

# Satisfaction as a Predictor of Future Performance: A Replication

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## Satisfaction as a Predictor of Future Performance: A Replication

Since the introduction of the Net Promoter concept by Reichheld (2003) there has been a vivid and ongoing debate among academics and practitioners about the performance of the Net Promoter Score (NPS) in comparison to other customer metrics, such as customer satisfaction, in predicting company growth rates. The intuitiveness of the NPS has led to many applications in marketing practice: “As academics debate the details, managers are putting the [Net Promoter] scores into practice.” (McGregor 2009, p. 94). Yet, empirical evidence for the superiority or inferiority of the NPS compared to satisfaction or loyalty measures has not been entirely convincing either way. Whereas Reichheld (2003) does not report convincing statistical evidence demonstrating the alleged superiority of NPS, Morgan and Rego (2006) did not find a significant effect of NPS on any of their outcome measures, such as annual sales growth, gross margin, net operating cash flow and Tobin’s Q.<sup>4</sup> Keiningham et al. (2007) employ data from the Norwegian customer satisfaction barometer and do not find evidence that “average levels of any of the satisfaction/loyalty metrics ... are significantly correlated with the relative change in revenue...” (p. 42). Given the unclear empirical evidence, we report results from a study using data from customers and firms in the Netherlands on the relationship between different satisfaction and loyalty metrics and the NPS as indicators for sales revenue growth, gross margins and net operating cash flows.

### *Data collection and Measures*

A professional market research agency collected data on customer metrics by means of an internet-based survey in 2008 which contains 11.967 responses. These responses refer to 46 companies in the banking, insurance, utilities and telecom industries. On average, we obtain 260 customer responses per company, ranging from 42 respondents for a small firm to 558 customers for a larger one. Table 1 provides an overview of our measures. We asked customers about their overall satisfaction, their satisfaction with five different aspects of encounters with the company, their loyalty intentions and their willingness to recommend the company. We averaged the individual responses to an overall satisfaction, a multi-item satisfaction (Cronbach’s alpha = .76) and a loyalty intention measure (Cronbach’s alpha = .83) per company. We also assessed the percentage of respondents giving the company the top satisfaction rating (top box). We constructed the NPS in accordance with Reichheld (2003) and subtracted the percentage of respondents answering 0-6 to our willingness-to-recommend questions (detractors) from those answering with 9-10 (promoters). Since Dutch respondents may give lower evaluations than US respondents (an 8 is already a high grade in the Netherlands), we also constructed an alternative NPS where we subtracted the percentage of respondents answering with 0-5 (detractors) from those answering with 8-10 (promoters). The data for the measures of sales growth, gross margin

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<sup>4</sup> The NPS metric Morgan and Rego (2006) employ deviates from the original NPS metric as developed by Reichheld (2003).

and net operating cash flows were collected from annual financial business reports over the years 2007-2010. Reichheld (2003) links survey data from 2001/2002 to revenue growth rates from 1999-2002 and therefore examines the relationship with past growth. Given that we want to establish which customer metric performs best in predicting current and future performance, we choose sales revenue growth, gross margin and net operating cash flow from the years 2008, 2009 and 2010 as our dependent variables. Furthermore, we examine two-year (2008/2009 and 2009/2010) and three-year (2008/2009/2010) sales growth rates. We normalized the financial data using log transformations (Morgan and Rego 2006).

### *Analysis and Results*

We estimate regression models with one of our financial measures as dependent variable and one customer metric as independent variable and include industry dummies and a measure of firm size as control variables. Table 2 shows that except for loyalty intentions, all customer metrics are significantly related to sales growth in 2008 and the two-year sales growth over 2008 and 2009. Our models explain between 17% (loyalty intentions and sales growth 2008) and 41% (NPS and sales growth 2008-2009) of the variance in sales growth. None of our metrics is significantly related to sales growth 2009 and 2010, the two-year sales growth over 2009 and 2010 and the three-year sales growth over 2008-2010 (we therefore do not show these results in table 2).

Table 3 reveals that all customer metrics are related to the gross margins in 2008. Only loyalty intentions are weakly related to the gross margins of 2010 (not shown in table 3); we fail to find significant relations between our customer metrics and the gross margins of 2009. Our models explain between 58% (NPS and gross margins 2008) and 63% (loyalty intentions and gross margins 2008 and 2009) of the variance in gross margins 2008 and 2009. The customer metrics are not significantly related to cash flows, the only exception is a marginally significant effect of loyalty intentions on the cash flows of 2009 (see table 4). We furthermore estimated models including a lagged term. For sales growth, the results are virtually the same, while we can only detect a significant impact of two out of six metrics for the gross margins of 2008.

### *And the winner is...*

To determine which customer metric is the best predictor of firm performance, we test the differences between the partial correlations, where we adjust for industry effects. We use the method as described by Meng, Rubin and Rosenthal (1992) to detect significant differences in the partial correlations between the customer metrics and sales growth 2008 and 2008-2009 and the gross margins 2008. We fail to find significant differences between the partial correlations, implying that all our metrics predict these outcome measures equally well. We therefore have to conclude that there is no single best metric.

In each of the columns of table 5, we specify characteristics and outcomes of the most relevant studies and compare these with those of our study (last column). Other studies only establish the link between customer metrics and fairly recent performance measures. Reichheld (2003) links survey data from 2001 to revenue growth rates from 1999-2002, and the customer metrics are collected one to three quarters before the performance data in Morgan and Rego's study (2006). Another notable difference is that Morgan and Rego (2006) fail to find a significant effect of the NPS on performance metrics, while we do. The reason for this deviation may be that Morgan and Rego's (2006) NPS metric differs from the one developed by Reichheld (2003) that we also use in our study. Taken together, our study suggests that the predictive capability of customer metrics, such as NPS, for future sales growth or gross margin is limited. The customer metrics included in this study perform equally well in predicting current company performance. As expected, the satisfaction measures are more highly correlated with sales growth and the loyalty measure is more correlated with gross margin and cash flow. However, few of the differences are statistically significant.

## References

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Table 1: Measures

<b>Independent variables</b>		
Single-item satisfaction	Reichheld (2003)	How satisfied are you with <x> in general? (1=very dissatisfied, 5=very satisfied)
Satisfaction: Top box	Keiningham et al. (2007)	Percentage of customers who are very satisfied (5)
Multi-item satisfaction		Can you indicate how satisfied you are with the performance of <x> regarding each of the following aspects (1=very dissatisfied, 10=very satisfied) <ul style="list-style-type: none"> <li>- Portfolio of available products and services</li> <li>- Price/quality ratio of the products and services</li> <li>- Customized advice</li> <li>- Clarity concerning relevant products and services</li> <li>- General settlement of questions and complaints</li> </ul> Cronbach's alpha = .76
Net promoter score	Reichheld (2003)	Can you indicate how likely it is that you would recommend <x> to a friend or colleague? (0=not at all likely, 10=extremely likely). NPS = percentage of respondents rating 9 or 10 - percentage of respondents rating 0 to 6.
Alternative NPS		Percentage of respondents rating 8, 9 or 10 - percentage of respondents rating 0-5.
Loyalty intentions	Adapted from Zeithaml, Berry & Parasuraman (1996)	I'm currently looking about (1) – not looking about (5) other companies and their products and services. For the next 12 months I expect to make less use (1) – more use (5) of <x's> products and services. I consider to leave (1) – do not consider to leave (5) <x> in the next 12 months. If I had to choose all over again, <x> would not be (1) – would be (5) my first choice. Cronbach's alpha = .83
<b>Dependent Variables</b>		
Sales revenue growth <sub>t</sub>	Morgan & Rego (2006)	$(\text{Sales revenue}_t - \text{Sales revenue}_{t-1}) / \text{Sales revenue}_{t-1}$ (log transformation: $\ln(\text{Sales growth}_t \text{ in } \% + 1)$ )
Gross margin <sub>t</sub>	Morgan & Rego (2006)	$(\text{Sales revenue}_t - \text{Cost of sales}_t) / \text{Sales revenue}_t$ (log transformation: $\ln(\text{Gross Margin}_t \text{ in } \% + 1)$ )
Net operating cash flow <sub>t</sub>	Morgan & Rego (2006)	$\text{Income before extraordinary items}_t + \text{Depreciation}_t - \text{Taxes}_t$ (log transformation: $\ln(\text{Cash flow}_t)$ for positive and $\ln(1/-\text{Cash flow}_t)$ for negative values)

Table 2: Impact of customer metrics in 2008 on sales revenue growth

	Sales revenue growth 2008						Sales revenue growth 2008-2009					
Single-item satisfaction	.420**						.406**					
Satisfaction: Top box		.493**						.414**				
Multi-item satisfaction			.481**						.513**			
Net Promoter Score				.460**						.410**		
Alternative NPS					.474***						.413**	
Loyalty intentions						.226						.181
Banking	-.067	-.135	-.038	-.014	-.066	.186	-.357	-.362	-.365	-.279	-.316	-.085
Insurance	-.357	-.268	-.106	-.180	-.257	-.207	-.291	-.183	-.048	-.114	-.179	-.127
Utilities	.002	.063	-.050	.091	.064	.031	-.140	-.080	-.202	-.055	-.080	-.105
Firm size (ln(assets))	-.237	-.243	-.336**	-.171	-.166	-.359**	-.496***	-.512***	-.592***	-.444***	-.443***	-.608***
R <sup>2</sup>	.231	.240	.229	.269	.270	.171	.388	.372	.404	.405	.400	.321

Table 3: Impact of customer metrics on gross margins

	Gross margin 2008					Gross margin 2009							
Single-item satisfaction	.261*						.106						
Satisfaction: Top 1 box		.276*						.088					
Multi-item satisfaction			.283*						.159				
Net Promoter Score				.221*						.098			
Alternative NPS					.265**							.132	
Loyalty intentions						.335***							.159
Banking	-.939***	-.952***	-.908***	-.856***	-.913***	-.916***	-.626***	-.608***	-.649***	-.599***	-.637***	-.633***	
Insurance	-1.307***	-1.242***	-1.151***	-1.186***	-1.235***	-1.306***	-1.277***	-1.242***	-1.214***	-1.229***	-1.256***	-1.287***	
Utilities	-.497***	-.459***	-.526***	-.445***	-.458***	-.513***	-.548***	-.532***	-.570***	-.526***	-.532***	-.558***	
Firm size (ln(assets))	.154	.145	.092	.172	.188	.052	-.069	-.076	-.094	-.058	-.047	-.113	
R <sup>2</sup>	.588	.584	.583	.582	.593	.627	.616	.613	.620	.616	.620	.627	

\*\*\* p < .01, \*\* p < .05, \* p < .1.



Table 4: Impact of customer metrics on net operating cash flows

	Cash flow 2008						Cash flow 2009					
Single-item satisfaction	.137						.107					
Satisfaction: Top box		.317						.092				
Multi-item satisfaction			-.162						.108			
Net Promoter Score				.178						.111		
Alternative NPS					.144						.075	
Loyalty intentions						.229						.310*
Banking	-.280	-.454	-.019	-.285	-.271	-.306	-.308	-.292	-.288	-.290	-.268	-.418
Insurance	-.713***	-.737***	-.626***	-.660***	-.677***	-.738***	-.313	-.279	-.249	-.267	-.273	-.395
Utilities	-.142	-.125	-.079	-.112	-.122	-.160	-.086	-.070	-.095	-.063	-.069	-.122
Firm size (ln(assets))	-.133	-.108	-.160	-.102	-.114	-.194	-.158	-.166	-.183	-.144	-.156	-.223
R <sup>2</sup>	.249	.281	.249	.259	.251	.274	.080	.077	.078	.081	.077	.138

\*\*\* p < .01, \*\* p < .05, \* p < .1.

Table 5: Overview of the results of different studies

	<i>Reichheld (2003)</i>	<i>Morgan &amp; Rego (2006)</i>			<i>Keiningham et al. (2007)</i>	<i>Our study</i>			
<i>Time frame</i>	Customer metrics data: 2001 Revenue data: 1999-2002	1994-2000; customer metrics data collected one to three quarters before the performance data			2000-2005 for metrics and revenue data	Customer metrics: 2008 Performance: 2008-2010			
<i>Industries</i>	Financial services, telecom, computers, e-commerce, insurance, internet service providers	Companies included in the American Customer Satisfaction Index (ACSI)			Banking, retail, security systems, transportation	Banking, insurance, utilities, telecommunication			
<i>Location</i>	US	US			Norway	Netherlands			
<i>Sample size</i>	14	569			21	46			
<i>Method</i>	Correlations	Regression with industry and firm controls			Partial correlations adjusting for firm effects	Regression with industry and firm controls			
<i>Results<sup>a</sup></i>		SRG	SRG	GM	CF	SRG	SRG <sup>b</sup>	GM <sup>b</sup>	CF <sup>c</sup>
Satisfaction	“little general applicability”	.189 <sup>***</sup>	.051 <sup>***</sup>	.104 <sup>***</sup>	n.s.	.420 <sup>**</sup>	.261 <sup>*</sup>	n.s.	
Top Box satisfaction	“little general applicability”	.189 <sup>***</sup>	.067 <sup>***</sup>	.084 <sup>**</sup>	n.s.	.493 <sup>**</sup>	.276 <sup>*</sup>	n.s.	
Multi-item satisfaction						.481 <sup>**</sup>	.283 <sup>*</sup>	n.s.	
Net Promoter Score	“most effective”	n.s.	n.s.	n.s.	n.s.	.460 <sup>**</sup>	.221 <sup>*</sup>	n.s.	
Alternative NPS				n.s.		.474 <sup>***</sup>	.265 <sup>**</sup>	n.s.	
Repurchase/ loyalty intentions	“effective in certain industries”	.314 <sup>***</sup>	.192 <sup>***</sup>		n.s.	n.s.	.335 <sup>**</sup>	.310 <sup>*</sup>	
Complaints		-.393 <sup>***</sup>	-.181 <sup>***</sup>	n.s.					
Recommendation		n.s.	-.231 <sup>***</sup>	n.s.	n.s.				
Convenience	“little general applicability”								
Innovativeness	“little general applicability”								

<sup>a</sup> If available, we report standardized regression coefficients.

SRG=sales revenue growth, GM=gross margin, CF=Net operating cash flow. <sup>b</sup> of 2008; <sup>c</sup> of 2009.

\*\*\* p < .01, \*\* p < .05, \* p < .1.

*Appendix: Correlations*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1) Single-item satisfaction	1																	
(2) Satisfaction: Top Box	.92**	1																
(3) Multi-item satisfaction	.67**	.76**	1															
(4) Net Promotor Score	.92**	.91**	.72**	1														
(5) Alternative NPS	.94**	.90**	.68**	.97**	1													
(6) Loyalty intentions	.81**	.78**	.71**	.78**	.80**	1												
(7) Sales growth 2008	.33*	.36*	.37*	.45**	.43**	.19	1											
(8) Sales growth 2009	-.07	-.25	-.38**	-.07	-.06	-.27	-.02	1										
(9) Sales growth 2010	-.02	-.07	-.09	-.02	-.01	.07	.10	.04	1									
(10) Sales growth 2008-2009	.20	.09	.01	.28	.28	-.04	.73*	.67**	.10	1								
(11) Sales growth 2008-2010	.13	.02	-.05	.18	.19	.02	.57*	.49**	.72**	.76**	1							
(12) Sales growth 2009-2010	-.06	-.20	-.29	-.06	-.04	-.10	.07	.61**	.82**	.47**	.86**	1						
(13) Gross margin 2008	-.15	-.03	.22	.04	-.02	.05	.10	-.19	.11	-.05	.04	-.02	1					
(14) Gross margin 2009	-.15	-.01	.24	.06	.00	-.04	.15	-.11	.04	.04	.06	-.03	.87**	1				
(15) Gross margin 2010	-.05	.11	.34*	.19	.12	.06	.10	-.24	-.10	-.09	-.13	-.22	.80**	.89**	1			
(16) Cash flow 2008	-.03	.12	.09	.13	.06	.07	.15	-.18	-.06	-.01	-.04	-.15	.38**	.42**	.47**	1		
(17) Cash flow 2009	-.06	-.09	-.06	.01	-.03	.07	.14	.14	-.00	.20	.14	.08	.18	.06	.10	.37*	1	
(18) Cash flow 2010	-.09	-.03	.02	.04	.01	-.05	.01	.15	-.11	.11	.00	-.00	.09	.18	.23	.20	-.10	1
(19) Firm size	.10	.24	.41**	.03	.02	.34*	-.12	-.66**	-.01	-.54**	-.38**	-.39**	.14	.07	.07	-.03	-.21	.07

\*\* p < .01, \* p < .05.