

**PRACTICAL ASPECTS EVALUATION  
COMPETITIVENESS OF INDIVIDUAL DEPOSIT  
BANKING SERVICES**



***Oleschuk M.G.***

*Ph.D, assistant department of banking,  
State Higher Education Institution “Ukrainian academy of  
banking of the National bank of Ukraine”*

*mashko\_@mail.ru*

*+380500837502*

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**Introduction.** Current banking market dynamics and increased competition forced banks to seek additional ways to gain competitive advantages. Banking services market has a strong influence on new services creation process and competitiveness of existing services. Nowadays there is no single price leader on Ukrainian market for banking services. There was a strong tendency to reduce deposit rates in 2012-2013 among the largest banks in Ukraine. Related researches show that for today there is no clear correlation between the level of deposits rates and banks share in this segment of the market. One of the specific features of individual deposit services evaluation is that the analysis is carried out not only by price parameters, but also in terms of banking services quality. That's why this article, devoted to develop scientific methods of assessing the competitiveness of banking services and testing results is topical.

The key purpose of this article is to study practical aspects evaluation competitiveness of individual deposit banking services.

**Main results of research.** For testing methodological approach of qualitative criteria assessment of competitiveness individual deposit banking services level we

took data from PJSC "Alfa-Bank". Competitiveness of individual deposit banking services quality can be characterized by two groups of indicators: factors that characterize the bank and factors that characterize banking service. A. Parasuraman, L. Berry and V. Zeithaml (1988) offered SERVQUAL method for measuring the quality of banking services. They showed that consumers evaluate the functional and technical aspects of banking services quality in general by five criteria: materiality, reliability, responsiveness, assurance and compassion. We agree with this approach, but we should note that for today, this system of criteria should be modified because, in our opinion, this group of indicators characterizes only the bank and how the bank performed services, but consumer is interested not only in banks image but also in qualitative parameters of banking services. Therefore we propose to use the following set of criteria (Figure 1):

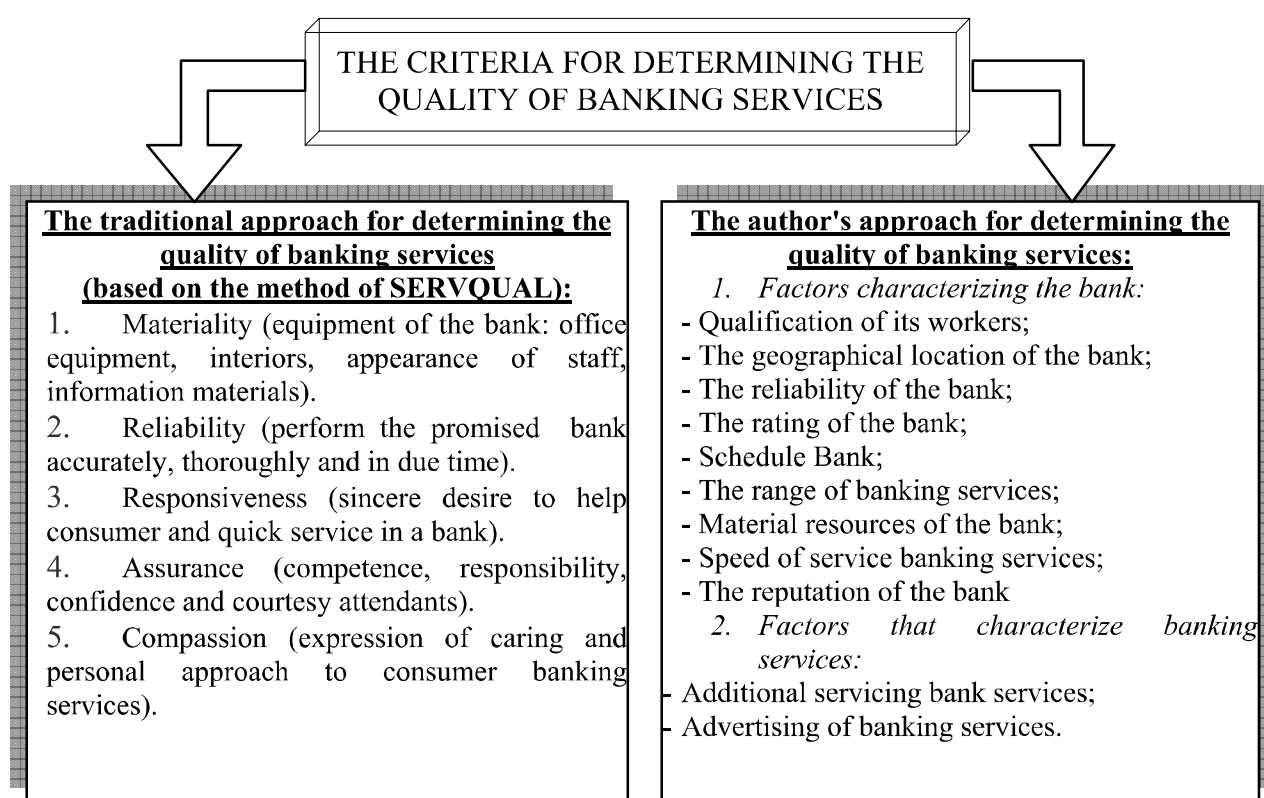


Figure 1. Author's view on non-price factors that describe the competitive banking services

A survey of PJSC "Alfa-Bank" depositors let us find the level of relevance of the proposed criteria (Table 1) and their internal rankings in terms of application priority of each.

While selecting mathematical approach, according to existing internal links between elements of the system, we should build multivariate utility function, because in the absence of statistical data it is mathematically impossible to confirm economic conclusions about the direct or indirect effects for each criterion. Described mathematical apparatus allows on one hand to determine the maximum level of utility that consumer plans to get from deposit banking services, and on the other hand - information on price and non-price criteria management aimed to maximize the competitiveness individual deposit banking services level.

Table 1. Effect of quality criteria banking services on competitiveness of individual deposit banking services (threshold value of the index from 1 to 5)

| Criterion  | for the whole sample | Age of respondents |       |        |
|--|----------------------|--------------------|-------|--------|
|  |                      | 18-26              | 26-40 | 41-... |
| Qualification bank staff   | 4,25                 | 4,14               | 4,26  | 4,38   |
| Placing Bank   | 4,01                 | 3,86               | 3,97  | 4,37   |
| Reliability of the bank  | 4,23                 | 4,16               | 4,26  | 4,27   |
| Rating Bank  | 4,01                 | 3,85               | 4,09  | 4,06   |
| The additional service of banking services                           | 3,66                 | 3,48               | 3,77  | 3,93   |
| Schedule Bank  | 3,76                 | 3,62               | 3,83  | 3,76   |
| Range of banking services  | 3,40                 | 2,92               | 3,55  | 3,71   |
| The material base of the bank  | 3,50                 | 3,63               | 3,40  | 3,59   |
| Speed of customer service regarding the purchase of banking services | 3,80                 | 3,71               | 3,98  | 3,44   |
| Advertising banking services   | 2,90                 | 2,49               | 3,04  | 3,18   |
| Bank image   | 2,75                 | 2,88               | 2,63  | 2,88   |

In order to construct multidimensional utility function we express all quality criteria in a price form (annual interest on deposits), that will allow us to equate the results to the deposit price. Along with the questionnaire, regarding to prioritization of each criterion, respondents were asked to identify critical interest values that characterize the sharpness of transition from one decision range to another. So that data formed a basis for the construction of monotone unidimensional utility functions for each of the criteria.

It's important to note that at the stage of dimensional utility functions construction we used the comparison of the results in the plane of the ratio of "numerical score - utility function": during the consumer survey was applied a five point rating system (1 to 5) and the utility function - from 0 (minimum) to 1 (maximum). In Fig. 2 you can see a correlation between utility function and scoping:

Along with this, we analyzed is function monotone or not, with the purpose to identify a critical value of utility function on which a consumer is ready to choose the priority of one or another quality characteristics of criterion. Consumers were asked: what value -  $x_i$  or  $x_{i+1}$  ( $x_i < x_{i+1}$ ,  $i = 1, 2, \dots 5$ ) of qualitative parameters does respondent prefer. After the summarization of the survey, we determined that all eleven dimensional utility functions are monotone and they can be described as growing. Thus, we can conclude that the multidimensional utility function is increasing. However, it should be noted that we can't make general conclusions about monotone character of function and do more detailed calculations on the results, because growth rates of each dimensional functions that formed multidimensional, are different, and therefore after summing all the functions it can be that not all segments will occur monotony.

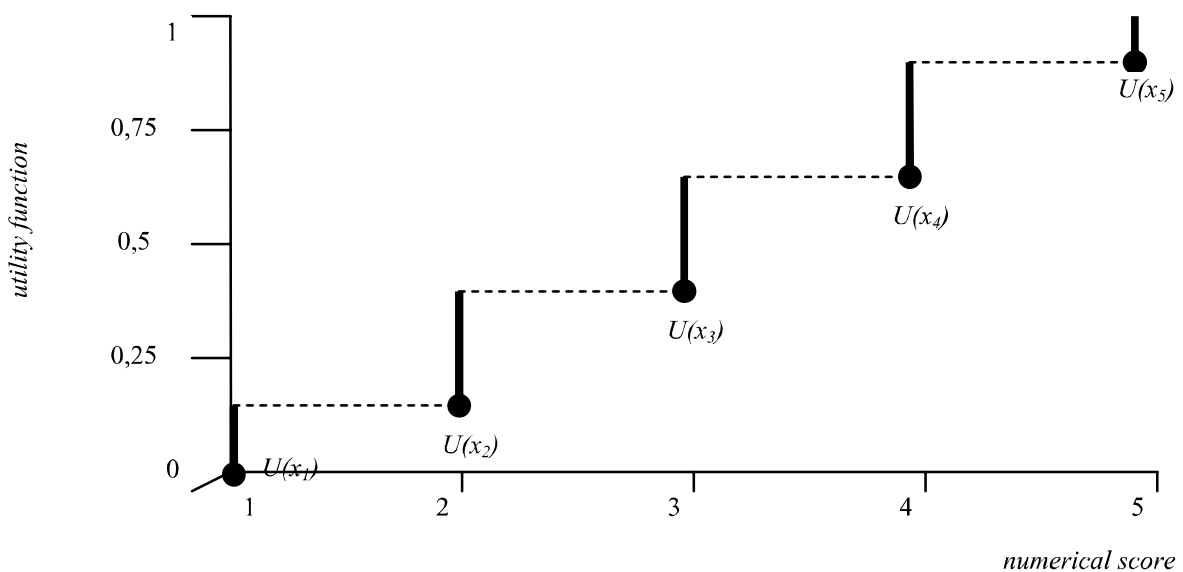


Figure 2. Correlation between utility function and scoping

Taking into account existing theoretical frameworks let's build dimensional utility functions (for example, determining the value of the impact of material base of the bank), which is the basis for determining the optimum value for satisfied customers - individuals with regard to the quality of the deposit banking services.

From an economic perspective, the material base of the bank - assets (tangible, material elements and the "means of production" of banking services), owned by the bank and used in all phases of management competitiveness individual deposit banking services. So, we found that the main parameters that characterize this criterion include:

- modern office equipment in bank;
- internal and external interior of the apartments of the bank where the deposit services are provided.

Whereas this function is monotone, respondents were asked to identify the function of utility in turning points according to the authors criteria that relate to a particular range of prices.

In order to determine the frontier values we have studied domestic deposit market where according to author criterion "x<sub>1</sub>" – "interior of banks apartment needs cosmetic update, deposit services are provided with use of outdated equipment (which affect the speed of service)" is equal to value of 20.0% per annum on deposits and criterion x<sub>5</sub> – "interior of banks apartment is in excellent condition, deposit services drawn to contemporary computers and equipment; exterior of banks' building is unique only to this bank" is equal to 15.0%.

First, we should find a deterministic equivalent of lottery (x<sub>1</sub>, x<sub>5</sub>), provided that the probability of consumer selecting deposit banking services with a set of quality criteria and price x<sub>1</sub> and x<sub>5</sub> is 50% each.

To determine the value of x<sub>3</sub> respondents were asked questions that laid in determining consumer willingness to sacrifice losing the maximum value of interest income for much better material base of the bank compared to x<sub>1</sub> but worse to x<sub>5</sub> and may be described as follows "interior of banks apartment is in excellent condition, although deposit services are provided with use of outdated equipment (which affect

the speed of service)". Algorithm for determining the value of  $x_3$  and received results of the survey are illustrated by the decision tree (Figure 3):

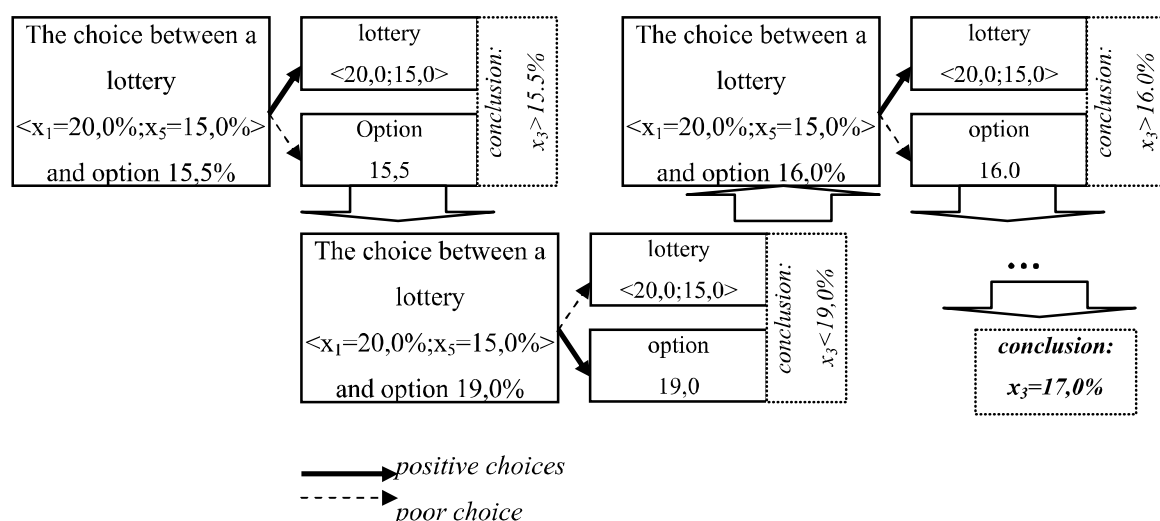


Figure 3. Algorithm for determining the value of the utility function under conditions  $x_3$

Thereby, the utility that consumers will get at the deposit rate 17.0% and qualitative characteristics proposed within the assigned to point  $x_3$  borders to be equal to the expected utility of the lottery ( $x_1, x_5$ ):

$$U_1(0,17) = 0.5 \times U_1(0,2) + 0.5 \times U_1(0,15) \quad (1)$$

Provided that  $U_1(0,2) = 0$  and  $U_1(0,15) = 1$  we obtain  $U_1(0,17) = 0,5$ , while  $x_3 = 17.0\%$ .

Then we find the deterministic equivalent of lottery ( $x_3, x_5$ ) with the same method, herewith while describing value of  $x_4$  we should remember that this figure is in the range between the level of quality  $x_3$  and  $x_4$  (e.g. "interior of banks' apartment is in good condition and deposits services are provided using modern computer equipment "). Provided that  $x_3 = 17.0\%$  and  $x_5 = 15,0\%$ ,  $U_1(0,17) = 0,5$  and  $U_1(0,15) = 1$  we received  $x_4 = 16\%$ , and  $U_1(0,16) = 0.75$ .

The next step is to find the value of  $x_2$  (making comparison with lottery ( $x_1, x_3$ )). In this case the material base of the bank can be described as follows: "deposit

services are provided using contemporary equipment, but the interior space of the bank requires cosmetic upgrade". These findings helped to determine that as long as price set at 18.0% we will observe equilibrium level of utility value between  $x_2$  and lottery ( $x_1, x_3$ ). According to this the utility function at the point of 18.0% takes the value of 0.25.

To confirm obtained results we checked for consistency of results using the definition of the deterministic equivalent of lottery ( $x_2, x_4$ ). Provided that this value coincides with the previously obtained, we consider the results of determining the values correct.

Thus, we got five determined values of utility function which characterizes the material base of the bank and on the basis of these results we construct curve (Fig. 4), which allows us to get function-approximation:

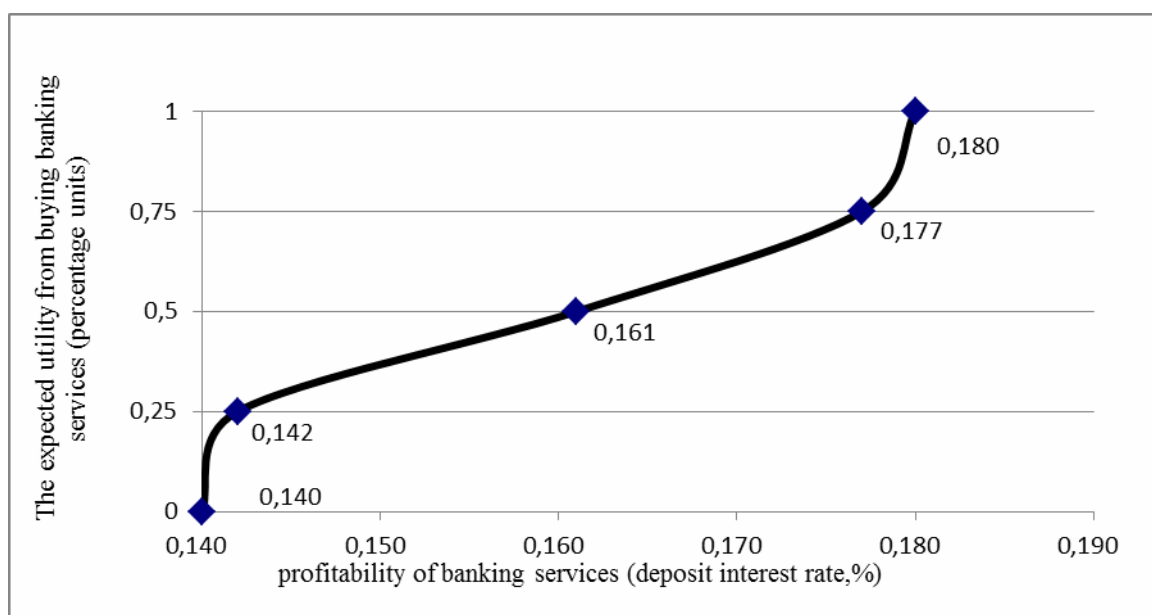


Figure 4. Dependence of the expected utility of banking services to customers from customer requirements to the material base of the bank in terms of the price (utility function  $u_1(x) = 20,27x - 2,9865$ )

Construction of the last ten dimensional functions is similar, and taking into account their level of relevance to the consumer, multivariate utility function is built.

Determination of weights coefficients we did considering expert opinions (Table 1).

Using the obtained results let's construct multidimensional utility function (1):

$$\begin{aligned} U = & 0,11(20,27x_1 - 2,9865) + 0,1(1789x_2^3 - 8570x_2^2 + 1368,1x_2 - 71,976) + 0,11(25x_3 - 4) + \\ & + 0,1(50x_4 - 7,25) + 0,09(26,019x_5 - 3,101) + 0,09(40,541x_6 - 5,4186) + \\ & + 0,08(14,776x_7 - 1,947) + 0,09(25,338x_8 - 2,9865) + 0,09(202,7x_9 - 31,365) + \\ & + 0,07(28,958x_{10} - 4,5792) + 0,07(11,682x_{11} - 1,0421) \end{aligned} \quad (1)$$

Thus obtained utility function allows us to take into account the change of each of its individual elements and to determine the optimal price that suits consumers - individuals with regard to the quality of the deposit banking services. In particular, the application of this scientific and methodical approach makes it possible for the bank to determine the optimal level of prices for using different strategies to manage the competitiveness of deposit services.

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