

# Real-time Business

Playing to win in the new global marketplace



A white paper produced in collaboration with SAP

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## Preface

This white paper, produced in collaboration with SAP, provides insight into executive perception of real-time business operations. To ensure the rigor of our research, we relied on a blend of quantitative and qualitative analysis, including:

- A global survey of 525 c-suite level executives in the consumer products, high-tech, oil and gas, and retailing industries.
- A series of in-depth personal interviews with senior executives in the aforementioned industries who are involved in their firm's efforts to move operations into real time.

We thank all the executives who took part in both the survey and the qualitative research.

Oxford Economics carried out the research. The results of the study are the sole responsibility of Oxford Economics and do not necessarily represent the views of the sponsor.

**May 2011**



**W**ith every passing day, the pace of business is accelerating. Tectonic shifts in the global economy combined with rapid technology adoption are forcing business executives to contend with a new global marketplace fraught with uncertainty and constant change. To be successful under these new market dynamics, firms must adjust operational processes, corporate strategies and business models at lightning speed—allowing them to leverage intelligence instantly and take immediate action. At the same time, they must make sure their decisions are informed by proper data and analysis.

What are executive perceptions and opinions about real-time operations? To explore these issues, Oxford Economics undertook a global survey in March 2011 of 525 executives. The survey focused on large and medium-sized business units in four sectors of the economy—consumer products, high-tech, oil and gas, and retailing. The data revealed some interesting findings:

- **Executives realize they need to take their businesses into real time.** In fact, 30% of firms already derive considerable benefit from real-time business, and nearly two-thirds of companies yet to implement real-time business techniques plan to do so over the next five years. With at least one-fifth of companies in every sector or region using real-time business techniques, its value to businesses of all types is growing. For the majority of the businesses that are behind these leaders, the imperative is to make up lost ground.
- **There are some surprising leaders—and laggards.** The majority of oil and gas firms have implemented a real-time business approach, particularly as part of their production processes and financial and business risk management strategies. This indicates the importance of real-time operations particularly for complex, capital-intensive firms. Consumer product and retailing firms, meanwhile, lag in terms of implementation. Retailers in particular are behind in the implementation of real-time operations for customer experience and supply-chain management, two critical areas for retailing success. Retailers also report their efforts around real-time business to be less effective than firms in other industries.

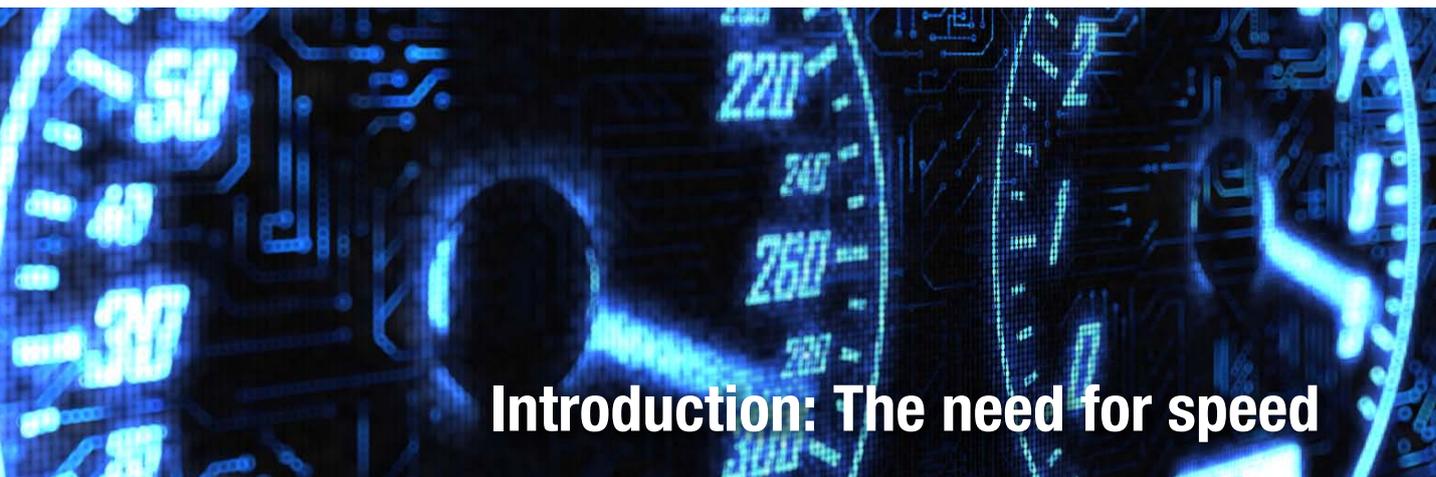
- **Early adopters have seen substantial results.** The main strategic goals of executives choosing to implement real-time business techniques are to increase market share and enhance service and quality advantages. Operationally, real-time business is proving especially effective in delivering improvements in customer experience, production processes and supply-chain management. But perhaps most striking is the tangible return on investment: Those able to estimate put revenues gains at over 20%, and cost reduction at nearly 20%. In fact, future gains are expected to exceed earlier ones, with revenue increases of 28%.
- **But challenges are significant, in a number of areas.** Respondents cite a lack of technology as a main obstacle, as well as suppliers' unfamiliarity with real-time systems and a lack of internal expertise. Indeed, the move to real-time operations can be extremely complex, and will require careful planning and strategy to ensure success.
- **Those planning to roll out real-time systems have different strategies than early adopters.** They will put particular focus on financial and business risk, production processes and supply-chain management. Meanwhile, almost all early adopters plan to carry on investing, though they will shift their focus from sales and marketing towards product design and innovation, while continuing to focus on customer experience.

### Survey demographics

This study is based in part on results from a survey of 525 businesses worldwide, carried out in March 2011. The survey focused on large and medium-sized business units in four sectors of the economy—consumer products, high-tech, oil and gas, and retailing. The study included 13 countries grouped into four regions: Asia-Pacific, Europe, North America and Latin America. Only business units with an annual turnover in excess of US\$250 million were included, except in Latin America, where the cut off was US\$150 million. Those completing the questionnaire held senior job roles, including c-level executives, managing directors and vice presidents across a range of business functions.

### What does it mean to be a “real-time business”?

For purposes of this study, “real-time business” refers to processes that allow companies to conduct a range of business activities instantaneously.



## Introduction: The need for speed

**W**e live in a world that increasingly communicates and operates in real time. Over the past decade, the spread of social media and mobile phone use, combined with the explosion of accessible information and increasing interconnectedness of global markets and cultures, has dramatically sped the pace of our daily lives. The evidence is clear in the dissemination of international news: For example, when US Airways Flight 1549 emergency-landed on New York’s Hudson River after striking a flock of geese during takeoff in January 2009, it took only three minutes for the first “tweet” to alert the world.

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*“The world is changing very fast. Big will not beat small anymore. It will be the fast beating the slow.”*

*Rupert Murdoch*

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The pace of business, too, has dramatically accelerated. Customers and clients expect their queries and problems to be addressed immediately. In an uncertain global market where there are many more competitors and constant change, executives know that success depends on the ability to take fast action and make rapid decisions. Indeed, in the business world today, speed is not only expected, but required. As Rupert Murdoch noted: “The world is changing very fast. Big will not beat small anymore. It will be the fast beating the slow.”

But are companies prepared to take their firms into real time? Our survey of global business executives in oil and gas, retail, consumer goods and high tech reveals some mixed answers. While nearly all respondents agree that doing so is critical, only one-third of businesses have already implemented real-time business applications in some way (though 65% of those who have not yet implemented real-time systems expect to do so within five years). And the experience is far from uniform. For example, companies that focus on business-to-business operations (35%), are more likely to have moved to real-time than those in the business-to-consumer space (16%). And almost half of the very large businesses surveyed—those with annual revenues in excess of US\$25 billion—have introduced real-time business, significantly more than those with a turnover of less than US\$1 billion (22%) or between US\$1 billion and US\$10 billion (28%).

Adopting a real-time business approach can provide companies with myriad benefits at both the operational and management levels:

- At an **operational level**: by speeding up data capture and simplifying processes, executives can reduce inventories, minimize business risks, lower operational costs, accelerate speed to market, foster productivity and better meet customer needs.
- At the **management level**, by accelerating decision-making and planning, executives can exploit market opportunities faster, identify competitive threats sooner, cope with market shifts more quickly and transform stagnating businesses.

With the internet transforming business, mobility moving to center stage and on-demand computing becoming the norm, global firms are on the threshold of an era that will radically transform operations. Companies need to consider how to adopt real-time into the fabric of their firms, or risk falling behind their competitors.

### What does it mean to be a “real-time business”?

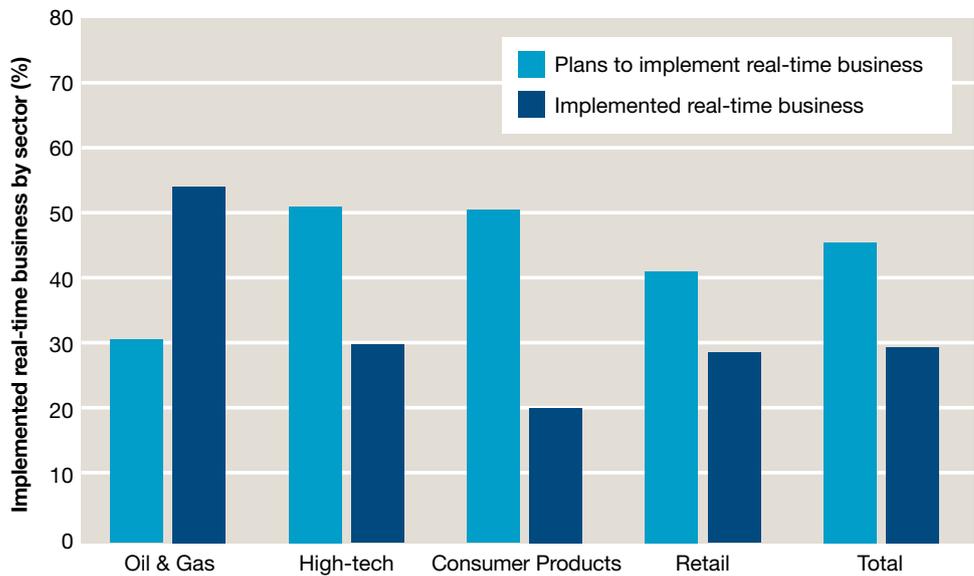
For purposes of this study, “real-time business” refers to processes that allow companies to conduct a range of business activities instantaneously. The activities that make up real-time business can, therefore, incorporate all aspects of business, including gathering and acting on business intelligence, developing promotional and marketing tactics, controlling and adjusting production processes, managing inventory, identifying and managing business risks, closing and fulfilling sales, and meeting customer needs.

Real-time operations depend on in-memory analytics, which takes a different approach than traditional business intelligence systems. Rather than storing information on various external disks and caching bits of data in a computer’s random access memory (RAM), real-time intelligence puts the data directly into RAM. Advancements in computing power and storage have made it possible to store vastly more amounts of data in RAM than ever before, and allows for extremely fast query responses.



**W**hich companies are ahead of the curve in adopting real-time operations? The answers are surprising. According to respondents in the four industries surveyed, oil and gas firms (54%) take the lead, particularly in production processes and assessing financial and business risk. In sharp contrast, only 20% of consumer products and 29% of retailers have moved toward real-time operations.

**Figure 1: Oil and gas leads in real-time**



In the oil and gas industry, real-time data is critical to monitor drilling sites. Shell, for example, maintains six real-time operation sites around the world, in Houston; New Orleans, La.; Miri, Malaysia; Muscat, Oman; Port Harcourt, Nigeria; and Aberdeen, UK. These centers provide around-the-clock monitoring of the firm’s assets and operations.

Considering some of the strides of the world’s most formidable retailers and consumer products companies in championing real-time operations (Walmart and P&G, to name but a few)—and the clear opportunities to improve critical areas of the business such as supply chain management and inventory control, it seems particularly surprising that these sectors would rate so low on our survey.

But Sunil Verma, Chief Information Officer and Senior Vice President of US-based clothing retailer The Children’s Place, is not surprised. “In terms of technology, the retail industry is a follower,” he says. “It’s an old industry which is changing quickly because of the internet. We are quickly understanding that there is a competitive advantage in doing real-time analytics and the idea that we need to infuse every customer touch point with some element of personalization. The minute you start to internalize that, the need for real-time computing becomes more urgent.”

According to Ranjay Gulati, the Jaime and Josefina Chua Tiampo professor of business administration at Harvard Business School, the reasons may center on a lack of understanding of its benefits. “The retail sector is pretty fast-moving—look at how quickly fads and fashions change. Yet retailers don’t have that kind of cycle speed on being able to look at the data and run analytics on it. Even worse, the people who have the data and the people who need the data are not sitting in the same place—in fact, the people who need the information might not even know it exists. So there is a huge disconnect.”

Still, the fact that so many respondents say their firms are planning to move in this direction points to an understanding that this disconnect exists—an encouraging step. “I don’t think we’re at the tipping point yet,” says Professor Gulati. “It’s still early stages. But we are approaching a point where business competition is becoming so strong that it will eventually force companies to find a way to get it done.”

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*For “early implementers” – firms that have already adopted real-time business methods, use is pervasive across the enterprise.*

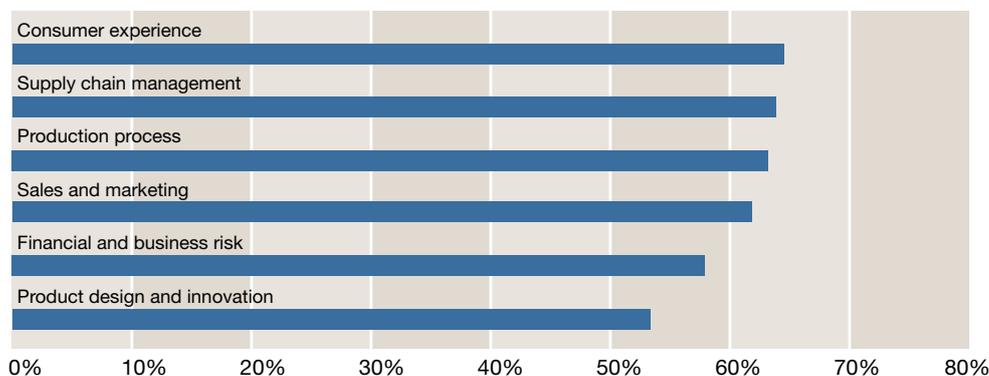
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### Drivers of adoption

For “early implementers”—firms that have already adopted real-time business methods, use is pervasive across the enterprise: Upwards of 95% of these respondents have some form of real-time business applications in place across all departments. And the commitment to real-time business is substantial. For each of the functions identified (consumer experience; supply-chain management; production; sales and marketing; financial and business risk; and product design and innovation), over 50% of early implementers report a high or very high degree of adoption. Customer experience and supply chain management top the ranking (each at 64%), followed closely by production processes (63%), and sales and marketing (62%).

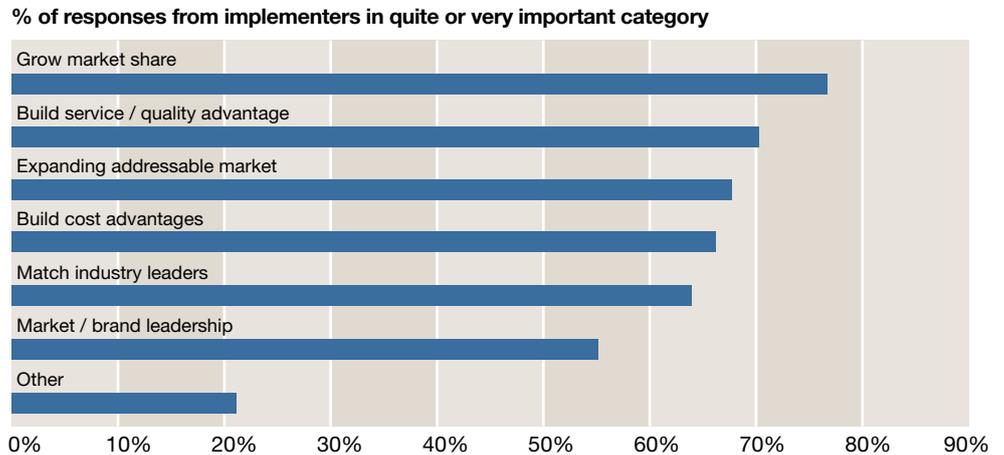
**Figure 2: Functions where real-time operations are most pervasive**

% responding high or very high degree of implementation



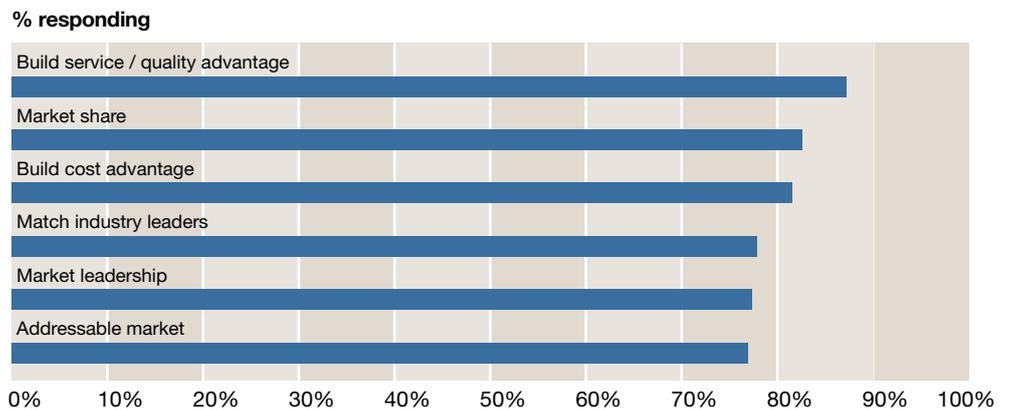
Naturally, obtaining a strategic benefit is a key driver for implementing real-time operations. Among early adopters, growth in market share (77%) is the most frequently cited driver for adoption. This is followed by building service and/or quality advantages (71%), expanding addressable markets (68%) and building cost advantages (67%).

**Figure 3: Key drivers among early adopters**



Meanwhile, “planners”—firms that are in the process of moving to real-time operations or intend to do so over the next five years—comprise some 46% of survey respondents. For these respondents, building service and/or quality advantage is most frequently identified (87%) as an important or very important driver. This is followed by ambitions to grow market share (83%) and building cost advantages (82%).

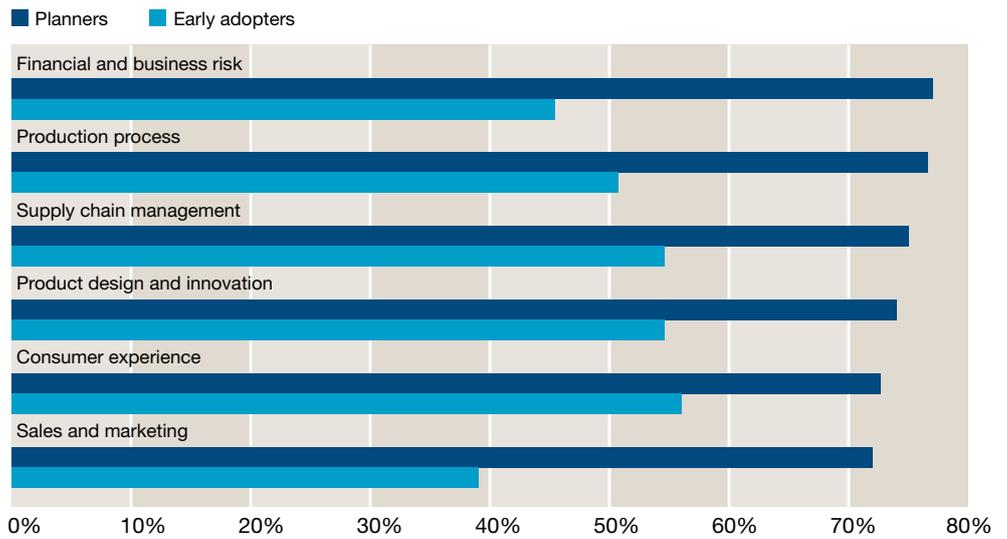
**Figure 4: Key drivers for planners**



Adoption strategies of planners are different from those of early implementers. By function, production process and financial and business risk lead initial investment among planners, with roughly 77% of those surveyed reporting fairly or very significant plans in these aspects of their operations. The next areas for investment are supply chain management, where 75% of planners have fairly or very significant plans, and product design and innovation (74%).

**Figure 5: Adoption strategies of Planners vs. Early adopters**

% responding fairly or very significant implementation planned



Among oil and gas businesses that plan to make their first efforts to move to real time, most consider building service/quality advantage and cost advantages as key drivers with 95% indicating this is quite or very important. Among new adopters in the retail sector, the greatest perceived benefit is building cost advantages (85%). In contrast, a higher proportion of new adopters in the consumer products sector (87%) cite increasing market share as the greatest anticipated benefit.



## Benefits and opportunities

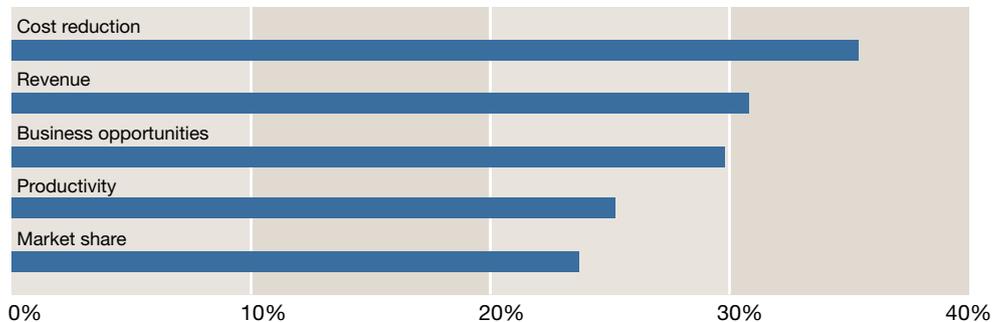
Clearly, the purpose of real-time operations is to help companies make better decisions and speed time to market. As such, it is of little surprise that early adopters cite increased revenue (31%) and cost reduction (35%) as the most important benefits. In this area, real-time operations seem to offer a tangible benefit: On average, companies that have implemented such systems are seeing revenue gains of 21% and cost reductions of 19%. In fact, among early adopters, 77% report revenue gains.

*“The sooner we have the customer data, the sooner we can adapt.”*

*Mike Blakemore, CTO, LOVEFiLM*

**Figure 6: Big wins across business metrics**

% enjoying quite or very large benefits



For some companies, the benefits are even more substantial. Oil and gas firms report revenue gains of 36%, which are significantly greater than those in the consumer products sector (revenue gains of 14%). Business-to-business operations (27%), meanwhile, also report significantly higher revenue gains than business-to-customer units (13%). The higher figures may be attributed to the fact that firms in these categories are further along the implementation curve, suggesting a connection between real-time operations and revenue.

At GE Energy, work is under way to embed real-time sensing software and controls into equipment to run its plants. “There is a huge wave of activity that is taking place now around data collection,” says Dr Peter Evans, head of strategy for GE Energy. “We are putting in place the frameworks for better decision-making about how to run these plants at higher performance.” For example, GE is now sharing with its clients the real-time data it collects from its fleet of over 1,000 gas turbines so customers can benchmark performance. “We collect and analyze the data, and turn it into better solutions,” he says.

For UK-based movie streaming service LOVEFiLM, which has more than 1.6 million members and manages four million rentals monthly across Europe, the conversion rate of trial to paid subscriptions is critical. “A 1% or 2% change in conversion has a huge effect on the bottom line,” says Mike Blakemore, the firm’s Chief Technical Officer. “So we manage that constantly.” Real-time systems are key to that effort: In addition to crucial housekeeping, such as tracking credit cards and payments in real time, LOVEFiLM can tailor its offerings to members based on their past preferences.

Furthermore, because LOVEFiLM can track instantly which films are most popular among its customer segments, its content team knows which films it should promote to drive sales. “The sooner we have the customer data,” says Mr. Blakemore, “the quicker we can adapt.” It’s a strategy that has paid off. In February 2008, Amazon became the firm’s largest shareholder; this January, the online retail giant announced that it would take full control of the LOVEFiLM.

The benefits of real-time operations are not limited to companies whose business models are mainly digital. Among airline executives, for example, the expression “wheels up” is a key phrase: Once a plane takes off, the value of an empty seat is zero—it can never again generate revenue. To keep financial performance aloft at Continental Airlines (now a unit of United Continental Holdings), real-time analytics track empty seats prior to takeoff to put as many travelers on board as possible. At any time, Continental executives can see an accurate account of revenue-generating passengers on its flights.

But real-time data helps with more than in-flight operations. It is now critical in helping the airline manage seat availability for its 2,000 daily flights, each of which can have as many as 30 different seating classifications. In the past, says Anne Marie Reynolds, director of the airline’s data warehouse, it was difficult to manage the complexity of the various pricing options—updates were done nightly in a batch process. “The science behind it hasn’t changed all that dramatically but now we are able to respond within a few minutes rather than waiting until the next morning.” That alone, she says, has meant millions in increased revenues.

Survey respondents also expect to see substantial benefits from real-time operations in the future. For the sample as a whole, the expected gains in revenue average 28%; the expected cost reductions average 20%; and the gains in productivity 24%.

At The Children’s Place, says Mr. Verma, the company is undergoing a significant transformation. “We have a new mandate to elevate what we do both in terms of product and in terms of how we service the customer,” he says. Real-time operations are critical to that mandate, particularly in terms of personalization. “Having access to immediate customer data is a huge opportunity,” he says. For example, in the past it took 30 days to know if a customer had made a purchase online or in a store. “Because a customer’s status couldn’t be updated immediately,” he explains, “they may have received suboptimal offers or incentives.”

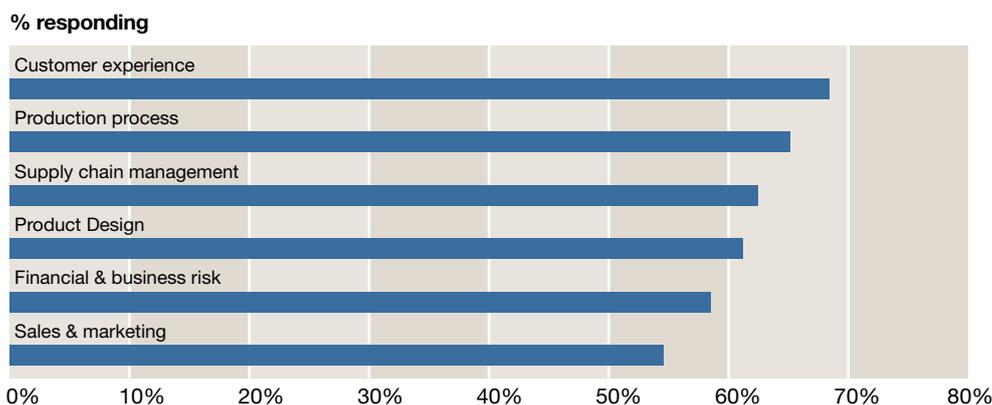
Despite being most pessimistic about future revenue gains and cost reductions, respondents in the consumer products sector anticipate the biggest increase in these measures (when comparing between what has been realized in the past and what is expected for the future). This is likely because these firms have yet to adopt these systems in a fundamental way. In contrast, respondents in the oil and gas sector expect just the opposite—future revenue gains and cost reductions are expected to be smaller than what was previously realized, though they will remain higher than in other sectors. This further underscores the maturity of adoption in this industry.

*The vast majority of early adopters plan further investment across their business functions.*

### Assessing effectiveness

While early implementers agree that real-time business is effective, there is some variation in the degree of effectiveness among functions. For example, early adopters rank its effectiveness more highly in consumer experience (69%) and production processes (65%) than in financial and business risk (58%) and sales and marketing (55%).

**Figure 7: Consumer experience and production processes seen as most effective**



Real-time operations are seen as more effective by firms in the oil and gas sector than in the other industries surveyed, perhaps as a consequence of the high level of adoption within the sector. Apart from sales and marketing, a higher proportion of oil and gas respondents see real-time business to be fairly or highly effective than the sample as a whole. This gap is particularly marked for product design and innovation, and financial and business risks, underscoring the power of real-time information in complex, capital-intensive organizations. The weak ranking of sales and marketing likely reflects the commodity nature of much of the industry’s output.

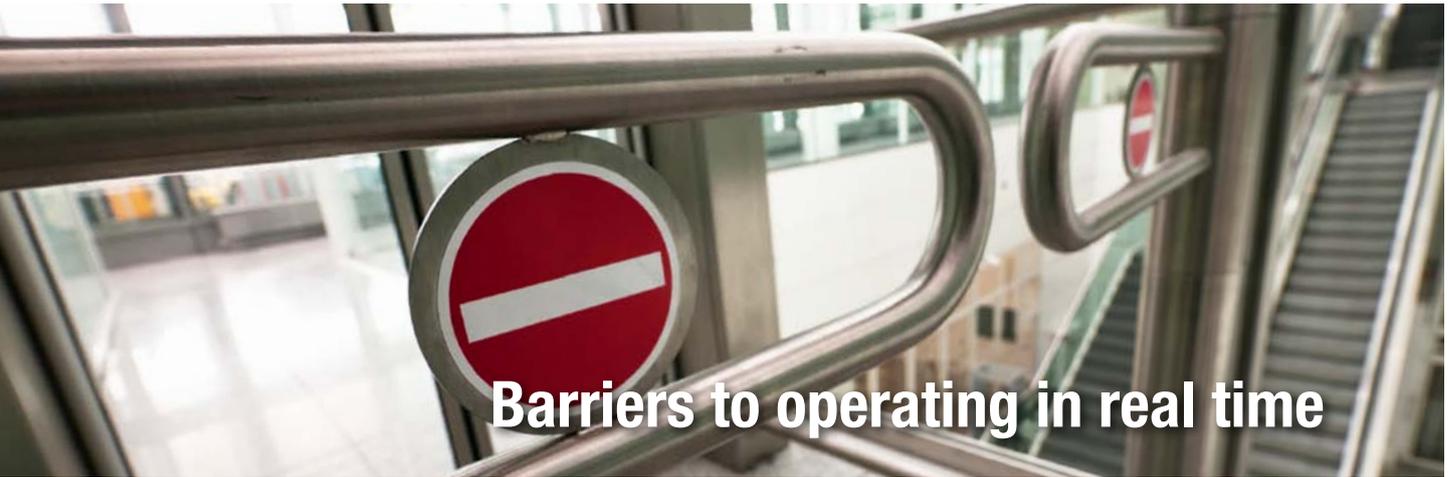
Meanwhile, early implementers from the retail sector are more likely to see the initiative as ineffective or of limited effectiveness than their colleagues in other industries.

### Future investments

The vast majority of early adopters plan further investment across their business functions. For them, consumer experience, supply-chain management, and product design and innovation rank top as the business functions where further investment in real-time business will be directed, with over 55% reporting fairly or very significant plans in these aspects of their operations.

Fewer early implementers in oil and gas plan for further investment in sales and marketing functions; instead, they plan to extend real-time approaches in production processes, supply-chain management, and product design and innovation. Early adopters in retail, meanwhile, have more modest plans for investment than other sectors. Nevertheless, for all business functions except production processes, more than 40% of these firms plan for intensive expansion of their capabilities.

As noted earlier, those planning to roll out real-time systems have different strategies than early adopters. Rather than focusing on customer experience, they will focus on sales, marketing and supply-chain management. These firms may be missing an important aspect of real-time business, as early adopters rate consumer experience as the most effective area for real-time operations. Meanwhile, almost all early adopters plan to continue investing and expanding their real-time efforts, though they will move their spending from sales and marketing to product design and innovation, while continuing to focus on customers.



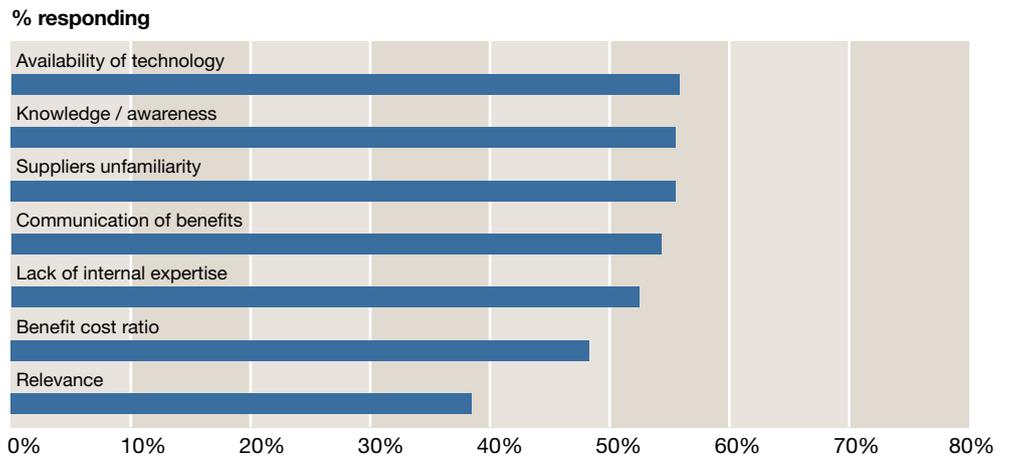
## Barriers to operating in real time

Despite the understood value of real-time systems, significant challenges remain with regard to adoption. At the top of this list, respondents note the lack of availability or adoption of technology (59%), suppliers' unfamiliarity with real-time systems (58%) and a general lack of internal knowledge or awareness of (58%) real-time operations.

*“You need to move the information to the people who are making the decisions.”*

*Ranjay Gulati, Professor, Harvard Business School*

**Figure 8: Barriers to adopting real-time operations**



Professor Gulati is not surprised by these findings, and points to data silos as one culprit. Similar to the aforementioned barriers in retail, when information is not transparent or easily accessible, “you have a situation where the person who owns the data, even if they are able to analyze it and figure it out, is not in a position to impact change.” The resulting opacity around what types of data exist and how they might best improve the business continues to hold companies back. “You need to either move the decisions to the people who have the information, or move the information to the people who are making the decisions,” he says.

At The Children's Place, the challenges have been both cultural and technical. When Mr. Verma arrived at the company a year ago, there were at least six separate merchandising systems, each with its own set of data. Moving to a single system requires full-on collaboration and communication—setting standards for data, and creating processes for generating reports and sharing information. At the same time, asks Mr. Verma, “how do you get people to believe that the new way is better?” Like any organization undergoing transformation, “there's caution among associates who have been here a while who have seen things work a certain way. You have to demonstrate there are alternatives that have better outcomes. It's all about educating.”

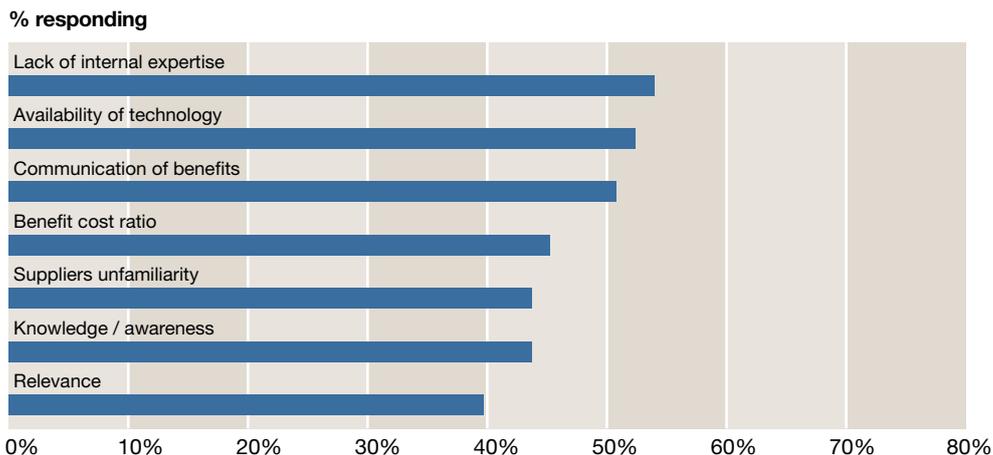
To that end, Mr. Verma has established a cross-functional IT innovation group at the company. “If you give your team the opportunity to work in different environments and understand how systems within individual business areas work together to connect business processes, they become more open to change.”

By sector, consumer products firms see a lack of available technology as a particular barrier, and generally judge the obstacles in the way of implementing real-time business to be greater than other sectors. Surprising given their lead in using real-time business, oil and gas companies see substantial barriers around communicating the benefits of real-time operations. From a cultural perspective, “it takes time to roll these things out so that it becomes embedded in day-to-day operations,” says Dr. Evans. “Given the high stakes that are involved in sustaining large energy systems, both trust and capability need to be built for wide-spread deployment into pipelines, networks and electrical distribution systems to be achieved.”

At Continental Airlines, Ms. Reynolds says the greatest challenge for her group will be integrating the airline's real-time revenue management systems with its new parent company, United Airlines. Thankfully, “United reservations will be done on the Continental system once they're fully integrated, so all we have to do is figure out how to back populate the United history and incorporate the new United forecasting system into the revenue management calculations. It's a lot of work—there are cases where United's data doesn't have all the attributes that Continental has, but we expect to be fully integrated by the middle of next year.”

For the small group of respondents who do not plan to implement real-time operations, more than half cite a lack of availability of technology, a lack of internal expertise and an inability to communicate the benefits as quite or very important. It's possible that for these firms, real-time data is not necessary for operations. However, it is more likely that these respondents have not yet fully considered how such systems could improve their business.

**Figure 9: Barriers for those not adopting real-time business**



For firms that are at the beginning of their efforts to move to real time, Professor Gulati says there are three steps executives must consider. The first is to make sure the information that is gathered across the firm is accurate. Professor Gulati refers to this as the information architecture. This may seem obvious, but executives constantly underestimate the complexity of creating a single version of the truth.

The second step is to understand the processes by which information is shared across the firm, and how departments need to use information to perform critical tasks. “This is the organizational architecture,” Professor Gulati says. “Without clarity around who needs access to what information, you’re working in a vacuum. No technology ever solved a business problem by itself.”

The third step is to take a hard look at how decisions are actually made inside companies—which can be different from understanding the organizational processes. Professor Gulati calls this the decision architecture. “Think in terms of the reporting, and who has what mandates.” This will require the IT team to work closely with executives across functions to ensure that the systems are designed to be truly useful. “What happens in a lot of the initiatives that are CIO-driven is that they work on the information, build a data warehouse and then add analytics. And then what do you find? Nobody uses it.”



## Conclusion: Looking ahead

**A**s our respondents confirm, use of real-time systems will only grow more pervasive in the coming years. According to research firm Gartner, 30% of business analytics tools will use in-memory functions to add scale and computational speed by 2014. And 30% of business intelligence applications will use predictive forecasting.

As noted earlier in this report, executives expect to reap substantial revenues as a result of real-time adoption. Mr. Verma of The Children's Place says that real-time systems will be instrumental in helping the company move to enable mobile commerce—a move that he believes will transform the retail industry. "In the near future customers aren't going to come into a store to find their size. It will be more a scenario where on a whim, a customer decides he or she needs something. They will use their mobile device to figure out what they are going to buy and where they are going to buy it. Then purchase it wirelessly, and simply pick it up in the store."

At LOVEFiLM, plans are under way to use real-time data to improve the streaming quality of films. "We have capacity to scale based on demand, and the only constraints are around the physical infrastructure associated with people's network connections in the home," says Mr. Blakemore. "What we can do with real-time data is to look at the network down to customers' internet service providers, and see which are the best local points of delivery." In other words, "If customers are having buffering issues or difficulty with playbacks because the network is overloaded, we can switch to a different route to deliver content." That, says Mr. Blakemore, will dramatically improve service—and help it gain market share.

At GE Energy, one of the longer-term objectives for real-time data is "to allow consumers to have more information and control of their energy use," says Dr. Evans. While some of that work is already happening with GE's business-to-business customers, Dr. Evans envisions a day when a smart electricity grid provides transparent information to consumers so they can better control the electricity consumed by the various appliances in their home.

Chris Denison, who recently left his post as managing partner of the innovation hub at Axa Financial to launch his own insurance consulting firm, Ingenin, takes Mr. Evans' thought one step further. Mr. Denison says the next five years will be a time of monumental transformation for the insurance industry—and business intelligence and mobility will be the key drivers. As an example, he points to the increasing number of GPS-based real-time telematic services that track drivers' routes as well as the performance of their vehicle. "You present that data to an auto insurer, and it can give you a tailored quote based on your level of risk."

While it will take several more years for real-time operations to become ubiquitous, executives should start putting their thinking together sooner than later. As Carl Icahn once said: "In life and business, there are two cardinal sins. The first is to act precipitously without thought. The second is to not act at all."

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