

CRITERIA OF A CHOICE OF THE CARRIER

КРИТЕРІЇ ВИБОРУ ПЕРЕВІЗНИКА

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В статтє изложена методика вибору перевозчика для использования грузовладельцами, экспедиторами и сделан вывод о создании системы оценок конкурентоспособности перевозчиков со стороны использования их услуг.

The article presents methods of selecting the carrier for the application of cargo owners, forwarders and the conclusion is made about the formation of the system of assessments of the competitiveness of carriers from the point of view of consumption of their services.

Statement of the problem. Before each production or trading company becomes a choice or an independent transportation of components, parts of the final product or the purchase of the services of a third-party carrier (forwarding agent), known as the task of LANGUAGES (Make-or-Buy Problem), that consists of a reasoned decision of the given problem.

The task of LANGUAGES is to decide on the use of their own vehicles (warehouses) or transport (composition) of the General public.

When solving the task it is necessary to take into account a series of factors "for" (transport demand, stable and high enough; the shipment may be made of available means of transport, etc.) and "against" (transport demand is small; for them there is no production of necessary capacities, etc.). In solving the problem of LANGUAGES should involve various divisions of a firm, including procurement, technological, etc. Attempts have been made to formalize the decision of a problem, for example, as a criterion of optimality are often taken a maximum of profit. However, the practical calculations are complicated by the fact that we have to take into account the large number of factors, the values of which in the given interval of time may have a high probability of change (decline in demand, the development of new technologies, etc.), as a result of which the decision may be wrong with all the ensuing consequences.

A review of recent research and publications. In the literature [3, 8, 9] are questions mainly production planning, inventory management, while such an important component as the selection of the carrier and its impact on results of operations fell out of attention of researchers. In modern conditions of efficient choice of the carrier makes all the more, which increases the effect on the efficiency of the results of the activities of production and trading companies.

The results of the study [9] showed a very low efficiency of the activity of firms on the choice of the carrier (freight forwarder). It was found out, that the firms

are not well aware of the information about the carriers, the level of tariffs for transportation, value and forms provided by different carriers services. They do not have the capacity to receive information on the situation in the market of transport services. Selection of the carrier represents for them a complex problem, since the cost of services of one and the type, number and level of quality in different carriers may be different. Methods of market study, used by employees of the Department, are of a General nature and do not meet their needs in an optimal choice of the carrier.

The task of the research. The purpose of this article is research of methods of assessment of level of quality of the service is already selected carrier (forwarding agent) of the various methods.

The main material for the research. Selection of the carrier in the conditions of a planned economy was, in the main, the abstract calculations of transport expenses, excluding the effect of the parameters of quality of transport-forwarding services. In the same market conditions, consumers are free within the limits of its financial resources to buy transport services in such a set, which they consider the most appropriate to meet their needs.

In conditions of a rigid market competition, there is a tendency of differentiation of the services of carriers, that is, consumers are offered a wide range of quality levels of any of the services at any time. This is for the consumer means a tangible benefits. Range of free choice is expanding, and the diversity and shades of consumer tastes are satisfied more fully. At the same time expanding the range of services can achieve such a level that the consumer will get confused, the choice will be difficult and the purchase will take a lot of time. Thus there is no less difficult problem of choice of services (producer services).

This problem is particularly acute rises in the market of mixed long-distance and international delivery of goods, where the services, for example, the carrier or warehouse terminal separately did not represent value for the firms. And only forwarders, combining these services, put up for sale service system, which is able to meet the real needs of the buyer. Thus, freight forwarders in fact engaged in resale of services of carriers, warehouse terminals, etc.

Selection and estimation of the carrier (freight forwarder) of the production or trading company is in search and selection of potential carriers of raw materials, materials, components, finished products, etc.; the evaluation of the carrier (freight forwarder) from the point of view of ensuring the delivery of goods with the necessary level of quality (in the required period of time, at a reasonable price and other criteria), conducted as at the stage of search and in the process of work with already selected carrier (forwarding agent). If the firm decided what to do transportation by own forces is not practicable, the search of the carrier shall be settled by means of an announcement of the competition, an examination of the relevant brand catalogs, analysis of advertisements in print, visiting exhibitions, fairs, etc. As a result, a list of potential carriers, which are being further work. Sampling parameters can be different (usually two or three, but in some cases there may be several tens) in various sectors of the economy, however, regardless of the specifics of the industry are the most important reliability of service and acceptable price of the service, that is.

In other parameters are for the current and term of transportation, the availability of reserve capacities of the carrier, the organization of management of

quality of service in the carrier, the psychological climate in the staff of the carrier, the creditworthiness and the financial position of the carrier, etc.

Reliability of service is understood as compliance with the obligations of the carrier on delivery time, the compliance of conditions of the contract of delivery. Reliability of service is a guarantee of customer service.

With the aim to improve the objectivity of the assessment of potential supplier firms often use the services of specialized agencies, one of the functions of which was the preparation of certificates of carriers, including with the use of informal channels. In these reports is given in particular, the evaluation of the financial position of the carrier in the following indicators: the ratio of the liquidity of the carrier up to the amount of debt liabilities; the ratio of the volume of sales of services to accounts receivable; the ratio of net profit to sales; cash flow, etc. Under the terms of the privacy of such a reference is intended for use by the customer and is not transferable to other firms.

When solving the problem of selection and evaluation of the carrier uses methods of operations research. The final choice of the carrier are to one degree or another volitional act of the decisions of the person. To solve the problem carrier of choice and estimation of the quality of service apply various kinds of automated systems, it is possible to use expert systems. The company, working on the Kanban system, usually use the services of one carrier, Western European firms in addition to the basic carrier have, as a rule, the provision of stand-ins.

The estimation of the quality level of the services are already selected carrier (forwarding agent) is carried out according to the results of its operations for the year, six months, etc, with the participation of the various divisions of the company - customer, technological, marketing, etc. Assessment can be conducted, for example, on a pre-designed scale assessment of the quality of service for the various parameters counting rating of the carrier. If the rating of the carrier below the permissible value, then the service contract is subject to termination.

In the method proposed by Feddin J.H., in the analysis of the results and costs of delivery of a cargo assessment of the profit is made as a stochastic random variable. This score is used for possible approval of the expected profit and allows you to identify the reasons for the decline in profits and to determine the ways of its enhancement.

In the method of matrix, the solution of the problem of choosing the carrier communicates with the analysis of a conjuncture of the market (the degree of scarcity and value of services, availability of alternative channels of acquisition, the frequency of proposals, etc.). A disadvantage of this method is the difficulty of formalization.

The essence of the method of valuation is that the choice of the carrier assumes caused by desire of the company to optimize the value of the goods and is determined by the variable profit. Thus, the choice is defined by the aspiration of the trading firms maximize profits at the expense of an optimal combination of the parameters of the transportation and commodity market, which shows the following pattern:

$$P_{kj} = [P_k - T_{kj}(Q, A_{kj}) - Q \cdot T_{0kj}(Q, A_{kj})] \exp(-iA_{kj}) \quad (1)$$

where P_{kj} - profit;

P_k - market price of the goods;

$T_{kj}(Q, A_{kj})$ - the cost of transportation of unit of the goods (function of the number of transported goods and time of transportation);

Q - function of the value of production of the goods;

A - the number of days of carriage; and

i - the interest rate for the day;

$\exp(-iA_{kj})$ - the factor, which takes into account the fact that profit is obtained after the end of a certain number of days, to determine the size of the profit in the moment;

k - market;

j - carrier.

The method describes an abstract of the carrier that transports the abstract of goods, in the form of the vector of parameters that the carrier shall offer to the sender of the goods, for example, the transportation time. The method is based on minimizing the cost of each parameter and on the equalisation of marginal value to a margin as a condition of equilibrium. In the model of delivery of cargo in the process of carriage is considered as moving goods:

$$C = r \cdot T - u \cdot t \cdot T + a/s + W \cdot S \cdot T/2 \quad (2)$$

where C is the expected value of the annual amount of expenses for transportation;

T - the amount of goods transported during the year;

r - delivery costs per unit of the goods (including tariffs for transportation, loading, unloading, insurance, etc.);

t - the average time needed for completion of the delivery, years;

S - the average time between the transportation of the goods years;

u - cost of delivery of the goods of the year (taking into account interest rates, penalties for damage to and small theft, etc.);

a - the value of the order for one cargo transportation;

W - the annual cost of storage.

The expected value of the annual amount of expenses for transportation of the given quantity of goods equal to the amount of the cost of transportation and storage. Abstract carrier is determined by three parameters, which characterize: transport costs, the value of the transported goods and transport times. The cost of ordering, warehousing transportation and transportation of full quantity of the goods are exogenous parameters. In principle, the model can take into account and some other factors, such as demand uncertainty and the time of delivery.

Selection of the carrier by the method of process parameters based on the relationship between the physical parameters of the cargo (weight, volume, the ability to deteriorate, the ratio of the value of the weight) and transport system (speed, frequency of transport, etc.), that is the choice is determined by the technological parameters. In considered methods of the carrier of choice, it is assumed that every consumer is considering all options, and each option, describing those alternatives before making a choice. However, in practice this assumption is unrealistic, especially in the relatively complex situations of choice when the consumer can try to simplify the task of choice, but a lot of alternatives and (or) parameters with the deal. Instead of simultaneous consideration of all the parameters of the carrier for the evaluation of the carrier, the user conducts a search of parameters in a consistent way, based on the parameters, which are considered to be the most significant, relatively

less significant. As the parameters describing the carriers discusses transport time, the reliability of the time of arrival at the destination, frequency of transport, the tariff for transportation, exceptions damage (spoilage) and losses (theft), convenient departure time, etc.

Selection of the carrier includes the following stages:

At the first stage we define the relative weight parameters. As a rule, neither one of the carriers is not the best on the entire system of parameters of order on transportation. For example, a carrier with a minimum tariff for transportation, as a rule, is characterized by a relatively longer term of transportation and, respectively, a lower degree of reliability. On the contrary, the carrier has the best performance on the parameter of reliability of the transport, forced to sell their services in respect of more expensive due to the high costs. Therefore, the freight forwarder should be to decide the question about the degree of importance of parameters of quality of the service, that is, determine the weight of each parameter. Weight parameter is a number, and, what is more important parameter, the more weight it. To set the weights of the dispatcher uses the methods of weighing.

The presence of several parameters, which are solved causes difficulties freight forwarder in terms of their weights. In the assignment of weights almost always present contradictions, which is the result or the lack of coherence of the subjective judgments of the forwarder or the impossibility of the freight forwarder set the correct comparison is through the limitations and the resolution used scales of comparison.

On the second step is the calculation of the scales of parameters concerning the target function (global weight). The procedure of calculation is carried out from the top down, starting with the global weight of the objective function, the value of which equals one. For each complex parameter are calculated in local weight of its component parameters. Global weight composed of parameters are obtained by multiplying their normalized local scales to the global weight of a complex parameter.

The third stage is the evaluation of carriers for each parameter (the definition of the degree of conformity of carriers of the parameters). Mathematically, the problem is reduced to the estimates of carriers for each parameter. Parameters are specified before the time, until it becomes possible quantitative and qualitative determination of their values. Stages 1 and 2 methodology is repeated for all of the new settings.

Estimates for the quantitative parameters coincide with the corresponding quantitative value of the variable describing the carrier. Assessment of the quality parameters are of a subjective nature and are defined in the form of abstract numbers.

In connection with the fact, that the estimates of carriers are set in different units (price in roubles, while in the clock, reliability in conventional units), there is a need to bring them to some comparable units. This is achieved by adjusting all of the assessments to a single scale by reference to a parameter of the best and the worst of the limit values, which can take the estimates for this parameter. These estimates also determine the boundaries of changes in estimates on the parameter of - the bottom and the top. In the numerical specifying the freight forwarder has the ability to set the value of assessments carriers.

The fourth step is the calculation of the benefits of carriers with respect to the target function. At this stage is the construction of all private estimates carriers of

each parameter to the General result, that is, the ranking of the carriers for the whole set of parameters and obtain their benefits.

The fifth stage is the analysis of the results of the carrier of choice. As a result of solution of a task of an international freight forwarder receives a list of carriers, ranked in relation to the target function. The need arises to determine, for example, that of C and-x carriers has the greatest advantage of the on arbitrary j-th parameter, it is necessary to calculate the benefits and th carrier with respect to this parameter. The calculation is based on the consideration of the best and worst estimates carriers, the estimates of carriers on this parameter, as well as the weight of the parameter in question with respect to the target function. The analysis is reduced to the benefits of carriers for each parameter.

Conclusions. The above methods of selecting the carrier, which is recommended for the application of cargo owners and forwarders, is not that other, as the building of a system of assessments of the competitiveness of carriers from the point of view of consumption of services in each particular transport of each particular client. Over the basic nomenclature of goods and the main clients of this technique allows to assess the competitiveness of both separate carrier, as well as of their group (aggregate), which operates on a particular freight market.

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Анотація

Перед кожною виробничою або торговельною фірмою стає вибір чи самостійне перевезення комплектуючих виробів, деталей, остаточної продукції або покупки послуг стороннього перевізника (експедитора), відома як задача МОВ (Make-or-Buy Problem), що полягає в обґрунтованому рішенні даної проблеми.

Задача МОВ - це рішення питання про використання власних транспортних засобів (складів) або транспорту (складу) загального користування.

При рішенні задачі необхідно враховувати ряд факторів "за" (потреба в перевезеннях стабільна і досить велика; перевезення можуть бути здійснені наявними транспортними засобами й ін.) і "проти" (потреба в перевезеннях невелика; для їхнього виробництва немає необхідних потужностей і т.д.). У рішенні задачі МОВ повинні брати участь різні підрозділи фірми, у тому числі постачальницькі, технологічні й ін. Робилися спроби формалізації рішення задачі, наприклад, як критерій оптимальності нерідко приймається максимум прибутку. Однак практичні розрахунки ускладнюються тим, що приходиться враховувати велика кількість факторів, значення яких у заданому інтервалі часу можуть з високим ступенем імовірності змінюватися (падіння попиту, розробка нових технологій і ін.), у результаті чого рішення може виявитися невірним із усіма наслідками, що звідси випливають.

Вибір перевізника в умовах планової економіки диктувався, в основному, абстрактними розрахунками транспортних витрат, без обліку впливу параметрів якості транспортно-експедиційного обслуговування. У ринкових же умовах споживачі вільні в межах своїх фінансових ресурсів купувати послуги транспорту в такому наборі, що вони вважають найбільш підходящим для задоволення своїх потреб.

В умовах твердої ринкової конкуренції спостерігається тенденція диференціації послуг перевізників, тобто споживачам пропонується широкий ряд рівнів якості будь-якої послуги й у будь-який момент. Це для споживача означає відчутні переваги. Діапазон вільного вибору розширюється, а розмаїтість і відтінки споживчих смаків задовольняються більш повно. У той же час розширення номенклатури послуг може досягти такого рівня, що споживач почне плутатися, вибір стане важким і покупки будуть віднімати багато часу. У такий спосіб виникає не менш складна проблема вибору послуг (виробника послуг).

Ця проблема з особливою гостротою встає на ринку змішаної міжміської і міжнародної доставки товарів, де послуги, наприклад, перевізника або складського терміналу по окремоті не представляють цінності для фірм. І тільки експедитори, об'єднавши ці послуги, виставляють на продаж систему послуг, що у стані задовольнити реальні потреби покупця. Таким чином, експедитори по суті справи займаються перепродажем послуг перевізників, складських терміналів і т.п.

Вибір і оцінювання перевізника (експедитора) виробничою або торговельною фірмою полягає в пошуку і доборі потенційних перевізників

сировини, матеріалів, що комплектують виробів, готової продукції й ін.; оцінювання перевізника (експедитора) з погляду забезпечення доставки товарів з необхідним рівнем якості (у необхідний термін, за прийнятною ціною й ін. критеріїв), проведене як на стадії пошуку, так і в процесі роботи з уже відібраним перевізником (експедитором). Якщо фірма вирішила, що робити перевезення власними силами недоцільно, то пошук перевізника виробляється шляхом оголошення конкурсу, вивчення відповідних фірмових каталогів, аналізу рекламних оголошень у печатки, відвідування виставок, ярмарків і т.п. У результаті формується перелік потенційних перевізників, по якому ведеться подальша робота. Параметри добору можуть бути різні (звичайно їхній два-три, але в окремих випадках їхній може бути кілька десятків) у різних галузях економіки, однак незалежно від специфіки галузі найважливішими є надійність обслуговування і прийнятна ціна обслуговування, що представляється.

До інших параметрів відносяться терміни виконання поточних і термінових перевезень, наявність резервних потужностей у перевізника, організація керування якістю обслуговування в перевізника, психологічний клімат у персоналу перевізника, кредитоспроможність і фінансове становище перевізника й ін.

Надійність обслуговування розуміється як дотримання перевізником зобов'язань по термінах доставки, відповідність умовам договору доставки. Надійність обслуговування є гарантованість обслуговування споживача.

З метою підвищення рівня об'єктивності оцінки потенційного постачальника фірми нерідко прибігають до послуг спеціалізованих агентств, одна з функцій яких - підготовка довідок про перевізників, у тому числі з використанням неформальних каналів. У цих довідках дається зокрема, оцінка фінансового становища перевізника за наступними показниками: відношення ліквідності перевізника до суми боргових зобов'язань; відносини обсягу продажів послуг до дебіторської заборгованості; відношення чистого прибутку до обсягу продажів; рух готівки й ін. За умовами конфіденційності така довідка призначена для використання винятково замовником і не підлягає передачі іншим фірмам.

При рішенні задачі вибору й оцінювання перевізника використовуються методи дослідження операцій. Остаточний вибір перевізника є втім або іншому ступені вольовим актом приймаюче рішення особи. Для рішення задачі вибору перевізника й оцінювання якості обслуговування застосовуються різного роду автоматизовані системи, можливе застосування експертних систем. Фірми, що працюють по системі Kanban, звичайно користуються послугами одного перевізника, західноєвропейські фірми крім основного перевізника мають, як правило, резерв дублерів.