



FORECAST
SERVICES

an eyeon
company

FORECAST SERVICES

ANALYTICS ON DEMAND

AN EYEON WHITE PAPER

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1 IT'S ALL ABOUT KNOWING AND PLANNING THE FUTURE

Predicting the future and planning accordingly, is a daunting task while it is an essential part of business processes and involves a wide range of functional areas such as marketing and sales, finance, operations and logistics. A good forecast and well balanced inventories drive an efficient supply chain and improve service levels, cash flow and ultimately profitability.

Over the last decade companies have been working feverishly to improve their planning processes. With the rise of more new data sources a new era in demand planning has arrived. Besides traditional Sell- In and Point of Sales data, consumers use social media, like Twitter and Facebook, and review sites to share their experiences with products and services. Likewise, consumers search for products on Google before the actual purchase (the zero moment of truth!). All this data potentially has predictive power! The use of this information to construct a statistical prediction makes the forecasting process reliable, efficient, transparent, fast and objective.

Data analytics can be used in several settings to create a reliable forecast. The demand signal for a specific product has to be differentiated according to the phase in the product life cycle (new products, mature and end-of-life products) and the distinction between regular sales and demand spikes (promotions, tenders).

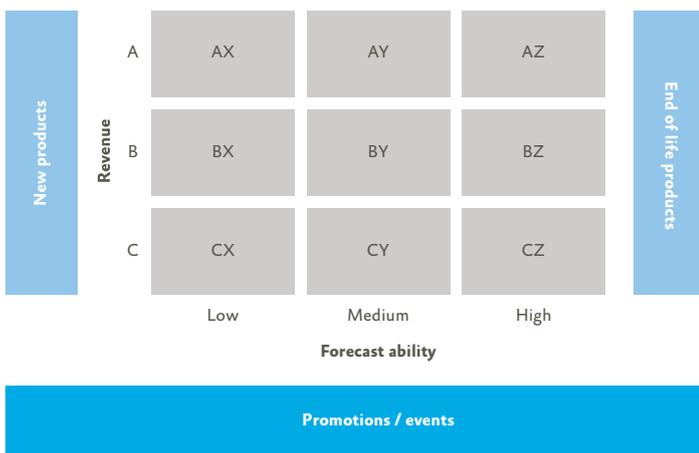


Figure 1: Demand segmentation.

Data analytics improves the quality of the prediction in many situations:

- 1. Base line forecasting for mature products:** based on historical sales data and often using trend models, a high quality statistical forecast allows companies to focus the enrichment process on those elements that really add value.
- 2. Promotion forecasting:** based on historical sales, point of sales data, web site behavior, product reviews, and promotion characteristics, a high quality promotion forecast is generated (generally using regression models) for retailers and their suppliers to improve promotion effectiveness.
- 3. New product forecasting:** based on several internal and external data sources, historical introductions, volumes and characteristics, or social media data, a high quality forecast for new products can be prepared and used to improve the effectiveness of new product introductions. Statistics (often multinomial logit) regression models can be used to forecast the full life cycle quantity, the initial launch quantity and the ramp-up profile.

As supply chains have become more complex, markets are increasingly volatile and manufacturing output remains variable, high-performance inventory management can make a real difference. A frequent update of the inventory parameters safety stocks and cycle stock in the planning system is a key contributor to delivering the desired service to the market at acceptable costs.

In summary EyeOn offers services to regularly deliver the best possible forecast and to update the inventory parameters in your systems. These activities have a number of aspects in common: (1) it requires specific knowledge to build and maintain the models, (2) it are recurring activities (weekly, monthly or quarterly) and (3) the fast growth of data science as an expertise offers constant opportunities for continuous improvement.

During the last decade, outsourcing has been on the agenda of nearly all supply-chain executives. Third-party logistics and third-party manufacturing have enabled companies to focus attention on core competences such as research, product design and marketing. Firms are constantly looking for ways to improve their forecast accuracy and inventory parameter setting. In some cases outsourcing of the forecast function is the best option. In this white paper, insights in outsourcing specific analytical activities like forecasting and setting inventory parameters are shared. We will discuss reasons and potential benefits of outsourcing.

WHY OUTSOURCING?



Bottom-line is that a specialist company delivers the best possible forecast in terms of accuracy and efficiency at a faster rate than internal teams!

"Outsourcing enables us to efficiently increase our accuracy through process improvement as well as tools leverage."

(John van Dongen VP Customer Service, Consumer Service & Trade Marketing Operations, Electrolux)

Knowledge. As stated in the Harvard Business Review; "Data Scientist: The Sexiest Job of the 21st Century". Key in predictive analytics is the availability of specialized knowledge. With the growth of the available data, like point of sales, social media, web data and google search data it has become even more important to find highly skilled data scientists to prepare the best possible forecast. Talent attraction and retention are especially difficult when this knowledge is not important for your career in a company. Consider a company with complex demand management challenges. Since it is rare for a statistician to have a clear career path to a senior executive position in this hypothetical company, a highly-trained individual is less likely to apply for a job with this company. This person will be more attracted by a company in which data scientists are valued as revenue generators. In smaller sized firms the amount of work available for this specialist is simply too low and he will get bored and leave the company. A third party forecast-services company is better suited to attract experts and to offer a challenging environment with a clear career path to retain these experts.

"EyeOn Forecast Services is seen as our long term strategic business partner, providing highly customized solutions to structurally reengineer our S&OP process to make it more efficient, sustainable and deliver excellent customer service level with a fully harmonized S&OP process. An excellent team of diverse personnel's who are very knowledgeable, experienced and focused in delivering results."

(Heidi Fan, Supply Chain Management Director, Gibson Innovations)

Speed. The fast implementation of a new forecasting process sometimes asks for proven solutions based on lessons learned from multiple implementations. This shortens time-to-value and eliminates many of the implementation risks.

Optimize forecast accuracy in a fashionable market

Gibson Brands Inc. acquired WOOX Innovations in June 2014, Royal Philips' audio, video, multimedia and accessories business. The company's goal is to become the world's # 1 music lifestyle company. Under the name Gibson Innovations, it has ambitious plans for its portfolio of new and established brands (Philips, Philips Fidelio, Onkyo, Trainer). Gibson Innovations with headquarters in Hong Kong is listed among the top music lifestyle companies in the world. This called for more standardized and streamlined demand planning processes across various sales organizations. Gibson Innovations wanted a leading forecasting and planning company to partner with during this demand planning transition. Besides setting up centralized processes that perform well, the company needed accurate and effective forecast services.

In September 2014, during a demand planning workshop in Amsterdam the company's best practices in Europe were discussed and evaluated. After this kick-off, EyeOn gathered and assessed company data from various branches and used this information in developing a complete demand planning process including fit-for-purpose tools.

The forecast services for four pilot sales organizations was launched in October 2014. Hereafter these services were rolled out to 11 European sales organizations. For the large part of the portfolio, EyeOn is responsible for a monthly statistical baseline forecast. This includes analyzing the overall accuracy of this company's demand planning process and identifying improvement potential. Next to that, EyeOn supported Gibson in setting up the standard top-down & bottom-up demand planning process and in providing the supporting tools.

The ongoing forecast services provides stable forecasts equal to if not better than the company's own forecasts in certain categories. By freeing up company time, planners can focus on events and promotions. In this business, seasonality has a big impact on sales, and improvements are being made to capture the trend and the effect it has on sales. By conducting collaborative forecasting with top accounts, forecasts as well as business results can be improved. This resulted for example in significantly higher forecasting accuracy and lower excess stock levels for the DACH sales organization. Statistical forecasting helped to improve especially long-term forecasting of European sales organizations.

WHY OUTSOURCING?

Lower costs. Economies of scale and therefore lower costs can be obtained by having the forecast performed by a company that does nothing but producing predictions for other companies. The forecast will be created by an expert using advanced statistical modeling techniques and using state of the art tooling.

Constant innovation. A third-party service provider will be challenged to continuously improve performance in terms of accuracy and performance. Most in-house forecasting teams will have a difficult call to make to invest in new technologies and skills, while a service provider will make these investments since they will be covered by a revenue stream and will strengthen its competitive position by enabling a continuous improvement culture. As part of the contract, the service provider has to deliver the forecast at a lower cost while improving the forecast accuracy.

“This really innovative approach using social media data will deliver us valuable insights for the introduction of our new range of mobile phones.”

(Director Supply Chain Mobile Phone Manufacturer)

Information broker. For channel partners it can be extremely beneficial to join data for forecasting reasons. For many product categories demand is dependent on a range of promotions offered in various, sometimes competing retail outlets. To improve promotional sales, retailers need to collaborate with manufacturers for forecasting and replenishment. Both parties have a significant part of the information. The retailer has insight into data like the success of previous promotions, promotion characteristics as pricing, advertising and shop behavior. The supplier, on the other hand, has superior knowledge regarding the product category. The strength lies in combing all data in one, unbiased regression-based forecast that can serve as an independent neutral estimation of promotion demand. In many cases the flawless exchange of information between channel partners is hampered by internal, often commercial, considerations. The use of a forecast specialist acting as an independent information broker collecting information from both sources and delivering a shared forecast enables true collaborative forecasting.

Event Casting enables perfect deliveries and on-shelf availability

A unique partnership between food and confectionary manufacturer, Mars Netherlands, and Dutch supermarket chain, Jumbo, has resulted in a sustainable solution for reducing costs and unnecessary inventory in the supply chain. Both companies have broken with tradition by identifying and integrating their planning processes.

In doing so, they have succeeded in streamlining their order flow to provide faster and more efficient deliveries. This has resulted in the complete availability of Mars products at Jumbo. The breakthrough came with the help of a new concept called Event Casting, which was developed in collaboration with EyeOn.

After an initial analysis, EyeOn quickly recognized the problems facing both companies. Both are experiencing increasing market volatility and complexity. In the case of Jumbo, communication in the value chain was found to be difficult and it was experiencing more and more peaks and dips in sales. The situation required a solution that reduced stocks and kept the shelves filled more optimally. Enter the Event Casting tool, which is used for forecasting consumer demand and calculating it for the entire As demand can be forecasted more accurately, delivery vehicles can be loaded more efficiently and used more effectively. “The supermarket chain does not need to hold large inventories of Mars products and can respond more quickly to the needs of consumers,” says Frans van den Boomen, Value Chain Manager at Mars Netherlands.

A problem that frequently arose in the information and supply chain prior to the new situation was lack of transparency due to inadequate communication between the sales and logistics departments. This had a negative impact on costs, inventory and product availability. “There was a great need for better communication among all disciplines involved,” says Karel de Jong, Supply Chain Director for Jumbo Supermarkets. “Information exchange is now more frequent and complete, and so the activities in the Mars-Jumbo chain run much more efficiently.”

EyeOn’s contribution to the turn-around for both companies was essentially twofold: 1) acting as a facilitator in bringing everything together, including all relevant information and supply-chain people, and 2) modeling the data to create a picture of how the respective activities would be affected by the changes made. EyeOn now weekly generates an overall demand forecast for the complete value chain. “We start by forecasting the end-consumer demand and calculate this with all sales and logistical inputs for all parts of the chain,” says André Vriens, partner at EyeOn. “The results and improvements are then tracked from the cash register to the factory using a joint scorecard for making quick adjustments when needed. In addition to better availability and optimizing stock levels, the solution has reduced supply-chain and other costs.”



Best in class processes. Third-party service providers often have valuable knowledge because they serve several companies within different industries. This allows best practice sharing over their customers, where the service provider guarantees that sensitive company information is handled correctly.

Optimizing inventory parameters at a Pharmaceutical company

Before a merger the client felt the need for a transparent insight and control of its inventory levels. In order to improve capacity & stock utilization; increase efficiency and effectiveness of supply planners in the central team improve customer service levels, The client, together with EyeOn conducted an inventory assessment to optimally balance safety stock levels and achieve the best possible service levels.

Following the assessment, EyeOn's forecast services is rebalancing safety stocks on a quarterly basis. Stock targets for approximately 2,200 SKU's in 14 stock locations across Europe for 5 divisions are optimized to reach the best possible service with available inventory. Adherence to strategic stock targets is carefully monitored separately to ensure top-level goals are achieved in the best possible way.

As part of the PDCA cycle, the client and EyeOn have made steps to further integrate and streamline the data collection process to ensure the quarterly run is worry-free and requires minimal effort from client's planners. EyeOn has trained the planners in inventory management allowing them to make the most value out of the rich quarterly analysis and optimization results.

EyeOn's ongoing forecast services provides reliable safety stock targets taking into account all relevant supply and demand characteristics. All important factors including supply uncertainty, replenishment lead times and demand volatility are fully accounted for in the safety stock targets. Almost 7% service level improvement will be achieved without raising stock levels.

Apart from safety stock proposals, the interactive analysis report provides a large number of valuable insights among which the decomposition of inventory into cycle stock, safety stock and overstock; the stock health (analysis of slow- and non-moving products); and the impact of supplier performance issues on safety stocks. The report enables planners to keep the planning system up-to-date and achieve the best possible customer service.

In summary, the benefits of outsourcing are various:

- Specialized knowledge
- Fast implementation and improvement
- Economies of scale
- Continuous improvement
- Investment in new technologies and skills
- Independent information broker
- Best in class processes

In-house statistical forecasting is preferred in those situations when key internal, often tacit knowledge is required to generate a forecast. This knowledge is not repeatable or transferrable to other parties. The more transactional or company-specific knowledge becomes, the more the internal organization is the preferred solution. For this reason forecast enrichment often remains within the company.

3 IMPLEMENTING THE ANALYTICS SERVICE: COSTS, SPEED AND RELIABILITY

The simplest, straightforward the implementation approach: the client delivers data and the service provider generates the forecast. But in reality three steps are required to implement a solid process:

1. Process set up
2. Initialization
3. Execution

PROCESS SET UP

In the initial phase of the project a clear process model has to be established. At what moment in time is what activity required to create a high quality forecast? An important element in this is the required IT design; which data flows are required, clear definitions have to be agreed between the service provider and its customer. An established service provider will deliver templates to facilitate the discussion and to realize a fast implementation project.



Figure 2: Process set-up.

Also the applications to be used are agreed upon. The service provider has its own tool set to generate the forecast which is transferred into the supply chain planning tool of its customer. In other cases it can be preferred that the service provider operates in the planning tool of its customer, like SAP DP or any other planning tool. Both models; a proprietary tool of the service provider or the planning tool of the customer have to be catered for.

INITIALIZATION

After or in parallel with the agreement on process, roles and responsibilities, tooling and reporting the process of initializing the statistical forecast or inventory parameters is the next logical step. What is required aggregation level? Store level per product in case of a promotion forecast? Product group per country for the baseline forecast? Regional for inventory parameters? For all possible aggregation levels the quality that can be achieved is evaluated to allow for a well-considered decision on the aggregation level.



Figure 3: Initialization.

EXECUTION

When all parameters are set the service is executed regularly; weekly or monthly depending on supply chain or market requirements. To continuously improve the service (forecast or inventory) it is of extreme importance to install a continuous improvement loop with participants of both the customer and service provider. Research has shown that the implementation of a continuous improvement cycle has a very strong impact on the accuracy of the forecast (Aertsen, 2013).

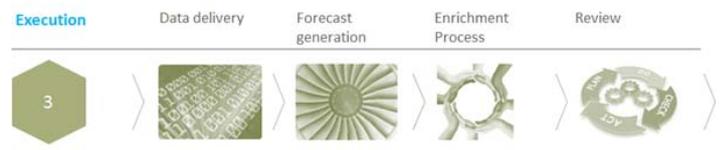


Figure 4: Execution.

In summary the activities to be performed during the outsourcing process are:

- Process set-up with agreement on the process, data flows, systems to be used and roles and responsibilities.
- Initialization to decide on aggregation level, segmentation, seasonality and analytical models.
- Regular execution of the agreed process with special attention to the continuous improvement process to assure an improved forecast at lower costs!



For almost 20 years EyeOn improved the bottom-line results of our customers by improving forecasting and planning capabilities and performance. Our service offering includes:

- Improvement projects (develop and implement tailored forecasting and planning solutions).
- Interim planners and analysts (temporary staff with assignment to improving processes and / or tools).
- Analytics outsourcing (deliver the best possible service).
- Academy (advance Forecasting and Planning specialists in their career by providing activities like training, knowledge networks, master classes and coaching).
- Data science and solutions (rapid implementation of ICT and data science solutions to support forecasting and planning processes).

For more information on the outsourcing of forecasting and inventory processes please contact Freek Aertsen: freek.aertsen@eyeon.nl.

ABOUT EYEON

In striving for success, large companies have to continuously struggle against growing internal complexity. We help our clients manage this complexity by designing, implementing and executing excellent planning processes as a discriminating factor for this success. In order to achieve this, we develop and share knowledge about top level planning and forecasting, with constantly demonstrable return on investment for our clients.

For more information: www.eyeon.nl.

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