NEW HORIZON COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NEWSLETTER

BUSINESS AND INFORMATION TECHNOLOGY

BIT / Q2 / DEC 2015

Trending Predictive Analytics and Machine Learning for Small Business

Most of the commonplace applications of artificial intelligence and machine learning seem to be technologies used *on* us, technology techniques that happen *to* us. "AI" isn't something that mom-and-pop shops do, and outside of fresh-out-of-Stanford startups, machine learning for small business is not a common association.

Even folks without a remote interest in artificial intelligence and machine learning understand that it's starting to permeate business processes in more tangible ways. The easy examples can be conjured by just about anyone walking the street: Siri; Amazon's recommendations; Pandora's playlists; Facebook's face-tagging and newsfeed; and Google's search results – these are the easy examples.

Since getting the lay of the land is what we do around here, I figured I'd dive into the reputable research in this domain and answer a two-art critical question:

"How are small businesses using machine learning, and what is driving or hindering small businesses from using machine learning?"

I place a focus on predictive analytics, as related technologies apply across industries and could almost be classified as approaching mainstream in 2017. Below is a collection of the best resources that I could dig up, along with my closing analysis of major lessons gleaned across sources; as always, I encourage you to draw your own conclusions.
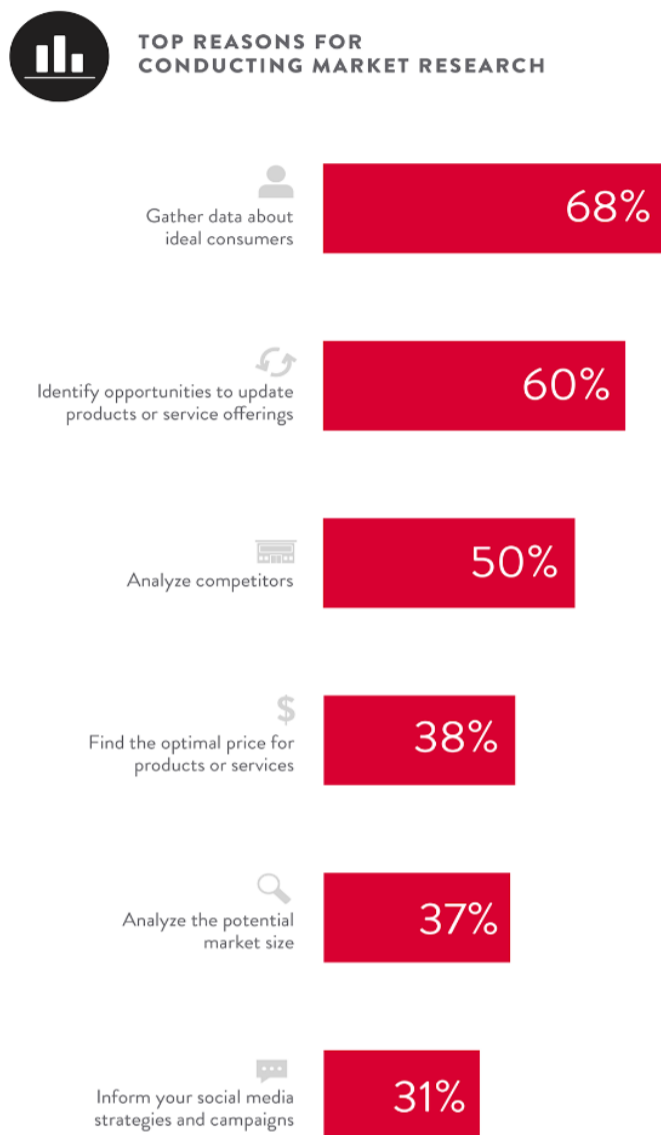
Neilsen Small Business Big Data Study

Neilsen is among the largest market research firms in the world. In this 2014 Neilsen study, the company interviewed thousands of small businesses in the US and found a mixed bag of results in terms of sentiment / assumptions about predictive analytics:

In looking at responses from a recent Nielsen poll of 2,000 small businesses in the U.S., 41 percent think conducting market research is too costly, and 42 percent say they just don't have the time. And even more surprisingly, 35 percent went so far as to say they've never even considered it.

The article mentions potential market forces that might be driving small business toward using machine learning applications, including the advent of much for tailored and personalized marketing and products from bigger players (made possible by their own big data investments and initiatives).

The infographic list in the article (which is worth a look and included below) identifies "gather data about ideal customers" as the top reason that this sample of small businesses conduct market research.

TOP REASONS FOR CONDUCTING MARKET RESEARCH

Gather data about ideal consumers	68%
Identify opportunities to update products or service offerings	60%
Analyze competitors	50%
Find the optimal price for products or services	38%
Analyze the potential market size	37%
Inform your social media strategies and campaigns	31%

IDC Worldwide Big Data and Analytics Predictions

International Data Corporation (IDC) ranks among the largest IT market research firms, and was founded in 1964. In their recent analytics predictions press release, IDC leads by stating the following:

Visual data discovery tools will be growing 2.5x faster than the rest of the BI market; investing in this enabler of end-user self service will become a requirement for all enterprises by 2018.

While the majority of IDC's clientele are not small businesses, the trend seems to coincide with a general trend towards accessibility of analytics tools. This trend seems to serve small businesses for two important reasons.

First, as IDC points out in their report, there is and will continue to be a large gap between demand and supply of data science talent (IDC predicts that the demand will exceed talent supply by 5x in the year 2018; in one of our more recent interviews with Hired's Data Science Lead, Parshu Kulkarni believes that supply will catch up with demand over the next few years).

Harvard Business Review has seemingly dubbed data science correctly as the "sexiest job of the 21st century", though some sources seem to suggest that SMBs are more likely to use consultancies, crowdsourcing, and cloud software, rather than hire teams of six-figure data scientists. It's possible that this shortage of talent could stave off an overwhelming data advantage of larger corporations with larger budgets for big data departments.

Second, many small businesses do not have the budget to allocate to high-paying data science positions, and will instead need to rely on easier to use tools for existing staff in marketing, IT, and management.

Another IDC trend that seems to bode well for machine learning for small business is the trend towards cloud-based solutions. IDC predicts that cloud-based big data and analytics solutions will grow three times faster than their on-premise counterparts, likely lightening the load on small business' IT staff and the company budget.

HBR's Take on Potentials for Predictive Analytics in Business

In June 2016, Harvard Business Review published an article based on real case studies and insights from experts at Microsoft Research and the University of Washington on where predictive analytics has the most potential for larger businesses. They quote statistics from a comprehensive SNS Telecom study on big data market predictions from 2016–2030 that predicts spending on big data storage and infrastructure to surpass $70 billion by 2020.

Although the article puts a focus on larger companies, it seems likely that advances in cloud-based technology are also opening doors to small businesses to use predictive analytics to improve ROI by predicting demand; improving pricing; and potentially predicting customer service or maintenance issues (although the latter may be more in the domain of larger enterprises).

Forrester Evaluates B2B Marketing Analytics

In 2015, Forrester conducted a study on trends in B2B marketing analytics, surveying 150 executives from businesses small and large (less than 1,000 to more than 20,000). About 19 percent of respondents were executives from small businesses (i.e. under 1,000 employees).

Across the board, predictive analytics appears to have a bright future in terms of real impact across business sizes and types. In comparing predictive marketers to traditional marketers gauging better customer lifetime value using marketing analytics, those companies already using predictive analytics were far more optimistic (an average of 23.5 percentage points higher) about specific impacts, from improving customer engagement to identifying new-net customer opportunities to identifying customer churn risk.

The following were the three most popular uses by companies using predictive analytics, at the time of the study:

1. Increasing volume, velocity and value of leads, from sales to customer
2. Using A/B testing or other behavioral criteria to optimize precise targeting
3. Implementing targeted, cross-channel marketing to convert leads to

sales

According to Forrester's analysis, predictive marketers are also (compared to traditional marketers) more likely to come out on top as follows:

○ Higher than average revenue growth

○ Command leadership position across products and services

○ Exceed company goals in terms of value contribution

FIGURE 7
Modern Marketing Is Prevalent At Organizations Using Predictive Marketing Analytics

"Please indicate the extent to which the following statements describe your marketing organization's current processes."
(Percentage who indicated it mostly or completely describes their marketing organization)

■ Predictive Marketers ■ Retrospective Marketers

Statement	Predictive	Retrospective
One of marketing's primary responsibilities is to increase the volume, velocity, and value of leads from early stage through sales qualified	80%	58%
We use A/B testing or behavioral triggers to optimize customer/prospect segmentation and targeting precisely	74%	36%
We nurture prospects with regular, highly targeted, cross-channel communications to convert leads into sales	73%	50%
We integrate customer data and contextual data across campaign channels to deliver consistent messaging	71%	42%
Insights from marketing analytics drive our go-to-market strategies	71%	42%
We've invested strategically in a data science team to enable our business to become data-driven	70%	35%
We use advanced analytics and marketing automation to qualify and prioritize leads for our sales organization	69%	51%

Predictive Analytics Providers for Small Businesses

The last two years alone have seen a significant uptick in data science boutique consultancies and predictive analytics platforms and applications.

Below we've listed some of the most popular and reputable solutions that apply to the small business environment. Note that we've linked directly to the small business landing page so that you can read the company's copy in their own words (revealing some of the apparent value propositions that predictive analytics companies are using to attract small business clientele):

○ IBM Watson – Easily the best known player in the predictive analytics field (due in large part to the press garnered through its Jeopardy! victory, as well as robust advertising), IBM is positioning itself to help small businesses. Here's an interesting YouTube video featuring an IBM marketing message geared specifically to small businesses who lack data science talent

○ SAS – Another giant of the analytics world (though not nearly the size of IBM), SAS now offers an option for SMBs

○ Canopy Labs – "…customer analytics platform, uses customer behavior, sales trends and predictive behavioral models to extract valuable information for future marketing campaigns…"

○ Qualtrics – Touting itself as "the world's leading enterprise survey platform," Qualtrics aims to go beyond Google Forms and SurveyMonkey in drawing deep insight from a wide variety of survey and qualitative tools

○ InsightSquared – Focuses on predictive analytics for sales, including pipeline management, sales forecasting, SaaS metrics, and more

By no means is this an exhaustive list, but it's a good start in exploring established and up-and-coming providers of predictive analytics and machine learning for small business.

Conclusion

Tools like IBM Watson are aiming to improve the accessibility of machine learning solutions, but most still require quite a bespoke setup period and unique skill set—both of which might fare in favor of large companies with existing data science teams.

That being said, an increasing number of younger companies and startups are leveraging the power of data science. The massive shortage for machine learning talent may give smaller companies a good chance at catching up to bigger players, and may give machine learning / analytics providers a hungry market of "non-data-scientist" clientele eager to expand the technology's potential for their smaller company.

Notes: For a good list of potential machine learning use cases for smaller businesses, Forbes' article on predictive analytics is a nice start. For overarching industry trends and predictions, we recommend founders and CXOs read Gartner's "Trends and Predictions" blog. This well-referenced article in PCMag provides an interesting set of coming analytics trends for 2016.

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