# CHOOSING THE APPROPRIATE FUNCTION TYPE WHEN THE SOURCE INFORMATION IS NOT EQUIVALENT

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**Abstract:** In the context of limited initial information, the article delves into the challenges of selecting the optimal function type for forecasting key performance metrics in road transportation. Forecasting involves the application of three distinct types of functions, which are linear, quadratic, and exponential. In most circumstances, the selection of the trend function type, whose parameters are determined using the least squares technique, is primarily based on an empirical approach. This involves constructing several functions and comparing them based on criteria such as correlation index, average absolute deviation, standard deviation, and coefficient of variation. Based on experimental computations, it has been determined that the least squares technique can be employed to create extended-term expansion strategies and identify overall patterns in the growth of road transportation companies.

**Keywords:** forecasts, business operations, mathematical models, phenomenon.

The enhancement of planning in contemporary environments and elevating its scientific standards have been underscored by the advancements in the utilization of predictions. In contemporary times, scientific planning is predicated on meticulously devised forecasts, spanning technical and economic factors, demographic trends, and other pertinent considerations, while accounting for all conceivable permutations in the productive capabilities of the milieu. The developed forecasts are subject to the set of requirements delineated below. The scientific justification, timely and reliable nature, as well as the inclusion of adequate information relevant to the construction of sustainable, long-term plans, are crucial characteristics of forecasts. Forecasting represents a pivotal stage in the process of substantiating long-term scientific plans, and serves several critical functions. These include the recognition and examination of prevailing patterns and trends in economic development, as well as evaluating their anticipated effects and considering their resultant benefits and drawbacks. Additionally, forecasting is responsible for anticipating new economic scenarios and potential issues that may require novel solutions, as well as identifying prospective courses of action for future development. Finally, its capacity to compile information allows for comprehensive justification of the direction chosen for optimizing planned solutions and providing proactive impact within the economy. Numerous scholarly

works have been dedicated to protecting the advancement of motor transport firms such as automobile manufacturing plants, automobile transportation businesses, car restoration facilities, service stations, among others, at varying levels of aggregation. Consequently, it is recommended to undertake a meticulous examination of the benefits inherent in diverse forecasting techniques, with the aim of determining the optimal methods that are best suited for enhancing the administration of business operations. Particularly critical is the selection of methodologies pertaining to the execution of long-range prognostication, given its inherent complexity. The employment of forecasting techniques grounded in the scrutiny of one-dimensional temporal data sets comprehensively satisfy the prerequisites of authenticity, accessibility, among other stipulations. In contrast to numerous other approaches such as multiple regression, econometric techniques, expert evaluations, and complex methods, the analytical techniques utilized for one-dimensional time series analysis draw exclusively upon the information encapsulated within the respective time series under scrutiny, necessitating no further supplementary data. One-dimensional time series refer to a collection of economic indicators, which are essentially a series of random figures recorded across the course of their evolution. Typically, the mathematical models deployed in these methodologies exhibit precise signification and straightforward methodologies. Concurrently, the precision of prognostication acquired through scrutinizing univariate temporal data may be deemed quite acceptable in the majority of instances within an academic context. The selection of the curve shape employed for smoothing is dependent, to a certain degree, upon the intended application of the smoothing method, specifically in the context of whether it is geared towards interpolation or extrapolation. The initial scenario involves striving for the utmost level of accordance with the authentic values of the time series, while the subsequent circumstance involves ascertaining the prevailing progression pattern of the phenomenon, thereby allowing for the formulation of hypotheses regarding its expected perpetuation in the future. In the context of trend analysis, the application of the least squares method for smoothing time series entails regarding time as an independent variable, while the levels of the series exert a functional influence over this aforementioned independent variable. The genesis of the said phenomenon is evidently contingent upon more than a mere time elapsed since its inception. Consequently, the determination of this phenomenon is contingent upon multiple factors, their orientation, and level of impact. The evolution of said phenomenon over a period of time is attributed to the impetus catalyzed by the interplay of these factors. The act of utilizing the analytical method to discern the primary pattern pertains to furnishing coherence to the progression of the events being examined within the period of time subject to examination. One of the paramount challenges in the analytical domain is the accurate identification of the nature of the curve and its analytical relationship with respect to time. The process of smoothing

enables the depiction of temporal progression regularity, thereby necessitating conscientious consideration regarding the selection of the smoothing technique and delimitation of the trend function classification.

The requirement for prognostications and their extensive dissemination has fostered the emergence of several empirical, mathematical, logical, and other approaches for crafting economic as well as scientific and technical projections. The diverse array of techniques at one's disposal can be categorically arranged into three classes of extrapolation, expert evaluations, and modeling. The utilization of intuition can exert a substantive influence on predictive outcomes, as discerned through the examination of statistical data sets and the assessment of present-day trends and patterns. In consideration of the implementation of the aforementioned methodologies, it is possible to derive certain overarching inferences. The utilization of the least squares method in extrapolation smoothing of time series warrants prudence, as the prognostication outcomes may be inaccurate in the event that the approximating function utilized to convey the developmental trend is erroneously chosen.

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