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Brazilian farmer perception of dynamic capability and performance over the adoption of enterprise resource planning technology

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Table S1. Empirical instrument.[1,2]

Please rate the following statements where 1 mean strongly disagree and 7 totally agree (1~7).			
(1) Relative advantage (Ra)/R	Ra1	Rate the level that your organization expects the ERP helps in the sales process and improve the productivity.	(Picoto *et al.*, 2014)
	Ra2	Rate the level that your organization expects an ERP helps in the production storage process	
	Ra3	Rate the level that your organization expects an ERP helps in the logistics process in order the production to arrive on time at their destination.	
(2) Compatibility (Cp)/R	Cp1	Management your farm through an ERP is compatible with your current sales process	(Picoto *et al.*, 2014)
	Cp2	Buy through the implementation of ERP is compatible with your current purchasing process	
	Cp3	Management through an ERP is compatible with my organizational culture	
	Cp4	ERP is compatible with my company current experience with similar systems	
(3) Technology competence (Tc)/R	TC1	The technology infrastructure of my Farm is available to support an ERP implementation	(Chan and Chong, 2013)
	TC2	Inside the farm there are skills needed to implement a more efficient ERP model	
(4) Technology integration (Ti)/F	TI1	Rate as that your processes and management tools are electronically integrated with the internal databases and information systems	(Zhu *et al.*, 2006)
	TI2	My databases and information systems are integrated electronically with my suppliers.	
	TI3	Please rate how much your company's databases and information systems are electronically integrated with the suppliers and business customers (buyers of agricultural production)	
(5) Financial competence (Fc)/F	Fc1	My Farm has the financial resources for the purchase of hardware and software necessary for the implementation of an ERP	(Chan and Chong, 2013)
	Fc2	My Farm has the financial resources to make workflow changes to accommodate the implementation of an ERP system	
	Fc3	I believe getting line of credit to finance the ERP implementation in my farm.	
(6) Top management support (TMS)/R	Tms1	Top Management is actively involved in establishing a vision and formulate strategies for the use of an ERP	(Chan and Chong, 2013)
	Tms2	Top Management communicates its support for the use of ERP	
	Tms3	Top Management is likely to analyse the occurrence of risks involved in implementing an ERP	
(7) Competitive pressure (Cpr)/R	Cpr1	My farm suffers a competitive pressure to implement ERP	(Chan and Chong, 2013; Zhu and Kraemer, 2005)
	Cpr2	My Farm will have competitive disadvantage if we do not implement ERP.	
	Cpr3	Pressure level originated by competitors in the local market	
(8) Partner pressure (PP)/R	Pp1	The Buyers of your production are requiring	Hsu *et al.*, 2006)
	Pp3	Raw material suppliers are requiring	
	Pp4	The official banks are demanding the implementation of ERP to facilitate approval of pre-costing and costing credit.	
(9) ERP usage (ERPU)/R	ERPu1	Please rate as your employees have access to the information in order to take right decisions independently from the leadership	(Zhu *et al.*, 2006)
	ERPu2	Please rate as your employees daily immediately make decisions in the farm when needed	
	ERPu3	Please rate as your internal process is conducted in an integrated and coordinated manner	
	ERPu4	Please rate as your production sales activities are supported by an integrated and consistent information platform.	
	ERPu5	Please rates your purchasing activities are supported by an integrated and consistent information platform.	
	ERPu6	Please rate as the production and productivity activities are supported by an integrated and consistent information platform.	
	ERPu7	Please rate as the activities of natural and sustainable resources care are supported by an integrated and consistent information platform.	

(10) Intention to increase the adoption of ERP (ERPi)/R	ERPi1	If there is a better ERP solution, it should be used for the application domain I am in charge of.	(Benlian and Hess, 2011)
	ERPi2	Our company should increase the existing level of adopting ERP applications.	
	ERPi3	I support the further adoption of ERP-based applications.	
(11) Adoption (Ad)/R	Ad1	My farm invests resources to adopt ERP	(Chan and Chong, 2013)
	Ad2	The purchase and production and sales tasks (business activities) from our farm require the ERP usage	
	Ad3	Functional areas in my farm require the use of ERP	
(12) Dynamic capabilities on costs (CDC)/R	CDC1	Increase employee productivity	
	CDC2	Facilitate communication among employees	
	CDC3	Increase the compression of business processes	
	CDC4	Improve organizational flexibility	
	CDC5	Improve the efficiency of staff	
	CDC6	Have better quality information	
(13) Dynamic capabilities on internal operational (IODC)/R	IODC1	Make internal operations more efficiently	
	IODC2	Increase control of the whole operation	
	IODC4	Increase the analysis capacity of business risks	
	IODC5	Increase control of internal farm logistics	(Picoto *et al.*, 2014)
(14) Dynamic capabilities on sales (SDC)/R	SDC1	Increase the farm profitability	(Shuen *et al.*, 2014; Teece, 2015; Vahlne and Johanson, 2013)
	SDC2	Reduce inventory costs	
	SDC3	Facilitate sales management with buyers	
	SDC4	Increase the ability to have a clearer business future view	
	SDC5	Increase the value of: my farm, my partners and my contracts.	
(15) Dynamic capabilities on natural resources and sustainability (RNDC)/R	NRDC1	Natural resource guarantee for the future	
	NRDC2	Has the land as an investment	
	NRDC3	Long-term care for future generations	
	NRDC4	Environmental preservation.	
(16) Farm performance (Fa)/R	Fa1	In terms of impact in your farm business the ERP system can be a success	
	Fa2	The ERP will improve the overall performance of my farm	
	Fa4	ERP should have a significant positive effect on my farm	
Control variable			
(17) Farm size (FS)/R	Fs1	The capital of my farm is high compared to my neighbours.	(Chan and Chong, 2013)
	Fs2	The revenue from my farm is high compared to my neighbours.	
	Fs3	The number of employees of my farm is high compared to my neighbours	

[1] R = constructs is reflexive; F = constructs is formative.

[2] References of column 4 are references to the questions in column 3 and the constructs in column 1.

Table S2. Discriminant validity model (Fornell-Larcker criterion) AVE and latent variables correlations.

	Ra	Cp	Tc	Ti	Fc	Tms	Cpr	Pp	ERPu	ERPi	Ad	Fa	CDC	IODC	SDC	NRDC	Fs
Relative advantage (Ra)	0.802																
Compatibility (Cp)	0.286	0.814															
Technology competence (Tc)	0.397	0.338	0.908														
Technology integration (Ti)	0.225	0.170	0.313	(F)													
Financial competence (Fc)	0.168	0.402	0.286	0.184	(F)												
Top management support (Tms)	0.459	0.410	0.288	0.193	0.295	0.837											
Competitive pressure (Cpr)	0.310	0.168	0.417	0.233	0.169	0.161	0.831										
Partner pressure (Pp)	0.128	0.184	0.182	0.255	0.148	0.091	0.412	0.876									
ERP usage (ERPu)	0.245	0.367	0.444	0.258	0.256	0.283	0.277	0.184	0.782								
ERP increase (ERPi)	0.264	0.329	0.262	0.051	0.266	0.388	0.192	0.143	0.296	0.877							
Adoption (Ad)	0.324	0.380	0.433	0.298	0.300	0.240	0.441	0.302	0.459	0.316	0.871						
Farm performance	0.307	0.306	0.218	0.080	0.315	0.328	0.256	0.094	0.225	0.479	0.277	0.911					
Costs dynamic capabilities (CDC)	0.242	0.205	0.207	0.047	0.261	0.243	0.143	0.103	0.210	0.662	0.168	0.662	0.800				
Internal operational dynamic capabilities (IODC)	0.295	0.199	0.200	0.069	0.256	0.254	0.207	0.109	0.240	0.433	0.204	0.716	0.733	0.828			
Sales dynamic capabilities (SDC)	0.305	0.240	0.163	0.092	0.229	0.245	0.211	0.150	0.199	0.350	0.202	0.734	0.690	0.810	0.800		
Natural resource dynamic capabilities (NRDC)	0.293	0.201	0.145	0.109	0.133	0.236	0.189	0.160	0.119	0.247	0.125	0.534	0.455	0.480	0.630	0.861	
Farm size (Fs)	0.132	0.339	0.280	0.142	0.427	0.156	0.115	0.198	0.251	0.216	0.221	0.174	0.213	0.160	0.161	0.096	0.876

[1] F = formative.

Table S3. PLS loadings and cross-loadings.

Constructs	Ra	Cp	Tc	Ti	Fc	Tms	Cpr	Pp	Ad	Fa	ERPu	ERPI	CDC	IODC	SDC	NRDC	Fs
Relative advantage (Ra)																	
Ra1	0,72	0.26	0.23	0.15	0.12	0.34	0.11	0.08	0.21	0.25	0.13	0.22	0.16	0.22	0.25	0.22	0.06
Ra4	0,83	0.21	0.36	0.18	0.15	0.42	0.29	0.04	0.28	0.28	0.20	0.23	0.21	0.26	0.24	0.21	0.09
Ra5	0,84	0.23	0.35	0.21	0.13	0.35	0.32	0.18	0.28	0.22	0.24	0.20	0.21	0.23	0.24	0.27	0.15
Compatibility (Cp)																	
Cp1	0.31	0,75	0.27	0.17	0.30	0.34	0.18	0.15	0.26	0.28	0.31	0.30	0.24	0.22	0.26	0.25	0.29
Cp2	0.25	0,83	0.24	0.16	0.24	0.33	0.10	0.17	0.29	0.20	0.29	0.24	0.11	0.11	0.16	0.13	0.24
Cp3	0.20	0,86	0.24	0.16	0.30	0.37	0.13	0.12	0.33	0.23	0.27	0.27	0.13	0.13	0.16	0.14	0.26
Cp4	0.19	0,81	0.35	0.15	0.34	0.30	0.14	0.16	0.34	0.28	0.34	0.27	0.20	0.20	0.22	0.15	0.31
Technology competence (Tc)																	
Tc1	0.37	0.31	0,92	0.32	0.27	0.25	0.33	0.15	0.42	0.17	0.40	0.23	0.18	0.16	0.12	0.11	0.28
Tc2	0.35	0.31	0,89	0.24	0.25	0.27	0.43	0.19	0.36	0.23	0.41	0.25	0.20	0.21	0.18	0.16	0.22
Technology integration (Ti)/F																	
Ti1	0.23	0.13	0.33	0,93	0.16	0.18	0.23	0.19	0.28	0.08	0.22	0.05	0.04	0.07	0.09	0.08	0.12
Ti2	0.11	0.20	0.21	0,73	0.18	0.15	0.18	0.26	0.22	0.09	0.26	0.07	0.11	0.08	0.11	0.12	0.15
Ti3	0.14	0.19	0.19	0,79	0.17	0.15	0.17	0.29	0.24	0.06	0.25	0.04	0.05	0.05	0.08	0.14	0.14
Financial competence (Fc)/F																	
Fc1	0.09	0.29	0.30	0.16	0,89	0.19	0.25	0.16	0.27	0.29	0.23	0.22	0.31	0.28	0.23	0.10	0.43
Fc2	0.16	0.40	0.26	0.16	0,98	0.30	0.14	0.12	0.29	0.29	0.25	0.25	0.22	0.22	0.20	0.12	0.41
Fc3	0.23	0.35	0.15	0.19	0,60	0.27	-0.01	0.11	0.18	0.25	0.15	0,24	0.14	0.18	0.20	0.16	0.20
Top Management Support (Tms)																	
TMS1	0.40	0.27	0.32	0.22	0.24	0,82	0.21	0.12	0.19	0.26	0.21	0.26	0.20	0.20	0.09	0.18	0.12
TMS2	0.43	0.37	0.22	0.12	0.25	0,88	0.11	0.04	0.22	0.33	0.24	0.42	0.24	0.25	0.11	0.22	0.15
TMS3	0.31	0.39	0.19	0.15	0.25	0,81	0.09	0.08	0.19	0.22	0.26	0.27	0.17	0.19	0.08	0.20	0.12
Competitive Pressure (Cpr)																	
Cpr1	0.22	0.21	0.34	0.12	0.16	0.09	0,84	0.38	0.35	0.21	0.27	0.17	0.11	0.18	0.18	0.14	0.16
Cpr2	0.34	0.21	0.39	0.20	0.22	0.24	0,86	0.29	0.43	0.29	0.26	0.26	0.17	0.22	0.21	0.17	0.11
Cpr3	0.19	-0.03	0.30	0.27	0.01	0.04	0,79	0.38	0.31	0.11	0.16	0.02	0.06	0.11	0.12	0.17	0.02
Partner Pressure (Pp)																	
Pp1	0.15	0.21	0.22	0.18	0.19	0.09	0.40	0,89	0.31	0.08	0.24	0.16	0.11	0.13	0.14	0.13	0.24
Pp2	0.08	0.11	0.10	0.21	0.05	0.06	0.32	0,87	0.20	0.06	0.11	0.09	0.08	0.06	0.10	0.11	0.10
Pp3	0.09	0.14	0.14	0.28	0.13	0.08	0.35	0,86	0.26	0.10	0.11	0.11	0.07	0.08	0.14	0.17	0.15
Adoption (Ad)																	
Ad1	0.24	0.29	0.43	0.29	0.22	0.22	0.38	0.24	0.83	0.20	0.44	0.23	0.12	0.14	0.15	0.08	0.19
Ad2	0.34	0.39	0.40	0.22	0.30	0.21	0.40	0.28	0.93	0.28	0.45	0.30	0.16	0.21	0.21	0.12	0.19
Ad3	0.26	0.30	0.31	0.27	0.26	0.20	0.37	0.27	0.86	0.24	0.31	0.30	0.16	0.18	0.17	0.12	0.19
Farm Performance																	
Fa1	0.26	0.30	0.21	0.10	0.29	0.31	0.24	0.08	0.24	0,93	0.23	0.44	0.61	0.67	0.69	0.52	0.15
Fa2	0.28	0.27	0.17	0.02	0.25	0.27	0.24	0.07	0.26	0,92	0.17	0.42	0.62	0.67	0.69	0.48	0.13
Fa4	0.30	0.26	0.22	0.10	0.32	0.32	0.23	0.11	0.26	0,88	0.22	0.45	0.58	0.61	0.63	0.46	0.21
ERP usage (ERPu)																	
ERPu1	0.26	0.30	0.44	0.17	0.24	0.20	0.24	0.14	0.39	0.18	0.73	0.21	0.23	0.23	0.16	0.10	0.23
ERPu2	0.23	0.24	0.33	0.12	0.23	0.17	0.20	0.12	0.34	0.20	0.74	0.19	0.22	0.22	0.19	0.05	0.21

ERPu3	0.16	0.29	0.39	0.15	0.25	0.25	0.21	0.10	0.35	0.23	0.79	0.31	0.21	0.25	0.19	0.05	0.21
ERPu4	0.24	0.36	0.39	0.24	0.22	0.26	0.26	0.20	0.40	0.16	0.87	0.25	0.12	0.15	0.14	0.10	0.23
ERPu5	0.08	0.18	0.22	0.34	0.10	0.19	0.17	0.14	0.29	0.08	0.71	0.16	0.09	0.09	0.10	0.08	0.10
ERPu6	0.16	0.32	0.33	0.19	0.16	0.23	0.21	0.13	0.40	0.18	0.85	0.26	0.15	0.18	0.13	0.08	0.21
ERPu7	0.19	0.29	0.30	0.23	0.18	0.24	0.21	0.17	0.33	0.21	0.76	0.23	0.12	0.19	0.18	0.19	0.16
ERP increase (ERPi)																	
ERPi1	0.23	0.26	0.25	0.04	0.23	0.28	0.11	0.11	0.22	0.34	0.24	0,79	0.27	0.29	0.25	0.21	0.20
ERPi2	0.22	0.30	0.23	0.04	0.23	0.33	0.17	0.13	0.29	0.44	0.25	0,92	0.35	0.41	0.32	0.22	0.18
ERPi3	0.24	0.30	0.22	0.05	0.24	0.40	0.21	0.13	0.31	0.47	0.29	0,92	0.38	0.42	0.35	0.22	0.19
Costs dynamic capabilities (CDC)																	
CDC1	0.17	0.15	0.21	0.02	0.22	0.19	0.20	0.11	0.22	0.57	0.24	0.35	0,84	0.58	0.54	0.34	0.17
CDC2	0.16	0.16	0.14	0.04	0.23	0.13	0.11	0.07	0.13	0.50	0.17	0.17	0,79	0.57	0.49	0.29	0.17
CDC3	0.20	0.16	0.16	0.02	0.22	0.19	0.06	0.07	0.08	0.50	0.16	0.15	0,82	0.58	0.55	0.31	0.21
CDC4	0.23	0.17	0.18	0.01	0.17	0.23	0.10	0.08	0.11	0.53	0.17	0.15	0,79	0.58	0.58	0.43	0.19
CDC9	0.22	0.17	0.16	0.06	0.20	0.22	0.13	0.10	0.14	0.57	0.17	0.15	0,83	0.60	0.55	0.45	0.18
CDC11	0.16	0.16	0.13	0.09	0.22	0.19	0.06	0.05	0.12	0.51	0.14	0.32	0.73	0.60	0.61	0.35	0.11
Internal operational dynamic capabilities (IODC)																	
IODC1	0.31	0.15	0.20	0.09	0.17	0.24	0.26	0.17	0.21	0.58	0.20	0.35	0.51	0,80	0.64	0.43	0.18
IODC2	0.23	0.19	0.17	0.03	0.27	0.20	0.13	0.04	0.15	0.59	0.19	0.39	0.62	0,86	0.64	0.34	0.15
IODC4	0.19	0.15	0.15	0.07	0.19	0.19	0.15	0.07	0.16	0.62	0.21	0.37	0.66	0,83	0.70	0.37	0.06
IODC5	0.24	0.16	0.14	0.04	0.22	0.21	0.15	0.08	0.16	0.58	0.19	0.33	0.63	0,82	0.70	0.45	0.14
Sales dynamic capabilities (SDC)																	
SDC1	0.23	0.22	0.16	0.10	0.22	0.21	0.21	0.12	0.20	0.64	0.16	0.28	0.55	0.67	0,84	0.57	0.06
SDC2	0.23	0.14	0.17	0.00	0.19	0.14	0.16	0.08	0.21	0.54	0.21	0.28	0.59	0.68	0,75	0.36	0.08
SDC3	0.33	0.20	0.13	0.07	0.19	0.20	0.18	0.16	0.16	0.58	0.19	0.24	0.55	0.67	0,84	0.52	0.20
SDC4	0.22	0.21	0.11	0.04	0.18	0.22	0.12	0.04	0.11	0.65	0.11	0.32	0.64	0.69	0,82	0.50	0.12
SDC5	0.21	0.19	0.07	0.16	0.12	0.23	0.17	0.22	0.14	0.52	0.14	0.26	0.42	0.53	0,74	0.58	0.20
Natural Resource dynamic capabilities (NRDC)																	
NRDC1	0.28	0.21	0.19	0.12	0.15	0.24	0.24	0.18	0.16	0.48	0.12	0.23	0.42	0.44	0.59	0,88	0.13
NRDC2	0.27	0.15	0.11	0.07	0.12	0.22	0.11	0.10	0.09	0.49	0.09	0.23	0.43	0.42	0.56	0,85	0.07
NRDC3	0.23	0.17	0.06	0.05	0.07	0.17	0.11	0.08	0.03	0.42	0.03	0.20	0.34	0.37	0.51	0,87	0.07
NRDC4	0.22	0.17	0.13	0.14	0.11	0.17	0.18	0.19	0.14	0.43	0.12	0.19	0.37	0.41	0.51	0,85	0.06
Farm size (Fs)																	
Fs1	0.11	0.29	0.20	0.10	0.39	0.12	0.07	0.15	0.14	0.11	0.17	0.15	0.14	0.11	0.12	0.07	0,87
Fs2	0.12	0.30	0.22	0.13	0.42	0.18	0.07	0.16	0.18	0.15	0.23	0.21	0.17	0.15	0.16	0.08	0,88
Fs3	0.11	0.30	0.29	0.14	0.33	0.11	0.15	0.20	0.23	0.18	0.24	0.20	0.23	0.14	0.14	0.10	0,87

Table S4. Collinearity assessment.

Constructs	VIF	
	Adoption	Farm performance
Relative advantage (Ra)	1.462	-
Compatibility (Cp)	1.512	-
Technology competence (Tc)	1.640	-
Technology integration (Ti)	1.217	-
Financial competence (Fc)	1.414	-
Top Management Support (Tms)	1.555	-
Competitive Pressure (Cpr)	1.476	-
Partner Pressure (Pp)	1.295	-
ERP usage (ERPu)	1.411	-
ERP increase (ERPi)	1.314	-
Adoption (Ad)	-	1.048
Costs dynamic capabilities (CDC)	-	2.035
Internal operational dynamic capabilities (IODC)	-	3.534
Sales dynamic capabilities (SDC)	-	3.870
Natural Resource dynamic capabilities (NRDC)	-	1.673
Farm Size	1.338	-

[1] The VIF value should be lower than 5. 1,088 e 1,738.

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