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Relationship between brand and dealer loyalty in the agricultural equipment market

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Table S1. Dependent and independent variable list.[1]

Dependent variable	Name of the variable	Categories of response
BLOYALTY	Loyalty to brands	1 = Loyal; 0 = Disloyal
DLOYALTY	Loyalty to dealers	1 = Loyal; 0 = Disloyal
Dimension 1 for brands and dealers: farm and farmer characteristics		
Independent variable	**Name of the variable**	**Categories of response**
EDUC	Education level of the farmer	0 = High school or less; 1 = More than high school
AGEG1*		1 = ≤ 44; 0 = otherwise
AGEG2	Age group of the farmer	1 = 45-54; 0 = otherwise
AGEG3		1 = ≥ 55; 0 = otherwise
RESID	Residence (distance to farm)	0 = In the facilities or less than 50 kms. away; 1 = More than 50 kms. away
FSIZE1*		1 = Mid-sized; 0 = otherwise
FSIZE2	Farm size	1 = Commercial; 0 = otherwise
FSIZE3		1 = Large; 0 = otherwise
PRL	% of rented land	0 = Less than 50%; 1 = 50% or more
GS1*		1 = ≤ 499,999; 0 = otherwise
GS2	Gross sales (U$D)	1 = 500,000-999,999; 0 = otherwise
GS3		1 = ≥ 1,000,000; 0 = otherwise
Dimension 2 for brands: farmer beliefs and attitudes		
CS	Cognitive style	1 = Analytic; 0 = Intuitive/Balanced
DBEBP1*		1 = Strongly disagree - Disagree; 0 = otherwise
DBEBP2		1 = Partially disagree; 0 = otherwise
DBEBP3	Differences between expendable and branded products	1 = Partially agree - Agree - Strongly agree; 0 = otherwise
Dimension 3 for brands: products characteristics		
PRICE	Appreciation of the attribute: price	1 = Most important; 0 = Least important/Neutral
PERFORM	Appreciation of the attribute: performance	1 = Most important; 0 = Least important/Neutral

Table S1. Continued.

Dimension 4 for brands: media exposure		
MEDSOU	Media source more frequented	1= Traditional and Personal Communication; 0 = Social Media
MEANVAL	Index measuring reported media exposure ranging from 1 to 6	
Dimension 2 for dealers: supplier characteristics		
FPDR	Financing provided by dealer/retailer	0 = 0-50%; 1 = 51-100%
Dimension 3 for dealers: relationship with supplier		
REL	Appreciation of the attribute: relationship with dealer	1 = Most important; 0 = Least important/Neutral

[1] * = category of reference or control.

Table S2. Seemingly unrelated bivariate probit models: first dealer loyalty as the dependent, and then brand loyalty as the dependent.[1]

Dependent variable	Variable	3.1.1	3.2.1	3.3.1	3.4.1	Marginal effects
DLOYALTY	CONSTANT	0.1809	0.0260	0.0454	0.0573	
		(0.1569)	(0.1234)	(0.1211)	(0.1221)	
	EDUC	-0.1769				
		(0.1228)				
	AGEG2	-0.2859**	-0.2979**	-0.3067**	-0.3038**	-0.1206
		(0.1314)	(0.1302)	(0.1298)	(0.1296)	
	AGEG3	-0.3790**	-0.3421**	-0.3548**	-0.3597**	-0.1427
		(0.1485)	(0.1449)	(0.1440)	(0.1444)	
	RESID	-0.2715**	-0.2959**	-0.2990**	-0.3237***	-0.1285
		(0.1258)	(0.1224)	(0.1225)	(0.1220)	
	FSIZE2	-0.0527				
		(0.1499)				

Table S2. Continued.

	FSIZE3	-0.0354				
		(0.2233)				
	PRL	0.3516***	0.3737***	0.3926***	0.3823***	0.1503
		(0.1232)	(0.1205)	(0.1183)	(0.1198)	
	GS2	0.3757***	0.3469**	0.3545***	0.3450**	0.1354
		(0.1398)	(0.1366)	(0.1346)	(0.1357)	
	GS3	0.3226*	0.2864*	0.3130**	0.3230**	0.1268
		(0.1804)	(0.1472)	(0.1486)	(0.1440)	
	FPDR	0.1234	0.1209			
		(0.1326)	(0.1340)			
	REL	-0.1381				
		(0.1343)				
BLOYALTY	CONSTANT	-1.7737***	-1.7828***	-1.5745***	-1.7191***	
		(0.5895)	(0.6128)	(0.4224)	(0.3451)	
	DLOYALTY	1.7635*	1.5535*	1.5929***	1.8237***	0.5280
		(1.0686)	(0.9049)	(0.6222)	(0.5262)	
	EDUC	-0.2028	-0.2451*	-0.2472*	-0.2596*	-0.0861
		(0.1885)	(0.1478)	(0.1454)	(0.1435)	
	AGEG2	-0.4504*	-0.4648**	-0.4664***	-0.4448**	-0.1362
		(0.2627)	(0.2012)	(0.1798)	(0.1889)	
	AGEG3	-0.7531**	-0.7917***	-0.8109***	-0.7311***	-0.2054
		(0.3597)	(0.2666)	(0.2474)	(0.2587)	
	RESID	-0.2148	-0.2233	-0.1780		
		(0.2208)	(0.1874)	(0.1546)		
	FSIZE2	0.1249	0.1605			
		(0.1678)	(0.1620)			
	FSIZE3	0.1407	0.2689			

Table S2. Continued.

	(0.2554)	(0.2291)			
PRL	-0.0796	-0.0639			
	(0.2125)	(0.1952)			
GS2	-0.0973				
	(0.2334)				
GS3	0.1225				
	(0.2710)				
CS	0.2999**	0.2955**	0.3021**	0.2617*	0.0844
	(0.1446)	(0.1433)	(0.1414)	(0.1347)	
DBEBP2	0.5909***	0.6110***	0.6146***	0.5950***	0.2145
	(0.2291)	(0.2134)	(0.2100)	(0.2081)	
DBEBP3	0.4036**	0.4055***	0.4330***	0.4185***	0.1377
	(0.1715)	(0.1639)	(0.1552)	(0.1546)	
PRICE	-0.1950				
	(0.2009)				
PERFORM	0.3376	0.4765***	0.5013***	0.4872***	0.1543
	(0.2099)	(0.1359)	(0.1324)	(0.1351)	
MEDSOU	0.1198	0.0913			
	(0.1619)	(0.1606)			
MEANVAL	0.0355	0.0444			
	(0.0909)	(0.0923)			
rho	-0.3095	-0.1674	-0.1948	-0.3649	
	(0.7745)	(0.6051)	(0.4234)	(0.3951)	

Table S2. Continued.

	Log-likelihood	-614.1192	-616.7137	-618.5792	-619.2541
	Wald chi-squared	195.67***	161.25***	162.88***	198.91**
	Likelihood-ratio test of rho = 0:	Chi^2 (1) = 0.1425	Chi^2 (1) = 0.0775	Chi^2 (1) = 0.2126	Chi^2 (1) = 0.81

[1] 3.1.1 included all the independent variables for dealers in the first equation, and then, all the independent variables for brands, and DLOYALTY in the second. 3.2.1 included all the variables for dealers except EDUC, FSIZE, REL (see chi-square test), and then, all the variables for brands except GS, PRICE (see chi-square test), and DLOYALTY. 3.3.1 included only the variables statistically significant for dealers in the models 2.1-2.2, and then, only the variables statistically significant for brands in the models 1.1-1.2, and DLOYALTY. 3.4.1 included the variables for dealers in the model 2.3, and then, the variables for brands in the model 1.4, and DLOYALTY. Coefficients above of standard errors in ( ). *, ** and *** indicate significance at the 0.10, 0.05 and 0.01 level, respectively.

Table S3. Seemingly unrelated bivariate probit models: first brand loyalty as the dependent, and then dealer loyalty as the dependent.[1]

Dependent Variable	**Variable**	**3.1.2**	**3.2.2**	**3.3.2**	**3.4.2**	**Marginal effects**
BLOYALTY	CONSTANT	-0.7262*	-0.6946*	-0.5153***	-0.5397***	
		(0.3836)	(0.3655)	(0.1849)	(0.1842)	
	EDUC	-0.2726**	-0.2743**	-0.2863**	-0.3198**	-0.1122
		(0.1379)	(0.1375)	(0.1352)	(0.1334)	
	AGEG2	-0.5385***	-0.5073***	-0.5294***	-0.5606***	-0.1802
		(0.1468)	(0.1449)	(0.1421)	(0.1397)	
	AGEG3	-0.8959***	-0.9029***	-0.9574***	-0.9533***	-0.2748
		(0.1787)	(0.1781)	(0.1700)	(0.1697)	
	RESID	-0.3114**	-0.2769**	-0.2170		
		(0.1437)	(0.1414)	(0.1330)		

Table S3. Continued.

FSIZE2	0.0807 (0.1585)	0.1811 (0.1425)			
FSIZE3	0.1141 (0.2384)	0.3121 (0.2003)			
PRL	0.1072 (0.1304)	0.0973 (0.1296)			
GS2	0.0875 (0.1589)				
GS3	0.2969 (0.1969)				
CS	0.3092** (0.1325)	0.3110** (0.1323)	0.3293** (0.1291)	0.2972*** (0.1275)	0.1014
DBEBP2	0.6386*** (0.2028)	0.6224*** (0.2007)	0.6476*** (0.1966)	0.6543*** (0.1962)	0.2451
DBEBP3	0.3910*** (0.1526)	0.3793** (0.1524)	0.4361*** (0.1433)	0.4411*** (0.1432)	0.1531
PRICE	-0.0742 (0.1890)				
PERFORM	0.3922** (0.1606)	0.4282*** (0.1245)	0.4670*** (0.1240)	0.4652*** (0.1215)	0.1563
MEDSOU	0.2198 (0.1587)	0.1890 (0.1548)			
MEANVAL	-0.0128 (0.0886)	-0.0150 (0.3655)			

Table S3. Continued.

DLOYALTY	CONSTANT	-0.3961	-0.5096**	-0.4784*	-0.5207**	
		(0.3229)	(0.2458)	(0.2500)	(0.2423)	
	BLOYALTY	1.1557**	1.2518***	1.2168***	1.2984***	0.4582
		(0.5126)	(0.4382)	(0.4244)	(0.4193)	
	EDUC	-0.0670				
		(0.1398)				
	AGEG2	-0.0494	-0.0269	-0.0388	-0.0201	
		(0.1818)	(0.1728)	(0.1704)	(0.1731)	
	AGEG3	-0.0538	-0.0022	-0.0228	0.0049	
		(0.2234)	(0.2056)	(0.2073)	(0.2060)	
	RESID	-0.1994	-0.2010	-0.2020	-0.1954	
		(0.1368)	(0.1326)	(0.1341)	(0.1298)	
	FSIZE2	-0.0891				
		(0.1600)				
	FSIZE3	-0.0781				
		(0.2442)				
	PRL	0.3304**	0.3295**	0.3427***	0.3392***	0.1328
		(0.1337)	(0.1340)	(0.1270)	(0.1274)	
	GS2	0.4101***	0.3890***	0.3905***	0.3941***	0.1529
		(0.1456)	(0.1420)	(0.1423)	(0.1420)	
	GS3	0.2825	0.2108	0.2148	0.2172	
		(0.1955)	(0.1584)	(0.1577)	(0.1578)	
	FPDR	0.0739	0.0704			
		(0.1451)	(0.1448)			
	REL	-0.0594				
		(0.1468)				
	rho	0.1043	0.0494	0.0729	0.0212	

Table S3. Continued.

	(0.3006)	(0.2625)	(0.2517)	(0.2533)
Log-likelihood	-612.3061	-613.9158	-616.9800	-618.3201
Wald chi-squared	145.26***	146.35***	137.10***	137.63***
Likelihood-ratio test of rho = 0:	Chi^2 (1) = 0.1197	Chi^2 (1) = 0.0352	Chi^2 (1) = 0.0832	Chi^2 (1) = 0.0070

[1] 3.1.2 included all the independent variables for brands in the first equation, and then, all the independent variables for dealers, and BLOYALTY in the second. 3.2.2 included all the variables for brands except GS, PRICE (see Chi-square test), and then, all the variables for dealers except EDUC, FSIZE, REL (see chi-square test), and BLOYALTY. 3.3.2 included only the variables statistically significant for brands in the models 1.1-1.2, and then, only the variables statistically significant for dealers in the models 2.1-2.2, and BLOYALTY. 3.4.2 included the variables for brands in the model 1.4., and then, the variables for dealers in the model 2.3, and BLOYALTY. Coefficients above of standard errors in ( ). *, ** and *** indicate significance at the 0.10, 0.05 and 0.01 level, respectively.

Table S4. Univariate probit models for brand loyalty and dealer loyalty.[1,2]

	Dependent variable: BLOYALTY					Dependent variable: DLOYALTY			
Variable	1.1	1.2	1.3	1.4	Marg. eff.	2.1	2.2	2.3	Marg. eff.
CONSTANT	-0.7136*	-0.6858*	-0.513***	-0.53***		0.1863	0.0275	0.0467	
	(0.3834)	(0.3633)	(0.1850)	(0.1841)		(0.1564)	(0.1237)	(0.1216)	
EDUC	-0.272**	-0.275**	-0.2885**	-0.320**	-0.0957	-0.1769			
	(0.1381)	(0.1373)	(0.1350)	(0.1333)		(0.1226)			
AGEG2	-0.53***	-0.50***	-0.529***	-0.56***	-0.1676	-0.286**	-0.299**	-0.3056**	-0.1147
	(0.1466)	(0.1450)	(0.1412)	(0.1397)		(0.1311)	(0.1302)	(0.1300)	
AGEG3	-0.90***	-0.90***	-0.958***	-0.95***	-0.2852	-0.38***	-0.343**	-0.3561**	-0.1337
	(0.1786)	(0.1774)	(0.1701)	(0.1697)		(0.1484)	(0.1448)	(0.1440)	

Table S4. Continued.

RESID	-0.303**	-0.2731*	-0.2121			-0.272**	-0.293**	-0.2940**	-0.1104
	(0.1419)	(0.1399)	(0.1318)			(0.1254)	(0.1222)	(0.1222)	
FSIZE2	0.0808	0.1788				-0.0489			
	(0.1586)	(0.1421)				(0.1494)			
FSIZE3	0.1152	0.3118				-0.0285			
	(0.2383)	(0.2004)				(0.2236)			
PRL	0.1026	0.0956				0.3483***	0.3736***	0.3960***	0.1487
	(0.1298)	(0.1292)				(0.1229)	(0.1205)	(0.1178)	
GS2	0.0784					0.3717***	0.3512***	0.3570***	0.134
	(0.1571)					(0.1390)	(0.1344)	(0.1341)	
GS3	0.2949					0.3228*	0.2805*	0.2948**	0.1107
	(0.1966)					(0.1807)	(0.1469)	(0.1460)	
CS	0.3090**	0.3108**	0.3284**	0.2971**	0.0888				
	(0.1328)	(0.1324)	(0.1292)	(0.1275)					
DBEBP2	0.6454***	0.6249***	0.6505***	0.6551***	0.1959				
	(0.2018)	(0.2003)	(0.1964)	(0.1960)					
DBEBP3	0.3902**	0.3788**	0.4353***	0.4409***	0.1318				
	(0.1530)	(0.1525)	(0.1435)	(0.1432)					
PRICE	-0.0643								
	(0.1879)								
PERFORM	0.3915**	0.4259***	0.4650***	0.4645***	0.1389				
	(0.1610)	(0.1241)	(0.1215)	(0.1213)					
MEDSOU	0.2340	0.1961							
	(0.1532)	(0.1501)							
MEANVAL	-0.0200	-0.0149							
	(0.0863)	(0.0859)							

Table S4. Continued.

FPDR					0.1154 (0.1345)	0.1163 (0.1342)	
REL					-0.1420 (0.1335)		
Log-likelihood	-294.2895	-295.5675	-298.5388	-299.8417	-367.6518	-369.1304	-369.5071
Likelihood ratio Chi-squared	120.80***	118.25***	112.30***	109.70***	44.52***	41.56***	40.80***
Pseudo R^2	0.1703	0.1667	0.1583	0.1546	0.0571	0.0533	0.0523
Correctly classified	70.74%	71.10%	71.28%	70.74%	62.94%	63.65%	63.30%

[1] 1.1 included all the independent variables for brands; 1.2 included all the variables except GS, PRICE (see chi-square test); 1.3 included only the variables statistically significant in 1.1 and 1.2; 1.4 included only the variables statistically significant in 1.3. 2.1 included all the independent variables for dealers; 2.2 included all the variables except EDUC, FSIZE, REL (see chi-square test); 2.3 included only the variables statistically significant in 2.1 and 2.2.

[2] Coefficients above of standard errors are in ( ). *, ** and *** indicate significance at the 0.10, 0.05 and 0.01 level, respectively.