Comparison of the direct and indirect routes of human values' influence on consumption of two traditional cheeses from Chiapas, Mexico

Carolina Illescas-Marin [a]

Arturo Hernández-Montes [a*]

Esaú Estrada-Estrada [a]

Rolando Murguía-Cozar [a]

Anastacio Espejel-García [a]

Armando Santos-Moreno [a]

[a] Universidad Autónoma Chapingo. Departamento de Ingeniería Agroindustrial. Km 38.5 Carretera México-Texcoco. 56230, Chapingo, Estado de México, México.

* Corresponding author: sensorial@prodigy.net.mx

Abstract:

Product preference can be influenced by specific human values and individual beliefs, among other factors. An analysis was done to identify the direct and indirect influence of human values, as mediated by tangible attributes, on acceptance of Ocosingo Bola and Chiapas cream cheeses. Surveys were applied to samples (n1= 200; n2= 230) of Chiapanecan consumers of each cheese variety. Correlation coefficients (R1) were generated from selected factor regressions from a factorial analysis of tangible attributes and consumption frequency. Calculations were done of R2 for the consumption regressions and selected human values factors, along with residual factors of tangible attributes. Human value-only factors and cheese consumption provided R3. The direct influence of human values on cheese consumption was determined by subtracting R2 from R1 (change in R), and the indirect influence was the difference between the R3 coefficient and the change in R. Direct influence was not significant in Ocosingo Bola cheese, but did affect preference for Chiapas cream cheese. The values for the latter cheese therefore predicted its consumption at a level beyond that of importance of

tangible attributes. The most important motivational values in both consumer samples were Benevolence and Security. Chiapas cream cheese consumers also manifested Power and Universalism as supplementary values, while among Ocosingo Bola cheese consumers Hedonism was a supplementary value.

Key words: Chiapas, Human values, Intangible attributes.

Introduction

Among the myriad traditional cheeses made in Mexico are two raw milk cheeses made in the state of Chiapas: Chiapas cream cheese and Ocosingo Bola cheese[1,2]. Traditional foods are defined as "a product frequently consumed or linked to a celebration or season, normally transmitted from one generation to another, made in a specific way based on culinary heritage, with or without processing, recognized and known due to its sensory properties, and associated with a certain area, region or country"[3]. Artisanal cheeses are produced using methods that are unique, non-industrial, small-scale, and minimally mechanized[4]. Thirty-one traditional artisanal cheeses have been described in Mexico[2]. These are associated with small-scale animal production systems, and are often produced by farmers as a way of saving money and ensuring family well-being[5,6].

Products are a collection of tangible and intangible attributes. The tangible refers to objectively verifiable elements of a product, and the intangible to that which does not alter a product's physical form but helps construct its symbolic meaning[7]. Thomson *et al*[8] noted that when processing sensory information consumers obtain functional, emotional and abstract conceptualizations. However, they also seek to build symbols, and manifest more favorable attitudes towards products when these symbolize the values consumers endorse[9,10]. Values and beliefs are the units with which attitudes are built in consumers[11]. Human values are desirable purposes that transcend situations, vary in importance, and serve as guiding principles in an individual's life or other social entity[12,13]. They have been used in the study of food consumption behavior[14,15] in different cultures, such as India[16], China[17] and Europe[18].

The expectation-value model has been used to explain attitudes towards the consumption behavior of a product, be it food in general[19] or a specific product such as meat[20, 21]. It

uses tangible attributes as mediators of the influence of human values on preference. Lindberg, *et al*[22] found that preference for a product was a function of beliefs that the product should completely reinforce human values and their importance. Keaveney and Hunt[23] argued that although the perception of intangible attributes is embedded in the set of perceptions of tangible ones, perception of intangible attributes is greater than the sum of perceptions of tangibles. They state that the distinction between these should be the consequence of the influence of human values, mediating between both kinds of attributes, to influence product preference. When consumers evaluate the utilitarian meaning of a product, human values can influence the importance of its tangible attributes, which in turn indirectly influence product preference. But when consumers assess symbolic meaning through affective holistic judgment, human values can directly influence product preference, employing tangible attributes as mediators. In the indirect route the product serves an instrumental psychological function and in the direct route it serves an expressive function[24]. Under these assumptions, when choosing some traditional cheese varieties native cheese consumers use intangible attributes more than tangible ones to express their consumer behavior. For other cheese varieties, however, consumers will only be able to use tangible attributes to make their decision. The present study objective was to identify the influence route of human values on consumption frequency of Chiapas cream cheese and Ocosingo Bola cheese.

Material and methods

Descriptive closed-response surveys were used to collect data[19,25], which was processed with the Microsoft Access 2016 program (Microsoft Corporation, USA). For Chiapas cream cheese, a sample of 230 consumers was used which included natives of three municipalities in the state of Chiapas: Pijijiapan, Tuxtla Gutiérrez and Comitán de Domínguez. For Ocosingo Bola cheese, a sample of 200 consumers was used who were natives of the municipality of Ocosingo, Chiapas. In both cases, respondents were consumers over the age of 40 and equally balanced between genders. Sampling was convenience type for an infinite population, and sample size was calculated using maximum variance, with 95 % reliability and a 7 % margin of error. The surveys included three sections. In the first section for Chiapas cream cheese each respondent was presented with a list of ten tangible attributes (the color yellow, the color white, firmness, moistness, crumbliness, milk aroma, soar milk aroma, fat aroma, acid flavor, salty flavor) and the separate attribute "affordable price". For Ocosingo Bola cheese the first section also addressed "affordable price" plus fourteen tangible attributes: two for the rind (yellow color and moisture), twelve for cheese filling (cream color, moisture, milk aroma, soar milk aroma, fat aroma, acid flavor, salty flavor, bitter flavor, spreadability, softness,

crumbliness, and graininess). Attributes were evaluated on a ten-point scale (1 "not important" and 10 "very important") based on the importance assigned to each attribute by the respondent when deciding to buy the cheese.

For both cheese types the second section was intended to identify the importance respondents assigned to human values. Participants first read a printed sheet with a list of forty human values and their meanings (Table 1); any doubts were resolved by the pollster. Initially they were asked to select the thirteen most important human values, and then to select the thirteen least important values. A worth of 3 was assigned to the values chosen as the most important, a worth of 1 to those deemed least important, and a worth of 2 to those not chosen by the respondent. This methodology is based on a study by Schwartz[12] involving people from twenty countries (n ≥ 200 per country), including all the continents, thirteen languages, and eight religions, as well as atheists. The study used eleven motivational values and 56 human values, all previously agreed to by experts in the discipline. The results produced recommendations for the use of forty human values associated with ten motivational values, and proposed a model for the structure of relationships between types of motivational values which is widely used in human values research[14-18]. In the third section of each survey consumers were asked how often they had consumed either of the two studied cheeses in the previous three days.

Table 1: Motivational values, human values and their meanings as used in the survey of traditional cheese consumers in the state of Chiapas.

Motivational values	Human values	Definition
Self-direction	Choosing own goals	Ability to determine one's own destiny
Self-direction	Self-respect	Self-esteem
Self-direction	Creativity	Bold, creative
Self-direction	Independent	Self-confident, self-sufficient
Self-direction	Freedom	Independence, free choice
Benevolence	True friendship	Close Friends
Benevolence	Mature love	Spiritual and sexual intimacy
Benevolence	Caring	Affectionate, tender
Benevolence	Honest	Sincere, believable
Benevolence	Indulgence	Desire to pardon others
Benevolence	Responsible	Worthy of confidence, trustworthy
Benevolence	A spiritual life	Saved, eternal life
Benevolence	Helpful	Work for the good of others
Conformity	Self-disciplined	Restrained
Conformity	Politeness	Courteous, Good manners
Universalism	Equality	Each person gratified according to the amount s/he has done

Conformity	Obedient	Has obligations, respectable
Stimulation	An exciting life	A stimulating, active life
Stimulation	Daring	Stands by convictions
Hedonism	Cheerful	Not serious
Hedonism	Happiness	To feel content
Hedonism	Pleasure	Agreeable, relaxed life
Hedonism	A comfortable life	A prosperous life
Achievement	Ambitious	Hard work, aspire
Achievement	Capable	Competent, effective
Achievement	Intelligent	Intelligent, thoughtful
Achievement	Logical	Consistent, rational
Achievement	A sense of attainment	Lasting contribution
Power	Social power	Position of authority and importance
Power	Social recognition	Respect, admiration
Security	Clean	Orderly, neat
Security	Family security	Care for loved ones
Security	National security	Protection from attack
Tradition	Respect for tradition	Acceptance and commitment to customs
Universalism	Inner harmony	Free of inner conflicts
Universalism	Equality	Community, equal opportunity for all
Universalism	Social justice	Rectitude, non discrimination
Universalism	Broadminded	Open-minded
Universalism	Wisdom	Mature understanding of life
Universalism	A world at peace	Free of war and conflict

Source: Schwartz[12].

Statistical analysis

Analyses were run to identify any direct and/or indirect influence of human values on the frequency of consumption of Chiapas cream cheese and Ocosingo Bola cheese. The data for each cheese type was analyzed separately. The first step in each case was to apply one factorial analysis without rotation, using the principal components method, for human values and another for tangible attributes with the goal of reducing the number of variables (forty human values and cheese tangible attributes). Chosen factors were had eigenvalues equal to or greater than one (≥ 1). Subsequently, a multiple regression (block one) was run using the selected factors for the tangible attributes (independent variables) and the frequency of cheese consumption (dependent variable). A second regression (block two) was done using the frequency of cheese consumption and selected human value factors, along with the residual factors of tangible attributes (i.e. those with

eigenvalues less than one); these were treated as independent variables. A third and final multiple regression was run with the selected human values factors and frequency of cheese consumption, called the human values-only regression. Multiple regressions were done using the step-by-step method with an $\alpha = 0.1$ to both include and exclude independent variables. Variance analyses and multiple regression coefficients (R) were done for each regression and each cheese. All analyses were done with the XLSTAT ver. 2014 program (Addinsoft, USA).

The direct influence of human values on cheese consumption frequency, with tangible attributes as mediators, was quantified by subtracting the R of the block one regression from the R of the block two regression (i.e. change in R). The significance of the change in R was evaluated by transforming the regression coefficients to Fisher's z (z')[26], then applying a z-test to evaluate the null hypothesis that an R is equal to a specific value ($\varphi_1 = \varphi_k$). These analyses were run with the SAS ver. 9.4 program (SAS Institute Inc., Cary, NC). The indirect influence of human values on the consumption frequency (using tangible attributes as mediators) of each cheese was calculated from the difference between the human values-only regression coefficient and the change in R[19,24].

Results

Factorial analysis of cheese tangible attributes and human values

For Chiapas cream cheese the factorial analysis for tangible attributes produced three factors (eigenvalues ≥1), which explained 49.86 % of total variation in the data. For Ocosingo Bola cheese five factors (eigenvalues ≥1) were identified that explained 62.04 % of total variation in the data.

The factorial analysis of human values in consumers of Chiapas cream cheese identified fourteen factors that explained 60.4 % of total variability. For Ocosingo Bola cheese, fifteen factors were identified which explained 64.2 % of total variation in the human values data.

Direct and indirect influence of human values on consumption of Chiapas cream cheese and Ocosingo Bola cheese

A Kolmogorov-Smirnov test of normality[27] was applied to the observation coordinates of each selected tangible attribute factor for each cheese variety and of each selected human value factor of the two consumer samples; in all cases the hypothesis of an assumption of normal distribution ($P>0.05$) was not rejected. Of the three multiple regressions for Chiapas cream cheese (Table 2), the three-factor regression including tangible attributes and consumption frequency identified factor two (T2) as a significant variable ($P<0.1$). The regression using fourteen human value factors, the residuals of intangible factors (RT4 – RT11) and consumption frequency as a dependent variable provided four significant variables ($P<0.1$), three human value factors (V3, V4, and V5) and a residual factor of tangible attributes (RT8). The block three multiple regression, including the fourteen human value factors and cheese consumption, identified three variables or factors (V3, V4 and V5). Of the Ocosingo Bola cheese multiple regressions (Table 3), the five-factor regression containing tangible attributes and consumption frequency identified three significant variables ($P<0.1$), which were T1, T2 and T3. The regression including the fifteen human value factors plus the intangible factor residuals (RT6 – RT13) and consumption frequency as a dependent variable provided three significant variables ($P<0.1$), two human value factors (V7 and V13) and a residual factor of tangible attributes (RT8). Finally, the multiple regression that included the fifteen human value factors and cheese consumption as a dependent variable identified two significant variables or factors (V7 and V13).

Table 2: Multiple regressions using consumer human values data and tangible attributes of Chiapas cream cheese

	Source	Coefficient value (B)	Standard error	t	Pr > |t|
Regression of tangible attribute factors and cheese consumption	Intersection	3.530	0.111	31.708	< 0.0001
	T1	0.000	0.000		
	T2	0.268	0.084	3.200	0.002
	T3	0.000	0.000		
Regression equation (R1)	Consumption = 3.530+0.268*T2				
Regression of tangible attribute residuals factors plus	Intersection	3.530	0.109	32.428	< 0.0001
	RT4	0.000	0.000		
	RT5	0.000	0.000		

the human values and cheese consumption factors	RT6	0.000	0.000		
	RT7	0.000	0.000		
	RT8	-0.505	0.136	-3.710	0.000
	RT9	0.000	0.000		
	RT10	0.000	0.000		
	RT11	0.000	0.000		
	V1	0.000	0.000		
	V2	0.000	0.000		
	V3	-0.124	0.073	-1.703	0.090
	V4	-0.135	0.077	-1.758	0.080
	V5	0.159	0.081	1.953	0.052
	V6	0.000	0.000		
	V7	0.000	0.000		
	V8	0.000	0.000		
	V9	0.000	0.000		
	V10	0.000	0.000		
	V11	0.000	0.000		
	V12	0.000	0.000		
	V13	0.000	0.000		
	V14	0.000	0.000		

Regression equation (R2): Consumption = 3.530-0.505*RT8-0.124*V3-0.135*V4+0.158*V5

	Intersection	3.530	0.112	31.549	< 0.0001
	V1	0.000	0.000		
	V2	0.000	0.000		
	V3	-0.127	0.075	-1.689	0.093
	V4	-0.132	0.079	-1.667	0.097
	V5	0.171	0.083	2.054	0.041
	V6	0.000	0.000		
Regression of human values and consumption factors	V7	0.000	0.000		
	V8	0.000	0.000		
	V9	0.000	0.000		
	V10	0.000	0.000		
	V11	0.000	0.000		
	V12	0.000	0.000		
	V13	0.000	0.000		
	V14	0.000	0.000		

Regression equation (R3): Consumption = 3.530-0.126*V3-0.131*V4+0.171*V5

Table 3: Multiple regressions run using human values data for consumers and tangible attributes of Ocosingo Bola cheese

	Source	Coefficient value (B)	Standard error	t	Pr > |t|
	Intersection	3.1100	0.1262	24.6481	< 0.0001
	T1	0.0000	0.0000		
Regression of tangible attribute factors and cheese consumption	T2	0.0000	0.0000		
	T3	-0.3282	0.0988	-3.3216	0.0011
Regression equation (R1)	Consumption = 3.110-0.328*T3				
	Intersection	3.1100	0.1251	24.8671	< 0.0001
	V1	0.0000	0.0000		
	V2	0.0000	0.0000		
	V3	0.0000	0.0000		
	V4				
	V5	0.0000	0.0000		
	V6	0.0000	0.0000		
	V7	0.2024	0.0995	2.0334	0.0434
	V8	0.0000	0.0000		
	V9	0.0000	0.0000		
	V10	0.0000	0.0000		
Regression of tangible attribute	V11	0.0000	0.0000		
residuals factors plus the human	V12	0.0000	0.0000		
values and cheese consumption	V13	0.3544	0.1182	2.9989	0.0031
factors	V14	0.0000	0.0000		
	V15	0.0000	0.0000		
	RT6	0.0000	0.0000		
	RT7	0.0000	0.0000		
	RT8	-0.3209	0.1551	-2.0696	0.0398
	RT9	0.0000	0.0000		
	RT10	0.0000	0.0000		
	RT11	0.0000	0.0000		
	RT12	0.0000	0.0000		
	RT13	0.0000	0.0000		
Regression equation (R2)	Consumption = 3.110+0.202*V7+0.354*V13-0.320*RT8				
	Intersección	3.1100	0.1261	24.6625	< 0.0001
Regression of human values and consumption factors	V1	0.0000	0.0000		
	V2	0.0000	0.0000		

V3	0.0000	0.0000		
V4	0.0000	0.0000		
V5	0.0000	0.0000		
V6	0.0000	0.0000		
V7	0.1867	0.1001	1.8656	0.0636
V8	0.0000	0.0000		
V9	0.0000	0.0000		
V10	0.0000	0.0000		
V11	0.0000	0.0000		
V12	0.0000	0.0000		
V13	0.3534	0.1191	2.9660	0.0034
V14	0.0000	0.0000		
V15	0.0000	0.0000		

Regression equation (R3)	Consumption = 3.110+0.186*V7+0.353*V13

An analysis of variance of the three regressions for each cheese variety showed the models to be significant (correlation coefficients in Tables 4 and 5). For Chiapas cream cheese the difference (change in R) between the block two and block one regression correlation coefficients was 0.104 ($P<0.05$). This indicates the degree to which human values predicted consumer acceptance of Chiapas cream cheese. Because it goes beyond the influence of tangible attributes, it represents the direct influence of the human values expressed through the importance of intangible attributes. For Ocosingo Bola cheese, the difference (change in R) between the block two and block one regression correlation coefficients was 0.051 ($P>0.05$), indicating the degree to which human values (direct route) did not predict consumer acceptance of Ocosingo Bola cheese.

Table 4: Results for regressions of the importance of tangible attributes and human values, and the residuals of tangible attributes in consumption of Chiapas cream cheese and Ocosingo Bola cheese

Cheese Variety	Block 1			Block 2			Change in R
	Tangible attributes			Human values plus residuals for tangible attributes			
	Introduced Factors [a]	Coefficients (β)	Mutliple R	Introduced Factors [a]	Coefficients (β)	Mutliple R	
Chiapas cream cheese	T2 (yellow color, milk aroma and fat aroma)[b]	0.268	0.207 F = 10.24 g.l.=1, 228	RT8 (salty)[b]	-0.505	0.311 F = 6.04 g.l.=4, 225	0.104 z = 1.68 p = 0.046
			(p=0.002)	V3 (hedonism, universalism)[c]	-0.124	(p=0.002)	
				V4 (benevolence, security)[c]	-0.135		
				V5 (hedonism, power) [c]	0.159		
Ocosingo Bola cheese	T3 (affordable price)	-0.229	0.229 F = 11.03 g.l.=1, 198	RT8 (softness)[c]	-0.142	0.280 F = 5.58 g.l.=3, 196	0.051 z = 0.76 p = 0.223
			(p=0.001)	V7 (benevolence)[c]	0.139	(p=0.001)	
				V13 (benevolence)[c]	0.205		

[a] = includes only significant factors (p ≤ 0.1)

[b] = Tangible attributes.

[c] = Motivational values.

Block 1 = importance of tangible attributes over product acceptability.

Block 2 = human values over remnants of product acceptability, not considered in importance of tangible attributes.

Table 5: Human values-only regression for consumption of Chiapas cream cheese and Ocosingo Bola cheese

| Cheese variety | Human values | | Multiple R | Indirect route |
	Introduced factors[a]	Coefficients (β)		
Chiapas cream cheese	V3 (hedonism, universalism)[b]	-0.127	0.204 F = 3.28 g.l.=3, 226 (p=0.022)	0.100
	V4 (benevolence, security)[b]	-0.132		
	V5 (hedonism, power)[b]	0.171		
Ocosingo Bola cheese	V7 (benevolence)[b]	0.186	0.242 F = 6.13 g.l.= 2, 197(0.002)	0.191
	V13 (benevolence)[b]	0.353		

[a] = only includes significant factors (p < 0.1).
[b] = Motivational value.
Indirect route: regression coefficient (R) only of value minus the change in R.

Analyses of the variances in human values-only and cheese consumption found them to be significant ($P<0.05$) (Table 5). For Chiapas cream cheese, the regression correlation coefficient for human values-only (0.204) minus the change in R (0.104) resulted in a score of 0.10. This represents the influence of human values, via the importance of tangible attributes (indirect route), on cheese preference. The regression correlation coefficient for human values-only and consumption frequency of Ocosingo Bola cheese was 0.242; when the change in R (0.051) was subtracted the representation of indirect influence was 0.191.

In the block one regression (Chiapas cream cheese), the tangible attributes (Table 6) with the highest positive correlations to the variable (factor T2) were yellow color, sour milk aroma and fat aroma, while the highest negative correlation was for white color. In the block two regression, the tangible attributes residual variable eight (RT8) was positively correlated with acid flavor, affordable price and moisture, but negatively correlated to salty flavor. The motivational values (Table 7) with the highest correlations to variable three belonged to Power (social power) and Universalism (social justice), while those with the highest negative correlations belonged to Hedonism (joyful) and Universalism (broadminded). Variable four was positively correlated to the motivational values of Benevolence (useful) and Security (clean), and negatively correlated to Achievement (intellectual). Variable five was positively correlated with Hedonism (pleasant) and Power (social power).

Table 6. Correlations of Chiapas cream cheese tangible attributes to the variables (factors) selected in the multiple regression analysis

	T2	RT8
Yellow color	0.815	-0.049
White color	-0.658	-0.026
Firmness	0.109	-0.202
Crumbliness	-0.005	-0.171
Moisture	-0.167	0.241
Milk aroma	0.119	0.108
Sour milk aroma	0.547	0.062
Fat aroma	0.485	0.092
Acid flavor	0.120	0.296
Salty flavor	-0.041	-0.572
Affordable price	-0.248	0.266

Table 7: Correlations of human values of Chiapas cream cheese consumers to the variables (factors) selected in the multiple regression analysis

Motivational value	Human value	V3	V4	V5
Stimulation	Daring	0.280	0.245	-0.084
Benevolence	Helpful	0.125	0.403	-0.051
Stimulation	An exciting life	0.207	0.064	-0.074
Hedonism	A comfortable life	0.181	0.248	-0.230
Achievement	A sense of attainment	0.168	-0.078	0.018
Universalism	A world at peace	0.173	0.276	-0.149
Conformity	Self-disciplined	-0.046	-0.251	-0.083
Segurity	National security	-0.047	-0.242	-0.149
Segurity	Family segurity	-0.063	0.250	-0.340
Benevolence	A spiritual life	-0.270	0.200	0.041
Universalism	Wisdom	-0.385	-0.130	0.032
Benevolence	Responsible	-0.056	0.206	0.012
Power	Social recognition	0.304	-0.088	0.398
Power	Social power	0.358	-0.270	0.423
Hedonism	Pleasure	-0.047	-0.053	0.437
Conformity	Obedient	0.099	0.322	0.347
Universalism	Broadminded	-0.474	-0.187	0.256
Achievement	Logical	-0.205	-0.305	-0.213
Security	Clean	-0.372	0.384	-0.025
Self-direction	Freedom	-0.325	-0.257	0.103
Universalism	Social justice	0.384	-0.183	-0.021
Achievement	Intelligent	-0.035	-0.386	-0.243

Benevolence	Indulgence	0.125	-0.167	0.289
Self-direction	Independent	-0.027	-0.296	0.272
Self-direction	Creativity	-0.261	0.143	-0.353
Universalism	Equality	0.373	-0.087	-0.022
Benevolence	Honest	-0.028	0.283	0.146
Hedonism	Happiness	0.046	0.329	0.136
Universalism	Equality	0.257	-0.271	-0.228
Conformity	Politeness	0.023	0.234	0.046
Benevolence	Caring	-0.140	0.138	0.156
Achievement	Capable	0.188	-0.041	-0.159
Self-direction	Self-respect	0.034	-0.035	-0.093
Self-direction	Choosing own goals	0.023	-0.287	-0.193
Tradition	Respect for tradition	-0.209	0.077	0.155
Universalism	Inner harmony	0.142	-0.064	0.084
Benevolence	Mature love	-0.360	-0.170	-0.211
Benevolence	True friendship	0.142	0.160	-0.029
Achievement	Ambitious	0.238	-0.098	-0.418
Hedonism	Cheerful	**-0.497**	0.021	0.067

In the block one regression (Table 8), the highest positive correlations of the tangible attributes of Ocosingo Bola cheese with variable three (factor T3) were affordable price and white color, while the highest negative correlation was with bitter flavor. In the block two regression, variable eight of the residual tangible attributes (RT8) was positively correlated with acid flavor and negatively with white color (Table 8). The motivational values with the highest correlation to variable seven (Table 9) were Benevolence (responsible and honest) and Security (national security), and those with the highest negative correlations were Universalism (wisdom) and Self-direction (creativity). Variable thirteen was positively correlated with Hedonism (joyful) and negatively with Achievement (intelligent) and Power (social recognition).

Table 8: Correlations of tangible attributes of Ocosingo Bola cheese with variables (factors) selected in multiple regression analysis

	T3	**RT8**
Yellow color on rind	0.0838	-0.0310
Rind moisture	0.0180	-0.0315
Cream color	0.2442	-0.1415
Moisture	0.1246	0.1670
Milk aroma	-0.2932	0.2590
Sour milk aroma	-0.2383	-0.0386
Fat aroma	-0.4330	-0.2053
Acid flavor	0.2464	0.4768
Salty flavor	0.0405	0.1229
Sour flavor	-0.6424	-0.0203
Spreadability	0.2650	-0.0957
Softness	0.4221	-0.4709
Graininess	-0.2349	0.0111
Crumbliness	-0.3181	-0.1116
Affordable price	0.5815	0.0868

Table 9: Correlations of human values of Ocosingo Bola cheese consumers with variables (factors) selected in multiple regression analysis

Motivational values	**Human values**	**V7**	**V13**
Stimulation	Daring	0.0117	-0.0244
Benevolence	Helpful	-0.2558	0.3224
Stimulation	An exciting life	0.1042	0.2111
Hedonism	A comfortable life	-0.2390	0.1227
Achievement	A sense of attainment	0.0953	0.1028
Universalism	A world at peace	-0.0084	-0.0828
Conformity	Self-disciplined	-0.2979	-0.2645
Security	National security	**0.3739**	0.1018
Security	Family security	-0.0940	0.1015
Benevolence	A spiritual life	0.2474	-0.0757
Universalism	Wisdom	**-0.4311**	0.0762
Benevolence	Responsible	**0.3627**	0.0568
Power	Social recognition	0.0245	**-0.3019**
Power	Social power	0.0602	0.0260
Hedonism	Pleasant	0.0289	-0.0965
Conformity	Obedient	0.0532	-0.0380
Universalism	Broadminded	-0.0529	0.0797

Achievement	Logical	-0.0754	-0.2071
Security	Clean	0.0109	-0.0740
Self-direction	Freedom	0.0721	-0.0385
Universalism	Social justice	0.0882	-0.1271
Achievement	Intelligent	-0.1513	**-0.4160**
Benevolence	Indulgence	0.2883	-0.0279
Self-direction	Independent	0.2518	0.1944
Self-direction	Creative	**-0.3254**	0.0974
Universalism	Equality	0.0050	-0.0330
Benevolence	Honest	**0.3191**	-0.3177
Hedonism	Happiness	0.1565	0.0689
Universalism	Equality	-0.0023	-0.1587
Conformity	Politeness	0.1183	-0.0745
Benevolence	Caring	0.2397	0.0480
Achievement	Capable	0.0149	0.1555
Self-direction	Self-respect	-0.2436	0.1822
Self-direction	Choosing own goals	-0.1547	-0.1493
Tradition	Respect for tradition	-0.0396	0.2495
Universalism	Inner harmony	0.1170	0.0689
Benevolence	Mature love	-0.2948	0.0550
Benevolence	True friendship	0.1880	0.0277
Achievement	Ambitious	-0.1301	0.2475
Hedonism	Cheerful	-0.2977	**0.5414**

Discussion

In contrast to Ocosingo Bola cheese, Chiapas cream cheese exhibited a direct influence of human values on consumption. This indicates that consumers of Chiapas cream cheese used intangible as well as tangible attributes to express the influence of values on cheese consumption, with tangible attributes functioning as mediators. The motivational values most involved in affecting preference were those of Power, Universalism, Benevolence, Hedonism, and Security. In Schwartz's scheme the values of Universalism and Benevolence are adjacent those of Tradition and Conformity, while Hedonism and Power are somewhat opposed to them; this arrangement is to be expected in a traditional community[12]. These results coincide with previous studies of red meat which show that human consumers use intangible attributes (symbolic and affective) when making choices[21]. In Brazil, for instance, red meat was found to symbolize social hierarchy and

its consumption was linked to the values of Power[20]. However, in Australia meat consumption was reported to be linked to values associated with Universalism, Power and Security in that people who had a positive attitude towards red meat consumption expressed values related to Power and Security as being important[21]. In a study done in China of healthy beverages the motivational values identified in a consumer sample were Security, Hedonism, Benevolence and Achievement[17]. Comparisons can be made of the structures of human and motivational values between consumers from different cultures. For example, consumers who give priority to the values of Conservation and Tradition normally place Achievement and Hedonism in opposition, while consumers who prefer red meat prioritize the values of Power and Achievement over Benevolence and Universalism[16,17,20,21].

For Ocosingo Bola cheese the influence of consumer human values fully employed tangible attributes to manifest preference. The main motivational values included in this indirect route were Benevolence, Safety and Hedonism; the first two are adjacent to the values of Tradition and Conformity whereas the third is their opposite[12,13]. Ocosingo Bola cheese exhibited some similarities with Chapingo cheese[28], in that both types have Benevolence as an important motivational value in the selected regression variables, and they manifest the same (indirect) route of the influence of human values on cheese consumption.

Conclusions and implications

Benevolence and Security were the most important motivational values in common between the two consumer samples. Chiapas cream cheese consumers also manifested the values of Power and Universalism, while Ocosingo Bola cheese consumers manifested Hedonism as a supplementary value. The influence of the human values of Chiapanecan consumers on preference for Chiapas cream cheese was direct, meaning they used intangible attributes (affective and symbolic), in addition to tangible ones, in a holistic evaluation of cheese consumption. For Ocosingo Bola cheese, the influence of human values on cheese preference was indirect, indicating that consumers valued only its tangible attributes and gave it a utilitarian meaning. These results imply that during consumption of different varieties of traditional Mexican cheeses the identification of direct or indirect routes can provide information on cheese preference based on parameters beyond mere tangible attributes. This presents the possibility of differentiating and characterizing traditional cheeses based on the type of influence human values exert on consumer preference. These findings can be applied in marketing of cheeses by incorporating distinctive symbols on product labels and planning marketing strategies for

sociodemographically differentiated consumer groups to promote greater affective engagement with regional cheeses. In addition to evaluating cheese tangible attributes, identification of the symbolic meanings manifested by consumers towards traditional Mexican cheeses needs to be done using an integrative and interdisciplinary approach.

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