

BASIC LOGISTIC MODEL OF COMPANY OSNOVNI LOGISTIČKI MODEL KOMPANIJE

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Abstract: Pressure to costs minimization invokes need of material, information and financial flow coordination analogous with coordination of all sources during military action management. Development of logistic during recent years was enabled by intensive development of cybernetics and especially of information technologies enabling information integration necessary for global management and therefore for logical approach application. In company, applying logistics as basic management method, all its systems are working in mutual bonds and follow the global optimality criterions.

In cybernetic term logistics is the method of flow management, concentrating strength of system approach, program planning management, algorithmic thinking and coordination of all sources for achievement of the objective – global optimization.

Global objective definitions is given by optimization criterions. Logistic management resolves directly or implicitly issue of multi-criterion optimization as maximum utilization of equipment capacity, energy and material consumption minimization. profit maximization, etc.

Key words: logistic, optimization criterions, global management, method

Apstrakt: Zahtev za minimiziranje troškova prouzrokuje potrebu da se koordinira materijalnim, informacijskim i finansijskim tokovima.

Do razvoja logistike u poslednjih nekoliko godina došlo je zahvaljujući intenzivnom napredovanju kibernetike, a posebno informatike koja omogućava objedinjavanje informacija, što je neophodno za globalno upravljanje, pa, prema tome, za logičnu primenu.

U kibernetici termin logistika predstavlja metod upravljanja određenim protokom, pri čemu se akcenat stavlja na sistemski pristup, kontrolu planiranja programa, algoritamsko razmišljanje i koordinaciju svih raspoloživih sredstava za postizanje cilja – globalne optimizacije.

Globalni cilj definisan je kroz kriterijume optimizacije. Logističko upravljanje rešava direktno ili indirektno pitanje multikriterijumske optimizacije kao vida maksimalnog iskorišćenja kapaciteta opreme, energije uz minimalnu potrošnju sredstava, maksimalni profit itd.

Ključne reči: logistika, kriterijumi optimizacije, globalni menadžment, metode

1. INTRODUCTION

Contemporary period of life on planet Earth is characterized by strong competitive struggle of world-wide scope for markets, customer, orders and this fact forces industrial and commercial companies to produce, update product and to store and to handle with such product with minimum global costs, to minimize financial

1. UVOD

Odluka savremenog doba je oštra konkurencija u borbi za primat na svetskom tržištu, za pridobijanje kupaca i pospešivanje potrošnje. Pomenute činjenice primoravaju industrijske i trgovačke kompanije da proizvodnju, modernizaciju i skladištenje obavljaju uz minimalne troškove, odnosno da svedu na minimum finansijska sredstva koja su zamrznuta u obliku proizvoda koji

facilities bound in products in stores and in movement between manufacturer and customers.

Pressure to costs minimization invokes need of material, information and financial flow coordination analogous with coordination of all sources during military action management. The above analogy brought term „logistics“ also to production and business processes management where in term of organization and management and concerning the information and management system development level we should not leave any „hole“ for leakage of sources (time, finances, material, energy, etc.) resulting in non-effective cost increase and therefore also in increase of product and service price with subsequent reduction of company competitive position.

In cybernetic term logistics is the method of flow management, concentrating strength of system approach, program planning management, algorithmic thinking and coordination of all sources for achievement of the objective – global optimization.

The term flow means organized movement of matter (material, money, information, people, etc.). System approach shall be applied in such way, that we look at processes and object, managed by us as „system“. I.e. we take into account all the elements (elementary processes) and relationships between them. We will determine relations with the other processes (systems) and we will define objective of management. We will use properties of elements and relationships and their synergic effect for objective fulfillment. So we will apply systematic decision-making, simultaneously evaluating information from several sources and on the basis of global criterion. Systemic approach means also following methodology application: *decomposition – analysis – objective – synthesis*.

Principle of coordination is necessary in logistics if systemic approach is applied to the process. Because majority of processes if created from several elements (processes, devices, production sections, plants...) their local objectives shall be synchronized with global objective of the entire system. Logistic systems have a hierarchic management structure, where the coordination is one of the basic management principle and in the case of network structures coordination is even more dominant.

Concerning mainly the time criterions for costs influence logistics uses principles of prognosis, planning and programming of objectives and course of individual elementary processes,

se nalazi na zalihama ili na putu od proizvođača do kupca.

Zahtev za minimiziranje troškova prouzrokuje potrebu da se koordinira materijalnim, informacijskim i finansijskim tokovima. Pomenuta koordinacija može se uporediti sa koordinacijom raspoloživih sredstava, koja je neophodna za vođenje vojne operacije. Prethodna analogija objašnjava upotrebu termina „logistika“ u kontekstu upravljanja proizvodnim i poslovnim procesima. Naime, u uslovima organizacije i menadžmenta, a u vezi razvoja sistema informacija i menadžmenta ne sme se ostaviti ni jedan „otvor“ kroz koji bi se odlivala sredstva (vreme, novac, sredstva, energija itd.), što bi prouzrokovalo nesvrshodan porast troškova, pa samim tim, i porast cene proizvoda i usluga, što bi, s druge strane, smanjilo konkurentnost kompanije na tržištu.

U kibernetici termin logistika predstavlja metod upravljanja određenim protokom, pri čemu se akcenat stavlja na sistemski pristup, kontrolu planiranja programa, algoritamsko razmišljanje i koordinaciju svih raspoloživih sredstava za postizanje cilja – globalne optimizacije.

Termin protok znači organizovano kretanje materije (sredstva, novac, informacije, ljudi itd.). Sistemski pristup se primenjuje tako što se proces ili objekat kojim se upravlja posmatra kao „sistem“, tj. uzimaju se u obzir svi elementi (elementarni proces) i veze među njima. Osim toga, određuje se relacije sa ostalim procesima (sistemima) i definiše se ciljevi upravljanja. Koristiće se svojstva i relacije elemenata i uzajamni (sinergetičan) efekat koji oni imaju na ostvarenje ciljeva. Prema tome, primeniće se sistematsko odlučivanje uz istovremeno procenjivanje informacija iz nekoliko izvora, a na bazi globalnog kriterijuma. Sistemski pristup, takođe, podrazumeva primenu sledeće metodologije: *rašćlanjivanje – analiza – cilj – sinteza*.

Princip koordinacije je neophodan u logistici ukoliko se na proces primenjuje sistemski pristup. S obzirom na to da se većina procesa sastoji od nekoliko elemenata (proces, uređaji, proizvodni sektori, pogoni, fabrike...) njihovi lokalni ciljevi biće sinhronizovani sa globalnim ciljevima čitavog sistema. Logistički sistemi imaju hijerarhijsku strukturu upravljanja, gde je koordinacija jedan od osnovnih principa upravljanja, dok je u slučaju složenih umreženih struktura koordinacija još dominantniji faktor.

Ako se za određivanje cene pretežno uzima u obzir vremenski kriterijum, logistika koristi prognostičke principe, planiranje i programiranje ciljeva i toka pojedinačnih elementarnih procesa koji se primenjuju sa algoritamskom doslednošću na svim

implemented with algorithmic consistency at all levels. Principle of algorithmic thinking uses principle from program algorithm generation, where every algorithm branch shall be consistently implemented and closed and nothing can be left for an accident, unclosed.

Global objective definitions is given by optimization criterions. Logistic management resolves directly or implicitly issue of multi-criterion optimization as maximum utilization of equipment capacity, energy and material consumption minimization, profit maximization, etc. The above criterions can be supporting or conflict. Logistics tries to influence all the above criterions, mainly in time aspect to meet the objective of global optimization resulting mainly in total cost minimization or profit maximization.

2. AREA OF LOGISTICS

Area of logistics begins from customer, his interest and our marketing activity through the customer's requirements realization in form of product or services to the delivery of goods to the customer, guarantee and post-guarantee service:

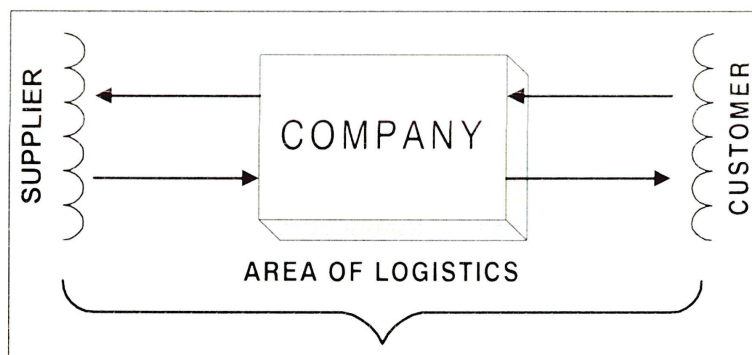


Figure 1 Area of logistics
Slika 1 Područje logistike

Within the area supplier – company – customer company's logistics ensures coordination of following flows, running in company's transformation process:

1. **Material flow** – its objective is to ensure necessary material (raw material, spare parts, semi-products...) for the production process on the one hand and to mediate manufactured production delivery to the customer on the other hand.
2. **Information flow** – its purpose is preparation and processing of necessary information for planning, production and control stage and logistics operation, which are of information or material nature.

nivoima. Princip algoritamskog načina razmišljanja primenjuje princip programskog generisanja algoritama u kome se svaka grana algoritma dosledno primenjuje, a krug se zatvara ne prepuštajući ništa slučaju.

Globalni cilj definiisan je kroz kriterijume optimizacije. Logističko upravljanje rešava direktno ili indirektno pitanje multikriterijumske optimizacije kao vida maksimalnog iskorišćenja kapaciteta opreme, energije uz minimalnu potrošnju sredstava, maksimalni profit itd. Navedeni kriterijumi mogu biti oprečni ili podudarni. Logistika pokušava da utiče na pomenute kriterijume, prvenstveno sa vremenskog aspekta u cilju ostvarenja globalne optimizacije koja bi imala za posledicu totalnu minimizaciju troškova i maksimiranje profita.

2. PODRUČJE LOGISTIKE

Oblast logistike počinje od kupca, njegov interes i našu marketinšku aktivnost kroz realizaciju njegovih zahteva u obliku proizvoda ili usluga, do isporuke robe kupcu garantujući i post garantni servis.

U sferi dobavljač-kompanija-korisnik logistika kompanije obezbeđuje koordinaciju sledećih tokova koji postoje u procesu transformacije kompanije, i to:

1. **materijalnih tokova** - čiji je cilj da obezbedi materijalna sredstva (sirovine, rezervne delove, poluproizvode...) neophodna, s jedne strane, za nesmetano odvijanje proizvodnog procesa i, s druge strane, za posredovanje između kupca i proizvođača gotovog proizvoda,
2. **informacijskih tokova** - čiji je cilj da pripremi i obradi informacije koje su neophodne za planiranje, proizvodnju i upravljanje, kao i za logističke aktivnosti informativne ili materijalne prirode i

3. **Financial flow** – its purpose is to ensure way and method of payment realization from the company to suppliers for production factor deliveries and also of payment realization from customers to the company for supplied services and products.

3. **finasijskih tokova** - čiji je cilj da obezbedi način i metode plaćanja, s jedne strane, između kompanije i dobavljača za isporučene proizvode, a, s druge strane, između kompanije i kupca za isporuku odgovarajućih usluga ili proizvoda.

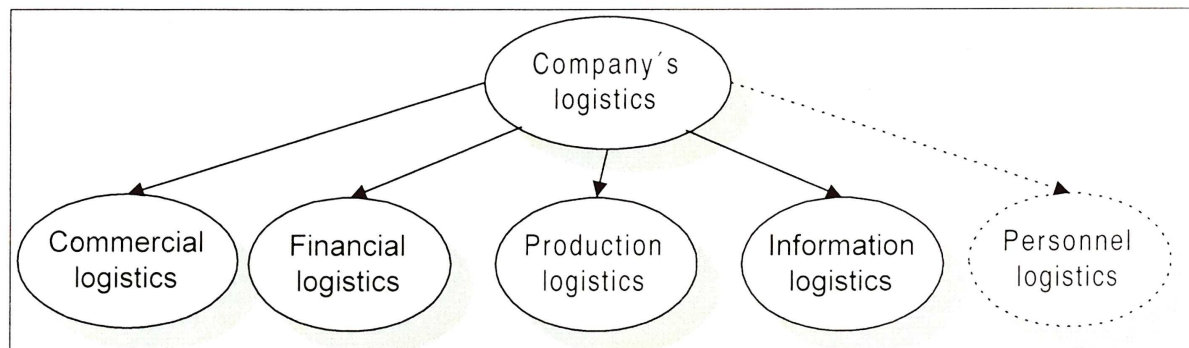


Figure 2 Structure of company's logistics

Slika 2 Logistička struktura jedne kompanije

3. STRUCTURE OF COMPANY'S LOGISTICS

Logistics of the company is used for company objective support, it is the set of tasks resulting in measures for optimal material, information and financial flow assurance during transformation process of production.

Company's logistics is divided into:

- production logistics,
- commercial logistics,
- financial logistics,
- information logistics,
- personnel logistics.

Strategic logistics of company

Strategic logistic is the basic column of company's logistics because all the objectives and activities of company are based on strategic logistics. Good strategy determination is critical, because firm existence depends on it – whether the company will prosper or not. During strategy development we go out from basic indicators as for example: time, customers, production process, product, raw material basis, suppliers, quality and ecology.

Financial logistics

During conversion to market economy numbers of companies shall resolve issues, concerning the own existence. Managers make an maximum

3. STRUKTURA LOGISTIKE U OKVIRU KOMPANIJE

Logistika jedne kompanije predstavlja njenu objektivnu podršku, a sastoji se iz niza zadataka iz kojih, zatim, proizilaze mere koje obezbeđuju optimalne materijalne, informacijske i finansijske tokove u procesu transformacije proizvodnje.

Logistika jedne kompanije može se podeliti na:

- logistiku proizvodnje,
- komercijalnu logistiku,
- logistiku finansija,
- logistiku informacija i
- logistiku kadrova.

Strateška logistika kompanije

Strateška logistika predstavlja logističku osnovu svake kompanije, s obzirom na to da se na njoj zasnivaju svi ciljevi i aktivnosti. Određivanje dobre strategije je presudan faktor, jer od toga zavisi opstanak i budućnost kompanije. Prilikom razvoja strategije polazi se od osnovnih indikatora, kao što su: vreme, kupci, proizvodni proces, sirovinska osnova, dobavljači, kvalitet i ekologija.

Logistika finansija

U procesu prelaska na tržišnu ekonomiju mnoge kompanije biće primorane da razreše neka egzistencijalna pitanja. Naime, direktori čine maksimalne napore da poboljšaju finansijske i

effort to increase financial and economic performance and adaptability of their companies in complex market conditions. High quality, minimum costs and advantageous price of realized production or provided services become the first assumption of their successful competitive struggle. Competitiveness improvement develops pressure to costs minimization resulting in requirement for material, financial and information flow optimal coordination, which are the objects of logistics. Financial flow management and coordination thereof with the other flows within the company is the purpose of financial logistics.

Commercial logistics

Commercial logistics deals with commercial activities enabling goods flow from one point of acquisition – raw material and material offer to the point of final consumption and also with information flows, fluctuating the product in order to ensure appropriate level of customer service for appropriate costs. Purpose of the commercial logistics is to ensure spanning between supply and demand to make goods and services available to the customers in time according to their requirements, at the required destination points and under required conditions.

Production logistics

Production logistics means complex of logistic tasks and measures for production process preparation, assurance and implementation. It contains all the activities with material and information flow of raw material and additional and production material from raw material store to production and from semi-product store and purchased components store through the individual production process stages including all buffer stores and assembly to the final products store.

Logistics of service processes is closely connected with production logistics. It ensures continuous and failure-free operation of all production processes. Logistics of service processes includes all the additional and auxiliary processes connected with production (production technical preparation, maintenance, storage, supplies, transport and handling, packing, energy facilities, waste facilities, etc.).

Information logistics

Information logistics creates information space for existence of the other parts of the company's logistics. Its purpose is necessary information preparation and processing for all planning,

ekonomске efekte i da se prilagode na najbolji mogući način složenim zahtevima tržišta. Visoki kvalitet, minimalni troškovi i pristupačna cena proizvoda ili usluga predstavljaju osnovni preduslov za uspeh i konkurentnost. Povećana konkurentnost u suštini znači minimiziranje troškova, što zahteva optimalnu koordinaciju materijanih, finansijskih i informacijskih tokova, koja je i predmet logistike. Prema tome, cilj finansijske logistike predstavlja upravljanje finansijskim tokovima i njihova koordinacija sa ostalim tokovima koji se odvijaju u okviru kompanije.

Komercijalna logistika

Komercijalna logistika bavi se svim onim aktivnostima koje omogućavaju protok robe od momenta nabavke - sirovina i sredstava do konačne potrošnje. Takođe se bavi i protokom informacija, kako bi se obezbedio odgovarajući nivo usluge za odgovarajuću cenu. Svrha komercijalne logistike je da poveže mehanizme ponude i potražnje tako da se obezbedi blagovremeno obezbeđivanje roba i uluga u skladu sa zahtevima kupca, na odgovarajućem mestu i pod odgovarajućim uslovima.

Logistika proizvodnje

Logistika proizvodnje podrazumeva niz logističkih zadataka i mera koje se primenjuju, kako bi se proizvodni proces adekvatno pripremio, obezbedio i sproveo. U njoj su sadržani svi materijalni i informacijski tokovi vezani za sirovine i ostala proizvodna sredstva i to, od skladišta proizvodnih sirovina, repromaterijala, gotovih proizvoda, do pojedinačnih proizvodnih procesa, skladišta poluproizvoda, montaže i, konačno, do skladišta gotovih proizvoda.

Logistika uslužnih delatnosti je usko vezana za proizvodnu logistiku. Ona obezbeđuje stalno i nesmetano funkcionisanje svih proizvodnih procesa. Logistika uslužnih delatnosti obuhvata sve pomoćne i dodatne procese koji su povezani sa proizvodnjom (tehnička priprema proizvodnje, održavanje, skladištenje, zalihe, transport, rukovanje, pakovanje, energetske pogone, pogoni za otpadne materije itd.).

Logistika informacija

Logistika informacija stvara informacijski prostor koji omogućava postojanje ostalih logističkih segmenata jedne kompanije. Svrha ove logistike predstavlja pripremu i obradu informacija koje su neophodne za sve oblike planiranja, proizvodnje i

production and control tasks in company, always complete, correct, actual, at required time and at costs as low as possible. Necessary activities consists of information collection, their saving, processing and sorting and also information preparation for one-shot or periodic decision-making. Majority of activities within production, commercial and financial logistics is of information nature.

Personnel logistics

The purpose of this logistics is to enforce appropriate personnel policy meeting the company's logistics needs which is premise of excellent logistic performance achievement. Logistic concepts in company can be enforced in long-time and successfully only in the case that wide basis of executive and managing employees will adopt logistic thinking and knowledge. The basis of high performance of employees is required education level and its permanent improvement. To ensure performance involvement introduction of stimulation methods of salary, attractive working content provision and opportunities of further growth are necessary. Personnel logistics is important especially in the case of larger companies, where the working promotion or professional career is considered as flow through the company.

upravljanja u kompaniji. Informacije moraju uvek biti potpune, tačne, blagovremene i što jeftinije. Informacije se prikupljaju, čuvaju, obrađuju i klasifikuju i mogu se pripremati za jednokratno ili periodično odlučivanje. Veći deo aktivnosti koje se odvijaju u okviru proizvodnje, komercijalne i finansijske logistike je u suštini informacijske prirode.

Logistika kadrova

Svrha logistike kadrova je da uspostavi odgovarajuću kadrovsku politiku na osnovu koje bi se zadovoljili zahtevi koje nameće ova oblast, što predstavlja preduslov za ostvarivanje izuzetnih rezultata. Logistički koncepti mogu se kontinuirano i uspešno realizovati samo pod uslovom da rukovodeći i izvršni kadar usvoji logistička iskustva i način razmišljanja. Odgovarajući nivo obrazovanja i stalno usavršavanje predstavljaju osnov za ostvarivanje visokog učinka zaposlenih. Da bi se obezbedio pomenuti visoki učinak, neophodno je i uvesti odgovarajuće metode stimulacije, počev od plate, atraktivnih poslova i mogućnosti napredovanja. Kadrovska logistika je naročito značajna za velike kompanije gde se unapređenje i napredovanje u karijeri smatra, takođe, kao vid protoka.

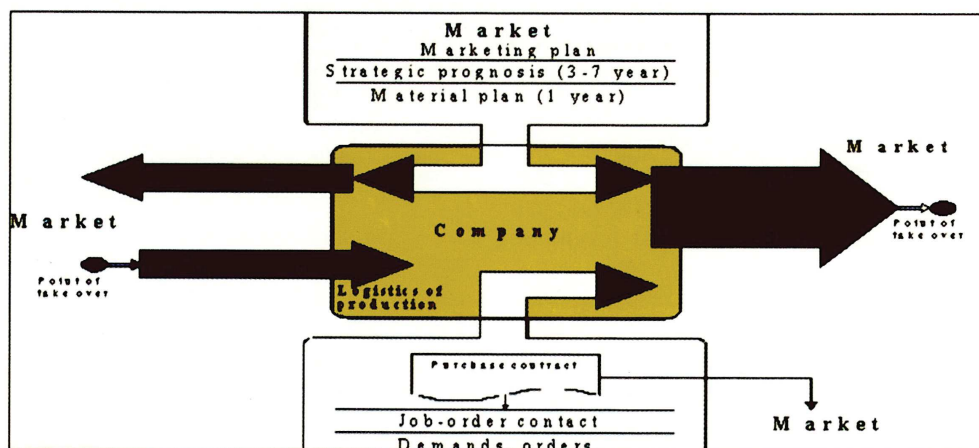


Figure 3 Relations of commercial and production logistics activities
Slika 3 Veza između komercijalnih i proizvodnih logističkih delatnosti

4. LOGISTIC MODEL OF COMPANY

Functional model – model of individual activities. In terms of logistics company is considered as mutually influenced flows.

4. LOGISTIČKI MODEL KOMPANIJE

Funkcionalni model - model individualnog delovanja u okviru logistike kompanija se posmatra kao skup sinergetičkih tokova.

4.1. Commercial logistics

Logistics is according to definition philosophy of flow management. In company's commercial area following information and material flows can be identified:

4.1.1. In the area of purchase these are following information and material flows

4.1. Komercijalna logistika

Logistika se može definisati kao filozofija upravljanja tokovima. U komercijalnoj sferi praćenje toka informacija i materijalnog toka može se staviti u sledeći odnos:

4.1.1. U oblasti nabavke informacijski i materijalni tok odvija se na sledeći način:

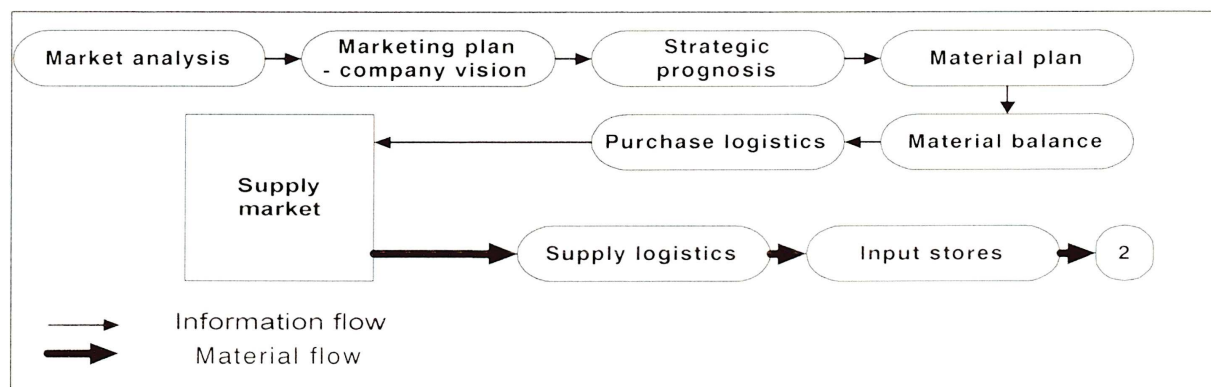


Figure 4 Information and material flows in the area of purchase
 Slika 4 Informacijski i materijalni tokovi u oblasti nabavke

Company management shall use qualified and detailed market analysis for preparation of company vision. Strategic prognosis for period of 3 to 7 years will be used for more detailed definition of company objectives in the area of inputs purchase, in production and sales policy as well as for company's production and technical basis development.

For the needs of detailed company planning annual material (production and commercial) plan, describing time, capacity, material, energetic and personnel balance shall be defined as well as preparation of financial plan for individual parts of the company and for company as whole. Material plan definition results in prognosis of company economical result.

For the area of purchase material and energetic balance, specifying subjects of procurement, is very important part of the material plan. Purchase logistics – on the basis of procurement subjects – actively acts on supply market through the tools of purchase marketing with objective to assure all the necessary company inputs in required volume, quality, price and time. Reaction of suppliers to submitted orders and their material fulfillment is

Koristeći stručnu i detaljnu analizu tržišta uprava kompanije biće u situaciji da precizno sagleda perspektivu kompanije. Strateška prognoza za period od 3 do 7 godina moći će da se koristi za tačnije određivanje ciljeva u oblasti nabavke, proizvodnje i prodaje, kao i za dalji razvoj proizvodne i tehničke baze date kompanije.

Za izradu detaljnog godišnjeg materijalnog plana (proizvodni i komercijalni plan) potrebno je precizno definisati rokove, kapacitete, materijalne, energetske i kadrovske bilanse. Osim toga, neophodno je izraditi i finansijske planove, kako za svaki pojedinačni sektor kompanije, tako i za kompaniju u celini. Definisanjem materijalnog plana dobiće se prognoza ekonomskih rezultata date kompanije.

U sferi nabavke, materijalni i energetski bilans je veoma važan deo materijalnog plana, jer se njime određuje predmet nabavljanja. Logistika nabavke - a na osnovu predmeta nabavljanja - može aktivno da učestvuje na tržištu ponude koristeći sva sredstva marketinga nabavke sa ciljem da kompaniji obezbedi neophodan ulaz u potrebnom obimu, kvalitetu, po odgovarajućoj ceni i u adekvatnim rokovima. Delovanja logistike u oblasti nabavke

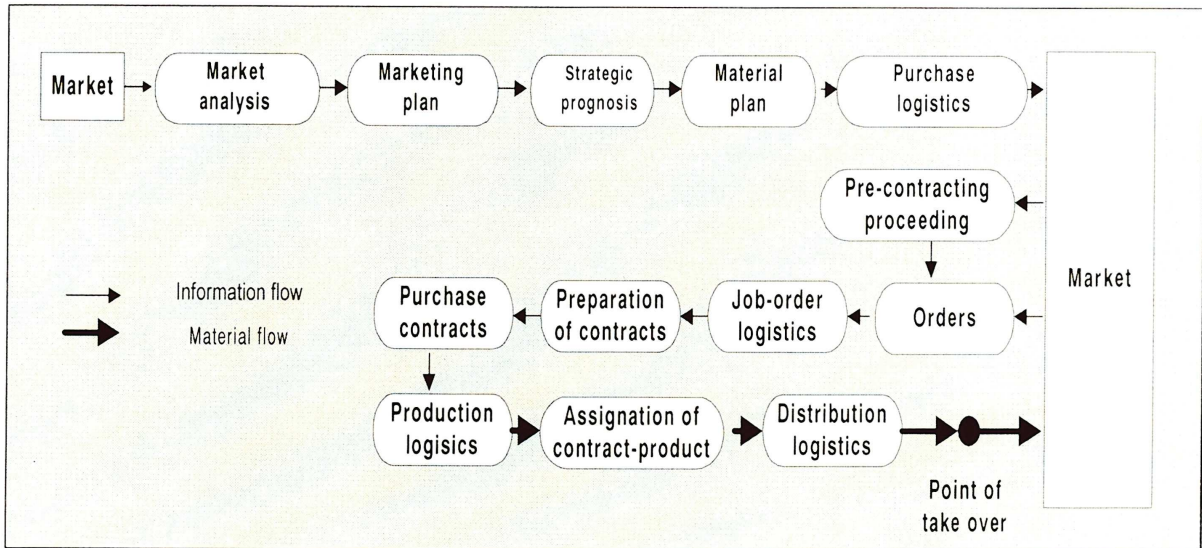


Figure 5 Information and material flows in the area of sale
 Slika 5 Informacijski i materijalni tokovi u oblasti prodaje

the response to purchase logistics action. The task of supply logistics is transfer of inputs from taking over point to the input stores, their qualitative and quantitative inspection, storage and preparation for production process.

manifestuje se aktivnim učešćem dobavljača i realizacijom njihovih zahteva. Zadatak logistike nabavke je prenos ulaza (inputa) od tačke preuzimanja do zaliha, njihova kvantitativna i kvalitativna kontrola, skladištenje i priprema za proizvodni proces.

4.1.2. In the area of product sale these are following flows:

4.1.2. U oblasti prodaje zapažaju se sledeći tokovi:

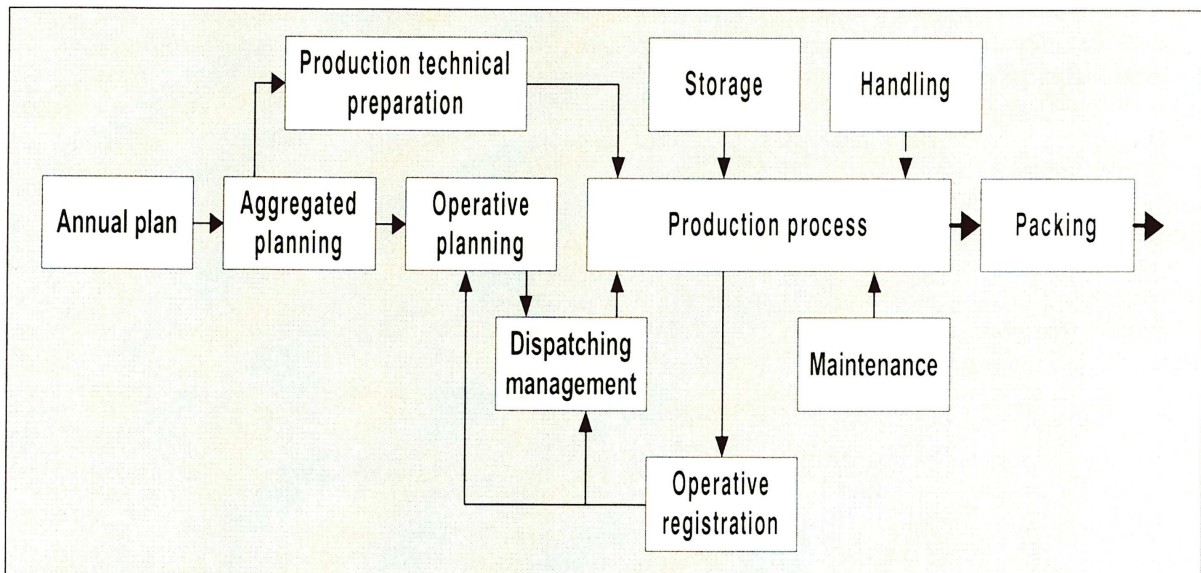


Figure 6 Activities and connections of production logistics
 Slika 6 Aktivnosti i veze u oblasti logistike proizvodnje

In like manner as for area of purchase also for area of product sale objectives in long-term marketing plan are defined with subsequent more detailed specification in strategic prognosis and detailed planning in annual material plan. Logistics of sale by means of tools systematically acts on customer market. It result in potential customers response in form of orders and demand which are the inputs for job-order logistics. Demands and orders of customers trigger the chain of logistic activities necessary for their successful execution. At the beginning demands and orders of potential customers are evaluated in job-order logistics according to economical, technical and technological and capacity criterions. After positive evaluation of order and after confirmation thereof purchase contracts or set of contracts are signed up used as main information input for production logistics. Product as production output is delivered to the customer through the distribution logistics.

4.2. Production logistics

Production logistics represents connecting element between procurement logistics and sales logistics. Coupling of production logistics with commercial logistics can be identified:

- during joint approval of company's strategic prognosis
- during preparation of details and material plan development
- in material plan material balance, representing set of inputs and needs of production logistics ensured by procurement logistics
- during sales plan definition, which is the part of material plan during purchased products dispatch notes taking over
- during technical, technological, material and capacity evaluation of orders
- during preparation and mutual approval of purchase contracts
- during assigning CONTRACT – PRODUCT
- during final products taking over from production to distribution.

Production logistics contains activities directly involved in production and service processes management and assurance and also production and service processes themselves, including:

- production processes,
- production technical preparation,
- supplies,

Kao i kod nabavke i u sferi prodaje proizvoda, ciljevi dugoročnog tržišnog planiranja određuju se putem detaljne specifikacije strateške prognoze i izradom detaljnog godišnjeg materijalnog plana. Logistika prodaje, putem adekvatnih mehanizama, sistematski deluje na korisničkom tržištu. Posledica ovakvog delovanja je odziv potencijalnih korisnika u vidu porudžbina i zahteva koji predstavljaju input za logistiku radnih naloga. Zahtevi i porudžbine korisnika pokreću lanac logističkih mehanizama koji su neophodni za uspešno realizovanje ovih aktivnosti. U prvoj fazi zahtevi i porudžbine potencijalnih korisnika se procenjuju putem logistike radnih naloga na osnovu ekonomskih, tehničkih i tehnoloških kriterijuma. Nakon detaljne procene porudžbine i konformacije da je ugovor (ili niz ugovora) potpisan, oni služe kao osnovna ulazna informacija, kojom se koristi proizvodna logistika. Proizvod kao rezultat proizvodnog procesa isporučuje se korisniku primenjujući logistiku distribucije.

4.2. Logistika proizvodnje

Logistika proizvodnje predstavlja element koji povezuje logistiku nabavke i prodaje. Povezivanje logistike proizvodnje sa komercijalnom logistikom može se prepoznati:

- prilikom zajedničkog usvajanja strateškog plana kompanije,
- prilikom izrade i razrade materijalnog plana,
- prilikom ustanovljavanja materijalnog bilansa u okviru materijalnog plana, što, praktično, predstavlja niz inputa i zahteva logistike proizvodnje koje obezbeđuje logistika nabavke,
- u fazi izrade plana prodaje koji je deo materijalnog plana,
- prilikom preuzimanja otpremnica za kupljeni proizvod,
- u fazi tehničke, tehnološke, materijalne i kapacitativne procene porudžbina,
- prilikom izrade i obostranog prihvatanja kupoprodajnih ugovora,
- prilikom navođenja odrednice UGOVOR – PROIZVOD i
- u fazi preuzimanja finalnog proizvoda iz proizvodnje u distribuciju.

Logistiku proizvodnje čine delatnosti koje direktno utiču na procese proizvodnje i pružanje usluga, kao i aktivnosti koje utiču na upravljanje i obezbeđivanje ovih procesa, i to:

- proizvodni procesi,
- tehnička priprema proizvodnje,

- storage,
- inter-operation transport and handling,
- maintenance,
- energetic and waste facilities,
- packing.

- snabdevanje,
- skladištenje,
- transport i rukovanje unutar procesa,
- održavanje,
- energetki pogoni i postrojenja za otpadne materije i
- pakovanje.

Management processes include:

- annual planning,
- aggregated (capacity and material) planning,
- operative planning and production scheduling,
- dispatching management,
- operative registration and monitoring,
- production process status and course analysis

Upravljanje podrazumeva:

- godišnje planiranje,
- kumulativno planiranje (kapacitativno i materijalno),
- operativno planiranje,
- kontrolu otpreme,
- evidenciju i monitoring,
- analizu statusa proizvodnog procesa i analizu toka.

Description of information and financial logistics
Opis logistika informacija i finansija

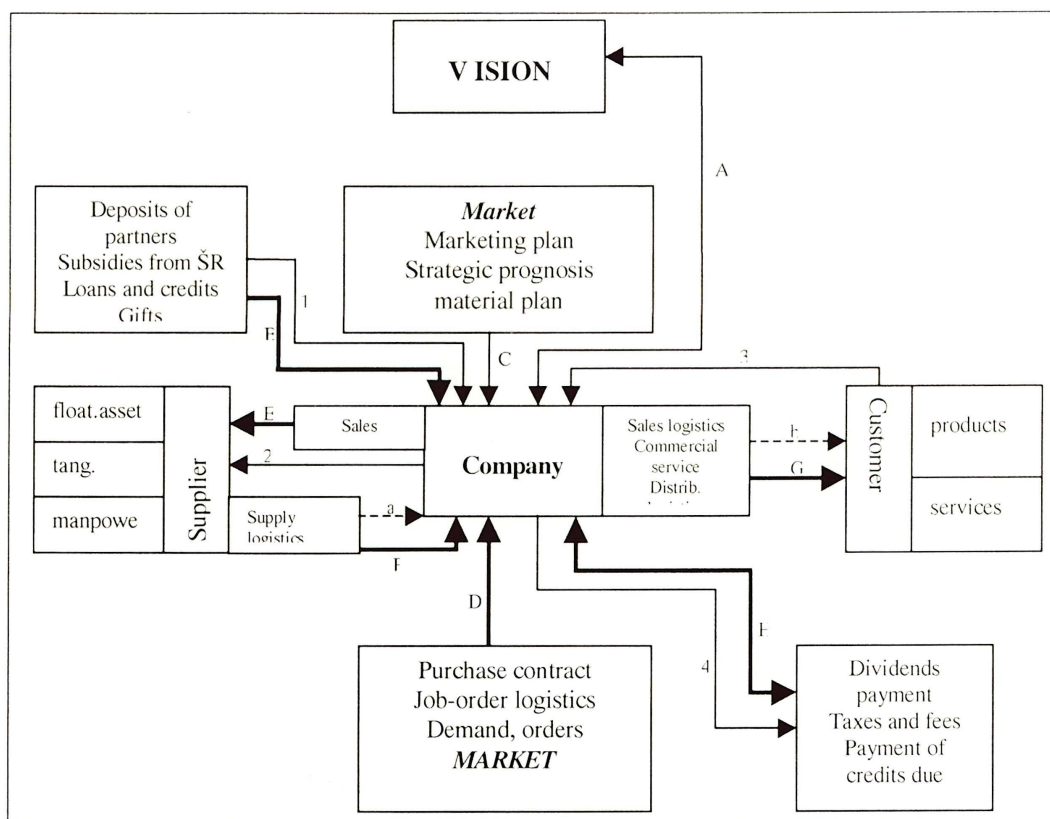


Figure 7 Complex logistic model of the company
 Slika 7 Složeni logistički model kompanije

4.3. Information logistics

Information logistics fulfills following functions:

1. Logistic activities integration through the appropriate information system creation

4.3. Logistika informacija

Logistika informacija ispunjava sledeće funkcije:

1. integraciju logističkih aktivnosti kroz izradu odgovarajućeg informativnog sistema,

2. Information about customers, suppliers and products acquirement and processing
3. Ensures collection and processing of information on objects, activities of logistics
4. Logistics managing activities have an information character.

The main task of information logistics is provision of actual information for managers for their faster, more effective and more pointing decision-making and to enable performance of analysis and evaluation of particular data with purpose of organization performance analysis.

Improved quality of information is critical especially during vision determination and implementation in the company (flow A). Erroneous information in this area will cause erroneous decisions preventing the company from stand to the competitive struggle, to response dynamically on changing market situation and from further development. Scope of vision implementation can be different and depends on possibilities, abilities and last but not least also on company sources. See Fig. 7 for various types and methods of individual financial source acquisition and for their possible achieved amounts (flow B).

Business strategy represents the method how to implement company vision. Clarification of intent WHAT, HOW and FOR WHO the company will produce is essential. Company will obtain answer to the above questions from marketing market analysis.

After marketing analysis completion and clarification of intentions and objectives planning and assurance of all production factors for given activity (flow C) based on expected demand follows.

The next essential question is, from where the company will obtain production factors, because the area of possible suppliers is quite extensive. Especially because of fact, that it is necessary to have available information on suppliers, their weak spots and advantages, intentions, problems and performed mistakes before order or purchase contract sign up. Because not only price but also product quality and delivery and payment conditions (flow D) are important.

After correct selection of supplier following delivered information are important: what, how many, for what price, in what time and to what place with what costs and maturity periods (flow E and F). On the other hand, it is also important to obtain correct information on customers, especially

3. informacije o korisnicima, dobavljačima, nabavci i obradi proizvoda,
2. obezbeđenje prikupljanja i obrade podataka o ciljevima i delatnostima logistike,
3. upravljanje logistikom ima informativni karakter.

Osnovni zadatak logistike informacija je da menadžmentu obezbedi aktuelne informacije radi njihovog bržeg, efikasnijeg i delotvornijeg odlučivanja i da obezbedi analizu i procenu pojedinih podataka, što bi, zatim, omogućilo i analizu funkcionisanja celokupne organizacije.

Od kvaliteta logistike informacija umnogome zavisi i uspeh definisanja vizije i njena implementacija u okviru kompanije (tok A). Pogrešne informacije dovešće do donošenja pogrešnih odluka, što će značajno umanjiti konkurentnost kompanije i onemogućiti blagovremene reakcije na stalne promene na tržištu, pa samim tim, i dalji razvoj. Obim implementacije vizije može varirati, a zavisi od mogućnosti, sposobnosti, ali i od resursa kojima raspolaže kompanija. Na sl. 7 prikazano je nekoliko tipova i metoda za obezbeđivanje pojedinačnih izvora finansiranja i njihova moguća realizacija (tok B).

Poslovna strategija predstavlja jedan metod implementacije vizije. Ključna pitanja koja se postavljaju su ŠTA, KAKO i ZA KOGA će kompanija proizvoditi. Odgovori na ova pitanja dobiće se na osnovu marketinške analize tržišta.

Posle analize tržišta neophodno je definisati i precizirati namere, isplanirati ciljeve i obezbediti sve proizvodne faktore za datu delatnost (tok C) i to na osnovu očekivanih tokova potražnje.

Sledeće značajno pitanje koje treba razjasniti je odakle će se nabavljati proizvodni faktori, s obzirom na to da je spektar potencijalnih dobavljača veoma širok. Naime, neophodno je obezbediti pouzdane informacije o dobavljačima, njihovim prednostima i manama, tendencijama, problemima i greškama, pre nego što se izvrši porudžbina ili potpiše ugovor o nabavci. Sve ove elemente treba uzeti u obzir, jer, osim cene, veoma je značajan i kvalitet proizvoda, isporuka i uslovi plaćanja (tok D).

Nakon pravilnog izbora dobavljača važno je obezbediti i sledeće informacije: šta, koliko, po kojoj ceni, u koje vreme i na kom mestu, uz koje troškove i periode dospeća (tokovi E i F). S druge strane, takođe je veoma bitno obezbediti tačne informacije o korisnicima, naročito o njihovoj

on their solvency and methods, ways and terms of payment realization (flow G). Apart from intro-plant information of various character also information on tax policy and interest rate are important for the company (flow H).

4.4. Financial logistics

Company is an independent business units with legal subjectivity for operation of which financial sources acquirement is necessary. *External sources* in form of own sources (partner's investment, fixed assets increase) or foreign sources (loans, credits) (flow 1) become the basic part of company financing. Company also generates *internal sources* (profit, depreciation, sale of useless tangible investment property and stocks) through its own production activities.

Selection of the optimum variant for financial facilities acquirement and decision on relation of own and foreign capital in the company depends on price of individual types of capital (acquisition costs) and financial risk. In general following apply during considerations on optimum financial structure:

- costs of acquirement and fixing of own capital are higher then costs of foreign capital acquisition
- foreign capital share increase in total capital results in tendency for capital acquisition and fixing costs reduction (Štangová, 1998).

Company needs acquired sources for company transformation process assurance with purpose of input conversion to outputs.

Total duration of the above process depends on individual phases of product flow duration. In particular, these are terms of delivery for raw stock and material, time necessary for their transportation, time reduced in production and assembly, order processing time, own delivery terms and of course downtimes, when material stocks or final products are stored. In this way invested finances are uselessly lost during process of time „cumulation” in logistic chain.

Final products purchase (flow 2) and final products sale can't be done without system of payments.

System of payments means complex of procedures and tools used for settlement of obligations and liabilities resulting from relationship supplier-customer.

solventnosti, načinima i rokovima plaćanja (tok G). Pored niza unutrašnjih informacija treba obezbediti i informacije o poreskoj politici i kamatnim stopama koje su, takođe, veoma značajne za kompaniju (tok H).

4.4. Logistika finansija

Kompanija predstavlja nezavisnu poslovnu celinu koja ima sopstveni pravni subjektivitet, a za njeno funkcionisanje neophodno je obezbediti odgovarajuća finansijska sredstva. *Externi izvori* finansiranja u vidu sopstvenih sredstava (investicije partnera, uvećanje osnovnih sredstava) ili spoljnih sredstava (zajmovi, krediti), (tok 1) predstavljaju finansijsku osnovicu kompanije. Osim toga, kompanija, takođe, stvara *interne izvore* finansiranja (profit, amortizacija, prodaja nekorisne materijalne imovine ili vrednosnih papira) kroz soopstvene proizvodne delatnosti.

Izbor najpovoljnijeg načina za obezbeđivanje finansijskih sredstava i odluka o procentu učešća sopstvenog i spoljašnjeg kapitala zavisice od cene koštanja pojedinih oblika kapitala (troškovi obezbeđivanja) i finansijskog rizika. Sledeće elemente treba uzeti u obzir prilikom stvaranja optimalne finansijske strukture:

- troškovi obezbeđivanja i aktiviranja sopstvenog kapitala su veći od troškova obezbeđivanja spoljašnjeg kapitala,
- povećan udeo spoljašnjeg kapitala u ukupnim rezultatima sa tendencijom da se umanjuje trošak obezbeđivanja i aktiviranja kapitala (Štangová, 1998).

Neophodno je obezbediti sredstva za proces transformacije kompanije u cilju pretvaranja ulaznog kapitala u proizvodni rezultat (inputa u output).

Ukupno trajanje gore opisanog procesa zavisi od trajanja proizvodnog toka pojedinačnih faza. Od posebnog značaja su rokovi isporuke za sirovu lako kvarljivu robu, vreme neophodno za transport, vreme potrebno za proizvodnju i montažu, vreme obrade porudžbenice, sopstveni rokovi isporuke i vreme skladištenja zaliha i finalnih proizvoda. U tom periodu "akumulacije" uložena finansijska sredstva su neupotrebljiva u okviru logističkog lanca.

Nabavka finalnog proizvoda (tok 2) i prodaja finalnog proizvoda ne mogu se realizovati bez obezbeđenog sistema plaćanja.

Sistem plaćanja podrazumeva složenu proceduru i mehanizme koji se koriste za izmirenje dužnosti i obaveza koji proizilaze iz odnosa dobavljač - korisnik.

Financial logistics deals with determination of way and method of realization of payment. Purpose of this logistics is assurance of failure-free payment, solvency and company liquidity.

Company's objective is to plan and to coordinate financial flows to slow down „offtake“ and to speed up „inflow“ of financial facilities.

Logistika finansija bavi se određivanjem načina i metoda za realizaciju plaćanja. Pomenuta logistika ima za cilj da obezbedi nesmetanu isplatu, solventnost i likvidnost kompanije. Namera kompanije je da planira i koordinira finansijske tokove, da uspori "odliv" i ubrza "priliv" finansijskih sredstava.

5. CONCLUSIONS

Development of logistics as method of company management, where the company is considered as system of mutually influencing chains – activity, material and product flows was conditioned especially by:

- development of cybernetics
- information technology development resulting in world globalization
- operating analysis methods development

World markets globalization exposed companies from Central and East Europe to competition, which is the necessary condition of their survival.

Purpose of herein described model was systemic description of basic logistic activities in the company and to present their mutual connections and relations.

Development of logistic during recent years was enabled by intensive development of cybernetics and especially of information technologies enabling information integration necessary for global management and therefore for logical approach application. In company, applying logistics as basic management method, all its systems are working in mutual bonds and follow the global optimality criterions.

5. ZAKLJUČCI

Razvoj logistike kao metode upravljanja kompanijom, gde se kompanija posmatra kao sistem međusobno zavisnih, sinergetičnih, lanaca - tokova rada, materijalnih sredstava i proizvoda. Napredovanje logistike uslovljeno je prvenstveno:

- razvojem kibernetike,
- razvojem informatičkih tehnologija i svetskom globalizacijom,
- razvojem metoda aktivne analize.

Globalizacija svetskog tržišta nameće konkurenciju kompanijama iz Centralne i Istočne Evrope kao neophodan uslov opstanka.

Svrha gore opisanog modela je sistematsko prikazivanje osnova logističkog delovanja u okviru kompanije i njihovih međusobnih veza i odnosa.

Do razvoja logistike u poslednjih nekoliko godina došlo je zahvaljujući intenzivnom napredovanju kibernetike, a posebno informatike koja omogućava objedinjavanje informacija, što je neophodno za globalno upravljanje, pa prema tome, za logičnu primenu. Primena logistike kao osnovnog metoda upravljanja u okviru kompanije obezbeđuje da svi njeni sistemi međusobno funkcionišu i istovremeno prate globalne kriterijume optimalnosti.

BIBLIOGRAPHY / LITERATURA:

- [1] Malindžák, D.: Výrobná logistika I., Štroffek, Košice, 1996, ISBN 80-967325-1-x
- [2] Sedlák, M. a kol.: Podniková ekonómia, Elita, Bratislava, 1995,
- [3] Štangová, N.: Finančné riadenie firmy, Štroffek, Košice, 1998, ISBN 80-88896-22-3
- [4] Vlachynský, K. a kol.: Podnikové financie, Súvaha, Bratislava, 1999,
- [5] Kiperská – Moro, D.: Wplyw tendencji integracyjnych na rozwój zarzadzania logistycznego, Katowice, 2000, ISBN 83-7246-161-9