratory factor analysis EFA, where all latent variables are analyzed. The result were four factors yielding an eigenvalues higher than 1 (F1:10.72; F2:22.63; F3:1.508; F4:1.002). Harman's criteria consist of the first factor not exceeding 50% of the total variance; in this fashion, the first component represented 44.67% of the total variance, concluding that no evidence might compromise the results.

Descriptive statistics of the sample

Regarding genre participation, the sample included 52.7% female respondents and 47.83% male. Of the participants, 59.35% were 18 to 35 years old, 37.17% were between 36 and 60 years old, and 3.46% were 61 or more years old. Regarding education, the sampling included 6.99% of participants with high school, 58.08% with a bachelor's degree or equivalent, 27.95% with a master's degree, and 6.99% of participants had completed doctoral studies. Table 5 presents descriptive statistics of these items.

Table 5: Descriptive statistics of the items

Table 3. Descriptive statistics of the items									
ITEM	Mean	Median	Min	Max	S. D.	Kurtosis	Bias	Responses	
PEQ1	4.301	5	1	5	0.865	1.279	-1.234	460	
PEQ2	4.487	5	1	5	0.703	3.332	-1.579	460	
PEQ3	3.978	4	1	5	1.187	-0.046	-0.986	460	
PEQ4	4.284	4	1	5	0.837	1.013	-1.112	460	
PEQ5	4.378	5	1	5	0.779	1.235	-1.217	460	
PEQ6	4.028	4	1	5	0.954	0.267	-0.829	460	
PEQ7	4.177	4	1	5	0.878	0.887	-1.014	460	
PEQ8	4.011	4	1	5	1.042	0.701	-1.045	460	
PEQ9	4.286	4	1	5	0.822	2.002	-1.306	460	
PEQ10	4.334	4	1	5	0.739	0.875	-0.981	460	
PIQ1	4.317	5	1	5	0.855	2.024	-1.371	460	
PIQ2	4.459	5	1	5	0.750	3.323	-1.633	460	
PIQ3	4.345	5	1	5	0.833	1.385	-1.265	460	
PIQ4	4.434	5	1	5	0.684	1.964	-1.218	460	
FQ1	4.526	5	2	5	0.610	0.610	-1.029	460	
FQ2	4.341	4	1	5	0.737	0.921	-0.998	460	
FQ3	4.063	4	1	5	0.986	-0.044	-0.841	460	
FQ4	4.624	5	2	5	0.586	2.713	-1.57	460	
FQ5	4.476	5	1	5	0.665	1.254	-1.121	460	
FQ6	4.561	5	1	5	0.682	4.113	-1.799	460	
FQ7	4.616	5	2	5	0.584	1.567	-1.381	460	
SAT1	4.504	5	2	5	0.610	0.458	-0.943	460	
PV1	4.317	4	1	5	0.767	1.102	-1.076	460	
PV2	4.249	4	1	5	0.770	0.547	-0.863	460	
PV3	4.186	4	1	5	0.832	0.569	-0.907	460	
WOM2	4.421	5	2	5	0.732	0.521	-1.081	460	
WOM3	4.566	5	2	5	0.642	1.588	-1.391	460	
WOM1	4.568	5	2	5	0.628	1.334	-1.321	460	

Source: Author, from PLS-SEM outcome.

Reliability

Different criteria were considered to assess the reliability of the model. The variables' internal reliability was measured through Cronbach's alpha, compose reliability, and average variance extraction (AVE). The thresholds for Cronbach's alpha and AVE are values above 0.7; regarding factorial loads, the recommended value should be above 0.5, and the recommended value for composite reliability is above 0.5.

Regarding thresholds, every item was evaluated individually through factor loading; if the scores were below 0.7, the items were recommended for

removal. Items whose loads were below the threshold are PEQ2 (0.558), FQ2 (0.596), and FQ3 (0.637); however, all items were statistically significant (P >0.000), so the decision was to keep them all. Table 6 provides the reliability results.

Table 6: Reliability

Construct Load α de Cronbach Physical Environment Quality 0.914 PEQ1 0.817 PEQ2 0.454 PEQ3 0.768 PEQ4 0.725 PEQ5 0.755 PEQ6 0.835 PEQ7 0.673 PEQ8 0.786 PEQ9 0.811 PEQ10 0.826 Personal Interaction Quality 0.912 PIQ1 0.896 PIQ2 0.887 PIQ3 0.899 PIQ4 0.871 Quality of the food 0.868 QF1 0.607 QF2 0.677 QF3 0.637 QF4 0.882 QF5 0.780 QF7 0.851 Satisfaction 1 EXP1 1 Perceived value 0.839 PV1 0.873 PV2 0.896 PV3 0.896 PV	Table 6: Reliability						
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WOM2 0.767 WOM3 0.898			0.839				
WOM3 0.898							
Source: Author from PLS-SEM outcome							

Source: Author, from PLS-SEM outcome.

Multicollinearity

The possibility of multicollinearity in the data exists and must be assessed to avoid spurious relations between variables. Multicollinearity occurs when two or more variables generate redundant information in the model, resulting in a high correlation. The variance inflation factor (VIF) was calculated to discard a multicollinearity problem. Kock (2015) suggested that VIF > 3.3 in a structural equation modeling context may indicate an existing problem; according to the criteria, multicollinearity is not a problem in this research. The VIF values are shown in Table 7.

Table 7: Variance Inflation Factor

2.691
1.994
2.613
1.873
2.736

Source: Author, from PLS-SEM outcome.

Discriminant validity

The discriminant validity states that each construct must be highly different from others that are unrelated. Fornell and Larcker (1981)'s criteria were used to analyze discriminant validity. This approach consists of calculating the square root of the average variance extraction, or AVE; the value in the diagonal of the correlation matrix should be highest compared with other values in the vertical and horizontal rows. As seen in Table 8, the Fornell and Larcker criteria were met.

Table 8: Fornell & Larcker Criteria

Table 6: 1 Girleii a Earoner Cinteria								
	1	2	3	4	5	6		
1 Physical environment quality (PEQ)	0.767			•				
2 Quality of the food (QF)	0.584	0.74						
3 Personal interaction quality (PIQ)	0.553	0.606	0.899					
4 Word-of-mouth (WOM)	0.533	0.723	0.609	0.897				
5 Satisfaction (SAT)	0.640	0.681	0.653	0.713	1			
6 Perceived value (PV)	0.533	0.738	0.592	0.793	0.69	0.882		

Source: Author, from PLS-SEM outcome.

Fit indexes

Henseler et al. (2016) suggested evaluating the model to verify the fit of the data; in this fashion, the SRMR and NFI are the suggested fit indexes. These indexes help determine how harmonious the data is to pursue the estimation of the structural equations; in Table 9, the values and thresholds are shown.

 Index
 Value
 Threshold

 SRMR
 0.068
 Values between 0.05 y 0.08

0.829 Value > or equal to 0.9

Source: Hu & Bentler, 1999

The previous table shows an acceptable fit for the model. Hair et al. (2010) suggested that values for SRMR between 0.05 and 0.08 are acceptable; Hu and Bentler (1999) suggested values < 0.8. In contrast, NIF is a value that can score between 0 and 1: the closer the values to 1, the better the model fit. Even though the obtained value is 0.829, it is still considered a good fit for the model as it is close to the suggested threshold.

Structural model assessment

To assess the structural model, R squared was calculated. This value determines the relationship of the explained variance of the dependent variable, respecting the interaction of the independent ones. The reference values are 0.75, 0.50, and 0.25, equivalent to substantial, moderate, and weak, respectively (Falk & Miller, 1992; Hair et al., 2017).

The PLS algorithm was completed in PLS-Smart software to calculate this index; the model shows that independent variables explain 63.4% of the variance of the mediator variable (SAT). It was concluded that 76.8% of the variance of the dependent variable was reached, which is considered a substantial effect. Table 10 shows the results.

Table 10: R square and Q square of the model

	\mathbb{R}^2	Q^2
Recomendation (WOM)	0.768	0.610
Satisfaction (SAT)	0.634	0.612

Source: Author, from PLS-SEM outcome.

Furthermore, Q squared was calculated; this value is related to the predictive power of the model. Chin (1998) suggested that values over 0.35 mean that the model has a relevant predictive power. In this fashion, the values for the mediator and independent variables are 0.610 and 0.612, respectively.

Hypotheses testing

The bootstrap algorithm was used to test hypotheses. This algorithm consists of generating random samples that consider the original sampling data. Five thousand sub-samples were generated to estimate t-values to test the proposed hypotheses in this research. Tables 11 and 12 show the results of the direct and indirect effects, respectively.

Table 11: Direct effect hypotheses

Hypotheses	Direct effect	Beta	T-statistic	P-Value	Result
H1	CQ-> WOM	0.461	10.155	0.000*	Supported
H3	CIP-> WOM	0.050	1.069	0.285	Not supported
H5	VPC ->WOM	0.334	8.137	0.000*	Supported
H7	AFC-> WOM	-0.049	1.279	0.201	Not supported
H9	SAT->WOM	0.167	3.819	0.000*	Supported

^{*}P-Value < 0.001

Source: Author, from PLS-SEM outcome.

The results of the hypotheses through the mediator variable or indirect effects are shown in Table 12.

Table 12: Indirect effect hypotheses

Hypotheses	Effect	T-statistic	P- Value	Result
H2	CQ->SAT->WOM	2.274	0.023**	Supported
H4	CIP->SAT->WOM	2.926	0.003**	Supported
H6	VPC->SAT->WOM	2.934	0.003**	Supported
H8	AFC->SAT->WOM	3.049	0.002**	Supported

^{**}P-value < 0.050

Source: Author, from PLS-SEM outcome.

Conclusions

The results of this investigation coincide in general terms with the results of previous research. The mediator variable (SAT) effect is especially interesting in the PIQ variable. As such, the hypothesis of being statistically significant in

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the direct relation with WOM was not supported; however, it was supported when assessed through the satisfaction variable.

Another interesting find is regarding the PEQ variable, which was not statistically significant in the tested effects on the WOM behavior neither directly nor indirectly through satisfaction. Authors acknowledge this variable as influencing behavior, such as customer loyalty, satisfaction, and even WOM intention. Suppose PEQ are elements that enhance the customer experience. In this case, the physical environment is not enough to recommend a restaurant to friends and family in a Latin American context.

The PEQ finding turns out to be relevant in a Latin American context, where most restaurants are independently operated, like the case of Mexico, where 99% of businesses do not belong to a corporation or chain. Budgets tend to be very limited, so this finding may be used as a guide to allocate resources to what matters for satisfaction, repurchasing, and word-of-mouth, i.e., having a superb QF and good value for money.

Future lines of investigation that may enrich this research could consist of analyzing the independent variables of this model testing the effects in different dependent variables, such as repurchase intention or loyalty. Similarly, replicating the model in a different cultural context may be interesting to contrast results with other moderating conditions, enriching consumer behavior literature.

Finally, this research acknowledges some constraints; perhaps the most important is the sampling methodology, which was very limited due to the Covid-19 pandemic. Our first approach should have been acquiring data in the field instead of using an online platform and probabilistic sampling.

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