IBM Institute for Business Value

The digital reinvention of travel

Following travelers into a radically different tomorrow

Create and capture value by connecting to the travel ecosystem

Travel customers expect more comprehensive travel support throughout the travel life cycle than ever before. Meanwhile, travel and transportation companies feel strong competitive pressure to deliver more service for a lower cost. These challenges seem to pull travel companies in divergent directions. Companies can thrive and grow in new ways by embracing the individual-centered economy and adopting a more cooperative position in the travel ecosystem. The IBM Global Travel and Transportation practice stands ready to assist travel companies in this difficult but important transition by providing services to clients in search of new ways to derive market insights, productively engage with partners and satisfy customer expectations.

By Steve Peterson and Anthony Marshall

The Internet transformed commercial transactions

between travel companies and their customers in the late 1990s. Today, social media, mobile devices, analytics and cloud are ushering yet another new era of change into the travel industry. Collectively, these digital developments are transforming how travelers interact with the companies that serve them. Travelers are more connected and empowered, increasingly seeking digital engagement with greater transparency. What's more, many travel companies face competition from different areas. This requires new types of collaboration, which is helping to create new industry winners and losers. Perhaps most importantly, travel operations and business models are transforming: redefining traveler value, eroding barriers between physical and digital mediums, and raising concerns about risk, security, compliance and privacy.

41% of the 48 travel executives we surveyed expect consumers to gain even more power and influence over their businesses, compared to 63 percent of the 1,100 executives comprising the total sample.

41% of travel executives expect technology to reduce barriers to entry in the next five years, but 78 percent expect more cross-industry competition during that time.

69% of travel executives cite the lack of a cohesive strategy for social as their most significant challenge to implementing a digital strategy within the enterprise.

In a manner that is reminiscent of the dot.com boom, the use of social media by consumers—as well as its adoption by corporations—is exploding. At the same time, a mobile revolution is well underway, presenting a steady stream of improvements that make customer-company interactions more timely and relevant. Both these developments are already proving transformative, and both are expected to generate vast amounts of new data that will fuel yet another wave of revolutionary change.

The power of analytics is indisputable, even as travel companies are learning how to fully tap into that power. And in adjacent industries, cloud is not just enabling business—it is redefining consumer value while sparking innovative operations and business models. All this portends a significantly different, and far more digitally enabled future for travelers and the providers that compete for their business.

In other industries, analytics, cloud and additional emerging technology innovations—including 3D printing, nanotechnology and biotech applications, and more—have begun driving major economic, societal and business shifts. Digitally-enabled technologies empower and connect individuals more easily and more regularly with businesses, governments and other institutions. In turn, these innovations are transforming organizational models, introducing new sources of competition and increasing the expectations of empowered consumers. Travel companies should watch these developments closely because similar developments are bound to impact the travel ecosystem as well.

The internet revolution of the late 1990s has produced an army of uber-connected consumers seeking 24/7 access and complete transparency. More recently, with the advent of social media, a growing subset of these always-on denizens has also come to expect greater personal influence and participation. Given this backdrop, it is no surprise that 63 percent of the 1,100 executives we surveyed expect consumers to gain even more power and influence over their businesses. Surprisingly, only 41 percent of travel executives share this sentiment, which may suggest that travel executives are targeting different consumers, or they are not picking up on the same trends as their counterparts in other industries.

The culmination of all of these forces creates the reinvention *imperative*. Most organizations, but especially those in the travel sector, have not yet fathomed the full implications of these new technologies. When asked what kind of digital strategy their enterprise has, more than 60 percent of CEOs surveyed in our 2012 CEO survey told us they lack an integrated physical and mobile strategy.[1] This finding also held true in our conversations with travel industry CEOs.

And yet, digital technologies will ultimately drive drastic changes in the economy: value chains will fragment, industries will converge and new ecosystems will emerge. As a result, the

Over the next five years, executives expect reduced barriers to entry and more cross-industry competition.

mechanics of value creation and value allocation will also change. Looking five years out, 58 percent of surveyed executives expect new technologies to reduce barriers to entry and 69 percent expect more cross-industry competition. Interestingly, only 41 percent of travel executives expect technology to reduce barriers to entry, but 78 percent expect more cross-industry competition during that time.

So, what will this future of continual digital reinvention entail? How will new convergent technologies impact organizations and industries? What can travel companies start doing today to begin preparing for a vastly different business environment? In particular, which investments, priorities and actions can set the stage for success during turbulent and ongoing change?

The 2013 IBM Digital Reinvention Study considers the answers to such questions. To better understand the deepening impact of digital technologies on today's organizations, the IBM Institute for Business Value surveyed approximately 1,100 business and government executives, 48 of whom have roots in the travel industry. We also surveyed 5,000 consumers and conducted in-depth interviews with 30 leading futurists in more than 10 countries.

Our analysis of study findings shows that as technology changes persist, the interactions between organizations and individuals also keep changing—and this change is rampant. In fact, the global economy was characterized as highly organization-centered for most of the 20th century. Its current state—individual-centricity—emerged around 1990, but that will soon evolve toward an *everyone-to-everyone (E2E)* model of engagement.

These E2E environments are defined by the direct interaction of consumers with one another, any one of whom might simultaneously act as a consumer or provider of services. In the near future, a traveler might drive his own car to the airport where an incoming traveler will pay him a fee to use it — all while the car's owner visits another city and stays in a third traveler's condo. This simple example of the E2E model in the travel industry has profound impacts on the business models of both rental car companies and hoteliers.

To prepare for the challenges and opportunities of an E2E model, successful firms will need to think disruptively, challenge established norms and blur organizational boundaries. Travel companies will soon be forced to confront the reality of an everyone-to-everyone (E2E) economy, in which travelers become not just consumers of travel services, but also providers of the assets and information needed to make travel possible. Competing successfully in this new economy will require travel executives to start thinking disruptively, welcoming external influences and making targeted digital investments.
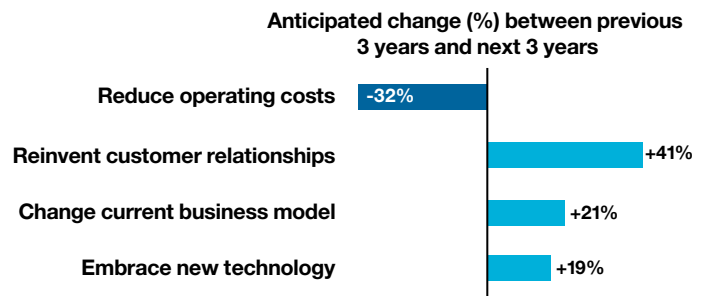
Now at warp speed: Digitization

Digitization is rapidly changing the nature of how individuals and organizations interact: the result is an individual-centered economy. Individuals are more connected and empowered. This is leading to rising expectations about information access, ubiquitous connectivity and transparency. The ability to stay connected through a variety of devices has increased consumer influence over organizations and it drives a consumer-centric business strategy. In the IBM Global C-suite Study, 55 percent of more than 4,000 C-suite executives report that consumers have the most influence on business strategy other than the C-suite itself.[2]

Meanwhile, new digital technologies mean that competition is coming from new and different areas, opening up opportunities for new entrants while creating new threats. Only 40 percent of surveyed executives expect competition to come from the same industry, another 41 percent expect it from outside traditional industries and 19 percent said it will come from both sources.

Few industries feel the impact of this competitive development as profoundly as the travel sector. Airlines once focused on the competitive actions of their traditional, direct competitors: other airlines. Today, especially in countries with a highly developed rail network, high-speed rail is also a viable alternative for airline customers. This change, as well as the possible development of Elon Musk's "Hyperloop" — a next generation high-speed rail system which optimists believe could obviate the need for air travel — make it essential for airlines to account for substitutes in key markets.[3]

Organizations are adapting new business models and leveraging digital capabilities to enable new consumer experiences. The IBM Global C-suite Study shows that the intense focus of the past three years on business strategy that reduces operating costs is shifting to a renewed focus on growth and transformation (see Figure 1).[4]

Anticipated change (%) between previous 3 years and next 3 years

Reduce operating costs	-32%
Reinvent customer relationships	+41%
Change current business model	+21%
Embrace new technology	+19%

Source: IBM Global C-suite Study, CEO question: "What are the top priorities in your business strategy?"

Figure 1: Organizations are transitioning from intense focus on operating costs toward growth and transformation.

In the early part of the 20th century, the economy was organization-centered and dominated by producer-driven consumption. Ford and its Model T are an example of this model. Organizations in most industries, but especially airlines, hotels, and some travel distribution companies were characterized by high barriers to entry and capital-intense production, with larger enterprises controlling production or other key aspects of market development.

Later, as technological capabilities changed consumer expectations, the organization-centered economy evolved into today's *individual-centered economy* (see Figure 2). The individual-centered economy is characterized by product differentiation
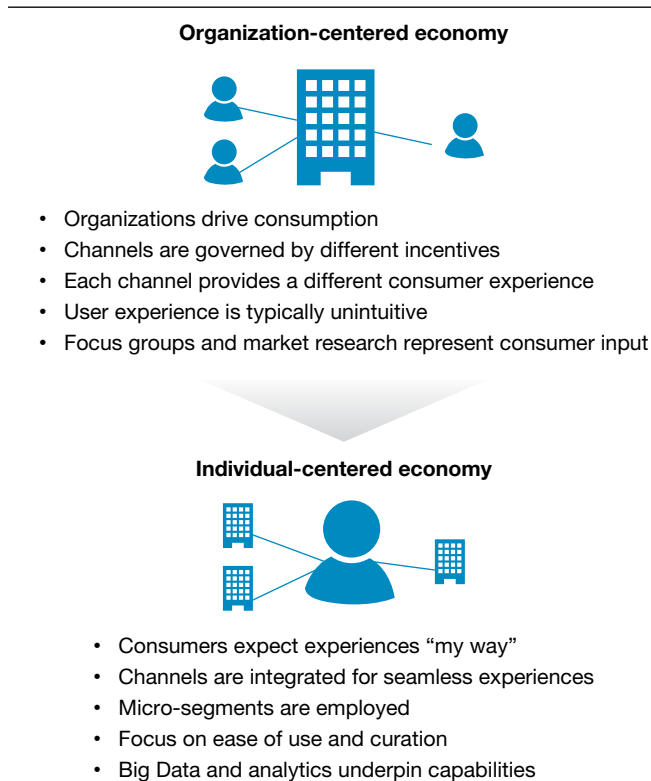
and individualized market segmentation targeted at deriving value for the consumer. There is a strong emphasis on design and marketing, and organizations focus on creating relevant, customized experiences that realize value for the consumer.

To keep up, organizations have been embracing digital transformation to create compelling consumer experiences. In the individual-centered economy, four *elements of digital transformation* are critical: being flexible, integrated, tailored and responsive (see Figure 3).

Digital transformation framework
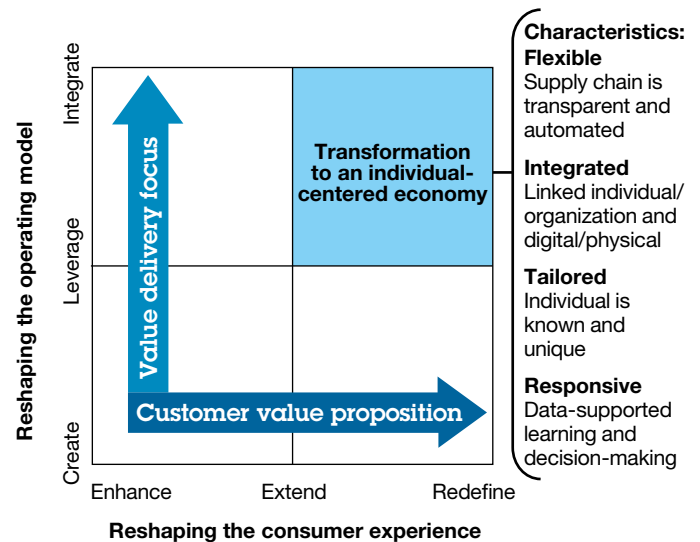
Source: IBM Institute for Business Value analysis; "Digital transformation: Creating new business models where digital meets physical." IBM Institute for Business Value.

Figure 3: Digital transformation produces customer experiences that support what individuals need or want.

Organization-centered economy

- Organizations drive consumption
- Channels are governed by different incentives
- Each channel provides a different consumer experience
- User experience is typically unintuitive
- Focus groups and market research represent consumer input

Individual-centered economy

- Consumers expect experiences "my way"
- Channels are integrated for seamless experiences
- Micro-segments are employed
- Focus on ease of use and curation
- Big Data and analytics underpin capabilities

Figure 2: The attributes of an individual-centered economy: keeping the focus on creating customer experiences that are rewarding.

Technological reinvention: Then and now

Looking back to 1978, personal computers, mobile phones and the Internet were in their infancy. Those powerful disruptive innovations have shaped the society we live in today and it took decades for their impacts to surface.

Today, we find that technological change is happening in a timespan that is highly compressed compared to what has come before. We are at the beginning of another shift, as newer technologies develop and mature—but much faster and more profoundly than ever.

Social media explosion. Even as they heighten control and privacy issues, collaboration and information sharing are spurring new models of value creation. "Social" has become revenue-generating, evolving from a dot-com trend to a sharing platform and business model. Groupon and peer-to-peer lending are examples of collaborative buying and revenue sharing models that are driving the sharing economy movement.

Mobile revolution. Mobility and miniaturization are transforming consumer experiences via new capabilities, such as the increased use of location-based services to enable both global positioning systems (GPS) and targeted retail promotions. New payment ecosystems let the mobile wallet turn dollars digital. And the miniaturization of mobile devices moves from palm-sized to wearable devices, including Fit Bit and Samsung Galaxy Gear.

Analytics. Advanced analytics enable deeper business intelligence and consumer insight to be drawn from big data, producing information that ranges from descriptive to predictive. Internal and external data sources can now be integrated and services can be highly personalized based on consumer data.

Cloud enablement. Cloud enablement allows for new models of interaction with individuals and organizations, and will help facilitate cross-platform data analytics. Examples of these new ways to interact include subscription access to enterprise applications, cross-platform on-demand content and computing without boundaries.

Technology rules, but digital strategies are still too rare

Not surprisingly, technology is an important driving force in most industries. In 2012 and again in 2013, CEOs named technology factors as the external force that will have the biggest impact on their organizations—more so than market factors, macro-economic factors and people skills. CEOs from the travel domain view technology as less important than market forces and macro-economic factors, but still rank technology as the third most important source of external influence in 2012 and 2013.

Despite this strong awareness, most organizations have not begun preparing for the drastically different environment ahead. Most CEOs (63 percent) report that their organizations still do not have an integrated physical and mobile strategy. And just 43 percent of CEOs believe their mobile strategy enables them to conduct business regardless of location.[5] And the situation is even worse in the travel domain, where 40 percent of CEOs admit that their organizations lack an integrated physical and mobile strategy.

What's more, 63 percent of executives interviewed, and 69 percent of travel executives for the IBM Global C-suite Study cite lack of a cohesive strategy for social as their most significant challenge to implementing a digital strategy within the enterprise.

As digital transformation and the individual-centered economy cut across multiple levels of business and society, they are creating both opportunities and challenges for businesses. The combined impact of new technologies will be profound, and will likely drive radical innovations.

A view of the vastly different future

The promise of compelling customer experiences can now be realized because of these economic changes. As industries converge, new ecosystems that cut across multiple organizations, functions and industries will emerge to enable new and compelling experiences.

Value chains will fragment

New technologies will continue to make travel value chains more transparent and easier to decompose. In the past, value chain disruptions often involved replacing whole value chains or big chunks of value chains, such as replacing physical airline city ticket offices with telephone reservations centers and Internet-based travel distribution systems. Next generation value chain disruption will involve contesting more specific elements or functions within value chains.

Travel organizations will increasingly recognize their own competitive strengths around specific functions and expand capability in these areas. They will begin to specialize to a far greater extent than they do today because the ever decreasing costs of outsourcing and out-tasking will enable increased efficiency without sacrificing an end to end customer experience. These new specialists will begin to contest their chosen functions in other markets. Faced with new functional offerings comprising better capability at lower cost, organizations will begin to cede more and more non-core functions to specialists.

New technologies will make travel value chains more transparent.

Thought it may seem like an impossible transition today, in the future an airline that has struggled to maintain complex and costly reservations systems, may choose to rely on specialist travel distribution companies that not only host the airline's inventory, but also deliver marketing, pricing, sales, and support capabilities to the airline for a fee. As data sharing solutions continue to evolve, such disruptions may become more feasible.

Ritz-Carlton, for example, recognized that its true competitive strength is the ability to consistently deliver an industry-leading customer experience, even when it has to work with partners to achieve its customers' objectives. The Ritz-Carlton Leadership Center now even trains organizations in non-travel industries on how to create outstanding consumer experiences. For example, leading hospitals are applying Ritz-Carlton's quality principles to improve their patients' medical experiences.[6]

Industries will converge

As specific functions in value chains are contested, new competitors will emerge. Functional specialists from one industry will begin competing in specific value chain functions of other industries and this cannibalization across industries will begin to drive industry convergence.

Organizations will begin pursuing dual strategies: continue focus on core business in their primary industries; and seek growth opportunities in their chosen specialized functions across other industries. Specialization will drive industry convergence as competition expands around specific, common value chain functions.

A projected future example in the travel domain is door to door baggage services, which would facilitate the pickup and delivery or luggage from a customer's home to their final destination thereby obviating the need for customers to transport their own bags to the airport or to their hotel.

An information-enabled third party could easily coordinate such a service for an airline, and while many customers would elect to manage their own luggage, some customers may willingly pay a premium to the provider who offers such a value-add travel service.

New ecosystems will emerge

Functional specialization, value chain fragmentation and industry convergence will begin to support formation of ecosystems or value nets. Ecosystems will typically cut across multiple organizations, functions and industries, providing a foundation for new, seamless consumer experiences and camouflaging functional complexity.

Looking to the future, fully-contextualized retail is an example of emerging ecosystems. A seamless omni-channel retail experience adapts real-time to a particular consumer's context. A combination of elements create this experience: a concierge service acts as a single contact point for all needs; in-store assistance is augmented with intelligent, mobile self-help options; inventory and product delivery are fully integrated in real time; and mobile payment is available and seamless across physical and virtual channels. Presence zone technologies—using intelligent location-based sensors to enhance the customer experience of those who opt in—are rapidly integrating consumers' digital and physical experiences in retail environments. Such solutions will eventually find their way into airports, hotels and other travel companies.

Ecosystems will tend to be very dynamic and able to deliver more complex experiences or activities than single—or even convergent—value chains. Of course, the manner in which value is created and allocated changes as organizations evolve from participating in traditional value chains to participating in ecosystems. This will especially be true when the value chain in question and the ecosystem that emerges is focused not on physical goods, but on an integrated customer experience.

According to traditional economic notions of "the firm," organizations optimize within their own boundaries, but emerging ideas about customer ecosystems challenge this silo-oriented thinking. Organizations often interact only with "their" customers, and are blissfully unaware of the experiences the customer had in the previous step in the value chain. Hotels, for example, might check incoming flight details for their highest-value guests, but more typically fail to interact with airlines or ground service providers at all—and therefore accumulate little sense of a customer's overall travel experience.

Digitally enabled travelers may soon come to expect more extensive coordination among travel providers, and they might even penalize providers who are not able to coordinate with adjacent pieces of the travel value chain. For example, if a customer can use her own device to foresee a disconnect between ground transportation provider and airline due to an arrival delay, it would be reasonable to for her to expect that "the system" is smart enough to see the disconnect too, and more importantly, to adjust the inbound arrival time with the ground service provider? After a single ecosystem of companies provides this level of integrated service management, customers everywhere may start to demand it.

But in ecosystems, organizations realize value through the engagement with the system as a whole, where "value" is defined by participants' willingness to pay for access to the ecosystem. Once access occurs, specific transactions may occur within the ecosystem. Total value created reflects the value of access to and engagement within the system as a whole. Increasing focus on the end-to-end travel experience, for example, is expected to lead to dramatic changes. Mechanisms are required to share the value created for access among ecosystem members, whether through central allocation, orchestration or some other arrangement (see sidebars, "Envisioning the new Travel ecosystem" and "A radically different automotive/mobility ecosystem").

Envisioning the new Travel ecosystem

In the traditional travel value chain, value is tied to sales of specific travel services, including seat and room reservations, baggage and other service fees, itinerary coordination and post-trip services. Intermediaries benefit from the value that the entire system generates — by providing specific services in the value chain, such as online travel agents and global distribution systems that extract fees for reservations (see Figure 4).
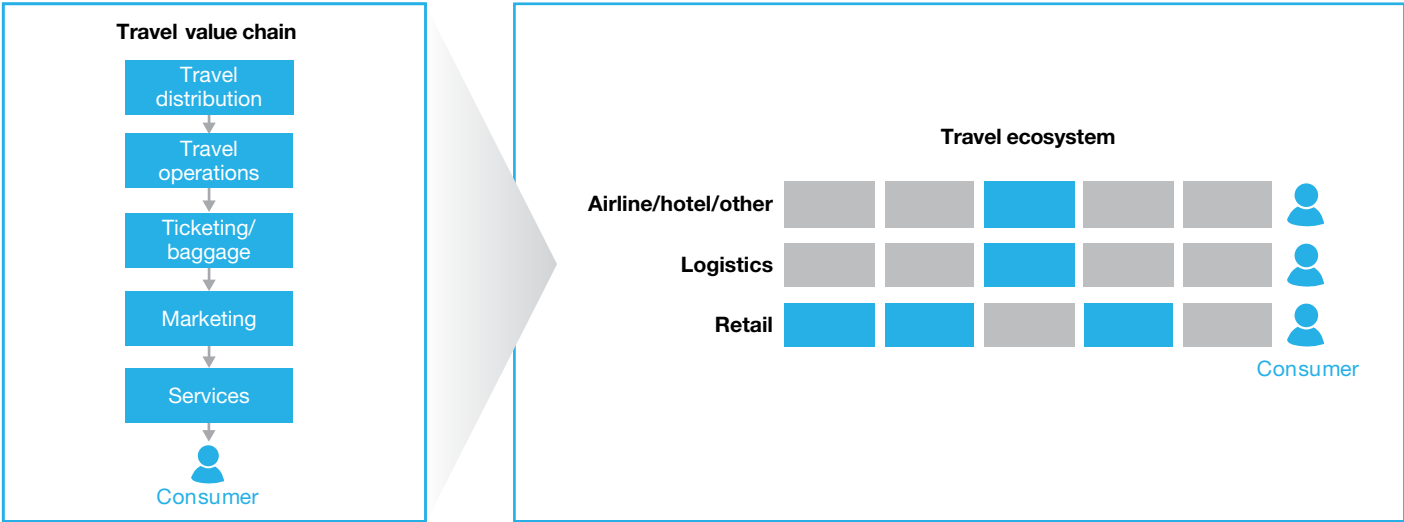
Source: Travel 2020: The distribution dilemma" and "New routes to profitability." IBM Institute for Business Value.

Figure 4: Value creation in a Travel ecosystem is based on delivery of the end-to-end travel experience.

In a future travel ecosystem, value is tied to the value perceived through access to a comprehensive travel experience, including physical goods, services, information and coordination. As each member of the current value chain expands its aperture, it will realize that consumers value the net benefit of the entire experience, not just isolated travel components. In this ecosystem view, value is extracted by a party that orchestrates the delivery of service, not just the travel provider or asset owners. Key travel ecosystem players include airlines and hotels that provide the primary perishable "good," the retail industry that provides travel-relevant goods, and the logistics industry that provides baggage pick-up and delivery.

Price is determined by consumers' willingness to pay for the travel experience — consisting of a personalized package of goods and services rendered. Airlines and hotels are already experts at pricing perishable assets like rooms and seats based on specific willingness to pay criteria of individual consumer segments. But as the ecosystem emerges and expands, the number of variables they must optimize against will also increase. Soon, prices will need to be set on the basis of what each individual is willing to pay for the specific set of goods and perishable services that meets personal preferences. Such pricing algorithms will need to be robust enough to include variables collected not just across the travel domain, but also across retail, social media and other sources of information that can inform an estimate of an individual's willingness to pay.

In a traditional automotive value chain, value is tied primarily to the vehicle and controlled by the original equipment manufacturer (OEM). Additional value is contained in ancillary products and services including suppliers, dealership networks, tire and automotive maintenance providers, gas stations, auto parts stores, insurance providers and the like (see Figure 5).

Value creation in the traditional Automotive industry is focused on product differentiation and supporting services, including upgrade options like leather interiors and sun roof, as well as safety ratings and brand exclusivity. In a future Automotive/mobility ecosystem, value is tied to the utility gained from the entire mobility experience and associated services, instead of the value inherent in the car itself, which acts a means of transportation.

Value creation reflects the quality of the overall consumer experience with better consumer experience, creating more value. Supporting services like satellite radio (SiriusXM) and remote services such as OnStar improve the enjoyment of the ride and afford greater convenience to the consumer. Since the experience creates more value, the consumer is likely to have a greater willingness to pay.

Finding services that can be delivered to garner a price premium to customers is a bedrock objective of the travel industry, and has, in many ways, helped to delineate the winners from losers in the sector. Despite the challenges associated with consistently delivering an end-to-end travel experience (irrespective of the single domain a given travel provider covers today), the benefits to the traveler are undeniable. Indeed, the value such a cross-ecosystem orchestrator can add is well understood by travelers today because they currently are forced by an independent set of provider markets (including air travel, ground transportation, lodging and entertainment) to play the role of travel orchestrator today.

Similarly, as automotive OEMs experiment with subscription-based ownership models that decouple drivers from single vehicles and enable drivers to make use of a wider variety of vehicles, the distinctions among car rental agencies, car dealers and ground transportation providers will continue to blur. Perhaps car rental agencies will seek to leverage their understanding of customers' unique non-owned vehicle preferences to market and provide mobility services to consumers that compete with, or even compliment, traditional car sales value chains.
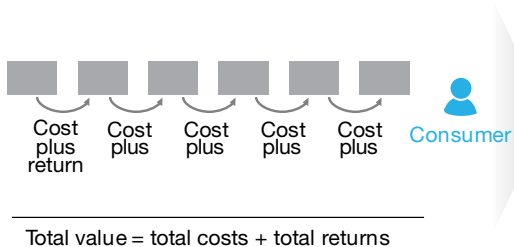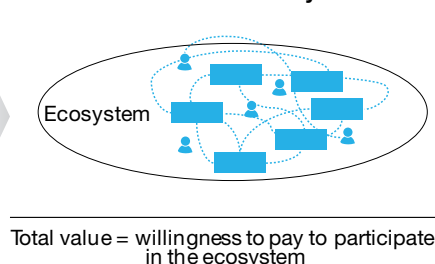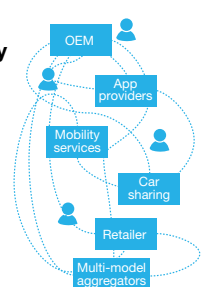

Figure 5: Value creation in an Automotive/mobility ecosystem is tied to utility gained from the entire mobility experience.

Digital reinvention in an E2E economy

Just as the organization-centered economy gave way to the individual-centered economy, a new sea change is brewing. The maturation of social media, mobility, analytics and cloud are motivating the transition from an individual-centered to an everyone-to-everyone economy.

E2E is characterized by hyper-connectedness and collaboration of consumers and organizations for the gamut of value chain activities: co-design, co-creation, co-production, co-marketing, co-distribution and co-funding. In this integrated system, consumers and organizations work together to create value, with transparency driving trust and effectiveness. The differences among the three types of economic models can be illustrated by considering four key dimensions: connectivity, interactivity, awareness and intelligence (see Figure 6).

The following questions can help organizations assess their own digital maturity in each dimension:

- Connectivity—How is the ecosystem coordinated and what are the driving forces?
- Interactivity—What is the depth of relationship between the individual and the organization?
- Awareness—What is the depth of market insight and is it reflected in the consumer experience?
- Intelligence—How is decision making informed?

E2E is characterized by hyper-connectedness and collaboration of consumers and organizations.
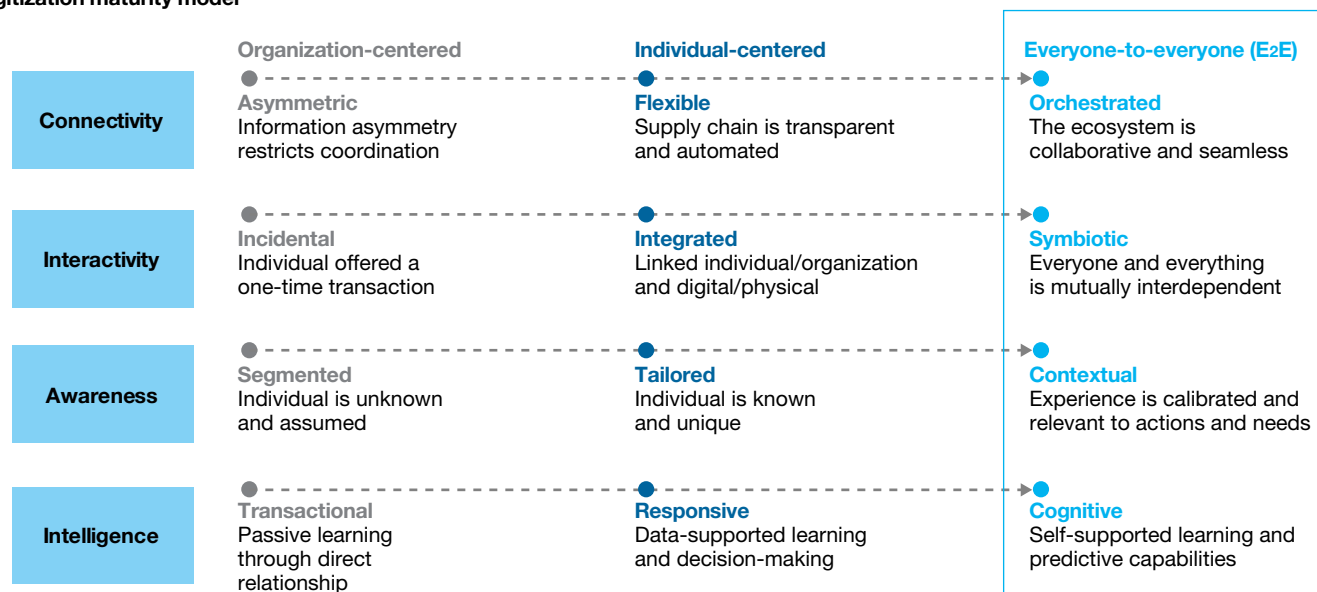
Connectivity

In an organization-driven economy, connectivity is best described as asymmetric. Information flows in one direction—from the organization to the consumer. Traditional insurance is one example, both because insurance costs are driven up by unknown risks that drive complexity and because there is limited visibility into operations of insurance providers such as how premiums are determined and approval/claims processing.[7]

In the individual-centered economy, flexible connectivity prevails thanks to a supply chain that is transparent and automated. Traffic management systems are an example of connectivity that is more digitally mature than in an organization-driven setting. For example, real-time traffic management information systems such as Bitcarrier get data from wireless network activity and the information enables active traffic management and identifies pedestrian movements with data.[8] In the future, connectivity will become orchestrated, within an ecosystem that is collaborative and integrated.

Interactivity

In an organization-driven economy, interactivity is best described as incidental, where an individual is offered a one-time transaction. Interaction between organization and consumer only occurs because it is necessary in order for a transaction to be executed. Product-focused retailers are one example, operating with high turnover, low margin and low-value transactions. Here, the goal is to maximize volume as a priority over developing long-term, personal consumer relationships. Typically, this group dedicates few resources to consumers.[9] To a large extent, this model defined the travel industry over the past two decades, and continues to be the core objective of many travel providers.

Digitization maturity model

	Organization-centered	Individual-centered	Everyone-to-everyone (E2E)
Connectivity	**Asymmetric** Information asymmetry restricts coordination	**Flexible** Supply chain is transparent and automated	**Orchestrated** The ecosystem is collaborative and seamless
Interactivity	**Incidental** Individual offered a one-time transaction	**Integrated** Linked individual/organization and digital/physical	**Symbiotic** Everyone and everything is mutually interdependent
Awareness	**Segmented** Individual is unknown and assumed	**Tailored** Individual is known and unique	**Contextual** Experience is calibrated and relevant to actions and needs
Intelligence	**Transactional** Passive learning through direct relationship	**Responsive** Data-supported learning and decision-making	**Cognitive** Self-supported learning and predictive capabilities

Source: IBM Institute for Business Value analysis.

Figure 6: **A comparison of "digitization maturity" for three economic models: organization-centered, individual-centered and E2E.**

By comparison, the interactivity in an individual-centered economy is integrated, linking individuals with the organization, as well as linking the digital with the physical. Digitized eyewear purchasing is an example of integrated activity that is more digitally mature than in an organization-driven setting. Retailers such as Warby Parker offer online, direct-to-consumer sales for eyewear in order to bypass physical outlets. Online retailers use low price and convenience to digitize a physical product: consumers can receive glasses to try on at home or try on glasses virtually.[10]

The future of interactivity will be symbiotic, in which virtually everyone and everything are mutually dependent. An epidermal electronic system is such an example. Electronic circuits that are like a "second skin" and are aware of a user's cognitive state and can stimulate tissues for rehabilitation. Future applications are expected to blur the physical and digital and extend to include external limb control, sub-vocal communication and military uses.[11]

Awareness

In an organization-driven economy, awareness is segmented, with individuals being both unknown and assumed. Traditional beverage marketing illustrates this approach. Beverages maintain classic flavors with some regional diversity, as when the selection is augmented with no-calorie options and flavor variants. Manufacturers use traditional demographic and psychographic consumer segmentation to promote products.[12]

But in an individual-centered economy, awareness is tailored and each individual is known and unique. Mass customization in retail is an example of awareness that is more digitally mature than in an organization-driven setting. For example, retailers such as Jockey have developed the volumetric bra with a new sizing system offering 55 size combinations that are based on surveys of women. These size combinations create a mass-customized alternative to existing bras, which are often described as ill-fitting.[13]

The future of awareness will be contextual, with an experience that is calibrated and relevant to each individual consumer. An example of this is a projected future retail experience: retailers integrate data across multiple sources, combining location, behavior, servicing, social, virtualization, and fulfillment to create a "for-me-only" experience. The provider of the retail experience may, in fact, know the consumer better than the consumer knows his- or herself. The future contextual experience may even be capable of turning on when needed and off when it is not wanted.[14]

Travel providers that attempt to increase awareness with ever more precise and fine-grained customer segmentation models are missing the point. True awareness, and the mutually beneficial forms of personalized services that flow from it, depend on accumulating insights on individuals and tailoring travel experiences to hue to these discovered preferences. At their best, hoteliers like Ritz Carlton and The Four Seasons deliver this level of personalization for their top customers, but most players in the travel space struggle to apply what they learn about customers in a consistent and personal way.

Intelligence

In an organization-driven economy, intelligence is primarily transactional, which results in passive learning through direct relationship. Traditional telephony illustrates transactional intelligence since providers offer combinations of subscriptions and service packages that can be flexibly combined, but do not vary based on usage history or length of consumer relationship.[15]

By comparison, an individual-centered economy has responsive intelligence, featuring data-supported learning and decision making. Energy optimization systems are an example of intelligence that is more digitally mature than in an organization-driven setting. Optimizations systems like the Nest learn user preferences and behavior for smart energy management. These systems leverage data to support convenient product usability and future development of energy efficiency services.[16]
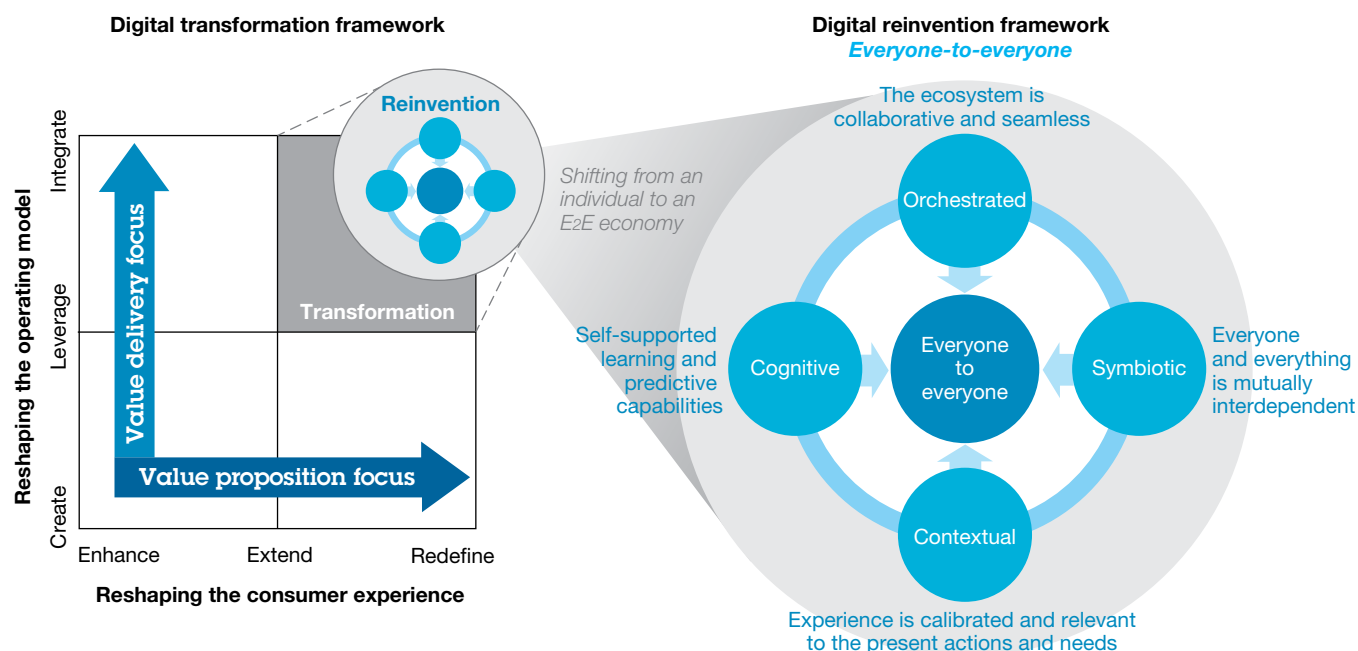
In the future, intelligence will become cognitive, using probabilistic techniques that enable computer-based decision making. One example of this Watson, IBM's new artificial intelligence, as it applies to medicine. Watson will soon help diagnose medical conditions by leveraging its cognitive ability and ingested medical documentation, continuously learning from mistakes. In a recent test, Watson successfully diagnosed lung cancer 90 percent of the time compared to 50 percent for human doctors.[17]

Watson-like solutions are rare in the travel industry, but in the near future they will become more common. Of course, the future looks very different for travelers and organizations when these sorts of advanced analytical capabilities are applied to large populations of the traveling public. Because the current marketplace of travel providers is highly fragmented, and because the explosion of travel intermediaries that was borne by the Internet revolution has not yet been fully rationalized, travelers often feel overwhelmed by the abundance of choice they face when arranging travel. Perhaps unknowingly, the industry as a whole has provided so much choice that travelers find themselves stymied by the impression that better deals are available if they just keep searching. This, in part, drives up the time travelers dedicate to travel search and booking processes today, and is therefore one of the many areas travel companies should seek to improve in the future.

The new Digital Reinvention Framework

A new innovation layer—beyond the traditional definition of digital transformation—is emerging. Organizations should continue to invest in individual-centricity while recognizing it as just the first step toward intensified digital reinvention in the future.

The E2E economy requires reinvention of markets, strategy and value from the ground up. And with the shift to E2E, the traditional Digital Transformation Framework is replaced by the Digital Reinvention Framework (see Figure 7).

Digital transformation framework

Reshaping the operating model

Integrate / Leverage / Create

Value delivery focus

Value proposition focus

Enhance   Extend   Redefine

Reshaping the consumer experience

Reinvention

Transformation

Shifting from an individual to an E2E economy

Digital reinvention framework
Everyone-to-everyone

The ecosystem is collaborative and seamless

Orchestrated

Self-supported learning and predictive capabilities

Cognitive   Everyone to everyone   Symbiotic

Everyone and everything is mutually interdependent

Contextual

Experience is calibrated and relevant to the present actions and needs

Source: 2011 IBM Digital Transformation Study and 2013 IBM Institute for Business Value analysis.

Figure 7: The new Digital Reinvention Framework supports the E2E economy.

Collaboration in the E2E economy can be understood through the *Digital Reinvention Framework* which features *orchestrated connectivity*, *symbiotic interactivity*, *contextual awareness* and *cognitive intelligence*.

Becoming orchestrated, symbiotic, contextual and cognitive

Successful travel companies will be open to the challenges ahead and rethink all aspects of their business. Above all, they must decide where to focus. The future will be very different from the present.

Rethink how your organization interacts with consumers and markets. Do not allow what is possible today (given existing IT or other capabilities) to limit you. After defining compelling experiences, identify monetization opportunities and technical/

organizational requirements, develop the business case and make investment decisions accordingly. Many travel companies, for example, will find that they already have the base capabilities needed to support traveler's needs beyond their own domain; the remaining challenge may be as simple as brokering relationship with partners to obtain the data they need to bring cross-mode travel coordination to life.

Next is the decision about how to focus. In the future, travel organizations will become even more specialized than they are today. Understanding what you are good at will become critical. Take a highly critical, impartial look at what you do well, and what others do better. Agree to focus your efforts on those activities that truly differentiate you from your competition. Make investments there, to build and maintain a position of excellence. Source other functions in your business to top providers for those activities.

The other facet of determining where to go is building new capabilities. Skills and capabilities required for business change through time — those required for success in the future will not necessarily be those that have contributed to past success. Take an objective look at what skills and capabilities you have today, what will be required in the future and move aggressively to retrain or recruit. Think through new models of investment, metrics and incentives, and begin building an organization designed for the future.

Step one: Open up to external influences

Turbocharge market insight. For many organizations, market insight has struggled to keep up with new technologies around social media and big data. Yet market insight will play an ever-more important role in understanding not only changes in consumer attitudes and behavior, but also looking across industry to scope business model possibilities and implications of new technologies. Upgrade market insight to encapsulate capabilities such as social analytics and scenario envisioning. Build better processes to detect weak but potentially profound signals from supply chains or partner networks and channel them into IT and the business.

Embrace digital natives. Managers will need to look at their businesses differently. Markets are unlikely to incrementally evolve as they once did. Organizations will be much more susceptible to disruption coming from both inside and outside their historical industry parameters. Millennials and other digital natives are much more likely to anticipate the power of new technologies and experiences.

Build processes that channel insights directly from Millennials to permeate the C-suite. The preponderance of market studies on Millennial travelers and the frequency with which this topic is on the agenda at travel conferences suggest that the travel community is already aware of this important demographic.

Internalize consumer influence. Consumer influence in most organizations tends to be filtered through the sales organization or the CMO. Such filters inevitably create distortions. Invite consumers to participate in ideation, project evaluation and development processes, as well as in fundamental business strategy development. Develop processes for consumers to have a real say in key business decisions. Increase decision making permeability, and rethink key initiatives as consumer collaborations.

Step two: Connect to new ecosystems and partners

Conceptualize ecosystem parameters. In the future, organizations will operate in ecosystems of converging products, services and industries. By focusing on single products or transactions, organizations will miss the big picture. Become proficient in understanding new ecosystems as they emerge. Identify and assess new sources of value and define where your organization might sit and what role it might play. Develop mechanisms to identify new opportunities and train your people anticipate emergent threats to your business.

Build systemic connectivity. Application programming interfaces (APIs) and Cloud are the tissue connecting ecosystems of individuals. The influence of APIs and Cloud go far beyond the IT department. If handled right, APIs and Cloud can empower dynamic new business models, consumer interactions and organizational flexibility. To position strategically for the future, combine technology (API and Cloud) strategy with business strategy. Compel IT to work with the business and the business to work with IT. Test what is possible with new technologies and anticipate the unexpected by maintaining technical and operational flexibility.

Establish ecosystem partners. In the future, the most successful organizations are likely to be those who partner with the right organizations in the right ways. No single organization can hope to do everything required in new ecosystems. But partnering with anyone will introduce a risk and confusion. Successful organizations will understand their capabilities and how to realize synergies with ecosystem partners. Find partners who can further your objectives and decide how you want to partner. Prioritize those that do things that are not easily replicable. Partner with world class organizations, even if they happen to be small. Explicitly align objectives both informally and contractually.

Step three: Invest in digital mobilization across the organization

Appoint digital torchbearers. Succeeding in the E2E economy will require fundamental rethinking of markets, consumers and products and services. It is likely that some business units and employees will struggle with understanding new imperatives and the change required. Appoint specific individuals to be digital torchbearers. In circumstances where the C-suite struggles to embrace new imperatives, consider appointing a Chief Digital Officer. Mandate these individuals with influencing strategy and educating other executives. Give them real authority, including a say in approving new projects and other investments.

Secure functional/business unit buy-in. Functional or business unit groups may become insular and self-focused, losing sight of overall strategic goals. Interactions between IT departments and business units can often be strained. Business complains that IT does not understand consumer imperatives; IT complains that business does not understand technical feasibility. Yet digital reinvention will require IT and the business to work together like never before. Compel a closer working relationship. Co-location, cross-functional tours of duty and combined planning exercises are among initiatives that might be pursued. The pattern of marketing, sales, and service operating in relative isolation at global hotels and airlines must end.

Key steps for reinvention: 1. Open up to external influences, 2. Connect to new ecosystems and partners, and 3. Invest in digital mobilization across the organization.

Pursue continuous innovation and experimentation. Investing in consumer-centricity remains necessary and desirable. Successful organizations are currently rethinking consumer imperatives and building compelling consumer experiences. But invest in consumer-centricity with knowledge and sensitivity to what will emerge beyond. As new technologies mature and business economics adapt, the economy will begin to shift from an individual-centric to an E2E paradigm. Think about how to shift as well—identify opportunities, conceive business models and navigate new ecosystems. Pursue experimentation, and apply to the business if successful.

Begin reinventing: Ask the right questions

Travel companies must be inquisitive and open to the challenges ahead in order to rethink and reinvent their businesses to capitalize on increasing digital reinvention. The following questions can help to identify valuable next steps:

- What fundamental travel needs have you been serving, and what needs have travelers been left to handle on their own? What new experiences can address those needs?
- If your competitors start selling integrated travel experiences, what will differentiate you in the eyes of travelers?
- What sorts of digital torchbearers already exist in your organization? What can you do to incorporate their influence into strategy and broad educational initiatives?
- How well are you positioning the organization to benefit from changes in the structure and function of traditional travel markets? Can you become the orchestrator across the entire travel ecosystem?

Seize the future through digital reinvention

Until the turn of the century, the most powerful impacts of new technologies have taken years to emerge. Today, we're experiencing the transformative impacts of social media, mobile technology, analytics and cloud at a highly-accelerated pace. Digital disruption has begun: it marks the start of a new technological lifecycle requiring the reinvention of markets, strategy—and value itself.

Organizations must start reinventing themselves from the ground up to remain competitive. On one hand, rapid digital transformation is creating new value and new opportunities for organizations to gain influence and innovate industries. On the other, established norms are in peril due to the blurring of traditional industry confines and formation of new ecosystems. To prepare for a radically different tomorrow, those who aim to prosper under digital reinvention should define strategy in terms of how best to open up to external influences, connect to new ecosystems and partners, and drive digital mobilization across the organization.

To learn more about this IBM Institute for Business Value study, please contact us at *iibv@us.ibm.com*. For a full catalog of our research, visit:

ibm.com/iibv

Access IBM Institute for Business Value executive reports on your tablet by downloading the free "IBM IBV" app for iPad or Android from your app store.

Related publications

"The Customer-activated Enterprise: Insights from the Global C-suite Study." IBM Corporation. October 2013. http://www-935.ibm.com/services/us/en/c-suite/csuitestudy2013/

"Leading through Connections: Insights from the Global CEO Study." IBM Corporation. May 2012. http://www-935.ibm.com/services/us/en/c-suite/ceostudy2012/

Berman, Saul J. and Ragna Bell. "Digital transformation: Creating new business models where digital meets physical." IBM Institute for Business Value. April 2011. http://www-935.ibm.com/services/us/gbs/thoughtleadership/ibv-digital-transformation.html

About the authors

Anthony Marshall is Program Director of the IBM Global CEO Study, and Strategy and Transformation Leader in the IBM Institute for Business Value (IBV). Anthony has 20 years' experience in consulting and analysis, working with numerous Global 1200 companies. He was Senior Managing Consultant in the IBM Strategy and Innovation Financial Services practice, and has deep public sector experience, particularly in privatization and deregulation. Anthony has lectured in economics at Barnard College in New York City, as well as universities in Australia. He is currently publishing in the areas of innovation, digital strategy, technology-enabled business models, ecosystems and partnering. He can be reached at *anthony2@us.ibm.com*.

Steve Peterson is the Travel & Transportation industry leader in the IBM Institute for Business Value. Steve's entire 15-year career has been focused on strategy within the travel and transportation sectors where he has helped companies around the globe develop and implement transformational change. Steve has published several seminal industry studies, including papers focused on airline business model transformation, personalization in the hospitality sector and changes in the travel distribution landscape. He can be reached at steve. *peterson@us.ibm.com*.

Contributors

Eric Conrad, Vice President and Partner, IBM Travel & Transportation, IBM Global Business Services

Joni McDonald, Digital and Content Strategist, IBM Sales and Distribution

Tom Liebtag, IBM Travel & Transportation Marketing executive, IBM Sales and Distribution

IBM Institute for Business Value

IBM Global Business Services, through the IBM Institute for Business Value, develops fact-based strategic insights for senior executives around critical public and private sector issues. This executive report is based on an in-depth study by the Institute's research team. It is part of an ongoing commitment by IBM Global Business Services to provide analysis and viewpoints that help companies realize business value. You may contact the authors or send an e-mail to *iibv@us.ibm.com* for more information.

IBM

References

1 "The Customer-activated Enterprise: Insights from the Global C-suite Study." IBM Corporation. October 2013. http://www-935.ibm.com/services/us/en/c-suite/csuitestudy2013/

2 Ibid.

3 Gross, Doug. "Hyperloop vs. world's fastest trains." CNN Tech: On the Move. http://www.cnn.com/2013/08/12/tech/innovation/hyperloop-fastest-trains/ Accessed on June 9, 2015.

4 "The Customer-activated Enterprise: Insights from the Global C-suite Study." IBM Corporation. October 2013. http://www-935.ibm.com/services/us/en/c-suite/csuitestudy2013/.

5 Ibid.

6 The Ritz-Carlton Leadership Center. http://corporate.ritzcarlton.com/en/LeadershipCenter/. Accessed on December 2, 2013.

7 Bitcarrier. http://www.bitcarrier.com. There is no source content for Bitcarrier in the 12/13 cross-industry Digital reinvention report. This is not a complete endnote source.

8 IBM Institute for Business Value analysis, informed by existing home energy and security management solutions.

9 "Revenue models: Low-value transactions." MaRS. http://www.marsdd.com/articles/revenue-models-low-value-transactions/. Accessed on November 1, 2013. ; Hurlburt, Ted. "A Tale of Two Business Models." 2013. http://www.businessknowhow.com/money/retail-model.htm. Accessed on November 1, 2013.

10 O'Toole, Mike. "Warby Parker, One Million Eyeglasses, And The Next Generation Of Brands." Forbes. CMO Network. July 22, 2013. http://www.forbes.com/sites/mikeotoole/2013/07/22/warby-parker-one-million-eyeglasses-and-the-next-generation-of-brands/. Accessed on November 1, 2013.

11 "Stick-On Tattoos Go Electric." National Science Foundation. August 11, 2011. http://www.nsf.gov/news/news_summ.jsp?cntn_id=121343. Accessed on November 1, 2013.

12 Wind, Jerry and David Bell. "Market Segmentation." *The Marketing Book.* October 3, 2007. https://marketing.wharton.upenn.edu/files/?whdmsaction=public:main.file&fileID=566. Accessed on November 1, 2013.

13 Clifford, Stephanie. "A New Step in Wrestling with the Bra." *The New York Times. Business.* May 30, 2013. http://www.nytimes.com/2013/05/31/business/a-new-step-in-wrestling-with-the-bra.html. Accessed on November 1, 2013.

14 "From Transactions to Relationships, Winning over the empowered Consumer." IBM Corporation. January 8, 2013. http://www-935.ibm.com/services/us/gbs/thoughtleadership/transitioningshopper/; "Analytics: The real-world use of big data in retail." August 8, 2013. http://www-935.ibm.com/services/us/gbs/thoughtleadership/big-data-retail/

15 "The End of the Line." *The Economist. Special Report.* October 12, 2006. http://www.economist.com/node/7995301. Accessed on November 1, 2013.

16 Nest. http://www.nest.com; Henry, Alan. "What Can a Smart Thermostat Do that Mine Can't Already Do?" August 15, 2013. http://lifehacker.com/what-can-a-smart-thermostat-do-that-mine-can-t-already-472975733. Accessed on November 1, 2013.

17 Steadman, Ian. "IBM's Watson is better at diagnosing cancer than human doctors." *Wired. Technology.* February 11, 2013. http://www.wired.co.uk/news/archive/2013-02/11/ibm-watson-medical-doctor. Accessed on November 1, 2013.