

# “Investment of Resources to Become Competitive: A Survey of Polish Manufacturing Companies”

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## **CHAPTER 2**

# **MANAGEMENT IN FIRMS AND ORGANIZATIONS**

### **Investment of Resources to Become Competitive: A Survey of Polish Manufacturing Companies**

Mark Wermus

#### **Abstract**

In view of unprecedented transition of the Polish economy, the privatization of manufacturing organizations and the investment of foreign funds in Polish companies, we wanted to learn about manufacturing practices in Polish companies during the period of transition. Analyzing how the companies use forecasts and then where they allocate limited resources may help us to better understand the transition economy and estimate if the way they have chosen may lead them to become world class manufacturers. Poland is a gateway country to other countries in the Eastern European region and many companies in those countries will use the experience of Polish companies either to follow good results or to avoid mistakes.

**Key words:** Polish manufacturing, investment of resources, economy of transition.

#### **1. Introduction**

For over 40 years, Eastern European countries were totally dominated by the former Soviet Union. Polish economic policies were state-imposed and a free-market economy was almost non-existent. Almost all organizations were owned by the state although, uniquely for Poland, there were many privately owned small farms and a few small manufacturing, retail and service companies. Production planning and control for all state-owned companies were prepared and performed at the top levels of the respective state ministries. There were no incentives for any company to follow new and modern production/operations planning and control techniques that emerged during that period of time, like MRP (MRPII), JIT, TQM, and others. Fulfilling quotas imposed by planners at the respective ministries was the objective of management at a company level. Then, in late 1980's, communism in Europe and Soviet Union collapsed. Not only people of that region were freed politically, but so were economic policies, and thus the companies. A program of radical reforms to create an institutional and economic basis for a market economy was introduced. An economy in transition, from a socialism command economy to a capitalism free market economy, has been experienced in Poland. The process of privatization of state-owned enterprises has begun. The new Polish Constitution was passed in the Polish Parliament and approved by the people of Poland. New administrative/regional provinces were established. Poland began entering modern Europe. It is anticipated that within a few years Poland will become an integral part of the European Community. An increasing number of Polish companies have become a part of large world corporations and more companies, especially manufacturing ones, have been trying to find foreign investors in order to become world class manufacturers. A thorough study of the evidence of the first few years of adjustment by Polish manufacturing firms was conducted in 1993, three years after the Abig bang@ by Pinto et al. (1993). For the past five years Poland has been the fastest-growing economy in Europe, averaging a growth of 5.9% a year. Foreign direct investments over that period of time amounted to \$28.5 billion (e.g., Anonymous, 1999). For example, Glaxco invested \$220 million in Polish Polfa pharmaceutical company as reported by Reid (1999). Hallam (1999) claims that the speed of privatization has been inconsistent since the fall of communism, but the process toward freeing the economy has never really

been in danger of reversal. The Ministry of the Treasury is in charge of the coordination of privatization. It emphasizes that the goal of privatization is not simply to provide windfalls for the government, but that it forms part of the ideological goal of securing economic development and competitiveness of Polish companies. According to the Ministry of the Treasury (1998) at the beginning of 1999 there were still over 3,000 state-owned companies out of which only 50% were still profitable in 1997.

In view of this unprecedented transition of the Polish economy, the privatization of manufacturing organizations and the investment of foreign funds in Polish companies, we wanted to learn about manufacturing practices in Polish companies during the period of transition. Analyzing how the companies use forecasts and then where they allocate limited resources may help us to better understand the transition economy and estimate if the way they have chosen may lead them to become world class manufacturers. Ferdows (1989) lists four reasons why we need to know more about how manufacturing is done around the world: (1) world trade in manufactured goods is increasing faster than world trade in general; (2) companies are spreading their production globally at a rapid pace; (3) improving manufacturing performance is the best way for most countries to improve their economies and their living standards; (4) comparing different practices in different settings is a rich source of ideas and insights.

## **2. Literature review**

Most of the research involving economies in transition has been done in the area of finance/banking, as discussed by Chodyla (1999) or Dockery and Herbert (2000). Another very important step to becoming a part of market economy was to have organizational structures that could respond to the new environment, as addressed by Sojka (1999). Ghemawat and Kennedy (1999) discuss the microeconomic implications of sweeping economic policy experiments by analyzing the evolution of industrial structure in the wake of a competitive shock in Poland. There is rather very limited research on Polish manufacturing companies, though Chrobot et al. (1999) present an example of implementing western-style shop-floor control systems in a Polish manufacturing company.

In 1985, Global Manufacturing Research Group (GMRG) was founded, whose initial objective was to develop a survey instrument to assess manufacturing practices in many countries around the world. We used some of the ideas presented in the book edited by Whybark and Vastag (1993).

## **3. Research questions and methodology**

Our study should add to better understanding of company operations in Poland. It should help the decision makers who consider investing in Polish companies to be better prepared to recognize areas of strengths as well as deficiencies. Poland is just one of many countries that go through the period of transition although Hallam (1999) and Hyam (2000) argue that the reforms in Poland are progressing much faster and deeper than in other countries. Brady (1999) and Hall (1999) view Poland as a gateway country to other countries in the region who may want to take into consideration Polish experiences. Our study may help in this area as well.

The questions of allocating existing resources to support various programs and how to invest new resources in new or existing programs may show the directions a company has chosen in order to become more competitive. The specific questions and the results are presented in the next section.

Copies of the questionnaire were distributed to top management of more than 350 companies through a variety of ways, predominantly through personal contacts, in spring and summer 1999. We selected medium and large size companies (250 or more employees) because such companies were mostly either sought after by foreign investors or were actively involved in finding new investors. The author of this paper visited about two dozens of the companies and conducted personal interviews with management of various departments.

## 4. Results

Unless otherwise stated, we used a five-point Likert scale (1 = not at all, 5 = to a great extent). Up to this moment, 87 responses have been received. Besides statistical means, we also included the number of no answers. From the interviews with the management of some of the companies, it was rather apparent that in many such cases the respondent was not very familiar with the term and preferred not to answer the question (After having tested our pilot questionnaire, we considered adding a new answer "Not familiar with the term" or "Not applicable" but were advised that it could be offensive to many respondents and the answers could be biased).

### 4.1. The respondents

Tables 1a and 1b summarize the characteristics of the respondents by employment and sales (in million PLN, the Polish currency, the so called new zloty).

Table 1a

Profiles of respondents by employment

Employment	No. of companies
250-499	46
500-999	26
1,000-1,499	15

Table 1b

Profiles by sales

Sales in mln PLN <sup>1</sup>	No. of companies
1.0-24.9	18
25.0-49.9	22
50.0-99.9	21
100.0-249.9	26

1\$1 approximately = 4PLN

We only collected data from medium- and large-size manufacturing companies with make-to-order production of 90% or more of total production (we did not include data from a few manufacturing companies who make more make-to-stock products). In all companies, a production employee works between 1,800 and 1,875 hours per year. All companies have an information system department with several employees whose main responsibilities are to make hardware and software purchasing recommendations, maintain data bases and administer area networks.

### 4.2. Forecasting

In order to lead a company to becoming a world class manufacturer we need to have a vision about the future. All plans to be developed in a company always pertain to the future. The use of forecasting techniques helps develop such plans. Forecasts are prepared by personnel from either marketing/sales or finance departments (Table 2) at the relatively high management level position (Table 3).

Table 2

Departments preparing forecasts

Department	No. of companies
Marketing/Sales	54
Finance	33

Table 3

## Position of forecaster

Position	No. of companies
President/CEO	19
Vice president	21
Department head	47

Table 4 shows where forecasting techniques are used. It is very encouraging that financial responsibility (budget preparation) received such high attention. All of the respondents answered this question and gave it a high rate (average of 4.35). Human resources planning immediately follows the budget preparation. This very high position of HR is quite an interesting result in the view of the huge difference between socialism and capitalism. Under communism every person had the right to work and there was no unemployment in Poland. The 90s introduced totally different employment policies, and double-digit unemployment rates have been common.

Table 4

## Purposes of forecasts

Purpose	No. of companies					Mean	No answer
	Not at all		To a great extent				
	1	2	3	4	5		
Budget preparation			12	33	42	4.35	
Human resources planning			15	28	39	4.29	5
Production planning		3	25	31	28	3.97	
Sales planning		12	29	31	5	3.38	10
Equipment purchase planning		12	33	31	4	3.34	7
Material/inventory planning	5	21	29	11		2.70	21
New product development plans	8	21	49	6		2.64	3
Facilities planning	18	33	10	16	2	2.38	8
Subcontracting decisions	51	16				1.24	20

From personal interviews we learned that the forecast is primarily used to develop a plan to hire young employees with the knowledge and skills of western managers. For example, knowledge of foreign language has a very positive impact on hiring. It is expected that the young manager will be able to improve his/her skills by studying foreign literature and will be able to communicate with his/her counterpart from a foreign country company.

The use of forecasts in production planning must be new to the management of many companies. Under the command economy, the manufacturing companies merely had to fulfill quotas imposed by national ministries. Now, the managers must develop the plans by themselves (our next section presents the results on factors that influence production plans). Somewhat intriguing is the gap between production planning and sales planning. The use of forecasts in planning received much higher responses than in sales. One possible explanation is that all of our respondents are make-to-order companies and have developed a strong relationship with their typical ordering companies.

Modernization of equipment is quite important in order to become competitive. The use of forecasts in developing plans to purchase new equipment is relatively high with the average of 3.34. On the other hand, the use of new product development is relatively low. We attribute it to the fact that many companies rely too heavily on the relationship with the ordering companies. At the bottom of the list are facilities planning and subcontracting. The answers are quite consistent

with the fact that capacities of Polish manufacturing companies greatly exceed demand, and there is no reason to plan for new facilities or to delegate some of the production to subcontractors. It also related to the lack of funds, and the investors are more interested in how to efficiently use the existing facility than to build a new one. In addition, subcontracting in Poland is viewed as looking for additional trouble or problems when dealing with an additional company rather than a very valid technique to address some of the capacity shortages.

#### 4.3. Investment of resources

Table 5 shows how the companies invested resources (money, time, and/or people) in the last two years in selected programs. Polish companies invested extensive resources in information systems departments, purchasing hardware, software and hiring information systems personnel. In another section, we will discuss the way Polish manufacturing companies use computers. Deans and Kane (1992) claim that companies trying to make a successful transition under uncertain and turbulent economic conditions invest heavily in Information Technology (IT). The result of our survey confirms this claim, and investment in computer hardware/software is at the top of the list with the high average of 4.38. Management of many companies think that IT is the best and fastest way to improve productivity. The necessity to invest resources in productivity improvement to become a world-class manufacturer is quite understood by Polish managers.

Table 5

#### Investment of resources in programs

Program	Number of companies					Mean	No answer
	Not at all	To a great extent					
	1	2	3	4	5		
Computer hardware/software			8	39	40	4.38	
Productivity improvement		9	22	33	23	3.77	
Other (environment protection)*			13	19		3.59	55
Manufacturing time reduction	5	8	31	28	4	3.26	11
Factory automation		27	31	29		3.02	
Setup time reduction	15	20	17	23	12	2.97	
Total quality management	12	19	27	18		2.67	11
MRP	10	18	33	12		2.66	14
Recycling of materials	21	32	18			1.96	16
Supplier partnership	27	28	21			1.92	11
Just-in-Time	14	15	8			1.84	50
Process analysis	32	17	15			1.73	23
Statistical Process Control	30	15	12			1.68	30
Cellular manufacturing	32	17	3			1.43	35
Employee participation	31	19				1.38	37

\*Other represented a write-in answer. The mean of 3.59 is for environment protection answer only. No answer of 55 represents either a true no answer (skipped question) or a different than environment protection write-in answer.

All companies are involved in such a program, and it received the second highest response (average of 3.77). However, the difference between the investment in IT and the productivity improvement is striking (averages of 4.38 and 3.77, respectively). The write-in question ("other") brought an interesting result: 37% of the respondents added environmental protection programs as the one that requires quite significant resources (mean of 3.59). The pressure from European Community countries on Poland to clean the environment is quite visible. It is rather interesting to notice that some of the elements of MRP or JIT techniques, e.g., setup time reduction

(mean = 2.97), received much higher averages than the techniques themselves (mean for JIT equals 1.84). For JIT, MRP, and TQM we used both, English proper names and the Polish translations. The English acronyms for most of the modern techniques (e.g., MRP, MRPII, TQM) are widely used by Polish management. Again, no answers seem to indicate that the respondents did not feel very comfortable with the terms or were not sure how to answer. It is rather disturbing that quality management (QM) questions occupy the bottom of Table 5. Das et al. (2000) indicate that quality management in general and the techniques in particular are critical to becoming competitive and world class organization. Powell (1995) claims that more than 90% of large U.S. corporations practice QM because, according to Kim and Miller (1992), the importance of quality is believed to be one of the five competitive priorities of U.S. manufacturers. Lisiecka (1999) presents the implementation of ISO 9000 standards in Polish companies and concludes that for manufacturers the most important reasons for beginning work on quality assurance system are external.

On the other hand, old habits are hard to break, as evidenced by almost non-existent employee participation (the very bottom average of 1.38 and 37 respondents did not answer the question). Under communism, workers did not count. All planning and execution were from top to bottom. It seems that not much has changed in this category.

#### 4.4. The use of computers

Table 6 shows the use of computers to support various functions within the companies.

Table 6

The use of computers

Function	Number of companies					Mean	No answer
	Not at all		To a great extent				
	1	2	3	4	5		
Other (payroll)*			4	26	11	4.17	46
Product Design			32	34	21	3.87	
Purchasing	15	32	30	10		2.40	
Inventory Management	19	32	27	6		2.24	3
Production Planning	17	33	19	8		2.23	10
Production Scheduling	26	34	12	5		1.95	10
Sales forecasting	32	29	10	3		1.78	13

\*Other represented a write-in answer. The mean of 4.17 is for payroll answer only. No answer of 46 represents either a true no answer (skipped question) or a different than payroll write-in.

All surveyed companies use computers in payroll, and this function received the highest average (4.17). The fact that computers are so widely used in product design (mean of 3.87) is very encouraging. A company that wants to be competitive must offer many new products quickly, reliably, and on time. Use of computers can help achieving these goals. Janson and Wrycza (1999) published an interesting study of the use of IT in introducing new and innovative products and services in three Polish companies. On the other hand, computers are rather seldom used in typical operational decisions: inventory management, purchasing, production planning or production scheduling. The averages for these functions are around 2, which indicates that the companies still do not need the computers or do not know how to use them to support these decisions. One could only believe that the implementation of selected modules of SAP R/3 systems in more than 140 Polish companies (<http://www.sap.com/poland>) should help in understanding the importance of the use of computers in operational functions, especially in manufacturing companies. The last position of sales forecasting in the use of computers is also discouraging.

#### 4.5. Production planning

Many factors influence the development of the company's production plans. Table 7 shows seven different factors and the extent to which they affect the respondents' production plan.

Table 7

Factors influencing production plan

Factor	Number of companies					Mean	No answer
	Not at all		To a great extent				
	1	2	3	4	5		
Customer order backlog				26	61	4.70	
Customers' future plans			19	23	42	4.27	3
Forecast		5	26	31	25	3.87	
Machine capacity			42	20	25	3.81	
Inventory levels		19	38	29		3.12	1
Labor capacity	19	29	22	12	5	2.48	
Previous sales	28	31	22			1.93	6

Customer order backlogs is the most important factor in developing a production plan and it received the highest mean of all questions we asked (average of 4.70). To be competitive in a global market the companies realize that they have to serve their customers very well. It might be the most dramatic lesson the management learned since the collapse of communism. There are no more shortages of goods in stores. There is no more selling all goods that have been produced. Customers' future plans are second with the average of 4.27. The producers seem to understand that they must also anticipate future customer needs and adjust accordingly. The top positions of the customers' roles in influencing production plan is quite consistent with the fact that the respondents are make-to-order companies. For make-to-stock the answers could be different. It is interesting to notice that the production plans depend much more on the machines' capacity than on labor capacity (averages of 3.81 and 2.48, respectively). It may be related to the high unemployment rate in Poland though; on the other hand, companies do take labor problems into account as evidenced in the use of forecast in human resources planning (see Table 4). The small role of previous sales in developing a production plan (average of 1.93) is likely the result of the rapid changes in the Polish economy, high level of inflation, and huge social/behavioral changes.

## 5. Conclusions

In this paper we wanted to share data collected from Polish companies about manufacturing practices, such as the distribution of resources in various programs, the use of computers, the use of forecasts, and what is important in developing production plans. In view of foreign investments in Polish companies, the knowledge of how Polish management in manufacturing companies conducts business should be of great interest, not only to academia but to industry practitioners as well.

Management of Polish companies realizes quite well that there is a long way to become world class manufacturers. It seems that in late 90's many in make-to-order companies relied very heavily on the ordering companies because this resembled the state-run economy of the past. In many instances, the investment of resources into future productivity gains is questionable and does not reflect current trends, especially in the view of QM techniques. On the other hand, more than 140 Polish companies have implemented some of the modules of the SAP R/3 system, however, mostly the human resource module.



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