SUPPLY CHAIN MANAGEMENT IN JAPANESE COMPANIES LOCATED IN POLAND - CASE STUDIES

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Abstract

The main aim of the paper is the identification of the scope and barriers of organization and operation of Japanese supply chains and networks in the different socio-economic condition in Poland. In the paper the six in-depth case studies of first tier-suppliers from automotive sector have been analysed in terms of facility location, planning, organization and control of processes, transport and warehousing, purchasing and inventory management, distribution and customer service, eco-logistics, supply chain social responsibility, production logistics, research and development, information technology, cooperation with local authority. The research showed a diversity of implemented methods and management tools as well as conditions for their adaptation in different macroeconomic, regulatory, social and cultural and infrastructural environments. The effective implementation of methods and techniques of Japanese supply chain management in companies operating in Poland required significant changes in the process of human resources managements.

Keywords: Supply chain management, Japanese management methods, automotive sector, Japanese foreign direct investments

1. INTRODUCTION

Contemporary supply chain management means making decisions and taking actions consisting in synchronization of physical, informative and financial supply and demand streams in order to increase the value added for all its links, final customers and other stakeholders. There are three key arguments which motivated the authors to conduct research concerning comparative analysis with regard to Japanese methods of supply chain management in Poland:

1) There are no complex and in-depth studies concerning the organization and operation of Japanese supply chains and networks in Poland.
2) In particular there is no comparative analysis concerning motives, barriers and experiences with regard to transfer and adaptation of methods of organization and practice of operation of supply chains created as a result of direct foreign Japanese investments in Poland since the 70s of the 20th c.
3) Modern supply chain management is not restricted to the optimization of procurement and distribution, production and return processes but also includes quite poorly diagnosed problems of product and supply network configuration, joint product designing with the use of the capability of suppliers and forming partner strategic relations between the entities of supply network in order increase the added value for the customer.

Therefore, the main aim of the paper is the identification of the scope and barriers of organization and operation of Japanese supply chains and networks in the different socio-economic condition in Poland.

In the paper the six in-depth case studies of first tier-suppliers from automotive sector have been analysed in terms of: facility location; planning, organization and control of processes; transport and warehousing; purchasing and inventory management; distribution and customer service; eco-logistics; supply chain social responsibility; production logistics; research and development; information technology; cooperation with local authority.

The study results, which are presented in the paper are a part of the research project realized by the authors under the title „Management methods in Japanese supply chains in Poland and Great Britain", accepted in Poland by the National Science Centre. Six Japanese automotive manufactures, as links in supply chains located in Lower Silesia region in Poland, have been analyzed: Toyota Motor Manufacturing Poland, NSK Steering Systems Europe, Daicel Safety Systems Europe, Sanden Manufacturing Poland, Takata Parts Polska and Tbmeca Poland.

The structure of the paper is as follows: in the next part the information on Japanese investments in Poland has been introduced. The following part of the paper presents the decisions regarding supply chain management. Then the methods and objectives of the research have been described. The last part presents the study results regarding eleven selected areas of decisions in supply chain management.

2. DECISIONS REGARDING SUPPLY CHAIN MANAGEMENT

In the relevant literature there are a lot of definitions of the supply chain management [1-3]. Despite such a wide variety of definitions it is possible to identify in them certain coherent areas, such as the necessity of integration and coordination of activities related to business functions within the framework of the whole supply chain. The analysis of 38 different definitions of the supply chain management carried out by Deshpande (2012) [4] indicates that the most frequent element identified in them includes long-term cooperation (10 definitions), information technologies (8 definitions) and integrated design, strategic purchase and logistics (in 7 definitions). According to authors and in reference to the literature, one can distinguish universal decision-making areas relevant for the supply chain management, in particular on the international market. They include: facility location planning [5,6], organization and control of processes [7] transport and warehousing, purchasing and inventory management, distribution and customer service [8,9] eco-logistics [10], supply chain social responsibility, production logistics, research and development, information technology, cooperation with local authority. According to authors, these decisions may be referred to the classic division of decision-making areas in the supply chain management proposed by R. Cooper and R. Slagmulder (1999) [11]. It must be borne in mind that particular decisions may be qualified to a few decision-making areas simultaneously (**Table 1**).

Table 1 Decisions' area in supply chain management

Decisions' areas	Product and network configuration	Production network formation	Common design of products	Optimisation of processes in a supply chain
Facility location	x	x		
Planning, organization and control of processes	x	x		x
Transport and warehousing	x	x		x
Purchasing and inventory management	x	x		x
Distribution and customer service	x		x	x
Eco-logistics	x		x	x
Supply chain Social Responsibility	x		x	
Production Logistics		x	x	x
Research and Development	x		x	
Information Technology	x			x
Cooperation with local authority	x			

Source: authors' own description based on Cooper R., Slagmulder R., Supply Chain Development for the Lean Enterprise - Interorganizational Cost Management. Productivity Press, Portland, 1999, p. 10.

3. RESEARCH METHODS

This paper presents the results of research conducted under the research project “Management methods in Japanese supply chains in Poland and Great Britain” financed from the National Centre of Science in Poland. The research procedure consisted of six stages. At the first stage the critical analysis of the literature concerning the Japanese management methods was carried out. On the basis of this analysis the research tool in the form of interview questionnaire covering eleven research areas, such as: location decisions, planning, organization and control of processes in supply chain, transport and storage, purchase and inventory management, waste logistics, social responsibility in supply chain, production logistics, R&D, telecommunication systems as well as cooperation with local government, was developed.

As a part of research focus interviews with representatives of six enterprises from automotive industry located in the Lower Silesia Province, Poland, were conducted. All analyzed enterprises are first row suppliers in Japanese supply chain. The research was carried out with the use of the categorized interview questionnaire, complementary interviews and the analysis of organizational documentation of enterprises. The research process in Poland was conducted in the years 2015 - 2016. The enquiry related to the possibility of conducting research was sent to all 11 enterprises of the automotive industry located in the Lower Silesia Province in Poland. As a result, the research was carried out in six Japanese companies. A short characteristics of surveyed enterprises was presented in **Table 2**. At the next stage the study results were analyzed. Finally, the authors draw conclusions and recommendations.

Table 2 General information about analysed Japanese automotive companies in Poland

Specification	Company A	Company B	Company C	Company D	Company E	Company F
Business activity of the surveyed enterprise (first row suppliers)	The production of steering equipment, precision and mechatronic products	Producer of manual and semi-automatic transmissions for cars	Producer of air bag fillers.	Producer of air-conditioning compressors.	Producer of seatbelts and air bags.	Producer of air filter for engines.
Employment figure	Approx. 400 people	Approx. 1500 people	Approx. 400 people	Approx. 600 people	Approx. 600 people	Approx. 100 people
Year of establishing the company in Poland	2000	1999	2004	2004	1995	2003
The manner of controlling the production in the enterprise	based on actual demand (alternatively, on several day forecasts)	based on short-term, medium-term and long-term forecasts	based on actual demand (alternatively, on several day forecasts) and short-term forecasts	based on short-term forecasts (from a few weeks to one month) and medium-term forecasts	based on actual demand (alternatively, on several day forecasts) and medium-term forecasts	based on actual demand (alternatively, on several day forecasts)

4. STUDY RESULTS

On the basis of conducted focus interviews and the analysis of documents of particular companies the research results were obtained in reference to the following decision-making areas in Japanese supply chains:

Research areas	Results
Location decisions	The main reason for companies locations were: tax exemption, low salary, low investment costs, investment attractiveness, access to suppliers and the level of the development of the market of logistics services
Planning, organization and control of process in supply chain	The decision-making center for supply chain management is situated in logistics department. There are no departments of supply chain management in organization structures in analyzed companies. Cooperation with partners exist mainly in joint projects of products and optimization of supply processes. In analyzed companies standards based on referential models (e.g. SCOR) are not incorporated in SCM. Only three analyzed companies measure and assess costs and effects of cooperation in supply chains.
Transport and warehousing	Among analyzed companies there are various approaches to the factors determining the selection of transport and warehouse services' model. Some companies focus only on lower costs and some on the proper quality of customer service. Only one analyzed company take into account both factors: lower costs and high level of customer service. Also one company focus only on customer satisfaction.
Purchasing and inventory management	The most important criteria for supplier's selection are: the price of the product and the quality of components. Less, but also important, were: the quality certificate possessed and costs of transport.
Distribution and customer service	The majority of customers are situated in Europe. The majority of surveyed entities have from 6 to 10 customers, which are leaders in their supply chains. Most analyzed companies develop a strategic partnership with customers
Waste logistics	Waste logistics is not a priority because of the Japanese tradition and culture which commands a respect for nature - it is a standard.
Social responsibility in supply chain	There are both formal and informal approach to the concept of social responsibility in analyzed companies. The share of foreign capital (other than Japanese) influences this approach (e.g. in supply chains with German capital is more formal approach). In supply chains with Japanese capital the CSR concept is embedded in the organizational culture of all enterprises.
Production logistics	All analyzed companies implemented the main method and concepts of TPS. The biggest problems with implementation were in terms of methods such as: Kanban and Productive Maintenance System. In those companies, where reactive manner of inventory management according to the Just-in-Time concept was implemented no problems with the shortage of components for production were identified.
R&D	The Polish branches of Japanese companies mostly are not responsible for the R&D process as the parent company deals with that (the supply chain leader).
ITC systems	In analyzed companies there is no integrated information system among tiers in supply chain. Most companies implemented only bar codes for data capturing (only one RFID).
Cooperation with local government	Japanese companies located in Poland cooperate with local government in the area of organization of cultural or sports events in the city, organization of commuting of employees to the company by public transport, assistance in recruiting employees, developing infrastructure in a city.

5. CONCLUSION

The research conducted in selected Japanese companies in Poland showed a diversity of implemented methods and management tools as well as conditions for their adaptation in different macroeconomic,

regulatory, social and cultural and infrastructural environments. A thorough case studies allowed to formulate a few conclusions concerning the patterns of operations of Japanese supply chains in the automotive branch in Poland.

The biggest barrier for the implementation of TPS (Toyota Production System) in Poland was the unfavorable (significantly different) culture of the country. The respondents believed that the greatest problems were encountered by the employees of the analyzed companies while implementing Kanban technique and Total Productive Maintenance. The least difficult was the implementation of Poka Yoke.

There is no supply chain department in analyzed companies and the logistics departments are mainly responsible for the inventory levels. Despite the full transparency of information in SCM is important, the IT systems integrating whole supply chains are missing. Japanese companies are still oriented on more traditional, stable and slow development than on dynamic, innovative expansion with regard to the implementation of up-to-date IT Technologies. The analyzed companies try to respect the natural environment according to the concept of a sustainable supply chain without the need for formalization of activities and the certification of management systems. The cooperation with regard to R&D focuses mainly on streamlining technological processes and the development of new products. Decisions and activities related to R&D usually are taken by headquarters in Japan or Western European countries. The analysed enterprises value more benefits from relation with local government in the early phases of the lifecycle of an investment. On the other side, the local government prefers relations in the phase of well-developed operation of an enterprise in the region.

The effective implementation of methods and techniques of Japanese supply chain management in companies operating in Poland required **significant changes in the process of human resources management**.

The authors are aware that the conducted research had a limited geographical and sector range. Therefore, drawing more authoritative conclusions concerning the conditions and the extent of implementation of Japanese management methods in Europe would require more further and more thorough research.

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