Predictive analytics improves the accuracy of forecasted sales revenue

Meeting company sales targets and accurately forecasting sales revenue are critical to the success of Microsoft and our customers, and have a direct impact on the company's stock price. Some of the challenges that sales teams can face, which are areas that require continuous improvement, include:

- Having too many manual, tool-related activities in the end-to-end sales process, which takes time away from engaging with customers or closing a deal.
- Not having enough of the right insights to inform and more accurately predict the future.

Microsoft IT is driving efforts to make the jobs of our sellers, sales managers, and sales executives easier by improving the accuracy of sales forecasting. We're consolidating the tools that the sales team uses to more efficiently assess the *present,* and using predictive analytics models to more accurately predict the *future* for sales processes such as:

- Pipeline management
- Forecasting
- Quota attainment
- Annuity
- Consumption

Tool consolidation gives our sales professionals a more comprehensive, streamlined way of seeing end-to-end sales information. By feeding this aggregated information into predictive analytics models, sales teams get analytics-based insights and recommendations. These models are built on Azure Machine Learning and open-source technologies, and are continuously refined based on feedback from our sales teams.

When integrated with sales activities such as pipeline management and forecasting, the predictive analytics and machine learning behind these models benefit the sales team by:

- Helping our sellers and sales managers make data-driven decisions that enable the larger sales teams to be more efficient and effective.
- Enabling sellers, sales managers, and executives to spend more time on customer-facing activities, instead of on manual, tool-related activities.
- Giving an end-to-end view of the sales processes and desired outcomes.

Our work is part of a customized sales approach that we created—Microsoft Sales Experience (MSX)—to modernize our sales and marketing, with automated, role-based, actionable insights for sellers, sales managers, and executives.

Overview of our sales process

In a nutshell, our high-level sales process involves the following activities:

- **Sales opportunity management, which feeds into pipeline management**. Our sellers manage sales opportunities for their accounts. Based on best estimates, they record the date when they think these opportunities will close, calculate expected revenues, and commit to the sales they expect to bring in. This seller information feeds into a "committed/at risk" sales pipeline.

  Recently, we incorporated a predictive-analytics model in opportunity management in Microsoft Dynamics CRM Online. This model uses machine-learning algorithms and opportunity-scoring data for near real-time win/loss predictions of a sale. It helps sellers prioritize by showing whether an opportunity is hot, warm, or cold, and advises them about actions to take.

- **Pipeline management, which feeds into forecasting**. Because the pipeline contains information about the stages of each sales opportunity that a seller is working on—from the active opportunity to when the sale closes—efficiently managing the pipeline is crucial. Having complete, accurate information in the pipeline leads to more complete, accurate forecasting. At the beginning of the month, sales managers review the committed/at risk pipeline with their sellers, and then lock the pipeline. Sellers forecast what sales opportunities they're committing (and un-committing) to that month, and indicate what revenue is at risk, based on conversations with customers. Sales managers can adjust the total forecast up/down as needed, and they monitor the locked pipeline by looking at whether sellers are winning the opportunities that they committed to at the start of the month—the close rate. They determine the opportunities that were forecasted to close during that month, and compare them to what actually happened.

Business challenges

Within the sales process just described, sellers, sales managers, and executives can face numerous challenges, along with discrepancies between what they need and what they're actually experiencing.

Seller

From a seller perspective, pain points include:

- Sellers have many customers, and a lot of associated data. Lots of data slows down sales; bad data is even worse (garbage in, garbage out).
- Sellers need a solid pipeline to be able to accurately forecast the sales that they think they'll land.
- Sellers don't feel like they get to spend enough time engaging with customers.
- Sellers don't want to waste the time of customers and sales professionals by engaging at the wrong time.
- There's a proliferation of systems and tools, which cause a disconnected user experience, hamper productivity, and trigger inefficiencies. A typical end-to-end sales process could entail four customer searches, five apps, and 10 to 15 minutes lost for each opportunity. Then multiply this by the number of opportunities.
- To monitor the progress of consumption, sellers have to use additional tools such as Consumption Engagement Tracker (CET), Customer Insights, and CRM Online.
- They need consolidated tools that give relevant, accurate insights, for better and faster decision-making.
- From a personal/professional standpoint, not meeting or exceeding quotas causes stress.

Sales manager, sales executive, team at large

From the perspective of a sales manager, sales executive, and sales team as a whole, pain points include:

- Sales managers have to spend too much time gathering information to prepare for meetings with sellers. They might spend an hour or more preparing for a weekly 1:1 meeting with a seller, and gathering data from disparate systems and reports. Multiply the time spent by the number of employees. This scenario can't scale.
- Managers need all data in one location in near real-time. Our systems and reports had a typical time lag of over 24 hours. When preparing for a Friday meeting, for example, the sellers needed to make updates by Tuesday or Wednesday to ensure that the right data was in place.
- Managers spend so much time on scorecards that there's not enough time to coach sellers on closing the deals.
- Sellers, managers, and executives need to meet or exceed company sales targets.
- It can be hard to stay on track with key performance indicators (KPIs)—for example, close rate, qualified pipeline coverage, forecast accuracy.
- The team needs more accurate data to improve forecasting accuracy, and to make better decisions more quickly.
- The team needs to reduce human error, bias, subjective judgment for an objective view of what's happening.

Solutions to address these challenges

With these challenges in mind, we created data-driven solutions that help sellers, sales managers, sales executives, and the team at large with pipeline management, forecasting, quota attainment, annuity, and consumption. From a high-level perspective, we're not only creating an easier user experience to assess the present, but also using predictive-analytics models to more accurately forecast the future:

- **Aggregating user experiences**. As a starting point, we're helping our sales team to see information related to a sale within one context, without having to jump back and forth between tools. Tool consolidation isn't predictive analytics. A lot of insights are analytics that show what's happening right now. For example, we might be helping sales professionals view data to better understand how a seller is doing on a commitment or pipeline. However, complete, end-to-end data gives the needed input and context for the next level—using predictive analytics. Also, reducing complexity gives managers more time to spend on coaching sellers for success.

- **Using predictive analytics**. In addition to consolidated user experiences, when we add Azure Machine Learning and team feedback to our analytics models, we can "train" the models. For example, we can better predict how the future looks, and suggest what actions to take—such as how to improve chances of winning a particular deal. These models provide an objective outlook, improve accuracy over time, and feed into each other through the cycle of pipeline management, forecasting, quota attainment, and consumption. They help us predict future opportunities, close rates, sales dates, conference calls, cold calls, customer connections, and other sales information. Sellers have a more accurate pipeline to be able to more accurately forecast the sales they anticipate they will land. Also, we can get prescriptive information that gives actionable suggestions.

Let's get a closer look at how the solutions and models we've created help address the pain points of our sales teams.

Seller

Win probability/opportunity scoring. This analytics model helps with opportunity management and pipeline management, for example. It indicates the likelihood of a seller winning a sales opportunity and gives the seller suggestions about how to accelerate the movement of opportunities from one stage in the sales cycle to the next.

Seller and sales manager

Close rate. This uses historical data to provide an objective view, and to help more accurately (without emotional bias) predict when a particular opportunity will close. The sales manager can use the close-rate prediction to see what the seller has committed or uncommitted to. Whatever is committed to goes into the quarterly finance scorecards and projections that can affect stock price, so accuracy is critical for meeting or exceeding KPIs and company sales targets.

The sales manager can see what opportunities our machine-learning model forecasted would close versus what the seller said would close in a particular month. Did a given opportunity materialize? Did we earn revenue? If the model's forecast differs from the seller's forecast, the seller and manager can discuss why that opportunity didn't close (for example, factors such as budget or unavailability of the business decision maker). If these factors are signals that we can digitize, we can add them to enhance our model. When we can't digitize the signals, the sales manager can work with the seller to determine the best way to win the opportunity.

In this sense, we help both sellers and sales managers pinpoint where to focus their efforts. For example, the data from models helps identify and prioritize opportunities that are predicted to be high revenue and that have a likely chance of winning, along with revealing areas where the model predictions differ from the seller predictions.

Sales executive

Consumption outlook. This helps with consumption and forecasting at the subsidiary/segment level. It enables the sales executive to more easily and accurately predict consumption of services (such as Office 365 in Azure), without a proliferation of tools. Our sales executives currently use it to track monthly consumption targets across subsidiaries.

Team at large

Actions from insights. This gives sellers, sales managers, and sales executives better insights to make the right decisions. It enables sellers and other team members to see data that can make them more effective, and puts this data in one place. We pull data together from numerous sources in real-time, reducing the need for them to hunt around.

Examples of solutions in action

The following figure shows the high-level technology stack that we use for our predictive analytics sales solutions. We manage sales data with Azure Data Factory, store it in Azure SQL Database, analyze it with Azure Machine Learning, and present the data to users with Power BI and Cortana.
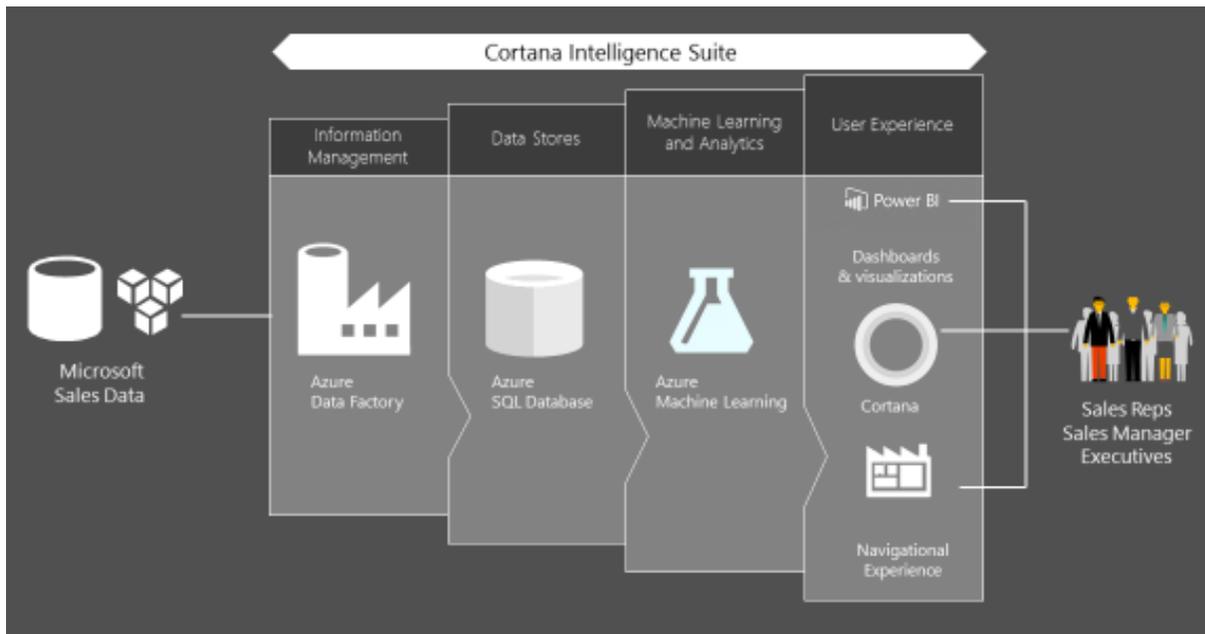
Figure 1. High-level technology stack for our predictive analytics sales solutions

The following figure shows ongoing work related to one of our core priorities—enabling sales managers to "coach for success"—which we're currently doing in France. The work is centered on forecasting, pipeline management, renewal/annuity, and customer success/consumption for sales projects that sellers have committed to. Some of the work stream and services that we use for this effort include Dynamics CRM Online Close Plans and Power BI dashboards (Pipeline Hygiene and Quota Coverage, Annuity Tracking, and Consumption).

Figure 2. Enabling sales managers to coach for success: current work happening in France

The following Power BI dashboards show analytics gained from aggregated experiences (based on seller judgment) and analytics insights (based on machine learning) for an account executive and account team unit (ATU) manager.
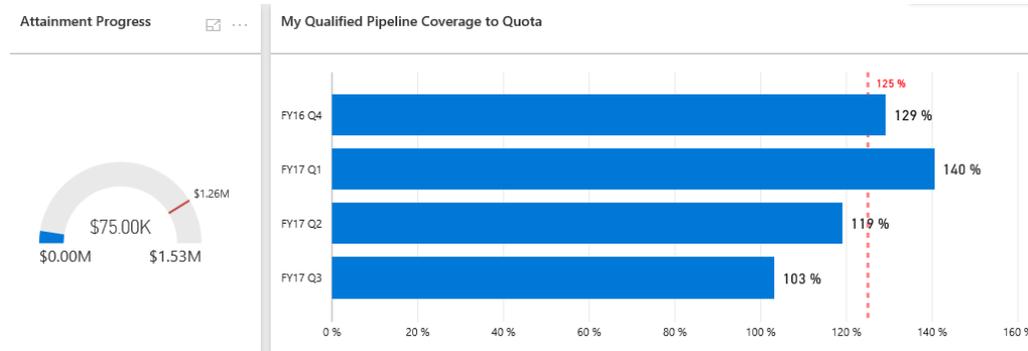

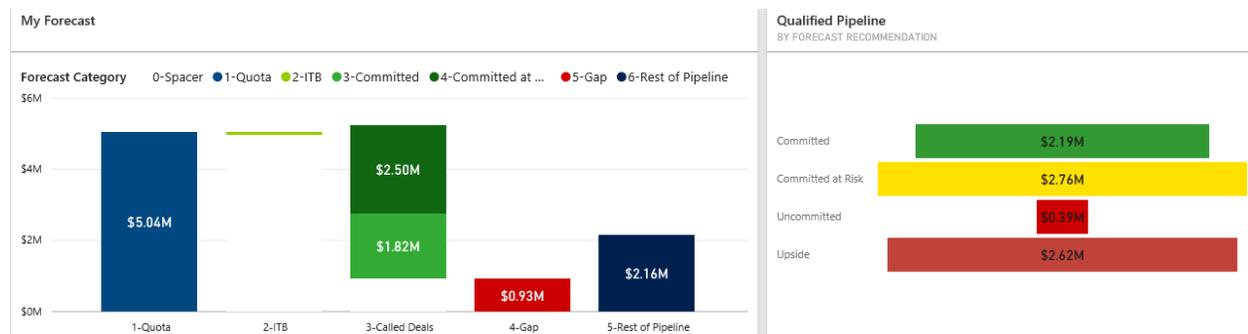*Figure 3. Qualified pipeline coverage to quota: example dashboard for an account executive*

Figure 4. Forecast and qualified pipeline coverage: example dashboard for an account executive
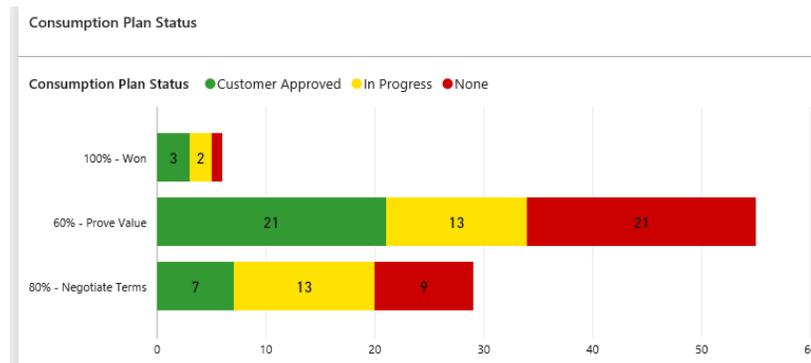

Figure 5. Consumption plan status: example dashboard for an account executive
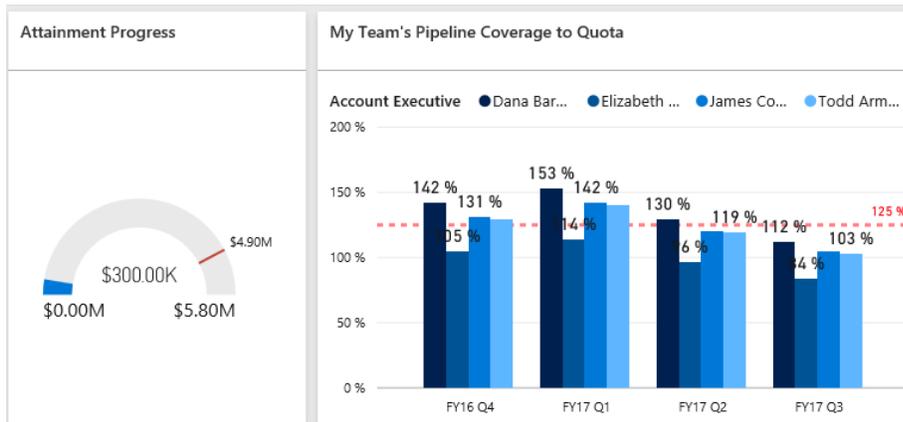
Figure 6. Team's pipeline coverage to quota: example dashboard for an ATU manager

Figure 7. Team forecast and opportunity management: example dashboard for an ATU manager

Benefits

Although we're in an early phase, the benefits from using these solutions internally are already evident. For example:

- The percentage of accuracy as Azure Machine Learning continues to improve the models is, in some cases, around 98 percent to 99.9 percent, with a goal of 99 percent accuracy or better. This contrasts with former predictions that were approximately 60 to 70 percent accurate. As a result, sales managers and executives have more accuracy for monthly KPIs like close rate, qualified pipeline coverage, and forecast accuracy.
- With global accounts, the accuracy of pipeline management has increased from 55 percent to 70 percent.
- Seller/manager productivity can increase, with less manual effort needed to gather and track information. Sellers can spend more time talking to customers about sales opportunities, and less time having to get information. Sales managers can spend less preparing for meetings with their sellers, and more time coaching.

The following is one example of the excited reactions from sellers in the field, as of March 2016:

*"We are extremely excited to see the improvements in the sales tools our sellers have available to them to improve sales productivity and customer satisfaction. This predictive indicator solution, using Azure Machine Learning and Power BI, is a game changer for our sales people at Microsoft." - **Michel Putnik**, Microsoft Sales Lead.*

Conclusion

Accurate sales forecasting is crucial to the success of our sales professionals and company. Aggregating user experiences and using predictive-analytics models are important parts of reaching our goal of high accuracy. Continuously improving models that use predictive analytics—that are trained with accurate, historical data, ongoing

feedback, pipeline data, and comparisons of what was forecast versus what happened—are keys to future success in predictive analytics and sales. We strive to make it easier to predict the future, with the past and present as our guide.

For more information

Using predictive analytics in Microsoft Dynamics CRM Online to improve sales

Using predictive analytics to improve financial forecasting

Using the Cortana Intelligence Suite for sales and marketing predictive analytics

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Microsoft.com/ITShowcase