THE DIMENSIONALITY OF ORGANIZATIONAL PERFORMANCE AND ITS IMPLICATIONS FOR STRATEGIC MANAGEMENT RESEARCH

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ABSTRACT

Organizational performance is widely recognized as an important – if not the most important – construct in strategic management research. Researchers also agree that organizational performance is a multidimensional construct. However, the research implications of the construct's multidimensionality are less understood. In this chapter, we use a synthesis of previous attempts to describe the dimensions of performance and our own analysis of performance measurement in the Strategic Management Journal to build a conceptual model of organizational performance and its dimensions. Our model suggests that operational performance and organizational performance are distinct, and that organizational performance can be further dimensionalized into accounting returns, stock market, and growth measures. The model has implications for how future

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research might advance understanding about performance and how empirical studies should conceptualize and measure performance.

Organizational performance is an important, if not the most important, construct in strategic management research (Rumelt, Schendel, & Teece, 1994). Indeed, the focus on performance differentiates strategic management from other fields (Meyer, 1991); the *raison d'être* of strategic management research is to increase understanding about the determinants of organizational performance and explain how managers can create superior performance (Meyer, 1991). To advance, therefore, the strategic management field must cumulate knowledge regarding theories that help explain organizational performance and prescribe ways that managers can adjust strategies to improve organizational performance (Carlson & Hatfield, 2004; Rumelt et al., 1994).

A key challenge in explaining organizational performance and making valuable managerial prescriptions, however, is the significant two-way interrelationship between theory development and construct measurement (Venkatraman & Grant, 1986). The utility of a construct for theory development depends on a tradeoff between its definitional scope and parsimony (Bacharach, 1989). Parsimoniously defined constructs have limited utility because fewer hypotheses follow logically. Overly broad construct definitions, however, create measurement problems wherein competing measures of the same theoretical construct might have little relationship (Schwab, 1980). Although there is a large and growing body of strategic management research, little attention has been paid toward conceptualizing and measuring key constructs (Hitt, Boyd & Li, 2004). Consequently, researchers possess too much discretion when choosing among alternative measures, which has led to excessive variance across findings and limited the field's ability to accumulate knowledge (Boyd, Gove & Hitt, 2005).

The need for conceptual clarity regarding a construct's boundaries, dimensionality, and appropriate measures appears particularly important when the construct in question is central to an entire field of inquiry, such as organizational performance is for strategic management (Rumelt et al., 1994). If the mission of strategic management research is developing and testing theory explaining organizational performance, and this can only be accomplished when key constructs are well understood, then strategic management research can only fulfill its mission once there is a common understanding regarding how to conceptualize and measure organizational performance.

Schwab (1999) suggests that there are two main requirements to gain a common understanding of a construct. The first requirement is to provide a "dictionary-like statement" that explains a construct's domain (p. 32). To date, the domain of organizational performance has been defined very broadly as the social and economic outcomes resulting from the interplay among on organization's attributes, actions, and environment (Andrews, 1971; Hrebiniak, Joyce & Snow, 1989). Such a broad domain allows researchers to claim any social or economic outcome measure that can reasonably be tied to an organization or its environment, which reduces the utility of organizational performance as a construct (Bacharach, 1989).

A key second requirement to gaining a common understanding of a construct is measure validation (Schwab, 1999). Measure validation involves establishing content, convergent, and discriminant validity. Content validity is present when experts agree that measures fall within the construct's domain. Convergent validity is present when there is a high degree of agreement among two or more different measures of the same construct, and discriminant validity is present when measures of different constructs do not converge.

Unfortunately, evidence thus far suggests that the validity of competing measures of organizational performance is quite low (e.g., Rowe & Morrow, 1999). The strategic management literature is replete with different and frequently unrelated organizational performance measures (Maltz, Shenhar & Reilly, 2003; Starbuck, 2004; Venkatraman & Ramanujam, 1986). When multiple measures of the same construct are unrelated, the construct's validity is dubious. The measures might depict different dimensions of a broadly defined construct, but if the dimensions are unspecified and their boundaries unknown, there is no way for researchers to reconcile the seemingly conflicting findings that result naturally (Boyd et al., 2005; Hunter & Schmidt, 1990).

Despite the apparent need to improve how we conceptualize and measure organizational performance, little research attention has been devoted to advancing our understanding of the construct. We take a step forward by developing a model of organizational performance and its dimensions. The model is built on our synthesis of prior studies describing the dimensions of performance and our own analysis of performance measurement in the *Strategic Management Journal* (*SMJ*). Our central theme is that once researchers arrive at a consensus regarding the boundaries and dimensions of organizational performance, the dimensions should form the basis for accumulating evidence regarding theories of organizational performance. Instead of expecting an organizational action (e.g., strategy) or

environmental attributes (e.g., dynamism) to affect the overall organizational performance, theory can be developed explaining how different performance dimensions are affected by a given phenomenon. Based on our model, we offer advice regarding how strategic management researchers can design primary research that best helps the field achieve its mission to accumulate knowledge about the determinants of organizational performance.

EFFORTS TO UNDERSTAND ORGANIZATIONAL PERFORMANCE

Prior efforts to describe organizational performance can be traced back to organizational theorists' investigations of "organizational effectiveness" (Cameron & Whetten, 1981; Steers, 1975). Organizations were viewed as effective if they satisfied their stated goals (Lewin & Minton, 1986). But goals, such as profitability and growth or increased employee wages and lower prices, often conflict. Organizational effectiveness similarly encompasses the satisfaction of stakeholders with conflicting agendas. By including the satisfaction of competing goals and stakeholder claims within the construct's definition, organizational theorists found it difficult to empirically distinguish between effective and ineffective organizations, and little consensus emerged among researchers as to how to best measure effectiveness (Cameron, 1986; Chakravarthy, 1986).

Venkatraman and Ramanujam (1986) attempted to narrow the measurement domain for strategic management researchers with a model consisting of three concentric circles. The outer circle is organizational effectiveness, which they argued is too broad in scope to be practically applied in strategic management research. The middle circle is operational performance, which is represented by nonfinancial indicators of specific areas of organizational operations, such as product quality, innovation, or marketing outcomes. The innermost circle is financial performance, which includes measures relating to economic outcomes such as sales growth, accounting returns (e.g., return on investment (ROI)), and the stock market.

Because of the applied nature of strategic management research and the empirical difficulties with organizational effectiveness that stem from its inherently conflicting elements, Venkatraman and Ramanujam (1986) urged strategic management researchers to focus on the measurement domain identified by the inner two circles. However, they also recognized that even within the operational and financial performance circles there are numerous

operational (e.g., innovation or marketing) and financial (e.g., asset growth or accounting returns) performance outcomes, and measures of such outcomes often do not converge. Thus, even within these two measurement domains, substantial multidimensionality remains. Consequently, they suggested that researchers should either "explicitly test the dimensionality of their conception of business performance" or use "an a priori classification which recognizes the dimensionality issue" (p. 807).

Some researchers have taken Venkatraman and Ramanujam's advice to test the dimensionality of performance. For example, in a sample of new ventures, Florin, Lubatkin and Schulze (2003) examined the influence of human and social capital on both accounting returns and sales growth. They found support for the hypothesized effects of human and social capital on accounting returns, but not for sales growth. Robinson and McDougall (1998) similarly found that the degree of product differentiation influences accounting returns, but not the sales growth of industry participants.

However, Venkatraman & Ramanujam's (1986) suggestion that researchers use "an a priori classification which recognizes the dimensionality issue" (p. 807) has not been followed. Excluding studies that focus on organizational effectiveness, we found only five studies that attempted to build a classification of the underlying dimensions of organizational performance (e.g., Maltz et al., 2003; Murphy, Trailer & Hill, 1996; Rowe & Morrow, 1999; Tosi, Werner, Katz & Gomez-Mejia, 2000; Woo & Willard, 1983). One conducted a qualitative review (e.g., Murphy et al., 1996) and the other four used empirical analyses to derive related, but distinct performance dimensions. Table 1 highlights key similarities and differences across the studies.

Based on a review of the entrepreneurship literature, Murphy et al. (1996) identified four main performance dimensions: (1) efficiency (e.g., return on equity (ROE)), (2) growth (e.g., sales growth), (3) profitability (e.g., net income), and (4) size (e.g., net sales). They also suggested survival as an additional dimension. Of the four empirical analyses, three studies used factor analysis. Woo and Willard (1983) factor analyzed 14 performance measures using PIMS data and found four dimensions: (1) profitability (e.g., return on sales (ROS)), (2) relative market position (e.g., product quality vis-à-vis competitors), (3) change in profitability and cash flow (e.g., ROI variability), and (4) growth in sales and market share (e.g., market share gain). Similarly, Tosi et al. (2000) factor analyzed 30 performance measures using COMPUSTAT data to identify eight dimensions. Rowe and Morrow (1999) used confirmatory factor analysis to show that: (1) subjective (e.g., *Fortune* reputation surveys), (2) financial/accounting (e.g., return on assets

Table 1. Organizational Performance Studies.

Study	Dimensions Identified	Measures	Approximate Equivalent Dimension in Figure 1
Woo and Willard (1983)	Profitability	ROI, ROS, Cash flow to investment	Accounting returns
	Relative market position	Product quality, new product development, and costs vis-à-vis competitors, product R&D, process R&D	Marketing and sales, operations, and infrastructure outcomes
	Change in profitability and cash flow	Variation in ROI and cash flow to investment ratio	Accounting returns
	Growth in sales and market share	Revenue growth, market share, market share gain	Growth
Murphy, Trailer, and Hill (1996)	Efficiency	ROE, ROI	Accounting returns
	Liquidity	Quick ratio, current ratio	Firm (financial) capability, not a performance dimension
	Profit	EPS, net income	Accounting returns
	Size	Net sales, number of employees	Size, not a performance dimension
Rowe and Morrow (1999)	Subjective	*Fortune* reputation survey on management quality, financial soundness, value as long term investment, wise use of corporate assets	Operational effectiveness
	Financial (accounting)	ROA, ROI, cash flow over equity	Accounting returns
	Market	Sharpe, Treynor, Jensen's alpha/ unsystematic risk	Stock market

Tosi, Werner, Katz, and Gomez-Mejia (2000)	Absolute financial performance	Pre-tax profits, net income, stock price change	Accounting returns, size, and stock market
	Change in financial performance	Change in pre-tax profits, change in ROE, changes in net income	Profit growth
	Stock performance	EPS, 5 year average EPS, 5 year average EPS vs. industry average	Accounting returns/growth hybrid
	Return on equity – short term	ROE, ROE vs. industry average	Accounting returns
	Return on assets	ROA, ROA vs. industry average	Accounting returns
	Return on equity – long term	5 year average ROE, 5 year average ROE vs. industry average	Accounting returns
	Market returns	2 year average market return, market return	Stock market
	Internal performance indicators	Changes in working capital, market to book	Infrastructure outcomes and stock market
Maltz, Shenhar, and Reilly (2003)	Financial	Sales revenue, profit margin, revenue growth	Accounting returns and growth
	Market/customer	Customer satisfaction index, customer retention rates, service quality	Service outcomes
	Process	Time to market, quality of NPD and project management processes	Infrastructure and operations outcomes
	People development	Retention of top employees, quality of leadership development	Human resources outcomes
	Future	Depth of quality of strategic planning, anticipating/preparedness for environmental changes	Infrastructure outcomes

(ROA)), and (3) market (e.g., Sharpe ratio) performance measures were distinct, but still significantly related to an overall latent performance construct. Finally, Maltz et al. (2003) surveyed senior managers to derive five performance dimensions.

Overall, these studies agree that performance is a multidimensional construct, but the actual dimensions identified appear to depend on the analytical method (qualitative vs. quantitative), data source, and measures examined. Rowe and Morrow (1999) examined 10 measures and found 3 dimensions, Woo and Willard (1983) examined 14 measures and found 4 dimensions, and Tosi et al. (2000) examined 30 measures and found 8 dimensions. Thus, examining more measures appears to lead to the conclusion that there are more distinct dimensions, which further illustrates the low level of convergent validity among the wide variety of available alternatives.

The studies also combine different measures into similarly labeled dimensions. For example, Maltz et al. (2003) classify total sales, accounting returns, and sales growth under "financial," whereas Woo and Willard (1983) include accounting returns and sales growth, but not total sales, under "profitability," and Rowe and Morrow (1999) limit their "financial" dimension to just accounting returns. Thus, in each of these attempts to develop an a priori classification of organizational performance dimensions, there is not only disagreement regarding the number of dimensions, but also differences regarding the name of each dimension and which measure(s) belong to each dimension.

Nevertheless, some commonalities are discernable among the dimensions identified. First, each study points toward accounting returns (e.g., ROA) as all or part of one or more dimensions. Second, there is preliminary evidence that growth is a distinct dimension. Specifically, although two studies combine sales growth and accounting return measures, two others treat growth as a unique dimension – though one study uses sales growth whereas the other uses market share growth. Third, the two empirical studies that include stock market measures found that these are distinct from accounting returns and growth. Indeed, Tosi et al. (2000) described two separate stock market dimensions. Finally, two of the studies separate operational performance from organization-wide performance. Consistent with the notion that operational performance corresponds to firms' different operational activities, managers surveyed by Maltz et al. (2003) identified four distinct operational performance dimensions. Woo and Willard (1983) also identified a distinct operational performance dimension. The notion that operational performance should be considered outside the domain of organizational performance is also consistent with recent efforts to focus

resource-based theory on operational instead of organizational performance (Ray, Barney & Muhanna, 2004), and with calls for study of the relationship between operational performance and organizational performance (Priem & Butler, 2001).

Taken together, these studies point toward a broad consensus that performance is multidimensional and also begin to uncover the dimensions. There appears to be some agreement that accounting returns form at least one distinct performance dimension, and preliminary evidence that growth and stock market measures form at least two additional dimensions. Further, operational performance appears distinct from and outside the domain of organizational performance. Pulling together the findings of these initial efforts is an important first step. However, given that consensus regarding the dimensionality of key constructs is a prerequisite for theoretical development (Venkatraman & Grant, 1986), further efforts to increase understanding seem warranted. Indeed, more effort is needed to establish the dimensions of organizational performance. To this end, we offer an exploratory investigation of how organizational performance has been measured in extant strategic management research. Based on the information provided in the studies above, we also examined how the measures either converge with or discriminate from one another.

METHOD

We limited our analysis to articles published in the *SMJ* because of its reputation for publishing high-impact research and because we are confident that articles published in *SMJ* fall within the domain of strategic management (Shook, Ketchen, Cycyota & Crockett, 2003).

The analysis proceeded in three steps. First, we followed Steers' (1975) recommendation that in order to understand a construct, researchers must "consider how researchers have operationalized and measured the construct" (p. 546). Thus, we examined a random one half of the articles published in *SMJ* from its first issue in 1980 through October 2004 and recorded every performance measure used. Following Venkatraman and Ramanujam (1986), we coded a measure as a performance measure if it fell within the financial or operational circle of their model. We considered a measure operational if it reflected an outcome that could be tied to a specific value chain activity as described by Porter (1985), but did not reflect the interactive outcome of all value chain activities. Measures that depict outcomes attributable to the interaction among all value creation activities and the organization's environment were treated as organizational performance measures.

The second step of the analysis was to examine all studies published in *SMJ* from the first issue in 1980 through October 2004 and record all reported correlations between different organizational performance measures. We did this in order to examine how performance measures were related (i.e., converge or discriminate), and to determine if patterns emerged regarding relationships among measures. Whenever we found multiple studies that reported a correlation between the same two measures, we used meta-analysis to obtain an estimate of the overall weighted correlation between measures. For example, we found nine studies that reported a correlation between ROA and ROS. Following Hunter and Schmidt (1990), we calculated the sample-size weighted mean correlation between ROS and ROA for the nine studies. This procedure offers a greatly improved estimate of the actual population correlation. We focused on correlations among organizational measures because there were too few operational performance measures to conduct a meaningful analysis. Even among organizational measures, no study reported a correlation for many two-measure combinations, such as market-to-book value (MB) and operating margin (OM). The result was a partially complete correlation matrix that summarizes the known correlations to date, as reported in *SMJ*, between alternative organizational performance measures.

In the third step, we took the correlations from those measures where we had a complete correlation table and entered them into a confirmatory factor analysis. We did this to assess the dimensionality of organizational performance using the enhanced correlation estimates obtained from the meta-analyses. There were six measures – ROA, ROS, ROI, ROE, annual stockholder returns, and sales growth – where at least one study reported a correlation for each cell of the correlation table. The correlation table created from the meta-analysis of correlations among these six variables was entered into a confirmatory factor analysis using LISREL. The *n*-size was determined using the geometric mean of the total sample size upon which the meta-analytic correlations were derived. The geometric mean is a conservative measure of central tendency appropriate for cases where sample size varies dramatically (Hedges & Olkin, 1985).

RESULTS

Table 2 shows the variety of performance measures that have been used in *SMJ*. Overall, 56 different measures were used to depict operational or organizational performance. Of the 374 studies examined, 238 were

Table 2. Organizational and Operational Performance Measures.

	Frequency		Frequency
Organizational Performance Measures (367)			
Accounting returns	52%	*Growth*	17%
Return on assets	64	Sales	38
Return on sales	34	Profit	10
Return on equity	26	Market share	7
Return on investment	15	Employment	3
Operating margin	14	Growth scale[a]	3
Net income	13	Assets	2
Profit scale[a]	9	Earnings per share (EPS) growth	2
Combined accounting measures	5		65
Cash flow/assets	4	*Hybrids*	5%
Earnings per share	3	Growth/market share scale[a]	6
Net income/employees	2	Financial/growth scale[a]	5
Cash flow/sales	1	Stock price/earnings (P/E)	2
	190	Overall performance scale[a]	2
Stock market	11%	Cash flow/market value	1
Stock returns	15		16
Market to book value (Tobins Q)	15	*Survival*	6%
Jensen	5	Failure	21
Sharpe	2	Bankruptcy	1
Treynor	2		22
Security analyst assessments	1	*Other*	9%
	40	Market share	34
Operational Performance Measures (83)			
Marketing	10%	*Technology development*	11%
Sales/x[b]	7	Number of new products	5
Repeat business	1	IT performance scale[a]	1
	8	New product development time	1
Outbound logistics	5%	New product sales growth	1
Delivery time	2	Innovation scale[a]	1
Export performance scale[a]	1		9
Export sales	1	*Infrastructure*	2%
	4	Board effectiveness scale[a]	1
Operations	31%	Collaborative success scale[a]	1
Product quality scale[a]	10		2
Occupancy/load rate	4	*Hybrids*	39%
Costs/x[c]	3	Cumulative abnormal returns	26
Change in costs	3	Employee satisfaction[a]	6
Accident rate	2		32
Patents	2	*Human resources*	1%
Labor costs/x[c]	2	Employee turnover	1
	26		
		Service quality	1%
		Customer satisfaction	1

[a]Indicates survey measures.
[b]Indicates survey measures that depict the scale of marketing activities, such as firm marketing expenses.
[c]Indicates survey measures that depict the scale of production, such as sales in units or dollars.

empirical studies that measured performance a total of 450 times. The focus was on organizational performance 82% of the time, reflecting the field's interest in the relationships between internal firm activities and external environmental influences on performance (Andrews, 1971). Of the times organizational performance was measured, 52% examined accounting returns, 17% reflected growth over a period of time, 11% measured either stock market returns or value, market share was used 9% of the time, 6% depicted organizational survival, and 5% were hybrid measures that blended elements of accounting returns, growth, and stock market returns. Among the 83 instances operational performance examined, 31% were cumulative abnormal returns (CARs) to shareholders following specific events that can be tied to a single value chain activity. Wright, Ferris, Hiller and Kroll (1995), for example, contrasted shareholder reactions to winning a diversity program award with reactions to losing a discrimination lawsuit, and O'Shaugnessy and Flanagan (1998) investigated reactions to layoff announcements. Both examples reflect shareholder reactions to activities within the human resource value chain activity. If CARs are removed as a special case, 46% of the remaining instances focused on firm operations, 19% of these on product or service quality. In sum, Table 2 indicates that strategic management researchers have used a wide variety of performance measures, but the majority are organization-wide measures, and over half of these depict accounting returns.

Table 3 shows the partially complete correlation matrix from the meta-analysis of studies that report correlations between two or more organizational performance measures. We grouped the correlations into the three dimensions found in our review of prior studies of the dimensionality of performance (Table 1 (i.e., accounting returns, stock market, and growth)) – followed by measures that did not fall clearly into the major dimensions (i.e., market share, survival, and subjective measures of overall performance).[1]

The intragroup correlations among the accounting return measures were the strongest with the lowest correlation between ROE and OM at $r = 0.54$. In contrast, the highest correlation between any accounting return and any stock market measure is between ROA and market to book (MB) at $r = 0.32$. Although the relationship between accounting returns and profit growth is $r = 0.63$ for both ROA and ROE, the highest sales growth correlation is with OM at $r = 0.34$. Finally, accounting returns correlate between $r = 0.22$ (ROE) and $r = 0.40$ (ROI) with market share, close to zero (i.e., between $r = 0.06$ (ROA) and $r = 0.09$ (ROS)) with survival, and range between $r = 0.55$ (ROA) and $r = 0.76$ (ROS) with subjective survey

Table 3. Correlations among Organizational Performance Measures.

	ROA	ROS	ROE	ROI	OM	EPS	Stock	MB	Jensen	Sharpe	Treynor	Sales Growth	MS Growth	Profit Growth	Market Share	Survival	Subjective	P/E
Accounting returns																		
ROA	**1**	9/2237	10/3440	5/780	3/394	1/562	8/1150	8/1811	4/585			12/1752		2/150	7/2125	1/1588	4/315	1/80
ROS	0.87**	**1**	1/110	1/110	1/25		2/58	3/412	2/358			3/179				1/1588	1/42	
ROE	0.6**	0.6**	**1**	3/161	1/90		1/80	2/441				5/859		1/286	1/133			
ROI	0.83**	0.8**	0.73**	**1**	1/90		1/117					3/519			2/490			
OM	0.61**	0.84**	0.54**	0.83**	**1**							1/25						
EPS	0.8**					**1**												
Stock market																		
Stock	0.29**	0.19**	−0.11	0.24**			**1**					1/51		1/181				
MB	0.32**	0.23	0.1			0.57**		**1**	2/209			3/362			1/133			
Jensen	0.27**	0.19**						0.06*	**1**	1/200	1/200							
Sharpe									0.9**	**1**	1/200							
Treynor									0.87**	0.84**	**1**							
Growth																		
Sales Growth	0.32**	0.33**	0.16*	0.25	0.34		0.13	0.02				**1**	1/205	3/387	1/133	1/973	1/105	
MS Growth												0.8**	**1**					
Profit Growth	0.63**		0.63**				0.89**					0.53**		**1**	1/205			
Hybrids and Other Measures																		
Market Share	0.37**		0.22**	0.4*				0.24**				0.01		0.56**	**1**			
Survival	0.06*	0.09**										−0.01				**1**		
Subjective	0.55**	0.76**										0.57**					**1**	
P/E	0.18																	**1**

Note: Correlations are below the diagonal and the number of studies/total sample size are above the diagonal.
ROA = Return on Assets, ROS = Return on Sales, ROE = Return on Equity, ROI = Return on Investment, OM = Operating Margin, EPS = Earning per share, Stock = Stock Returns, MB = Market-to-Book Value, Jensen = Jensen's Alpha, Sharpe = Sharpe Ratio, Treynor = Treynor Index, Sales Growth = Sales Growth, MS Growth = Market Share Growth, Profit Growth = Profit Growth, Subjective = Subjective Survey Measure and P/E = Price to Earnings Ratio.
*$p < 0.05$.
**$p < 0.01$.

measures of overall performance. Overall, measures of accounting returns show evidence of convergent validity and, with the exception of profit growth, discriminant validity from other performance dimensions. Also, accounting returns appear to figure prominently in managers' survey evaluations of overall performance.

One study showed high convergent validity among Jensen's alpha, the Treynor index, and the Sharpe ratio,[2] but no study relates these measures to actual shareholder returns, which is a more common stock market measure in strategic management research (38%, Table 2). Also, although MB is a fairly common stock market measure (38%, Table 2), there is evidence it is unrelated to Jensen's alpha ($r = 0.06$). Thus, evidence of convergent validity among alternative stock market measures is mixed. Finally, although the evidence suggests discriminant validity between stock market measures and accounting returns, based on two separate studies, stock measures appear strongly related to profit growth ($r = 0.89$) but not sales growth ($r = 0.13$). No correlations were available between stock market measures and market share, survival, or subjective measures of overall performance. Overall, stock market measures discriminate from accounting returns and sales growth, but not profit growth, and evidence of convergent validity is mixed.

Among growth measures, sales growth was highly related to market share growth in one study ($r = 0.80$), but sales growth and profit growth were only related at $r = 0.53$. Further, the few studies that related profit growth to other performance dimensions report that it is related to accounting returns (i.e., $r = 0.63$ for both ROA and ROE) and annual stock returns ($r = 0.89$), whereas the most common growth measure, sales, is not. The only other performance measure related to sales growth appears to be managers' subjective assessments of overall performance at $r = 0.57$. Overall, growth measures demonstrate good convergent and discriminant validity only once profit growth is removed. The data suggest that whereas profit growth is only moderately related to any other growth measure, it is also moderately related to accounting returns and strongly related to a stock market measure.

As for the last three measures in Table 3, market share is a measure of a firm's relative size within its industry (Lenz, 1981). Thus, it is arguably not a performance measure (Buzzell, Gale & Sultan, 1975). It was included, however, because of its frequent use as such. Not surprisingly, given the effect of size on profits via economies of scale (Buzzell et al., 1975), market share shows significant correlations with accounting returns (from $r = 0.22$ for ROE to $r = 0.40$ for ROI). Only one study reported correlations between survival and accounting returns and another reported a correlation with

sales growth; each was close to zero. Thus, preliminary evidence suggests survival is independent of the other dimension.

In the third analysis, we entered the correlations of the six performance measures for which we had complete correlations (i.e., ROA, ROS, ROE, ROI, stock returns, and sales growth) into a confirmatory factor analysis. Based on the literature review of prior studies that dimensionalize performance (Table 1) and our examination of the correlations (Table 3), we initially predicted that ROA, ROS, ROE, and ROI would comprise one factor, and stock market returns and sales growth would load on two additional factors. We used LISREL to conduct the confirmatory factor analysis and assessed the three aspects of model fit (i.e., absolute, incremental, and parsimonious; Hair, Anderson, Tatham & Black, 1998) using four indices: Chi-square, goodness of fit index (GFI), adjusted goodness of fit index (AGFI), and normed fit index (NFI). Despite adjusting for sensitivity to sample size, the chi-square indicated poor model fit ($\chi^2 = 79.93$, df $= 8$, $p < 0.00$). The GFI (0.88) and NFI (0.88) were close to the recommended level of 0.90, but the AGFI (0.69) was not. We then tested a model that separated ROE from ROA, ROS, and ROI, and treated ROE as a distinct factor. This model was also not supported ($\chi^2 = 52.97$, df $= 6$, $p < 0.00$, AGFI $= 0.71$). We, therefore, removed ROE from the analysis because of its low correlation with the other accounting return measures and because its denominator is a measure of financial leverage, which is easily manipulated by managers. The model excluding ROE had good fit ($\chi^2 = 9.53$, df $= 4$, $p < 0.05$, GFI $= 0.98$, NFI $= 0.93$, and AGFI $= 0.98$) suggesting that, excluding ROE, accounting returns, shareholder returns, and sales growth reflect three distinct performance dimensions. We build on these findings to draw a model of performance dimensionality.

TOWARD A MODEL OF PERFORMANCE DIMENSIONALITY

Recent theoretical developments (e.g., Ray et al., 2004) and our review of the studies that previously attempted to describe the dimensions of performance suggested that operational performance is related to, but outside the conceptual domain of organizational performance (i.e., organization-wide performance). Further, at a minimum, accounting returns, growth, and the stock market tap different organizational performance dimensions. Our analysis of performance measurement in *SMJ* (Table 3) also shows evidence

of convergent validity among accounting returns and, to a lesser extent, among stock market measures. But, in both the review of studies and the analysis of performance measures in *SMJ*, the level of convergent validity depends on the measure. With the exception of profit growth, accounting return, stock market, and growth measures show discriminant validity. Although the number of measures included is small, our confirmatory factor analysis also points to these as empirically distinct dimensions. Thus, we conclude that accounting returns, the stock market, and growth represent three related but distinct dimensions of organizational performance. Although there might be other dimensions, such as survival, these three have the strongest empirical case that within-dimension measures converge and that between-dimension measures discriminate. Fig. 1 depicts these relationships and the logic supporting the model is explained below.

Operational Performance

In contrast to its earlier treatment as a dimension of a broadly defined organizational performance (Venkatraman & Ramanujam, 1986), recent theory (Ray et al., 2004) and the studies of performance dimensionality (Table 1) indicate that operational performance is a separate construct from

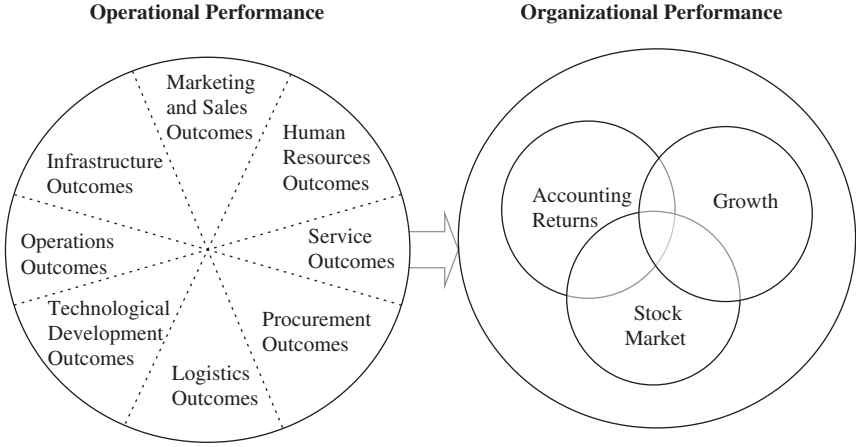


Fig. 1. Operational and Organizational Performance Dimensions. Note: Operational Performance Outcomes are Based on Porter's (1985) Value Chain Model.

organizational performance. Further, operational performance is itself multidimensional (Maltz et al., 2003; Porter, 1985). However, these studies do not suggest how operational performance should be viewed vis-à-vis organizational performance. Because organizational performance is affected, in part, by the sum of the firm's operational performance across many different value chain activities (Porter, 1985; Ray et al., 2004), we conclude that operational performance is best viewed as an antecedent to organizational performance. For example, when strategic human resource management researchers look at the relationship between high performance work practices (HPWPs) and performance, they view HPWPs as first affecting human resources (HR) outcomes such as productivity and employee turnover, which in turn benefit organization-wide performance (Dyer & Reeves, 1995; Huselid, 1995). In other words, operational performance mediates the relationship between internal activities (e.g., strategies, resources, and capabilities) and organizational performance (Ray et al., 2004). Acknowledging that operational performance outcomes are logical antecedents of organizational performance should empower researchers to explore how operational outcomes mediate relationships between strategy, resources, and capabilities and organizational performance (Priem & Butler, 2001; Ray et al., 2004).

As shown in Fig. 1, the domain of operational performance is still very broad and multidimensional. In Porter's (1985) description of value chains, he points out that there are many different intraorganizational activities that help bring a product or service to customers. Outcomes from these different activities, as shown in Table 2, have been used to measure operational performance. However, as Ray et al. (2004) point out, outcomes from different processes and activities within the firm should not be treated as highly related components of a unidimensional operational performance construct. In the context of resource-based theory, they argue that different processes and activities within firms have different effects on organizational performance.

These different processes and activities and their outcomes might have competing impacts on organizational performance. An organization that has a competitive advantage in customer service, for example, might have a disadvantage in production that negates any visible effects of the customer service advantage on organizational performance. The important point is that the outcomes of different activities are not necessarily related to one another. Thus, while it is convenient to use the overarching term operational performance, it is necessary to treat outcomes from different activities as independent dimensions and perhaps more importantly, to keep these dimensions separate from organizational performance.

Organizational Performance

Fig. 1 is drawn to depict the three related, yet distinct, dimensions of organizational performance suggested by our review of the studies that dimensionalize performance (Table 1) and in our own analysis of *SMJ* (i.e., accounting returns, the stock market, and growth). The first reason the dimensions overlap in Fig. 1 is the fact that they are both theoretically and statistically related (e.g., Fryxell & Barton, 1990; Rowe & Morrow, 1999). For example, a low-cost strategy might increase accounting returns by lowering costs and increase growth by attracting customers to lower prices (Campbell-Hunt, 2000). Similarly, growth can improve economies of scale, which makes firms more efficient and profitable (Buzzell et al., 1975; Makadok, 2000).

Although the dimensions are related, they also have key differences. Growth, for example, does not necessarily lead to accounting returns; firms might sacrifice profits to increase growth. Firms might similarly forgo growth for profit, particularly when overall industry growth is stagnant (Miles & Snow, 1978). The result is that each performance dimension is positively correlated, though not strongly enough to be considered alternative measures of a single one-dimensional construct.

A second reason the dimensions are shown as overlapping is because some measures are hybrids that capture elements of multiple dimensions. For example, our analysis revealed that surveys asking managers to rate their overall performance show strong correlations with both accounting returns and growth. Scales combining questions about growth and profitability have acceptable reliability (e.g., Capron, 1999; Lane, Salk & Lyles, 2001), which suggests that managers are able to consider accounting returns and growth simultaneously when assessing organizational performance. Other hybrids, such as the (stock) price to (accounting) earnings ratio (i.e., P/E), depict the organization's relative performance on two dimensions and thus might not relate strongly to either (e.g., for P/E-ROA, $r = 0.18$).

IMPLICATIONS FOR RESEARCH IN STRATEGIC MANAGEMENT

Although the model presented in Fig. 1 is derived from our examination of prior investigations of performance dimensionality and our analysis of the reported correlations among performance measures, we depart from prior literature in two important respects. First, although Venkatraman and

Ramanujam (1986) depicted organization-wide financial measures as a subset of operational performance, we view operational and organizational performance as conceptually distinct. Second, we identified three interrelated, yet distinct, dimensions of organizational performance (i.e., accounting returns, growth, and the stock market). These departures from prior literature have important implications in two areas: (1) they point toward important avenues for future inquiry to increase our understanding of performance and (2) they have practical implications for how to design studies where performance is the dependent variable.

Future Research Directions for Understanding Performance

From our examination of prior efforts to understand the dimensionality of performance we concluded that (1) operational performance is both different from and an antecedent to organizational performance and (2) operational performance has many dimensions. These conclusions are consistent with recent theoretical advances suggesting that organizational and operational performance are different and the relationship between them is affected differently for different operational activities (Ray et al., 2004). Other theory suggests that powerful stakeholders might siphon away some of the fruits of high operational performance and thus intervene between operational and organizational performance (Coff, 1999). Overall, researchers interested in further clarifying the dimensionality of performance need to begin by separating operational performance from organizational performance.

Porter's (1985) value chain describes the several known dimensions of operational performance, but research is needed to explain how these dimensions interact. For example, high productivity is an important manufacturing outcome and low turnover is an important human resource outcome. However, some organizations achieve productivity through a control approach that works employees hard and results in high turnover, whereas others use an empowerment approach that reduces turnover (Guthrie, 2001). Clearly, there are several causal and theoretically interesting relationships among the dimensions of operational performance that are potentially lost if researchers treat operational performance as a one-dimensional construct.

Our study found preliminary evidence in support of three interrelated dimensions of organizational performance – accounting returns, growth, and the stock market. This result points to at least two important questions:

Are there other dimensions? And how closely are the dimensions related? We initially defined organizational performance as the social and economic outcomes resulting from the interplay between an organization's attributes, actions, and environment (Andrews, 1971; Hrebiniak et al., 1989). Even after moving operational performance outside the construct domain, however, organizational performance is still broad. There are many economic and social outcomes, such as impacts on the natural environment and local communities, which lay beyond the three dimensions identified. Future research should focus on identifying and classifying these other outcomes. One potentially fruitful avenue might be to use managers as informants. Because managers and researchers often view phenomena differently (Reger & Huff, 1993), gaining practitioner insights might help identify additional dimensions.

One outcome that deserves attention is survival. Survival is often used as the ultimate measure of organizational performance (e.g., Fischer & Pollock, 2004). Murphy et al. (1996) argued that it is an independent dimension, and the three studies in our analysis that correlated survival to accounting returns and growth showed small or negative relationships, which also suggest that survival is a distinct dimension. However, other studies suggest that survival is preceded by organizational performance rather than being a dimension of organizational performance (e.g., Hudson, 1986). In short, additional research is needed that analyzes whether survival is a distinct dimension of organizational performance or an entirely different construct.

We were limited in our analyses by the number of studies reporting correlations among organizational performance measures. Thus, more work needs to be done to establish convergent and discriminant validity. One avenue would be to expand our analysis beyond *SMJ*. Another approach would be to increase the number of studies that test convergent and discriminant validity. The ultimate goal should be a complete Table 3 wherein each correlation is based on many studies.

The fruits of such efforts will be knowledge regarding which measures best depict each dimension and which measures should be avoided. In the stock market dimension, for example, Jensen's alpha, the Sharpe ratio, and the Treynor index are all measures of stock return, but their relationship with overall stock returns is still to be examined. Further, the two studies that relate Jensen's alpha, a measure of stock return, with the market-to-book ratio, a measure of stock value, only show a correlation of $r = 0.06$. Are stock returns and stock value empirically different? If so, use of both might lead to conflicting results. Similarly, more research is needed on profit

growth. Profit growth in our data has moderate to strong correlations with key measures in all three dimensions. Does that make profit growth a good universal measure? Future researchers will be better equipped to design fruitful studies if they could draw upon a body of research describing which measures are valid and reliable indicators of each dimension and which are not.

Practical Implications for Designing Studies

Our findings offer practical implications for strategy researchers involved in testing theory that explains organizational performance. Specifically, studies need to account for the relationship between operational and organizational performance, the multidimensional nature of organizational performance, and the interrelationships among the dimensions. Key implications that arise by accounting for these elements are depicted in Table 4.

Recognizing operational performance as distinct from organizational performance opens up the potential for strategy researchers to develop much richer theory. Studies are needed to investigate the relationship between operational and organizational performance, as well as how phenomena relate differently to each. For example, we might expect external environmental forces to more directly affect organizational performance than internal activities because the latter is mediated by operational performance (Ray et al., 2004). Indeed, studies are needed to test the extent to which operational performance mediates the relationship between internal activities, such as HPWPs and organizational performance (e.g., Huselid, 1995). Failure to explain how internal capabilities affect organizational performance is a central criticism of resource-based theory (Priem & Butler, 2001). We also need a theory describing factors that moderate the relationship between operational and organizational performance. Powerful stakeholders provide one example (Coff, 1999). More generally, recognizing the differences between operational and organizational performance should allow researchers to build richer theory and design more fine-grained empirical tests.

If operational and organizational performance are distinct, it follows that researchers should avoid measures that capture elements of both. For example, the numerator in ROE is derived from the accounting returns dimension of organizational performance, but the denominator reflects the firm's capital structure, which is an outcome of infrastructure (i.e., finance) in the value chain. This explains, at least in part, why ROE did not load

Table 4. Suggestions for Strategy Researchers.

Implications of Separating Operational from Organizational Performance

(1) Develop theory and empirical tests to learn which:
- Factors impact operational performance more than organizational performance and vice versa.
- Types of operational performance have the most impact on organizational performance.
- Factors moderate the relationship between them.

(2) Avoid measures that are composites of operational and organizational performance.

Implications of the Distinct Dimensions of Organizational Performance

(1) Select performance measures by matching the performance dimension with the underlying theory.
(2) Select and validate measures separately within each dimension of interest.
(3) Collect measures from multiple dimensions, but:
- do not necessarily expect convergence,
- use dimensionality to test the limits of theory, and
- to build separate bodies of knowledge around each dimension.

Implications of the Interrelated Nature of the Dimensions

(1) Establish the validity of selected measures by either:
- testing convergent and discriminant validity, or
- "sticking to" measures previously validated for the dimension of interest.

(2) Avoid "hybrid" measures in the overlapping areas of the performance dimensions.
(3) Design perceptual scales that cue respondents to the performance dimension of interest.

adequately in our confirmatory factor analysis. Conceptually, earnings per share (EPS) suffers from the same weakness.

Recognizing that organizational performance comprises at least three distinct dimensions also has implications for study design. One implication is that researchers should circumscribe theory and empirical tests to the appropriate dimension or dimensions. For example, transaction cost theory predicts that firms organize productive activity internally or using hybrid organizational forms (e.g., joint ventures) when the transaction costs (e.g., negotiating, monitoring) of using markets are high (Williamson, 1975). Doing so is efficient and thus improves performance (Poppo & Zenger, 1998). This theory, like others rooted in economics (e.g., resource-based theory), is focused specifically on efficiency, and thus should have its most profound impact on accounting returns. Resource dependence theory, in contrast, is focused on strategies for gaining access to resources, and thus might be expected to relate strategy to growth (Pfeffer & Salancik, 1978). Similarly, if the theory suggests that shareholders should care about

something, such as having an independent board of directors, perhaps a stock market measure is appropriate (e.g., Shivdasani & Yermack, 1999), even though we might not expect shareholders' concerns to translate into accounting profits (cf. Dalton, Daily, Ellstrand & Johnson, 1998).

A related implication is that researchers should not expect results from different tests of the same hypothesis to converge if the measures depict different dimensions. The value of triangulation has been widely accepted in the organization sciences (Jick, 1979). Although we encourage researchers to triangulate within dimensions by collecting multiple measures from multiple sources (e.g., secondary and primary; Venkatraman & Ramanujam, 1986), we are less sanguine about the notion that results based on different dimensions should converge. Acquiring another firm, for example, generally increases sales growth (Capron, 1999), but an acquisition's effect on shareholder returns depends on factors such as the relatedness of the target (Palich, Cardinal & Miller, 2000). Franchising similarly accelerates growth, but has an ambiguous effect on accounting returns (Combs, Michael & Castrogiovanni, 2004). We encourage researchers to collect measures from different dimensions for the purpose of testing the boundaries of the theory (Bacharach, 1989) and building a unique body of knowledge around each dimension, but not to triangulate on the determinants of organizational performance as if it were a one-dimensional construct.

Finally, the interrelated nature of the dimensions has important implications for the selection of measures. Confidence in a study's findings relies on a foundation of measures with known and reliable properties. Measures should be justified based on their appropriateness for the research setting and their validity as established in the literature. If multiple measures are used, their reliability, and convergent and discriminant validity must be empirically assessed. Unfortunately, too many studies justify combining disparate performance measures without gauging their reliability or validity, presumably on the grounds that performance is multidimensional and thus convergence is not necessarily expected (e.g., Anderson, Forsgren & Holm, 2002; Qian & Li, 2003). However, this practice weakens reliability and thus the likelihood of finding support for hypotheses (Hunter & Schmidt, 1990). Further, if a relationship is found, there is no way for the researcher to know which performance dimension is driving the result.

One approach to increased validity is to select measures that prior investigations have already validated as tapping the performance dimension of interest. Our study offers preliminary evidence that ROA, ROI, ROS are reliable measures of accounting returns, and that Jensen's alpha, the Sharpe ratio, and the Treynor index are all related stock market measures.

Weinzimmer, Nystrom, and Freeman (1998) offer advice for measuring growth. Researchers should also avoid "hybrid" measures that combine aspects from multiple dimensions. Measures such as the (stock) price to (accounting) earnings (i.e., P/E) ratio capture elements of two or more dimensions. Survey scales that combine items about different dimensions should also be avoided. Although such scales can be designed with adequate reliability (e.g., Wiklund & Shepherd, 2003), their content validity is questionable because it is difficult for researchers to assess the degree to which different performance dimensions are affected by the phenomena of interest. Thus, survey scales should be designed to recognize the dimensionality of organizational performance.

CONCLUSION

Although organizational performance is perhaps the most important construct in strategic management research, the nature of its definitional boundaries and dimensionality have been poorly understood. Based on a review of previous attempts to understand the dimensionality of organizational performance and our own analyses of performance measurement in the *SMJ*, we built a conceptual model of organizational performance. Our model has implications for the way organizational performance is conceptualized vis-à-vis operational performance, and for the way theory and empirical tests should be circumscribed to address the dimensionality of organizational performance. It is our hope that others will take up the challenge of advancing understanding of organizational performance, its dimensions, and its proper measurement. We also hope researchers will follow the practical implications of our model. Without such efforts, we confront increased risk of floundering in a sea of measure-driven conflicts among reported findings (Bacharach, 1989; Hunter & Schmidt, 1990). Alternatively, by understanding the dimensions of our central construct and building this knowledge into our theories and empirical tests, the field of strategic management is more likely to fulfill its mission to generate cumulative knowledge about the determinants of organizational performance.

NOTES

1. Although significance tests are reported in Table 3, our discussion focuses on the size of the relationship because it is size, not significance, that determines whether two measures depict the same construct (Schwab, 1999).

2. All three measures reflect the stock market return of a stock over some period of time relative to the stock's risk. The Sharpe ratio is $R_i - RFR_i/\sigma_i$ where R_i is the stock's return, RFR_i is the risk-free rate on U.S. Treasury Bills, and σ_i is the stock's price variance. Jensen's alpha is α_i from the regression equation $R_i = \alpha_i + \beta_i(R_m)$ where R_i is the stock's return and R_m is the market's overall return. The Treynor index is $R_i - RFR_i/\beta_i$ where β_i is the stock's price variance relative to the market variance as calculated in the same regression equation used to calculate Jensen's alpha.

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