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Modified Food by a Variance-Based Structural Equation
Modelling Method

Melania Salazar-Ordóñez¹ and Macario Rodríguez-Entrena²

¹Department of Applied Economics

Universidad Loyola Andalucía, Córdoba (Spain)

E-mail: msalazar@etea.com

²Department of Agricultural Economics and Rural Studies

Institute of Agricultural Research and Training (IFAPA), Córdoba (Spain)

E-mail: macario.rodriguez@juntadeandalucia.es

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Analysing Consumer' Behaviour towards Genetically Modified Food by a Variance-based Structural Equation Modeling Method



Melania Salazar-Ordóñez[†], Macario Rodríguez-Entrena[‡]

[†]Dpt. Applied Economics
 Universidad Loyola Andalucía, Cordoba (Spain)
 E-mail: msalazar@etea.com
[‡] Dpt. Agricultural Economics and Rural Studies
 Institute of Agricultural Research (IFAPA), Cordoba (Spain)
 E-mail: macario.rodriguez@juntadeandalucia.es

Introduction

Knowledge is one of the most unsteady variables influencing in consumers' GM food acceptance. It shows positive (Moerbeek and Casimir, 2005), negative (Grunert et al., 2001) and no relations (Priest, 2000) on GM food acceptance. Priest (2000) states the role played by people literacy and the relevance of studying "science literacy" effects.

But, which is the potential role of people literacy in determining consumers' acceptance towards GM foods?

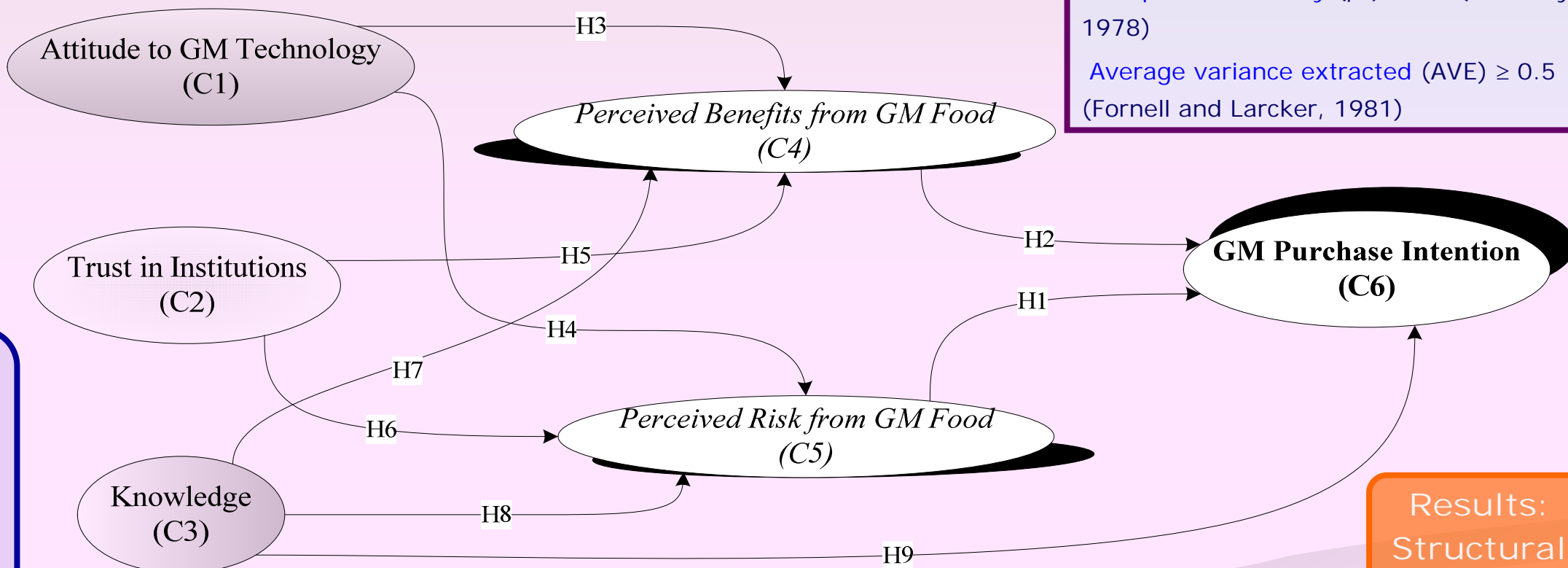
The research is performed in Southern Spain by 169 face-to-face surveys –from January to April 2008.

Method

Structural Equation Modelling is a multivariate technique. Relations are: among theoretical constructs –unobserved variables (structural model), and theoretical constructs with indicators –observed variables (measurement model). We apply Partial Least Squares (PLS), variance method. Multi-group comparison –scientific-technical (S1) and social-humanistic fields (S2)– follows Chin (2000) parametric method.

Theoretical Framework and Model Development

Based on multi-attribute approach developed originally by Fishbein (1963), cognition and attitudinal features are relevant variables to explain GM food purchase intention (Bredahl, 2001; Verdurme and Viane, 2003).



Results: Measurement Model

Loadings over 0.5 (Duxbury and Higgins, 1991)

Composite reliability (ρc) ≥ 0.7 (Nunnally, 1978)

Average variance extracted (AVE) ≥ 0.5 (Fornell and Larcker, 1981)

X: Loadings; C: ρc and AVE					
	S1		S2		
C1	0.80 0.57	0.80 0.58	C2	0.87 0.69	0.86 0.69
X1	0.81***	0.70***	X4	0.71***	0.79*
X2	0.75***	0.78***	X5	0.86***	0.80*
X3	0.70*	0.80***	X6	0.90***	0.88*
C3	0.89 0.81	0.90 0.82	C4	0.79 0.56	0.86 0.67
X7	0.89***	0.85***	X9	0.81***	0.86***
X8	0.91***	0.96***	X10	0.74***	0.85***
			X11	0.69***	0.75***
C5	0.82 0.61	0.86 0.67	C6	0.95 0.83	0.96 0.87
X12	0.79***	0.76***	X15	0.91***	0.92***
X13	0.67***	0.69***	X16	0.94***	0.95***
X14	0.87***	0.77***	X17	0.91***	0.93***
			X18	0.88***	0.92***

Results: Structural Model

	S1		S2		Hypothesis	Multi t
	β	t	β	t		
H1	-0.30***	-3.35	-0.42***	-6.40	Support	1.38 ns
H2	0.43***	5.21	0.44***	6.14	Support	-0.02 ns
H3	-0.43***	-3.33	-0.44***	-5.27	Support	0.04 ns
H4	0.53***	5.16	0.51***	7.21	Support	0.13 ns
H5	0.03 ns	0.25	0.30***	3.82	Part Support	-1.97*
H6	-0.19*	-1.67	-0.21**	-2.52	Support	0.17ns
H7	0.03 ns	0.23	0.16*	2.04	Part Support	-0.92 ns
H8	0.22*	1.99	-0.06 ns	-0.77	Part Support	2.11 *
H9	0.08 ns	0.69	-0.08 ns	-1.20	Not Support	--

*** p < 0.001; ** p < 0.01; *p < 0.05; n.s. non significative

C	Indicators
C1	Applying gene tech is X1: ethically unacceptable; X2: naturally unacceptable; X3: worst than conventional-tech X4: EU monitors GM tech correct use in food sector; X5: I trust in scientist reports about GM food safety; X6: I can distinguish GM food by labels
C2	X7: Scoring in test knowledge ; X8: Self-knowledge level
C3	Applying gene tech in food production will X9: increase yields; X10: solve ecological problems; X11: improve functional issues
C4	Applying gene tech in food production X12: proves harmful to environment; X13: causes allergy in humans; X14: only serves big companies interests
C5	I would buy a precooked meal if X15: chicken was GM; X16: vegetables were GM; X17: preservatives were GM; X18: chicken fed with GMO

Indicators: 5 point-Likert scale, except C6 = 10 point-Likert scale

H1: Consumers' purchase intention to GM food is decreased by GM food perceived risks; H2: Consumers' purchase intention to GM food is increased by GM food perceived benefits; H3: Perceived benefits from GM food is decreased by consumers' negative attitude to GM tech; H4: Perceived risks from GM food is increased by consumers' negative attitude to GM tech; H5: Perceived benefits from GM food is increased by consumers' trust in institutions; H6: Perceived risks from GM food is decreased by consumers' trust in institution; H7: Perceived benefits from GM food are influenced by knowledge; H8: Perceived risks from GM food are influenced by knowledge; H9: Consumers' GM purchase intention is influenced by knowledge.

Conclusions

Consumers' risk and benefit perceptions play a key role in purchase intention; though for scientific-technical people, risks loss relevance, because the self-confidence from this training may reduce risk impact in a cognitive level.

Attitude to GM technology is the main key driver in consumer's risk and benefit beliefs. Trust in institutions reduces perceived risks and vice versa, but scientific-technical literacy people is only influenced in risk perceptions.

Knowledge, for social-humanistic literacy people, does not have a significant relation with the risks; but existing with the benefits which may be easier to assimilate. In scientific-literacy group, higher knowledge means a higher risk perceptions. No direct influence from knowledge to purchase intention may be owing to the consumers' ability to absorb the hodgepodge of conflicting information.

References

Bredahl, L., 2001. Determinants of consumer attitudes and purchase intentions with regard to genetically modified foods –results of a cross-national survey. *Journal of Consumer Policy* 24, 23–61.

Chin, W., 2010. How to write up and report PLS analyses. Esposito, Chin, Henseler & Wang (Eds.), *Handbook of Partial Least Squares* (pp. 655-690). Berlin: Springer.

Duxbury, L.E., Higgins, C.A., 1991. Gender differences in work-family conflict. *Journal of Applied Psychology* 76, 60-74.

Fishbein, M., 1963. An investigation of the relationship between beliefs about an object and the attitude toward that object. *Human Relations* 16, 233-239.

Fornell, C., Larcker, D.F., 1981. Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research* 18.

Grunert, K.G., Bredahl, L., Scholderer, J., 2003. Four questions on European consumers' attitudes toward the use of genetic modification in food production. *Innovative Food Science and Emerging Technologies* 4, 435-445.

Moerbeek, H., Casimir, G., 2005. Gender differences in consumers' acceptance of genetically modified foods. *International Journal of Consumer Studies* 29, 308-318.

Nunnally, J.C., 1978. *Psychometric theory*. McGraw-Hill, New York.

Priest, S., 2000. US public opinion divided over biotechnology? *Nature Biotechnology* 19, 939-942.