Supplementary_material_Table 1_S1

Table 1 (S1). Descriptive analysis and variable definitions.

Variable	Measure	Mean	St. Deviation
Company size (total assets)	It is the sum of all the company's assets (in thousands of $) for a specific year.	7457.34	87443.09
Marketing investment[a]	It is all the firm's marketing expenses (in thousands of $) incurred in a specific year.	108.13	526.10
R&D investment	It is all the firm's research and development expenses (in thousands of $) incurred in a specific year.	120.26	688.45
Market share	It is the total revenue of firm i in time t divided by the industry's total revenue in time t.	12.70	24.31
ROA	It is the operating income of firm i in time t divided by the average total assets (t, t-1) of firm i in time t.	10.85	232.39
Competitors in the industry	It is the total number of competitors in the industry in a specific year, divided by the average number of competitors across all industries in that year in the dataset.	1.00	1.14
GDP Growth	It is the percentage of the country's GDP in year t, divided by the country's GDP in year t-1, that was in operation for the firm i.	1.95	1.55

Note: [a] Marketing investment is one incurred in marketing consultancy fees, advertising, market development, marketing and business development, promotion, telemarketing, and brand marketing.

Supplementary_material_Table 2_S2

Table 2 (S2). Pearson correlations (raw).

	Total Assets (t)	Marketing investment (t)	R&D investment (t)	Competitors in the industry (t)	GDP growth (t)	Market share (t)	Market share (t+1)	Market share (t+2)	Market share (t+3)	ROA (t)	ROA (t+1)	ROA (t+2)	ROA (t+3)	Years
Total Assets (t)	1.00	.236**	.061**	-.024**	-0.01	.103**	.101**	.099**	.097**	0.00	0.00	0.00	0.00	.023**
Marketing investment (t)		1.00	.540**	-.110**	0.00	.324**	.324**	.325**	.325**	.019*	.019*	.019*	.018*	.050**
R&D investment (t)			1.00	-.027**	0.00	.151**	.154**	.156**	.156**	0.00	0.00	0.00	0.00	.038**
Competitors in the industry (t)				1.00	.009**	-.248**	-.248**	-.247**	-.246**	-.010*	-0.01	-0.01	-0.01	0.00
GDP growth(t)					1.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-.166**
Market share (t)						1.00	.983**	.969**	.957**	.012*	0.01	.011*	.012*	0.00
Market share (t+1)							1.00	.984**	.970**	.014**	.011*	0.01	.011*	0.00
Market share (t+2)								1.00	.984**	.015**	.015**	.012*	0.01	0.00
Market share (t+3)									1.00	.016**	.015*	.015**	.012*	0.00
ROA (t)										1.00	.814**	.714**	.617**	.014**
ROA (t+1)											1.00	.814**	.714**	.014**
ROA (t+2)												1.00	.814**	.013*
ROA (t+3)													1.00	.012*
Years														1.00

* $p \leq 0.10$; ** $p \leq 0.05$; *** $p \leq 0.01$

Supplementary_material_Table 3_S3

Table 3 (S3). Pearson correlations in Log.

	Log of Assets (t)	Log of marketing invest. (t)	Log of R&D invest. (t)	Log of competitors in the industry (t)	Log of GDP growth (t)	Log of market share (t)	Log of market share (t+1)	Log of market share (t+2)	Log of market share (t+3)	Log of ROA (t)	Log of ROA (t+1)	Log of ROA (t+2)	Log of ROA (t+3)	Years
Log of Assets (t)	1.00	0.683**	0.848**	-0.074**	0.000	0.662**	0.653**	0.637**	0.620**	-0.151**	-0.165**	-0.154**	-0.146**	0.109**
Log of marketing invest. (t)		1.00	0.813**	-0.325**	-0.034**	0.681**	0.678**	0.672**	0.668**	0.412**	0.410**	0.423**	0.426**	0.127**
Log of R&D invest. (t)			1.00	-0.026**	0.010	0.574**	0.575**	0.572**	0.562**	0.080**	0.069**	0.066**	0.067**	0.126**
Log of competitors in the industry (t)				1.00	0.088**	-0.420**	-0.419**	-0.418**	-0.417**	-0.374**	-0.372**	-0.369**	-0.368**	0.000
Log of GDP growth (t)					1.00	-0.035**	-0.037**	-0.037**	-0.041**	-0.010	-0.019**	-0.031**	-0.027**	-0.042**
Log of market share (t)						1.00	0.980**	0.966**	0.954**	0.339**	0.326**	0.333**	0.338**	0.027**
Log of market share (t+1)							1.00	0.981**	0.966**	0.347**	0.335**	0.322**	0.330**	0.031**
Log of market share (t+2)								1.00	0.981**	0.353**	0.342**	0.330**	0.319**	0.036**
Log of market share (t+3)									1.00	0.361**	0.349**	0.339**	0.329**	0.041**
Log of ROA (t)										1.00	0.806**	0.732**	0.688**	-0.010*
Log of ROA (t+1)											1.00	0.807**	0.736**	-0.011*
Log of ROA (t+2)												1.00	0.810**	-0.018**
Log of ROA (t+3)													1.00	-0.031**
Years														1.00

* $p \leq 0.10$; ** $p \leq 0.05$; *** $p \leq 0.01$

Supplementary_material_Diagnostics_S4

Panel diagnostic tests

Using panel data (companies over time), we first compared the results with those from Ordinary Least Squares models. Results showed heterogeneity (White test: market share LM = 484.9; ROA LM = 79.3; both $p \leq 0.01$), low residual correlation between DVs at time t ($r = 0.05$; $p \leq 0.01$), and temporal autocorrelation (Durbin–Watson = 0.6 for ROA; 0.1 for market share).

Based on Dickey-Fuller tests with Choi's meta-tests, both ROA (Inverse Chi-square = 7674.8; Inverse normality = –77.3; Logit = –129.1; all $p \leq 0.01$) and market share (Inverse Chi-square = 2093.9; Inverse normality = –30.5; Logit = –34.2; all $p \leq 0.01$) were stationary. ICCs were 72.3% (ROA) and 90.4% (market share). Multicollinearity was low (VIF < 10).

Supplementary_material_ModelCriteria_S5

QIC model selection criteria

Using a robust error estimator, the researchers performed GEE analyses. The Breusch-Pagan Lagrange Multiplier test was significant ($p < 0.01$), favoring the random effects model. The Hausman test was also significant ($p < 0.01$), favoring a fixed-effects model over a random-effects model. Although these tests indicate conflicting preferences, the GEE approach does not require a choice between fixed-effects and random-effects models. GEE estimates population-average (marginal) effects and accounts for within-group correlation via a working correlation matrix and robust standard errors (Ziegler, 2011). In our models, we included time, sector, and country dummies to control for observed heterogeneity across firms and contexts.

The researchers used the Quasi-likelihood under the Independence Model Criterion (QIC) to select the most appropriate correlation structure. For testing hypotheses H1 to H4, they found that the Autoregressive (AR1) model had the lowest QIC, indicating it

was the best fit for the data. In contrast, for testing hypotheses H5a–d, the researchers determined that an unstructured working correlation minimized QIC.