



Contract of the International Visegrad Fund Visegrad Grant No. 22520049

Project title: Improving Demand Forecasting Education in Turbulent Times and Beyond at Industrial Environment

MODUL 1

Modul 1 Chapter 1

Introduction to Forecasting

The concept of forecasting, common challenges, and the key lessons learned from surveys. An outlook on emerging trends, with particular emphasis on the growing importance of short-term forecasting.

Content: *What is forecasting? In general...; What is forecasting in business?; Impact of Forecast Quality on Business Processes Based on Literature Evidence – What Can We Gain from Improving Forecasting?; What can we gain by improving forecasting? some practical experience; As things started to turn completely upside down. The COVID crisis scenario: it does not resemble what is typical for pandemics (2021 SPRING); Here, things really turned upside down: the peak of the UA–RU war period in 2024/2025 – disrupted supply chains.; A question and responses accompanying the 2017 and 2022–23 surveys: Which areas of corporate operations would be affected by a **5%***

improvement in forecasting accuracy, and to what extent?; Flash survey on forecast quality based on a small sample Poland, Hungary, Slovakia – 2025; Practical circumstances hindering forecasting based on survey responses; Assessment of characteristics of forecasting culture Poland, Hungary, Slovakia – 2025; Consequences of a 5% Improvement in Forecast Accuracy (Professional Estimate); Development activities implemented by respondents in individual years in line with changes in external conditions (2019–2024); Change in the importance of the forecasting time horizon; Who has the problem — when something is a problem?; The story starts with sales / demand planning; The close relationship between demand forecasting and controlling; Planning Horizons; The level of detail of the sales forecast; Planning cycles and updates within the financial year; The selection of the forecasting type / method depends on...; own practice

Modul 1 Chapter 2

Sources of inaccuracy:

Identifying common sources of error in forecasting, including cost-increasing inaccuracies and their consequences.

Content: *Destructive cases of forecasting errors – over-forecasting; Destructive cases of forecasting errors – under-forecasting; What can we expect approximately? in stockout / shortage situations; Annual benefit (gain) of the revised forecast. Assumptions, justification / proof; Annual benefit of the revised forecast (gain) in the case of **under-forecasting**; Measuring the success of demand planning process improvements and the return on investment (ROI);*

Modul 1 Chapter 3

Preparatory analytical processes:

Understanding the logic and structure of forecasts through the following fundamental analyses:

- o ABC analysis: Value-based ranking of inventories.*
- o XYZ analysis: Categorization based on demand variability.*
- o FMR analysis: Examination based on frequency, financial value, and time dimension in a forecasting context.*
- o Product lifecycle approach: Integration of lifecycle phases into forecasting processes.*

Content: *Steps of traditional forecasting – detailed; Historical data cleansing - general overview; Own practice; Product classification according to forecasting importance criteria: ABC analysis (Pareto principle) – value-based ranking of inventories; Example: sales data of a company under review; Sorting products by forecasting importance criteria: **XYZ analysis** – the temporal regularity of demand; The fluctuation; Evaluation of variability within the sample; Groups created based on the ABC and XYZ analysis; Product classification according to forecasting importance criteria: **FMR analysis** – sales frequency; Lifecycle curve; The product's market life vs. forecasting; Review and classification of forecasting models for new products; Improving short-term demand forecasting for short life-cycle consumer goods: the importance of data mining / alternative techniques; Data Mining, CRISP-DM methodology: the general steps of a data mining project; The steps and activities of the CRISP-DM methodology; Improving short-term demand forecasting for short life-cycle consumer goods: **demand patterns**; Improving short-*

*term demand forecasting for short life-cycle consumer goods:
retail testing*

Modul 1 Chapter 4

Forecasting methods and models:

A detailed overview of qualitative and quantitative methods, aligned with organizational objectives and market dynamics.

Content: *Forecasting – from two perspectives; What is a forecasting model? Methods and types of demand forecasting; Types of demand forecasting; Forecasting methods; Family tree of forecasting models, A quick — and perhaps no longer fully comprehensive — overview; Judgmental models; Developing an in-house expert (judgmental) forecasting model; Time Series Forecasting Process – Quick Logical View; Time series forecasting; Causal relationships; Causal models; Causal or Time series models?; Types of causal models; Machine Learning; Artificial Intelligence-Based Methods*