Systematization of the definitions characterizing the content of services provided by industrial enterprises

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Abstract. The conducted analysis of the conceptual construct applied in scientific literature to reveal the relationships characterizing the content of the processes of produced equipment maintenance and repair, as complication of technical means, caused by the acceleration of scientific and technical progress, changes requirements for organization of processes of operation, and significantly changes the situation in the relationships between a producer and a consumer at which the priority in economic interests reserves for a consumer. These circumstances could justify the main motivation to create the necessary conditions to develop the service providing the consumer a possibility of optimum alternating choice while buying and using goods, and, in particular, technical and industrial goods. In the market, the crucial factors to buy those goods are to a lesser extent their price and technical operational characteristics than the real ability of the enterprises to provide necessary maintenance and repair during all operation life. The attempt is made to differentiate definitions in relation to technical and industrial goods, cultural goods and household goods. It is offered to define the services connected with satisfaction of human needs as "service, service maintenance", and to define the services, connected with creation of material assets, as «production service».

1 Introduction

In scientific literature and other materials to reveal the relationships characterizing the content of maintenance and repair of produced complex both household and technical and industrial goods quite a wide range of concepts and definitions can be used today: service, support service, mixed servicing, after-sales service, maintenance, company upkeep, upkeep integrated into goods, service maintenance, maintenance service, a complex of service maintenance, service of the production character, production service, service of the production enterprise, technical service, company service, company and technical service, industrial system "Product - service" etc. , in which authors mean various contents. Such extensive verbal creativity is caused by the lack of unity in a conceptual construct and often

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brings confusion in a comprehension that a certain researcher expresses and, to our opinion, causes the need of analysis of the existing definitions of the services provided by industrial enterprises to consumers and differentiations of concepts in relation to technical and industrial goods, cultural goods and household goods.

2 Investigation

Let's also analyze what is understood by the researchers in scientific and educational literature under the concept "service". Definition "service" is widely used as service delivery, which means satisfaction of someone's needs. At the same time, F. Kotler says that providing services may be or may not be related to material products [15]. Volgin V.V. has approximately the same opinion. He takes service as business selling satisfaction to consumers [5]. Sobchak A.P. and Kolenko S.V. hold another opinion. They define service as "customer service in various spheres of everyday life" [37]. Let's analyze what content in these definitions is put by scientists and experts in the field of production management, that is:

- let's carry out the analysis of interpretation of these concepts and definitions, judging only by the name;
- let's make attempt to establish the developed standard or most widespread interpretation of these concepts;
- let's state our point of view at addressing this problem.

Prokhorov A.M. associates service with repair and maintenance when a buyer receives extended services to the commodity received earlier. In the encyclopedic dictionary he defines service "as maintenance in a broad sense as well as in relation to repair and adjustment of technical means, the household equipment, municipal engineering" [29]. Syomin O.A. defines "service" as a complex of services, connected with sale and operation of technical and industrial goods, cultural goods, household goods and others [36]. Bagiyev G.L. understands "service" as "the subsystem of marketing activity of the enterprise providing a complex of services in sale and operation of cars, inventories, automobiles" [2, p. 689]. Zavyalov P. S. and Demidov V.E. also consider that "service is the subsystem of marketing activity of the enterprise providing a complex of services, connected with sale and operation of a product" [10, p.134]. Romanov A.N. gives broader definition: "Service is the supporting system allowing a buyer (consumer) to make optimum alternating choice while buying and using the technically composite product and also economically operate it during reasonably caused term dictated by the interests of the consumer" [31]. Semyonov V.M. and Vasilyeva O.E. suppose that "Service is the strategic tool managing the relations with consumers integrated into a physical product in the form of a range of services, connected with designing, production, sale and numerous methods of its effective use, flexibly adapting to surrounding changes" [34, p. 153]. Nikolashin V.M. considers service (servicing) as "service delivery which accompanies and provides the implementation of a certain process" [35]. Kostyukhin D.I. defines "service" (maintenance) as "a range of services connected with sale and use of machines, the equipment and other technical and industrial goods and providing their fixed readiness for highly effective operation. Service needs are generated by product needs, and good service expands needs for serviced products [14].

Sakhno E.Yu., Dorosh M.S., Rebenok A. V. connect the concept "service" only with physical items, technical innovations, expensive goods and professional training of personnel and consider it as the system of providing qualified servicing, an optimal variant of buying and economic operation of goods. That is, under the term "service" they
understand not any servicing but only characterized by qualitative features and good performance [33].

Donskova L.I. gives broad understanding of a definition "service", defining it as the repeated, multidimensional phenomenon arising while meeting human needs and promoting buyer's reproduction, improving the employability of the working, quality of life, helping to solve problems [9].

Having analyzed works written by Sukhorukov M.M., Hristoforova I.V. provides his results of the comparative analysis of the concepts "goods", "product", "service" in Russian - and English - speaking literature and also K. Lavlok's concept of service considering it as addition to the main service [42; 43]. Economists Vandeunarwe and Chadwick allocated six groups of services based on two criteria — "relative involvement of goods" and "the degree of cooperation among a consumer and a producer". In the classification according to «relative involvement of goods" they allocate service in a separate group connected with maintenance, and designate them by the term "support services" [44].

Prischepenko V.V. and Prischepenko M.V. use the term "after-sales service" as "... additional services offered by the producer after sale of goods to maintain their consumer properties during operation" [28, p. 132]. According to Fatkhudinov R.A.: "After-sales service is a set of activities performed by the manufacturer's customer service department to ensure buyer's legal security and social and economic satisfaction during operation of the purchased goods" [41, p. 239].

Vasilyeva O.E. and Paklina L.A. connect the terms "after-sales service", "service maintenance", "complex of service maintenance" with engineering goods, that is, with goods of industrial and technical application: "The complex of service maintenance is economically and socially constructed system of relations between enterprises and consumers performed throughout the complete period of ownership of the producer and consumer and based on inclusion of the greatest possible set of services determined according to qualifying standards of consumers in the price of goods purchased. The suggested definition of a complex of service maintenance of products considers: first, the systematic approach to a complex of service maintenance; secondly, not only economic, but also social conditionality of this category; in the third, the period of ownership of products not only by a consumer, but also by a producer, as service maintenance begins at the design stage, assuming the possibility of replacement of the end-of-life parts, units and mechanisms; fourthly, it's got the ability to consider the consumer's requirements to the services provided" [3].

Having analyzed the terms "service", "servicing" and "maintenance», Torgushina E.V. invents the concept "Service activity". According to her opinion "The service activity is the complex, difficult service forming the system of the interconnected technologies of implementation of complete service maintenance of advanced technology products and methods of satisfaction of client's individual requests concerning provision of all profile types of activities as well as comfortable stay in the organization" [39]. Avanesova G.A. and Nikolashin V.M. invent the term "production service". At the same time Avanesova G.A. understands it as "Repair services of the equipment, … including pre-sale and after-sale services" [1], and Nikolashin V.M. defines more narrowly the area of the provided services as "A set of the offered types of after-sales service of products, that is, a set of services provided to a consumer since the conclusion of the contract until the time of delivery" as he invents the additional term – "After-sale support service is a set of all provided services necessary to ensure good performance of products in the existing economic conditions over the entire life cycle of the products [35]."
Komarov V.F., Koluga E.V., Yusupova A.T. use the term "company service", understanding it as "active participation of a manufacturer during operation of a product [13].

However, in scientific and technical literature to designate maintenance and repair of the equipment of industrial enterprises, that is, goods of industrial and technical application, there are other invariant concepts as: "industrial service", "upkeep integrated into goods", "service of industrial enterprise" and "the system (complex) of service maintenance of products". So, Tulinov A.B. notes that "abroad approximately since the 1920's industrial service has been used where specialized service firms provide a complex of recovery work to maintain the performance of the equipment and to observe its operation. The main reason that the western companies prefer to use services of specialized service firms is desire to expand their own opportunities (concentration on core business) and to increase the productive efficiency [40].

To define a set of services offered by an industrial enterprise or a trading company French economist E. Mate invents the term "the mixed servicing" which, according to him, "... is perfectly suitable to designate various combinations of the provided services which correspond to numerous ways of the equipment operation during the entire service life [20, p. 7]. Kulibanova V.V. offers the following definition: "service of industrial enterprise is the assistance program to clients connected with development and implementation of the system of service maintenance of goods raising consumer properties (utility) of material goods, and intended to obtain the maximum satisfaction of specific needs of each client during the entire process of consumption of goods even if duration of their operation much more exceeds the term of their commercial life" [16, p. 8].

As maintenance and repair are structural elements of industrial service, "Industrial service represents the difficult range of services including researches, developments, particular physical services, information, training and other services which allow to configure, to make working conditions, to support in a normal functional state, to modernize, to provide recycling and utilization of different types of the production equipment, single or any other type" [4]. Such definition of industrial service is suggested by Voytolovsky V.N. Tulinov A.B., Korneev A.A. Shpagina I. V. [40], Mamishev A.I. [17, p. 19] support the similar point of view. However Karjakin E.I. emphasizes the need to consider industrial service not only as a range of services to maintain the functionality of the production equipment, but also as "product oriented services, that is, services which are directed to optimize the use of industrial products and to increase the value of their use for a buyer" [11, p. 30]. This definition though determines the essence of industrial service, but isn't its unique interpretation.

For example, Puzyrevskaya A.A., Yastremskaya P.V. write that "industrial service is a set of works on services in order to satisfy someone's needs; it is a range of services, connected with sale and operation of goods" [30, p. 6]. Kozhevnikov M.V. gives a similar concept: "Industrial service is economically grounded functional activities of the enterprise which are to create and offer a complex of services at all stages of product lifecycle connected with its most effective operation" [12, p. 136]. Samsonov A. S. and Lipatnikov V.S. have an interesting point of view. They define industrial service as "a long-term cooperation of the owner of fixed assets (of the enterprise) and specialized service operator within which the operator on a continuous basis provides compliance of the equipment performance to the needs of the enterprise in order to create conditions for the most effective activities of the enterprise, but not just a single maintenance or repair" [32, p. 506]. It is the understanding of the authors that "The contract of lifecycle can be an example of industrial service, similar models are known in various options of public-private partnership. We invented the term "industrial service" for the reason that the concept of
technical service doesn't correspond to specifics of the relations arising between the customer and the consumer of services of industrial service. At the same time active distribution of long-term relations in service industry of fixed assets (the equipment isn't obligatory – for example, the roadbed can be the subject of the contract of lifecycle) requires development of special tools managing the relations between a customer and a consumer which would allow to provide acceptable profit level of a contractor, the acceptable cost level for a customer and risk minimization of both parties" [32, p. 506].

Mayorova N.V. notes that "the analysis of the definitions given by different authors and relating to attempts of each of them to define such concept as "service of industrial enterprise" led to two main conclusions: on the one hand, all authors practically connect industrial service with technical and industrial goods. This conditional term can designate all goods of both consumer application and industrial and technical application which, anyway, require maintenance. Other obvious conclusion is that industrial service can be considered as marketing function, and then, figuratively speaking, the issue is actually about tough external orientation of the main activity in this sphere". In her view, it's appropriate to consider industrial service as "... a part of professional services, which cover the main issues of servicing of the in-line and auxiliary equipment of an industrial enterprise and also of the execution of works belonging to its productive activity, includes maintenance departments of companies-manufacturers of equipment, independent service firms and service subdivisions of industrial enterprises, the main destination of which is highly effective operation of the equipment and implementation of a necessary complex of works, taking into account the need of fixed upgrade and rational updating both the equipment and the processing procedures which are carried out with its participation" [18].

L.B. Nyurenberger and T.V. Barykina give the following definition: "industrial service is economically and socially constructed set of industrial services having the integrated character. For its part, the industrial service is the service performed in the course of maintenance of goods of industrial and technical application during all service life stages" [22], that is, almost identical to the definition of GOST R57369-2016 "Production service. Terms and definitions" where "the production service" is understood "as the kind of business and productive activity aimed at providing the state and municipal needs, at satisfying needs of other entrepreneurs and persons engaged in business and productive activity performed on the basis of contractual legal relationship, and doesn't include services for households" [6] (emphasis added).

The concept "technical service" is close to the concept "industrial service", so in the international practice it is considered as complex service in buying, using and ensuring operability of technological machines, devices, the energy and engineering equipment, – in a broad sense any equipment. Technical service is, first of all, preparation and selling cars, maintenance, diagnostics and repair, including the warranty and post-warranty service, consultation, sale of spare parts and so on" [20, p. 4].

Mokronosov A.G. and Anisimova M.A. provided a fuller description of technical service. "An overwhelming part of the operations connected with … a concept of marketing system belongs to technical service: …: … the studying of the available and potential needs for goods and services, scientific research and project design studies, planning output, development of the marketing system and techniques and allowing a buyer to get necessary services for ensuring optimum use of the purchased product" [21].

Panteleev S.S. gives definition that is even more interesting and close to industrial service: "The industrial product service system (hereinafter– IPSS) represents the symbiosis of a product and services offered by the producer in the market “business for business”. At the same time a buyer (a user) is the owner of the company interested in supply of equipment and receipt of a packet of services" [26]. Further Dorokhina E.Yu. and Panteleev
S.S. develop this definition, namely that "The Industrial Product Service System (IPSS) represents the configuration of products and services focused on the consumer, considering their mutual influence during the processes of complex development. Within IPSS there is a shift from separate consideration of products and services to the complex business model oriented towards the consumer interests rather than sales volumes" [7]. In his article, Panteleev S.S. explains: "in order to gain a competitive advantage many supplying enterprises begin to offer a packet of supporting industrial services in addition to a main product. This approach allows structuring and systematizing the vendor's proposal taking into consideration the clients' needs that can be reached due to the involvement of the client in development of IPSS and receipt of client’s critical remarks and suggestions during all lifecycle of the equipment [24], similarly: "approach of the industrial product service systems (IPSS). In this approach the client participates in the processes of development and use of products and has an opportunity to influence performance of goods and a set of provided services" [25, p. 138]. As a result, Dorokhin E.Yu. and Panteleev S.S. conclude that the industrial product service systems are the integration of a product and supporting services" [8]. It should be noted that the concept "Industrial system "Product -Service" is broader than industrial service as this system provides the customer further servicing that is yet absent in case of industrial service. The essence of "The industrial system "Product -Service" is that the enterprises develop a portfolio of services on the basis of the analysis of needs for after-sale service imposed by the customer and also on behalf of the enterprise taking into account its opportunity and economic benefits.

Yu.V. Meleshko invents concept "industry-related service – the economic good in the form of action directed to satisfy needs of the enterprises of the industrial complex, to increase competitiveness of industrial output by improvement of production processes throughout all value chain including engineering, management, marketing, logistics, etc." that is also interesting [19].

This concept is close to industrial service, but is broader as it includes not only supporting service, but also engineering, designing, Research and Development, pre-sale and after-sale service, transport, warehouse, production logistics, maintenance, information support, communication systems, banking services (the part that provides necessary financial and clearing transactions of productive activity), management services. Unlike the industrial system "Product -Service" this definition does not contain customer’s participation.

The analysis of the above-stated definitions allowed to draw the following conclusions:
- first, service is a type of activity satisfying additional needs by means of services;
- secondly, the main condition of service performance is availability of products to which it accompanies;
- thirdly, service is a result of work of two parties in which one party is a contractor, and the second is a receiver of service;
- fourthly, service is the additional factor or additional value influencing the choice of the consumer;
- fifthly, definitions given by Avanesova G.A., Bagiyeva G.L., Demidova V.E., Zavjalova P. S., Kozhevnikova M.V., Nikolashina V.M., Puzyrevskoy A.A., Syomina O.A., Yastremskoj P.V. are extensive interpretation of the term "service" applicable to all service sector, without specification of types of goods and reflect consumer orientation of service. In these terms there is the limitation of interpretation of substantial essence of service: the functions covering designing process, productions and sale of a physical product aren't reflected;
- sixthly, in the definitions given by Donskova L.I., Kolenko S.V., Sobchak A.P., Fatkhutdinova R.A. the term "service" is linked to the process of satisfaction of personal needs;
- seventhly, in the definitions most of the researchers connect the term "service" with maintenance and repair of industrial goods of technical application, with the equipment of industrial enterprises;
- eighthly, quite wide range of definitions of service applied in scientific and technical literature and lack of clearness of differentiation of these concepts complicate perception of author's interpretations.

According to the results of the analysis, let's consume that in order to eliminate various discrepancies and various interpretation in terminology, it is expedient to differentiate all definitions relating to service activity according to the scientific understanding of the service activity peculiar to the modern world formulated by Avanesova G.A. as "the activity of people interacting in a special way in order to realize public group and individual services. At the same time the purpose of these relations is not to create material values, but to satisfy human needs" [1, p. 63] (emphasis added).

### 3 Conclusion

In sum, it is possible to give the following author's vision:

- Service is service activity of one party to another that is directly connected with a certain product, and is directed to satisfy human needs.
- Industrial service is the complex of services connected with sale and operation of the complex goods having technological application and participating in creation of material values.

The specificity of industrial service of industrial goods is that:

- first, it is the flexible and susceptible tool of commodity and price policy in a marketing mix of the enterprise;
- secondly, it is the functional element of its production logistics system;
- thirdly, it is the stream process of interaction between systems of a producer and a consumer of industrial goods.

Industrial service of the enterprise, being the tool of commodity and price policy, includes process of "embedding" of services to ensure constant readiness of the production being sold for effective operation. As the result of evolution of substantial essence of the concept of goods, there is a process of integration of the offer of a physical product and the offer of related services that can change the concept of the offer in the sphere of industrial production. The total offer in this case as the useful function delivered on the market is characterized by:

- development of goods;
- planning of the system of industrial service;
- implementation of management by service offer during all life cycle of the output.

Thus, it is suggested to differentiate definitions depending on the satisfaction of human needs or creation of material values, namely:

- to define the services connected with satisfaction of human needs as service, service activity, service maintenance;
- to define the services connected with creation of material values as industrial service (fig. 1).
In national science and service activity units of fragmenting of services and service activity connected with their functional essence are marked out as productive services to which service (repair) of the equipment is referred. The question arises of what kind of equipment. There might be many different interpretations. But, if to follow the suggested classification of terminology according to scientific understanding of the service activity peculiar to the modern world, it is obvious that the term "service maintenance" belongs to maintenance and repair of household appliances, and the term "industrial service" belongs to maintenance and repair of goods of industrial and technical application (the equipment of the industrial enterprises, active business assets).

The suggested approach, in our view, more fully reflects the relation of the manufacturer to the products during their operation as it assumes that final products are not the goods of industrial and technical application, but their trouble-free operation throughout all life cycle, and considers:
  - first, the systematic approach to the provided services;
  - secondly, carries the capacity to meet requirements of consumers to the range of services;
  - thirdly, the period of possession of production not only by the consumer, but also by the producer, meaning that production of goods of industrial and technical application in general takes smaller period, than the existing life cycle, but industrial service is provided during the entire period goods are owned by the producer and by the consumer.

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