

A CROSS-COUNTY CONTEXTUAL COMPARISON OF THE UNDERSTANDING OF THE TERM *LOGISTICS* *PLATFORM* IN PRACTICE

Brigita Gajšek* and Katarzyna Grzybowska**

* Department of business logistics, University of Maribor, Faculty of logistics, 3000 Celje, Slovenia, Email: brigita.gajsek@fl.uni-mb.si

** Faculty of Engineering Management, Poznan University of Technology, Strzelecka 11, Poznan 60-965, Poland, Email: katarzyna.grzybowska@put.poznan.pl

Abstract Logistics platforms represent a modern approach aimed towards fostering and facilitating logistics activities and business exchange with associated flows in a specific geographic area. Though a widespread buzzword in political and business circles the logistics platform still lacks a clear definition and thorough understanding of the concept in its entirety. We examined the understanding of that term among various types of organizations in Slovenia and Poland. Cross-sectional and inter-state research was conducted in Slovenia and Poland. Web-based survey responses from four different types of organisation were obtained, namely: logistics companies; production or service non-logistics companies; branch association/state agency/chamber interest groups; educational institutions. This paper seeks to raise awareness of the implementation complexity of this particular inter-organisational concept, namely logistics platforms. From a practitioner viewpoint, knowing that different stakeholder groups could have differing perceptions of the concept's content is important.

Paper type: Research paper

Published online: 30 April 2013

Vol. 3, No. 2, pp. 85- 108

ISSN 2083-4942 (Print)

ISSN 2083-4950 (Online)

© 2013 Poznan University of Technology. All rights reserved.

Keywords: *inter-organisational concept, logistics platform, Stakeholders groups, Integration*

1. INTRODUCTION

This paper has, in the main, been motivated by current events in Slovenia and globally, which can be best summarised as an increasing mass emergence of conceptual formations using the compound word ‘logistics platform’ in the title. This phenomenon is, case by case, more or less, differentiated within the different types of organisations, supply chains, industries, states, regions, and even the EU as a whole. Whilst critically observing the current situation in Slovenia, we noted that its government openly talks about a ‘Slovenian logistics platform,’ and of the Netherlands as an exemplar in this field. Despite governmental preference, there is operationally little movement. It appears that the message has not been understood by those who would most benefit: logistics and non-logistics companies. Our initial curiosity was followed by a study of scientific papers, practical applications of logistics platforms globally, and published professional literature on this subject. Our main preliminary conclusions were twofold. Firstly, in practice, there are an increasing number of trials and pilot schemes in terms of establishing logistics platforms. On closer examination, differences occur in four major areas, these being: objectives; scope; constituent elements; participants. Additionally, logistics platforms can be fully compatible or completely incompatible with each other in several ways concerning management, organisational structure, technology, information support, and infrastructure. The possibility of a multi-level hierarchy with possible common or uniform items can be its conclusion (Skjøtt-Larsen, Paulsson & Wandel, 2003); (Pekkarinen & Ulku-niemi, 2008); (Lin, Luo & Zhou, 2010). This would make sense, because the utilisation of potentially contextually different phenomenon with the same nomenclature in different geographical locations could inhibit the easy passage of goods, capital, personnel, and others between them: hindering such movement is contrary to the mission of logistics. Secondly, within the scientific and professional literature studied, authors used the term ‘logistics platform’ in contextually diverse ways. We identified a limited number of major conceptual flows, and many examples of unique application.

Exploration of logistics platform concept has proven to be very topical area where it is initially necessary to analyze the understanding of its content among different stakeholders.

2. LOGISTICS PLATFORM CONCEPTS

Sources within the body of scientific and professional literature focusing primarily on logistics platforms are scarce. In contrast, placed in different contextual frameworks, logistics platforms mostly assume the role of partially elaborated constructs. However, for the effective management of future challenges, such as supply chain relationship transformation, sustainable development con-

straints and the need for supply chain environment complexity alleviation, an alternative understanding or awareness of logistics platforms should be adopted. The case specific scope of previous approaches is unable to capture the phenomenon in its entirety: the concept presents itself as intrinsically multifaceted. In its broadest sense, logistics platforms are the underlying medium that brings together the tangible and intangible logistics assets that are intrinsically embedded within them. Below, we will present and discuss a variety of the interpretations of 'logistics platform' we have encountered in scientific and professional literature, and other sources.

Our review of the literature was conducted in three separate sections. In the first section, we reviewed articles on logistics and platforms separately in order to deduce a meaning of the phrase. In parallel, the content of the publications on non-logistics platforms was taken into account. In the second section, we reviewed articles on logistics platforms to demonstrate diversity in reference to the usage of the term. Finally, in the third section, we presented three examples of contradictory practical utilisation of the phrase.

2.1. Theoretically expected content from non-logistics platform literature

Conclusions on an expected theoretical definition of the term 'logistics platform' will be partly developed, based on the meaning of the individual words in the compound word, as Meidute (2005), in the case of a logistics centre, and partly, in the context of, the differently named, non-logistics platforms. The results from scientific publications on the topics of services and logistics services will also be taken into account.

Pursuant to our exhaustive review of the literature, and, consequently, from a number of definitions of logistics, it can be generally summarised that logistics is observed from scientific, business, organisational unit, and process viewpoints. Recent articles mostly state, and take into account, the definition from the Council of Supply Chain Management Professionals (2010), which defines logistics as: the process of planning, implementing, and controlling procedures for the efficient and effective transportation and storage of goods, including services, and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements. Therefore, it is assumed that a logistics platform can not be something that would partially or completely disprove the generally recognised definitive content. Additionally, it is expected that differentiation of logistics platforms, according to the field of observation, will be detected, namely in terms of company, supply chain level, nation, and region.

Logistics services include both service and physical elements, and are provided according to demand. Consumer and customer requirements from different markets and industries have significantly different impact on logistics service design (Bask, Lipponen and Tinnilä, 2011). Therefore, logistics platforms should refer to both

types of requirements, and can not also be something independent of the volume and type of demand. A greater variety of service will more than likely require customisation and/or modularity (Bask et al., 2011). Sundbo (1994) was one of the first researchers to suggest that a modular model of services can be described. Muffatto (1999) describes modularity as being complementary to setting up platforms, as from customers' perspectives it allows a high degree of product differentiation (Pekkarinen et al., 2008). Van Hoek and Weken (1998) define modularity in logistics services as an integration of various functions within a company, in order to decrease service complexity and achieve improved responsiveness to service variety. The elements of logistics platforms will most likely be fashioned to incorporate customisation and/or modularity: service; process; assets; organisation; supply chain; network.

The word 'platform' is derived from the Middle French 'plate-forme,' meaning diagram, map, literally, flat form. Its first known use was recorded in 1535. The Online Merriam-Webster Dictionary explains platform as: (1) plan, design; (2) a declaration of the principles on which a group of persons stands; (3a) a usually raised horizontal flat surface; a device/structure incorporating or providing a platform; (3b) a place or opportunity for public discussion; (4) a usually thick layer (as of cork) between the inner sole and outer sole of a shoe; (5) a vehicle (as a satellite or aircraft) used for a particular purpose or to carry a usually specified kind of equipment; (6) operating system also: the computer architecture and equipment using a particular operating system. It is impossible to unambiguously conclude on a meaning of the compound word 'logistics platform' from the diverse dictionary interpretations encountered. Theoretically it is expected that practical cases will reveal a complete set of principles, resources/assets, constituent elements and limited surface areas on which the implementation of logistics activities will be based.

Muffatto and Roveda (2000) identified two types of 'platform' definitions amongst the wide literature on this subject. The production oriented stream of literature stresses physical commonality and pays more attention to the manufacturing and assembly process than to other performance indicators, such as the lead time reduction. On the other hand, the multifaceted stream of literature represented, for example, by Robertson and Ulrich (1998) considers a platform as "a collection of assets that are shared by a set of products." In their definition, besides production and logistics processes, assets could be considered as the development process, the project organisational structure, and knowledge base (Mahmoud-Jouini & Lenfle, 2010). Causally, little or no contribution can be expected in reference to production companies' internal logistics platforms.

In the literature, which does not directly refer to 'logistics platforms,' we observe contributions in terms of the 'platform' concept from strategic, organisational, and technical perspectives (Muffatto, 1999), which lead to the conclusion that multiple platforms can be unambiguously divided into product and service platforms. Even so, logistics platforms might be a type of service platform that can include physical elements. Within the scientific community, service plat-

forms receive a lot less attention than product platforms, the ones that are standard tools in operations management (Sawhney, 1998); (Meyer and de Tore, 1999). The accumulated knowledge about product platforms seeks to be constantly and persistently transferred to service platforms. Pursuant to the active dialogue in the aforementioned field of science, it has not been found that authors have considered the transfer of knowledge on service platforms to the field of logistics platforms.

Mahmoud-Jouini et al. (2010) summarise that similarly to modularity, platform strategy has to deal with architecture (Ulrich, 1995), standardisation (Meyer & Lehnerd, 1997), mass customisation (Worren, Moore, & Cardona, 2002), and interfaces (Sanchez & Mahoney, 1996). It can be expected that the transition from the field of the supply chain to that of state / region will stress the need for the involvement of states/inter-national authorities, associations, educational institutions, and the like.

The word 'platform' is often an integral part of compound words. For example, platform may refer to railway platform, computing platform, oil platform, jumping platform, and so on, and recently the actual term 'logistics platform.' The added adjective precisely specifies the meaning of the noun 'platform,' for example Cambra and Ruiz (2009) state that intermodal platforms may help decision makers select the best transportation option, and are related to more than just the physical movement of goods, and the associated direct and indirect costs. Modularity can, in this case, be presented as a standard transportation unit (container, palletised cargo, and the like), which can be effectively postponed between various transportation options. Similarly, explanations of other types of platforms are found; an intermodal platform could, perhaps, be considered as a type of logistics platform in terms of the definition of 'logistics' (Council of Supply Chain Management Professionals, 2010). The platform is, in all examined cases, a single unit operated by a central body with a managerial and/or operational role.

The trend towards customisation is strongly apparent in the logistics industry. Companies that dealt with logistics no longer presents themselves as forwarders, road carriers, distributors, and so on, but as logistics service providers. The formation of virtual organisations seems an appropriate response to this trend, because the industry is highly fragmented (Hoogeweegen, Teunissen, Vervest & Wagenaar, 1999). Additionally, commentators state that the multitude of organisational types allows for numerous different virtual organisations to be formed, and many different temporary supply chains to be established in response to every single shipment. They offer a solution in the form of the Modular Network Design approach. Logistics platforms should also, theoretically, include the type of information and communication technology necessary to enable an assessment of the alternative allocation of required tasks amongst the members of the virtual organisations which have become more common.

2.2. Theoretically expected content from scientific literature on logistics platforms

Several authors in their work on logistics platforms rely on the findings of Meduité (2005) on logistics centres:

“This phenomenon has not yet received an agreed name. The main terms for logistics centres known in Europe can be arranged by state, e.g.: in Great Britain, “Freight Villages”; in France, “Plate Forme Logistique” or “Plat Forme Multimodales”; in Germany, “Güterverkehrszentrum”; in Italy, “Interporto”; in Denmark, “Promet Center”; in the U.S., Japan, China and Singapore, they are often referred to as “Logistic Center,” although, even in these locations, it is impossible to speak about the coordinated use.”

In Brazil and Portugal, De Souza Silva Costa and Gobbo Junior (2007) note the use of the term “Platform Logistics”. Even though, Meduité (2005) never used the term ‘logistics platform,’ many authors, based on the French “Plate Forme Logistique,” or “Plat Forme Multimodales,” and Portuguese “Platform Logistics,” easily, and without hesitation, translate their local terms for logistics centres or English “Freight Villages” from their native language into the English ‘Logistics Platforms.’

Another group of researchers present logistics platforms as conceptually broader than logistics centres. This kind of definition is expected according to the findings of the preceding chapter, for example De Souza et al. (2007) summarise, according to their preliminary research, that “A logistic platform is a place where everything concerning logistics efficiency is gathered.” This can be either logistics centres or even ordinary production company warehouses.

In their paper on Germany’s automotive industry supplier parks, Pfohl and Gareis (2005) presented supplier parks as a kind of logistics platform. The supplier park concept is one of the new concepts in procurement logistics. They stress spatial concentration and a focus on logistics activities as the main definers of supplier parks.

Nunez-Carballosa and Guitart-Tarres (2011) state that Spain, with its strategic geographical location, is currently shifting towards being an international logistics platform involving companies, public bodies and 3PL providers, who will, over the next few years, play a key role in the development of Spanish logistics activity.

Sprague et al. (2011) mention logistics platforms in connection with the healthcare system in Northern Mozambique, which is undermined by three fundamental factors: poor infrastructure (roads, vehicles and electricity); insufficient human resources; the absence of coherent problem-solving systems. Although many authors mention a well-developed infrastructure as a prerequisite for the development of a logistics platform, this is not. Its partners created a logistics platform and delivery system that allowed for the timely ordering, procurement and transportation of vaccines, medicines, supplies, and propane to clinics. The authors used ‘logistics platform’ as a conceptually broader concept than that of logistics centre.

Lin et al. (2009) placed their survey in the Beijing, Shanghai and Shenzhen regions because the development of the logistics industry in these three regions is more mature than in the other regions of China. The respective Regional Municipal Governments have prioritised the establishment of highly effective logistics platforms, by developing three large-scale logistics parks and services in the context of the three mainstay industries.

Mangan and Lalwani (2008) mention that it is planned to establish Dubai as a global logistics hub, comprised of an integrated, multimodal logistics platform. Due to the emerging concept of port-centric logistics, a key advantage of Dubai is that it is ideally positioned on the trade corridor between Europe and Asia, and as part of a larger development titled Dubai World Central; the Dubai government is seeking to exploit the area's obvious location advantages.

In their survey, Lieb and Bentz (2005) interviewed chief executive officers of major logistics service companies in North America in terms of what steps their company's management had taken to reduce the severity of the 'high-cost/low-return on IT investment' problem. One of the answers was: "A company has focused on the development of a core logistics platform with pre-built adaptive connectors that allow easier integration of customer and 3PL applications."

The findings of Aldin et al. (2003) are based on a definition of 'logistics system' that states that it is concerned with the total material and information flow from supplier to end customer, including related activities, facilities, information systems, and organisations involved (Lambert and Cooper, 2000); (Cooper and Ellram, 1993). In terms of industry in Sweden, the focus has been on the power to design and control logistics operations as a homogenous part of the logistics system within the firm's purview. 'Logistics platform' is used to refer to the homogenous parts of logistics systems in supply chains. They see development whereby logistics platforms are centrally controlled and designed by focused organisations as parts of logistics systems, in a way that is resource based for new marketing channel positions.

Skjøtt-Larsen, Paulsson and Wandel (2003) studied the absence of a logistics platform covering the Denmark-Scania region. Their research question being: Has the Öresund region positioned itself as a leading logistics centre in Scandinavia in light of the new conditions created by the bridge? In terms of Öresund as "a leading logistics centre in Scandinavia," they mean: is Öresund's primary goal, through its concentration of physical logistics activities combined with its range of service facilities, of making the region attractive in terms of being the hub for logistics assignments between the Nordic states and Baltic States achievable? In doing so, they precisely demarcate physical and service logistics facilities. Their study indicates that the following five prerequisites for regional development are most important: access to people with the right education and competences; the possibility of increased integration; economies of scale through merger and centralisation; well developed infrastructure; access to new markets. In the survey, the compound word 'logistics platform' is mentioned, but not defined.

Proposers of a modular logistics service platform model (Lin et al., 2010) mention, as their model's underpinning, the intermodal logistics platform, defined by Cambra et al. (2009), as a physical place where different agents of the supply chain can be integrated, incorporating the 3PL modular service platform as defined by Pekkarinen et al. (2008). Nevertheless, the latest model, despite its prospects, does not cover the situation in cases of intermodal logistics platforms. The proposals of Lin et al. (2010) and Pekkarinen et al. (2008) have very similar content. The main difference is in terms of visualisation. Consequently, it can be clearly deduced on more than one type of logistics platform. Both contributions (Lin et al., 2010); (Pekkarinen et al., 2008) are based on concrete examples from practice, and require no further material examples of modular logistics service platforms, as the model is clearly defined.

Lăpăduși et al. (2011) stated that the 'logistics platform' concept was originally proposed in the Netherlands, and then later adopted in Germany.

Pekkarinen et al. (2008) construct an empirically grounded modular service platform model which consists of five elements: modular service offerings; modular organisations; modular processes; modular customer interfaces; service customisation modules. The authors do not prescribe which part/module of service platform has to be used for the sharing of common assets. Assets can be classified in terms of tangibles (storage facilities, distribution terminals, transport vehicles, and equipment) and intangibles (training of employees, competence building within logistics, collaboration activities, leverage activities, structural activities). Logistics platforms could, firstly, be established for the purpose of horizontal integration between logistics service providers, or secondly for the purpose of vertical integration between logistics service providers, educational institutions, government authorities, and public infrastructure operators. Horizontal and vertical integrations could, perhaps, be established on the same logistics platform, to assure strategic, management and operational functioning. In this case, it is clear that authors, in their use of the term 'logistics platform,' did not have in mind one of the many forms of 'logistics centre.'

2.3. Practical examples

Three illustrative examples presenting the usage of the term 'logistics platform,' in various practical contexts, will be presented to demonstrate the diversity of its use.

Example 1: Logistics Platform BE – GE – NL (2010).

Its definition can be summarised from the following quotation: "The platform will not be just another initiative, but a useful addition to existing networks and partnerships, however, with a clear focus as a cross-border component." Its vision is: "(1) Networking of organisations, businesses and

government agencies in the logistics sector in NRW, the Netherlands and Belgium; (2) Exchange of experience of planning and coordination of the regions; (3) Demand-driven focus in international cooperation; (4) Global positioning of the EU as a major logistics region within Europe.”

From the definition above, it is clear that its main aim is the integration of different actors to increase the efficiency and visibility of the aforementioned logistics sector, and its activities in the region.

Example 2: MEDAMoS (2010)

The project report on MEDAMoS (2010) states that:

“A logistics activity zone or logistics platform is an area specifically designed and developed to carry out logistic and transport activities in the most efficient way for its users (settled companies). The typologies understood by this term range from the natural intermediate reloading nodes (ports, airports, railway terminals, river transport terminals, etc.) to the logistic zones adjacent to these intermediate reloading nodes (port-type logistic zones, air loading centres, intermodal transport terminals, etc.) or single-modal logistic zones (transport and land storage centres, perishable product supply markets, etc.)”

In this specific case, regional logistics and transportation infrastructure elements are considered in relation to their servicing the needs of owner/tenant, namely the most diverse logistic and transport companies, logistics activities. The construction of infrastructure elements results in a concentration of logistics activities and services in a relatively small physical area. One manifestation of the logistics platform also implies an increase in the gravitational pull of the target port. An expanding logistics platform, in this case, is seen as the building of logistics and transportation infrastructure elements in sound locations.

Example 3: The Swiss Logistics Platform (2007)

Switzerland’s logistics platform is described on the website of the Swiss Logistics Platform (2007):

“the innovative display window of logistics experts active in Switzerland. Companies and organisations in the Swiss logistics sector present themselves jointly on the Swiss Logistics Platform. Interested parties quickly gain a comprehensive overview of the entire range of services on offer.”

In this case, the logistics platform is a web portal with logistics sector company information, and links to their websites.

The three examples above, illustrate our assumption that, in practice, the term ‘logistics platform’ is used for anything other than just describing logistics centres.

3. OBJECTIVES AND ASUMPTIONS

Objects of survey are basic constituent elements of logistics platform concept and the covered geographical or business areas. The idea of a platform is still a subject of development and various sources show various views on a content of this concept. We tried to determine the width of the gap in understanding between the formally clearly defined business actors. Our main aim is to compare understandings of basic constituent elements affiliation to chosen inter-organisational concept from various stakeholder views in two different countries. Based on the current situation, in relation to theory and practice, we assume that the views of stakeholders will differ between different organizational type in both states (vertically), and that they will be the same between the same organizational type in two states (horizontally). Precisely, we are interested in whether there are significant differences in the affiliation of compound elements and the covered geographical or business area to the logistics platform concept amongst employees in four different types of organisation in Slovenia and Poland, these being: logistics companies; production or service non-logistics companies; branch association/state agency/chamber; educational institutions. We are particularly interested in the proportion of employees who have ever heard of the concept ‘logistics platform.’ And additionally, we are interested whether Slovene and Polish companies considered the phrase ‘logistics platform’ as one containing much greater contextual potential than something Americans would call “cross-dock”.

The following research hypotheses are set for validation:

- H1. Different types of organizations differ in the degree of awareness with the concept of ‘logistics platform’;
- H2. The same types of organisation in different countries have significantly differing perceptions in terms of affiliation between each of proposed constituent elements and the concept of ‘logistics platform’;
- H3. The same types of organisation in different countries have significantly differing perceptions in terms of affiliation between each of proposed geographic or business areas, which could be most likely covered by the concept, and the concept of ‘logistics platform’.

4. METHODOLOGY

Our research objectives were achieved by obtaining responses from four different types of organizations, namely: logistics companies; production or service non-logistics companies; branch association/state agency/chamber; educational institutions, and two counties, namely: Slovenia and Poland. The respondents were employed in managerial, executive, operational, research, and educational positions.

Table 1 Survey main demographic for Slovenia and Poland

Company type	Slovenia	Poland	Total
Logistics company	44	15	59
Production/service non-logistics company	26	44	70
Public body (ministry/industry association)	7	5	12
Education	10	9	19
Total	87	73	160
Workplace			
Managerial	25	9	34
Executive	28	31	59
Operational	19	10	29
Research	4	14	18
Educational	8	9	17
Total	84	73	157
Working on with logistics connected work position			
Up to 3 years	3	25	28
From 3 to 10 years	20	16	36
More than 10 years	29	32	61
Total	52	73	125
Company size**			
Less than 5 employees	4	11	15
From 5 to less than 50 employees	5	33	38
From 50 to less than 250 employees	4	17	21
250 employees and more	24	10	34
Total	37**	71**	108**

**Answered only by those who are employed in a logistics company or production/service non-logistics company

Three academic experts and two industry experts were asked to review the questionnaire in order to ensure its clarity and relevance as a survey instrument. The input from both groups was used to develop the final questionnaire. The questionnaire, excluding the demographics section, consists of three questions, with nineteen items or sub-questions. The answers were provided in the form of a five point Likert scale.

The survey was web-based, as a result of its advantages as a research tool (Grant et al., 2005). Respondents were guided through the questionnaire through the use of submit-buttons. Data were collected stepwise, in November 2011 in Slovenia and in April 2012 in Poland, over a three-week period, yielding a total of 182 completed surveys: 89 in Slovenia and 95 in Poland. In Poland we received 22 questionnaires, from 95, without demographics data, from respondents who answered with "No" Or "Not sure" on the first question of the questionnaire. Those questionnaires were excluded from further detailed analysis. In Slovenia two

responses were excluded from our analysis as the relevant respondents indicated their companies were no longer in the logistics industry. A total of 160 usable responses remained. Respondent demographics are provided in Table 1.

Processing of the collected data below is technically based on the advice and findings of Field, 2005.

5. RESULTS

Firstly, we divided valid respondents questionnaires into two groups according to the country. Each group was further divided into two additional, one being those who had previously encountered the concept, the other, those who were 'not' or were 'not completely sure' that they had already encountered the concept 'logistics platform,' see Q1 in Table 2.

Table 2 Degree of familiarity with the concept logistics platform

Q1: Have you ever encountered the term »logistics platform« before?				
	Slovenia		Poland	
	»Yes«	»No« and »Not sure«	»Yes«	»No« and »Not sure«
The number of responses	53	35	56	39
Company type				
Logistics company	23	21	13	2
Production/service non-logistics comapany	14	12	31	13
Public body (ministry/industry association)	7	0	3	2
Education	8	2	9	0
Total	52	35	56	17

In Slovenia, of the 87 participants who returned questionnaires, 59,8% were already familiar with the concept of a 'logistics platform.' Those who had never before encountered the concept, or were unsure of it, were asked to only answer questions with regard to sample demographics. Differences were observed with reference to company type. 'Logistics companies', and 'production or service non-logistics companies' were 54% familiar with the concept. In contrast, 'branch association/state agency/chamber' were 100% familiar, and 'educational institution' somewhere in the middle with 80%. It could be argued that this is the first reason for the government and business' somewhat ineffective dialogue. Slovenian logistics companies' degree of familiarity with the concept 'logistics

platform' is low, especially in the context of logistics activities being their primary business activities.

In Poland, of the 160 participants who returned questionnaires, 76,7% were already familiar with the concept of a 'logistics platform.' Those who had never before encountered the concept, or were unsure of it, were also asked to only answer questions with regard to sample demographics. 'Logistics companies' were surprising 86,7% familiar with the concept. 'Production or service non-logistics companies' were slightly less familiar with the concept with 70.5%. In contrast, 'educational institutions' were 100% familiar, and 'branch association/state agency/chamber' were at least familiar with 60%.

We assume that Polish logistics companies vigorously and sufficiently follow global trends, although they may be developmentally lower supported by government institutions and inhibited by slightly inferior aware production companies. It could be argued that in both countries ineffective dialogue between logistics companies and government institutions can be expected, although in the opposite sense. In both cases it would be possible to encourage more efficient economic development with use of clearer, less complex terms to bridge the gap in knowledge of popular buzzword content.

Research hypothesis H1 is acceptable for all organization types in Slovenia and Poland. We can even talk about a different level of awareness of the same type of organization in two states. We can deduce on difficult inter-organizational communication. This is especially concerning among logistics companies, who are responsible for facilitating the interstate streams of goods.

In further research were included only aware respondents who answered with 'yes' to Q1.

The second question (Q2 in Table 3) is concerned with the contextual elements of logistics platforms encountered in respected resources and interpreted by the survey's participants. This question is composed of thirteen sub-questions, twelve being 'closed,' one 'open': Other. The latter was not addressed by any of our respondents in both countries. It can be assumed that we included all basic constituent elements. The question was geared towards identifying the basic constituent elements of logistics platforms, and their centrality to the concept in the eyes of the industry and other interest groups. In response to each sub-question, participants expressed the degree to which it had been included in logistics platform information, or how intensively the item could have been associated to the relevant concept: the question and question-related items, alongside basic aggregate response descriptors (Table 3).

The key finding is that all proposed constituent elements are included in written and oral sources from which respondents were informed about the concept. Therefore, if we approach to the development of a general model of logistics platforms the model should include all twelve proposed primitives. The basic elements are defined very generally, but form as such a good basis for analyzing details.

Table 3 Aggregated Q2 descriptive statistics

Q2: Up to what extent did the LPF*** term and its context include the respective ...	Poland			Slovenia		
	Mean	Std.dev. **	N	Mean	Std.dev.	N*
... state/regional geographic position?	2,63	1,259	56	3,37	1,085	52
... business environment?	3,14	1,368	56	3,15	,894	52
... traffic infrastructure?	3,66	1,517	56	3,67	,923	52
... logistics infrastructure (e.g. warehouses, distribution centers)?	4,05	,883	56	3,75	,813	52
... logistics suprastructure (e.g. transport, handling, warehousing equipment)?	4,32	,690	56	3,17	,985	52
... logistics technology (e.g. transport, handling, warehousing technologies, tracking, notification and routing systems)?	4,29	,825	56	3,17	,944	52
... logistics ICT support?	4,12	1,010	56	3,08	1,100	52
... specialized logistics personnel?	3,50	1,009	56	2,94	1,110	52
... logistics service providers?	4,38	,885	56	3,33	,964	52
... regulations catering for the needs of logistics companies?	3,14	,980	56	2,67	,857	52
... common interactive portal for shared marketing and information services?	3,95	,961	56	2,51	1,065	51
... organized group of companies?	4,02	1,018	56	2,69	1,086	51
... other: _____?	n/a	n/a	n/a	n/a	n/a	n/a

* – Standard deviation

** – The sample size

*** - Logistics Platform

Slovenian organizations had on average (Mean value 3,14) less strongly connected the basic constituent elements with logistics platform in comparison with their Polish colleagues (Mean value 3,77) as presented in Figure 1. This can be associated with a lower level of familiarity with the concept and the resulting uncertainty in decision making.

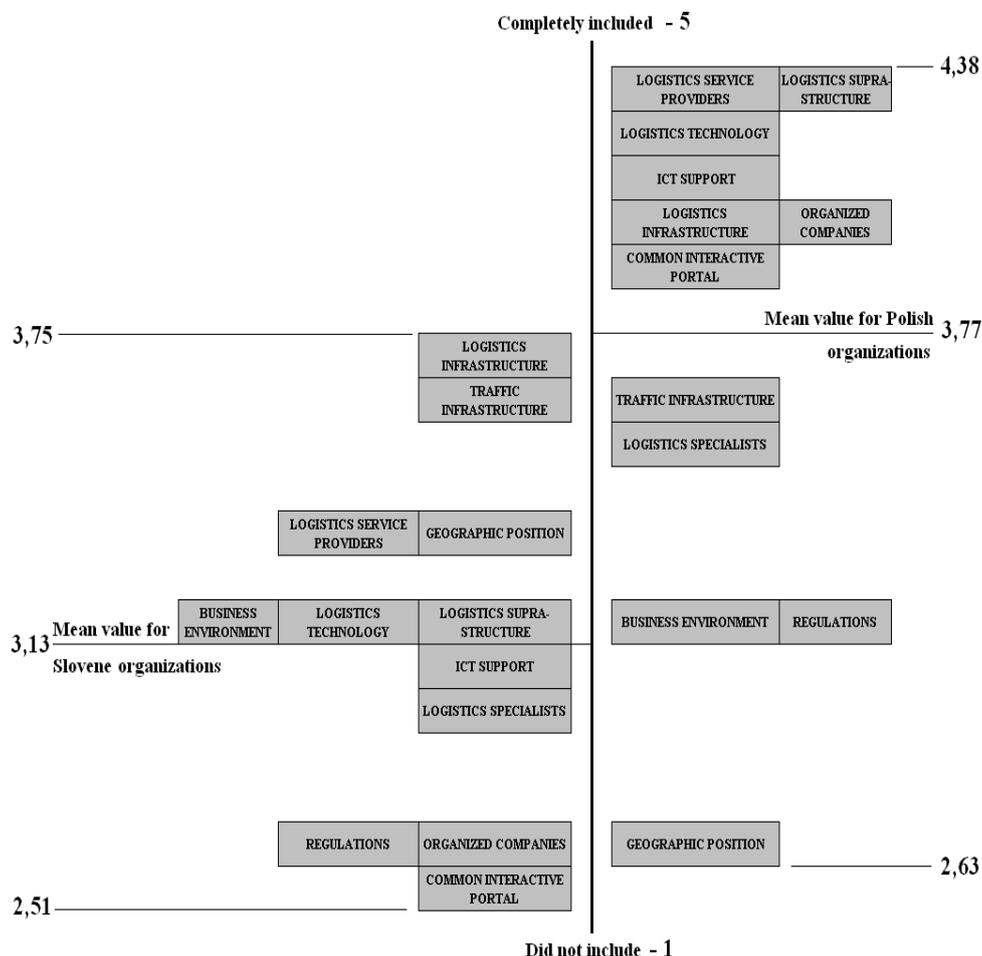


Fig. 1 Centrality of basic constituent elements of logistics platforms to the concept in the eyes of Slovenian and Polish respondents

Both groups of respondents also differ regarding to the classification of the basic constituent elements involvement in the use of the term. The results could be associated with the influence of local environmental conditions on the perception of respondents. The all kinds of media often highlight only elements that stand out from the average, whether they are neglected or well developed. The claim should be more precisely checked for both countries separately.

Infrastructural elements (traffic, logistics) and geographic position were found to be the foremost and prevalent logistics platform constituents, as stated by respondents in Slovenia, achieving highest values aggregately. On the other hand, logistics service providers, logistics supra-structure and logistics technology were

found to be the foremost and prevalent logistics platform constituents, as stated by respondents in Poland, achieving highest values aggregately.

Table 4 Statistically significant opposing tendencies intra-organizational and inter-state within certain types of organization

Company type	μ	Std. dev.	\bar{R}	U	Sig	R
Logistics suprastructure						
Production/non-logistics service – SI*	3, 21	1,188	40,29	80,000	,000	-,35
Production/non-logistics service – PL**	4, 42	0,564	73,97			
Logistics technology						
Production/non-logistics service - SI	3, 00	,961	33,43	57,500	,000	-,39
Production/non-logistics service - PL	4, 42	0,765	74,24			
Logistics ICT support						
Production/non-logistics service – SI	2, 71	1,139	32,11	59,000	,000	-,39
Production/non-logistics service - PL	4, 29	0,739	71,76			
Logistics service providers						
Production/non-logistics service - SI	3, 36	,929	38,68	71,000	,000	-,37
Production/non-logistics service - PL	4, 52	1,380	72,81			
Education - SI	2, 72	,463	21,50	3,000	,000	-,33
Education - PL	4, 78	1,281	82,44			
Common interactive portal						
Production/non-logistics service - SI	2, 50	1,225	36,79	68,000	,000	-,36
Production/non-logistics service - PL	4, 10	0,790	74,68			
Organized group of companies						
Education - SI	2, 00	,756	20,88	,000	,000	-,35
Education - PL	4, 78	0,441	89,89			

* Slovenia; ** Poland; μ - The mean of the population of scores; \bar{R} - Mean Rank (Kruskal Wallis test); U – Mann-Whitney's statistics; r – effect size

As interesting, the Polish organizations see the geographical position as at least debated in connection with the logistics platform. The most disputable contexts, where statistically significant opposing tendencies regarding the same company type in different countries perceptions arise, include 'logistics suprastructure' ($H(3) = 37,920, p < .05$), 'logistics technology' ($H(3) = 36,545, p < .05$), 'logistics ICT support' ($H(3) = 29,157, p < .05$), 'specialized logistics personnel' ($H(3) = 21,112, p < .05$), 'logistics service providers' ($H(3) = 37,611, p < .05$), 'for logistics tailored regulations' ($H(3) = 15,819, p < .05$), 'common interactive portal' ($H(3) = 39,212, p < .05$), and 'organized group of companies' ($H(3) = 39,534, p < .05$). Mann-Whitney tests were used to follow up these findings. V Bonferroni correction was applied and so all effects are reported at a .001 level of significance (Table 4).

Normally it would be expected that respondents from the same organisational type in two observed countries have unified view concerning logistics platforms. The argument has proved to be statistically true for the logistics companies and public bodies, and partially true for production non-logistics companies and educational institutions. Production and non logistics service companies in Slovenia and Poland the most differentiate in understanding the centrality of contextual elements to the concept. Their opinions weakly differ on 'logistics suprastructure' ($U=80, r = -.35$), 'logistics technology' ($U=57,5, r = -.39$), 'logistics ICT support' ($U=59, r = -.39$), 'logistics service providers' ($U=71, r = -.37$) and 'common interactive portal' ($U=68, r = -.36$). Opinions of educational institutions differ on 'logistics service providers' ($U=3, r = -.33$) and 'organized group of companies' ($U=0, r = -.35$).

Additionally, by using the Kruskal-Wallis test, we confirmed that there are no opposing tendencies regarding company type groups perceptions separately for both states. Different situation arose observing inter-state situation. Eight groups were formed according to organisational type and state (Slovene logistics companies, Polish logistics companies, Slovene educational institutions, ...). Table 5 shows statistically significant differences in understanding the centrality of contextual elements to the concept from a different types of organization in both states view point.

Research hypothesis H2 is acceptable for production/non-logistics service companies and educational institutions in Slovenia and Poland, and unacceptable for logistics companies and public bodies. Therefore we assume the possibility of difficult communication between Slovene and Polish production/non-logistics service companies and between Slovene and Polish educational institutions. Due to non-significantly different views we do not foresee any major problems in the joint operation between Slovene and Polish logistics companies and Slovene and Polish public bodies. In this way we can also assume potential groups who might react inhibitory in case of planning of pan-European logistics platform.

Table 5 Statistically significant opposing tendencies inter-organizational and inter-state

Company type	μ	Std. Dev	\bar{R}	U	Sig	R
Logistics suprastructure						
Logistics - SI	3,30	,974	40,30	132	,000	-,40
Production/non-logistics service - PL	4,42	,564	73,97			
Education - SI	2,75	,886	25,50	19	,000	-,38
Production/non-logistics service - PL	4,42	,564	73,97			
Logistics technology						
Logistics - SI	3,48	,898	45,59	158	,000	-,35
Production/non-logistics service - PL	4,42	,765	74,24			
Education - SI	3,00	1,060	33,19	38,5	,001	-,38
Production/non-logistics service - PL	4,42	,765	74,24			
Public body - SI	2,71	,756	24,57	16,5	,000	-,36
Production/non-logistics service - PL	4,42	,765	74,24			
Logistics ICT support						
Public body - SI	2,71	,952	30,29	25	,000	-,33
Production/non-logistics service - PL	4,29	,739	71,76			
Specialized logistics personnel						
Education - SI	2,25	,886	27,25	22	,000	-,37
Production/non-logistics service - PL	3,81	,749	70,68			
Logistics service providers						
Logistics - SI	3,52	,947	43,33	147	,000	-,38
Production/non-logistics service - PL	4,52	,626	72,81			
Education - SI	2,75	,463	21,50	6	,000	-,42
Production/non-logistics service - PL	4,52	,626	72,81			
Logistics - SI	3,52	,947	43,33	28	,000	-,32
Education - PL	4,78	,667	82,44			
Production/non-logistics service - SI	3,36	,929	38,68	13	,000	-,32
Education - PL	4,78	,667	82,44			
Common interactive portal						
Logistics - SI	3,09	1,621	45,13	148,	,000	-,36

Production/non-logistics service - PL	4,10	,790	74,68	5		
Education - SI	1,88	,641	19,63	4	,000	-,42
Production/non-logistics service - PL	4,10	,790	74,68			
Public body - SI	2,29	1,113	30,86	22	,000	-,33
Production/non-logistics service - PL	4,10	,790	74,68			
	Organized group of companies					
Education - SI	2,00	,756	20,88	8	,000	-,31
Logistics - PL	3,92	1,038	66,65			
Education - SI	2,00	,756	20,88	26	,000	-,34
Production/non-logistics service - PL	3,81	1,078	64,45			
Logistics - SI	2,83	1,072	39,70	10,5	,000	-,38
Education - PL	4,78	,441	89,89			
Public body - SI	2,43	,787	29,29	,000	,000	-,34
Education - PL	4,78	,441	89,89			

In the third question (Q3 in Table 6) we investigated perceptions about the geographic or business area which could be most likely covered by the concept of ‘logistics platform’. Within this context, we tried to determine the range within which logistics platforms had been associated – namely, whether logistics platforms, as encountered and perceived by respondents, had manifested themselves at company, supply chain, state, regional or EU levels. The association of logistics platforms with level-specific scope was examined in terms of these five areas, and the resulting aggregated descriptions are presented in summation (Table 6).

Table 6 Descriptive statistics on logistics platform association with level-specific context, interstate

Q3: How strongly was the LPF concept used and expressed on the scope of ...	Poland			Slovenia		
	Mean	Std. dev.	N	Mean	Std. dev.	N
... a single company?	2,07	1,204	56	2,42	1,073	52
... a supply chain?	2,77	1,414	56	3,17	,985	52
... a country ?	3,00	,991	56	3,25	1,278	51
... a region?	3,55	,933	56	3,24	1,226	51
... European Union?	3,36	,923	56	3,04	1,232	51

The concept ‘logistics platform’ is used in all of the suggested areas in both states. However, it is distinctively less pronounced ‘company-wide.’

In Slovenia initial results show that logistics platforms are mostly connected with states and/or regions, followed by supply chains. Statistically significant differences were detected using the Kruskal-Wallis test for inter-group discrepancies at the supply chain level ($H(3) = 9.912$; $p < .05$). Furthermore, Mann-Whitney tests were used to identify the source of relational difference. A comparison method with Bonferroni corrections was applied, so all effects are based on a .004 significance level. Logistics platforms' association with supply chains was significantly affected with regards to company type when comparing logistics companies and academia. Logistics companies, in contrast to academia, perceive the concept of a logistics platform as significantly, but weakly, more associated with the supply chain context ($U = 26.5$; $r = -.43$).

In Poland initial results show that logistics platforms are mostly connected with EU and/or regions, followed by states. No statistically significant differences between different types of organization were observed.

Table 7 Logistics platform association with level-specific context, summarily

How strongly was the LPF concept used and expressed on the scope of ...	Poland and Slovenia				
	Mean	Std. Dev.	N	H	Sig.
... a single company?	2,24	1,151	108	1,651	,646
... a supply chain?	2,96	1,237	108	3,365	,331
... a country ?	3,18	1,267	108	1,417	,709
... a region?	3,45	1,210	108	7,542	,051
... European Union?	3,26	1,218	108	7,923	,046

Normally it would be expected that respondents from the same organization type in two observed states have unified view concerning the geographic or business area which could be most likely covered by the concept. Research hypothesis H3 is unacceptable for all organization types. Both samples regarding geographic or business area, from Slovenia and Poland, can be combined into one. The association of logistics platforms with level-specific scope was examined ones again, and the resulting aggregated descriptions are presented in summation (Table 7).

Production and non-logistics service companies, combined for both states, in contrast to Public bodies, perceive the concept of a logistics platform as weakly significantly more associated with the European union territory ($U = 101,5$; $r = -.27$), Table 8.

Table 8 Logistics platform association with level-specific context, analytically by the organization type

Company/workplace	Single company				
	μ	St. dev.	N	H	Sig
Logistics	2,22	1,017	36	1,651	,640
Production/non-logistics service	2,36	1,334	45		
Public body	2,4	1,174	10		
Education	1,88	,857	17		
	Supply chain				
Logistics	3,14	1,222	36	3,365	,321
Production/non-logistics service	2,96	1,331	45		
Public body	3,10	,994	10		
Education	2,53	1,125	17		
	Country				
Logistics	2,94	1,264	36	1,417	,697
Production/non-logistics service	3,36	1,317	45		
Public body	3,20	,919	10		
Education	3,18	1,334	17		
	Region				
Logistics	3,22	1,124	36	7,542	,052
Production/non-logistics service	3,84	1,261	45		
Public body	3,00	,943	10		
Education	3,18	1,185	17		
	EU				
Logistics	3,31	1,091	36	7,923	,045
Production/non-logistics service	3,47	1,325	45		
Public body	2,40	,699	10		
Education	3,12	1,269	17		

6. CONCLUSION

Pursuant to the survey, we are fully aware of the need to develop a general model of logistics platforms, bringing together the majority of their current variety of phenomenon, and their, as yet, unexploited theoretical potential. In parallel, a classification of various existent logistics platforms should be carried out; both being necessary to bridge the gap in the understanding of the concept between the different types of organisation in Europe, which has been partially proved by our research. There is also the question as to whether the concept has practical value elsewhere in the world.

Although logistics platforms have been explored by researchers and experts in the past from varying perspectives, the majority of studies have been qualitative. We have witnessed many “close-up” views of the topic in the dispersed literature on logistics platforms, but no “big picture”. The authors should, before using this or any other similar compound word in their research, explore the context in which it has been used by others.

Although we present the specific cases of Slovenia and Poland, this may be informative for anyone wishing to realise this theoretically promising inter-organisational concept in practice, locally or globally. Although, at first glance, it seems that the different stakeholders groups uniformly understood the concept's content, it is not always necessarily the case. Our survey revealed significantly different interpretations of logistics platform content by different stakeholders, who have, in the process of development and deployment, adopted various roles: initiator; operator; customer; supporter. We suggest a verifying of the compliance of interpretations of the concept content amongst different stakeholder groups as part of the preparatory phase of a joint inter-organisational concept implementation process.

REFERENCES

- Aldin N. & Stahre F., (2003), "Electronic commerce, marketing channels and logistics platforms – a wholesaler perspective", *European Journal of Operational Research*, Vol. 144, pp. 270-279.
- Bask, A., Lipponen, M., Rajahonka, M. & Tinnilä, M., (2011), "The concept of modularity: diffusion from manufacturing to service production", *Journal of Manufacturing Technology Management*, Vol. 21, No. 3, pp. 355-75.
- BE – GE – NL, (2010), "Multiplikatorentreffen Venlo" [online], available at: <http://www.logisticsplatform-be-ge-nl.com/download> [Accessed 12 April 2011].
- Cambra, F.J. & Ruiz, B.R., (2009), "Advantages of intermodal logistics platforms: insights from a Spanish platform", *Supply Chain Management: An International Journal*, Vol. 14, No. 6, pp. 418–421.
- Cooper, M. & Ellram, L., (1993), "Characteristics of supply chain management and the implications for purchasing and logistics strategy", *The international Journal of Logistics Management*, Vol. 4, No. 2, pp. 13-24.
- Council of Supply Chain Management Professionals, (2010), "Glossary of Terms" [online], available at: <http://cscmp.org/digital/glossary/glossary.asp> [Accessed 5 October 2011].
- De Souza, F.M., Da Silva Costa, W.A. & Gobbo Junior, J.A. (2007), "Logistic platforms: Proposal of an implementation methodology", available at http://www.poms.org/conferences/poms2007/cdprogram/topics/full_length_papers_files/007-0185.pdf (accessed 8 March 2012).
- Field, A., (2005), "Discovering Statistics using SPSS", London: SAGE Publications.
- Grant, D.B., Teller, C. & Teller, W., (2005), "Web-based Surveys in Logistics Research: An Empirical Application", in H. Kotzab, R. Seuring, M. Müller and G. Reiner, eds. *Research Methodologies in Supply Chain Management*. Germany: Physica-Verlag, pp. 140-152.

- Hoogeweegen, M.R., Teunissen, W.J.M., Vervest, P.H.M. & Wagenaar, R.M., (1999), "Modular Network Design: Using Information and Communication Technology to Allocate Production Tasks in a Virtual Organisation", *Decision Sciences*, Vol. 30, No. 4, pp. 1073-1103.
- Lambert, D., & Cooper, M., (2000), "Issues in supply chain management", *Industrial Marketing Management*, Vol. 29, pp. 65-83.
- Lieb, R. & Bentz, B.A., (2005), "The North American third party logistics industry in 2004: the provider CEO perspective", *International Journal of Physical Distribution & Logistics Management*, Vol. 35, No. 8, pp. 595-611.
- Lin, C.Y. & Ho, Y.H., (2009), "RFID technology adoption and supply chain performance: an empirical study in China's logistics industry", *Supply Chain Management: An International Journal*, Vol. 14, No. 5, pp. 369-378.
- Lin, Y., Luo, J. & Zhou, L., (2010), "Modular logistics service platform", *IEEE International Conference on Service Operations, Logistics, and Informatics (SOLI)*, pp. 200-204.
- Mahmoud-Jouini, S.B. & Lenfle, S., (2010), "Platform re-use lessons from the automotive industry", *International Journal of Operations & Production Management*, Vol. 30, No. 1, pp. 98-124.
- Mangan, J. & Lalwani, C., (2008), "Port-centric logistics", *The International Journal of Logistics Management*, Vol.19, No. 1, pp. 29-41.
- MEDAMoS, (2010), "MEDAMoS". Motorways of the sea. Logistic Activity Zones" [online], Egis Bceom International in association with IDOM, Copetrans, ACE, available at: <http://www.euromedtransport.org/image.php?id=134> [Accessed 10 January 2012].
- Meidute, I., (2005), "Comparative Analysis of the Definitions of Logistics Centres", *Transport*, Vol. XX, No. 3, pp. 106-110.
- Meyer, M. & Lehnerd, A., (1997), "The Power of Product Platforms: Building Value and Cost Leadership", New York, NY: The Free Press.
- Meyer, M.H. & de Tore, A., (1999), "Perspective: creating a platform-based approach for developing new services", *The Journal of Product Innovation Management*, Vol. 18, pp. 188-204.
- Muffatto, M. & Roveda, M., (2000), "Developing product platforms: analysis of the development process", *Technovation*, Vol. 20, No. 11, pp. 617-630.
- Muffatto, M., (1999), "Introducing platform strategy in product development", *International Journal of Production Economics*, Vol. 60-61, pp. 145-153.
- Nunez-Carballosa, A. & Guitart-Tarres, L., (2011), "Third-party logistics providers in Spain. *Industrial Management & Data Systems*", Vol. 111, No. 8, pp. 1156-1172.
- Pekkarinen, S. & Ulkuniemi, P., (2008), "Modularity in developing business services by platform approach", *The International Journal of Logistics Management*, Vol. 19, No. 1, pp. 84-103.
- Pfohl, H.C. & Gareis, K., (2005), "Supplier parks in the German automotive industry. A critical comparison with similar concepts", *International Journal of Physical Distribution & Logistics Management*, Vol. 35, No. 5, pp. 302-317.
- Robertson, D. & Ulrich, K., (1998), "Planning of product platforms", *Sloan Management Review*, Vol. 39, No. 4, pp. 19-31.
- Sanchez, R. & Mahoney, J., (1996), "Modularity, flexibility and knowledge management in product and organisation design", *Strategic Management Journal*, Vol. 17, pp. 63-76.

- Sawhney, M.S., (1998), "Leveraged high-variety strategies: from portfolio thinking to platform thinking", *Journal of the Academy of Marketing Science*, Vol. 26, No. 1, pp. 54-61.
- Skjøtt-Larsen, T., Paulsson, U. & Wandel, S., (2003), "Logistics in the Öresund region after the bridge", *European Journal of Operational Research*, Vol. 144, pp. 247-256.
- Sprague, C. & Woolman, S., (2011), "VidaGas: delivering better health to Northern Mozambique with LPG", *Journal of Enterprising Communities: People and Places in the Global Economy*, Vol. 5, No. 1, pp. 41-57.
- Sundbo, J., (1994), "Modularisation of service production and a thesis of convergence between service and manufacturing organisations". *Scandinavian Journal of Management*, Vol. 10, No. 3, pp. 245-266.
- The Swiss Logistics Platform, (2007), "The Swiss Logistics Platform branch conspectus since 1999" [online], available from: Found on <http://www.logistikplattform.ch/wcms/logi.cfm/h,20/s,0/c,0/sc,en/blue.htm> [Accessed 12 April 2012].
- Ulrich, K., (1995), "The Role of Product Architecture in the Manufacturing Firm", *Research Policy*, Vol. 24, pp. 419-40.
- Van Hoek, R.I. & Weken, H.A.M., (1998), "The impact of modular production on the dynamics of supply chains", *International Journal of Logistics Management*, Vol. 9, No. 2, pp. 35-50.
- Worren, N., Moore, K. & Cardona, P., (2002), "Modularity, strategic flexibility and firm performance: a study of the home appliance industry", *Strategic Management*