IDC FutureScape: Worldwide SMB 2019 Predictions
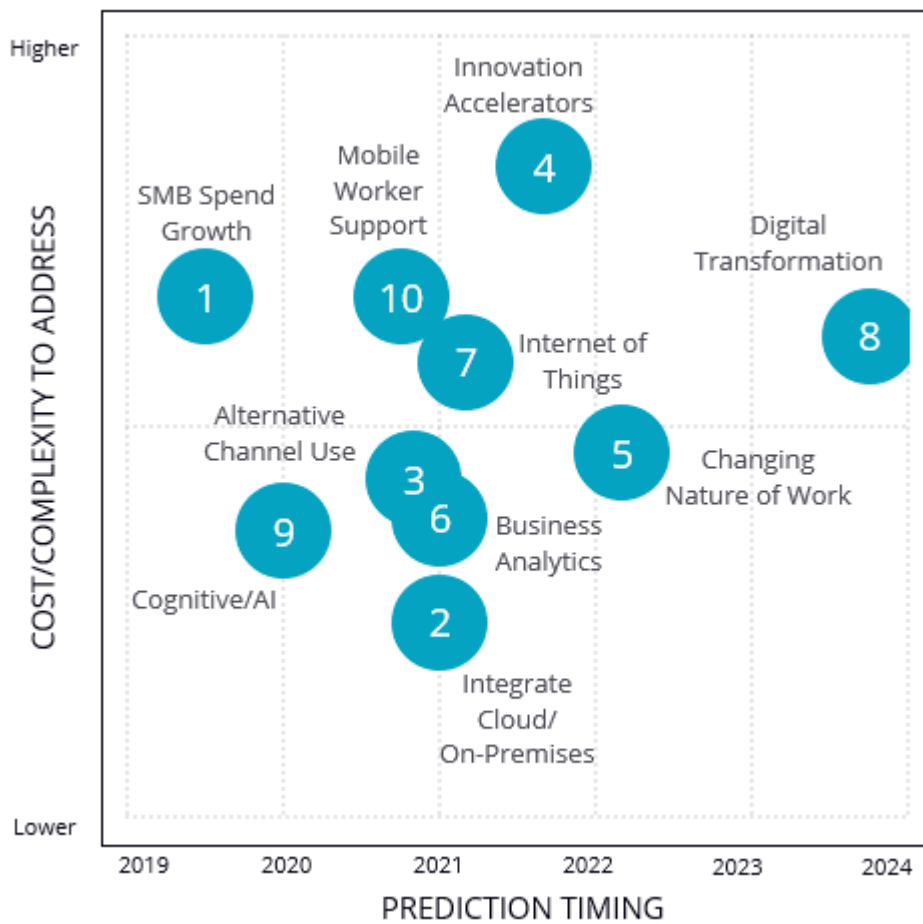
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IDC FUTURESCAPE FIGURE

FIGURE 1

IDC FutureScape: Worldwide SMB 2019 Top 10 Predictions

Note: Marker number refers only to the order the prediction appears in the document and does not indicate rank or importance, unless otherwise noted in the Executive Summary.

Source: IDC, 2018

EXECUTIVE SUMMARY

This study provides IDC's top 10 predictions for small and medium-sized businesses (SMBs) in 2019:

- **Prediction 1:** SMB IT spending worldwide will expand 4.6% in 2019 to total almost $630 billion.
- **Prediction 2:** By 2021, the integration of on-premises and cloud resources will be a top IT spending priority for half of SMBs – in both developed and developing countries.
- **Prediction 3:** By 2021, 60% of SMBs worldwide will use alternative channels for technology procurement, including various service providers (SPs) and self-service sources.
- **Prediction 4:** Innovation accelerators (IA) will have transformed business and production processes in half of SMBs in key verticals by 2022, such as robotics in manufacturing and artificial intelligence (AI) in several industries.
- **Prediction 5:** By 2023, half of SMBs will respond to the changing nature of the work, leveraging new talent and sourcing models.
- **Prediction 6:** Half of medium-sized businesses in developed countries will have business analytics in place by the end of 2019, with adoption increasing across all regions.
- **Prediction 7:** The Internet of Things (IoT) will be used by a third of SMBs in key industries by 2021 to collect and evaluate real-time external and internal data.
- **Prediction 8:** Two-thirds of SMBs will have digital transformation (DX) as a key part of their IT strategies by the end of 2023.
- **Prediction 9:** By the end of 2019, the majority of medium-sized businesses in developed countries will have implemented cognitive/AI software.
- **Prediction 10:** By the end of 2021, 60% of SMBs worldwide will have formal or informal mobile worker support in place.

IDC forecasts that in 2019 worldwide SMB IT spending will approach $630 billion in 2019, which is $27 billion over 2018 levels. A shift in emphasis from traditional 2nd Platform hardware (PC, server, and network) to 3rd Platform (social, mobile, cloud, and big data) resources and software solutions will continue, something both small businesses (SBs; with fewer than 100 employees) and midsize firms (MBs; with 100–999 employees) should keep in mind as they plan for technology investments next year and beyond. Most small and midsize businesses will budget for continuing spending increases (4–5% on average), but IDC believes the rate of the increase for software and services should be greater than that for hardware. The coordination of on-premises and cloud resources should also be a focus for investment, especially as firms continue to add cloud resources as anticipated. IDC's guidance for small and midsize firms is that their technology investment thinking should continue to focus on solutions, whether on-premises or cloud, to at least maintain and ideally enhance their competitive position. The traditionally fragmented and improvisational nature of SMB IT spending should be replaced by the coordinated and managed approaches seen in larger firms.

Decentralized technology acquisition, often led by line-of-business (LOB) departments, will continue to characterize the purchasing of smaller firms, but at the same time, IDC expects to see a growing share of SMBs leveraging technology investments in more comprehensive ways, with greater coordination among different constituencies in keeping with digital transformation. We strongly encourage firms to move in this direction, so that technology investment will have maximum long-term impact.

This IDC study provides the top 10 predictions and underlying drivers that we expect to impact SMBs in 2019 and beyond.

"Effective senior executives, business unit heads, and IT managers in small and midsize businesses worldwide will be looking to harness a wide range of technology to support positive business outcomes in challenging times. While SMBs will always seek the near-term benefits of new technology, the most successful will also invest at the same time to support a long-term vision in keeping with digital transformation." – Raymond Boggs, vice president, Small and Medium Business research at IDC

IDC FUTURESCAPE PREDICTIONS

IDC provides its top 10 predictions and analysis for the SMB market through the end of 2023. The predictions are designed to provide senior managers and IT decision makers with a call-to-action investment plan with respect to critical technologies. Associated with these predictions are a number of fundamental external drivers.

Summary of External Drivers

- **Next chapter of DX:** Technology-driven transformation altering business and society
- **Sense, compute, actuate:** Turning data into value
- **Emerging autonomy:** Learning to live with AI
- **Rising customer expectations:** More convenience, customization, and control
- **Reimagining the material world:** Revolutionized processes expand technology reach
- **The future of work:** Bridging the digital talent gap
- **Legacy inertia:** Retrofit the old into the DX world

Predictions: Impact on Technology Buyers

Prediction 1: SMB IT Spending Worldwide Will Expand 4.6% in 2019 to Total Almost $630 Billion

The worldwide SMB IT spending forecast provides a macroeconomic total of all the different microeconomic investment decisions made by small and midsize firms. "Following what others" do is not necessarily a good idea, but total spending growth does serve as a useful benchmark, especially when compared with previous years. Pressure on SMB IT environments will continue to come from larger and smaller competitors in different industries. In addition, the changing nature of available, affordable technology and the changing preferences and needs of staff and managers for different technology solutions will provide new opportunities to invest in innovative ways. In addition to reflecting the overall health of the economy (recall your company's likely reduction in IT spending in 2008), total IT spending will be linked to changing prices, changing investment priorities, and changing competitive environments. Two major goals will continue to drive SMB IT spending growth: the desire for near-term productivity improvement and long-term competitive advantage.

Associated Drivers

- **Next chapter of DX:** Technology-driven transformation altering business and society
- **Legacy inertia:** Retrofit the old into the DX world

IT Impact

- The opportunity for near-term productivity gains will be increasingly diverse and attractive, making essential the orderly and coordinated development of IT spending priorities.
- Refreshing and updating technology, especially hardware, will drive the largest share of total spending for the next two years, but the opportunity for real performance improvements will be

associated with new software and services investment. SMBs worldwide will have the opportunity to leverage their infrastructure investments to support more solutions. This shift in perspective will be important for long-term success.

Guidance

- Plan on expanding technology investment by at least the general IT spending growth rate to avoid losing competitive ground. Leverage existing technology as much as possible.

- Frame near-term technology acquisition decisions in the longer-term context of potential contribution to the DX process, especially if your organization has no formal DX budget. Everyone is participating in this journey, which begins with coordination of different technology resources. Horizontal solutions and specific vertical resources will bring new capabilities to SMBs across size categories.

Prediction 2: By 2021, the Integration of On-Premises and Cloud Resources Will Be a Top IT Spending Priority for Half of SMBs — in Both Developed and Developing Countries

Cloud-based capabilities will continue to transform how SMBs deploy technology. For the past five years, cloud applications and infrastructure have become integral parts of SMB technology thinking, resulting in the new challenge of integrating and coordinating diverse on-premises and cloud resources. SMBs will continue to add new cloud applications even while they are in the process of upgrading internal on-premises infrastructure. This alignment between updating the old and adopting more cloud services and applications will be at the heart of digital transformation for SMBs in the coming years.

Associated Drivers

- **Next chapter of DX:** Technology-driven transformation altering business and society

IT Impact

- The increase in the share of firms using cloud resources and the number of cloud applications used will continue across company size and geographic categories even as upgrades of on-premises equipment continue. Both cloud and on-premises resources will have to be managed in a comprehensive way for maximum effectiveness.

- The appeal of cloud capabilities is no longer focused on cost reduction (i.e., pay for what you need). Even more important to a growing share of SMBs is gaining access to resources previously unavailable, along with management tools to support effective deployment. SMBs globally will be moving cloud capabilities more deeply into key operating areas to support management activities, especially when vertical-specific solutions are available.

Guidance

- Ensure that cloud services and applications are a basic part of IT acquisition and deployment plans. A significant share of small businesses (almost half of firms with fewer than five employees worldwide) are not yet making use of cloud resources, placing them at a competitive disadvantage in terms of flexibility and support of remote and mobile workers. Leverage current cloud solutions rather than bringing in additional providers to minimize "cloud sprawl" to consolidate and improve efficiency.

- Conduct regular reviews of IT resources, including a review of how they are delivered. When adding new applications, give careful consideration to potential cloud solutions, which coordinate and integrate with existing services and resources. Resist the temptation to add "best of breed" solutions that may be incompatible with other resources being used. It is better

to compromise a little on performance to ensure consistency and ease of management across different company applications.

- Related to the integration of on-premises and cloud resources is the potential role of cloud service providers and other technology sources that can help in rationalization and coordination of capabilities.

Prediction 3: By 2021, 60% of SMBs Worldwide Will Use Alternative Channels for Technology Procurement, Including Various Service Providers and Self-Service Sources

While SMBs have long relied on convenient retail channels (like office or computer superstores) for what can be called "transactional purchases," a range of advanced technology solutions are now being provided by these and related channels. The efficient, direct selling efforts of firms like Dell and CDW have shifted SMB channel preferences to a more self-service/self-managed/self-paced purchasing model. In addition, the growth of cloud services has come with increasing use of service providers, including internet service providers, managed service providers, communications service providers like telcos, and traditional VARs that also provide hosted services. Positive consumer experiences with app stores are influencing business buying preferences, which can also ease deployment and management chores of IT departments if the right rules are in place for technology acquisition and governance.

Associated Drivers

- **Rising customer expectations:** More convenience, customization, and control

IT Impact

- SMBs relying on traditional channels will be at an increasing disadvantage as the decentralization of technology acquisition and the use of new channels and new sources provide more flexible, agile access to advanced technology resources.

- In a similar way, SMB technology decision makers should consider not only what they acquire but how and where their purchases are made. Technology providers are implementing new distribution approaches with self-service through app stores and digital sales channels. Some channel partners will be able to extend their own capabilities by leveraging their access and understanding of resources to serve SMB customers. This will include help in integrating on-premises and cloud resources.

Guidance

- Actively encourage decentralized technology purchasing, with LOB influence, to get the latest technology resources into the hands of those who can most benefit. Empower workers to take more responsibility for technology acquisition, with improved performance and accountability in mind. Leverage creativity and experimentation through "fast trials," so successes (and disappointments) can be shared along with new approaches.

- Identify and expand the use of various service providers that are strengthening their portfolio of capabilities. The mix of different technology sources used by SMBs has grown in recent years with various service providers playing an increasingly important role. While their diverse offerings can be a challenge to follow, the effort to keep up, especially in industry-specific areas, will be worth it.

Prediction 4: Innovation Accelerators Will Have Transformed Business and Production Processes in Half of SMBs in Key Verticals by 2022, Such as Robotics in Manufacturing and AI in Several Industries

Six innovation accelerators, identified by IDC, will provide new capabilities and performance advantage to companies over the next 10 years: next-generation security, augmented and virtual reality (AR/VR), Internet of Things, cognitive systems, robotics, and 3D printing. Many of these are already in manufacturing (robotics, 3D printing), financial services (next-generation security, cognitive systems), and logistics/distribution (Internet of Things). All are of greatest interest to larger companies and institutions, but they will also change the competitive landscape for SMBs in different industries.

Associated Drivers

- **Emerging autonomy:** Learning to live with AI

IT Impact

- The impact of innovation accelerators is already at hand, with robotics and 3D printing changing the nature of manufacturing, and the IT support required, as noted. Larger and midsize firms will be best able to capitalize on artificial intelligence systems, with changing work environments and the opportunity to outsource IT support for AI potentially benefiting firms of all size.

- SMBs will need to ensure appropriate talent is available to implement and manage new technologies including innovation accelerators (see Prediction 5). IT managers in smaller businesses and less sophisticated industries may feel less pressure to adopt IAs but improved ease of use and affordability are coming, along with the need for preparation.

Guidance

- Actively explore IAs, particularly in competitive industries (manufacturing, healthcare, media, transport, and telecom). Even the smallest firms will be under increasing pressure to improve efficiencies, change their business models, and reduce costs. AIs will be an important part of this process, although the focus should be on solutions and their benefits, rather than on AI technology itself.

- Ensure that your organization is keeping pace with the "future of work," which can already be seen as IAs in production and operational processes are changing labor requirements. Skilled workers will continue to be at a premium given the growing trend of collaborative work between humans and machines, and SMBs offering an advanced work environment will have an advantage in attracting and retaining the most effective staff.

Prediction 5: By 2023, Half of SMBs Will Respond to the Changing Nature of the Work, Leveraging New Talent and Sourcing Models

Generational changes will continue to pose challenges as well as opportunities for SMBs. These will encourage continuing adjustment in work policies and practices in keeping with the future of work. Millennials born after 1980 are now the largest age group in the population and represent an increasing share of the workforce, especially for SMBs. Their attitudes are shaping workspace dynamics in different ways, including technology use, resource expectations, and career options. In response to these as well as competitive forces, SMBs will increasingly apply advanced technology resources, new sourcing strategies, and new job market approaches. Intelligent technologies (cognitive systems), smart machines (intelligent robots), and the digitization of businesses, processes, and the economy will all reshape how people work, as noted in the Prediction 4. In Japan, for example, the growth of robotic process automation (RPA) will extend to SMBs challenged with worker shortages while looking to increase

productivity. Tasks will be redefined to reflect new collaboration between humans and machines to augment and automate work while creating new opportunities for value creation.

Associated Drivers:

- **The future of work:** Bridging the digital talent gap

IT Impact

- The changing nature of both work and the workforce, including senior management roles, sets the stage for new levels of technology engagement as next-generation workers bring different technology skills and expect different resources than their older colleagues.
- Millennial comfort with technology will encourage more cloud and mobile resource deployment (which could be considered "digital-native architecture") in companies previously reluctant to revise their technology attitudes.

Guidance

- Embrace "millennial thinking" from a 360-degree perspective. This means taking a fresh look at how things are done, exploring how technology can be applied in new and innovative ways, and capitalizing on ideas from all parts of the organization in a collaborative way. It also means that building effective career paths for workers will be an important part of the process to attract, enhance, and retain talent. This will hold for SMBs across regions and industries.
- Updating how and where things are done will help set the stage for the "future of work," including work culture, workspace, and workforce. Anticipate how the flexibility made possible by accelerators could impact your business and consider how best to join the disruptors rather than the disrupted.

Prediction 6: Half of Medium-Sized Businesses in Developed Countries Will Have Business Analytics in Place by the End of 2019, with Adoption Increasing Across All Regions

Classic accounting software has long been used by SMBs to track business progress, but more advanced business intelligence (BI) and analytics resources can provide deeper understanding of influences on business performance and, more importantly, what trends will have an impact on future performance. More SMB firms, especially in the midmarket, will be using analytics for insight about where they are going as well as where they have been.

Associated Drivers

- **Sense, compute, actuate:** Turning data into value

IT Impact

- The availability of new, lower-cost business intelligence and analytics resources is providing a growing share of SMBs with access to capabilities previously beyond their IT environments and budgets. While BI resources are not a top SMB IT spending priority, the ability to sharpen business practices through effective analysis of operations will appeal to a growing share of small and midsize firms. Of course, the availability of low-cost tools will make effective coordination important so that multiple "sources of truth" are avoided.
- For many SMBs, especially smaller firms, BI will continue to be "descriptive" rather than "predictive." This is the first step toward comprehensive analytics, and while technology may be available to provide more comprehensive reporting, SMB management skills in using advanced analytics may lag behind technology performance, posing a challenge for IT staff seeking to extract the maximum value from BI investments.

Guidance

- Coordinate "islands of analytics" for more comprehensive planning guidance companywide. One-third of SMBs rely on just basic accounting/spreadsheet software for business guidance, and others may use analytics only on a departmental basis for near-term planning. Siloed information can be as bad as no information if people use different data, draw different conclusions, and move in different directions.

- Consider how predictive analytics can improve performance. Advanced dashboards and industry-specific BI solutions can help less experienced users with more compelling and actionable information. Channel partners and technology vendors can be effective sources of information on new BI applications, especially industry-specific ones. Be open to new measures of business performance that can help sharpen your understanding of what metrics really matter.

Prediction 7: The Internet of Things Will Be Used by a Third of SMBs in Key Industries by 2021 to Collect and Evaluate Real-Time External and Internal Data

The Internet of Things is based on the online connectivity of various devices and sensors to provide detail on operating performance or analysis of outcomes. This prediction is closely tied to Prediction 6 and the need for business analytics but moves the speed and detail of available data collection and analysis to a higher level. Beyond just tracking performance levels or operating effectiveness, the adoption of IoT provides the potential ability to measure the results of management action or environmental changes in ways that can help guide future decision making.

Associated Drivers

- **Sense, compute, actuate:** Turning data into value

IT Impact

- The expansion of formal and informal industry-organized ecosystems to include SMB participants as part of supply chain or distribution networks will make data collection vital at every level. SMBs will increasingly need to make technology investments to establish and maintain relationships with key partners.

- The declining costs of sensors, computing, and analytical software will provide new, affordable economies and competitive parity and even potential advantages for SMBs. Investment in experimentation will be especially useful in allowing organizational skills to keep pace with technology advances.

Guidance

- Expect to make significant IoT investments in the next two to three years but with commensurate rewards. Key verticals will be under growing pressure to integrate IoT into essential processes. Manufacturing and transportation firms, as well as wholesale and retail, should commit to major business transformations associated with IoT. Business partners will be expecting such transformation in those they work, with and you don't want to be left behind.

- Consider early adoption and deployment of IoT. While off-the-shelf resources will be available by 2020, the real learning and SMB opportunity will be in this early stage, so "wait and see" could turn into "wait and lose." See the experimentation recommendations noted previously. Road maps for IoT deployment are still works in progress, but SMBs prepared to join with other pioneers will be able to develop an important knowledge base on which to build.

- IoT needs to be undertaken strategically as it can impact every department in an organization from finance to HR to customer service and core businesses. Business processes will change, making it essential for initiatives to have CEO-level support and leadership.

Prediction 8: Two-Thirds of SMBs Will Have Digital Transformation as a Key Part of Their IT Strategies by the End of 2023

Digital transformation is the process by which enterprises adapt to or drive disruptive changes in their customers and markets (internal and external ecosystems) by leveraging digital competencies. The goals of DX are to innovate new business models, products, and services that blend digital and physical and business and customer experiences while improving business performance. While SMBs are only just beginning to coordinate resources in keeping with digital transformation, IDC believes DX thinking with be an important part of successful company strategy in the coming decade.

Associated Drivers

- **Next chapter of DX:** Technology-driven transformation altering business and society
- **Legacy inertia:** Retrofit the old into the DX world

IT Impact

- SMB IT investments typically focus on near-term problem solving or resolving specific issues. A DX perspective requires taking an organizationwide view of how and where investments are made. For smaller firms looking for a 90-day payback for IT investments, DX may not be a top IT spending priority (in keeping with the "Legacy inertia" external driver), but it should be a part of everyone's assessment of new technology.
- Developing new business models will be an increasing part of SMB thinking in the next two years with emerging "digital economy" opportunities. Pressure can come from new competitors as well as suppliers, partners, and customers expecting performance improvement. Advanced technologies like business analytics, IoT, and other innovation accelerators will need to be managed by IT for effective coordination and maximum DX benefit.

Guidance

- Adopt "born on the cloud" long-term thinking even if you are a not a digital native. Disruptive pressures from start-ups and growing businesses in your industry will make digital transformation essential for survival. Explore innovative business approaches (overcome that "legacy inertia") as you reinvent processes to improve efficiency and customer engagement. Be attentive to customer and supplier technology moves to strengthen your relationships.
- Appreciate that the greatest challenges tomorrow may come from companies that are just getting started today. Continuous benchmarking to track competitive performance will be necessary but not sufficient. Drive innovation and performance in new and potentially unanticipated ways; new technology resources should be part of that process.

Prediction 9: By the End of 2019, the Majority of Medium-Sized Businesses in Developed Countries Will Have Implemented Cognitive/AI Software

Affordable intelligent assistants are already adding value to different applications, especially consumer-oriented smartphone apps that collect and process user data. Similar capabilities will expand the value of different SMB applications, providing more attractive, personalized engagement. Cognitive/AI capabilities will be bundled with specific applications, of course, rather than acquired as a separate product. The resulting improvement in the user experience, especially in the anticipation of preferences based on past behavior, will improve efficiency and encourage greater use, leading to even better technology performance.

Associated Drivers

- **Emerging autonomy:** Learning to live with AI
- **Reimagining the material world:** Revolutionized processes expand technology reach

IT Impact

- SMB IT resources are typically scarce, especially among SBs with fewer than 50 employees that typically don't have full-time IT staff. This means that SMBs will have to depend on off-the-shelf and standard cognitive and AI solutions with a minimum of customization to manage costs and speed deployment time.

- Large company solutions (like IBM's Watson) will generate interest, but easier-to-implement subsets of comprehensive cognitive technology will provide the most immediate SMB IT value. Longer term, the ability of cognitive resources to adjust based on experience will provide an important added benefit as the competition for talent increases (refer back to Prediction 5).

Guidance

- Look critically at current processes to identify opportunities for "reverse engineering" to reduce the steps needed to make business decisions. For example, what components feed a decision and can a deconstructed view of apparent "management intuition" be formalized in repeatable ways? This understanding makes the magic of AI possible. Plus, this review can provide insight about which processes can be streamlined even without AI investment.

- Automate routine decision making as much as possible using AI resources. Companies should capture key information and leverage analytics to support and improve business decision making. It also helps to know what you don't know, so you can take steps to replace intuition with actual information.

- Consider where feedback in the decision process (and new AI resources) can be used to improve outcomes. Flowcharting how decisions are made can also reveal inefficiencies and identify areas where improvements in the timing and quality of information can enhance business results.

Prediction 10: By the End of 2021, 60% of SMBs Worldwide Will Have Formal or Informal Mobile Worker Support in Place

In keeping with the changing nature of work (refer back to Prediction 5), a growing share of SMBs will implement mobile worker support to improve staff flexibility, empowering workers to do their jobs when, where, and how they please. This includes working from home or remote locations as well as working flexible hours, something increasingly important for firms with operations or customers in multiple time zones. For SMBs, the appeal of letting employees use their own mobile devices (bring your own device [BYOD]) was always clear from a cost savings perspective. At the same time, though, security and control issues make it important that firms manage both the devices and applications that connect to their networks.

Associated Drivers

- **The future of work:** Bridging the digital talent gap

IT Impact

- SMB IT departments continue to expand BYOD programs, supporting the use of employee-managed devices. In fact, younger employees expect this kind of support for personal technology that can be used in the office. SMBs are typically less restrictive than larger firms about BYOD practices, more willing to take on risk in exchange for a more liberal and productive environment.

- Productivity gains associated with mobile resources will be enhanced through new cloud capabilities. SMB IT departments can provide remote workers with the same access to, data, and collaboration resources that are available to onsite staff. Cloud capabilities offer key benefits that larger firms may be less nimble at leveraging.

Guidance

- Take advantage of advances in the latest mobile security resources to optimize the capabilities of mobile workers. This will improve the productivity of both mobile workers and work colleagues operating in more traditional environments. Provide choice and empowerment wherever possible. Improving productivity also improves job satisfaction.

- Emphasize your mobile worker support to job candidates to underscore your "worker empowerment profile." This will enhance your ability to attract and retain talent interested in advancing their own and your company's performance objectives. Even firms in "control concerned" verticals like finance and healthcare should actively leverage improvements in device security and management for mobile worker support.

ADVICE FOR TECHNOLOGY BUYERS

IDC's SMB predictions are as diverse as the challenges that business executives and IT management will face in the years ahead. That noted, there are three themes that echo throughout – the changing nature of work in light of the changing digital economy, the new technology advances that will allow for significant productivity gains, and the pressures for innovation even as the risk profile associated with some developments might encourage caution. While the benefits of different IT investment must be evaluated independently, there are important ways in which coordination and systematic deployment of technology can provide important advantages. IDC's advice for SMB IT technology buyers centers on three areas:

- **Look internally at current resources to provide context for future investment.** SMBs are naturally reluctant to make technology investment in advance of need (and even then, may be slow to respond, in keeping with "legacy inertia"). But an informed understanding of current technology in place will help ensure that new investment helps build long-term strength. Take care that pressure to address immediate technology needs doesn't result in investment that doesn't contribute to your long-term technology portfolio. Build in compatibility with your existing environment from the start. This is especially important when adding new cloud resources or strengthening on-premises environments.

   Even as you address current requirements, think about what your company will likely need to add in the next two or even three years. Ensure that the technology you are acquiring today will be upwardly compatible and supported in your future environment. Invest an additional 5% or 10% in new technology to ensure its usefulness beyond a year or two – this will be money well spent.

- **Anticipate the needs of current and future staff as your workplace and competitive environment transform.** The changing nature of work is at the heart of different IDC SMB predictions. Prepare for the changing workforce that is either already affecting your firm or soon will be. The impatience of millennials with out-of-date technology is legend, but don't dismiss it as misplaced interest in the latest gadgets. Make sure to leverage three important strengths of millennials' comfort with mobile devices, a facility for collaborative communications, and a willingness to work anytime/anywhere. Harness their career ambitions to further the goals of your organization (and make sure you have the resources to track their

progress as closely as your company's). Don't let them forget that you share common objectives.

In a similar way, pay careful attention to the growing demands of suppliers, distribution partners, and customers for greater transparency and real-time intelligence regarding your activities that affect them. Advances in business analytics and IoT will provide important opportunities to strengthen relations with firms outside your company by providing new sources of value (and competitive advantage). Think of this as guidance regarding external relationships, much like strengthening staff support focuses on internal relationships.

▪ **Embrace the natural tension between centralized control and decentralized decision making in technology deployment and use.** Build a framework for effective decision making in IT acquisition and use. The balance between centralized IT budgeting and control and decentralized deployment of new resources for maximum impact is difficult to craft but essential to drive productivity gains while avoiding chaos. Senior management support of this will be vital. Core rules regarding security and the use of different social applications will be important but so will flexibility regarding innovation and alternative work strategies. Identify internal innovators in the company that are interested in experimenting with new approaches and then help finance and support their efforts. Make sure to celebrate and share their successes (as well as their failures) as learning experiences that all can benefit from. Think of this as guidance regarding how to balance the often-conflicting demands of technology users and technology managers in your firm. Having a reputation for nurturing innovation will improve business performance and make your company more appealing to exactly the kinds of employees you would like to attract and retain.

EXTERNAL DRIVERS: DETAIL

Next Chapter of DX: Technology-Driven Transformation Altering Business and Society

Description: Digital transformation, the continuous process by which enterprises adapt to or drive disruptive changes in their operations, customers, and markets, has entered the next chapter – multiplied innovation. Now, competition is driven by platforms and ecosystems; innovation feeds off of itself. Ubiquitous changes affect business in markets, customer expectations, and operational efficiencies, while society sees improvements in daily life. But many businesses are implementing DX without success, and some will fail entirely. Societal impacts include disturbed trust, jobs, alliances, and new inequities. Companies that achieve multiplied innovation can thrive in the next chapter of DX.

Context: In the past few years, we have witnessed the evolving of DX and the disruptions and opportunities it poses for business and society. Organizations of every size and in every industry must adapt to new technologies, new players, new ecosystems, and new ways of doing business. IDC predicts that, by 2021, at least 50% of global GDP will be digitized, with growth in every industry driven by digitally enhanced offerings, operations, and relationship. While most organizations are attempting DX, only a small percentage are getting it right. Early attempts are met by subsequent challenges of change management, budget, talent, platform, scale, and sustainability.

Sense, Compute, Actuate: Turning Data into Value

Description: Today, data and intelligence represent a unique opportunity for creating unimaginable value. IoT, mobile devices, big data – combined with historical data, systems of record, and global information – continually sense an environment and put it into new contexts. Combined with AI and

machine learning, organizations are spreading intelligence from the edge to the core to turn data into value. However, it is harder than it appears. Winners are differentiated by the ways they leverage data to deliver meaningful, value-added predictions and actions for personalized life efficiency and convenience, improving industrial processes, healthcare, experiential engagement, data monetization, or any enterprise decision making.

Context: By 2020, in over half of G2000 firms, revenue growth from information-based products and services will be twice the growth rate of the balance of the product/service portfolio. Data as a service (DaaS) presents an expanding market for both providers and consumers. The volume, velocity, and variety of data and large and diverse data sets create new challenges, but when combined with AI technologies and exponential computing power, they create ever greater opportunities. Any application, process, service, or organization that isn't part, or all, of the new "sense, compute, and actuate" paradigm is missing the boat with digital transformation.

Emerging Autonomy: Learning to Live With AI

Description: AI is actively impacting experiential engagement, business and manufacturing processes, strategies, and more – autonomously creating a significant portion of new innovations. Many future applications will be developed by AIs without human supervision. Beyond that, augmented humanity – the fusion of digital technologies and humans – for improved mobility, sensing, and cognition will start to become routine. Unfortunately, the "ethics of AI" have yet to catch up with the technology, leaving potential for bad AI as well as good. Bias in AI models is just beginning to get attention. Regulations are even farther behind. There will be a long period of augmentation before autonomy takes over. Unfortunately, society is unprepared; however, there is still time to adapt. As AI is changing the way people live, work, and play, learning to live with AI is essential.

Context: Intelligent applications based on artificial intelligence and continual deep learning are the next wave of technology transforming how consumers and enterprises work, learn, and play. By 2027, 10%+ of applications will be developed by AI without human supervision. Automated customer service agents, increased public safety, preventative maintenance, reduction of fraud, and improved healthcare diagnosis are just the tip of the iceberg driving spend today. IDC forecasts AI solutions will continue to see significant corporate investment over the next several years, achieving a compound annual growth rate (CAGR) of 46.2% through 2021, when revenue will be more than $52 billion.

Rising Customer Expectations: More Convenience, Customization, and Control

Description: As disruptive organizations leverage breakthroughs in cloud, mobile, social, and AI to deliver personalized, rewarding, and immediate experiences, customers have more choices than ever. New devices and interfaces, wearables, AR/VR, home automation, information, and connectivity are combining to instill a belief that people can have what they want, when, where, and how they want it – and at the same time, be in control of the data and their experience. Yet AI-based consumer reputational scoring may be at odds. Emerging economies are bringing hundreds of millions of new customers that businesses are competing to win. Enterprises live and die by Net Promoter Scores, apps, network integration, and more.

Context: With new customer expectations being set by thriving companies that disrupted markets, the previously accepted levels of customer service are no longer good enough. New platforms and business, operational, and organizational models are required to meet consumer expectations. Customers now expect real-time support with answers to complex questions ready at the click of a

button. More people are willing to share personal data in exchange for better service, but they also want more control around their personal data.

Reimagining the Material World: Revolutionized Processes Expand Technology Reach

Description: New technologies are revolutionizing industrial processes and ushering a "golden age" of new materials. Nanotechnologies and atomic-level materials create entirely new applications. IoT, robotics, and 3D printing are mainstream technologies in industrial and commercial applications. AI is used to design products that could only be manufactured by 3D printing techniques. Supercomputers are being used to help slice chromosomes and drive the pharmacogenomics revolution. "Generative design" improves strength and removes weight. Technology is driving "de-materialization" – the use of fewer raw materials to produce products and growth – and the obsolescence of outmoded devices and processes in a whole new world of products, production, and materials.

Context: Traditional CAD/CAM vendors and new upstarts are rolling out generative design frameworks leading to new generations of lighter, stronger products. Genetically targeted drugs and treatments have the potential to effectively combat cancer in our lifetime. New aircraft structures already have significant 3D printed composition, and that's just the beginning. By 2019, generative design and biomimicry will be used by 25% of G2000 manufacturers resulting in 30% improvement in product development cycle time. IDC forecasts that, in 2021, 3D printing investments will exceed $19 billion, worldwide spending on robotics will reach $230.7 billion, and spending on cognitive and AI systems will grow to $52.2 billion.

The Future of Work: Bridging the Digital Talent Gap

Description: New talent management techniques and technology accelerators are fundamentally changing the concept of work and how it is done. The future workspace will be a mix of physical and virtual. Work culture will be more collaborative, while the workforce will be a combination of people and machines working together. But until that vision materializes, the demand for digital talent outpaces the supply and trends to limit free flow of workers localizes the problem. Platform providers are under pressure to address the talent crunch with new productivity environments such as low code/no code. AI may help increase efficiency for some tasks, but this is not the talent in short supply. Organizations need to equip up-and-coming generations for the future while they bring current workers up to speed to address workforce needs.

Context: The demographic shifts led by millennials entering the workforce and technology advances are driving fundamental changes in the workplace. The future of work is humans and machines, instead of human versus machines. This impacts organizations' culture, required skills, talent sourcing, and workspace and the nature and makeup of the workforce itself. It requires organizations to leverage digital technologies, attitudes, and behaviors to reinvent the way businesses engage with their employees, partners, and customers to drive higher efficiencies and deliver superior experiences.

Legacy Inertia: Retrofit the Old into the DX World

Description: Technology has been enabling business for decades, and refreshing deployed systems has always been problematic. While new technologies are transforming some aspects of the business, legacy systems are holding others back, limiting innovation, opportunity, and engagement. Every company in every sector is faced with balancing traditional and next-generation systems and technologies: transformation at scale demands the replacement of outdated systems. Mergers and acquisitions challenge industry leaders as they struggle to incorporate acquired technologies. Many

organizations are retrofitting the traditional systems and technologies to meet the new requirements, while trying to create the flexible and adaptable DX platform of the future.

Context: DX is becoming a competitive requirement and the source of a massive wave of new investments in digitizing business operations, communications, and services. Many organizations are facing the challenges of simplifying the current technology environment. Legacy systems and processes and change management issues often derail DX initiatives. Organizations should evaluate systems against business, financial, technology, and operations measures and create a road map for modernization.

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Related Research

- *Critical External Drivers Shaping Global IT and Business Planning, 2019* (IDC #US44330818, October 2018)
- *U.S. and Worldwide SMB Cloud Storage and Backup/Disaster Recovery Update, 2018: Technology Priorities, Use, and Plans – On-Premises/Cloud* (IDC #US42181918, October 2018)
- *Market Analysis Perspective: Worldwide Small and Medium-Sized Business, 2018 – Technology Investment to Grow Revenue and Improve Productivity* (IDC #US42567118, September 2018)
- *2018 U.S. SMB Market Update: Business Goals, Technology Priorities, Buying Preferences, Millennial Engagement, and Digital Transformation Progress* (IDC #US42570218, July 2018)

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