



Beyond agility

How cloud is driving enterprise innovation

IBM Institute for Business Value

Executive Report

Cloud

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The cloud revolution has advanced

Five years ago, enterprises were implementing cloud primarily to streamline IT infrastructure and cut costs. Today, organizations are unleashing the power of cloud as business optimizers, innovators and disruptors. Where companies choose to direct their cloud initiatives depends on a variety of factors. These factors include their goals and strategies, how much risk they are willing to assume, their current competitive context and their customer needs. In this report, we examine the evolution of cloud-enabled business transformation over the last five years, cloud strategies leaders are using to drive business innovation today and techniques organizations can use to employ cloud to attain their distinct business goals in the future.

Executive summary

What if your organization could sharpen its competitive edge by becoming more nimble? What if your enterprise could shift industry economics in its favor? What if your company could foresee a new customer need and dominate the market?

The cloud revolution is here now, delivering true business value to organizations. In enterprises around the world, cloud adoption has moved beyond the stage of acquiring technological agility and is now powering business innovation.

In our 2012 cloud study, only a third of the senior executives we spoke with when developing our report, “The power of cloud,” said they were planning, testing or adopting cloud computing.¹ Fast forward to 2016. More than three-fourths of the business leaders we surveyed for “Tailoring hybrid cloud” described their cloud initiatives as part of a coordinated program or as fully integrated into an overall strategic transformation.²

In addition to the swelling ranks of cloud adopters, the essential change in cloud over the last five years is that it is now the “go to” platform for driving enterprise transformation. More than 70 percent of the executives we spoke with in our 2016 study revealed that cloud adoption has already transformed their organizations into business innovators. These innovators are exploiting cloud to move into new industries, transform customer experience, monetize information to build new sources of revenue and forge new business models.



71% of companies indicate they are cloud-enabled innovators



74% of organizations say that cloud adoption has significantly improved their customer experience



76% of enterprises report that their most successful cloud initiative drove expansion into new industries

The cloud enablement framework

In our 2012 cloud study, we developed a cloud-enablement framework that defined how cloud adoption is driving enterprise transformation (see Figure 1).³ This framework unveiled three archetypes that demonstrate how organizations can use cloud to improve customer engagement by reshaping their business operations:

- **Optimizers** adopt cloud to enhance their organizations' operational efficiency, presenting a better customer experience.
- **Innovators** markedly expand customer engagement, altering their roles within their own business ecosystems or penetrating new markets.
- **Disruptors** wield cloud's attributes to envision previously unmet customer needs, creating new customer demands while architecting first-of-a-kind industry value chains.

Let's take a look at how cloud-enabled optimizers, innovators and disruptors are operating today.

Optimizers. Today's optimizers strengthen their existing customer strategies by improving the efficiency of their current operating models. Optimizers expand customer value by upgrading their products and services, improving customer personalization and responsiveness, and adding new delivery channels.

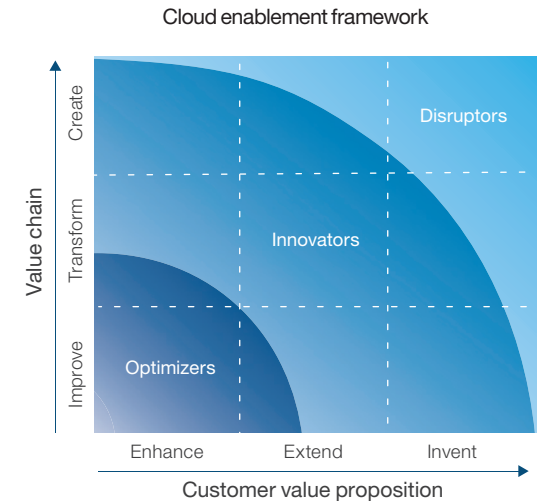
Case Study: Versandhaus Walz – Personalizing marketing using cloud-enabled analytics⁴

Versandhaus Walz is a leading German retailer with high-street stores, online websites and mail-order brands. For its flagship brand targeting expectant mothers and babies, the company is integrating customer engagement across all touchpoints. To acquire a 360-degree view of each customer, the company built an e-commerce platform that unites its online and in-store environments. The company uses cloud-enabled data analysis to study each customer and delivers actionable insights about her shopping behaviors. Based on this understanding, personalized marketing messages are created, presenting each customer with an offer appropriate for her stage of pregnancy or baby's age.

The results? A boost in customer satisfaction and spending. Versandhaus Walz is enhancing its competitive position with nimble, efficiently produced, personalized marketing experiences.

Figure 1

Organizations are harnessing the power of cloud three ways



Source: IBM Institute for Business Value

Innovators. Applying cloud's transformational attributes, today's innovators significantly broaden their customer interactions, typically generating new revenue streams within their incumbent industries or by penetrating new markets. Due to their ingenuity, innovators often significantly reconstruct their industry value chains, reaping additional competitive advantage by shifting industry economics in their favor.

Case Study: Doctome – Going global with cloud-based telemedicine⁵

To help patients obtain medical advice whenever and wherever they need it, Doctome developed a convenient mobile app that connects users to instant chat or video conferences with medical professionals. Patients of Israel's largest health maintenance organization readily adopted the telemedicine service, reducing emergency room referrals by 40 percent.

Due to the app's success, Doctome decided to move to a cloud-based platform to provide telemedicine service globally. With cloud's agile functionality, the service accommodates a diverse range of healthcare providers, including organizations dealing with regulations that require them to restrict patient data to their home countries.

Disruptors. Disruptors provide customers with novel, unanticipated experiences.

By revolutionizing customer needs, today's cloud-enabled disruptors command the new markets they create. At least for a time, disruptors leapfrog their competitors, earning greater market rewards from disrupting traditional industry value chains or creating new ones.

Case Study: Talview – Disrupting the recruiting industry by employing cloud and cognitive⁶

Talview, a human resources software company, is disrupting the professional recruiting services industry with a cloud-based solution that pinpoints top-quality candidates better than human recruiters. Conventionally, applicant evaluation is heavily dependent on partisan recruiter opinion. But Talview's cognitive algorithms build profound, impartial behavioral insights acquired from a multitude of structured and unstructured data sources – including information on how candidates comport themselves during interviews and on social media – resulting in a broader, more rigorous and objective candidate selection process.

By more effectively culling marginal candidates, Talview's cloud-based service increases the suitability of company hires by up to 40 percent. Human resources departments also benefit. Hiring cycle times are shortened by up to 75 percent, while company recruiting resource requirements are cut by up to 60 percent.

How cloud enables today's optimizers, innovators and disruptors

What are the common themes in how cloud is enabling the optimizers, innovators and disruptors of today? In our most recent cloud study, we asked each executive to reflect on their organization's most successful cloud initiative and to report on the outcomes achieved (see Figure 2).⁷

Figure 2

Most enterprises are using cloud to drive business innovation



Source: IBM Institute for Business Value

Using our cloud enablement framework, we classified each of these outcomes as characteristic of an optimizer, innovator or disruptor. Our research confirms that today's optimizers are using cloud initiatives to attain business outcomes such as:

- Bringing more personalized products and services to market faster
- Achieving tighter business integration with ecosystem partners
- Attaining incremental revenue growth
- Reducing operating costs while lowering capital investment
- Developing a more efficient, business-focused IT organization.

An even more significant change in the last five years is the enterprise shift to cloud-enabled innovation. Today, we classify 71 percent of organizations as innovators because they are using cloud to generate new sources of business revenue by:

- Redefining customer engagement
- Targeting customers in different industries and/or geographies
- Expanding their portfolios of products and services
- Generating additional revenue streams from new and existing customers, products and markets.

While disruption is a less common occurrence, today's disruptors "weaponize" cloud initiatives to radically recast the status quo, creating distinct new business models or assembling unexpected value chains.

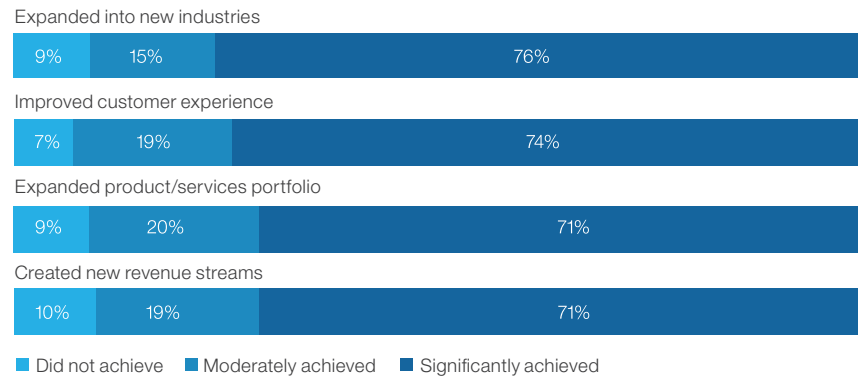
Cloud-enabled innovation

The cloud-driven innovation revolution has advanced. In 2016, we asked business leaders what their most successful cloud initiative accomplished. Four of the top five responses classify their owners as innovators. The most common business outcome of hybrid cloud adoption is entry into a new industry (see Figure 3). Seventy-six percent of executives report that their most successful cloud initiative achieved industry expansion. Additional innovative business outcomes cloud delivered are: significantly improved customer experiences, expanded product/service portfolios and creation of new sources of revenue.⁸

Moving beyond innovation, over two-thirds of survey respondents report that cloud adoption has aided them in creating and supporting new business models. When these new business models radically alter industry economics, the outcome can be viewed as disruptive.⁹

Figure 3

In the last five years, an essential change is that cloud is now the platform driving enterprise innovation



Source: IBM Institute for Business Value

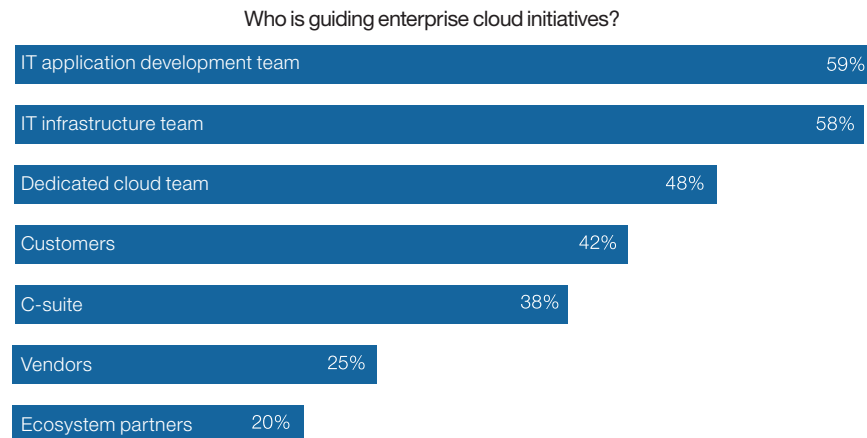
Who's minding the cloud?

Implementing cloud projects without line-of-business collaboration diminishes cloud's ability to deliver business model innovation. Over half of executives report that their IT organization has the most influence leading enterprise cloud initiatives (see Figure 4). This goes a long way toward reaping the benefits of IT operations efficiency or lowering the total cost of technology spend. However, in organizations where IT implements cloud technology without significant line-of-business guidance, cloud's power to propel business forward is dramatically curtailed.

Almost half of organizations practice another approach in which a dedicated cloud team guides their enterprise cloud initiatives. This can be advantageous, particularly if the governance team includes C-suite, business unit and IT executives who view cloud strategy as a top business priority and work together to ensure that cloud adoption is fully integrated with strategic business objectives.

Figure 4

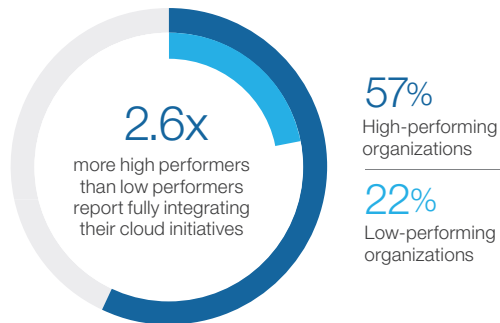
Business and IT executives must work together to ensure that cloud adoption supports business goals



Source: IBM Institute for Business Value

Figure 5

Combining related cloud initiatives into a coordinated program drives enterprise innovation beyond IT



Source: IBM Institute for Business Value

Harmonizing cloud initiatives with business objectives

Combining multiple cloud initiatives into a coordinated program enables cloud to drive enterprise agility beyond IT. This empowers an organization to quickly build and test new product ideas, move into adjacent geographies or industries, deliver new products and services more effectively, and move ahead of the competition. Eighty-three percent of high-performing organizations say their cloud initiatives are either already coordinated or fully integrated within their enterprises.

Full integration of cloud initiatives can be transformative, transcending organizational, geographic, ecosystem and industry boundaries. Enterprises can maximize the power of cloud to invent new customer needs, give birth to new markets and even disrupt industry economics.

How important is integrating cloud adoption with business objectives? Over half of high-performing organizations are already fully integrating their cloud initiatives as part of overall strategic transformations (see Figure 5). This is over 2.5 times the rate of low performers. (For an explanation of how we define high- and low-performing organizations, please see “How we conducted our research” at the end of this report.)

So you want to be an optimizer?

Cloud-enabled optimizers are chiefly focused on improving operations to provide greater customer value. Therefore, they concentrate on increasing their overall efficiency and reducing costs. Since cloud-enabled optimizers largely focus on incremental improvement, they don't tend to grow revenue and market share as substantially as successful innovators and disruptors. Optimizers also run the risk of cloud enabling their more nimble competitors to supplant them in their customers' loyalty.

If becoming a cloud-enabled optimizer is your organization's goal, you may want to consider taking the following actions:

- To reduce fixed IT costs, transfer technology spend from capital expenditures to operating expenses
- To improve cost efficiency, pay only for the amount of infrastructure your enterprise uses
- To aid business scalability, scale your organization's IT infrastructure and services (up and down) on an "as needed" basis
- To increase operational success, select cloud providers that facilitate your nimble assimilation of technological advances and emerging technologies
- To reposition IT as a business partner, shift your enterprise's IT resources away from maintaining infrastructure to achieving business objectives.

Case Study: Hamarøy kommune – Providing superior services through cloud collaboration¹⁰

Founded in 1838, Hamarøy kommune is a municipal government in Norway that provides public services including education, healthcare, childcare, zoning and road maintenance. Under pressure to reduce government spending while improving its services, Hamarøy adopted collaboration in the cloud. The move reduced Hamarøy's IT infrastructure and travel costs, enhanced Hamarøy's civil servants' ability to communicate and collaborate with each other, and improved their proficiency in serving their community.

Cloud collaboration tools empower Hamarøy's employees with immediate access to the information they need to deliver timely, top-notch public services. What's more, the municipality saves on IT maintenance costs, avoids capital costs of new servers and storage, and redeploys existing IT infrastructure and resources to higher value tasks that directly aid the people living in Hamarøy.

Case Study: Tabor Math – Revolutionizing math education for children in the cloud¹¹

Tabor Math is a personalized, tablet-based math tutor for grades K–8. Tabor Math moves beyond the confines of location- and time-bound appointments, making virtual math tutoring available anytime, anywhere.

Using cloud technologies, Tabor's tablet app "watches" each step of a student's thought process while solving math problems. Experienced human tutors then analyze the student's problem-solving approach to determine where learning needs bolstering, monitor progress and evolve program instruction according to the student's needs.

After only three months, the South Brunswick School District in New Jersey improved student math performance by more than 90 percent. Tabor's customer retention rate is a whopping 97 percent, almost doubling the industry average of 50 percent. Tabor's affordable tutoring method is so convenient and effective, the company may even become a disruptor of location-based tutoring arrangements.

Do you have what it takes to be an innovator?

Innovators leverage cloud to create new products and services and incorporate new channels or payment options into their business models. Cloud allows innovators to develop new operating capabilities by rearranging their ecosystems to shift industry economics in their favor. One of the major risks innovators face is the possibility of a "fast follower" competitor applying the power of cloud to improve upon an innovator's original innovation.

If your enterprise decides to become a cloud-enabled innovator, consider taking the following actions:

- Use cloud to expand your product/service feature set while improving ease-of-use
- Capitalize on cloud's capability to support sophisticated customer journeys to design customer interactions individually tailored to user preferences and situational context
- Leverage cloud's agility to anticipate your customers' needs through rapid prototyping, development and deployment of new products and services
- Implement a cloud that reaches new target customers in your incumbent industry and markets
- Adopt a cloud that facilitates your entry into a new industry or market.

Are you ready to be a disruptor?

Disruptors wield cloud to invent a new customer need by creating a revolutionary value proposition. A disruptor's unique ability to satiate the need they have created confers a first-mover advantage and the disruptor "owns" the market, at least for a time. This fractures industry economics as cloud is used to create a new industry value chain that often disintermediates an existing ecosystem. Disruptors take on the most risk since their cloud-nouveau business models may not succeed. And when they do, cloud-enabled fast followers may learn from disruptive first movers and eclipse the trailblazers.

If your enterprise is ready to be a disruptor, consider using cloud to take the following actions:

- Invent new customer needs and define entirely new markets
- Disrupt legacy competitors
- Create new ecosystems
- Share resources, processes and talent among ecosystem partners that develop critical capabilities that don't reside in any one organization
- Create sustainable competitive dominance across a new value chain.

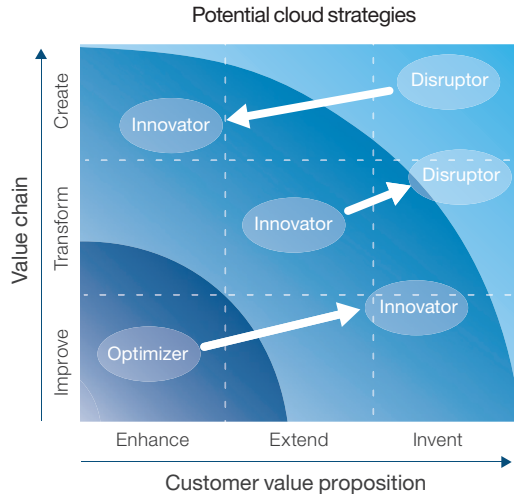
Case Study: Carbip – Driving a car-sharing revolution with mobile cloud analytics¹²

Carbip is revolutionizing car ownership. The company's car-sharing and carpooling mobile app, powered by cloud, matches drivers with people who need rides, coordinates car lending and borrowing, and supplies insurance coverage. By Carbip's estimation, its mobile cloud analytics platform cuts application development time in half, lowers infrastructure costs and scales on-demand. To outflank the competition, feature upgrades will be developed up to four times faster.

Carbip's mission to "own social driving" is on track to disrupt other transportation options, including taxis, car rentals, buses and trains.

Figure 6

How should your organization's cloud archetype evolve?



Source: IBM Institute for Business Value

Should your organization be an optimizer, innovator or disruptor?

The cloud enablement framework is not necessarily a progression model (see Figure 6). Enterprises do not need to begin by using cloud for operational optimization, advance to cloud-driven innovation and graduate to industry disruption. It is certainly true that many large enterprises, particularly in regulated industries, initially gravitate to cloud-enabled optimization. But it is equally true that other companies are “born in the cloud,” entering the framework for the first time as innovators or even disruptors. Either way, optimizers and disruptors may find themselves moving to the innovation area of the framework for their second acts.

Whether companies choose to become cloud-enabled optimizers, innovators or disruptors depends on a variety of factors, including their goals and strategies, how much risk they are willing to assume, their current competitive context and their customer needs. To determine where your organization should sit on the framework, business leaders can start by:

- Studying cloud-enabled competitors, ecosystem partners and other organizations to generate viable alternative approaches to using cloud to achieve your business goals
- Choosing an aspirational cloud archetype that is a “best fit” given your strategic goals, culture, resources and capabilities, industry economics and dynamics, customer obligations and organizational risk tolerance
- Understanding which archetype most closely resembles your enterprise today to inform a gap analysis between your current cloud archetype and your intended one
- Testing the achievability of your intended position on the framework by developing an action plan that details the financial realities of resources and capabilities required, and the actions necessary to mitigate potential risks.

How to get started

Today, cloud is the essential platform driving enterprise innovation. Consider these three steps when launching your organization's journey into cloud-enabled business transformation:

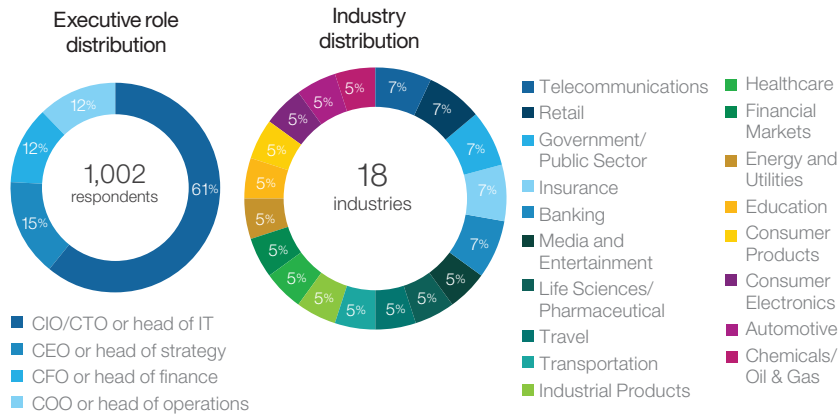
1. Set up a cloud governance board comprised of senior line-of-business executives and IT management with shared responsibility for your enterprise's cloud strategy, installation and deployment to ensure that your organization's cloud adoption is driving the success of your business initiatives.
2. Study cloud-based disruptors, innovators and optimizers inside and outside of your industry to envision how cloud might transform your customer relationships and your value chain.
3. Carefully evaluate your organization's strategic plans, competitive context, current capabilities and ecosystem adaptability to determine whether your enterprise should become an optimizer, innovator or disruptor.

Key questions

- How will your enterprise use cloud to drive transformation?
- What will your enterprise do to become a cloud-enabled optimizer, innovator or disruptor?
- How will you align your organization's cloud adoption with your business objectives?
- How will you assemble the business case for cloud, including the resources required?
- What steps does your action plan for cloud adoption include to overcome anticipated hurdles?

How we conducted our research

To learn how organizations differentiate themselves using cloud, in 2016 we interviewed 30 executives and surveyed 1,000 global respondents from 18 industries. Sixty-one percent of respondents held the title of CIO, CTO or Head of IT. To analyze differences among the study sample participants, each respondent did a self-assessment based on organizational performance. A “high-performing organization” is one that rated itself as “5” on a scale of 1 (low) to 5 (high) in both revenue/effectiveness and profit/efficiency performance. “Low-performing organizations” rated themselves as “1” on that scale.



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