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Key Words

***Manufacturing
Strategy; Competitive
Priorities;
Privatization; Egypt;
Factory of the Future***

A COMPARATIVE STUDY OF MANUFACTURING STRATEGY CONTENTS AMONG STATE- OWNED, PRIVATIZED AND PRIVATELY-OWNED COMPA- NIES IN EGYPT: PAVING THE WAY FOR THE EGYPTIAN FACTORY OF THE FUTURE

Abstract

The purpose of this study is to empirically examine the differences in and the ranking of the future manufacturing strategy contents among Egyptian state-owned, privatized, and privately owned plants. Findings of this study indicate that the Egyptian factory of the future is focused on delivering the existing products, with better quality and lower cost with less emphasis on flexibility and innovation. It also shows that privatized plants place more emphasis on cost, quality, delivery, innovation, in that order. On the other hand, state-owned plants rank their future competitive priorities in the following order: quality, delivery, cost, flexibility, and innovation. Results of the analysis also show significant correlation between past and future levels of emphasis on the contents of manufacturing strategies for the entire sample.

Introduction

The strategy literature suggests a hierarchical relationship among the three different levels of strategy in an organization, namely, corporate-level; business-level; and functional-

level strategy (Fine and Hax, 1985; Gupta and Somers, 1996). While the main consideration of corporate-level strategy is the scope and resource deployments for the conglomerate di-

Submitted October 2000, Accepted February 2002.

in this study plant-level questionnaire, plant managers were asked to indicate, on a five-point Likert scale, the planned level of the emphasis they intend to place on each of these manufacturing strategy contents for the next years. Because this paper addresses intended as opposed to realized strategies, levels of focus placed on these dimensions are used as an indication of the competitive manufacturing priorities, as opposed to capabilities, for the surveyed plants.

Privatization Status variable includes two categories: state-owned no privatized units (working under law 203) and privatized companies (working under law 203 or 159). With the intention to privatize most, if not all, state-owned business firms, the term privatization status is commonly used in the government privatization program to distinguish between the two categories. On the other hand, Ownership Type was designed to reflect the three levels of ownership that exist in Egypt during the economic reform process. These are state-owned, privatized, and private firms (working under law 230).

Research Hypothesis:

Due to the nature of this exploratory study, a set of four null hypotheses was formulated for this study. These are: (1) There are no statistically significant differences between pre-

vious and future manufacturing strategy contents adopted by Egyptian manufacturers, (2) There are no statistically significant differences in the degree of emphasis on future manufacturing strategy contents between privatized and state-owned plants, (3) Ownership Type has no significant effect on the Egyptian factory of the future manufacturing strategy contents, and (4) For each manufacturing strategy content, the degree of association between past and future levels of emphasis is insignificant.

Statistical Analysis:

Since ordinal measurements were used in this study, nonparametric statistics were selected for response analysis. Most parametric statistical methods require that the measurements belong to at least the interval scale (Pfaffenberger and Patterson, 1977). Nonparametric tests are having the advantages of making the minimal assumption about the underlying distribution of data (Wonnacott and Wonnacott, 1977). In order to compare state-owned and privatized companies, Mann-Whitney test for two independent samples was used, while Kruskal-Wallis test for several independent samples was used to investigate the differences between the three ownership types. To compare manufacturing strategies in the past three years to that the company intends for

With respect to the effect of privatization, the findings indicate that the level of emphasis on all future strategies is consistently higher for privatized companies than the state-owned ones. The change of ownership type seems to create awareness among privatized firms to put more emphasis on all manufacturing capabilities.

Table 4
Manufacturing Strategy Contents for State-Owned and Privatized Plants (Mean Score)

	State-owned (N = 42)	Privatized (N = 17)
Quality	4.45	4.82
Delivery	4.43	4.47
Cost	4.02	4.97
Flexibility	3.71	4.00
Innovation	3.60	4.24

When considering the relative ranks of manufacturing strategies, it seems that state-owned plants will focus on quality, delivery, cost, flexibility and innovation, in that order. On the other hand, privatized plants tend to have slightly different future priorities. They will focus on lower cost, higher quality, on-time delivery, innovation, and then flexibility. Obviously, for the privatized plants, privatization is an opportunity to overcome the inherited sourcing labor and overhead cost and build a value factory during the 2000s. On the other hand, state-owned plants will place heavy emphasis on improving quality.

Mann-Whitney test results, as shown in Table 5, suggest the rejection of the second null hypothesis for almost all manufacturing strategies. The level of emphasis on quality, cost, and innovation by privatized companies is significantly different ($p < 0.05$) from state-owned ones. However, a less significant level ($p < 0.1$) was reported for delivery and flexibility. These results revealed that the privatized plants are significantly different in their future emphasis on the manufacturing strategy components.

Table 5
Manufacturing Strategy Contents By Privatization Status (Mean rank, Mann-Whitney U Test)

	SO (N=42)	PD (N=17)	U	Z	P
Quality	27.18	36.97	238.5	-2.31	.021*
Delivery	27.77	35.50	263.5	-1.72	.084 +
Cost	26.98	37.47	230.0	-2.62	.009*
Flexibility	27.82	35.38	265.5	-1.65	.098 +
Innovation	27.27	36.74	242.5	-2.01	.045*

SO: State-Owned; PD: Privatized

+ $P < 0.1$; * $P < 0.05$; ** $P < 0.01$

Type of Ownership and The Egyptian Factory of the Future:

One of the main elements of the Egyptian economic reform is to encourage the private sector to invest and grow efficiently. Most international organizations; such as the International Monetary Fund (IMF) and the World Bank (WB), are calling

for the private sector to play a leading role in the reform process. They base their argument on the preposition that under comparable conditions private companies will outperform state-owned ones. In this section, similarities and differences among state-owned, privatized, and private plants are presented.

Overall, our findings in Table 6 show that the strategic manufacturing visions were shown to be dissimilar across the three groups in terms of their ranking of all strategies.

Table 6
Manufacturing Strategy Contents By
Ownership Type (Mean rank, Kras-
kal-Wallis test)

	SO	PD	PT	Chi-Sq	Prob.
Quality	22.50	27.64	34.82	9.33	.009*
Delivery	26.41	24.43	30.24	1.21	.008*
Cost	27.55	33.86	25.08	12.22	.329
Flexibility	24.30	34.64	29.58	3.58	.171
Innovation.	22.38	37.86	31.24	7.79	.020*

SO: State-Owned; PD : Privatized; PT: Private;

* $P < 0.05$; ** $P < 0.01$

As for the level of focus on each strategy, privatized plants reported that they will put more emphasis on these strategies in their effort to build the future Egyptian factory. Surprisingly, private plants did not score higher in any future strategy relative to the other two groups.

The third Hypothesis states that Ownership Type has no significant effect on future manufacturing strategies. Kraskal-Wallis test results, as reported in table 6, show that different types of ownership will differ significantly on their level of emphasis on quality, delivery, and innovation in the future. Therefore, the third hypothesis was rejected ($P < 0.05$) for these three strategies. On the contrary, it was not rejected ($P < 0.05$) for both cost and flexibility.

The level of Association between Future and Past Manufacturing Strategies:

When testing the hypothesized level of association between future and past level of emphasis for each manufacturing strategies (H_0 number 4), Pearson correlation coefficient values, as reported in Table 7 support the rejection ($P < 0.05$) of this hypothesis. It is very interesting to discover a significant positive correlation between past and future level of emphasis in most manufacturing strategies for the entire sample. Companies who focused on particular strategies intend to focus on the same strategy in the near future. Table 7 results support this conclusion for quality, delivery, flexibility, and innovation. The hypothesis was not rejected for cost reduction strategy for the entire sample. The linear association between

past and future level of emphasis on cost reduction strategy was only detected for private plants. On the other hand, this correlation was significant for only quality improvement strategy in the case of privatized plants. This implies that privatized plants intend to rethink their manufacturing strategies through the 2000s regardless of its previous strategies. In this new environment of privatization and deregulation, the management of the Egyptian factory of the future will rethink their manufacturing strategies and place heavy emphasis on those that will enable them to compete globally.

Table 7
Past Verses Future Manufacturing
Strategy Contents
(Pearson Correlation Coefficient Values)

	SO	PD	PT	ALL
	N = 42N = 17N = 31N = 90			
Past three years "Quality"				
WITH future "Quality"	.364*	.540*	.451*	.409**
Past three years "Delivery"				
WITH future "Delivery"	.406**			.352**
Past three years "Cost"				
WITH future "Cost"			.373*	
Past three years "Flexibility"				
With future "Flexibility"	.664**			.544**
Past three years "Innovation"				
With future "Innovation"	.350*		.386*	.399**

SO: State-Owned; PD: Privatized; PT: Private-Only significant (two-tails probabilities) correlation values are reported, * $P < 0.05$; ** $P < 0.01$.

Conclusion and Managerial Implications

This research finding revealed that, in the future, cost and delivery strategies will be the top three priorities for most Egyptian manufacturers. Very similar to the American approach reported in 1992, the Egyptian factory of the future is focused on delivering the existing products, with better quality and lower cost. This result seems reasonable with the expected competitive business environment in Egypt during the 2000s where customer will be looking for the best value products. However, it seems that Egyptian manufacturers are not aware of the important of manufacturing flexibility and its expected role as a core competency and competitive capability for the future.

Our findings also indicate that manufacturing executives in Egypt intend to place heavy emphasis on manufacturing strategies in the near future. Notably, a major anticipated change is expected to occur on the level of emphasis on the innovation strategy that requires heavy investment in new technology and in R&D programs. This strategy used to be perceived as luxury content that only international and world-class producers could afford.

An encouraging result of this study is that the intended level of emphasis

- Noble, M. A. 1995. Manufacturing Strategy: Testing The Cumulative Model In A Multiple Country Context. *Decisions Sciences*, 26 (5):693-721.
- Pearce, J.A. and Robenson, R.B. 1994. *Formulation, Implementing and Control of Competitive Strategy*, (5th ed.). Burrige, Il: Irwin.
- Pfaffenberger, R. C. and Patterson J. H. 1977. *Statistical Methods for Business and Economics*. Richard D. Irwin, Illinois.
- Romano, J.D. 1983. *Operations Strategy: Strategic Management Handbook*. NY: McGraw-Hill, Inc.
- Roth, A. and Miller, J. G. 1987. *Manufacturing Future Fact Book*, Boston: Manufacturing Roundtable. School of Management, Boston University.
- Roth, A. and Giffi, C. 1993. Critical Factors For Achieving World Class Manufacturing. *Operations Management Review*, 10 (2):1-29.
- Roth, A. and Giffi, C. 1994. Winning In Global Markets: Neo-operations Strategies In U.S. And Japanese Manufacturing. *Operations Management Review*, 10 (4):1-36.
- Roth, A. and van der Velde, M. 1991. Operations As Marketing: A Competitive Service Strategy. *Journal of Operations Management*, 10 (3): 303-328.
- Skinner, W. 1969. Manufacturing: Missing Link In Corporate Strategy. *Harvard Business Review*, (May-June):136-45.
- Swamidass, P. M. and Newell, W.T. 1987. Manufacturing Strategy, Environmental Uncertainty And Performance: A Path Analytical Model. *Management Science*, 33 (4): 509-524.
- Vastag, G. and D. Whybark C. 1994. American And European Manufacturing Practices: An Analytical Framework And Comparisons. *Journal of Operations Management* 12 (1):1-11.
- Vickery, S. K., Droge, C. and Markland, R.E. 1994. Strategic Production Competence: Convergent, Discriminant, And Predictive Validity. *Production and Operations Management*, 3 (4):308-318.
- Ward, P. T., Bickford, D. J. and Leong, G. K. 1996. Configurations Of Manufacturing Strategy, Business Strategy, Environment And Structure. *Journal of Management*, 22 (4):597-626.
- Ward, P. T., Duray, R., Leong, G. K., Sum, Chee-Chuong 1995. Business Environment, Operations strategy, and Performance: An Empirical Study Of Singapore Manufactures. *Journal of Operations Management*, 13 (2):99-115.
- Whybark, D.C. and Vastag, G. (Eds.), 1993. *Global Manufacturing Practices*. Amsterdam, Elsevier.
- Wheelwright, S.C. 1984. Manufacturing Strategy: Defining The Missing Link. *Strategic Management Journal*, 5 (1):77-91.
- World Bank Report 1994. *Private Sector Development In Egypt: The Status And The Challenges*. Conference On "Private Sector Development In Egypt: Investing In The future", Cairo.
- World Bank Report 1998, Egypt.
- Wonnacott, T.H. and Wonnacott, R. J. 1977. *Introductory Statistics For Business and Economics, Second Edition*. N.Y. John Wiley & Sons.

الملخص

التوجهات الاستراتيجية الإنتاجية المستقبلية للشركات الصناعية المصرية: دراسة مقارنة لشركات قطاع الأعمال العام والشركات التي تم خصصتها وشركات قطاع الأعمال الخاص

محمد توفيق ماضي

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تهدف هذه الدراسة إلى اختبار مدى وجود فروق معنوية في درجة التركيز على التوجهات الاستراتيجية الإنتاجية بين ثلاث مجموعات من الشركات الصناعية المصرية هي: شركات قطاع الأعمال العام، وشركات قطاع الأعمال التي تم خصصتها، وشركات القطاع الخاص. ولقد أوضحت نتائج الدراسة أن الشركات الصناعية المصرية سوف تركز بصفة عامة على استراتيجيات تقديم نفس المنتجات الحالية، ولكن بمستوى جودة أفضل وبتكلفة أقل. ومن ناحية أخرى فإن الشركات سوف تركز تركيزاً محدوداً على كل من المرونة والابتكار كليهما بوصفهما توجهات استراتيجية مستقبلية. وقد خلصت الدراسة أيضاً إلى أن الأولويات الاستراتيجية للشركات الخاصة سوف تتمثل في تخفيض التكلفة ثم تحسين الجودة، يليها التسليم في المواعيد والابتكار. وفي المقابل فإن الأولويات الاستراتيجية لشركات قطاع الأعمال العام سوف تتضمن تحسين الجودة أولاً، يليها التسليم في المواعيد، ثم تخفيض التكلفة، وأخيراً المرونة والابتكار. كذلك توصلت الدراسة إلى وجود علاقة ارتباط معنوية بين الاستراتيجية التي ركزت عليها خلال السنوات الثلاث السابقة، فالمعتاد أن تميل الشركات إلى التركيز على نفس الاستراتيجيات التي اتبعتها من قبل، مما يعني اتباع سياسة تحفظية من حيث التغيير المستقبلي لتلك الاستراتيجيات.

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