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Pricing capabilities: the design, development, and validation of a scale

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Abstract

Purpose – The literature has paid increased attention to pricing capabilities as a set of distinctive, complex activities, routines, and processes that drive company performance. Despite this emphasis, little research has addressed the pricing-capabilities construct itself, and no accepted measure of pricing capabilities exists. The purpose of this paper, therefore, is to document the design, development, and validation of a dedicated pricing-capabilities scale, PRICECAP.

Design/methodology/approach – Qualitative plus three quantitative surveys.

Findings – The present research describes the development of a ten-item measure, PRICECAP, that can be used to assess organizational capabilities related to pricing.

Research limitations/implications – The reliability and validity of the scales were assessed through three separate quantitative studies using exploratory and confirmatory analysis. The PRICECAP scale has a variety of potential applications and can serve as a framework for future empirical research in marketing theory as well as an instrument to assess, compare, and develop pricing capabilities in marketing practice.

Originality/value – Empirical research has provided scales to measure value creation but a scale to measure value capture – i.e. pricing – capabilities is lacking. This study covers this gap and provides a new, parsimonious, ten-item construct to measure pricing capabilities.

Keywords Pricing, Resource management, Validity, Research methodology, Pricing strategy

Paper type Research paper

Value creation and value capture are the cornerstones of any business activity (Bowman and Ambrosini, 2000; Pitelis, 2009). Value creation refers to delivering value to customers and increasing customer willingness to pay; value capture refers to splitting the value created between the firm and its customers through pricing. Empirical research provides scales with which to measure value creation capabilities (see, for example, Ngo and O'Cass, 2009; O'Cass and Ngo, 2012). We lack, however, a scale to measure pricing capabilities.

To fill this gap, we first conduct qualitative interviews with 44 managers in 15 US companies to study the organizational antecedents of pricing capabilities. Based on these interviews and a thorough literature search, we design and test a pricing-capabilities scale, which we subsequently use in three quantitative surveys. In the first survey, we collect responses from 748 pricing and marketing managers to study antecedents of pricing capabilities and firm performance. We then survey 507 sales and key account managers to identify the antecedents and consequences of organizational confidence and pricing. Finally, we survey 557 CEOs and business



owners to examine the effect of CEO pricing-championing behaviors on firm performance. Our combined sample thus consists of 1,812 respondents from a variety of functions closely reflecting the factual diversity of decision makers in pricing. For each study, we operationalize the pricing-capabilities construct using pretested items. We summarize the statistical results (exploratory factor analysis (EFA), confirmatory factor analysis (CFA), regression weights, and R^2 -decomposition) for each survey as well as for the combined data set and propose a quantitative measurement scale for the pricing-capabilities construct.

Our pricing-capabilities construct, PRICECAP, consists of ten items:

- (1) using pricing skills to respond quickly to market change;
- (2) having knowledge of competitor pricing tactics;
- (3) pricing products/services effectively;
- (4) quantifying customer willingness to pay;
- (5) measuring and quantifying differential economic value versus competition;
- (6) measuring and quantifying price elasticity of products/services;
- (7) designing proprietary tools to support pricing decisions;
- (8) conducting value-in-use analysis or total cost of ownership analysis;
- (9) designing and conducting specific training programs; and
- (10) developing a proprietary internal price-management process.

This construct is thus also theoretically grounded and covers the three critical dimensions of pricing (Hinterhuber, 2004): the customer perspective (measuring and quantifying maximum willingness to pay, price elasticity, and value-in-use), the competitor perspective (knowledge about price levels of competing products, ability to respond to market changes), and the company perspective (availability of pricing tools, existence of price-management processes, availability of trainings to develop employee skills in pricing). It thus appears that this pricing-capabilities construct is robust, both theoretically and empirically.

Theoretical foundations

Our work integrates the literature on the resource-based view (RBV) with the literature on pricing.

The resource-based view and pricing capabilities

According to the RBV, resources and capabilities are heterogeneously distributed across firms. Differences in firm profitability thus reflect differences in firm capabilities (Barney, 1991).

As part of overall firm capabilities, recent research scrutinizes pricing capabilities as source of competitive advantage: Dutta *et al.* (2003) highlight the roles of pricing capabilities – defined as a set of complex routines, skills, systems, know-how, coordination mechanisms, and complementary resources – in increasing company performance. Pricing capabilities refer, on the one side, to the price-setting capability within a firm (identifying competitor prices, setting pricing strategy, translating from pricing strategy to price) and, on the other, to the price-setting capability *vis-à-vis* customers (convincing customers on the logic of price changes, negotiating price

changes with major customers). In this and subsequent qualitative research settings, pricing capabilities are found to be positively related to company performance (Berggren and Eek, 2007; Dutta *et al.*, 2002; Hallberg, 2008).

The marketing-capability literature, by contrast, uses quantitative surveys to document a positive link between pricing capabilities – a subset of marketing capabilities – and firm performance (Morgan *et al.*, 2009; Vorhies and Morgan, 2005). These and other surveys – see, for example, Kemper *et al.* (2011) – use the following scale to define pricing capabilities: using pricing skills and systems to respond quickly to market changes; learning about competitors' pricing tactics; pricing products/services effectively; and monitoring competitors' prices and price changes. Subsequent studies (Zou *et al.*, 2003) on the performance of Chinese exporters use a substantially similar scale and confirm the relationship between pricing capabilities and performance.

All these studies measure pricing capabilities as part of a much wider subset of marketing capabilities: in parallel, they measure capabilities related to product development, channel management, market communication, selling, market information management, marketing planning, and marketing implementation (Vorhies and Morgan, 2005), as well as other capabilities. It is therefore not surprising that the construct "pricing capabilities" in this stream of research is somewhat crude with a limited number of measurement items. In other words, use of a four-item scale of pricing capabilities may risk underestimating the complexity of pricing capabilities in firms. In this study we aim to capture the complexity of pricing capabilities by developing a scale that can reflect their complex, multifaceted aspects.

More specifically, the RBV's emphasis on learning and process orientation suggests the incorporation of, in addition to the items the current literature proposes, items related to training/learning and to proprietary processes/tools in the scale development process. We expand on this point below.

Literature on pricing and firm performance

Our scale also builds on the extensive literature on customer value and pricing. With respect to customer value, while definitions differ (Woodside *et al.*, 2008), the dominant stream of literature equates customer value with "value in use" (Bowman and Ambrosini, 2000, p. 3) or with "consumer benefit experienced" (Priem, 2007, p. 219). Customer value is thus equal to customer willingness to pay (Nagle and Holden, 2002) or, in microeconomic terms, to a customer's reservation price (Hinterhuber, 2004). One scale item thus refers to the ability to quantify customer willingness to pay.

With respect to pricing, the literature has only fairly recently expanded from its microeconomic foundations to incorporate the notions of customer heterogeneity, bounded rationality, and imperfect competition. Core elements of profitable and effective pricing are the abilities to create meaningful differentiation, to quantify the (differential) value to customers, to measure customer price elasticity, to segment customers, and to document value to customers (Hinterhuber and Liozu, 2012). In the scale development process these items obviously play a vital role.

Methods

Pricing is a cross-functional activity that involves virtually all decision makers within the firm, mainly executives from pricing, marketing, sales, controlling and, increasingly, top management itself. To develop a reliable construct to measure

pricing capabilities, we consequently aim to include a broad basis of respondents in our sample, one able to capture – as much as possible – the diversity of actual pricing decision makers. This intent calls for a broad and diverse empirical base. Consequently, we approach three leading professional organizations in the fields of pricing/marketing, key account management/sales, and, finally, top management with a request to poll their membership. These organizations are the Professional Pricing Society (PPS) for pricing managers, the Strategic Account Management Association (SAMA) for sales/key account managers, and the Young Presidents' Organization International (YPO) for Chief Executive Officers. We conduct these studies in multiple waves from March to July 2011 and obtain a total of 1,812 complete responses on a common set of constructs. Detailed information about each survey follows.

Sample and data collection

Survey 1: Pricing and marketing managers. The PPS is the largest global organization dedicated to the education of pricing professionals. Members are mostly pricing and marketing managers in large, global companies. The president of the PPS endorses our study by encouraging responses to our survey, which the PPS distributes electronically in April 2011 to its database of approximately 18,300 members. We assure respondents of anonymity, attach a cover letter explaining the nature of the research, and mention that respondents will have access to the survey results and analysis on completion of the study. We offer the option to enter into a raffle to win a prize as an inducement for participation. PPS e-mails the link to the survey on our behalf in multiple waves over an eight-week period. About 300 mails bounce. Of the remaining 18,000 surveys, 1,148 are returned partially or fully completed. We determine 748 to be usable for further analysis. The response rate is 4 percent. The Appendix (Table AI) summarizes the sample profile.

Survey 2: CEOs and business owners. Following the total design method (Dillman and Groves, 2009), we send a cross-sectional self-administered electronic survey to 7,897 active members of the YPO. The YPO is a for-profit organization with 18,000 members in 110 countries. Members of YPO must meet eligibility criteria including age (under 45), title (president, chief executive officer, chairman of the board, managing director, and/or managing partner), enterprise value (minimum USD 10 million), number of employees (minimum 50), and annual sales revenues (minimum USD 8 million for sales, service, and manufacturing corporations; USD 160 million for financial institutions). We offer a donation to victims of the then recent earthquake in Japan as an inducement to participation. The typical respondent in this survey is a CEO/president of a small, US-based, private company; detailed information on the sample in this survey is provided in the Appendix (Table AII).

Of the 7,897 targeted surveys e-mailed, 376 are returned as undeliverable. Of the remaining 7,521 surveys, 902 are returned partially or fully completed. The final number of usable surveys is 557. The response rate is 7 percent – similar to response rates reported for previous surveys of upper-echelon executives (Hambrick *et al.*, 1993; Simsek *et al.*, 2010).

Survey 3: Key account and sales managers. SAMA, a professional organization dedicated to the education of strategic account and sales managers worldwide, supports our research by providing access to its database of active members, distributing the survey electronically, and following up with non-respondents.

Respondents in this survey are mostly sales and key account managers from large, global companies. The survey is e-mailed to 7,200 SAMA members in June 2011, and responses are returned over a six-week period. As in Study 1, we offer the option to enter into a raffle to win a prize as an inducement to participation. About 200 e-mails bounce. Of the remaining 7,000 surveys, 723 are returned partially or fully completed. We determine 507 to be usable for further analysis. The response rate of 7 percent is thus again comparatively low given respondent characteristics. The Appendix (Table AIII) provides more information on these respondents.

Through our three quantitative surveys we thus poll CEOs from mostly small companies and marketing, sales, key account, and pricing managers from mostly large companies; all three surveys include respondents from countries around the world, with respondents from the USA accounting for the single largest share in all surveys. To the extent that this will ever be possible, these surveys thus capture a broad base of decision makers probably closely reflecting the diversity of actual decision makers in pricing processes in companies of all sizes today.

Pricing-capabilities scale construction

We develop the scale for pricing capabilities following established item-development procedures and guidelines (Churchill, 1979; Spector, 1992), as shown in Table I. These guidelines involve construct definitions, interpretation, and item generation based on the literature, item refinement using think-aloud exercises proposed by Bolton (1993) and based on pretests, and scale and psychometric analysis based on a large-scale pilot test.

Item generation

Hinkin (1995) recommends starting with a thorough and thoughtful item-generation process when developing a new organizational scale.

Literature search. Our process begins with an online literature search of terms related to “pricing capabilities” and “marketing capabilities.” Our literature search identifies 12 items strictly related to pricing capabilities, as shown in Table II. As discussed, four of these items are from the current pricing-capabilities scale that is part of the larger marketing-capability construct (Morgan *et al.*, 2009). The other eight items are from the literature discussed previously.

Qualitative interviews. Semistructured interviews with 44 managers in 15 industrial firms reveal the importance of building capabilities in pricing (Liozu *et al.*, 2012). Managers in these firms engage in building these capabilities with different intensities depending on their pricing orientation. From the results of these interviews, we extract five additional pricing-capabilities items, as shown in Table II. The combination of a

Table I.
Process summary for scale development

Steps	Scope of Methods	Outcome
Literature Review	Marketing & Pricing Capabilities	12 items Identified
Qualitative Interviews	44 Interviews in 15 Industrial Firms	5 More Items Identified (17 Total)
Pre-test Process	8 Practitioner Interviews Pre-test with 14 Scholars & Practitioners	5 Items Removed
Pilot Survey	70 Completed Surveys	12 Items Included
Quantitative Surveys	3 Surveys with 1812 Total Respondents	12 Items Included
Integrative Analysis	EFA, CFA and Validity Testing	10 Items Recommended

thorough literature search and findings from these qualitative interviews yields 17 pricing-capabilities items in total.

Pretest. We conduct face-to-face interviews with six pricing practitioners using Bolton's (1993) pretesting methodology. We pretest our scale items with a panel of five academics and eight pricing practitioners using a paper-and-pen process. We check for item complexity and understanding, and we validate survey logic and length. We drop five items based on feedback from these experts for lack of relevance.

Pilot. We e-mail the survey with these 12 pricing-capabilities items (see Table III) to over 150 executives. From 92 executives accessing the survey, we obtain 70 complete sets of responses for statistical analysis. Respondents include professionals from the pricing, business, and general manager functions from companies in manufacturing and service industries.

Descriptive statistics show sufficient variability as indicated by standard deviations and very little skewness. A review of response frequencies shows an acceptable and balanced distribution of responses on the survey scales. We create composite items in SPSS to represent our constructs. An analysis of composite variable correlations shows moderate to high levels of correlation between the composite variables, supporting the validity of the conceptual model. We conduct a principal axis factoring with promax rotation on all the constructs composing our conceptual model and represented in the survey instrument. Our pricing-capabilities construct demonstrates an acceptable Kaiser-Meyer-Olkin (KMO) value of 0.84, a good measure of sampling adequacy.

Morgan, Vohries & Mason (2009)

- Using pricing skills and systems to respond quickly to market changes
- Knowledge of Competitors' pricing tactics
- Doing an effective job at pricing product/services
- Monitoring competitors prices and price changes

Koufteros, Vonderembbe & Doll (2002)

- Our capability of selling at price premium
- Our capability of selling at prices above average
- Our capability of selling at high prices that only a few firms can achieve

Dutta, Zbaracki & Bergen (2003)

- Translating pricing strategy to price
- Convincing customers on the price change logic
- Negotiating price changes with major customers
- Developing internal pricing management process
- Capturing value through price

Liozu, Boland, Hinterhuber & Perelli (2011)

- Identifying and evaluating customer value drivers
- Measuring and quantifying value differential versus competition
- Designing proprietary tools to conduct value-in-use analysis
- Designing and conducting specific pricing training for key users and decision makers
- Managing pricing in the product development process (stage-gate)

Table II.

Identification of initial items from literature and qualitative interviews

Table III.
List of pricing-capabilities items in pilot survey

Items	Pricing Capabilities (PC)
PC1	Using pricing skills and systems to respond quickly to market changes
PC2	Knowledge of competitors' pricing tactics
PC3	Doing an effective job of pricing products/services
PC4	Monitoring competitors prices and price changes
PC5	Sticking to price list and minimizing discounts
PC6	Quantifying customers' willingness to pay
PC7	Measuring and quantifying differential economic value versus competition
PC8	Measuring and estimating price elasticity for products/services
PC9	Designing proprietary tools to support pricing decisions
PC10	Conducting value-in-use analysis or Total Cost of Ownership
PC11	Designing and conducting specific pricing training programs
PC12	Developing proprietary internal price management process

Average explained variance is measured at 48 percent, and items composing the constructs have acceptable to high loadings. Finally, our capability construct yields a Cronbach alpha score of 0.885, in line with those identified in the literature.

Analysis and results

We use a combination of IBM SPSS Statistics 19 and IBM AMOS 19 software packages for analysis.

Measurement models

We conduct an EFA on two sample datasets and on the combined dataset to determine whether each of the items, particularly those for the new scales, reliably measures its intended construct. Factor analysis confirms the existence of six factors, with each item loading on its respective factor in support of unidimensionality (Anderson and Gerbing, 1988). Loadings and Cronbach alpha scores are shown in Table IV.

We assess the psychometric properties of the factors derived from the EFA using a CFA to validate the factor structure. The measurement model results, shown in Table V, indicate that the standardized regression weights are greater than 0.58 and all are statistically significant ($p < 0.001$), indicating convergent validity (Bagozzi, 1994). That all of the variables load at levels greater than 0.40 on expected factors also indicates convergent validity (Bagozzi, 1994). Furthermore, without exception, the composite reliability (CR) for our construct exceeds the commonly used norm for acceptable psychometrics (> 0.70). AVE exceeds the average squared variance (ASV) and maximum squared variance (MSV) in all cases except one, providing evidence of discriminant validity.

Table IV.
EFA measurement model results

	Construct	No. of Items	Loadings	Cronbach Alpha
PPS Survey (748)	Pricing Capabilities	10	0.641; 0.672; 0.602; 0.613; 0.718; 0.771; 0.831; 0.601; 0.611; 0.623	0.906
SAMA Survey (507)	Pricing Capabilities	11	0.739; 0.625; 0.613; 0.608; 0.664; 0.790; 0.715; 0.852; 0.557; 0.830; 0.767	0.923
Combined Data Set (1812)	Pricing Capabilities	9	0.552; 0.525; 0.526; 0.652; 0.647; 0.843; 0.664; 0.815; 0.819	0.895

PPS Survey	Cronbach Alpha	Standardized Regression Weights	Standard Error	Critical Ratio	Composites Reliability	Average Variance Extracted	Maximum Shared Variance	Average Shared Variance
Pricing Capabilities (PC)	0.906				0.90	0.48	0.42	0.35
PC1		0.766	0.051	23.998				
PC2		0.653	0.048	19.298				
PC3		0.808	0.041	25.956				
PC4		0.625	0.051	18.228				
PC6		0.694	0.05	20.932				
PC7		0.756	0.048	23.406				
PC8		0.682	0.050	20.384				
PC10		0.607	0.054	17.513				
PC11		0.621	0.056	17.982				
PC12		0.712	0.05	21.448				
SAMA Survey	Cronbach Alpha	Standardized Regression Weights	Standard Error	Critical Ratio	Composites Reliability	Average Variance Extracted	Maximum Shared Variance	Average Shared Variance
Pricing Capabilities (PC)	0.923				0.91	0.55	0.37	0.24
PC3		0.718	0.055	14.949				
PC6		0.704	0.059	14.812				
PC7		0.801	0.054	17.401				
PC8		0.772	0.054	16.944				
PC9		0.755	0.049	20.078				
PC10		0.694	0.06	14.962				
PC11		0.750	0.051	20.078				
PC12		0.730	0.046	20.285				
CEO Survey	Cronbach Alpha	Standardized Regression Weights	Standard Error	Critical Ratio	Composites Reliability	Average Variance Extracted	Maximum Shared Variance	Average Shared Variance
Pricing Capabilities (PC)	0.860				0.85	0.41	0.26	0.132
PC1		0.920	0.692	16.464				
PC2		0.905	0.694	16.888				
PC3		0.888	0.750	18.182				
PC6		0.999	0.660	12.332				
PC7		0.802	0.600	13.005				
PC8		0.759	0.560	13.029				
PC9		0.816	0.553	12.963				
PC12		0.870	0.600	14.158				
Combined Data Set	Cronbach Alpha	Standardized Regression Weights	Standard Error	Critical Ratio	Composites Reliability	Average Variance Extracted	Maximum Shared Variance	Average Shared Variance
Pricing Capabilities (PC)	0.895				0.87	0.49	0.38	0.25
PC1		0.721	0.057	20.766				
PC3		0.818	0.032	30.035				
PC6		0.725	0.038	26.406				
PC7		0.726	0.037	25.023				
PC8		0.656	0.037	23.682				
PC10		0.625	0.042	21.108				
PC12		0.618	0.041	20.766				

 Table V.
Measurement model
results

Pricing capabilities in our structural models

For each study and our combined analysis, our next step is to conduct a structural analysis on the hypothesized causal model, using the constructs and items from the CFA analyses. Structural equation modeling (SEM) is particularly appropriate because it allows estimation of multiple associations, simultaneously incorporates observed and latent constructs in these associations, and accounts for the biasing effects of random measurement error in the latent constructs (Medsker *et al.*, 1994). We use AMOS for two reasons. First, AMOS is useful in studying models with latent variables and measurement errors. Second, AMOS is an effective tool for testing complex simultaneous equations.

In each study and for the combined analysis, we hypothesize a direct positive influence between our pricing-capabilities construct and relative firm performance. Our results (see Table VI) show that our hypotheses are supported across the board. The relationship between pricing capabilities and relative firm performance is positive and highly significant.

The results from our literature search, the qualitative exploration, three quantitative studies, and our combined dataset analysis allow us to reduce the number of items from 17 to 10 following a thorough search, study, and validation process. Table VII presents a summary of the items that are included in all statistical analyses and selected following a rigorous EFA and CFA analysis. We reject two items from the 12 tested on the basis that they need to be included in at least two quantitative analyses: items 4 and 5 are therefore rejected. Table VIII shows the final list of pricing-capabilities items generated.

Table VI.
Regression weight in research models

Study	Hypothesized Paths	Regression Estimates	Standardized Estimate	Critical Ratio	Hypothesis Supported
PPS Survey	Pricing Capabilities to Relative Firm Performance	0.299	0.341***	9.530	Yes
SAMA Survey	Pricing Capabilities to Relative Firm Performance	0.318	0.381***	7.990	Yes
CEO Survey	Pricing Capabilities to Relative Firm Performance	0.420	0.440***	11.479	Yes
Combined Data Set	Pricing Capabilities to Relative Firm Performance	0.427	0.666***	30.232	Yes

Table VII.
Summary table of item selection

	PPS	SAMA	CEO	Combined	Status
PC1	X		X	X	Keep
PC2	X		X		Keep
PC3	X	X	X	X	Keep
PC4	X				Reject
PC5					Reject
PC6	X	X	X	X	Keep
PC7	X	X	X	X	Keep
PC8	X	X	X	X	Keep
PC9		X	X		Keep
PC10	X	X		X	Keep
PC11	X	X			Keep
PC12	X	X	X	X	Keep

Discussion and implications

The objective of this paper is to document the design, development, and validation of a dedicated pricing-capabilities scale, PRICECAP, to be used for future research. Our methodological approach, supported by robust statistical validation, allows us to recommend a list of ten pricing-capabilities items based on qualitative and quantitative research.

Our results also support the resource-based theory that pricing capabilities positively and significantly influence firm performance *vis-à-vis* competition. Previous studies on marketing capabilities suggest a positive link between pricing capabilities – a subset of marketing capabilities – and firm performance (Morgan *et al.*, 2009; Vorhies and Morgan, 2005). However, these studies measure pricing capabilities as part of a much wider subset of marketing capabilities. Other studies investigate pricing capabilities using case-study or qualitative – but not quantitative – research methods. Our inquiry is unique in that we develop and validate via quantitative research a robust pricing-capabilities construct that can be used in future studies; we are also able to link pricing capabilities to relative firm performance via a causal model.

In this study we extend our understanding of pricing capabilities by developing and testing a parsimonious ten-item scale, PRICECAP. Unlike previous measures, our construct includes items related to internal pricing processes and skills, items related to understanding competitors, and items related to understanding customer needs and customer willingness to pay. The reliability and validity tests indicate that the ten-item PRICECAP scale has sound and stable psychometric properties. The PRICECAP scale also confirms current qualitative research suggesting that pricing capabilities are a complex bundle of routines, processes, and activities that comprise a strong customer orientation, a strong understanding of competitor prices, and robust internal processes related to price setting, pricing tools, and training.

For practicing managers this scale has very important implications. Within General Electric, for example, pricing has today fully captured the attention of the company's CEO, Jeff Immelt. He states: "A good example is what we're doing to create discipline around pricing [...] When it comes to the prices we pay, we study them, we map them, we work them. But with the prices we charge, we're too sloppy" (as quoted in Stewart, 2006, p. 62). Jeff Immelt has appointed a Chief Pricing Officer responsible for, among other tasks, analyzing and developing pricing capabilities across business units and countries.

Items	Pricing Capabilities (PC)
PC1	Using pricing skills and systems to respond quickly to market changes
PC2	Knowledge of competitors' pricing tactics
PC3	Doing an effective job of pricing products/services
PC4	Quantifying customers' willingness to pay
PC5	Measuring and quantifying differential economic value versus competition
PC6	Measuring and estimating price elasticity for products/services
PC7	Designing proprietary tools to support pricing decisions
PC8	Conducting value-in-use analysis or Total Cost of Ownership
PC9	Designing and conducting specific pricing training programs
PC10	Developing proprietary internal price management process

Table VIII.
Final pricing-capabilities
scale

Our scale, PRICECAP, offers an instrument with which to analyze an organization's pricing capabilities over time and across geographical boundaries; compare pricing capabilities both within and across firms; and plan and implement measures to develop pricing capabilities further. Since our research suggests that pricing capabilities and firm performance are positively linked, this scale is thus a useful instrument that will allow senior executives to increase their company's performance via pricing.

Our scale enables executives to assess pricing capabilities of different business units or country organizations, to benchmark these capabilities with capabilities of other organizational units or other companies (e.g. a peer group), and to plan and implement specific measures to further develop pricing capabilities. To illustrate: as a result of measuring pricing capabilities (see Table VIII), an organization might find that it has well-developed capabilities in the area of reacting quickly to market changes and of understanding competitor prices (scale items PC1 and PC2), but that it scores very poorly on understanding customer willingness to pay, understanding the economic value of products to customers, and understanding price elasticity (scale items PC4, PC5, and PC6). As a result, our scale would thus allow this company to implement very specific measures to improve pricing capabilities. In this example, our scale would suggest increasing the understanding of customer willingness to pay via, for example, customer value-in-use assessments or a conjoint analysis; increasing the company's ability to quantify the economic value of its products via, for example, expert estimates or field-value-in-use assessments; and, finally, gaining insights on price elasticity via, for example, qualitative estimates or market surveys. In sum, this scale clearly highlights in which of the three critical dimensions of pricing (Hinterhuber, 2004) – the customer, the company, the competition – a company already has well-developed capabilities and in which areas these capabilities need to be developed further. This research also shows that developing pricing capabilities improves organizational performance.

Opportunities for further research include studies examining the organizational antecedents of pricing capabilities – including the role of corporate culture, incentive systems, and goal structures – as well as studies that use CEOs as a sample in order to shed more light on the role of top executives as architects of pricing capabilities. Finally, studies examining the micro-foundations of pricing capabilities and the roles of individual actors in developing firm-level competitive advantages appear particularly interesting.

Limitations

This is the first study proposing a quantitative scale to measure pricing capabilities and linking these capabilities to firm performance. Nevertheless, this study has limitations. First, the performance measures are perceptual. Perceptual performance measurements can be highly indicative of actual performance (Dess and Robinson, 1984), but are nevertheless potentially problematic, since in this study we lack information about actual prior-year firm performance. Second, because our survey is self-administered, the results may not reflect what respondents actually do when managing the pricing process. Babbie (2007, p. 276): "Surveys cannot measure social action: they can only collect self-reports of recalled past action or of prospective or hypothetical action". Third, no statistical test can ensure a bias-free analysis (Podsakoff *et al.*, 2003). Although we attempt to minimize common method bias, we cannot exclude it since we lack multiple respondents from each participating company.

The final limitation is our response rates: we aggregate responses from three different surveys with response rates ranging from 4 percent (pricing managers) to 7 percent (key account managers and CEOs). Only the response rate for the survey of CEOs is in line with response rates of comparable surveys; the response rates for the other two surveys are considerably lower than the typical reported response rates of 20 percent for middle managers.

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Appendix

Characteristics of survey samples.

Main Activity	Count	%	Function of Respondents	Count	%
Manufacturing Firm	415	55%	General Management	65	9%
Service Organization	206	28%	Marketing and Sales	177	24%
Distribution/Retail Company	107	14%	Finance and Accounting	29	4%
Missing Data	20	3%	Pricing and Revenue Management	427	57%
Nature of Firm	Count	%	Administrative and Operations	27	4%
Publicly Traded	437	58%	Missing	23	3%
Privately Owned	257	34%	Geography of Firm HQ	Count	%
Both	25	3%	North America	508	68%
Do Not Know	9	1%	Latin America	10	1%
Missing	20	3%	Europe	180	24%
Firm Size - Employees Numbers	Count	%	Asia Pacific	21	3%
Less Than 250	78	10%	Middle East/Africa	2	0%
251 to 500	43	6%	Missing	27	4%
501 to 1,000	45	6%	Geography of Respondent's Location	Count	%
1,001 to 10,000	233	31%	North America	532	71%
More than 10,000	329	44%	Latin America	22	3%
Missing	20	3%	Europe	140	19%
Total Respondents		748	Asia Pacific	25	3%
			Middle East/Africa	2	0%
			Missing	27	4%

Table AI.
Survey 1 with pricing,
marketing and business
professionals

Main Activity	Count	%	Background of Respondents	Count	%
Manufacturing Firm	179	32%	Business Management	212	38%
Service Organization	174	31%	Marketing and Sales	63	11%
Distribution/Retail Company	88	16%	Finance and Accounting	77	14%
Missing Data	116	21%	Technical and Engineering	89	16%
Nature of Firm	Count	%	Missing	116	21%
B2B	268	48%	Age of the Firm	Count	%
B2C	79	14%	Less than 5 Years	23	4%
Both	90	16%	5 to 10 Years	35	6%
Do Not Know	4	1%	10 to 25 Years Old	111	20%
Missing	116	21%	25 to 50 Years Old	123	22%
Firm Size - Employees Numbers	Count	%	More than 50 Years Old	149	27%
Less Than 250	220	39%	Missing	116	21%
251 to 500	95	17%	Gender	Count	%
501 to 1,000	59	11%	Male	408	73%
1,001 to 10,000	54	10%	Female	33	6%
More than 10,000	13	2%	Missing	116	21%
Missing	116	21%	Ownership Nature	Count	%
Geography of Respondent's Location	Count	%	Publicly Traded	50	9%
North America	265	48%	Privately Owned	384	69%
Latin America	32	6%	Both	5	1%
Europe	59	11%	Unsure	2	0%
Asia Pacific	49	9%	Missing	116	21%
Middle East/Africa	36	6%	Total Respondents	557	
Missing	116	21%			

Table AII.
Survey 2 with CEOs and
business owners

Main Activity	Count	%
Manufacturing Firm	306	60%
Service Organization	166	33%
Distribution/Retail Company	30	6%
Not Sure	5	1%
Position of Leadership (Y/N)	Count	%
Yes	346	68%
No	153	30%
Missing	8	2%
Firm Size - Employees Numbers	Count	%
Less Than 250	77	15%
251 to 500	42	8%
501 to 1,000	48	9%
1,001 to 10,000	138	27%
More than 10,000	197	39%
Not Sure	5	1%
Geography of Respondent's Location	Count	%
North America	314	62%
Latin America	13	3%
Europe	115	23%
Asia Pacific	41	8%
Middle East/Africa	16	3%
Not Sure	8	2%
Total Respondents	507	

Table AIII.
 Survey with sales and account management professionals

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