Model of personal consumption under conditions of modern economy

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Abstract. In the conditions of the modern economy, in connection with the development of production, the expansion of the market for goods and services, its differentiation, active use of marketing tools in the sphere of sales, changes occur in the system of values and consumer needs. Motives that drive the consumer are transformed, stimulating it to activity. The article presents a model of personal consumption that takes into account modern trends in consumer behavior. The consumer, making a choice, seeks to maximize the overall utility from consumption, physiological and socio-psychological satisfaction, in accordance with his expectations, preferences and conditions of consumption. The system of his preferences is formed under the influence of factors of a different nature. It is also shown that the structure of consumer spending allows us to characterize and predict its further behavior in the market. Based on the proposed model and analysis of current trends in consumer behavior, conclusions and recommendations have been made that can be used by legislative and executive government bodies, business organizations, research centres and other structures to form a methodological and analytical tool for preparing a forecast model of consumption.

1. Introduction
Consumption in the modern economy is characterized by an expressive individuality of every consumer. It is demonstrated by their goods and services choice \cite{1,2} which is being formed in accordance with the factors and conditions of consumption and their influences and forcing the model of behavior. At the same time the modern economy provides a wide range of opportunities for consumers to defend their individuality, erasing the absolute limit of resources.

Russian scientists have made the great contribution to the development of the theory of consumption within the neoclassical approach framework and other directions of economic scientific research. In their works consumer demand, the factors influencing on it and the process of consumption are analyzed by the economic-sociological approach (V. V. Radaev\cite{3}, Y. D. Krasovsky\cite{4}, M. V. Ryzhkova\cite{5}, L. N. Safiullin\cite{2}, N. Z. Safiullin\cite{2}, etc.), by the economic and socio-psychological approach (S. P. Bogachev\cite{6}, Yu. a. Zimerman\cite{7}, etc.), by the new institutional Economics (G. N. Ismagilova\cite{1}, A. E. Shastitko\cite{8}, M. Yakushev\cite{9}, etc.) methodologies. In their
own way they characterize the basic formation criterions and factors of the consumption process based on the changes of the conditions of the modernizing economic system.

Despite the creation of many research works about various theoretical aspects of consumption, many questions have not found a complete solution. For example: the development of the system of needs based on transformation of the consumption process; the features of the formation of the consumer budget in emerging economy of welfare, etc.

2. Theory
Everyone can make an exclusive assessment of any product relevance based on the kind of utility that it brings to him. Depending on the nature of utility from the consumption, it is possible to identify three types of goods:

- the consumption of which brings only the physiological utility for a consumer;
- the consumption of which brings the social and psychological utility for a consumer;
- the consumption of which brings satisfies the physiological and socio-psychological needs of a consumer.

Moreover, the same goods might be differently categorized, that depends on the individual needs and satisfaction of different consumers and their attitude to the goods.

We have found three types of demand: functional, non-functional and extended functional.

Functional consumer demand – demand for goods, based on only the physiological needs of the individual. In this case the goods are solely purchased for the intended purpose.

Non-functional consumer demand – demand for goods (often luxury good) with the purpose of getting psychological satisfaction and minimum satisfying physiological needs. To this type it is possible to identify the ostentatious consumption, the speculative consumption and any irrational consumption (just want), etc.

Advanced functional consumer demand – the demand for mixed goods, which can bring both types of satisfaction: physiological and psychological. In this case the goods are more expensive, fashionable. Often the subjects of advanced functional demand are imports. [10] Moreover, this type of demand associated with the growing needs and requirements of today's consumers and the expanding grocery market that promotes some goods to become very important for life support despite the fact that they were previously unknown and non-used.

Assume that we can represent some function $f$ of dependence between the total utility level of the physiological and socio-psychological consumer satisfaction that is obtained from using the good or the set of the goods.

$$ U_{\text{total}} = f(U_{\text{phys}}; U_{\text{socio-psych}}) $$  \hspace{1cm} (1)

In equation (1) $U_{\text{total}}$ is the total level of utility from the consumption of goods (in percent, maximum =100% (or fractional =1), is determined in accordance with the sensations and feelings of consumer), $U_{\text{phys}}$ is physiological utility (% or share of complete satisfaction of the physiological needs) and $U_{\text{socio-psych}}$ is socio-psychological utility (% or share of complete satisfaction of the socio-psychological needs).

Our research work has shown that the level of satisfaction of consumption and the level of the utility simply determined by consumers and is estimated at 10, 20, 30, 40, 50, 60, 70, 80, 90 or 100% in accordance with the existing needs and the possible for the individuals’ minds maximum pleasure and the full satisfaction that they are expecting for and to which they are aspiring.

We suggest introducing the coefficients of the importance of utility showing shares of each types of utility in the whole consumption set so that the overall level of satisfaction is the highest:

- $i_{\text{phys}}$ is the ratio of the importance of physiological satisfaction;
- $i_{\text{socio-psych}}$ is the coefficient of the importance of socio-psychological satisfaction.
The total satisfaction (100% = 1) includes the satisfaction of physiological needs accounting its importance and the satisfaction of socio-psychological needs accounting its importance. Accordingly, we can conclude that

\[ i_{ph} + i_{s-p} = 1. \] (2)

There are eleven possible types of consumers, the coefficients of importance of utilities of which are respectively equal to:

1) \( i_{ph} = 1, i_{s-p} = 0 \)
2) \( i_{ph} = 0.9, i_{s-p} = 0.1 \)
3) \( i_{ph} = 0.8, i_{s-p} = 0.2 \)
4) \( i_{ph} = 0.7, i_{s-p} = 0.3 \)
5) \( i_{ph} = 0.6, i_{s-p} = 0.4 \)
6) \( i_{ph} = 0.5, i_{s-p} = 0.5 \)
7) \( i_{ph} = 0.4, i_{s-p} = 0.6 \)
8) \( i_{ph} = 0.3, i_{s-p} = 0.7 \)
9) \( i_{ph} = 0.2, i_{s-p} = 0.8 \)
10) \( i_{ph} = 0.1, i_{s-p} = 0.9 \)
11) \( i_{ph} = 0, i_{s-p} = 1. \)

The total level of utility that is brought by some set of goods relating to a particular type in accordance with the targets of the consumption (based on the list of goods of the consumer basket) and perception of utility by the consumer in accordance with his belonging to one of eleven types will be calculated by the following equation:

\[ U_{total} = (U_{phys}^{i_p}) \cdot (U_{socio-psych}^{i_{s-p}}) \] (3)

In equation (3) \( U_{total} \) is the total level of utility from the consumption of goods, \( U_{phys} \) — the physiological utility and \( U_{socio-psych} \) — socio-psychological utility, \( i_p \) is the coefficient of the importance of physiological satisfaction, \( i_{s-p} \) is the coefficient of the importance of socio-psychological satisfaction.

The consumption will be recognizing as rational if consumer spending his own and borrowed funds feels most satisfied and happy. Then the total utility level of consumption, which involves socio-psychological and physiological components, approaches 100%.

The income of the consumer is used in two ways: the expenses for the consumption and the savings.

\[ Y = C + S \] (4)

In equation (4) \( Y \) is the total income of the consumer, \( C \) — the consumer expenses and \( S \) — the savings.

It is necessary to consider how the income (\( Y \)) is being spent by today's consumers taking into account their features. The consumer expenses (\( C \)) include the acquisition costs of goods and services to satisfy the physiological needs and functional consumption (\( C_f \)), for the acquisition of the mixed utility goods and services— advanced functional consumption (\( C_{af} \)) (both of physiological and socio-psychological utilities); for the purchase of socio-psychological orientation goods and services — non-functional consumption (\( C_{nf} \)). This situation can be represented by the equation:
\[ C = C_f + C_{af} + C_{nf} \]  

The other part of the income goes to savings; they constitute monies of the delayed demand. Depending on the purpose of savings and the level of satisfaction of the consumer at the time of making savings we can distinguish the following types of savings:

- the funds in excess of the required budget, when the consumer is satisfied at one hundred percent and has no more desire and need to spend more. In this case, as a rule, the money is kept aimlessly and has no value at the moment for the consumer. He may give it everyone, help family, friends and loved ones, do charity or may be do nothing. These funds provide the consumer the state of confidence, stability, sense of well-being and reliability. It is not necessary to be this consumer a man of high wealth, because maybe he needs the absolute minimum budget goods for a complete total satisfaction. Or the purpose of this kind of savings may be the future satisfaction of the different nature needs of other people. For example, parents save money for their children's future, their education, for purchase an apartment for them, etc. Accordingly, the type of utility that carry these savings is socio – psychological and they satisfy the consumer's non-functional demand \( (S_{nf}) \);

- the funds derived from the budget, which is essential for full satisfaction. In this case, the consumer is not absolutely satisfied, because he cannot purchase any good or service that he needs at the moment. The cause of these savings may be the consumer's uncertainty that he won't be able to reach the enough satisfaction in the future, for example, unstable income, possible illness, changing of the residence, etc. Respectively, the socio-psychological satisfaction of this consumer at this stage is not high and with the aim of it increasing the funds are deposited. The total utility is higher when the allocation of income is with the generated savings than the utility from fully spent available income. It is possible to identify three types of savings: the savings of functional demand \( (S_{f}) \) – the consumer saves money for his future expenditure for the purchase of goods of the physiological purposes (both primary and secondary); savings of advanced functional demand \( (S_{af}) \) is for the purchase of the mixed goods; savings of non-functional demand \( (S_{nf}) \) is for the purchase of goods of the socio-psychological orientation;

- “the savings for the savings”. Some consumers, regardless of their satisfaction level of their real needs, are unable to achieve any level of total utility from the consumption set, not saving a part of their income. This is about consumers like \( i_{ph} =0,1, \ i_{af} =0,9 \) or \( i_{ph} =0, \ i_{af} =1 \) for whom the socio-psychological type is the most important utility that they get from making savings. The utility from the really acquired goods will be reduced under the influence of socio-psychological dissatisfaction in the absence of savings. This kind of accumulation also can be considered the savings of non-functional demand \( (S_{nf}) \) as they bring only the socio-psychological utility. So we can get the following equations:

\[ S = S_f + S_{af} + S_{nf} \]  
\[ Y = C + S = C_f + C_{af} + C_{nf} + S_f + S_{af} + S_{nf} \]  

Savings can be defined as the good and the consumer spends his money to purchase it. Ultimately, all savings will be ever turned into real products or services, and at the time of their formation, they already are an independent good, providing the consumer the socio-psychological satisfaction. The structure of expenditure of the consumer’s income can be summarized into three components: functional expending costs, advanced functional and non-functional expenses:
Knowing the structure of the consumer expenditure by the nature of purchases, his level of satisfaction from the set of consumed goods, you can determine what type of consumer he is, what will be his future desires and, therefore, what purposes will determine his next choice.

3. Conclusion
The transformation of the existing theory of the consumption allows to take into account new important determinants of individual consumer choice and satisfaction in the modern economic system, which facilitates a theoretical justification of the actual consumption.

The proposed methodology of the consumption research allows analyzing the quality of life of the population. After exploring the people desires, their needs and the level of satisfaction, you can recognize the features of the society and the stage of its development, compare and characterize the consumption process and its outcome in different countries, allowing to identify the advantages and disadvantages that are presented in a particular society, predict the future direction of the development of the social relations.

4. References
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