Business Success Through Pervasive Analytics
How Top Business Performers Are Using BI Technologies And Analytics To Become Data-Driven And Agile
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Executive Summary

The pace of business has increased in lockstep with how quickly goods and services are delivered to the customer — we’ve gone from a month-long journey by an ocean liner, to days or weeks by a freight train, to overnight and even same-day air delivery. Modern consumers have the luxury of many options and are no longer required to wait. They are able to proactively reach out in the digital world to make their demands known and determine for themselves what company best meets their needs. They vote with their dollars and are not afraid to trade in loyalty for a better deal or feature.

We are fully immersed in the age of the customer, where just being customer-centric is no longer enough. Having comprehensive, timely, and actionable customer insights gives you a competitive edge and is a vital part of the overall business strategy. In addition to all the data generated by internal processes like ERP, customers and prospects also generate a massive amount of data about what they value, how they make decisions, and what they think of your company. This data is available for the harvesting by data-driven and agile businesses. Business agility is the engine that will move your company forward in the age of the customer, and modern, pervasive analytics are the fuel required to make agility run.

Over the past two years, Forrester has noticed a very clear difference in the adoption and use of data between companies that have experienced high rates of revenue growth and are able to adapt quickly to changing circumstances and those that have neither grown nor kept up.

In January 2015, HP commissioned Forrester Consulting to explore the next stage of analytics, moving beyond earlier-generation business intelligence (BI) to advanced, pervasive, and agile analytics. Then to further explore this trend, Forrester developed a hypothesis that tested the assertion that businesses with more modern, agile, data-driven, and mature BI analytics practices experience increased business success as a result.

In conducting in-depth surveys with 166 global IT and business managers and above with responsibility for business intelligence, analytics, and big data within their organization, Forrester found a strong correlation between agile companies that saw positive revenue growth year over year and their usage of analytics in a pervasive manner within their organizations.

Forrester’s study yielded three key findings:

- **Data-driven and agile businesses place more importance on a variety of data sources.** Casting a wider net to encompass a variety of data sources leads to more informed decision-making.

- **Data-driven and agile businesses are more effective— they are quick to adapt by monitoring and adjusting BI platforms and applications with great frequency.** Agile growth goes hand in hand with continuous monitoring of customer and market conditions. Don’t make decisions on information that has grown dusty when customers have already moved on. Make insights truly actionable by operationalizing them based on real-time information as it becomes available from point-of-sale (POS) devices, social media, and other rapidly changing information sources.

- **CIOs can empower the business to better leverage BI by making agile analytics pervasive.** Make sure that IT is not a bottleneck through which everyone needs to pass in order to access or use analytics. Implement tools that are intuitive, easy to use, and, most importantly, allow users to generate questions and answers for themselves through self-service. Make analytics pervasive by delivering predictive analytics at every point of customer engagement to drive new levels of innovation and business performance.

Customers and potential customers generate a massive amount of data about what they value, how they make decisions, and what they think of your company. This data is available for the harvesting by data-driven and agile businesses.
Organizations Understand Age Of The Customer Priorities, But Not Everyone Follows Through

As with every pivotal era, the age of the customer has both crippled companies that could not respond to the paradigm shift, as well as created opportunities for new businesses that were born out of customer obsession to meet new, previously unanswered needs. Indeed, being customer-centric to achieve growth and market share is not an option in the 21st century — it is a must. In this modern, perpetually connected world, many consumers know that they are leaving a digital trail of breadcrumbs that companies can use to better tailor their product offerings, customer service, and marketing. Your customers and prospects expect you to adapt to them.

One key way companies seek to succeed in the age of the customer is to modernize and expand their business intelligence analytics to be pervasive instead of point solutions. Pervasive analytics around what customers expect and how they behave allow businesses to better adapt to constantly changing circumstances. Business intelligence is shifting from the perspective of being just another back-office process or cost center to being pervasive throughout the organization. Companies are not just using standalone analytical apps and tools; they are using analytics embedded in all enterprise apps and processes. Pervasive analytics also cultivate continuous use of data inputs in everyday decision-making, requiring the business to be nimble and quick. As a result, decision-makers responsible for business intelligence are now key stakeholders in how their organizations win, serve, and retain customers. The extent to which they understand and are prepared to face the challenge presented by the age of the customer more broadly reflects their organization’s viewpoint and capabilities as well. In this study, Forrester found that:

Organizations prioritize customer-facing initiatives first. When presented with traditional IT and business technology (BT) priorities, BI decision-makers clearly confirmed that BT priorities focused on winning, serving, and retaining customers are at the top of their firm’s list, while noncustomer-facing, back-office cost cutting shifted to the bottom (see Figure 1). More than half are focused on improving their products and services, closely followed by the 49% who are looking to better leverage big data and analytics to help improve business decisions.

Technology management within organizations — thanks in part to the attention of C-level business execs embracing the BT agenda — is truly shifting from being a function viewed as overhead or behind the scenes to a key enabler of business growth.¹

Creating a comprehensive strategy for digital channels and technologies is a firmwide priority for 40% of companies. Increasingly, customers’ interactions with a brand occur via digital channels such as social, mobile, or the Web. On the plus side, this opens up a multitude of opportunities to track and analyze conversion, marketing effectiveness, and customer sentiment. On the flip side, however, it also serves as a potential reason for customers to abandon the brand if it

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does not meet their expectations or lacks a consistent strategy.

Firms acknowledge, however, that prioritizing age of the customer initiatives has not been a simple endeavor. BI and analytics decision-makers in our study find that:

› **Addressing rising customer expectations is a top challenge.** It is not surprising that, given the fluid nature of rapidly evolving technology and technically savvy customers, two out of three companies are finding their mission to keep up with the high pace very or extremely challenging (see Figure 2).

› **Considerable challenge exists in leveraging big data for business decisions.** Making data-driven business decisions is key in winning, serving, and retaining customers. Nevertheless, two-thirds of BI and analytics decision-makers acknowledge that this is very or extremely challenging for their firm.

| “How challenging are these priorities for your firm?” |  
| --- | --- | --- | 
| (Rate on a 1 to 5 scale) | Extremely challenging | Very challenging (4) | Total |
| Addressing rising customer expectations (n = 65) | 34% | 34% | 68% |
| Better leveraging big data and analytics in business decision-making (n = 82) | 17% | 50% | 67% |
| Improving our products/services (n = 88) | 14% | 45% | 59% |
| Creating a comprehensive strategy for addressing digital technologies like mobile, social, and smart products (n = 67) | 16% | 40% | 56% |

Base: BI and analytics decision-makers who rated each priority in the top three

Source: A commissioned study conducted by Forrester Consulting on behalf of HP, February 2015
Business Agility Is Key To Succeeding In The Age Of The Customer

As our study shows, businesses prioritize the challenges associated with the age of the customer. Indeed, staying atop a rapid-paced, customer-driven landscape is a difficult endeavor for any organization. Succeeding in this landscape requires an overall business framework where reacting to fast-changing business needs is paramount.

Forrester identifies this framework as business agility and believes it is one of the fundamentals to succeeding in the age of the customer. Reacting to change in a top-down management structure or forcing IT to be the gating factor in big data decisions is not an option anymore — agile businesses succeed because they empower and enable business users to take on these decisions themselves. While data democratization may present its own unique challenges, it also means that more data is available to more people, allowing for greater overall visibility and transparency of how specific actions influence business outcomes. The results of this study reflect this reality, with our findings indicating that:

- Data-driven and agile businesses both prioritize and utilize more data types more than non-agile businesses. You can only make data-driven business decisions for which you have data to evaluate. Organizations that use analytics pervasively throughout the enterprise realize this and cast a wide net to get as complete a view as possible upon which to base their strategic decisions. Transactional data (internally and externally captured) and unstructured data that resides internally are among the most important and most often utilized data types; however, that is far from the whole picture (see Figure 3). The ultimate goal is to inch closer to a constantly moving target of a complete “customer 360” view. This is considered one of the most important elements to a company’s strategy in the age of the customer and is further enhanced and complicated by the emergence of new data sources such as the Internet of Things (IoT), social media, and dark enterprise data, which is data that exists in operational data repositories but is not being used for information, decisions, and insights.

### FIGURE 3
Agile And Growing Firms Prioritize And Utilize Multiple Data Types

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Agile Business %</th>
<th>All Others %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer data (360-degree view of customers)</td>
<td>70%</td>
<td>68%</td>
</tr>
<tr>
<td>External transactional data (from partners, suppliers, distributors)</td>
<td>78%</td>
<td>50%</td>
</tr>
<tr>
<td>Transactional data from ERP, CRM, and other operational applications</td>
<td>77%</td>
<td>59%</td>
</tr>
<tr>
<td>Unstructured internal data (email, text files, documents, form data, logs)</td>
<td>81%</td>
<td>59%</td>
</tr>
<tr>
<td>Internet of Things (IoT) and or device/sensor data</td>
<td>72%</td>
<td>50%</td>
</tr>
<tr>
<td>Consumer mobile device data (wearables, CDRs, geolocation)</td>
<td>64%</td>
<td>49%</td>
</tr>
<tr>
<td>Unstructured external data (including social media, blogs, web pages)</td>
<td>64%</td>
<td>31%</td>
</tr>
<tr>
<td>Unstructured data beyond text such as audio and video</td>
<td>53%</td>
<td>28%</td>
</tr>
</tbody>
</table>

“*How important are the following data types to your firm’s overall business strategy?”
“*To what extent does your firm utilize the following data types?”

(Rate on a 1 to 5 scale)

<table>
<thead>
<tr>
<th>Rating</th>
<th>Extremely/very important</th>
<th>Completely/extensively utilize</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Base: BI and analytics decision-makers

Source: A commissioned study conducted by Forrester Consulting on behalf of HP, February 2015
Agility benefits the bottom line. The ability to react quickly in the age of the customer is more than a mission statement — it is an initiative that has real impacts on businesses. BI and analytics decision-makers who reported that their businesses are agile are more likely to state that their firms are seeing year-over-year growth (86%) than non-agile firms (67%) (see Figure 4).

Pervasive Agile Analytics Are Key In Supporting Business Agility

A firm can be truly agile only if it empowers business users on all fronts — culturally, organizationally, and technologically. Self-service BI and analytics empower business users technologically, enabling them to leverage big data and analytics on their own and make the quick decisions necessary in the age of the customer.

Agile growth businesses operate and treat BI very differently than their less nimble peers and competitors. They all face the same customer-focused priorities and challenges; however, how they address the challenges is what counts. Data-driven and agile businesses are better at operationalizing insights by incorporating modern agile analytics pervasively in all enterprise applications and processes. As a result, they often achieve faster revenue growth.

BI is maturing at a rapid rate, advancing from basic operational and historical reporting to analysis and finally to advanced and predictive analytics. This advancement has the potential to allow organizations to become more responsive and reactive as a whole, moving their data and information from being siloed and untrusted to pervasive and integrated. The results of our study reflected this progression and showed that:

› Companies that are agile and growing reported having successful, mature, and agile BI with higher rates of self-service capabilities than those companies that are not. Pervasive agile analytics does not occur in the business just because certain tools or software is purchased. Individuals must be enabled and encouraged to actually use the data analytics available to them to collaborate with others and integrate the analytics into daily decision-making. Agile growth companies have 35% more of their enterprise BI content produced by business users via self-service compared with their non-agile counterparts (see Figure 5). Pervasive exposure to analytics allows it to be central to the business operations, not just a part of top-down management or “stuck” in IT.

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Ease of use factors in significantly for agile growth companies. Agile and faster-growing companies use BI and analytics tools and applications that are “extremely” or “very” intuitive at a rate of almost twice that of everyone else (see Figure 6). Easy-to-use BI self-services not only allow business users to directly access data analytics without waiting weeks (or even months) for an IT department to turn around a request, but they also allow the technology management organization to monitor the environment and selectively operationalize the business user-generated BI and analytics content and insights.

Agile and growing businesses implement more BI technologies and monitor and adjust them with greater frequency. By its sheer definition, to be agile implies continuously monitoring and adjusting, so it should be no surprise that agile (and profitable) companies not only invest in more types of BI and analytics products but also constantly evaluate their effectiveness. Across the board by a variety of metrics — ROI, effectiveness, utilization, and efficiency — agile growth enterprises are far and away more “hands-on” compared with everyone else (see Figure 7).

FIGURE 6
Decision-Makers At Agile And Growing Firms Are Nearly Twice As Likely To Report Their BI Analytics Tools Are Easy And Intuitive To Use

“How intuitive and easy to use are your BI/analytics tools and applications?”
(Very or extremely intuitive/easy on a 5-point scale)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Agile business and saw increased growth YoY (n = 98)</th>
<th>All others (n = 68)</th>
</tr>
</thead>
<tbody>
<tr>
<td>We have a well-established methodology for measuring the ROI of BI and creating BI business cases with tangible business benefits</td>
<td>82%</td>
<td>49%</td>
</tr>
<tr>
<td>We constantly measure and analyze our BI effectiveness, such as the turnaround time for BI requests and the number of BI requests that are being self-serviced by end users, and proactively take appropriate actions</td>
<td>82%</td>
<td>50%</td>
</tr>
<tr>
<td>We can monitor the usage, efficiency, and effectiveness of all BI tools in our enterprise, including spreadsheets and other homegrown BI applications</td>
<td>79%</td>
<td>53%</td>
</tr>
</tbody>
</table>

Base: BI and analytics decision-makers
Source: A commissioned study conducted by Forrester Consulting on behalf of HP, February 2015

FIGURE 7
Agile And Growing Firms Are Much More Likely To Have Established Measurement And Adjustment Strategies In Place

“Please rate your level of agreement for each of the statements below regarding the maturity of your organization’s measurement and adjustment of BI.”
(Agree or strongly agree on a 5-point scale)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Agile business and saw increased growth YoY (n = 98)</th>
<th>All others (n = 68)</th>
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Base: BI and analytics decision-makers
Source: A commissioned study conducted by Forrester Consulting on behalf of HP, February 2015
Agile and faster-growth businesses reported advanced maturity, ease of use, and advanced measurement of BI and analytics for one simple reason — they have taken the steps to ensure an effective BI environment can thrive at their firms. They are specifically:

- **Implementing all necessary BI and analytics technologies.** Agile, faster-growing businesses do not rest on their laurels. Pervasive agile analytics tools and capabilities are constantly evolving to meet growing needs. The BI and analytics decision-makers we surveyed were implementing and expanding implementation of analytic technologies at a much higher rate than everyone else (see Figure 8). What is telling, however, is the proportion of decision-makers from non-agile, slower-growing companies who had no plans whatsoever to implement data exploration, big data, embedded analytics, predictive analytics, hybrid data management, and open source data management and analytics platforms. Non-agile, slower-growing companies fail to deploy and plan to implement these technologies two to four times more often.

- **Using and trusting the data.** In order to help their organization be a data-driven and agile enterprise, people must trust the data. It does no good to have access to pervasive agile analytics if they only serve as slideware while executives continue to make decisions based on their "gut" or the status quo. Agile, faster-growing businesses *completely* trust the data quality in their data warehouses and data marts at a rate of two times more than all others (see Figure 9).
Key Recommendations

Just as supply chains were refined and tightened as commerce adjusted from rail to air transport, businesses must continue modernizing their BI analytics capabilities or risk being left in the dust. Competition and technological evolution dictate that the only constant is change — therefore, pervasive analytics cannot be viewed so much as a series of sprints, but as a marathon where capabilities are built continuously over time without stopping in between. This study, along with insights from other Forrester research, finds a strong correlation between deploying modern, agile, pervasive BI analytics and the overall improvement in business performance and agility. With these insights in mind, decision-makers who wish to succeed in ensuring their organizations are data-driven and agile enough to succeed in the age of the customer should:

› **Start small; think big.** Decision-makers may be tempted toward making large-scale investments in pervasive BI and analytics to attempt to stay ahead in the age of the customer. They should know, however, that making massive shifts too quickly never works and is often quite costly in ways not anticipated. Pervasive BI is an evolution — not a revolution — that needs to be supported so that it grows to be part of the company DNA. Organizations would be best served by building an agile and pervasive analytics road map while taking incremental steps toward implementation — based on their specific requirements, environment, and culture — and learning quickly from any mistakes made.

› **Develop prototypes and proofs of value over long software development life cycles (SDLCs).** In the age of the customer, the luxury of a long SDLC to collect requirements, design, test, and deploy are gone. By the time a traditionally long cycle is complete, your customers will have moved on to more agile competitors. Don't put all your eggs in one basket trying to design and engineer the equivalent of a coast-to-coast railroad, only to wake up and find out all of your customers are now booking overnight flights to get to their destination. Agile businesses will emphasize rapid prototyping and delivery of working proof of business value solutions — not with screen mockups, but with agile analytics tools that can later be easily operationalized and productionalized.

› **Reach out to professionals for help instead of going at it alone.** Organizations would be ill-served by attempting to reinvent the wheel themselves — top software vendors and consulting companies have learned best practices after working with thousands of clients. Use their experience to help coach your organization to be better at the pervasive BI analytics marathon. They have also already developed the mature, robust, stable, and scalable products that are enabling businesses to become more data-driven and agile. Seeking their advice and exploring their product set should be one of the key steps in developing a data-driven organization road map.
Appendix A: Methodology

In this study, Forrester conducted an online survey of 166 business intelligence and analytics decision-makers who were managers or higher in organizations of 500 or more employees in the US, the UK, Germany, Brazil, and Australia. Questions provided to the participants asked about the scope, level of maturity, and level of success of BI and analytics technologies in their organization. The study began in January 2015 and was completed in February 2015.

Appendix B: Endnotes
