

KNOWLEDGE ACQUISITION IN THE CONTEXT OF COORDINATION OF DISTRIBUTION NETWORK

KRAMARZ Marzena

*Silesian University of Technology, Faculty of Organization and Management, Gliwice, Poland, EU,
mkramarz@polsl.pl*

Abstract

The collaboration in the distribution network, through the connection of entities as well as their actions and resources, takes the dimension of the new outline. Such a structure may form a dominated network or a network of equal partners. In the first and the latter case it is possible to indicate the organisation coordinating movements. In the dominated network this role is assumed by the flag enterprise. In such complex structures which are distribution networks the coordination (due to the management of interdependencies) requires taking into consideration of various kinds of factors disturbing movements of finished goods. Showing the concept the acquisition and gathering of the knowledge of disruptions for needs of streamlining coordination processes by the flag enterprise is a purpose of the article.

Keywords: Knowledge acquisition, flag enterprise, distribution network, disruptions

1. INTRODUCTION

Distribution networks are created by independent enterprises cooperating both vertically and horizontally along the stream of added value. They are based on collaboration, which means that they are aware of the primary objective which is incorporated into individuals goals of every organization. In the distribution network it may be assumed that delivering a product in a particular place and time and hence providing the availability of products according to the customer needs will constitute the primary goal. Through collaboration organizations aim at achieving mutually non-contradictory objectives and therefore they coordinate completed sub-tasks resulting from the division of work and they take up mutually consistent and complementary tasks. The collaboration in the distribution network, through the connection of entities as well as their actions and resources, takes the dimension of the new outline. Such a structure may form a dominated network or a network of equal partners. In the first and the latter case it is possible to indicate the organisation coordinating movements. In the dominated network this role is assumed by the flag enterprise. In such complex structures which are distribution networks the coordination (due to the management of interdependencies) requires taking into consideration of various kinds of factors disturbing movements of finished goods. Thus, this article aims at indicating the concept of acquisition of knowledge of disruptions in movements of finished products for the needs of facilitating coordination processes by the flag enterprise.

2. THE PROBLEM OF THE DISTRIBUTION NETWORK COORDINATION

Coordination constitutes the most important substance of the management of interdependencies. In the broadest praxeological view, the collective effort should be carried out in an orderly manner, jointly organize, connect, unify and harmonise all actions and all efforts into one which will be the most relevant to implement the set primary objective of the collaborating organisations[1,2]. Therefore, in order to coordinate anything in the network distribution interdependencies must be identified - it is they who point out the potential scope and manners of coordination. In the coordination process of the distribution network resources must be constantly organised (identified and configured). Those resources which are interdependent (they contribute to the implementation of the primary objective of the network) must be found and allocated.

Coordination of logistics processes should be understood as all undertakings which lead to the arrangement of actions aiming at moving materials and delivering them in a timely and reliably manner [3,4]. Hence, the coordination of logistics processes in distribution networks will mean harmonisation in time and space of particular sub-tasks of logistics processes carried out by production and distribution enterprises collaborating with one another which aim at: obtaining the highest possible standards of logistics customer service, ensuring high efficiency of establishing time relationships in the flow of goods and information, determining principles of the use of joint resources. In the literature the network coordination is also described as the multiple coordination [5, 6]. It consists of three forms existing independently or interdependently: market one - based on the price, hierarchical - based on bureaucracy (structure, system and control level) and social - otherwise known as relational, based on trust. The mechanisms of coordination (pricing - the price, bilateral security interests, non-pricing - trust, social norms, the style of making decisions and flowing - VMI, QR, CPFR, ECR) constitute its key element.

As far as dominated networks are concerned, it is possible to indicate another model of collaboration than in networks of equal partners and the role of the organisation coordinating the network is also different. However, constantly having knowledge of disruptions in movements is the problem in the coordination of movements of finished products. This knowledge is essential to the reliable implementation of tasks, counteracting disruptions or developing the strategy of reaction to events which cannot be counteracted.

3. KNOWLEDGE ACQUISITION IN THE KNOWLEDGE MANAGEMENT MODEL

Knowledge is a critical resource for organizations' competitive advantage [7,8]. Organizations have to create new knowledge continuously to maintain their competitive advantage in rapidly changing environments. However, knowledge creation is not a process that necessarily creates completely new knowledge but an operation that recombines and reorganizes existing knowledge. The knowledge that transfers from knowledge sources becomes the raw material in knowledge creation for a recipient organization, and successful knowledge transfer is an important driving force in knowledge creation.

The first stage of knowledge management is knowledge acquisition in the organization and in its environment [9, 10, 11]. Information turns into knowledge when it is interpreted and related to a context by its holder. Knowledge management in supply network refers to a wide spectrum of issues, including the manner of logistics decision making in particular organizations, gaining and processing knowledge about customers, organization of transport, the stock control, lead time, as well as identifications of information, accumulation and processing the knowledge of disruptions in material flows. Relatively little attention is devoted in the research to factors causing deviations from the planned material flows.

System of logistics knowledge management in distribution network should embrace classic elements, as well as identification of sources of logistic knowledge, obtaining information, system of the knowledge acquisition, system of the knowledge processing, logistics knowledge base and (constituting the greatest challenge in supply network) system of sharing the logistic knowledge and the transfer of logistic knowledge to networks partners. Even though intrafirm transfers of knowledge are often laborious, time consuming, and difficult, current conceptions treat them as essentially costless and instantaneous. When acknowledged, difficulty is an anomaly in the way transfers are modelled rather than a characteristic feature of the transfer itself. One first step toward incorporating difficulty in the analysis of knowledge transfer is to recognize that a transfer is not an act, as typically modelled, but a process. Acquisition knowledge of disruptions should be the domain of all network nodes. The knowledge of disruptions should be gathered in one node which is responsible for the coordination of movements of finished products. In dominated distribution networks the flag enterprise is such a node. In the concept of knowledge acquisition it was assumed that the flag enterprise of the distribution network is at the same time the information and material decoupling point.

4. THE FLAG ENTERPRISE AS THE COORDINATOR OF THE DISTRIBUTION NETWORKS OF STEEL PRODUCTS - RESEARCH RESULTS

The first stage of building the management system of the knowledge of disruptions in the distribution network is the selection of the flag distributor and identification of his role in the coordination of movements of finished products. The coordination of movements in the distribution network is focused on reliable delivery in time and place expected by the customer. Hence, the flag enterprise as the coordinator should create conditions to carry out tasks smoothly within the framework of processes in the network for which he is responsible. The organisation which is the coordinator of the movement of finished products, meeting additional objectives [12]: having a strong position in the network, having leadership competence (initiates, manages, consolidates the group's activity), creating the network and selecting partners, establishing principles of the network functioning, procedures, meeting the objectives of preferential adding nodes to the network (having high relation competences), is described as the flag enterprise.

The distribution networks of steel products in which the research was conducted in the years 2008-2016 are dominated networks where flag enterprises being the network coordinator at the same time can be identified. **Table 1** presents attributes of the flag enterprise allowing to select such an entity from the set of all distributors of steel products.

Table 1 Attributes of the flag enterprise of the distribution network

Necessary attributes	Symbol
Implementation of logistics processes (storing, transport organisation), implementation of deferred production processes	Proc_sum
Significant market share in terms of the marketing of steel products by tonnage, estimated by the ranking list of distributors of steel products (place in the first 30)	Place_TLR
Geographical range of serviced markets, at least domestic	Range_ac_P
Having own distribution network (regional warehouses, subsidiaries)	Own_network
Significant market share in terms of the marketing of steel products by value, estimated by the ranking list of distributors of steel products (place in the first 30)	Place_OLR

Source: Own study.

The selection of attributes of the flag enterprise of the distribution network was proceeded by expert studies. Experts indicated those organisations which in the years of the Polish steel industry transformation assumed the role of coordinators of the distribution network, building the network of logistics partners at the same time. Thus a hypothesis was formulated that these organisations are flag enterprises of distribution networks. The stage of the exact selection of flag enterprises of distribution networks of steel products consisted of the testing stage of necessary attributes in order to include given organisations into the set of flag enterprises and the second stage in which sufficient attributes attesting to the strength of the flag enterprises in the distribution network were tested. Necessary attributes were used to divide flag enterprises in supply networks of steel products into two groups: flag enterprises and other enterprises. On this stage the discrimination function was applied. Attributes characterising the flag enterprise distinguished on the basis of the literature study taken into account of the discrimination analysis comprise: streams of movement of products by tonnage (in case of flag enterprises in the sector of the distribution of steel products they are determined by the qualification of the enterprise to the rank list presenting 30 enterprises with the highest marketing of steel products by tonnage published by the Polish Union of Steel Distributors, (Place_TLR)), the number of processes carried out in the stream of added value (Proc_sum), the impact range of the enterprise (Range_ac_P), the width of own distribution network (Own_network), marketing of products according to the rank list of the Polish Union of

Steel Distributors (in case of enterprises in the distribution sector of steel products they are determined by the qualification of the enterprise to the rank list presenting 30 enterprises with the highest marketing of steel products by value published by the Polish Union of Steel Distributors (Place_OLR)).

The flag enterprise in the distribution network should be characterised by differentiated processes carried out in the stream of added value (processes connected with the management of supplies, the organisation of transport processes, the differentiation of processes within the deferred production area, the management of the logistics and marketing information, etc.), should service differentiated groups of addressees and provide versatile range ensuring a large capacity of its own distribution network built through the appropriate situation of warehouses and creation of local distribution subsidiaries increasing the market penetration which, as a consequence, translates into the stream of moving products in the tonnage view as well as provides high turnover of the enterprise [12, 13]. At the same time two views on the market share of distribution enterprises were taken into consideration: by tonnage and by value. The first approach emphasize logistics meaning of the flag enterprise in the distribution network, while the second one takes into account deferred production processes enabling the increase in the added value on the distribution stage. In order to provide the correctness of selection of the distribution sector representatives for further research, preliminary qualified as flag enterprises of the network (20 enterprises indicated by the group of experts), the discrimination analysis on the entire set of distribution companies associated in the Polish Union of Steel Distributors (67 enterprises) was carried out.

The joint meeting of all necessary attributes allowed to qualify the entity to the set of flag enterprises of the distribution networks of steel products. It was examined which of the indicated variables (necessary attributes) have the largest power of dividing the set into flag distributors and other enterprises. Variables which have the largest power of identification of flag network units from the set distribution enterprises are: the range of the enterprise's activity (Range_ac_P) and marketing of steel products (Place_OLR).

5. CONCLUSIONS

This article has focused on two problems interconnected with each other. The first one concerned the multiple coordination and coordinators of the distribution network identified as the flag distributors (the flag enterprise of the distribution network). In the distribution network of steel products selected for the research by using the discrimination analysis flag distributors were distinguished. The second research problem dealt with the conceptualization of the management model of the knowledge on disruptions in distribution networks. Within this area the literature study was conducted. Due to the indicated attributes of flag enterprises of the distribution networks these are entities which should be central links having such a model and initiating its implementation in collaborating organizations. In the adopted objectives the system should include obtaining the knowledge of disruptions from all nodes of the network.

Another step in the presented research concept will be the connection of the problem of obtaining and gathering the knowledge of disruptions with the problem of the network coordination by the flag distributor. Taking into account documents made available by flag enterprises it can be preliminary assumed that among distribution networks of steel products networks in the creation phase and maturity phase prevail. In the network preparation phase social forms of coordination dominated. In the phase of creation and consolidation market and hierarchical forms began to dominate, while in the maturity phase and developed norms of conduct in the network hierarchical norms were reinforced but due to the great significance of informal relations in these networks social forms of coordination are still of crucial importance. In networks in the phase of completion of collaboration market forms dominate again. These preliminary observations need thorough research both in terms of maturity phases of particular networks as well as coordination mechanism and connection of these results with the concept of the knowledge management system in the distribution network.

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