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FORECASTING THE SCOPE OF SERVICES OF COMMUNICATIONS INDUSTRY ORGANIZATIONS

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Summary: *The procedure of forecasting the scope of services of communications industry organizations and validating their areas of development on the example of mail services has been presented. The analysis covers not only regression models for dynamic data sets, but also regression models for regional data sets, which makes it possible to discover independent correlating factors with either little or no variation in time. The influence of external and internal factors on the market of mail services has been studied. The consumer demand for the services provided by FSUE Russian Post for 2014-2015 has been predicted.*

Key words: *postal organizations, consumer demand*

1. INTRODUCTION

The communications industry in Russia includes all organizations and public bodies that exercise and provide electric communication and mail services. Mail service as a type of communication is an integral production and engineering complex of technical and transportation means aimed to ensure reception, processing, transportation (transfer), and delivery of mailing items as well as money transfers by mail [2, art. 17]. The types of mail service used in Russia include mail service of common use, specialized mail service for the federal executive body, federal state courier service, and state courier mail service of the Ministry of Defense [3, art. 9]. In this study only a mail service of common use is considered through the example of the FSUE Russian Post.

According to the All-Russian Classifier of Economic Activities (OKVED), the areas of activity of mailing organizations include the delivery of letters and parcels, as well as money transfers by mail. These services are provided only on a licensed basis. Express mail services and subscription for periodicals are provided without licensing.

The competition in markets of letter items, parcels, and express mail deliveries involves the federal mail service enterprise (the Russian Post) and more than 440 private courier companies and express mail service (EMS) agents. In the field of pension deliveries and payments, the Russian Post has to compete with banking and other organizations contracted by the Pension Fund of the Russian Federation. Money transfers can be sent either by mail or with the help of specialized money transfer systems that cooperate with banks and other

organizations or have representative offices of their own. Subscription to periodicals is offered by mail offices, subscription agencies, and publishing houses. The Russian Post is only a natural monopoly in the field of delivering domestic letter items (mail cards, letters, postal packages), which is classified as universal mail services, considered a worldwide standard, and recommended by the Universal Postal Union. Because of its social importance, this type of service excludes full-scale competition and free price formation.
The share of the state post operator in the market of express delivery makes 6,6%, money transfers – 15%, parcels – 26%, payment and delivery of pensions – 50%, a subscription – 69%, written correspondence in general – 75% (but in a subsegment of departures from the organization to the organization the share makes 40%, and in a subsegment from the organizations to the population – 70%).All of the aforesaid shows that the public mail service provider is entering a period of ever tightening competition in the field of traditional mail services. Thus, to ensure a viable market position, the Russian Post needs to have a reliable forecasting system that allows it to make short- and average-term forecasts of service volumes while taking into account variable consumer demands and external and internal influences.

2. FEATURES OF FORECASTING OF POST SERVICES

In the Russian Post, revenues and service volumes are currently forecasted according to the procedure described below. First of all, an expense budget is drawn up, followed by a revenue budget to cover the expenses. The amount of revenues is calculated by types of services and taking into account the rates of growth of these services in volume in the preceding year (without including the regions). The necessary amount of revenues is set for all the regions at a uniform interest rate. However, this approach requires improvement because it does not consider the regional specifics of the federal subjects.
Mail service is a very specific object for forecasting because the production and consumption in this area coincide. Whatever the demand, mail service providers must meet customer needs. The realized demand is the actual value of mail exchange. It is therefore possible to forecast volumes of services provided by mail service organizations only in a systemic manner and taking into account regularities in customer demand changes in terms of scope and quality of services.
For that matter, the author has developed a procedure that enables one to forecast customer demand for mail services and justify their growth areas. The objectives of this procedure are to identify external and internal factors affecting customer demand for mail services, determine actual and estimated customer demands for services provided by mail service providers, and compare estimated mail service volumes by dynamic data sets with estimated service volumes by regional data sets.
The marketing analysis of the six types of services provided by Russian Post (deliveries of letter items, parcel deliveries, money transfers, pension deliveries and payments, EMS, subscriptions to periodicals) is conducted by studying primary and secondary information and social survey data (20 interviews with residents of Syktyvkar, a questionnaire survey of 600 customers of Russian Post conducted by the author in 2007, 2008, 2009, and 2012) by assessing service quality and report forms with qualitative indicators. Using the factors identified in the marketing analysis, the statistical data for 2005-2013 were collected. The overall number of internal and external factors was 37 and 111, respectively. The

dependent factors under consideration were the scopes of the six mail services provided in the indicated period. Six principal and mutually independent factors were identified in the factor analysis, i.e., number of dispatched letter items, number of mail offices, local budgetary expenses, number of rural populated localities serviced by mailmen, area of the region, and length of regional railroad lines.

The principal factors underwent a cluster analysis that formed the basis for restructuring the branches of Russian Post across the country. As a result, all of the branches were divided in five clusters.

It was found out in the correlation analysis by dynamic data sets that the external and internal factors affecting the demand for the services provided by Russian Post were largely the ones referred to the groups "demographic factors" and "infrastructural branching of mail service organization", respectively.

According to some data from the regions, the demand for mail services is affected most often by factors from the group "economic activity of companies", which reveals the need to take into account the factors affecting this demand not only across Russia in general but in its regions as well.

After the multiple regression ratios were calculated, sets of factors with the maximal multiple correlation ratio and models of regression for dynamic data sets across Russia were selected. The model of linear regression of two-part sets of factors was chosen for four of the six services (letter item delivery, parcel delivery, pension deliveries and payments, and EMS), whereas for money transfers and subscriptions to periodicals, the model of exponential regression of two-and three-part sets of factors was chosen. For the design curves of the equations of linear and exponential regression drawn for a more reasonable selection of independent factors as compared with the data on the scope of the six services see Figure 1.

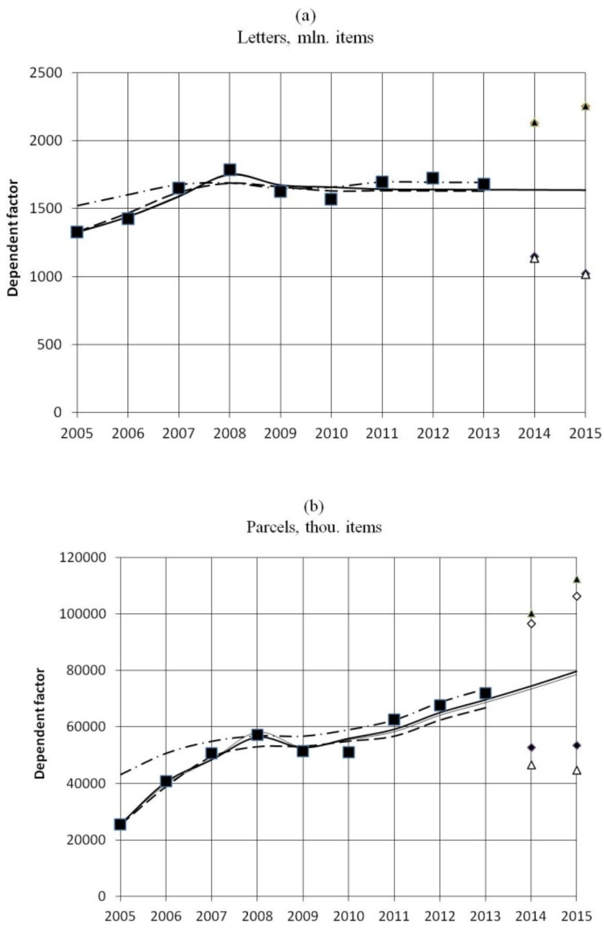
The quality of the model equations of regression for the selected sets of factors was assessed in the F-test passed by all the chosen factors. The mean relative error in approximation for the resulting sets of factors of the model of exponential regression is 0,8-4%, and it is 1-4% for the linear factors, which proves that the choice of the models is correct.

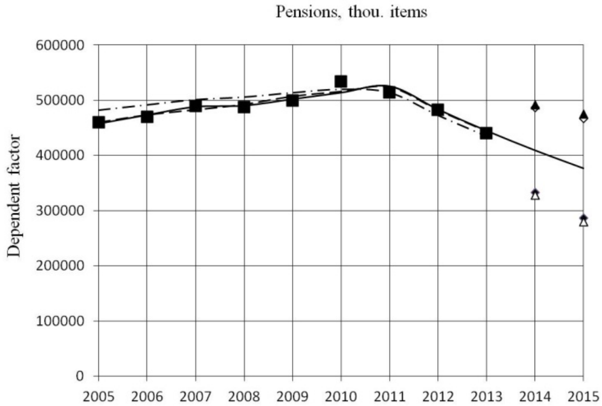
The customer demand for the six services provided by the Russian Post was used in 2014-2015. The forecasting quality of the models was assessed using a confidence range. The estimated points of the 2014-2015 demand fall within the confidence range. To compare the quality of the regression model with other statistical models, the data of the independent factors were analyzed by the smoothing of the dynamic range. For the design curves of the moving mean and exponential smoothing line for the selected set of factors (Fig. 1). The behavior of the dependent factors is described with far better precision by the regression curve than by the curves of the moving mean and exponential smoothing line.

According to the forecast for 2014-2015, the customer demand for deliveries of letter items must have decreased or remained the same as in 2013, whereas the demand for parcel deliveries and express mail service (EMS) must have increased. The demand for pension deliveries and payments and subscription to periodicals has been looking negative since 2010, and the demand for money transfers has had a considerable decrease (Fig. 1).

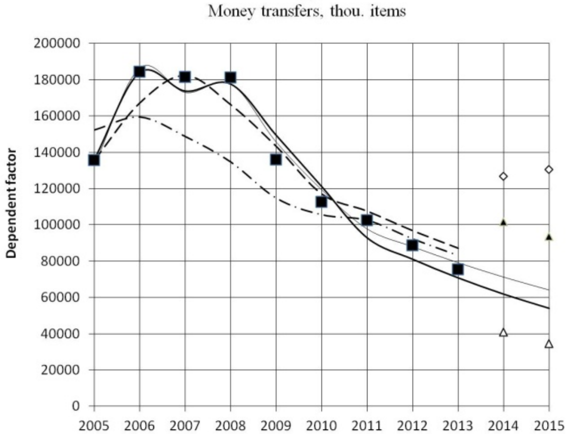
The procedure developed for designing the multiple regression model applies to data sets, not only in terms of dynamics, but in other respects as well, for example, in terms of geography, i.e., by the federal subjects within the scope of Russian Post. Therefore, it was possible to identify correlating factors with little or no variation in time. As an example, let us cite the results of designing a multiple regression model by regional data sets for 2013.

The chosen regression models of regional data sets were linear regression models of two-part sets of factors. The distribution of the data points for pension payments and money transfers is close to linear, though some of the points are beyond the range (Fig. 1). The distribution of data points least close to linear is observed in the case of letter items and parcels because the scatter of points is extremely large. The distribution of data points for the services presented is described best of all by regressive linear curves.
The comparison of the design regression values and estimated values of the demand for deliveries of letter items for 2013 and 2014-2015, respectively, by dynamic and regional data sets has revealed a reduction in the estimated values for 2014-2015.
This goes to prove that the customer demand for deliveries of letter items by the Russian Post is still tending to decrease (Fig. 1), but not as rapidly as in 2009. In Russia, only 11 letter items are delivered per capita every year on average, which is 36 times smaller than in developed economies.
The main competitive advantage of the Russian Post with regard to deliveries of letter items is the large network of offices in both urbanized and rural areas.




Pensions, thou. items
Dependent factor
600000
500000
400000
300000
200000
100000
0
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015

(d)


Money transfers, thou. items
Dependent factor
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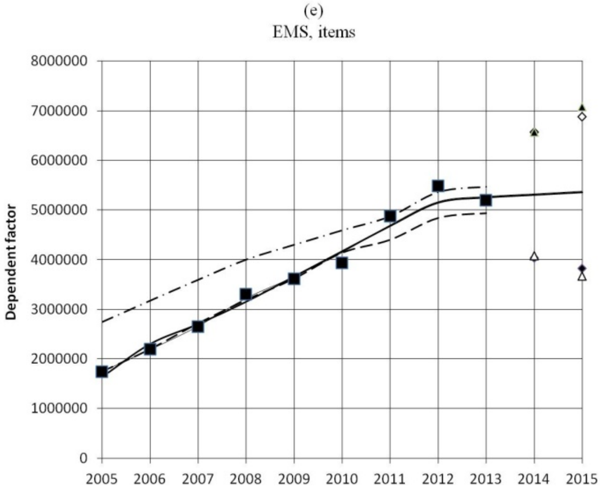
180000
160000
140000
120000
100000
80000
60000
40000
20000
0
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015

(e)


EMS, items
Dependent factor
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7000000
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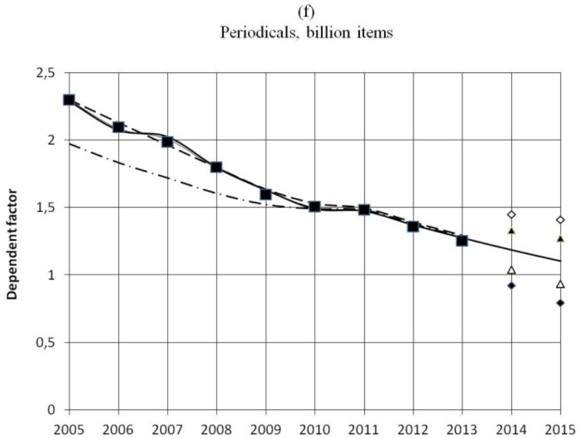

Figure 1: Forecast of the scope of services to be provided by Russian Post in 2014-2015:
■ – service; ______ - linear regression and forecast; ______ - exponential regression and forecast; _ _ _ - moving mean; _._._ - exponential smoothing line; ◆ - linear forecast minus the confidence range; ◊ - linear forecast plus the confidence range; Δ - exponential forecast minus the confidence range; and ▲ - exponential forecast plus the confidence range.

However, the poor level of automated and mechanical operation extends the period of letter item delivery to the addressee, which does not meet the reference figures. According to the survey results, both, households and organizations want the rapid and reliable delivery of letter items (one-third of the respondents are displeased with the current delivery speeds). The supposition can be made that deliveries of personal letter items will gradually be replaced with online communication. The demand for deliveries of letter items from households to organizations (public and private) will also depend on data submission by electronic means.

Since 2009, the reduction observed in the demand for deliveries of letter items from organizations to households can be explained by the liberalization of legal requirements to notifications sent; for example, there has been a reduction in the need for dispatch of notifications by judicial and tax control authorities (these items are now sent not as registered but as ordinary letters, whereas the number of mailing pieces remains the same and their cost declines). The number of tax notifications has also decreased because they are all now included in one letter; furthermore, nowadays, more and more notifications are emailed or delivered by text message. On January 1, 2013 the dispatch of so-called chain letters (notifications about states of personal accounts in the system of mandatory pension insurance) was abolished, which also affected the reduction in the amount of deliveries of letter items. As for now, the most promising sector is notifications by traffic police about fines for violations of traffic rules registered by automated audiovisual recording equipment. That is why the reduction in the amount of mailing piece deliveries in this sector will be slow.

The demand for deliveries of letter items from organization to organization will likely remain the same or decrease somewhat due to the growing tendency to use online communication or choose other mail service providers able to ensure more rapid delivery

(DHL, SPSR express, etc.). The reduction in demand in this sector will also depend on electronic data exchange with digital signatures by both parties (for example, the dispatch of tax returns by a legal entity to a revenue service).

The type of service that could become the most popular is delivery by hybrid mail with the option to receive messages in any mail office across Russia (as a substitute for telegrams to be called for). However, this will make it necessary to amend the current legislation. Since 2012, the option of dispatching responsive internal mailing items (RIMIs), which are ordinary and registered letters/cards where the return address is indicated, has been adopted as a complementary service. The sender can pay for answers by his respondents, who must fill out the return card in and drop it in any mailbox. This is also a promising sector for the indicated service: in mail services across Europe, for example, the share of direct mailing is about 30%).

Whereas the model of dynamic data sets reveals that outbound parcel deliveries has tended to grow in volume, the model for regional data sets does not show any changes in this sector. This is an indication of the high customer demand for this service in 20142015 (Fig. 1). Parcel deliveries and express mail service are often classified in one market sector referred to as CEP, i.e., courier, express, and parcels.

The advantages of the Russian Post in providing these services include its large network of mail offices and its own system of freight hauling. The Russian Post is almost the only company to deliver parcels to rural areas and penitentiary facilities (its rivals often resort to its services to deliver parcels to populated localities where they have no office of their own). The considerable flaw of the Russian Post in this sector is the time lag of delivery dates relative to reference dates, which was revealed by the survey. The vital indicators for most customers ofRussian Post are delivery speed and reliability and integrity of parcels.

Similar to the worldwide tendency, the factor that influences the growing demand for parcel deliveries and express mail service is the development of private online auction companies (eBay, u-Bid, Molotok, e-Commerce), remote international and domestic e-commerce (online shopping, sales through catalogs) in the sector ofparcel dispatches from private bodies to individuals, and online payment systems. For example, the volume of parcel deliveries abroad grows by 20% every year. Russia's entrance to the WTO can also lead to the growth in the international scope of parcel deliveries. This tendency is more typical of urbanized localities, where most organizations operate and people shop online more often. However, the majority of rivals of Russian Post also carry their activities in the city (including such international companies as DHL, FedEx, etc.).

The amount of parcel deliveries between households will likely remain the same as in 2013.

Although the Russian Post has no banking department of its own, more than one-third of the overall demand for its services falls to the share of financial and economic operations. The increase in the amount of pension deliveries and payments until 2010 resulted from the increasing number of pensioners and closedown of alternative organizations that provided pension deliveries to domiciles. According to our predictions for 2014-2015, the demand for this service in the model of dynamic data sets will be decrease, but remain almost unchanged in the model of regional data sets; thus, the rate of decrease will be insignificant (Fig. 1). Most pension deliveries and payments fall in the share of pensions home-delivered to pensioners and disabled people. The reduction in the customer demand will result from the decreasing number of people who receive their pensions in mail offices.

According to the survey results, city residents who receive pensions prefer that they be paid in banks, which can remit the payments to bank cards, or else they open specialized bank accounts for pension remittance. This tendency is also typical of rural areas because many banks will only provide loans to pensioners if they receive them through banks.

The demand for money transfers in the model of dynamic series tends to decrease, whereas in the model of regional data sets, it tends to grow slightly, which is indicative of the decreasing rates of decline in the volume of money transfers (Fig. 1). This decline results from the negative influence of the worldwide financial and economic crisis in 2008-2010. In particular, there was a reduction in the amounts of loan repayments from households to banks; furthermore, there is strong competition in the sector of money transfers because one is free to transfer money not only through banks (bank offices, online, or payment kiosks), but also in different trade centers with Evroset and Svyaznoi communication stores. Moreover, other methods of sending money without any fee payments are sometimes used as an alternative; e.g., if the card number and pin code are known, a bank card account can be loaded through a cash dispenser. The popularity of money transfers will continue to decline in all sectors and mostly in the sector of transfers from households to organizations (bank loan repayments, payment for goods bought online).

A very topical service in demand is the Forsazh system of express money orders (no-address transfers with a code word) offered by Russian Post since 2010. This service is classified as a household-to-household service.

The reducing sales of periodicals (whether retail or by subscription) are caused by the general contraction of interest in printed media due to development of online communication, changes in mass media consumption preferences among young people, high cost of subscription (the subscription price covers the delivery of periodicals as well, whereas in retail networks they can cost less), circulation of free publications (mainly advertising papers with news and a TV program), and option of online subscription to periodicals on their publisher's website). However, the general tendency does not cover highly specialized periodicals sold by subscription only. The advantages of household subscription to periodicals through the Russian Post include the complete absence of any alternative providers to deliver printed media to the mail box and the fact that this service is provided by the Russian Post in every federal subjects (in both urban and rural areas). However, in the sector of corporate subscriptions to periodicals, the Russian Post occupies a considerably smaller share (about 60%) because of many alternative providers. In rural areas, mail offices are the only places where periodicals can be bought for retail.

3. CONCLUSION

Thus, the use of the author's methodical developments, in particular the calculation of two types of forecasts in the model of dynamic data sets and in the model of data sets by federal subjects, respectively, makes it possible to predict the level of customer demand for the services provided by the Russian Post taking into account factors with no or little variation in time (they are not considered in forecasting by dynamic data sets only). The developed procedure can be used, not only by different mail service organizations, but also by any Russian economic entity, as well as by instructors and academicians to prepare respective curriculums.

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