UPGRADE TO GREAT

How to improve business processes and cut operating costs with emerging technologies
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**EMERGING TECHNOLOGIES FOR SMEs, 2019**  
BLOCKCHAIN, AI, AND IOT, USE CASES, OPPORTUNITIES, AND CHALLENGES

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1 Introduction

The emerging contours of the modern digital world in the Fourth Industrial Revolution are rapidly becoming a lived reality for millions of small and medium-sized enterprises (SMEs) across the globe. The opportunities brought by new technologies and societal progress are enormous, yet depend crucially on the ability of all concerned stakeholders to instigate new business approaches.

Small and medium-sized enterprises (SMEs) are the backbone of any economy. They contribute to economic growth through innovation and job creation. Currently, SMEs represent nearly 90% of businesses worldwide (almost 99% in the US), being accountable for 50% of employed labor force worldwide yearly (1.4 million employees in the US only). Their contribution makes up a good part of about 55% of the GDP in high-income countries.¹

SMEs are continually facing a lot of challenges. In the present socio-economic conditions, with the customers expecting high-quality experiences rather than just useful products, and with one disruptive technology after another entering the market, SMEs all around the world are facing increasing competitive pressures. That incentivizes them not only to discover new ways to grow their revenue, reduce costs, sustain market share, and minimize risks but also to innovate constantly.

Being able to react swiftly to changes in the market situation is a must, and high-tech decision-makers are looking for every advantage. As a business grows, various issues and opportunities require different solutions. What worked a year ago might not bring the same results today. All too often, mistakes that could have been avoided with proper investigation lead to missed out opportunities and lost market share in favor of more agile industry players.

The TeqAtlas's research shows that while some companies are aggressively developing projects based on emerging technologies, others are either unaware or stumped by a multitude of new technologies. It comes as no surprise. After all, it is the first time in human history when several revolutionary technologies, such as Blockchain (BC), Artificial Intelligence (AI) and Internet of Things (IoT), are coming up simultaneously.

Although a strategy of waiting for the innovation to grow to maturity and for more experts to evolve has worked with most information technologies, today this is a wrong approach, considering the rising speed of tech adoption. While a late adopter has done all the necessary preparations, the pioneers may have taken a considerable share of the market — they’ll be able to perform at significantly lower costs while achieving better results. In a nutshell, the winners may receive all, and late adopters may never make up for the lost time.

¹ International Federation of Accountants (2018), Foundation for Economies Worldwide
Some technologies had just made their way to the market and still need further improvements; others exist for decades, like machine learning. Even modern ones like deep learning are based on research that took place at the end of the last century. The research is being constantly carried but the statistical and mathematical foundations of current AI are well-established. Satoshi Nakamoto conceptualized the Blockchain technology more than ten years ago from where the innovation has advanced and discovered its way into numerous applications beyond digital currencies.

Some steps can be accelerated by collaborating with credible partners for the pilot projects. Vendors are developing a vast variety of solutions: from natural language processing to identity management based on Blockchain. But a company should take into account that it may lose the unique selling point unless it customizes the solution to fit a particular business environment and builds everything around it. One other option may be to acquire a startup that has gained considerable technical capabilities. Even so, there is a need to adjust those capabilities to your business.

We investigated a number of case studies describing how solutions based on emerging technologies solve the problems faced by modern SMEs. The purpose of this research is to provide those SMEs all around the world that are interested in high-end tech adoption with insights on already existing solutions and guidance on how to properly start the first project. We mainly focused the research on solutions based on underlying technologies such as Blockchain, AI, and IoT.

The research findings show that Blockchain could easily become a secret weapon for SMEs to beat the sumo-sized rivals. Increased transaction and data transparency, as well as tamper-proof contract management, are just among the few advantages enabled by the distributed database architecture. AI reaches its potential for SMEs in terms of near-instant analytics and reliable forecasts that give companies more time to measure their success and outperform slow starters. Control over smart devices is maintained with the help of advancements in IoT technology.

Altogether, these technologies are here to bring ease, minimalism, speed, and a significant cost reduction. If a company wants to avoid the threat from competitors or new entrants, it is essential to get acquainted with the emerging technologies real-world applications. It will require an entrepreneurial spirit and bold leadership skills from stakeholders, as well as an agile mindset of lifelong learning from employees.

Before getting started, we would like to give thanks to all of the following people and companies for their assistance and insight in developing this research: Diego Gutierrez Zaldivar, CEO and Co-Founder of RSK Labs; Dr. Deng Mu, The Vice President of the China Association of Small and Medium Enterprises; Lasha Antadze, CEO and Founder of Shelf.Network; Dave McKay, Head of Global Solutions at MLG Blockchain; Karl Burns, Strategic Partnerships Manager at SIMBA Chain; John Liu, Chief Product Officer at Fusion
1.1 Objectives of the Study

- To assess the awareness of the SMEs regarding the opportunities and real-world applications of emerging technologies.
- To provide executives and managers with insights on current tech adoption trends, barriers, and opportunities they can bring to a business process.
- To analyze suitable for SME solutions that are based on Blockchain, Artificial Intelligence, and Internet of Things technologies.
- To describe the challenges that businesses face with process automation as well as on how to overcome them or be prepared.
- To suggest a guideline on how to start integrating emerging technologies in the business processes and make a project more likely to succeed.

1.2 Research Methodology

To gain a better insight into the possibilities emerging technologies bring to the SMEs, we conducted structured interviews with 25 companies from the supply-side that provide solutions based on Blockchain, AI, and IoT, including for SMEs. Interviews were conducted with various industry experts, subject-matter technology experts, CEOs, VPs, key executives from different companies and organizations operating in the Blockchain, AI, and IoT markets.
Most of these companies have just entered the market, but have substantial potential to disrupt the market. They are usually well funded and managed by experienced teams, that have in-depth and authoritative knowledge of these technologies. They have devised different business cases to capitalize upon their unique value proposition. At the same time, they have a realistic view of the current regulatory atmosphere. These companies include:

- AI Technology Vendors
- Blockchain Technology Vendors
- Blockchain Security Providers
- Infrastructure and Protocol Providers
- Payment Gateway Providers
- IoT Technology Vendors

Every admitted company was carefully selected by the TeqAtlas analyst team and required to comply strictly with the essential criteria as follows: availability and quality of own use cases, client’s feedback, proven record of published papers within technology they specialize in, assessment from market intelligence. Stated criteria aren’t exhaustive and can vary in line with the particular case for making an adequate impression about the validation of a vendor.

To differentiate vendors, we use a solution-based approach. Since solutions are aimed to cover clients’ various needs and are quite often deployed under turnkey requests, a combination of multiple technologies may be used within one solution. Consequently, there is more logic in classifying solutions and vendors in terms of kind of the problem they solve rather than the precise technology used.

Secondary research accounts for findings extracted from the most recent market reports and analysis published by various industry associations, analytical agencies and consortiums like European DIGITAL SME Alliance, IDC, Gartner, World Economic Forum, Asian Development Bank, Bain & Company, PWC, Deloitte, EY, etc.

However, some limitations should be noted. First, the scope of this research study does not include the costs to develop a project that includes Blockchain, AI, or/and IoT technologies. Second, the study does not include the ROI or cost reductions that resulted from launching the projects based on emerging technologies. Third, the research only covers the scope of Blockchain technology and not any cryptocurrency, such as Bitcoin or Ether.
2 Market Trends (Blockchain, AI, and IoT)

2.1 Tech Adoption

With business technology rapidly advancing, companies can increase a competitive edge if they can keep up-to-date with the latest high-tech trends that drive efficiencies. According to a recent report from the US-based market research firm International Data Corporation (IDC), global Blockchain spending will account for almost $2.9 billion in 2019, which is a nearly 89% increase from 2018. Worldwide spending on AI and IoT systems is expected to grow to well-high $35.8 billion and $745 billion respectively during this year. On a geographic basis, the United States, China and Europe will be the global leaders for Blockchain, AI, and IoT spending in 2019.²,³,⁴

The research by PwC based on 300 AI use cases estimates that the potential contribution to the global economy by 2030 from AI is $15.7 trillion.⁵ Gartner predicts that Blockchain is going to create $176 billion in business value by 2025 and over $3 trillion by 2030.⁶ But while business revenue is on the rise and IT budgets are expected to grow or remain level, SMEs aren’t adopting emerging tech trends as quickly as their larger counterparts, except for IT automation (39% adoption rate).

According to a survey of 780 IT decision makers in North America and Europe conducted by Spiceworks, SMEs are mostly focused on updating their existing IT infrastructure and software. The majority of small enterprises (70%) are making significant increases to their hardware budgets (42% of the IT budget allocation in 2019 to 31% in 2018); meanwhile, medium-sized enterprises are opting to focus on securing sensitive data.⁷ This happens due to European businesses upgrading their IT policies and technologies they employ as required by new regulations, such as GDPR.

With this increased focus on IT, the most visionary companies are also taking this opportunity to test new emerging technologies, such as AI, Blockchain, and IoT. AI-based software is currently used by 9.5% of surveyed IT decision makers, about 11% started to use IoT, and 9.25% pioneered the use of Blockchain technology according to the study conducted by Spiceworks. Among the emerging technology trends, 28% believe that IoT will have the most significant impact, and 22.6% bet on AI. Slightly more than 10% of IT decision makers lean on Blockchain having the most significant impact on their business yet.

David Friend, CEO and co-founder of cloud storage provider Wasabi Technologies, once said: "Large companies in saturated markets typically have fewer opportunities to

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⁵ PWC (2017), “Sizing the prize. What’s the real value of AI for your business and how can you capitalize?”
invest windfall tax savings in the business, so they’re more likely to return that money to shareholders in the form of buybacks. Mid-size companies often compete in markets with greater growth opportunities and hence are more likely to reinvest in the business. And in many cases, investing in IT will have a higher return than investing in other areas, particularly in the case of tech-oriented businesses that make up a large percentage of the mid-size market.”

But some businesses initially being overly optimistic about emerging tech adoption, later chose to wait for the technology to pass its nascent stage instead. Tech Pro Research points out that 53% of SMBs remain uncertain about the business value of intelligent automation, and 47% worry that they lack the necessary skills to implement and support AI/ML systems.⁸

“Every few years, we see new emerging technology. Smartphones, the internet and even personal computers were once emerging technologies. The lessons learned from those are that in the early stages, there are rapid advancements in the technology before the sector matures. The sweet spot is to get in on the early majority. That allows one to take advantage of the leg up quickly this gives you over competitors while not having to do as much work as the early adopters”

_Dave McKay, Head of Global Solutions at MLG Blockchain_

The adoption of emerging tech also varies significantly by region. The survey results show that the adoption rates in European businesses are twice as high in many cases compared to North American companies. For example, nearly 40% of European companies plan to adopt AI and Blockchain-enabled technology by 2020, compared to less than 20% of North American companies.

A broader range of new machine learning algorithms and AI technologies at or near commercialization are attracting significant business interest in adoption. This thesis is supported by the findings of The Future of Jobs Report 2018 by World Economic Forum. According to the report, there is accelerating demand for a range of entirely new specialist roles related to understanding the latest emerging technologies: AI and Machine Learning Specialist, Big Data Specialist, Process Automation Expert, Information Security Analyst, User Experience and Human-Machine Interaction Designer.⁹

Concerning Blockchain, specialists in this field also appear in the list of emerging in-demand roles. The estimated use cases among SMEs appear to remain somewhat more

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⁸ ZDNet and TechRepublic (2019), “Managing AI and ML in the enterprise”
limited as currently Blockchain is not well understood and still subject to a lot of hype. Companies keep on investigating the technology’s potential business application.

As Oliver Grün, President of European DIGITAL SME Alliance commented: “Technology providers, especially digital SMEs, increasingly focus on Blockchain technology due to the greater transparency, security, and traceability it has to offer, as well as increased efficiency and speed. However, businesses operating in other sectors still lack awareness of the benefits that this technology has to offer.”

According to MarketsandMarkets industry report, the global Blockchain market size is expected to grow from $1.2 billion in 2018 to $23.3 billion by 2023, at an unprecedented CAGR of 80% during the forecast period. The infrastructure providers who are developing the Blockchain protocols account for over 65% share in the Blockchain market. These protocols assist application developers in building customized distributed networks for their customers. The Blockchain as a Service (BaaS) market is expected to grow at the highest CAGR of 90%.

A lot of cross-business deals and a wide range of prototypes have been being developed recently. Major players bet on Blockchain using the different strategies, such as mergers and acquisitions, partnerships, business expansions, and product developments.

- Visa purchased Ripple partner Earthport, a payment network for cross-border transactions, for £198 million ($251 million);
- Spotify acquired the Brooklyn-based Blockchain startup Mediachain Labs, to develop the technology for connecting artists and other rights holders with the tracks;
- Ant Financial, the payments affiliate of Alibaba, backed $10 million round for QEDIT, a developer of privacy technology for enterprise Blockchains;
- Korea’s game giant Nexon acquired Korbit, one of the three major cryptocurrency exchanges in Korea, for $80 million;
- Facebook has reportedly acquired Chainspace in its first apparent Blockchain-related acquisition;

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10 European DIGITAL SME Alliance (2019), “DIGITAL SME wins new EU project to boost Blockchain adoption by SMEs.”
13 Vanian J., Fortune (2017), “Spotify Buys Startup To Help It Track Musician Royalties”
14 Allison I, CoinDesk, “Alibaba’s Ant Financial Backs $10 Million Round for Blockchain Privacy Startup”
• San Francisco based bitcoin micro-tipping service ChangeTip, was acquired by Airbnb in a talent deal; 17

• Wyre acquired Bitcoin smart contract derivatives platform Hedgy. 18

Many businesses are increasing IT budgets to support digital transformation initiatives. To establish seamless cross-machine and machine-to-human communication, companies update legacy systems with gadgets connected to a network to discover each other. The edge computing in Internet of Things sensors will see the highest CAGR – up to 46.5% – over the next five years in the small and medium enterprise segment.19

IT professionals believe that emerging tech could eventually become a solid building block that can complement existing IT infrastructure. Although there are some uncertainties, SMEs increase their IT spending not only to upgrade outdated IT infrastructure (65%), but also due to increased priority on IT projects (53%), security concerns (53%), employee growth (50%), changes to regulations (35%), and business revenue increase (29%). Their strategies are becoming more thoughtful.20

2.2 Drivers

There a range of socio-economic trends driving business opportunities in tandem with the spread of new technologies, such as national economic growth trajectories, increasing urbanization, expansion of education and the share of the middle class, in particular in developing economies.

These trends are consistent with the key findings of the Spiceworks recent survey. The majority of SMEs (52-56%) across North America and Europe expect business revenue to increase in 2019. This upward trend shows that most businesses don’t expect the economy to slow down shortly. Across all company sizes, enterprises that expect IT budget increases foresee a 20% increase on average, up from 19% in 2018.21

The shifts of mindset among the new generation also drive the increasing adoption of emerging tech. We are in the era driven by millennials’ buying power and their sophisticated tastes. Millennials are used to obtain all sorts of information about the desired product before making a purchase. Studies show that 69% of millennials say that they “feel good” about both themselves and the company when they can solve a problem solo and 79% of consumers look at customer service as a test of brand value.21

17 Kar I. and Wong J. I., Quartz (2016), “Airbnb just acquired a team of bitcoin and Blockchain experts”
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7 Research Contributors

All the vendors featured in the report, as well as many more, are listed on the TeqAtlas Market Intelligence platform. Within TeqAtlas database companies can find relevant data about the vendors, providing forceful state-of-the-art solutions, with additional specifics about their funding history, professionals, and much more.

ShipChain is a Blockchain-based solution provider for the transport and logistics industry. With a fully integrated platform across the supply chain, products are tracked from farm to table in an open ecosystem that allows for external players to integrate their products.

China Association of Small and Medium Enterprises (CASME) is a nationwide, cross-industry and non-profitable organization. Its members are small and medium enterprises from all over the country. It was established in Beijing in 2006. It was sponsored by the National Development and Reform Commission and supported and approved by the State Council.

Techemy Advisory’s experienced team supports the growth of digital assets by providing a marketplace for astute investors and issuers of quality projects to meet. It has reviewed 950 candidate projects and engaged in 19 projects and created $1.5bn in token value. Accredited investors can access quality, curated deals via the Techemy Dealroom Platform.

Altoros is a strong consultancy and professional services company that helps Global 2000 organizations to turn innovative technologies into products with a sustainable competitive advantage. Altoros offers a methodology, training, technology building blocks, and end-to-end solutions for cloud automation, Blockchain, and AI.

Shelf.Network is a distributed network technology that enables the p2p connection between car listing marketplaces and empowers sellers to run the same vehicle trade synchronized across these multiple marketplaces. Such distribution and unifying service create a global infrastructure where not only cars can be shared but builds up the entire ecosystem of interconnected businesses, where with
each car supplementary services such as transportation, inspections, financing companies can cross-sell their offerings.

Founded in 2014 at Harvard University, Nucleus.Vision is an end-to-end technology solution provider that captures and provides previously inaccessible data to retailers and “brick and mortar” businesses through Blockchain and real-time sensor technology. Nucleus.Vision is backed by Tim Draper, IndusAge Partners, and several other prominent industry players. Nucleus.Vision has offices in San Francisco, USA, and Hyderabad, India.

With offices in London, UK and Chiasso, Switzerland, Aave was founded by CEO Stani Kulechov in 2016 and is now run by a team of 16 innovators. Aave is known for ETHLend, the first decentralized application on Ethereum Blockchain allowing peer to peer lending agreements using Smart Contracts. Aave Pay allows transferring money to IBAN accounts using cryptocurrency. Aave Lending is a B2B solution solving the issue of digital asset storing and digital asset-backed loan management for institutions, who can easily enter the digital asset backed lending business.

OSA Decentralized (OSA DC) is the world’s first decentralized AI-driven marketplace providing real-time solutions to retailers, manufacturers and consumers. OSA provides services for world-leading consumer product retail and manufacturers, including Coca-Cola, PepsiCo, JTI, Mars, L’Oreal, Metro Cash & Carry, and many others. OSA DC developed a proof of concept in 2016, and as of 2017 deployed OSA Hybrid Platform (OSA HP) - Big Data platform powered by AI that manages products optimal shelf availability in retail stores in real time.

ByzGen technology allows decision-makers to track data, keeping a secure digital record of who, when and where information was interacted with. Distributed access rights are attributed to each data object, access to the information controlled via permissions and validated decryption. ByzGen technology speeds up existing processes designed to manage data, streamlining and thereby reducing operational cost and improving efficiencies.
Fusion Foundation, is a nonprofit developer of an open-sourced blockchain protocol to drive the Internet of Value (IoV). The Fusion protocol empowers next generation interoperable architecture with the ability to express and monetize digital asset ownership over time. A growing number of companies are already integrating Fusion’s groundbreaking protocol into their blockchains systems.

Adshares is a decentralized marketplace for programmatic advertising. It uses Blockchain technology to connect publishers and advertisers in order to let them make direct deals. Adshares is an open ecosystem that allows anyone to start offering ad-related services in a fair and transparent marketplace. Thanks to carefully aligned incentives, everyone can profit from the growth of the platform.

RSK is the first open source Smart Contract platform secured by the Bitcoin Network. RSK adds value and expands functionality to the Bitcoin ecosystem by providing smart contracts and greater scalability.

MLG Blockchain is a global venture creation and capital advisory firm with blockchain technology development and broker-dealer capabilities. Headquartered in Toronto and New York City with a distributed team across 20+ countries, MLG Blockchain offers premium Blockchain consulting services, with both regional and global representation for clients around the world.

SIMBA Chain is a cloud-based, smart-contract-as-a-service (SCaaS) platform, enabling users across a variety of skill sets to implement dApps (decentralized applications). These apps allow secure, direct connections between users and providers, eliminating third parties. The easy-to-use platform is tailored for users, developers, government, and enterprises to quickly deploy Blockchain dApps.

Monetha is a global payment solution that enables trustful commerce over the Ethereum blockchain. The key technology behind Monetha is the decentralized trust and reputation system, or DTRS, that is powered by smart contracts and works flawlessly with Monetha’s payment processor. Monetha’s system allows buyers to see trustworthy and transparent reviews made by previous
customers, while retailers can view reviews for each customer as well.

Stratis Group is a Blockchain platform provider that enables users to create, test, deploy and manage both public and private blockchains and can be deployed in the cloud in minutes from the Microsoft Azure Marketplace. Stratis operates worldwide with headquarters in the U.K.

Shivom platform helps pharmaceutical companies gain access to secure DNA data for quick and efficient research, all the while incentivizing and protecting patient confidentiality. Shivom combines Blockchain, AI, DNA sequencing and cryptography to enable secure and personalized medicine. By creating a web-marketplace, a network of genomic counselors, and a not-for-profit drug research unit, Shivom will build a global healthcare ecosystem, reaching even low-income countries where such services have not been previously available.

Founded in 2014 in Paris, Coinhouse (formerly La Maison du Bitcoin) is an online platform and a brick-and-mortar location for individuals and institutional investors looking to analyze, acquire, sell, and securely store crypto assets. Coinhouse currently serves more than 100,000 users from across Europe.

Shopin is a universal shopper profile, built on the blockchain and powered by its proprietary artificial intelligence tools. Shopin aims to deliver shoppers the most personal experience on every site and app, as well as in-store, by working with retailers to give shoppers control of their purchased data. Shopin can enable retailers to advertise directly to the shopper.

Founded in 2018, VegaWallet aims to be a complete cryptocurrency platform, incorporated in Malta with headquarters in Berwyn, USA. VegaWallet solutions - Wallet, Exchange and VegaPay - provide a complete and secure way to streamline a customer’s crypto journey. VegaWallet integrates the latest security technology and focuses on maintaining a clean user interface.
**NetObjex** is an Intelligent Automation Platform for Smart Cities and Connected Enterprises that enables tracking and tracing of assets, asset performance optimization, and reduce asset shrinkage, waste, and inefficiencies through IoT, AI, and Blockchain technologies. Solutions range from peer to peer energy trading, tracking academic credentials on Blockchain, supply chain traceability, smart water metering, anti-counterfeiting crypto tags, fleet management of kiosks, powering smart medical devices, and more.

**Patientory** provides personal healthcare solutions to store and manage health information. The Patientory App is a HIPAA compliant health information storage and management tool based on the company’s PTOYNet Blockchain network. Its solution enables patients to manage their medical records and chronic illness, and get information about their health; and allows healthcare providers to connect with their patients and offer support. The company was incorporated in 2015 and is based in Atlanta, Georgia.

**Totle** provides a single source of aggregated liquidity to power decentralized payment systems, exchanges, and other open financial apps. The team is currently working on the further development of their API / pay endpoint, which will allow their partners to enable a payment system where the user can pay in any ERC20 token, and the merchant can receive any ERC20 (such as DAI or ETH). Totle is headquartered in Detroit, with a distributed team around the globe.

**FarmaTrust** is a Blockchain and AI services company for the healthcare and pharmaceutical sector. FarmaTrust provides its clients with transparency, accountability, and efficiency in their pharmaceutical and medical devices supply chains, Cell and Gene Therapy (CGT), personalized medicines and clinical trials. FarmaTrust ensures regulatory compliance, reduce costs and streamline processes as well as allowing faster speed to market by digitizing workflows and audit trails.

**BlockApps** STRATO is a scalable Ethereum-compliant platform for development, deployment and management of enterprise
blockchain applications. The platform allows businesses to develop early proof-of-concept and can scale to full production systems.

The DAV Foundation is a Swiss non-profit based in Zug, Switzerland. The Foundation is dedicated to research and development of the DAV protocol and network, which are predicated on autonomous vehicles and blockchain technology. DAV Foundation members are located around the world, working as a decentralized team on the project.
About TeqAtlas

TeqAtlas is the Market Intelligence Provider that drives and eases scouting of emerging technologies for SMEs. Our goal is to encourage tech professionals all over the world to adopt modern solutions and wide-spread digitalization.

TeqAtlas Analytics & Research is a knowledge base for tech pioneers. Our comprehensive Products & Services database helps find vendors for any job. Investment Opportunities service provides the data you need preparing for the next funding round, benchmarking your company against competitors and looking for the lead investor.

TeqAtlas Research Team

For suggestions on future research or questions, you can reach us at inquiries@teqatlas.com.