TYPOLOGY, CLASSIFICATION, AND CHARACTERIZATION OF FIRMS FOR MANAGEMENT BEST PRACTICES MONITORING (CASE OF RUSSIAN DOMESTIC ENERGY SECTOR)

Irina O. Volkova, Nikolay B. Filinov,
Valentina V. Kuskova, and Nadezhda L. Titova
National Research University Higher School of Economics, Russia

ABSTRACT

The notion that certain management practices at all levels create substantial competitive advantages for the company in the market received a lot of attention in the academic community over the years. A large body of work was accumulated as a result, though it appears that a comprehensive understanding of the relationship between management practices and firm performance is still lacking. This study is a part of a larger project aiming at closing this gap. The objective of this study was to create a typology of companies based on efficiency, using a number of objective criteria obtained from publicly available information.

INTRODUCTION

The notion that certain management practices at all levels create substantial competitive advantages for the company in the market received a lot of attention in the academic community over the years. The idea that there is a relationship between the actions of managers and company effectiveness was first introduced in early 1950s (Carlson, 1951), when researchers first noticed that there is a link between managerial actions and effectiveness and productivity of the units and companies as a whole (e.g., Guest, 1951; Jasinski, 1956; Strong, 1956; Dubin & Spray, 1964). Since then, a number of studies have looked at various individual management practices and their impact on all productivity metrics. A large body of empirical and theoretical work was accumulated as a result, though it appears that a comprehensive theory of the relationship between the management practices and firm performance is still lacking.

The interest in the relationship between the management practices and company performance has been revived recently, with the work of Bloom and colleagues (Bloom & Van Reenen, 2010). Bloom and Van Reenen (2006, 2010) and Bloom, Kretschmer, and Van Reenen (2009) have looked at management practices in medium-sized manufacturing firms in the US and several European countries. They have found significant cross-country differences in the management practices and their impact on firm-level productivity, profitability, sales growth, and other measures of performance. A large number of studies[1] have already extended this work, looking at competition policy (e.g., Buccirossi, Ciari, Duso, Spagnolo, & Vitale, 2009), corporate culture (e.g. Cronqvist, Low, & Nilson, 2007), compensation (Falato, Li, & Milbourn, 2011), as well as individual management practices and their clusters (e.g., Fu, Eisingerich, & de Hoyos, 2009). Current research agenda, however, appears to be missing a very important aspect of knowledge creation: the long-term monitoring of these practices for the establishment of causal relationship with firm performance. While there are a large number of studies on the relationship between management practices and firm performance, to the best of our knowledge, none of them are longitudinal, looking at the progression of management practices over the years and relating them to firm performance metrics. The

exploratory study presented here is the first part of a multi-part, multi-year project aimed at filling this important gap in our current knowledge in this domain.

At this time, the first objective of the project is to create a typology of companies and classify them as more or less efficient based on a number of theoretically-driven, objective criteria that can be observed from the "outside" of the company – that is, from publicly available information. There are several reasons for doing so. First, because collecting publicly available information does not require company involvement, and can be done in an efficient manner by researchers without expanding sufficient time and resources on data collection. Second, in the monitoring process we need to include different companies, with various degrees of efficiency. Finding which companies are efficient *before* entering the company for data collection can only be done by analyzing publically available data. Third, if our method of company analysis by using external data proves to be an efficient way to evaluate companies, other researchers will be able to use our methodology in their analysis.

Prior attempt at creating company typologies have taken many different approaches. The best well-known are typologies of Miles and Snow (1978), strategic typologies based on industry characteristics (e.g., Kearns, 2005), or typologies based on management characteristics (e.g., Hass, 1996). However, these typologies are somewhat limited, because they cannot be easily applied to every industry, and may not offer as much insight into the company as the typologies based on performance. Therefore, the main goal of this study is to create such typology based on the objective performance metrics, and then classify and describe the companies that fit different typological profiles.

THEORETICAL FOUNDATION

The overall study is based on a rich theoretical foundation formed on the intersection of several classical managerial theories. We use the theory of the allocation of time (Guest, 1956) and Vroom's (1964) expectancy theory to explain the mechanisms of formation of individual management practices and practice clusters within companies; industrial organization approach for looking at resource allocation within management domain; and resource-based view of the firm (Wernerfelt, 1984) to explain the relationship between managerial practices and firm performance. As management performance measurement is a rather complex process (Chiang & Lin, 2009), a large number of inputs and outputs are expected to be involved in the process. One of the methods for identifying individual inputs and outputs suggested previously (Chiang & Lin, 2009) is the Balanced Scorecard (BSC) approach, which has been shown to provide a realistic framework for the relationship between performance measurement and strategic objectives (Hasan & Tibbits, 2000).

The BSC approach is a formal measurement system, first offered by Kaplan and Norton (1992) to address the issues of agency issues between stakeholders and the company management. Per Kaplan and Norton (1992), there are four balanced perspectives to company management: financial, customer, internal business processes, and learning & growth, integrating a large number of both financial and non-financial indicators of company performance. These perspectives are connected through complex cause-effect relationships (Rusjan, 2005). Out of the four, financial and customer indicators are the dimensions that can be assessed from the "outside," without getting access to the inside information, aligning well with the goals of this study. While what constitutes financial performance is relatively clear, performance measures from the customer perspective are usually the subjective attributes such as customer satisfaction, loyalty, retention, and acquisition of customers (Kaplan & Norton, 1996), usually measured through behavioral summated rating instruments. Therefore, through the BSC approach has been thought of as a top-down approach to organizational management with heavy management input (e.g., Kanji & Moura, 2001; Malina & Selto, 2001), it is apparent that some BSC dimensions can be obtained and evaluated from the information not limited to the insiders, and through their causal interrelationships with other BSC factors, could serve as indirect indicators of the overall company effectiveness.

METHOD

Analysis Tool

For the purposes of management effectiveness benchmarking, one of the tools that has been used previously is the Data Envelopment Analysis (DEA) (e.g., Chiang & Lin, 2009). Though not widely used in management, DEA is a linear programming method (Charnes, Cooper, & Rhodes, 1978), which allows decision-making units (DMUs) to be assessed on a basis of multiple inputs and outputs, even when the production function is unknown (Adler, Friedman, & Sinuany-Stern, 2002). It is thought by some as superior to other methods (such as cluster analysis) because it does not only separate companies by certain characteristics, but also evaluates their output measures relative to each other on a number of different parameters. The main benefit of using DEA for this particular project is the ability to use several performance metrics as outcomes simultaneously. As company performance is not one-dimensional, and different companies may achieve a relatively superior efficiency level by using different means, using DEA as an analysis tool allows us to remove the subjectivity when weighting various performance metrics for company evaluation, and use the composite measure of performance efficiency to separate the companies. There are several methods of post-hoc DMU classification (such as the level of efficiency, e.g., Norman & Barry, 1991), all of which allow comparing companies relative to their efficiency peers. For further review of DEA please see, e.g., Adler et al., 2002.

Sample and Measures

As it is evident that different countries (Bloom and Van Reenen, 2010) and industries may have not only different managerial practices, but different performance indicators as well, we have started our exploratory work with the Russian domestic energy distribution sector (total sample size n = 38). Russian economy is unique, with both the elements of the developed and the emerging market economies present. Findings obtained in the Russian market may become useful for companies operating in either market, or for comparative cross-cultural research. We have focused on the energy sector as a starting point for a number of reasons. First, energy companies are relatively similar in their approach to management and business modeling. Therefore, it is less likely that the observed differences in management practices would be due to drastic differences in strategic orientation. Second, energy distribution business is relatively robust to fluctuations in BSC customer perspective. This is because energy distribution companies divide the market on a regional basis, with little to no competition, and customer demand, loyalty, and retention remain relatively stable compared to other industries, eliminating the need for introducing subjective summated rating indicators into the efficiency evaluation process. With a rare exception, companies are named for the region in which they operate, and that is how they are identified throughout the study.

Because financial performance indicators vary by industry (Braker, Keates, & Pearson, 2006), we have identified a number of performance metrics relevant to the energy distribution sector (e.g., Gutermuth, 1998). These indicators serve as the performance measurement inputs (current and long-term investments, company ownership status, costs, composite financial indicator -a simple average of large number of such indicators as financial liquidity, debt ratio, etc.) and outcomes (economic value added, labor productivity, costs, number of employees, and a number of calculated metrics based on the available outputs) for the DEA. Company size was measured in the number of employees and used as a control: all financial inputs and outputs were divided by the number of employees. We have also accounted for the fact that energy industry may be regulated, and some companies have guaranteed supplier contracts. Data was analyzed with Frontier software using denominator minimization approach.

RESULTS

DEA results are presented in Table 1 below. Using input/output contribution and availability of peers, we have further classified the companies into three distinct clusters. All but four companies were assigned a cluster based on their relative performance. First cluster was grouped together based on their lack of contribution on the long-term investment indicator; second – EVA indicator, and third – labor productivity indicator. Last four companies did not appear to belong in any of the first three categories.

TABLE 1: Results of Data Envelopment Analysis

				Input/Output Contributions[a]						*Peers*[b]									
CL[c]	***CO***[2]	***EL***[d]	***RIA***[e]	***CI***	***Costs***	***LTI***	***EVA***	***LP***	***CF***	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***I***	***J***
1	C1	*99.14%*	*3B1*	*97%*	*3%*	*0%*	*68%*	*25%*	*6%*	+		+	+						+
1	C2	*73.67%*	*3B2*	*90%*	*10%*	*0%*	*20%*	*30%*	*50%*			+	+	+					+
1	C3	*71.34%*	*1A*	*99%*	*1%*	*0%*	*71%*	*29%*	*0%*		+	+							+
1	C4	*58.71%*	*3B1*	*88%*	*12%*	*0%*	*30%*	*30%*	*40%*			+	+	+					+
1	C5	*43.11%*	*1B*	*97%*	*3%*	*0%*	*54%*	*39%*	*7%*		+	+	+						+
1	C6	*41.49%*	*3B1*	*98%*	*2%*	*0%*	*49%*	*38%*	*13%*		+	+	+						+
1	C7	*41.45%*	*3B2*	*96%*	*4%*	*0%*	*52%*	*25%*	*23%*			+	+	+					+
1	C8	*38.22%*	*3B1*	*97%*	*3%*	*0%*	*49%*	*44%*	*7%*	+		+	+						+
1	C9	*28.21%*	*3B1*	*98%*	*2%*	*0%*	*49%*	*40%*	*12%*	+		+	+						+
1	C10	*23.81%*	*1B*	*97%*	*3%*	*0%*	*44%*	*56%*	*0%*	+								+	+
1	C11	*16.49%*	*3B1*	*100%*	*0%*	*0%*	*46%*	*6%*	*48%*			+	+	+					
2	C12	*100.00%*	*1A*	*2%*	*90%*	*8%*	*0%*	*100%*	*0%*		+								
2	C13	*100.00%*	*1A*	*76%*	*24%*	*0%*	*0%*	*100%*	*0%*									+	
2	C14	*100.00%*	*2B*	*113%*	*-13%*	*0%*	*0%*	*100%*	*0%*										+
2	C15	*100.00%*	*2A*	*100%*	*0%*	*0%*	*0%*	*72%*	*28%*				+						
2	C16	*74.56%*	*3B1*	*7%*	*40%*	*53%*	*0%*	*100%*	*0%*		+				+		+		+
2	C17	*67.93%*	*3C1*	*87%*	*13%*	*0%*	*0%*	*88%*	*12%*					+				+	+
2	C18	*61.60%*	*3B1*	*11%*	*25%*	*64%*	*0%*	*67%*	*33%*		+		+		+				+
2	C19	*34.36%*	*3B1*	*86%*	*14%*	*0%*	*0%*	*82%*	*18%*				+	+				+	
2	C20	*31.74%*	*3C2*	*5%*	*4%*	*91%*	*0%*	*100%*	*0%*		+						+		+
3	C21	*100.00%*	*3B1*	*100%*	*0%*	*0%*	*100%*	*0%*	*0%*			+							
3	C22	*100.00%*	*3B1*	*37%*	*0%*	*63%*	*100%*	*0%*	*0%*							+			
3	C23	*100.00%*	*3C1*	*91%*	*2%*	*7%*	*79%*	*0%*	*21%*						+				
3	C24	*91.68%*	*3C2*	*88%*	*12%*	*0%*	*77%*	*0%*	*23%*			+		+					+
3	C25	*74.45%*	*3A1*	*100%*	*0%*	*0%*	*67%*	*0%*	*33%*			+		+					
3	C26	*60.73%*	*3B1*	*70%*	*15%*	*15%*	*80%*	*0%*	*20%*			+		+	+	+			
3	C27	*57.75%*	*2A*	*68%*	*0%*	*32%*	*66%*	*0%*	*34%*				+		+	+			
3	C28	*35.26%*	*3B1*	*61%*	*4%*	*36%*	*60%*	*0%*	*40%*			+	+	+		+			
3	C29	*32.87%*	*3B2*	*77%*	*23%*	*0%*	*74%*	*0%*	*26%*			+		+					+
3	C30	*27.86%*	*3B1*	*60%*	*12%*	*28%*	*62%*	*0%*	*38%*			+		+	+	+			
3	C31	*19.92%*	*1B*	*103%*	*-3%*	*0%*	*100%*	*0%*	*0%*			+							+
3	C32	*18.41%*	*2B*	*100%*	*0%*	*0%*	*57%*	*0%*	*43%*			+		+					
3	C33	*12.16%*	*2B*	*100%*	*0%*	*0%*	*35%*	*0%*	*65%*			+		+					
3	C34	*6.00%*	*1A*	*96%*	*4%*	*0%*	*100%*	*0%*	*0%*			+							+
	C35	*100.00%*	*2B*	*53%*	*9%*	*38%*	*43%*	*16%*	*42%*	+									
	C36	*100.00%*	*3B1*	*50%*	*50%*	*0%*	*0%*	*0%*	*100%*					+					
	C37	*100.00%*	*3C2*	*11%*	*15%*	*74%*	*0%*	*100%*	*0%*								+		
	C38	*97.32%*	*3B1*	*48%*	*0%*	*52%*	*36%*	*0%*	*64%*				+		+	+			

Note: [a] Input/Output Contributions: CI – Current Investments, LTI – Long-Term Investments, EVA – Economic Value Added, LP – Labor Productivity, CFM – Composite Financial Measure.
[b]Peers: Some of the same companies as above; in order listed, from A to J. Novosibirsk, Siberia, Ryazan', Belgorod, Buryatya, Dagestan, Chuvashia, Kalmykia, Moscow, Perm'.
[c]CL – Cluster number.
[d]EL – Efficiency Level.
[e]RIA – Regional Investment Attractiveness.

Post-Hoc Analysis

As was apparent from the presented results, the companies were clearly different in their level of efficiency. The more interesting question was whether there was anything in common between the companies belonging to a particular cluster that first, could be identified without obtaining additional company data; and second, was not accounted for with all the previous indicators. Upon careful analysis of the data, it was determined that indeed, the companies did have something in common – namely, the investment attractiveness of the region in which they operated. Regional investment attractiveness[3] (RIA) is a complex composite index calculated by the "RA Expert" Russian rating agency, based on a large number of indicators (financial, social, management, economic, ecological, and criminal). Based on a complex formula, a region is assigned one of ten possible grades, starting with 1A (most attractive) to 3D (the least attractive). This rating is show in column 4 of Table 1. Because the resulting scale is obviously ordinal, we have assigned a number 1-10 to each rating category in a descending order (1A = 10, 1B = 9, etc.) for further analysis.

Based on the RIA, we have determined that the companies belonging to the first cluster, united by their lack of output contribution to long-term investment, belong to the regions with very high levels of risk. The three exceptions are companies that are established for providing energy to specific large companies, and are, therefore, not subject to the same operating conditions as their peers in the cluster. For clusters 2 and 3, united by the lack of contribution to EVA and labor productivity, there was a clear relationship between effectiveness level and RIA. To further test the strength of this relationship, we have regressed the efficiency level on the RIA, and obtained the R-square (variance explained) of 0.68 for the second cluster and 0.43 for the second cluster. Considering that these clusters were formed using financial input and output measures without taking the regions into account, this is a very high percentage of variance explained by just one variable. In order to verify that the region did not play any role for the overall sample, the same regression was performed for all companies simultaneously, with resulting R-square very close to zero. In other words, knowing the investment attractiveness of a region in which the company operates could help determine which of the financial indicators would not contribute to the output, and therefore should not be used for evaluating the company's efficiency.

CONCLUSION

The objective of this study was to create a typology of companies and classify them as more or less efficient based on a number of theoretically-driven, objective criteria observed from the from publicly available information. Using an inductive approach based on DEA, we have determined that such classification is indeed possible. Results of the analysis indicate that once the inputs and outputs are selected and the DMUs' relative efficiency is obtained it is possible to further find the patterns not accounted for previously.

Contribution to Theory, Practice, and International Community

Results of this study have clear implications for research and practice. First, we have clearly demonstrated that it is possible, by using public information only, to separate the companies based on their levels of efficiency and further describe them using patterns and regularities not accounted for previously. Second, we have shown how the DEA could be used to evaluate relative efficiency of a company based on a large number of indicators, potentially aiding managers in the corporate performance review and evaluation. Third, by conducting the analysis on a sample of companies in Russia, we have opened the door for further research in comparative developed-emerging market research.

Limitations and Directions for Further Research

This study, clearly, has several limitations. First, it was conducted on a very narrow sample – that of an energy distribution industry. Because this industry is relatively homogeneous, there is less of a chance of third variable interference when evaluating a new method of efficiency analysis. On the other hand, it is too early to talk about the generalizability of the results, and the method has to be tested on a variety of different samples. Second, only the financial indicators were used, though the BSC approach, among many others, calls for a more complex

evaluation of the company's efficiency. While it is not uncommon for BSC evaluation to be reduced to financial analysis only, including other indicators, especially the customer perspective observed from the outside, could substantially enrich the analysis process and the resulting outcomes. Future studies could address these limitations, and find other uses for the classification process described in this paper.

REFERENCES

Adler, N., Friedman, L., & Sinuany-Stern, Z. "Review of ranking methods in the data envelopment analysis context." *European Journal of Operational Research*, 140(2002): 249-265.

Bloom, N., Kretschmer, T., & Van Reenen, J. "Work-life balance, management practices, and productivity." In *International Differences in the Business Practices and Productivity of Firms*, R.B. Freeman & K.L. Shaw (Eds.), University of Chicago Press, 2009.

Bloom, N. & Van Reenen, J. "Measuring and explaining management practices across firms and countries." *NBER Working Paper Series*, Cambridge, MA, May 2006.

Bloom, N. & Van Reenen, J. "Why do management practices differ across firms and countries?" *Journal of Economic Perspectives*, Spring 2010.

Bracker, J.S., Keats, B.W., & Pearson, J.N. "Planning and financial performance among small firms in a growth industry." *Strategic Management Journal*, 9(6), November-December 1988: 591-603.

Buccirossi, L. C., Duso, T., Spagnolo, G., Vitale, C. "Competition policy and productivity growth: An empirical assessment." *Social Sciences Research Center Berlin*, ISSN 0722-6748, 2009.

Carlson, S. *Executive Behavior*. Stockholm: Strombergs, 1951.

Charnes, A., Cooper, W.W., & Rhodes, E. "Measuring the efficiency of decision-making units." *European Journal of Operational Research*, 2(1978): 429-444.

Chiang, C.-Y., & Lin, B. "An integration of balanced scorecards and data envelopment analysis for firm's benchmarking management." *Total Quality Management*, Vol. 20, No. 11 (November 2009): 1153-1172.

Cronqvist, A. L., & Nilsson, M. "Does Corporate Culture Matter for Firm Policies?" *Working Paper*, 2007.

Dubin, R. & Spray, S.L. "Executive Behavior and Interaction." *Industrial Relations*, III (February 1964): 99-108.

Falato, A., Li, D., & Milbourn, T. "To each according to his ability? CEO pay and the market for CEOs." *Working Paper*, 2011.

Fu, X., Eisingerich,A., & and de Hoyos, R. "Clusters of management practices, structural embeddedness, and firm performance." *University of Oxford: Department of International Development, SLPTMD Working Paper Series* No. 008, 2009.

Guest, R. "Of Time and the Foreman." *Personnel*, XXXII, (May1956): 478-486.

Gutermuth, P-G. "Financial measures by the state for the enhanced deployment of renewable energies." *Solar Energy*, 64, September 1998: 67-78.

Hasan, H., & Tibbits, H. "Strategic management of electronic commerce: An adaptation of the balanced scorecard." *Internet Research*, 10(5): 439-450.

Hass, J. "Environmental ('green') management typologies: an evaluation, operationalization, and empirical development." *Business Strategy and the Environment*, Vol. 5, Iss. 2 (June 1996): 59-68.

Jasinski, F.J. "Foreman Relationships Outside the Work Group." *Personnel*, XXXIII (September 1956): 130-136.

Kanji, G., & Moura, P. "Kanji's business scorecard." *Total Quality Management*, 7(8)(2001): 898-905.

Kaplan, R.S. & Norton, D.P. "The balanced scorecard – measures that drive performance." *Harvard Business Review*, 70(1)(1992): 75-85.

Kearns, G.S. "An electronic commerce strategic typology: insights from case studies." *Information & Management*, Volume 42, Issue 7 (October 2005):1023-1036.

Malina, M.A., & Selto, F.H. "Communication and controlling strategy: An empirical study of effectiveness in the balanced scorecard." *Journal of Management Accounting Research*, 13(1)(2001): 47-90.

Rusjan, B. "Usefulness of the EFQM excellence model: Theoretical explanation of some conceptual and methodological issues." *Total Quality Management & Business Excellence*, 18 (1) (2005): 363-380.

Strong, L. "Of Time and Top Management." *The Management Review*, XLV (June 1956): 486-493.

Vroom, V.H. *Work and motivation*. New York: Wiley, 1964.

Wernerfelt, B. "A resource-based view of the firm." *Strategic Management Journal*, Vol.5, (1984): 171–180.

ENDNOTES

[1] According to Google Scholar, as of now, work of Bloom and colleagues has been cited over 500 times.

[2] CO = Companies. All companies have "Energy Distribution" in their names. In order listed, from C1 to C38: Archangelsk, Atom (Atomic Energy), Belgorod, Dagestan, Kalmychia, Karachaevo-Cherkesovo, Kirov, Kostroma, Lipetsk, Mordova, Moscow, Moscow region, Krasnodar, Novgorod, Orel, Perm, Ryazan', Samara, Saratov, Sverdlovsk, Novosibirsk, Sibur, Smolensk, Stavropol, Tula, Tumen', Udmirtia, Ulyanovsk, Chelyabinsk, Chita, Chuvashia, Rostov, Moscow (second), Vladimir, Volgograd, Vologda, Voronezh

[3] Detailed information about the rating agency, as well as RIA calculation and composition, can be obtained at: http://raexpert.ru/ratings/regions/2011/tab8/

Best policy practices for promoting energy efficiency. A structured framework of best practices in policies to promote energy efficiency for climate change mitigation and.Â Improving energy efficiency is supposed to be easy to do and contributes to energy security, a better environment, quality of life, and economic well-being for all. Energy efficiency is called â€œthe first fuelâ€ as it is the best way of getting more out of existing resources, supporting economic growth, and reducing energy costs.Â 1. identifying an effective typology and content for a menu of measures with effective and economic measures; 2. active engagement with ECE member States; 3. initiating a longer term regional evaluation, learning and collaboration process. Finally, Russia has real practical experience of tackling terrorist financing and engagement with countries and understanding of the situation on the ground, which can provide real leadership to the FATF. From what Iâ€™ve seen in Rosfinmonitoring, I think many countries around the world can learn from Russia. Russian FIUâ€™s way of information gathering, processing and understanding is very useful.Â ÂƒÂƒ engage with domestic intelligence agencies to improve the flow of TF-related information; ÂƒÂƒ examine the utility of cross-border wire transfer information in the context of combating TF; ÂƒÂƒ consider the reporting of couriers transporting cash or non-cash instruments across borders @inproceedings{Irina2012TypologyCA, title={Typology, classification, and characterization of firms for management best practices monitoring (case of russian domestic energy sector)}, author={Volkova Irina and Filinov Nikolay and Lebedeva Nadezhda and Kuskova Valentina}, year={2012} }. Volkova Irina, Filinov Nikolay, +1 author Kuskova Valentina. Published 2012.Â The notion that certain management practices at all levels create substantial competitive advantages for the company in the market received a lot of attention in the academic community over the years. A large body of work was accumulated as a result, though it appears that a comprehensive understanding of the relationship between management practices and firm performance is still lacking.