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IMPROVEMENT OF CAR QUALITY MONITORING SYSTEM IN OPERATION

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When organizing the process of monitoring the quality of cars in use, domestic car assembly enterprises use traditional approaches to assess indicators in absolute units (number of defects; total costs), as well as indicators in relative units (reduced to the size of the warranty fleet). To date, the complex of the IPTV model, GMF (quality in warranty for a group of months of operation), used by a number of leading global automakers, is considered more progressive. In fact, the proposed group of indicators reflects the global practice of monitoring the quality of cars in operation. The advantage of the proposed set of indicators is that they are more harmonized for the initial group of reliability indicators. In addition, the current practice of monitoring automobiles in operation is characterized by a departure from the concept of a warranty fleet, since its current status is difficult to assess (the processes of selling and dropping cars out of warranty operation are ongoing, and in the latter case they are not registered by the automaker). Also, at present, multi-brand research in the field of quality is carried out using the practice of international marketing institutes and automobile associations - clubs. In the framework of quality research, both marketing institutes and clubs conduct a comprehensive survey of the consumer environment and calculate the results obtained in satisfaction and defect indices using a similar system of indicators.

IPTV model. The number of defects in a group of months of analysis per 1000 soldcars ($K\%$) is calculated by the formula

$$K\%_B(MIS) = 1000 \times \sum_{i=0}^{i=MIS} k_i, \quad (1)$$

where k_i - is the coefficient reflecting the ratio of the number of defects to the numbercars sold for each of the months included in the analysis group; MIS - month of service, the number of months between the date of sale of the deviceand the date of opening the registration of documents for repairs.

Model IRVO. Blocking failure rate by month of operation. Blocking defects are defects in which operationprohibited or impossible (security, functionality).The calculation of the indicator IRVO ($R\%$) is carried out according to the formula

$$R\%_B(MIS) = 1000 \times \sum_{i=0}^{i=MIS} r_i, \quad (2)$$

where r_i is a coefficient reflecting the ratio of the number of blocking defects to the number of cars sold for each of the months included in the analysis group.

Model c/v. Serviceability Index c/v determines the level of costs for fixed defects on motor vehicles (ATS) with a specified period of operation.

The calculation of the indicator is carried out according to the formula:

$$Z\%_{00_B}(MIS) = 1000 \times \sum_{i=0}^{i=MIS} z_i, \quad (3)$$

where z_i is a coefficient reflecting the ratio of the cost of eliminating defects to the number of telephone exchanges sold for each of the months included in the analysis group.

PDI model. The failure rate identified in the pre-sale preparation. A quantitative indicator is the ratio of the number of failures detected at the stage of pre-sale preparation (RFP), to the number of automatic telephone exchanges of the past RFP having preset release date reduced to 1000 cars:

$$P\%_{00_i} = \frac{\sum_{i=1}^n Y}{N} \times 1000 \quad (4)$$

where Y is the number of failures in the car exchange of a known month of production identified on pre-sale preparation.

The proposed group of quality indicators for cars in operation, must be considered as a single set of indices responsible for various quality positions of cars in a certain time period of operation: general level of defects; level of blocking defects; IFR defective level; level of defects repair costs.

Considering modern methods and approaches to organizing the measurement process the quality of complex high-tech products during operation, you can conclude that they are basically designed in such a way that the key element to which the computational base of monitoring is brought is the month of production of the investigated batch of products. Many corporate information systems for monitoring the quality of automobiles during the operation period are organized. The period of data collection is carried out in the reporting period - a month. Then, within a few days after the reporting month, usually 1-3 days, held automated verification, analysis of the resulting database, its calculation. Further in the work is undertaken by the analytical quality service, which prepares quality reports on cars in operation. Thus, it may happen that from the moment of occurrence of a failure or group of failures on vehicles in operation until their identification in the corporate enterprise quality service may pass a sufficiently long time period, in some cases it will be equal to a month. Naturally, this is unacceptable. Development and implementation of required tools for operational quality analysis.

That is why the Master degree work is being modernized a set of indicators, in terms of developing and implementing an index that reflects Warranty Alarms.