



WHITEPAPER

Digital Commerce: Transforming Your Business for Success

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White Paper

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Sponsored by: Lucidworks

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August 2018

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To succeed today, organizations must be able to reach their customers on the channels of their choice, present them with relevant products or services at the right price, deliver the products or services on time, and maintain customer relationships. More than ever, a digital commerce platform is critical to achieving these goals, and IDC believes organizations that develop, implement, and successfully execute a comprehensive digital commerce strategy will capture and maintain a competitive advantage. But no longer do companies have to invest millions or billions of dollars in client/server and system-server software architectures. Available tools now provide modular plug-and-play technology, enabling businesses to quickly adapt and compete in digital commerce. This white paper discusses the rise of digital commerce and its enabling transformative technologies and the associated benefits and challenges. After a discussion of Lucidworks' digital commerce solutions, this document provides some advice for businesses looking to adopt this transformative technology.

SITUATION OVERVIEW

More than ever, technology has changed the way companies, partners, and consumers conduct business. Advances such as social media, mobile devices, and big data have impacted how businesses interact and maintain relationships with their customers – and more importantly, how customers engage retailers, or don't. This transformation has become far more than just a new way to sell products and services. Digital transformation forces – such as the rise of ecommerce, online marketplaces, consumer-buying experiences, mobile device usage, improved customer analytics, and efficient global supply chains – have all drastically changed how consumers and businesses buy and sell products and services. Simultaneously, customers – whether they are consumers, businesses, or public institutions – are demanding more focused and curated individual experiences as well as more flexible payment options.

Because of this, company survival is no longer linked to just products, price, locations, and marketing; survival is also linked to the company's ability to change and embrace digital commerce. The new imperative is not just keeping pace with business change but also increasing the speed of business operations. In an attempt to go faster, organizations struggle with a forest of silos and business innovations stagnate because of redundancy and inconsistency. Companies that don't adapt and don't transform themselves into digital commerce-based organizations will become part of the carnage. Meanwhile, the leaders will get further ahead by rationalizing and integrating their data and applications and leveraging transformative capabilities to move faster and deliver better products and services.

From a business standpoint, digital commerce is an amalgamation of multiple technologies, including enterprise portals, search and content analytics, content management, financial accounting, procurement, order management, inventory, sales, marketing, customer service, and other back-office applications. It is about providing a personalized experience in which businesses differentiate themselves by collecting, analyzing, and using information from each of these systems to make each individual customer feel unique and known – an authentic experience to each and every customer. Ironically, digital transformation holds the promise of taking retailers full circle to an era when customers are catered to, based on their likes and preferences, by knowledgeable salespeople making recommendations and suggestions for additional products. What is different is that organizations can now provide high-end service – "hyper-personalization at scale" – to anyone at the click of a button. In other words, technology has made it possible for organizations to meet the needs of today's demanding, knowledgeable yet fickle consumer.

And market figures show the growth of digital commerce. For example, more than 30% of consumer-based ecommerce in the United States occurs on a mobile device, and this number has grown nearly 10% in the past three years, indicating that consumers are using their mobile device to browse, research, and purchase goods and services. IDC forecasts that the worldwide digital commerce applications market will be one of the fastest-growing segments of the enterprise applications landscape. The market for technology to provide this highly automated, personalized service is currently forecast to increase to a total of \$4.9 billion by 2021, representing a compound annual growth rate (CAGR) of 9.6%. This forecast growth is a reaction to consumers and business buyers purchasing an increasing percentage of their products and services digitally. The digital commerce market demand will steadily increase. It is no longer about just looking for a digital platform but also about architecting the right platform to facilitate the front- and back-office experience. This trend will further stimulate demand for digital commerce that provides hyper-personalized experiences. Customers expect an exceptional customer experience throughout the buying journey, or they will quickly switch to a competitor.

TRANSFORMING TECHNOLOGIES THAT IMPACT THE DIGITAL COMMERCE WORLD

Digital commerce applications facilitate the research, marketing, merchandising, buying, sales, payment processing, fulfillment, upsell, cross-sell, and loyalty functions of commerce through digital channels. Digital commerce applications also support business-to-business (B2B), business-to-consumer (B2C), and business-to-business-to-consumer (B2B2C) transactions. Additionally, digital commerce applications may integrate with point-of-sale, customer service, and other systems to provide sellers of goods and services a complete omni-channel selling environment that extends from the online store to the physical store, the call center, and other sales channels.

Digital commerce uses what IDC calls 3rd Platform technologies (cloud, big data, social, and mobile) for interactions and transactions with businesses and consumers through the customer life cycle. These technologies are used to understand buyer behaviors, optimize product and service offers, establish trust between buyers and sellers, exchange value, and provide related customer services (upgrades, refunds, billing, and accounting). Digital commerce not only includes the technologies listed previously but also includes the ways in which they are implemented; this is where the true transformation occurs. Data still is at the core of the growth of digital commerce, but just as important is how data is sensed and managed from edge to core to cloud and how data is analyzed in near real time, learned from, and acted on to affect outcomes. Sources of data, from the Internet of Things (IoT) to mobile devices, social media, and website interactions, must be combined with big data, machine learning (ML), and cognitive/artificial intelligence (AI) to enable businesses to provide a meaningful, value-added experience for the consumer.

Modern digital commerce platforms aggregate and handle extremely large amounts of external data. This data can be used to better target potential customers on the appropriate channel, dynamically price products and services to optimize revenue, and present special offers.

Consumers want to own their experiences, and the ability to personalize the experience is fast becoming a key competitive advantage. This hyper-personalization ensures that every visit to an ecommerce site is relevant to the customer, ensuring return visits.

A critical enabler of an organization's ability to provide a hyper-personalized environment is the use of cognitive/artificial intelligence technology. In fact, IDC believes that intelligence *must* be part of every digital commerce business model. With so much data and information being generated, businesses will need help in analyzing and curating that data. AI will augment human decision making, automate much of the analysis and recommendation process, and assemble the cognitive components of digital commerce systems.

As a result, there are dramatic advances being made in artificial intelligence platforms and toolsets used to develop applications ranging from chatbots and conversational interfaces to predictive and prescriptive applications that offer advice and recommendations. These technologies are using AI, machine learning, and cognitive computing to analyze data and information to drive digital commerce applications. In particular, embedded tools focus on extracting, processing, and understanding a wide range of unstructured content such as text, images, speech, and video for use in these applications. Fast access to pertinent information and "relevance" are no longer enough; AI-enabled intermediaries or marketplaces improve search results and content relevant to the individual. Industry leaders are now using contextual clues, machine learning, and user interaction data to provide context to results, adding to the personalized consumer experience.

Similarly, the rise of smart assistants – intelligent software and devices that can perform tasks or services for a user – augments users and places even more demands on suppliers for personalized service. Increasingly, this technology is becoming the hub of home automation and utilizes content from many sources. Smart assistants also can be connected to automated shopping and delivery services. Organizations that use them or can easily interface with the popular smart assistants will have another advantage in the marketplace. And supporting the assistants and the ability to perform search, analysis, and recommendations all require some form of cognitive computing as there simply are not enough humans to provide the customer support and knowledge required.

AI provides a platform for the analysis, organization, and interpretation of unstructured data. It can hypothesize and formulate possible answers to questions and searches based on available evidence, can be trained through the ingestion of vast amounts of content, and can automatically adapt and learn from its mistakes and failures. But it provides more than just information; it provides context about entities (people, places, and things) as well as actions and relationships. Advanced AI can go beyond intelligent search and provide applications such as speech recognition, machine translations, text to speech, and conversational interfaces. This helps a business organize and categorize vast amounts of information to further hyper-personalize the customer experience.

But the key to success in any digital commerce-based organization is still information. Data from an ever-growing list of sources plays a central role in understanding the customer and providing the necessary hyper-personalized experience. Traditional enterprise search technology has evolved to index and display results based on structured and unstructured data but still struggles to interpret the unstructured side of the equation. This is a growing challenge as unstructured data now forms the largest share of information and still is the fastest-growing type of data. The key to hyper-personalized service,

therefore, is to provide intelligent searches that use data analysis, customer-supplied contextual clues, and machine learning embedded in the search technology to provide the required information for customers and enterprises alike.

BENEFITS AND CHALLENGES OF DIGITAL COMMERCE TECHNOLOGY

The transformational technologies discussed previously will add to the continued importance of digital commerce as the backbone of successful companies. For example, as the use of AI and language services grows, there will be more conversational platforms, making the technology easier to implement. IDC predicts that by 2020, 40% of ecommerce transactions will be enabled by AI-/ML-based personal shoppers and conversational commerce solutions, with voice-enabled applications becoming the norm. This technology also increasingly will play a greater role in governance, risk, and compliance. And AI will help improve understanding of massive amounts of data through cognitive visualization. The technology will be used to rapidly create personalized solutions, which will enable even better user interfaces.

Organizations must be able to reach their customers on the channel of their choice, present the customers with relevant products or services at the right price, deliver the products or services on time, and maintain the customer relationship. A digital commerce platform is critical to achieving this goal, and IDC believes organizations that develop, implement, and successfully execute a comprehensive digital commerce strategy will capture and maintain competitive advantage. Many organizations have been embracing ecommerce, but digital commerce is much more than simply having a pleasant online experience or mobile app. Instead, the experience in a mobile app or online should be insightful, highly optimized for interaction and participants, frictionless, and "aware" of the experience a user receives.

Digital commerce has evolved to encompass experiences as well. Specifically, customers, employees, partners, and suppliers all receive better experiences during the buying and selling process because of easier access to information and buying channels and the flexibility afforded by the public cloud. IDC believes that vendors that build their technology with the customer's experience in mind will see a positive revenue impact because this is now a key competitive differentiator. In a hypercompetitive era where low prices and product diversity are often not enough to survive the competitiveness for the attention and business of a customer, the experience and emotional response a customer has in interacting with a vendor often makes the difference in winning business. And with so much information and "noise" surrounding commerce, it will be the organizations that turn the seemingly meaningless into meaningful signals about customers to improve the personalized experience that will win big.

The documented benefits of using digital commerce tools and technologies include reduced time to market, greater agility to meet customer needs, reduced customer loss, and providing better access to a full line of a company's products. Creating a hyper-personalized experience for customers increases revenue per visit through increased order size due to product recommendations and personalized search results. In addition, by capturing buyer behavior, the technology can continue to learn and improve, further increasing revenue.

But the demonstrated benefits also raise a significant challenge. Much of the underlying transformative technology is complex, and only a few major players are successful at being a completely digital commerce-based organization. The reason the leading marketplace, search, and social media platform companies are successful is that they have huge staffs of experts who regularly experiment with ways to interpret and take advantage of the vast amounts of information generated. They have the resources to invest in trying new ways to slice data on a daily basis and interpret the subtle signals that

consumers are sending regularly. The bar for a hyper-personalized consumer experience is high, and most businesses without the vast resources of the major players can't even get off the ground.

The good news is that there is a growing number of tools and solutions that can help businesses transform themselves into digital commerce-based enterprises. These customizable offerings are based on the transformational technologies discussed previously and can be linked into existing infrastructure and provide personalized experiences for customers.

CONSIDERING LUCIDWORKS' DIGITAL COMMERCE SOLUTIONS

Lucidworks, based in San Francisco, offers a three-tiered approach to enabling its customers to transform themselves into a digital commerce-based organization. The solution is based on the company's Fusion platform. Fusion provides the tools to design, develop, and deploy intelligent data applications with the popular open source Apache Solr search technology as part of its core. The platform supports querying trillions of documents from an unlimited number of data sources and formats. The platform provides functions to make search-based solutions easier to develop and faster to deploy. These include pre-built connectors to file systems, databases, and other data stores; experience management to tune results and relevancy, as well as the end-user interface; data analytics, visualization, and dashboarding; signal processing and recommendation tuning; and a management and monitoring console. The Fusion platform supports both unstructured and structured data, enabling analysis of virtually any type of information. The platform also provides a processing framework that produces, aggregates, and performs complex processing and algorithms on massive amounts of raw data.

Lucidworks describes its digital commerce solution as a combination of big data and AI. The cognitive functionality is provided by Fusion AI, which runs with Fusion technology. Fusion AI provides the intelligence to capture and aggregate signals such as queries, clicks, views, purchases, and other behaviors to create a custom experience for each user. These intelligent abilities, combined with Lucidworks' signal processing, use machine learning and contextual clue recognition to improve recommendations based not only on individual usage of search but also on the aggregated experience of multiple users, greatly improving the results. In addition to creating a more personalized search experience, the technology can provide predictive results before a customer even makes a query. As a result, organizations can tune search opportunities to create intelligent interactions based on company products and services that focus on individual customer needs.

Fusion App Studio enables companies to quickly build custom digital commerce applications. The development environment enables companies to create a personalized customer experience using modules and prebuilt components that dramatically reduce development time to days instead of months. Modules include tools to create applications for any screen size and device and include search controls, navigation, visualization, mapping, auto-suggest, and analysis. Depending upon the skill set of an organization, Fusion App Studio lets the organization build an out-of-the-box application or develop highly customized user experiences.

Even more intriguing is how Fusion App Studio enables organizations to quickly develop and test new applications. Users are regularly influenced by the experiences they have with the major marketplace, search, and social media platforms. Fusion App Studio provides a tool to experiment and test new approaches quickly, essentially providing the technological expertise that major players have to stay ahead of the game and provide the same hyper-personalization capabilities.

LUCIDWORKS IN ACTION: STARTECH

StarTech is a global manufacturer of hard-to-find connectivity parts for the technology and audiovisual industries. Based in London, Ontario, Canada, the company serves customers worldwide and employs 400 people. StarTech specializes in helping users overcome interconnectivity issues between legacy technology and devices that feature new technology and connector types. StarTech prides itself on customer service, offering 24-hour support and boasting that 93% of phone and chat inquiries are being answered within one minute.

StarTech has been a long-term Lucidworks customer, taking advantage of the company's search technology to help users find what they need out of more than 3,000 products. When StarTech upgraded to Lucidworks Fusion, the company wanted to offer the same high level of customer interaction provided by its telephone and chat customer service representatives to its ecommerce customers. One of the biggest challenges is that customers in different regions and using different technologies have local terms for connectors and other devices, so StarTech needed a search environment that was intelligent enough to interpret customer requests to determine exactly what product was required.

Using the Query Workbench tool in Fusion's development environment, StarTech was able to develop search parameters and quickly test them. Taking advantage of the built-in intelligence of the Fusion environment, the company was able to easily customize the platform's standard modules to create a search environment that met the changing needs of its customers. And with more than 200 connector types in its IT organization alone, the built-in intelligence has been a critical tool in giving StarTech the ability to provide an "amazing amount of control" to customize its ecommerce site.

LUCIDWORKS IN ACTION: LENOVO

Lenovo is a \$45 billion Fortune Global 500 company and a global technology leader in driving intelligent transformation through smart devices and infrastructure that create the best user experience. Lenovo manufactures one of the world's widest portfolio of connected products, including smartphones (Motorola), tablets, PCs (ThinkPad, Yoga, and Lenovo Legion), and workstations, as well as AR/VR devices and smart home/office solutions. Lenovo offers search as a key component of its digital commerce offerings on its global websites and has used a number of other search systems in the past. The company wanted to standardize on a single platform and ultimately chose Lucidworks Fusion after an 18-month multiple vendor selection process.

That process was quite detailed, with several criteria with different weighted percentages around the most important attributes. Items such as functionality, globalization, configuration, and the ability to administer and run easily were very high on the list. In addition, Fusion's use of open source software, focus on the user experience, and scalable system architecture were also important in the selection process. In addition, Lenovo was in the midst of transitioning its commerce platform. Because of that, the organization was familiar with Solr from product and product data perspectives. Lenovo was already managing product through Solr, so finding opportunities to leverage existing infrastructure with a search solution so that Lenovo could not only standardize how it presented results across an internal search but also leverage what it was doing as far as faceting results when users are navigating on the site was important to the company. So there was the potential for significant synergy with its new platform, and as such, Lenovo was looking at providers that could leverage those capabilities that they had from a commerce perspective.

Once Fusion had been chosen, Lenovo began to work toward migrating its search systems to Fusion. The primary focus in the early stages of the migration was to replace the revenue stream, the transactional experience that Lenovo had established already with the existing infrastructure. Click-through rates, conversion, and revenue were all key elements. However, Lenovo understood that features like personalization are going to be crucial as ecommerce sites start evolving and customers get more and more accustomed to a one-to-one type of relationship with vendors, whether it's search or just even navigation of the site. Personalization, using Lucidworks Fusion, is a key capability on Lenovo's road map going forward.

Lenovo has been very happy with the adoption and usage of Lucidworks Fusion. According to Marc Desormeau, senior manager, Digital Customer Experience at Lenovo, "We've seen dramatic bumps in conversion rates and, overall, some of those key success metrics for transactional revenue within order of magnitude at 50% increase since the migration."

OVERCOMING CHALLENGES AND MEETING OPPORTUNITIES

Digital commerce is a transformative technology. It will drive even more change, providing both challenges and opportunities. Major players will continue to innovate and create hyper-personalized experiences for their customers. They will continue to invest heavily in expertise and technology to maintain that edge. But truthfully, there is only so much room at the top. This is not to say that a business cannot reach the size and value of the major marketplace, search, and social companies, but these organizations have changed the baseline for even modest success in today's market. So being the biggest should not be the goal. The goal should be customer satisfaction and using digital commerce to provide the best experience possible. The result will be increased efficiency, faster return on investments, and increased revenue. The opportunity lies in creating an environment where customers start shopping first and then stay longer. As more organizations create customer-facing environments that are intelligent, consumers will expect more personalized service. If organizations do not embrace digital commerce, increasing the odds of success, they risk failure.

And there lies the critical challenge. The business world is littered with the remains of companies that claim they want to be the "next X." Consumers are more sophisticated, tech savvy, and impatient; organizations must focus solely on them. And yes, this will stimulate growth, but companies must understand that transformative technologies are a means to an end, not the final solution: the customer still is the key. Therefore, it is the job of companies like Lucidworks to provide digital commerce technologies along with advice and expertise based on reality, not promises. Frankly, the reality of hyper-personalization and how it can help a business is significant in itself, and there is no need for overblown promises.

Similarly, with such an emphasis on consumer information and personalization, security and privacy will increasingly become critical to stakeholders, including customers, investors, and partners. The customer experience depends heavily on trust, and any breach of that trust will be hard to recover from. Any digital commerce technology supplier must clearly articulate its security and privacy strategies for its users. Lucidworks, for example, should emphasize its history in providing secure enterprise search applications for Global 2000 companies in environments requiring advanced security and technical requirements. To be successful, the company has had to provide a safe, secure environment for its customers and their data.

CONCLUSION

The best-performing companies today, armed with digital technology, are pulling away from the pack and creating an unequal landscape where they will be rewarded with high productivity and profits. Digitalized businesses are more profitable as they adopt new technologies and deliver winning products and services more efficiently. These companies have invested heavily in expertise and tools to create environments that not only meet customer needs but also anticipate them and make recommendations to create a hyper-personalized environment. Automation and intelligence have become key tools in the ultimate differentiator – meeting the needs of customers.

The race to embrace digital commerce has transformed business. The life span of S&P 500 companies has shrunk from approximately 60 years to closer to 18 years. Surviving means companies not only have to be digital transformers but also must make that near-frictionless transformation on the fly. Companies no longer have to invest millions or billions of dollars in digitization. Available tools now provide modular plug-and-play technology, allowing businesses to quickly adapt and compete in digital transformation.

The digital commerce business models can and will evolve. New categories will emerge. Organizations and their C-suite leadership teams that desire to win and lead in the new economy will therefore need to create an environment/platform including people, processes, governance, success metrics/key performance indicators, and data to accelerate the creation, testing, and commercialization of future commerce business models that provide the ultimate service to customers. IDC recommends that, in order to adopt digital commerce technology, companies should:

- Understand that digital commerce and customer personalization is a philosophy and mission, not just a technology. True adoption of digital commerce requires an amalgamation of multiple solutions, including enterprise portals, search and content analytics, content management, financial accounting, procurement, order management, inventory, sales, marketing, customer service, and other back-office applications.
- Select a champion for the move to digital commerce who will break down barriers between traditionally siloed operations within the organization. Often this champion is not a technology person but is someone who most understands the customer base and market, such as a CMO.
- Assess the overall needs and desired results in transforming to digital commerce. This includes increased knowledge of not only customer preferences but also existing technologies within the organization and whether they are appropriate for company goals.
- Decide on whether to make or buy digital commerce technology. Only the largest organizations will be able to build true hyper-personalized environments themselves. The good news is that tools and services now are available to help organizations build a digital platform.
- Search for, and partner with, a technology provider that not only has the expertise but also has the experience in helping companies transform to digital commerce.
- Remember that no matter the technology used, it is all about the customer. Technology for technology's sake will not transform an organization into a successful player, but creating an environment where customer needs are continuously met will.

One only needs to look at which companies in various markets are leading the pack and which are scrambling to catch up to determine who has adopted digital commerce. Technology has changed the overall approach to business and customers, and this will only increase their desire to have a personalized experience every time they interface with a vendor or retailer. The question is no longer whether an organization will adopt this transformative approach to business, but when.

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

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