

The Potentials in the Integration of Planning Enterprise Activity

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Planning, including planning in logistics, consists the primary function of management, as it is logically and chronologically first in the management process. The efficiency of the subsequent activities in the company depends on the proper realization of this stage. Therefore, finding possibilities of improving this part of management process, aimed at reducing the risk of undertaken planning decisions, creates an important issue in the research activity. One of the possible ways of improving planning process is to integrate it within internal company's activity, as well as to include it to cooperation with partners. As a result, the aim of this article is to identify needs and opportunities of integration for selected planning levels in company's work.

Keywords: planning, integration, internal cooperation, external cooperation.

The issues on integration are currently a subject of interest for both politicians and businessmen. In mass-media and in the specialist literature, the necessity to integrate different areas of business and social activity has been widely discussed. Since contemporary understanding of logistic processes refers to the integration of goods and information flux, it is particularly in the logistic activity of enterprises, where integration acquires its significance¹. This is largely associated with the system approach and 'comprehensive thinking' which dominate in the science of logistics². D. Kisperska-Moroń emphasizes that 'the logistic management in terms of the system approach presents the most complex model of the integration of a number of processes relating to the flux of goods within individual spheres of management'³.

The original function of management, including the logistic management, is planning. In

the process of management it is, logically and orderly, the first function⁴. The efficiency of individual operations within an enterprise is repeatedly dependent on appropriate planning. Perceiving logistics as an activity for coordinating and controlling the course of feasible processes, in which realization the organization is a participant⁵, one can discriminate two possible planning levels, which might be the subject of integration:

- planning the course of the internal processes of an enterprise,
- planning the course of processes carried out on business-to-business level

The aim of this article is to recognize the demands for and potentials of integration on defined levels of planning a company's activity.

¹ Skowronek Cz., Sarjusz-Wolski Z., *Logistyka w przedsiębiorstwie*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2008.

² *Logistyka* pod red. D. Kisperskiej – Moroń i S. Krzyżaniaka, ILiM, Poznań 2009.

³ Ibidem.

⁴ *Organizacja i zarządzanie. Podstawy wiedzy menedżerskiej*, pod red. M. Przybyły, Wydawnictwo AE we Wrocławiu, Wrocław 2003.

⁵ Krawczyk S. i in., *Logistyka w przedsiębiorstwie*, NDiO, Wrocław 2007.

1. THE NOTION OF INTEGRATION

The general understanding of the notion of integration finds its reference in social science and politics, where the term social integration means the creation of coexisting and cooperating groups and human societies. The dictionary entry 'integration' presents us with a definition which might be understood more generally than that regarded from the sociological position, namely: 'the process of merging; creating a whole from elements; the inclusion of an element into a whole'⁶. However, in literature devoted to the notion of integration has two meanings⁷. In the first meaning integration is 'combining so far separate (or insufficiently linked) elements, displaying logical connections, into one system', whereas in the second the integration is 'merging similar system elements or its established components in order to reduce the number of constituents or connections'. For the benefit of this article integration will be defined as the process of:

- assembling reciprocally complementing or logically combined entities as well as
- incorporating new elements into already existing whole.

In economic activities most attention is drawn to the integration of entities, which is perceived as a take-over or a buyout, alternatively merging of enterprises. It is the creation of new economic standards, meaningful to the functioning of the state. However, the issues of integration on this level will not be the subject of discussion.

The cases studied in this paper will be limited to the integration which leaves fundamental organizational structures of entities unchanged. It operates therefore inside an enterprise or on business-to-business level. However, in the latter case it will be assumed that the entities undergoing integration do not change their legal status, and they formally maintain their economic autonomy. The introduced limitation means that integration

may operate within particular technical and managerial aspects referring to⁸:

- data – linking and creating, and subsequently using shared data base and information systems,
- function – merging of duties
- processes – linking and controlling connected processes,
- facilities – creating combined maintenance facilities, e.g. manufacturing modules, or a range of complementary products.

Only the first three abovementioned aspects will be discussed in this article.

2. THE INTEGRATION OF THE PLANNING AREA WITHIN AN ENTERPRISE

The first key area which must be examined with regard to integration is the internal process of planning an enterprise activity. Among the factors prompting this sort of integration one can list:

- increasing data relevance and accessibility,
- improving enterprise cohesion,
- reducing the duplication of efforts and functions.
- To achieve the above, the integration of internal planning can assume two forms:
- the integration of planning processes within individual departments / sections within both uni- and multi-institutional enterprises or
- the integration of planning processes within individual establishments / branches responsible to shared management centre (in a multi-institutional enterprise).

The integration of planning processes of individual departments within an enterprise

In many organizations planning their activity is of progressive character. It means therefore, that planning starts on the bottom level in an enterprise and is gradually conducted towards the top level

⁶ Kopaliński W., *Słownik wyrazów obcych i zwrotów obcojęzycznych*, Wiedza Powszechna, Warszawa 1994.

⁷ Rosemann M., *Gegenstand und Aufgaben des Integrationsmanagements*, w: *Integrationsmanagement*, A.-W. Scheer, M. Rosemann, R. Schütte (Hrsg.), Arbeitsbericht Nr. 65, Institut für Wirtschaftsinformatik der Westfälischen Wilhelms- Universität Münster, 1999.

⁸ Scheer, A.-W.: *Integration, computergestützte*. In: *Handwörterbuch der Organisation*. 3. Aufl., Hrsg.: E. Frese. Stuttgart 1992, Sp. 1041-1051.

(bottom-up shift)⁹. The fundamental problem of such approach is the incompatibility of plans created by individual organizational sections as well as the threat of the plans leading to different objectives. The incompatibility can most often be detected in the decisions of marketing, production, and logistics departments. In their plans, production managers are considerably oriented to reducing costs of individual products. Thus, they are interested in enhancing production batch, which enables them to spread fixed costs over a greater number of units. Consequently, piece-production costs are lowered with a parallel increase in stock. The marketing department is responsible for creating sales as well as gaining new and maintaining regular customers. Thereby, in its actions it will strive to store higher stock, which ensures increased goods availability for customers, and it will aspire to organize frequent promotional campaigns to raise the customers interest in the product.

The objectives of these departments remain competitive, not to say contradictory, to the objectives of logistics. In many enterprises the logistics department is assessed with regard to the incurred costs of a particular activity, of which the costs of stocking constitute an essential part. Thus, quite naturally it is forced to lower them, while at the same time to maintain declared levels of customer service. Also promotional campaigns constitute considerable obstacle in the process of planning logistic activity. In regards to the difficulties in anticipating promotion results, the defined level of promotional stock sometimes displays significant deviation towards the demands which actually occurred. For this reason the logistics department does not participate in many marketing campaigns. The discrepancy between so formulated objectives leads to numerous conflicts and problems in their realization.

The integration of the process of creating and coordinating plans within individual departments appears necessary for sufficient and effective functioning of an enterprise. Recognizing interaction regulations and the necessity for mutual acceptance of the aspects of a particular activity in individual departments will ensure coherence of the determined objectives and of

conducted operations. A support for integration can be found in the introduction of a planning system based on both progressive and regressive planning¹⁰. It consists in establishing by the management board high-level objectives and, on their basis, creating crucial goals and detailed plans in order to verify their possible realization. It is followed by the reversal of the 'bottom-up' shift, which consecutively leads to coordination and concentration of the plans on lower levels. The process concludes with a final decision by the management board on objectives and plans. Another support for management, which can improve internal integration of the planning process, is controlling. Among its tasks one can list monitoring plans coherence within an enterprise as well as coordinating partial plans with overall objectives¹¹.

3. THE INTEGRATION OF THE PLANNING PROCESSES WITHIN INDIVIDUAL ESTABLISHMENTS

A particular case of integrating the internal activity planning is that of a multi-institutional enterprise, which is responsible to joint central office, reliable for the overall management of an enterprise. The issue concerns both multi-institutional enterprises, with a dispersed territorial structure, as well as those operating locally. Managers major focus on manufactured products or executed partial processes results in the domination of individual objectives within plans drawn for the future activity. However, when each element of the final product is manufactured in a particular department the fact which acquires significance is not only consistency of determined objectives but also the established work schedule.

During the integration of the planning process within individual production plants a considerable emphasis is put on mutual coordination of production processes or on monitoring consecutive stages of accomplishment of individual partial processes. Thus the knowledge on the course of processes within each department appears crucial. It is necessary in the planning process to consider both the departments potential as well as their limitations. Such knowledge

⁹ Hulsenberg F., Wróbel J., *Controlling*, Towarzystwo Naukowe Organizacji i Kierownictwa, Zielona Góra 1995.

¹⁰ Ibidem.

¹¹ Jonczyk-Strzała E., *Controlling w przedsiębiorstwach produkcyjnych*", Cedetu, Warszawa 2008.

enables accurate planning of individual stages, which consequently leads to swift and effective realization of the entire production process as well as limiting possible stock occurring at the joint of particular production process. It is also necessary to exchange information promptly, particularly that concerning anticipated batch quantity. The action which will improve mutual communication is the harmonization and integration of data-handling system exploited by individual enterprises. A genuine solution to support integration is also the creation of a planning team¹², comprised of the representatives of individual enterprises. The team's responsibility would be to establish base parameters to condition plans designed in particular units. The integration of the planning process in this situation often enforces centralization of certain functions¹³, e.g. supervising the stock, establishing main policy and strategies for supplies purchasing, preparation of uniform directives for the entire enterprise. One should take into consideration the fact that to thrive this type of internal integration must be supported with the integration of plans of individual departments within establishments.

4. INTEGRATION AS A MEANS OF MERGING ENTERPRISES ACTIVITY

A coherent planning system of an enterprise constitutes the basis for the integration of an organization's external operations. These processes, realized on business-to-business level, usually concern relations between the supplier and recipient, in accordance with the regulation on independent economic subjects. All in all, any kind of integration between organizations needs to be preceded by a discussion on the following issues:

- What does the integration concern?
- Is it indispensable?
- What are the ways of introducing it?

The extent of integration of planning organization's external operations may vary considerably – starting with a basic consolidation

¹² *Controlling – prezentacja i analiza przypadków*, pod red. J. Moñki, Wydawnictwo Akademii Ekonomicznej im. Oskara Langego we Wrocławiu, Wrocław 2001.

¹³ Lysons K., *Zakupy zaopatrzeniowe*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2004.

of common information systems and ending in a complex process of collaborative planning with respect to the integrated supply chain. The range of integration depends on the initiative from the part of interested subjects as well as anticipated and gained benefits associated with consecutive stages of cooperation. The tendency for integration of the planning process with independent organizations indispensably evokes profit anticipation. Thus, in the analysis preceding the process of integration one should point out the possibility to gain them with regard to:

- better use of shared potential on purchasing and marketing outlets,
- better use of self potential,
- improved fulfilment of processes among integrating subjects.

A favourable decision on initiating integration and consequently determining its extent requires the formation of regulations for its introduction. It is highly important who performs the role of the initiator of efforts leading to integration. When the main motivating factor is improved and more effective production process the initiators are predominantly market manufacturers. However, this approach is occasionally adopted by commercial companies, such as IKEA or Wal-Mart. The issue which requires careful consideration and overall approval is the appointment of a decision-making body and the determination of the means of enforcement.

For the benefits of this paper, the authors will focus particularly on identifying the areas of possible integration of the planning process between cooperating enterprises.

5. INTEGRATION WITHIN THE INFORMATION EXCHANGE

The first step towards the integration of the planning process between partnership enterprises is the creation of a communication system which guarantees regular exchange of information necessary to plan mutual operational activity. The range of data exchange depends on the level of trust between business partners. It most often refers to the information on anticipated demand, current stock level, production capacity and

schedules, possible promotional campaigns¹⁴. Besides the extent of exchanged information the parties should determine the form of transferred messages and schedule / promptness of data exchange.

The access to crucial information conveyed by a co-operator allows a business to take into consideration mutual limitations, possibilities and actions stimulating sales. It increases the number of accurate decisions, limits the risk of error and improves the process of plan preparation. Designing plans based on shared information improves their coherence and limits the number of obstacles in their realisation.

This type of integration, based on the inclusion of information conveyed by a co-operator into the process of plan designing, is merely the first step to business partnership. It means only the creation of shared database, however it's possible though not obligatory for the obtained information to be complied by participants in the process of planning.

6. NORMALISING REGULATIONS AND PROCEDURES

When an enterprise decides to enhance the scope of integration in mutual planning operations, a basic exchange of messages, as discussed above, is transformed into a common system of information management. Therefore not only is it crucial to denote the content of exchanged information but also to determine the procedures for its provision, gathering, storage and accessibility. To ensure flawless and prompt data flow between sides it is often necessary to integrate data-handling systems with a repeated support from the technology for electronic data exchange. Messaging standardization and the use of bar codes (or other information carrier on a particular product) is in this case crucial, however insufficient. It is also essential to create and introduce the system of common standards on operation procedures, exchanged messages and

¹⁴ Lee H., Whang S., *Supply Chain Integration in the Age of e-Business*, Supply Chain Management Global Supplement, Fall 1999 [in:] Hoppe R.M., *Outlining a Future of Supply Chain Management – Coordinated Supply Networks*, <http://web.mit.edu>, viewed: 01.07.2007.

documents. The establishment of mutually binding standards improves the flow of information between the sides and ensures:

- the clarity of data communication – the sides determine the mark-up language as well as techniques of encoding transferred data;
- comprehensibility, explicitness of sent messages – due to the standardization of terms used in messaging the risk of overinterpretation of particular expressions is depreciated;
- the clarity of a message – each side is well aware as to where to search for necessary information;

the promptness of data exchange – due to established procedures and schedules for message exchange each partaker in the process realizes the deadlines for data transfer; however he is also familiar with the deadlines for messages received from other participants which enables him to react immediately in case he does not receive the essential information.

The introduction of common standards for data exchange may improve the process of communication and furthermore operations intended to use obtained data in plan creation. Introduced standards limit the number of necessary investigation and counsel, resulting from mutual incomprehension, overdue transfer of information or ambiguity of exchanged messages. Moreover operation procedures point out particular units responsible for transferring and updating certain data which improves mutual communication in case of any obstacles within the process and prompts planning activities. This type of integration is defined by some researchers as informational¹⁵.

7. CREATING TEAMS COMPRISED OF THE REPRESENTATIVES OF BOTH ORGANIZATIONS

Another integration area for the demands of the planning process of a current activity is the creation of project teams comprised of experts

¹⁵ Por: Van Goor A.R., *Demand & Supply Chain Management: a Logistical Challenge*, <http://soleurope-net.logengineering.org>, viewed: 01.07.2007;

from both organizations. The team members have an established extent of duties and competences and their actions are directed to improve the mutual process of activity planning. They are usually responsible for supporting integrated information system and the accurate management of data flow. Members are obliged to consult one another regularly and to exchange significant information concerning the present state of affairs as well as planning future activity of each side.

Integration within this framework is performed with the intention to gain mutual coherence of designed plans of business partners and to time their realization. Thus a partial effect is attained, which also appeared in the integration of planning a multi-branch enterprise. No centralization of any function is encountered here. However, the total information system along with the planning team yields the integration of planning processes which in turn enables the coordination of operations schedules and consequently limits stock increase.

8. RESPONSIBILITY SHARE AND THE CREATION OF NEW MANAGEMENT

The creation of shared data base and the enforcement of uniform operation and data exchange procedures constitutes preliminary condition to cooperation within the planning area. It is the ultimate level of integrating the planning process which can originate between business partners. K. J. Petersen defines this type of integration as 'mutual, for both the buyer and the provider, decision making process which requires bilateral flow of information among partners within the supply chain'¹⁶. Therefore, through planning cooperation business partners create operating plan for the future activity of both enterprises, taking into account reciprocal objectives and potentials.

The synergy in operations planning requires a series of binding stipulations during cooperation. First and foremost, the sides are obliged to determine the extent of integration of the planning process. Companies are required to specify processes, products, target markets and sections

included in mutual planning. This will determine the extent of interaction with a simultaneous distinguishing of 'exceptions', namely those elements which, despite cooperation, remain independent for an individual company.

Subsequently master agreements are required, namely rules and regulations on cooperation, adopted systems of reciprocal communication, subjects directly involved in executed processes, determining mutual duties and legal rights, as well as costs and benefits allocation consequential to the realization of shared process. Accordingly, it is crucial to determine mutual demands and anticipations thus, so that the established operation agreements are correspondent with the directives of business partners, concurrently satisfying for each them.

The agreements may also refer to binding system of index and criteria. Such a system will enable the determination of anticipated objectives and accomplishment standards for integrated processes. It will also ensure actual supervision of plans realization through constant monitoring of index fluctuation. Consequently, business partners will be able to respond promptly to any irregularities as well as to adjust their strategies to the fluctuating external factors.

The planning process is realized by a group of specialists composed of the representatives from both companies. These people are extensively involved in mutual design of plans on actual business activity within the established extent of cooperation. This fact imposes on the group members the necessity to maintain constant communication and operativeness beyond the boundaries of enterprises. Their operations are similar to those of the project team which is appointed at the time of cooperation between organizations. Such group is capable to constitute an organizing unit, with its own statute determining cooperation, attributed functions, entitlements and responsibilities¹⁷.

Within the framework of preparation for cooperation it is crucial to recognize the constituent requirements of the integrated process along with the assignment of duties necessary for their realization. A facilitating instrument is the

¹⁶ Petersen K. J., Ragatz G. L., Monczka R. M., *An Examination of Collaborative Planning Effectiveness and Supply Chain Performance*, Journal of Supply Chain Management, Spring 2005, pp. 14 – 25.

¹⁷ Galoński J., Rosiński J., *Zarządzanie projektem – model najlepszych praktyk*, IFC Press. Nowe Motywacje, Kraków 2003.

matrix of responsibilities which for each operation integral in a particular process appoints a direct contractor of individual actions, subjects (people) supporting its realization, units receiving or transferring crucial information, as well as the authority sanctioning the obtained result. An overview of assigned functions for objectives accomplishment and consequent responsibilities leads to the recognition of crucial elements of the process. Through accurate precautionary measures the effect of 'release' is acquired and consequently the improvement in process realization. With the creation of the maps of responsibilities it is possible to point out (to plan) standard times (dates) of realization of particular stages of the process. It allows the establishment of operations schedule which is essential for improved coordination of business activities.

While creating the matrix of responsibilities business partners should take into consideration the necessity of accurate planning of flow and schedules of information (data) transfer. Reciprocal planning requires more improved (supreme) communication and information sharing between organizations than in the case of standard business relations¹⁸. Accordingly, it is necessary to recognize the information needs of particular employees involved in cooperation on consecutive stages of accomplished processes. Subsequently, business partners are expected to define potential sources of essential information and appoint subjects responsible for its provision. In this way it is possible to design a whole network of essential informational connections among the employees of involved organizations; in other words who conveys information, to whom it is transferred and which information is to be conveyed.

In order to operate effectively and promptly the informational network must be supplemented with an accurate schedule (including deadlines) of transferred data and messages. Consequently, with the established provisions and obligations maintained, each co-operator should receive the necessary information on time. However, it must be noted that various analyses conducted by many researchers clearly point out that the favouring factor is more and more common integration of data-handling systems¹⁹. Nevertheless, traditional

ways of conveying information remain indispensable, particularly in crisis or disputable situations.

On each stage of decision making with regard to integration, the subjects responsible for this process should insightfully analyze both benefits as well as obstacles resulting from assumed actions. Certain solutions, considered 'good practice' in one company may not necessarily be worth imitating in the other. Enterprises deciding on external integration must consequently comply with the terms. Foremost, these enterprises are expected to prove ready for cooperation and creation of a winner-winner situation to achieve full success.²⁰ The effects of integration are repeatedly dependent on the level of trust between business partners and the quality of information being shared. Both these factors correlate closely. Trust is crucial for cooperation since only through mutual trust of participants can there start productive interaction and can there be communication favourable for the cooperation in progress²¹. The higher the level of trust between the sides, the greater the openness toward sharing information with a partner. Moreover, with collaborative planning information sharing acquires particular significance as it repeatedly refers to data deciding on a particular organization's existence or at least on its competitiveness on the target market. Conducted analysis clearly point out that the quality of information sharing is crucial for the effectiveness of decisions in collaborative planning performance²².

As recognized at first, this type of integration of the planning area is associated with the creation of supply chain performance. The above presented conditions and regulations on performance reveal explicitly that this system of collaborative planning is not limited only to the operating level but requires proper strategy and mutual long term

²⁰ Hansson G., Hansson M., *Information sharing for improved collaborative planning*, Master Thesis in Technology Management Nr. 78:2003, Lund, Sweden 2003.

²¹ Kumar A., Paddison R., *Trust and Collaborative Planning Theory: The Case of the Scottish Planning System*, International Planning Studies, Vol. 5, No. 2, Jun 2000, pp. 205 – 223

²² Petersen K. J., Ragatz G. L., Monczka R. M., *An Examination of ...*, pp. 14 – 25.

¹⁸ Petersen K. J., Ragatz G. L., Monczka R. M., *An Examination of ...*, pp. 14 – 25.

¹⁹ Ibidem.

plans. To exist it demands close partnership based on trust. This integration is often enhanced onto other areas of cooperation. Thus collaboration in operating planning constitutes a part of such logistic strategies as Vendor Managed Inventories (VMI), Efficient Consumer Response (ECR), or Collaborative Planning, Forecasting and Replenishment (CPFR).

9. FINAL CONCLUSION

It is essential in the final conclusion to emphasize the fact that the idea of integrating planning activity within an enterprise is entirely different from the issues on consolidating plans with regard to shared processes realized between companies. With the internal integration the decision to consolidate the planning system repeatedly proves to be a necessity rather than a choice. Because of the central management and clear distribution of tasks the process of integration is easier to conduct. Whereas with external cooperation the substantiation of particular performance is seldom clear and conclusive. The integration of this kind always creates certain level of dependence and limits enterprise freedom which constitutes a serious obstacle for many contractors. It is also difficult to determine future extent and the probability to gain anticipated benefits. Therefore integration process is usually of a challenging character²³, which has also been included in this paper.

The meaning of integration for economic processes can be viewed from a wide and multifaceted perspective. The author of this paper tried to limit her considerations to the issues of integration of the planning process within an organization and with external cooperators. The objective was to recognize the demands and the potentials of the integration on both levels of planning an enterprise activity. For its complexity, detailed and precise discussion of the subject matter is beyond the potentials of single article. The author has made every effort to include the most essential aspects of the discussed issue.

²³ Van Goor A.R., *Demand & Supply Chain Management: a Logistical Challenge*, <http://soleurope-net.logengineering.org>, viewed: 01.07.2007.

BIBLIOGRAPHY

- [1] *Controlling – prezentacja i analiza przypadków*, pod red. J. Mońki, Wydawnictwo Akademii Ekonomicznej im. Oskara Langego we Wrocławiu, Wrocław 2001.
- [2] Gaoński J., Rosiński J., *Zarządzanie projektem – model najlepszych praktyk*, IFC Press. Nowe Motywacje, Kraków 2003.
- [3] Hansson G., Hansson M., *Information sharing for improved collaborative planning*, Master Thesis in Technology Management Nr. 78:2003, Sweden 2003.
- [4] Hoppe R.M., *Outlining a Future of Supply Chain Management – Coordinated Supply Networks*, <http://web.mit.edu>, podgląd: 01.07.2007.
- [5] Hulsenberg F., Wróbel J., *Controlling*, Towarzystwo Naukowe Organizacji i Kierownictwa, Zielona Góra 1995.
- [6] Jonczyk – Strzała E., *Controlling w przedsiębiorstwach produkcyjnych*, Cedetu, Warszawa 2008.
- [7] Kopaliński W., *Słownik wyrazów obcych i zwrotów obcojęzycznych*, Wiedza Powszechna, W-wa 1994.
- [8] Krawczyk S. i in., *Logistyka w przedsiębiorstwie*, NDiO, Wrocław 2007.
- [9] Kumar A., Paddison R., *Trust and Collaborative Planning Theory: The Case of the Scottish Planning System*, International Planning Studies, Vol. 5, No. 2, Jun 2000, pp. 205 – 223.
- [10] Lee H., Whang S., *Supply Chain Integration in the Age of e-Business*, Supply Chain Management Global Supplement, Fall 1999.
- [11] *Logistyka* pod red. D. Kisperskiej – Moroń i S. Krzyżaniaka, ILiM, Poznań 2009.
- [12] Lysons K., *Zakupy zaopatrzeniowe*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2004.
- [13] *Organizacja i zarządzanie. Podstawy wiedzy menedżerskiej*, pod red. M. Przybyły, Wydawnictwo AE we Wrocławiu, Wrocław 2003.
- [14] Petersen K. J., Ragatz G. L., Monczka R. M., *An Examination of Collaborative Planning Effectiveness and Supply Chain Performance*, Journal of Supply Chain Management, Spring 2005, pp. 14 – 25.
- [15] Rosemann M., *Gegenstand und Aufgaben des Integrationsmanagements*, w: *Integrationsmanagement*, A.-W. Scheer, M. Rosemann, R. Schütte (Hrsg.), Arbeitsbericht Nr. 65, Institut für Wirtschaftsinformatik der Westfälischen Wilhelms- Universität Münster, 1999.
- [16] Scheer, A.-W.: *Integration, computergestützte*. In: *Handwörterbuch der Organisation*. 3. Aufl., Hrsg.: E. Frese. Stuttgart 1992, Sp. 1041-1051.
- [17] Skowronek Cz., Sarjusz-Wolski Z., *Logistyka w przedsiębiorstwie*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2008.
- [18] Van Goor A.R., *Demand & Supply Chain Management: a Logistical Challenge*, <http://soleurope-net.logengineering.org>, podgląd: 01.07.2007.