OPERATING CHARACTERISTICS OF HIGH PERFORMANCE COMPANIES: STRATEGIC DIRECTION FOR MANAGEMENT

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ABSTRACT

Purpose – *The present study investigates whether companies that exhibit high performance characteristics in the pre-financial crisis period can maintain their high performance in the financial crisis period of 2007–2009 and, in particular, the post-financial crisis period of 2010–2011.*

Methodology – *The current study of 1,473 companies in 25 countries and 66 industries (MSCI index) (1) extends the empirical research of prior studies through the year 2011; (2) identifies the operating characteristics (performance drivers and performance measures) and associated risk factors which were most critical with regard to sustaining, exiting, and entering HPC companies during the five 10-year periods since 1998–2007, and (3) summarizes conclusions about HPC results*

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from the 13 ten-year periods (1989–1998 to 2002–2011) in this stream of research.

Findings – *(1) Companies that sustain high performance over periods of financial stress clearly excel in asset turnover performance driver and on the performance measures of growth in revenues, profit margin, return on equity and return on assets. Sustaining HPC had less debt than other companies and consistent cash flow yields. Operating turnover ratios became less important in recent years as an indicator of high performance. (2) Although exiting companies maintained profitability, financial risk and liquidity, the key factor in their dropping out of HPC status is their failure to grow revenues. (3) Entering companies did not exhibit the superior performance in all categories.*

Practical implications and value – *The results provide strategic direction for management of companies that aspire to HPC status and to maintain HPC status once gained, particularly in times of global financial stress.*

Keywords: Strategy; financial analysis; ratio analysis; performance measurement; financial crisis

INTRODUCTION

Global companies often face challenges that threaten their ability to perform at a high level. High performance companies, those that can sustain exceptional performance over a long period, will inevitably encounter challenging periods. Consider that during the period covered by this study – 1989–2011, crises in the world financial markets have occurred every 5–10 years:

1989–1991: Savings and Loan Crisis
1997–1998: Asian Financial Crisis
2000–2001: Dot-Com Bubble
2007–2009: Subprime Mortgage Financial Crisis

Prior research cited in the next section has shown that these companies represent a small percentage of companies. It is therefore critical to understand the key operating variables and associated risks that can lead to a

company falling from elite status or to maintaining elite status and the opportunities for companies that achieve this status. Vital to the success are the links among strategy, execution and financial performance. It is important that management focus on the performance drivers associated with five key performance objectives and link them to the performance drivers and to common performance measures in the Financial Performance Scorecard (FPS). Further, it is essential to link the patterns of these operating variables for HPC to specific strategic risks, which cannot be anticipated, but which can be planned for.

The global financial crisis of 2007–2009 is considered by many economists to be the worst financial crisis since the Great Depression of the 1930s (Pendery, 2009). This period presented a challenge to all companies and opportunities for a few companies around the globe. The present study investigates whether companies that exhibit high performance characteristics in the pre-financial crisis period can maintain their high performance in the financial crisis period of 2007–2009 and, in particular, the post-financial crisis period of 2010–2011. We find that there is significant turnover of HPC during these periods. We identify the operating characteristics that are most important in managing a company through these periods. We identify the operating characteristics of companies that were not able to maintain high performance, companies that were able to enter high performance, and companies that were able to sustain high performance. Identifying the important operating characteristics of each group of companies enables us to identify of the specific areas of risks associated with working through a period of crisis. We then summarize conclusions about HPC results from more than a decade of this stream of research. The results provide strategic direction for management of companies that aspire to HPC status and to maintain HPC status particularly in times of global financial stress.

PREVIOUS RESEARCH

Financial statements provide important information about a company's ability to achieve the strategic objective of creating value for its owners. The intelligent user of financial statements will be able to discern how well the company has performed in achieving this objective. Financial analysis provides the techniques to assist the user in this task. In short, the financial statements reflect how well a company's management has carried out the

strategic and operating plans of the business. The marketplace, in turn, evaluates this performance, and a value is placed on the company. Analysts have traditionally conducted ratio analysis by examining ratios related to various aspects of a business' operations. Previous research related to financial statements, financial analysis, and ratio analysis has been conducted by, among others, Nissim and Penman (1999, 2001), Brief and Lawson (1992), Fairfield and Yohn (1999), Feltham and Olsson (1995), Fera (1997), Jansen and Yohn (2002), Lev and Thiagarajan (1993), Ohlson (1995), Penman (1991), Piotroski (2000), Selling and Stickney (1989), Burns, Sale, and Stephan (2008), Raynor, Ahmed, and Henderson (2009), and Raynor and Ahmed (2013). Soliman (2008) provides a thorough review of financial statement analysis literature.

Initial research into the link between strategy and value creation began with an examination of the relation between three contrasting strategies: efficiency, innovation, and customer service by Needles, Frigo, and Powers (2002a), which the authors then extended to the entering economy of India (Needles, Frigo, & Powers, 2002b). These studies found that different strategies are characterized by exceptional performance on different measures, that efficiency and innovation are better differentiators of high performance than customer service, and finally that developing and the entering economy of India displays similar links among strategies and performance.

These early studies were followed by a more comprehensive examination of the links between strategy and integrated financial performance measurement by Needles, Frigo, and Powers (2004) and Frigo, Needles, and Powers (2002). The objectives of this study were first to identify the financial characteristics of HPC over a test period (1990–1999) and then to observe the sustainability of these measures over contrasting test periods (1997–2000 and 2001–2003). Selection of HPC relied on a decade of research by Frigo and Litman (2002, 2008) that emphasized defined a "Return Driven Strategy" framework under which business activities are highly aligned with ethically achieving maximum financial performance and shareholder wealth creation. According to Return Driven Strategy (Frigo, 2003a, 2003b; Frigo & Litman, 2002, 2008; Litman & Frigo, 2004), the pathway to superior financial value creation is through the customer, by fulfilling unmet needs in increasing market segments. The Return Driven Strategy framework describes the strategic activities of HPC in various industries. It describes the underlying "strategic performance drivers" that have been shown to lead to sustainable shareholder wealth creation. It is robust in its ability to also explain the decline of companies where by charting how the tenets of Return Driven

Strategy were neglected or could not be executed. Meanwhile, the rise of these companies' performance and the sustainability of high performance can be attributed to attention to these tenets. Companies with mediocre or poor performance demonstrate significant gaps in their business models when viewed through the lens of Return Driven Strategy. This work provided the strategic underpinnings of our research.

Comparisons of HPC and other companies served to identify a set of ratios that were statistically independent of each other and a set of ratios that interact in integrated financial ratio analysis. This research resulted in the development of an expanded set of financial performance objectives linked to financial performance, as follows:

Financial Performance Objectives	*Links to Financial Performance*
Total asset management	Ability to utilize all the assets of a company in a way that maximizes revenue while minimizing investment
Profitability	Ability to earn a satisfactory net income
Financial risk	Ability to use debt effectively without jeopardizing the future of the company
Liquidity	Ability to generate sufficient cash to pay bills when they're due and to meet unexpected needs for cash
Operating asset management	Ability to utilize current assets and liabilities to support growth in revenues with minimum investment

This global research included in the development of the FPS. The FPS is based on the premise that management must achieve these financial performance objectives in order to create value and that these financial performance objectives are interrelated. The FPS relates to a company's strategic objectives as reflected in its financial statements through a structure or framework of value creation that shows the interaction of performance objectives, financial ratios, with particular emphasis on the drivers of performance and their relationship to performance measures as shown in Fig. 1.

Further, the FPS relates the performance measures that analysts and the financial press commonly use to assess a company's financial performance to certain independent financial ratios, called performance drivers, which

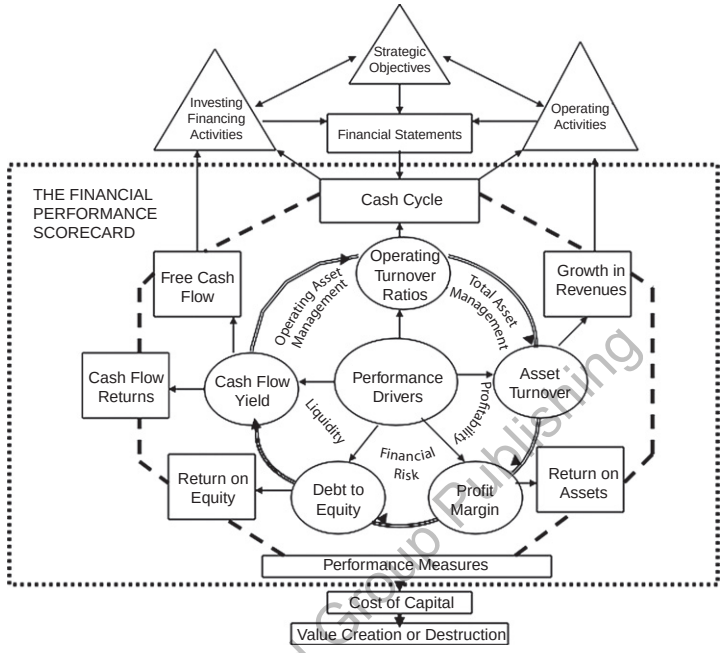

Fig. 1. The Financial Performance Scorecard: Key Component of the Value Creation Chain.

are critical to achieving the interrelated performance measures commonly reported in the financial press, as follows:

Performance Objectives	*Performance Drivers*	*Performance Measures*
Total asset management	Asset turnover	Growth in revenues
Profitability	Profit margin	Return on assets
Financial risk	Debt to equity	Return on equity
Liquidity	Cash flow yield	Cash flow returns
		Free Cash flows
Operating asset management	Turnover ratios:	Cash cycle:
	Receivables turnover	Days' sales uncollectible
	Inventory turnover	Days' inventory on hand
	Payables turnover	Days' payable
		Financing Period

While HPC uniformly excel on the basis of performance measures, they will not display uniform characteristics when it comes to performance drivers because these measures are more a function of the various strategies that the companies may employ to achieve high performance (Needles et al., 2002a, 2002b, 2004; Needles, Powers, & Frigo, 2006, 2009; Needles, Powers, Shigraev, & Frigo, 2010).

The performance measures in the FPS are reflected ultimately in a return that is compared with a benchmark cost of capital. If the return exceeds cost of capital, value has been created. If the return is less than cost of capital, value has been destroyed. The "spread" between return on investment and the cost of capital was used as a criterion for selecting the leading companies; however, for purposes of evaluating the FPS, it is assumed that the cost of capital is determinable and given (Adman & Haight, 2002; Gebhardt, Lee, & Swaminathan, 2001).

Specifically, the previous research investigated (1) evidence with regard to the components of the FPS – in particular, the relationships between the performance drivers and the performance measures and (2) the relationships between the performance of the HPC and that of their respective industries. The empirical results confirmed the basic propositions of the FPS and the criteria for choosing HPC. These results are summarized as follows:

1. The performance drivers and performance measures are independent of each other, as shown by low correlation among each other or low rank correlation. This proposition held true for all companies, for selected industries, and for industry leaders, all of which show independence among the ratios, with low correlations among performance drivers (except asset turnover and profit margin) and performance measures.
2. The criteria for choosing HPC were validated by the performance measures in the FPS model. The HPC exceed the industry averages across all performance measures and across all industries.
3. The HPC show mixed results with regard to performance drivers when compared with industry drivers. HPC excel on profit margin, are lower on cash flow yield, have lower financial risk, and have variable results for asset turnover. These results are due in part to the different strategies that companies may employ.

Subsequently, Needles et al. (2006) replicated the above study with refinements that focused on the sustainability of performance by HPC and on operating asset management performance drivers and measures. The goal of liquidity is closely related to the goal of operating asset

management. Operating asset management is oriented towards the management control of the cash conversion cycle, which is the time required to make or buy products, finance the products, and sell and collect for them. Operating asset management is the ability to utilize current assets and liabilities in a way that supports growth in revenues with minimum investment. The drivers of operating asset management are the turnover ratios, and the performance measures are the days represented by each turnover measure. Taken together, the performance measures give an indication of the net cash cycle or financing period. The financing period represents the amount of time during which a company must provide financing for its operating activities. (Financing period = days' receivable + days' inventory on hand − days' payable).

The hypothesis was that HPC would have a shorter financing period than S&P companies because their superior financial performance would be a reflection of their operating efficiency. The results confirmed this expectation, as follows:

1. The financing period for HPC compared to S&P companies was shorter in almost all cases by about 28 days for the 1997−2001 period and 30 days for the 2002−2003 period, which equates to fewer days that need financing, thus lowering the financing costs for HPC relative to S&P companies.
2. The operating asset turnover ratios, however, showed more variability among industries and between HPC and S&P companies. We expected HPC to outperform S&P companies on receivables turnover, and this was generally the case; however, overall, the HPC advantage was non-significant. This result could be accounted for by the fact that HPC have less need to sell receivables and take advantage of off-balance-sheet financing than S&P companies. Further, HPC are better able to take advantage of trade creditors.
3. Inventory turnover ratios were in line with our expectations that the HPC would outperform the S&P companies. Inventory turnover for HPC exceeded that of S&P, which represents fewer days of financing needed, more than offsetting the shortfall from receivables.

HPC had a slightly lower payable turnover than S&P companies. Strong operating results and low debt loads of HPC enable these companies to obtain longer terms than average from their trade creditors, which accounted for most of the difference. Thus, the HPC's deficiencies noted above in receivables and inventory are overcome, so that these companies outperform their industry on the financing period.

In an extension of HPC research to a second study of the developing country India (Needles, Powers, Shigaev, & Frigo, 2007), to the natural resource rich country of Australia (Needles et al., 2007) and the emerging industrial economy of Turkey (Needles, Turell, & Turell, 2012), the relationships among performance drivers and performance measures observed in the Western economies were found to hold with the exception of asset turnover in India and payables turnover in both countries. The low asset turnover ratios in Indian companies were attributed to the preponderance of asset-intense infrastructure companies among the HPC. The existence of higher payables turnover in Western developed countries reflects more willingness to rely on the credit of suppliers in these countries. Further extensions involved studies of corporate governance in high performance companies in India (Needles, 2009), Turkey (Needles, Turell, Sengur, & Turell, 2012), and Australia (Needles, Powers, & Shigaev, 2013).

Further, 20 year (1988–2007) longitudinal results confirm the results of prior studies as to the long-term superior performance of HPC over other companies. For sustaining HPC, results were consistent as to total asset management, profitability, financial risk, and liquidity. Exiting HPC companies fail at total asset management, profitability, and operating asset management and significantly increase their financial risk. Entering HPC companies improve liquidity through improved operating asset management and cash flows. To become a HPC management must generate increased cash flows from income, manage receivables and inventory vigorously, and reduce its debt in relation to equity. Thereafter, management must concentrate on maintaining its asset turnover and growth in revenues while maintaining its profit margin and not increasing its debt to equity (Needles, Powers, Shigaev, & Frigo, 2013; Needles, Shigaev, Powers, & Frigo, 2010). In addition, it is essential to link the patterns of these operating variables for HPC to specific strategic risks, which cannot be anticipated, but which can be planned for (Frigo & Anderson, 2009, 2011).

RESEARCH QUESTIONS

As noted above, previous research addressed issues of on what measures do HPC excel and can they sustain high performance over contrasting future periods. This study focuses on the issue of which performance drivers and measures are most likely to lead to falling from HPC status and the risks associated with those drivers and measures. Specifically, this study

empirically investigates 1,473 companies in the United States and 24 other countries (MSCI index-Appendices A and B) representing 66 industries over the periods 1998–2007 (benchmark) and 2008–2011 to identify HPC from the former period that exited, maintained, or entered HPC status in the latter period including:

(1) The operating characteristics of companies that were able to sustain high performance from 1998 to 2007 into 2008–2011.
(2) The operating characteristics (performance drivers and performance measures) and associated risk factors which were most critical for companies that exited HPC status in 2008–2011.
(3) The operating characteristics that were most critical for companies that emerged to HPC status in the post-financial crisis period.

EMPIRICAL SAMPLE

Data for this study came from the CompuStat database. The analysis focuses on two groups of companies: companies in the MSCI World index, and HPC. In the benchmark group, we started with companies in the MSCI World index for which data exists consecutively from 1998 to 2011. Based on this condition, data for 1473 companies existed: 600 companies from United States and 873 companies from other countries. The current countries and industries that make of the MSCI World Index are shown in Appendices A and B.

The following adjustment was made to the benchmark group of MSCI World companies: we excluded several industries whose financial structures typically depart from industrial, retail, and service businesses. These industries are banks, savings institutions, credit institutions, other financial institutions, financial services (broker) companies, insurance companies, real estate agents and operators of buildings, real estate investments trusts, hotels, personal services, miscellaneous recreation services, health services, hospitals, educational services, and child day care services. In total, 176 companies (147 companies from the United States and 29 companies from other countries) were excluded from the benchmark group. This adjustment improved the comparability of the benchmark group with the HPC. After that screen, our sample had 1297 MSCI World companies (453 companies from the United States and 844 companies from other countries).

Companies included in the HPC group were removed from the MSCI World sample. After all screens, the size of the benchmark group in the benchmark period (1998–2007) was equal to 1244.

HPC were identified from the HOLT database from Credit Suisse. In determining Global HPC, we identified five samples of HPC for five consecutive 10-year periods (from 1998–2007 to 2008–2011) where data was available from 1998 to 2011 according to the following criteria:

- Cash flow return on investment (CFROI) (Madden, 1999) at twice or more the cost of capital or greater than 5% discount rate for 10 consecutive years.
- Cumulative growth rate in total assets over 10-year period exceeds cumulative growth rate of World GDP over the same 10-year period.
- Cumulative total shareholder returns (TSR) over 10-year period above the MSCI World cumulative return over the same 10-year period.

METHODOLOGY

The performance of the HPC was compared to that of their respective industries and were expected to excel above their industry peers on performance drivers and measures which are overall indicators of success or failure in achieving the financial objectives of total asset management, profitability, financial risk, liquidity, and operating asset management.

Ratios were calculated for each company for each year for years 1998–2011 (year 1997 was used to calculate averages that were used in the formulas). The next parts of the study examined the performance of sustaining, exiting, and entering HPC.

In the analyses, HPC were grouped in three categories:

- Sustaining – Companies that appeared in the 10-year period of 1998–2007 and in the period 2008–2011.
- Exiting – Companies that appeared in the 10-year period of 1998–2007 but lost HPC status in the period 2008–2011.
- Entering – Companies that did not appear in the period 1998–2007 but gained HPC status in the whole period 2008–2011.

Companies were also grouped by the first two digits of the SIC code. In the benchmark sample, 51 industries were identified based on this grouping. In some industries, there were not enough HPC to derive reliable industry averages and discuss industry-specific results. We provide test data for industries in which we had at least three HPC (with two-digit SIC indicator).

For sustaining HPC, companies were identified which were HPC in the period 1998–2007 and continued to be HPC in the period 2008–2011 and the means for each ratio were calculated for the period 2008–2011. For exiting HPC, the means for each ratio were calculated for the period 2008–2011. It includes companies, which were HPC in the period 1998–2007 but lost HPC status in the period 2008–2011. For entering HPC, companies were identified which were not HPC in the period 1998–2007 but were HPC in the period 2008–2011 and the means for each ratio were calculated for the period 2008–2011.

The next part of the study examined the relative performance of the HPC in relation to the mean performance of their peers among MSCI World index constituents for each of the abovementioned test periods (2008–2011 for sustaining HPC, 2008–2011 for exiting HPC, and 2008–2011 for entering HPC). We expect "high performance" companies to excel above their industry peers on performance drivers and measures in periods when they held the HPC status. As to the periods when exiting and entering HPC did not hold the HPC status, we expect more variation in their performance.

The results are shown without outliers. In order to detect and eliminate outliers in the samples, we applied the Grubbs' test (NIST/SEMATECH). The Grubbs' test detects one outlier at a time. The outlier is expunged from the dataset and the test is iterated until no outliers are detected. There are no outliers at the specific significance level if the Grubbs' test statistic is less than the upper critical value for the Grubbs' test statistic distribution corresponding to that specific level. To get better results on the T-test, we eliminated outliers for various ratios. In all cases, outliers represent less than 5% of the sample, usually much less than 5%. The elimination of outliers did not change the conclusions reached in examining the full set of data, but did affect the significance level on some ratios. In most cases, the results improved with the elimination of outliers. In the following sections, we will discuss the results with outliers eliminated, unless otherwise noted.

FINDINGS

As noted above, the following criteria from previous studies (see above) as determined by Frigo (2002, 2003a, 2003b) were applied to the period 1992–2011:

- Cash flow return on investment (CFROI) at twice or more the cost of capital or greater than 5% discount rate for 10 consecutive years.

- Cumulative growth rate in total assets over 10-year period exceeds cumulative growth rate of World GDP over the same 10-year period.
- Cumulative total shareholder returns (TSR) over 10-year period above the MSCI World cumulative return over the same 10-year period.

Table 1 shows the results of this screen over the 11 ten-year periods. The number of high performance companies increased from only 53 in 1992–2001 to a peak of 151 in the period (2000–2009). The number dropped in the 2001–2010 period to 140 and continually dropped to 119 in the 2002–2011 period. U.S. companies have dominated HPC throughout but over time companies in other countries have increased their presence as HPC. For instance, in 1988–1997, 10 of the 13 HPC were from the United States with one each from France, Germany, and Japan, but by 2000–2009, 52 of 151 HPC were from 16 countries outside the United States. The complete period-by-period breakdown may be found in Appendix C.

As a benchmark for HPC, Tables 2a–2c show the performance of HPCs relative to the MSCI World for the most recent two 10-year periods. Note that in all cases, HPC outperformed the World MSCI companies for all performance drivers and performance measures in all periods. The differences in favor of HPC in all cells were significant at least at the 0.000 levels (except payables turnover which was significant at the 0.0029 level.

Significant movement by HPC among recent 10-year periods may be observed and is summarized in Table 3. (A comprehensive list of HPC for the five time periods under study is available from the authors). This table shows the movement of HPC in the five most recent 10-year periods including the period of financial crisis. In summary, only 45 companies sustained high performance over the entire period and the number of HPC is constant over the years. Up to 55 companies exited in one of the next periods, with the number dropping gradually over the years. Up to 10 companies exited and reentered in the last four periods, and up to 121 companies entered in the current period and any of the previous periods after 1998–2007. The following sections examine performance characteristics of the sustaining, exiting, and entering HPC.

1998–2007 Sustaining, Exiting, and Entering HPC Performances Compared with MSCI World: 2008–2011

Table 4 addresses 1998–2007 HPC performance compared with MSCI World: 2008–2011. In Table 4a, as in previous periods, sustaining HPC

Table 1. The Number of Companies Selected by the Consecutive Application of each Screen.

Time period	1992–2001	1993–2002	1994–2003	1995–2004	1996–2005	1997–2006	1998–2007	1999–2008	2000–2009	2001–2010	2002–2011
CFROI screen	240	228	248	278	311	339	334	232	235	242	232
Asset growth screen	129	122	139	166	205	234	231	150	171	171	155
TSR screen	53	62	71	77	99	105	110	134	151	140	119

Table 2. Global HPC Performance Compared with MSCI World – all 10-Year Periods.

(2a) Global HPC: Total Asset Management, Profitability, and Financial Risk

	Performance Drivers			Performance Measures		
	Asset turnover	Profit margin	Debt to equity	Growth in revenues	Return on assets	Return on equity
2001–2010 all	26.77%	47.69%	–47.41%	78.06%	55.56%	50.28%
2001–2010 T-test	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2002–2011 all	11.20%	51.92%	–91.14%	78.64%	56.68%	50.14%
2002–2011 T-test	0.000176	0.000000	0.000000	0.000000	0.000000	0.000000

(2b) Global HPC: Liquidity

	Performance Driver	Performance Measures		
	Cash flow yield	Cash flow return on total assets	Cash flow return on stockholders' equity	Free cash flow
2001–2010 all	–127.84%	34.40%	12.29%	62.71%
2001–2010 T-test	0.000000	0.000000	0.000115	0.000000
2002–2011 all	–122.70%	36.13%	11.99%	59.83%
2002–2011 T-test	0.000000	0.000000	0.000007	0.000000

(2c) Global HPC: Operating Asset Management

	Performance Drivers			Performance Measures			
	Receivables turnover	Inventory turnover	Payables turnover	Average days' sales uncollected	Average days' inventory on hand	Average days' payable	Financing period
2001–2010 all	–86.04%	–94.47%	15.36%	46.25%	48.58%	–18.14%	103.10%
2001–2010 T-test	0.000000	0.000000	0.000059				
2002–2011 all	–54.55%	51.12%	10.60%	35.29%	–104.58%	–11.86%	25.70%
2002–2011 T-test	0.000000	0.000782	0.002963				

Table 3. High Performance Companies in Five 10-Year Time Periods. Regular TSR criteria.

Group of HPC	98–07	99–08	00–09	01–10	02–11	Number of HPC
Sustaining	45	45	45	45	45	45
Exiting in one of the next periods	55	31	25	17	–	55
Entering in the current period and any of the previous periods after 1998–2007	–	53	74	75	67	121
Exiting and reentering in the last four periods	10	5	7	3	7	10
Total	110	134	151	140	119	231

excel in total asset management, profitability, and financial risk performance drivers and performance measures are significant at least at 0.0001 levels. These companies are very strong on asset turnover performance driver and on the performance measures of growth in revenues, profit margin, return on equity and return on assets. It is important to note that sustaining HPC had much less debt than other companies, a factor helped them make it through the recession period. Also, note that although exiting companies were able to maintain good performance drivers, they were not able to maintain an advantage in the performance measures of growth in revenues or in return on equity. Finally, entering companies did not exhibit the superior performance in all categories, particularly, asset turnover and return on equity, as did companies that were able to sustain high performance. These results reflect the years these companies were not high performers.

Table 4b examines liquidity measures. A prior study (Needles et al., 2006) examined the apparent anomaly of generally lower cash flow yields for HPC. This analysis showed that weak companies tend to have lower incomes and more noncash adjustments such as restructurings and losses on sales of assets that produce very high artificial cash flow yields. HPC tend to have very consistent cash flow yields in the range of 1.0 to 3.0. The results in Table 4b are consistent with these prior findings. HPC had lower cash flows yields than other companies and the differences are significant. However, the low cash flow yield translates into exceptional performance in cash flow return on stockholders' equity in which HPC exceed other MSCI companies by significant amounts (0.007 level). Neither exiting nor entering HPC exhibited a significant difference in cash flow return on equity.

Table 4. 1998–2007 HPC Performance Compared with MSCI World: 2008–2011.

(4a) 1998–2007 Sustaining, Exiting, and Entering HPC: 2008–2011 Total Asset Management, Profitability, and Financial Risk

	Performance Drivers			Performance Measures		
	Asset turnover	Profit margin	Debt to equity	Growth in revenues	Return on assets	Return on equity
Sustaining all	21.61%	53.95%	−74.44%	96.96%	60.65%	57.41%
Sustaining T-test	0.000106	0.000000	0.000000	0.000000	0.000000	0.000000
Exiting all	25.33%	37.94%	−54.82%	75.34%	53.43%	53.68%
Exiting T-test	0.000087	0.000083	0.000005	0.319159	0.000000	0.023948
Entering all	−21.80%	71.05%	−116.96%	97.43%	69.67%	31.64%
Entering T-test	0.003296	0.000000	0.000000	0.000001	0.000000	0.238275

(4b) 1998–2007 Sustaining, Exiting, and Entering HPC: 2008–2011 Liquidity

	Performance Driver	Performance Measures		
	Cash flow yield	Cash flow return on total assets	Cash flow return on stockholders' equity	Free cash flow
Sustaining All	−113.45%	32.11%	15.65%	64.28%
Sustaining T-test	0.000000	0.000000	0.007176	0.000000
Exiting all	−68.99%	36.16%	23.28%	65.55%
Exiting T-test	0.000000	0.000000	0.163564	0.000000
Entering all	−115.59%	46.45%	−52.87%	74.32%
Entering T-test	0.000000	0.000061	0.121046	0.000006

Table 4. (*Continued*)

(4c) 1998–2007 Sustaining, Exiting and Entering HPC: 2008–2011 Operating Asset Management

	Performance Drivers			Performance Measures			
	Receivables turnover	Inventory turnover	Payables turnover	Average days' sales uncollected	Average days' inventory on hand	Average days' payable	Financing period
Sustaining all	−167.09%	−129.18%	15.98%	62.56%	56.37%	−19.02%	97.26%
Sustaining T-test	0.000000	0.000000	0.014871				
Exiting all	−45.78%	−116.83%	−17.75%	31.40%	53.88%	15.08%	134.71%
Exiting T-test	0.036469	0.000000	0.005076				
Entering all	−110.68%	−224.96%	29.37%	52.54%	69.23%	−41.58%	97.93%
Entering T-test	0.000000	0.000000	0.113476				

Operating asset management results in Table 4c display a major anomaly. Inventory turnover and receivables turnover are lower as compared to MSCI industries. Past results would as shown in Table 2c above would lead to the expectation that HPC would usually excel in these turnover ratios in difficult times. However, this is not the case in the period ending in 2008–2011. This may be due to the financial difficulties of customers and the slowness of payment during the GFC years 2008–2011. HPC accounts receivable collection is dependent on the ability of customers to pay the bills, as well as the receivable processes of the HPC. The consistent cash flows of the HPC may enable them to be more accepting of slower payment from customers in order to keep them. Also, the longer inventory turnover may be explained by the desire to manage risk in the supply chain during the financial crisis plus low demand on the customer side. On the other hand, it is likely the banking crisis which limited loans to companies and in light of the high financial risk characteristic of non-HPC companies led to these companies reducing receivables and inventories to come more in line with high performers. Payable turnover did not show a significant difference. It is important to note that exiting companies had a significant longer financing period than do both sustaining and entering HPC, indicating that management of the cash cycle is very important to achieving and sustaining high performance.

SUMMARY AND CONCLUSIONS

Companies receive the designation of high performance by achieving:

- Cash flow return on investment (CFROI) at twice or more the cost of capital or greater than 5% discount rate for ten consecutive years.
- Cumulative growth rate in total assets over 10-year period exceeding cumulative growth rate of World GDP over the same 10-year period.
- Cumulative total shareholder returns (TSR) over 10-year period above the MSCI World cumulative return over the same 10-year period.

Sustained high performance over 10 years or more is rare, never exceeding 10% of the companies in the MSCI index and averaging about 7%. Further, sustaining high performance is difficult. No company maintained high performance in all 11 ten-year periods studied. And only 57 (3.8%) sustained high performance over the last five periods since the beginning of the financial crisis in 2008.

The results of this study provide a framework through the FPS (performance objectives > performance drivers > performance measures) for companies regardless of industry or country to focus their strategic efforts. To achieve HPC status and keep it once achieved, management must aggressively manage on operating performance as measured by six key numbers:

- Revenue
- Net Income
- Cash flow from operating activities
- Total Assets
- Total Liabilities
- Total Equity

that provide the components of four key performance drivers:

- Asset Turnover (Revenue/Average Total Assets)
- Profit Margin (Net Income/Revenue)
- Cash Flow Yield (Cash Flow From Operating Activities/Net Income)
- Debt to Equity (Total Liabilities/Total Equity)

Our research has shown that these numbers and ratios are statistically independent and thus measure difference components of performance as measured by such ratios as return on assets, return on equity, and free cash flow. The latter measures do not exhibit statistical independence. These findings validate key aspects of such frameworks as the DuPont model (ROA and ROE), but add the key dimension of cash flow as reflected by the cash flow yield, a measure first reported in our earlier research. Contrary to our priors, HPC do not have higher cash flow yields than other companies but have very consistent cash flow yields in good times and bad. This allows HPC to have predicable cash flows that allow them to do well and actually strengthen during times of stress. Further, HPC consistently manage the cash flow cycle well, especially the turnover ratios associated with receivables and inventories.

In contrast to the tendency of many to focus only on revenue growth (Raynor & Ahmed, 2013; Raynor et al., 2009), HPC must control the growth of assets while growing revenues. While profit margin is an important driver of return on assets for HPC, asset turnover has proven to be a key variable in achieving and maintaining HPC status. Despite their apparent ability to take on more debt and make use of leverage, HPC control the level of debt in relation to equity. In summary, HPC excel at controlling risk by managing growth of assets (asset turnover), cash cycle turnover ratios, cash flows through the cash flow yield, and debt to equity.

In all cases, unadjusted numbers have proved to be better at judging a company's performance than adjusted numbers for measuring long-term high performance. For instance, total assets is better than "assets adjusted for goodwill" at giving a true asset turnover over time. Since non-HPC tend to have more special items in the income statement than HPC, "bottom-line" or unadjusted net income does not exclude these "special" items as measures such as "income before interest, taxes and depreciation (EBITDA) do. Our study of executive compensation also showed more emphasis by HPC on unadjusted bottom line benchmarks as well as non-financial measures when compared to non-HPC companies.

Although the operating characteristics as represented by the six key numbers and four key ratios and the cash cycle can vary greatly from industry to industry, the same measures are important for all industries studied. As mentioned above, this study included companies in 66 industries. Similarly, studies of HPC across the diverse economies of the 25 countries in this study yielded similar results. Our in-depth studies of HPC in the specific varied economies of Australia, India, and Turkey confirmed the findings from the HPC research. Different industries rise to high performance depending on the country: Australia (mining and minerals), India (infrastructure and transportation); Turkey (emerging industries supplying the EU.)

The present study has examined HPC in the MSCI index over five 10-year periods: 1998–2007, 1999–2008, 2000–2009, 2001–2010, and 2002–2011. The latter five periods correspond roughly to the period since the global financial crisis. It is now possible to draw some guidance to management during periods of stress:

- Companies that are able to maintain high performance over periods of financial stress clearly excel in asset turnover performance driver and on the performance measures of growth in revenues, profit margin, return on equity and return on assets. It is important to note that sustaining HPC had much less debt than other companies, a factor helped them make it through the recession period. HPC tend to have very consistent cash flow yields in the range of 1.0–3.0. It is also clear that turnover ratios – operating management of receivables, inventory, and payables – has become less important in recent years as an indicator of high performance. The latter finding is very likely the direct result of the financial crisis, which forced all companies to reduce receivables and inventories due to shortage of debt, high financial risk, and lacking of lending ability by banks.

- Although exiting companies are able to maintain profitability, financial risk and liquidity, the key factor in their dropping out of HPC status is their failure to grow revenues resulting in a decline in return on equity.
- Entering companies did not exhibit the superior performance in all categories. Asset turnover in particular is not a key factor in becoming HPC. It appears to be more important in sustaining HPC status. Also, as above, operating asset measurements do not appear to be key factors with entering to HPC status.

Obviously there are many factors and drill-downs that lie behind the six key financial statement elements and the resulting four key ratios but they should serve to focus management's attention intensely. The risk management faces is that the profitability and liquidity financial performance measures that flow from these basic elements and key ratios will quickly suffer in periods of financial downtown. Further, for managements that aspire for their companies to achieve HPC status, they provide opportunities. This is clear from the number of companies that were able to sustain high performance and the number able to emerge as a high performers, periods of financial stress can be a period of opportunity.

LIMITATIONS AND FUTURE RESEARCH

Although it is intended to be broadly representative of global financial markets, the MSCI Index used in this study is weighted toward large companies in developed countries. We have not taken into account the effects of many countries that adopted IFRS or a variation thereof during the past five years. Future studies can address a broader population and examine the effects of IFRS. We also did not look at effect of industry classifications on high performance. This will be the subject of future research.

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APPENDIX A: INDUSTRY COMPOSITION OF THE GLOBAL MSCI INDEX – 2011

Industry Group	Quantity of companies
13	41
15	31
16	17
20	69
26	21
27	26
28	110
29	23
32	21
33	34
34	18
35	92
36	93
37	55
38	62
44	16
45	18
48	71
49	83
50	24
53	17
54	18
56	16
59	16
60	32
63	37
67	25
73	91
79	18
99	15
Other	263
Total	1473

>14 (1%) at least 1% of the sample.

APPENDIX B: COUNTRY COMPOSITION OF THE GLOBAL MSCI INDEX – 2011

Country Code	Country	Quantity of Companies
AUS	Australia	53
AUT	Austria	11
BEL	Belgium	15
BMU	Bermuda	3
CHE	Switzerland	30
CHN	China	4
DEU	Germany	39
DNK	Denmark	16
ESP	Spain	25
FIN	Finland	21
FRA	France	52
GBR	United Kingdom	107
GIB	Gibraltar	1
GRC	Greece	11
HKG	Hong Kong	26
IRL	Ireland	14
ITA	Italy	18
JPN	Japan	318
NLD	Netherlands	21
NOR	Norway	17
NZL	New Zealand	7
PRT	Portugal	8
SGP	Singapore	21
SWE	Sweden	35
USA	United States	600
Total		1473

APPENDIX C: DISTRIBUTION OF HPC BY COUNTRY FOR EACH 10-YEAR PERIOD–MSCI WORLD

Regular TSR Criteria for HPC Selection					
Country	1998–2007	1999–2008	2000–2009	2001–2010	2002–2011
AUS	5	5	5	4	5
BEL	1	1	2	2	2
CAN	3	5	6	7	4
CHE	3	5	7	5	4
DEU		1	2	3	2
DNK	1	1	1		1
ESP	1	1	2	1	
FIN	1	1			
FRA	2	7	7	7	5
GBR	5	9	9	8	6
GRC			1	1	1
HKG	2	2	3	1	2
IRL	1	1	1	1	1
ITA		1	1		
JPN	1	2	1		1
NLD			2		
SWE	1	2	2	2	2
USA	83	90	99	98	83
Total	110	134	151	140	119