

EdgeVerve Headquarters, Bengaluru, India

#### **About EdgeVerve**

EdgeVerve Systems Limited, a wholly-owned subsidiary of Infosys Limited; defines, develops and licenses innovative software products and cloud-hosted business platforms. We focus on driving revenue growth, cost-effectiveness, and profitability for global corporations and their business ecosystems across the world.

Visit www.edgeverve.com to know more about our innovations in financial services, insurance, retail, CPG, life sciences, manufacturing and telecom.



## BEING RESILIENT



Practically all of us were quite certain about the future, with enterprises setting their vision for 2025 and beyond. That future is neither predictable nor will turn out to be the same as planned. The pandemic has turned the world upside down, affecting the entire world, and impacting every enterprise.

Crises are unapologetic, unfortunate, unforeseeable, but certain. They impact enterprises across geographies and in ways generally not expected or predicted. Look at the crisis that we are in today. It has disrupted some of the toughest enterprises in the world. From Supply Chain to F&A, employees to customers, enterprises are still striving to smartly implement BCP and safeguard them all. However, the biggest challenge is to manage short-term cost pressure and leverage technologies like AI and Automation to create business value in a downturn.

What we have sensed through our discussions with business leaders across industries and geographies is that resilient enterprises are ahead of the curve, and most of them thrive in a crisis. How do they do that? How are they structured, and how do they leverage technology to their advantage during a crisis?

This edition of The Edge Quarterly focuses on how 'Resilient Enterprises' weather the storm better than others and turn a global downturn into an opportunity.

The Edge Quarterly was conceived to share practical leadership ideas and best practices with enterprise leaders.

We hope that you will like the articles and share ideas, thoughts, and comments. You can also view the online version of the magazine for access to other cutting-edge white papers in addition to blogs on Al and Automation at www.edgeverve.com/the-edge-quarterly

To feature your enterprise story or transformation journey in our next edition, please write to us at **contact@edgeverve.com** 

#### - Editorial Team



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try and look through the opaque glass of uncertainty, it's time to think constructively about the future, one that is likely to become

digitally native.

Most organizations have gone through a real-time litmus test of their business resilience, and quite a few gaps have been exposed. While one plans for disruptions to the short-term continuity of a part of the operations, many business models are not built for such scenarios. To strengthen business resilience, enterprises will need to adopt a systematic approach to revisit the fundamentals and new ways of working. A start-stop approach could become the norm depending on conditions around the discovery of a vaccine. So, how does one build an organization that can sustain or even thrive in a crisis. rather than being overwhelmed by it?

#### **Build organizational resilience**

A company is a highly complex intersection of people, processes, systems, and infrastructure. The complexities vary further depending on the sector they operate in. While some enterprises have stepped up during the crisis to protect their businesses, employees and contribute to the society, demonstrating significant agility, others have struggled due to the way they have been built over time. One needs to ask, have core processes changed due to the large scale workfrom-home scenario? These processes often tend to be differentiators for an organization. Many such questions eventually lead to an impact on customer experience, which has a direct correlation to business impact. Hence, the next normal demands that organizations be redesigned and set up to survive and thrive in any situation. Resilient organizations require a foundation of core values like agility, flexibility, innovation, collaboration, and trust to navigate a post-COVID-19 era or even handle any shift due to similar situations. While it's easier said than done, it requires large scale organizational transformations to create de-risked Business & Delivery Models.

#### Leadership to combat the crisis

Numerous predictions are being made on the impact due to COVID-19, and many scenarios are being discussed. But, the uncertainty around the course of the virus, the long-term economic impact it has created remains. CXOs and leadership teams are faced with the responsibility to build organizational resilience by evaluating both the risk and opportunity that will continue to evolve in the short term. They play a pivotal role in deciding the next normal possibilities across consumer expectations, talent engagement, the rejuvenated role of technology, resilient supply chains, and possibly greater corporate responsibility.

## The future workplace - Remote work at scale

Workplace strategies have already begun to look radically different from what we have been accustomed to. Organizations that had 10% of employees working from home before, now have

over 90% functioning remotely. The last couple of months have dispelled a few myths around work from home. Sectors like financial services. healthcare, and contact centers dealing with confidential information have been forced to find ways to adopt remote work at scale. Challenges remain around security, compliance, building the company culture, employee engagement and productivity, and collaboration to further innovation. In a survey that we conducted with 200 global organizations, the key concerns which came out were remote workspace constraint. connectivity, employee motivation and wellbeing, and infrastructure needs, to name a few. However, remote work is here to stay as it offers the undeniable benefit for businesses to continue operations with the opportunity to lower office rentals and overheads. Organizations need to evolve their workplace strategies and create friendly policies to support employees and enabling them to embrace this new paradiam successfully.

## Accelerated digitization - Technology takes center stage

The digital future is here, and it's almost a binary go-digital or shut down scenario. We have seen that organizations in advanced stages of their digital transformation initiatives were positioned better to handle the current crisis. Companies have been forced overnight to reinvent their offline businesses to online and decentralize the workforce.

56% of the same respondents (from the report referred earlier) identified Automation, key to maintaining service levels<sup>1</sup>. Over the last few weeks, we have seen our customers too leverage AI and Automation for numerous new use cases. These range from enhancing business continuity with digital workers, loan processing, invoice and claims management, contract analysis to identifying risks, and resolving IT issues to support remote work. With stock-outs of essential items happening across many countries, consumer and packaged goods organizations have also leveraged Al-enabled business Apps to bring real-time visibility into their downstream trade ecosystem. A trend seen globally is AI and RPA are powering contactless customer experience. Al, Automation and Cloud adoption will become critical for business resilience by refining processes and operations to ensure business growth.

Business resilience is the new corporate buzzword and fast becoming central to every company's strategy. The COVID-19 crisis we face was impossible to predict, but the insights and learning have been plenty. As organizations pursue disruptive change, they will need to inspire internally and externally to reimagine their current businesses and the new possibilities to sustain and thrive in the next normal.

https://www.edgeverve.com/assistedge/ survey-report-impact-of-covid19-on-enterprisesbusiness-resilience/?src\_page=94724

s countries across the globe went under lockdown amidst a deadly pandemic threat, the sports industry came to a screeching halt. The first few months of 2020 have exposed many weaknesses and chinks in businesses' resilience of industries like sports that still rely heavily on the physical presence of coaches, players, and spectators. The 2020 Olympics have already been postponed by a year to a cost of USD 800Mn' and many a lost dream. While the full impact of COVID-19 will likely be visible by the third quarter of 2020, it is estimated that the sports industry could lose over 60 Billion dollars in 2020.

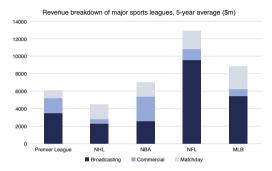
How will this crisis shape the future of professional sports? And what role will technology play in this transition? Let's take a look.

#### The obstacle course ahead

The challenges that COVID-19 has brought to the fore, and the strategies to deal with them will vary based on the type of sports. For instance, while low-contact sports like tennis and gymnastics might see a quick resurgence, high contact, and team sports like wrestling, rugby, and football may take some time to get back in the arena. However, in either case, there will be some significant restrictions. For instance, training is currently a key challenge for sportspeople under lockdown. The social distancing norms and travel restrictions make it difficult for them to access world-class training facilities and in-person coaching. In sports like wrestling, where you need an opponent to train with, keeping in top form becomes doubly difficult.

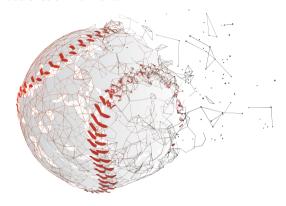
When stadiums do open up, maintaining social distancing and adequate sanitization may remain a challenge in the years to come. And even then, it might be a while before audience confidence in large gatherings returns. After Covid-19, all professional sports have lost their attendees overnight. Sports events are often "superspreader" events for infectious disease, making fans unwilling to assemble in large sports arenas in the near future. Indeed, a Champions League soccer match between Atalanta and Valencia on February 19, 2020, in Milan is being called "Game Zero" because it was played just two days before the first positive case of Covid-19 was confirmed in Italy. It is estimated that nearly 40,000 people in the stands exchanged the virus amongst them that day3.

Another challenge for the industry is revenue generation. Closed borders and canceled events have dealt a big blow to sponsorship and broadcasting opportunities as well as matchday income. Players wearing brand logos in the stadiums bring in sponsorship dollars and also create merchandizing opportunities. The NFL earned over \$8.1 billion in national revenue (consisting of TV deals along with merchandising and licensing deals) in 2019. In the absence of new games, these opportunities may be lost.



Source: WEF/Statista

These challenges pose key questions for the industry: What is the business model for sports when the crowds do not (or are not allowed) show up? Will players be as motivated to excel when there are no roaring crowds to cheer them on? What are the ways to make players perform in a zero-audience environment?



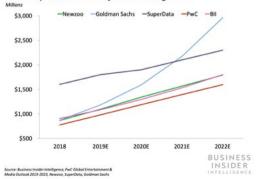
The new reality is a wakeup call for the industry to rethink their business models at the most fundamental level

#### **Emerging business models**

An alternative way of playing and watching sports is already emerging, where physical presence is not required for the audience. Teams in Taiwan and Germany<sup>5</sup> are already filling their stands with fake spectators and cardboard cutouts. Even as early as 2016, in the aftermath of the Arab Spring, Tunisia used technology to strengthen the virtual relationship between fans and their football league. Using a mobile App, fans could connect to 40 speakers placed throughout the stadium and tap buttons to clap, cheer, and sing while watching the match live on TV. On the day of an important match, 90,000 fans cheered CS Hammam-Lif to the win. Broadcasters such as ESPN7 and individual leagues are using reruns, analysis, and documentaries to keep fans watching. NFL's decision to make achieved games since 2009, available for streaming on its direct-to-consumer channel, Game Pass, has shot up daily sign-ups for the service by 500 times8. NBCUniversal9, too has made video streaming the centerpiece of its future operations.

Another approach is to move to virtual models where fans follow live broadcasts or engage with the game and players in an eSport format. eSports have grown tremendously (See Fig. 10) in recent years, and the lockdown will only boost their adoption by leagues and fans alike.

#### Global Esports Revenue Projections Through 2022



In the emerging world of eSports, the Intel Extreme Masters (IEM) is a series of tournaments held in countries around the world". These Electronic Sports League (ESL) sanctioned events, sponsored by Intel, including StarCraft II, Counter-Strike: Global Offensive, Quake Live, League of Legends and Hearthstone. The 2017 IEM finals in Katowice, Poland, drew 46 million viewers. In the same year, the NFL's Super Bowl drew 111 million viewers. Some companies are already transitioning to eSports and seeing great results. eNASCAR<sup>12</sup> race stream where amateurs played against professionals on Amazon's Twitch brought in almost 70,000 unique viewers with no notice and no advertising.

As necessity makes online gaming the new normal, technology will also be a critical element in keeping fans engaged in the virtual stadiums. The need is to move from a high-touch to low-touch customer experience — a shift that makes digital experience a vital move on the board. We may see an increased use of Artificial Intelligence (AI) to share insights on player performance and intelligent bots to have conversations with viewers in real-time. Technologies like Augmented and Virtual Reality (AR/VR) will give the viewers higher control on the gameplay and create more personalized and interactive experiences.

We could even see a complete **robotization of sports** with investments already pooling in for self-driving cars in auto racing and humanoid robot teams that could play in FIFA. CUE the basketball-playing robot can already shoot free throws with 100% accuracy topping the current NBA average of 77%<sup>13</sup>

How sponsorship, broadcasting, and merchandizing opportunities evolve with these new models remains to be seen, however, one thing is clear — technology is set to play a major role in the sports industry.

## Technology partnerships: A key to winning

Now is the time for the industry to seriously look at how to integrate technology in everything from actual gameplays, to player training, and audience engagement and create winning technology partnerships.

- Training: Al and wearables can help players keep in shape even without access to training facilities. Online training platforms like Zwift<sup>14</sup> and Al-powered wearable tech<sup>15</sup> that can track and analyze microscopic movements to help maximize workout efficiency are already being used to great effect. Statistical analysis, video analytics, and predictive insights from past games can also help sportspersons prepare for matches and improve performance.
- Game strategies: Al's impact on game strategies has been significant, and coaches are increasingly using Al-based inputs to take decisions about line-ups, plays, game tactics, etc. and also to better prepare their players against the competition 16. In the times of eSports, when access to players may not be in person, this data will become even more important in game decisions.
- Broadcasting and Reporting: Another exciting development is automated sports data journalism. To meet the consumption needs of the audience sitting at home, Al and video automation can produce videos at scale through data feeds. This can help repurpose existing games with new analytics insights generating interest in re-telecasts even as new games stand canceled.
- Audience engagement: Technologies like AI, automation, cloud, 5G, AR/VR, etc. will help enrich fan experience in the virtual world. Using these technologies, it would be possible to enable personalized augmented experiences, instant replays, 360-degree views, timelapse capabilities, and actual participation in the event<sup>17</sup>. Al could also enhance predictive capabilities, something that 52% of views say make sporting events more engaging<sup>18</sup>. For example, Infosys Stats+<sup>19</sup> Al/ML re-orders statistics in a live match based on their individual influence on the outcome of the match delivering point-by-point, dynamic, and live updates.
- Health and safety: Even as the impact of COVID-19 wanes, precautions will have to be taken as the audience returns to the stadiums.
   Technology will be critical to ensure that spaces are sanitized, crowds managed, and safety protocols adhered to. We may see an increased use of biometrics to allow a ticketless stadium entry, seating might be farther apart, and people may be guided to their seats via in-app navigation.

#### Data: The key to performance

Powering all these technology use cases, and Al platforms is data. And the data we collect today will make the next innings for sports better prepared for managing any crisis.

Sports have multiple sources of data, such as social media, scoreboards, wearables, ticket sales, merchandise sales, loyalty programs, etc. Data solutions can unify this player, sport, and customer data into a single version of the truth. Available to Al-powered analytical tools, this data can become a goldmine of information for the industry for strategic decision making. For example, it can help with micro-segmentation of the audience and performance-based ranking of players to create advertising and gameday strategies and measure their effectiveness. Actionable insights can also help drive dynamic pricing, contracts and sponsorship fee structures, and stadium and television rights.

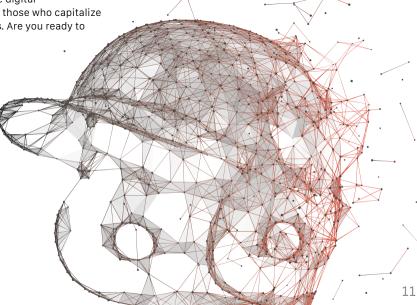
Even as the future of sports rests on data availability, the focus on analytics has often been after data is collected. A sound data collection strategy is almost non-existent. The industry needs to quickly set up processes to collect data for all transactions, without regard to how it will be used in the short term.

#### The next innings for sports

Digital technologies will be the cornerstone of the next innings for sports, and we will see a shift away from stadiums. The good news is that we are not on ground zero. Sports has already made forays into models like eSports, and now the efforts need to focus on making these models mainstream. Technology partnerships are forming and strengthening right now, and investments will only grow bigger.

The fact is that disruption breeds innovation. COVID-19 has fast-tracked the digital transformation of sports, and those who capitalize on it will come out champions. Are you ready to win the game?

- 1 https://www.hhc.com/sport/olympics/52670857
- <sup>2</sup> https://www.insidesport.co/sports-business-to-lose-usd-61-6-billion-in-2020-reveals-two-circles-report/
- <sup>3</sup> https://www.indiatoday.in/sports/football/story/championsleague-match-atlanta-vs-valencia-san-siro-bergamocorongyirus-1659741-2020-03-25
- 4 https://www.cbssports.com/nfl/news/packers-financials-show-that-nfl-made-billions-despite-national-anthem-controversy/
- 5 https://www.bbc.com/sport/football/52632679
- 6 https://www.copa90.com/en/creators/creator-collective-archive/ creators/diana-al-shammari/2016/7/90000-fans-heard-emptystadium
- 7 https://www.wsj.com/articles/espn-unveils-plan-for-dealing-withsports-shutdown-11584454928?mod=searchresults&page=1&pos=10
- 8 https://www.weforum.org/agenda/2020/04/sports-covid19coronavirus-excersise-specators-media-coverage/
- <sup>9</sup> https://www.nbcuniversal.com/
- <sup>10</sup> https://www.businessinsider.com/esports-ecosystem-marketreport?r=US&IR=T
- 11 https://en.wikipedia.org/wiki/Intel\_Extreme\_Masters
- 12 https://www.theverge.com/2020/3/22/21184192/sim-racing-coronavirus-f1-nascar-iracing-veloce-esports-max-verstappen-lando-narris
- <sup>13</sup> https://www.distrelec.de/current/en/robotics/how-robotics-and-aiare-shapina-the-world-of-sport/
- 14 https://www.forbes.com/sites/adigaskell/2020/04/14/will-necessitybe-the-making-of-esports-during-covid-19/#a3d563846ba8
- <sup>15</sup> https://emerj.com/ai-sector-overviews/artificial-intelligence-insports/
- 16 https://www.cio.com/article/3400877/artificial-intelligence-in-sportsa-smarter-path-to-victory.html
- <sup>17</sup> https://www.futurithmic.com/2020/03/03/5g-networks-will-changeesport-telco-playbook/
- 18 https://cio.economictimes.indiatimes.com/news/strategy-and-management/ai-the-holy-grail-for-the-enhanced-sports-viewing-experience-according-to-millennials/70175381
- <sup>19</sup> https://www.rolandgarros.com/en-us/article/stats-infosys-rolandgarros-2019
- 20 https://www.infosys.com/industries/media-entertainment/industryofferings/sports.html



# Evolving Endurance

RPA led digital transformation in financial services



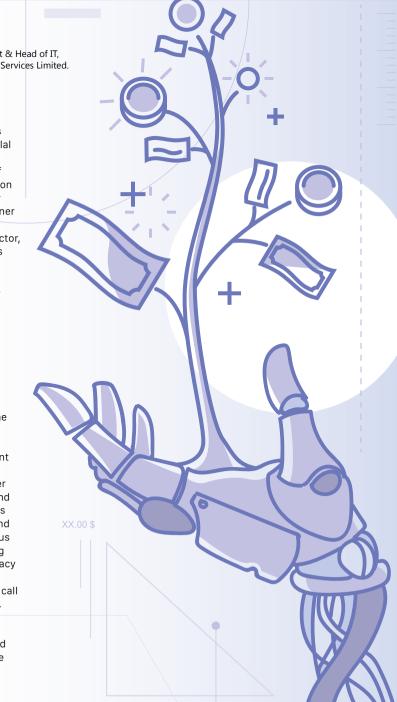
#### Pankai Purohit

Executive Vice President & Head of IT,
Motilal Oswal Financial Services Limited.

s a leader in India's hugely competitive financial services sector, homegrown giant Motilal Oswal Financial Services Limited (MOFSL) has experienced a phase of significant growth and transformation over the last decade. With customer experience becoming a key determiner of business success even in the traditionally antiquated financial sector, the company has made rapid strides over the past few years. Powered by industry-leading technology, we are delivering a combination of best-inclass intelligence, convenience, and customer experience to our clients across sectors and portfolio types.

## Growing Expectations. Exponential Opportunity.

The consumer decides the demand, not only decides the demand, volume or quality, but also the context and method. A combination of these growing expectations and the current events has meant that businesses must have a long-term vision to offer delight across products, services, and channels. It would best if enterprises were to be resilient in the present and future-ready. Our journey has seen us adopt a hybrid approach, harnessing technology for efficiency and accuracy while our human capital delivers incisive, personalized solutions. We call this model Motilal Oswal PHYGITAL. Intelligent Automation has played a significant role in its success. Let's examine the challenges that inspired our thinking before we delve into the details of the solution.



## Great Complexity Needs Extreme Simplicity

To conceptualize a solution capable of scale and agility, we knew it was critical to understand our challenge's complexity. Our audit uncovered the following areas of development:

- Data Management: A comprehensive channel strategy and a vast customer base meant that we have access to rich data capable of offering a wealth of insights. We needed to ensure that we were harnessing our in-house data to develop focused solutions that address our customers'
- Extreme Intelligence: In an industry built on attention to detail, the speed of access to information is as essential as access itself. Our search led us to arrive on the need to implement a technology platform capable of unlocking intelligence across the enterprise, without an obligation to overhaul our legacy systems.
- Agile Innovation: The world is constantly moving, now faster than ever before, and businesses need to be agile. That mindset needs a culture of innovation, and technology could empower that shift.
- Holistic Excellence: The industry now needs agility, endurance, and innovation while ensuring a seamless experience for both internal and external stakeholders. We had a specific aim, a North Star, to build a framework for all-around excellence.

#### **Understanding the PHYGITAL Approach**

At MOFSL, our knowledge-first mindset means we focus on knowledge, talent, processes, technology, brand, culture, and inter-segment synergies. Our constant drive towards linearity in the business sees us prioritize effectiveness and future developments. With PHYGITAL, we are combining the best of physical comfort and digital convenience to offer our stakeholders the best of speed and personalization. Having implemented a comprehensive robotic process automation (RPA) strategy with AssistEdge, we have created a service delivery model where our advisors provide highly customized solutions. Advanced technology, research, and products support the value proposition while our investment advisors focus on offering consumers valuable counsel and individual attention.

#### The Case for RPA

After extensive research, we identified RPA as the growth lever that could inject even more efficiency into our enterprise. The pace of business growth - rapid, volatile, and constant - meant that we needed to incredibly efficient. The challenge was substantial when you factor in the slow pace of development, the inefficiency of purely manual

processes, and the need to cope with regulatory change while managing data from disparate sources. RPA offered a well-oiled tech machine and a single source of truth, making it the right choice for our requirement.

## The Role of Automation in MOFSL's

In consultation with EdgeVerve, we built a clear roadmap for RPA implementation using AssistEdge. Since an in-house team drives all development at MOFSL, we wanted to work with a partner capable of preparing us for autonomy. We also had the flexibility of developing mini-robots and integrating automation into the business. Once the direction was set, we rolled out an enterprise-wide implementation of AssistEdge RPA.

Our journey was built on a foundation of democratized automation. Constant experiments on both new process design and discovery created an environment of continuous optimization. We ensured leadership buy-in at every stage of the implementation process, executing a successdriven scaling strategy.

Since AssistEdge offered a feature-rich and highly customizable solution, MOFSL's inhouse team implemented no fewer than 350 use cases with no external support. These include:

- Bank book reconciliation: Before RPA, we would complete bank book reconciliation once a day, and the process would take three people working for 12 hours each. RPA allowed us to run reconciliation every two hours, ensuring that customers received their statement within seconds as opposed to the previous 24-hour turnaround. Now, bank statements of various banks for all accounts are downloaded and reconciled with bank books at regular intervals in an entirely automated process.
- Service requesting automation: Numerous service requests from clients or business partners like GST reversal and brokerage modification are processed through RPA.
- MIS: Various types of MIS like Productivity MIS, Revenue MIS, and Risk MIS are processed through RPA.
- Data extraction: Most data requests such as client details, revenue details, login details, and even data extraction for auditors are now processed using RPA. The process, which would previously take weeks, now only requires a few hours.
- Fraud detection: RPA analyzes alerts raised by the exchange or internal AML applications and sends formatted emails to clients and business partners in the event of any suspicious activity.

- Data upload and download: We needed to sync a lot of data like client data and DP data with exchanges and depositories, and this process has been fully automated through RPA.
- Disaster recovery: Full BCP and disaster recovery are seamlessly handled by leveraging RPA.

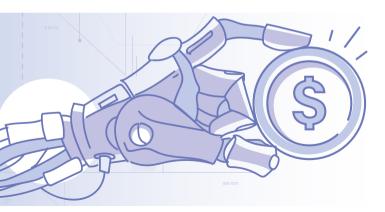
#### **Measuring Success**

MOFSL measures the success of the RPA implementation through a broad range of parameters. First, speed. For instance, a process like an account opening, previously used to take hours and days, and now it needs just 15 minutes. Additionally, the ability to handle high volumes and simultaneously manage multiple processes seamlessly has increased operational productivity by over 20%. RPA has also helped MOFSL achieve 100% process accuracy, eliminating the errors associated with manual intervention.

## How RPA Has Helped MOFSL Navigate the COVID-19 Crisis

The COVID-19 pandemic saw RPA come to the fore at MOFSL as we completed a seamless transition to WFH with no business disruptions. A range of

- and we believe that Artificial Intelligence (AI) will substantially improve the efficacy of processes such as:
- Credit decisions: Al could help businesses process applications faster, issue credit with greater confidence, and understand risk profiles, such as delinquency probability, with more accuracy.
- Risk management: The uncertainty of our current environment means that accurate risk assessment needs both predictive and proactive management. Predictive capabilities could help enterprises prevent risks while Al innovations such as computer vision and document analysis could unlock the hidden value, and risks, in contract clauses.
- Trading: Data-driven investments, also known as algorithmic, quantitative, or high-frequency trading, are fast gaining popularity and could see further refinement in the near future.
- Personalized Broking: Smart tools like chatbots get faster and more intelligent with use and could prove to be a valuable driver of customer experience. The human element remains integral to financial services, but automation and intelligence will only serve to augment human contributions.



customized bots supported MOFSL's advisors, with the digital workers providing valuable help in service delivery and operations. Previously, data in disparate locations, a large number of legacy applications, and a high volume of manual processes meant that agility was a challenge. With RPA, MOFSL has been able to process data in near real-time, automate manual processes, and handle legacy systems with ease, making for a smooth migration at short notice.

#### **Looking to the Future**

In these trying times, one thing is clear that enterprises need to be prepared to take on unforeseen challenges and respond effectively to changes in market dynamics. Intelligent technologies will be essential to this adaptability,

With data now the most valuable resource in the world, companies that can harness it effectively to drive enterprise-wide intelligence will earn a competitive advantage. PHYGITAL will drive our long-term vision so we can offer our customers laser-targeted solutions delivered through immersive human interactions combined with the accuracy and extreme productivity of technology-driven resources.

Nations Trust Bank based in Sri Lanka is amongst the top 30 business establishments offering, world-class financial products and services for individuals, corporate and institutional clients. The organization was facing a challenge to manage several manual tasks for multiple users every day, such as onboarding of bank branch user, user modification, user deletion, suspension and more.

The company implemented AssistEdge RPA to automate these manual tasks in a secure way. AssistEdge Design Studio was used to configure the microbots, Java, and windows applications automations. As a result, cards and transactions were enabled/disabled quickly without manual intervention, leading to a 43% reduction in average handling time.

Scan the QR code to read the case study



# From Attention to Detail to an Eye for Opportunity

### The Evolution of Contract Analysis



#### Michael Sonstena

Head - Legal Process Management, Infosys BPM



#### Jasdeep Singh Kaler

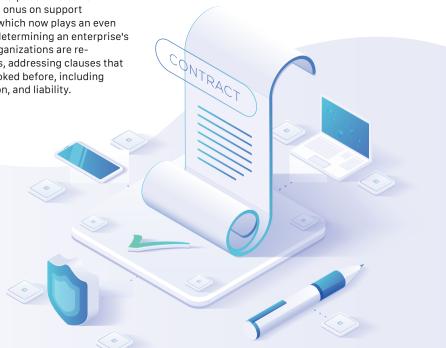
Global Product Head - Infosys Nia™, EdgeVerve Systems Ltd. (An Infosys Company)

ragility and uncertainty. These are the terms that come to mind when you consider the impact of the coronavirus pandemic. It is not hyperbolic to state that things will never be the same again. For enterprises, the disruptions have been widespread and substantial. From manufacturing and distribution to operations and security, enterprises have been forced to revisit every aspect of their business to develop adaptability while ensuring survival. The circumstances have meant that contractual arrangements are now under extreme scrutiny, with companies needing to revisit relationships both from a client and vendor standpoint.

In the past, we have talked about the need for functions like procurement to become value centers, driving business growth, and unlocking intelligence across the enterprise. The current scenario places the same onus on support functions, such as legal, which now plays an even more substantial role in determining an enterprise's financial health. Many organizations are reevaluating their contracts, addressing clauses that may have never been invoked before, including force majeure, termination, and liability.

#### **Overruling the Status Quo**

Before suggesting a solution, one must understand the challenges. Many contracts govern a substantial amount of risk, and the sheer volume of contracts means that it is difficult for enterprise CROs to evaluate an accurate risk profile. Additionally, the complexity of documents like MSAs may also result in revenue leakage with oversight affecting penalty payments, recovery, and even potential discounts. Research from the International Association for Contract & Commercial Management (IACCM) indicates that contract value leakage affects even exceptional enterprises, creating average losses of 6.2% in annual revenue and nearly double that for the rest. With demand and supply



likely to be volatile in the medium-term, enterprises are under pressure to unlock revenue. Diligence in contract analysis could make a substantial impact.

When factoring in the disproportionate amount of time spent identifying instead of analyzing the key aspects of a contract, it is easy to see the reasons for inefficient negotiations and a loss of personhours. Most negotiations are in real-time, and information asymmetry between the negotiating parties can create a disadvantage.

In addition to processing a large corpus of contracts, another challenge is how the contracts are linked to each other. With multiple amendments and addendums to any contract, it will be important to get a view on the latest applicable clause.

Then there is the matter of compliance to regulations, such a GDPR, GAAP, HIPAA, etc., which is the other critical aspect of Contract management. Enterprises need to ensure that their contracts are not just watertight but also fully compliant with all the relevant rules and regulations.

A review of current enterprise operations will point to the need for greater diligence, giving rise to trends like contract-centric sourcing and significantly improved negotiation capabilities. Intelligent technologies are essential to address this need

#### **Essential Quality Delivered at Speed**

Although efficiency is an essential component of digital transformation in contract analysis, speed, and accuracy are equally crucial indices of success. It is here that intelligent contract management and analysis will make a tremendous contribution. While contracting is commonplace, proper contracting is less so, with companies losing sizeable percentages of the contract value on any particular deal. Contract law is very patterned, or at least should be, to achieve consistent and repeatable outcomes. In both contracting and many other aspects of life, humans unconsciously repeat patterns. Al-powered contract review can be the tool that recognizes these patterns to allow for those consistent outcomes and can be a tool for collaborative contracting.

Given the complexity of the documents and the importance of understanding nuance, accuracy must be viewed as a combination of comprehensiveness, detail, and intelligence.
Contract Lifecycle Management (CLM) systems promised much at the outset but have not delivered. First, by being unable to address due diligence, particularly during M&A activities. There is a huge need for advanced contracts analytics, which is not met by CLM systems. Moreover, CLM systems address only the contracts created after the implementation and ignore the historic load of contracts, creating a significant blind

snot that could prove costly. The silo effect in enterprises is further exacerbated by the fact that these implementations are usually restricted to a few departments and not carried out across the organization. Even if allowances are made for these limitations, these systems still fall short on convenience as they do not offer an indexed and searchable repository of contracts. To realize the real impact of intelligent applications, users should have access to the most relevant information in a useful format, right when they need it. The resulting shift will give rise to a legal team capable of doing more with the same number of people, directing its attention to high-value tasks instead of what is more rote and routine, making a direct contribution to a company's effectiveness and profitability.

## Why Al-powered Contract Review and Analysis is the future

It's important to note here that while contracts have been brought into focus by the current crisis, the process has long been inefficient. The sophistication of AI and the rapid evolution of NLP and computer vision means that contract analysis no longer needs to be an effort-intensive process that makes for a hasty negotiation with inadequate information. Companies now understand the need to be familiar with risk clauses such as force majeure, the survival of obligations, and limitations of liability across their supplier contracts or other third-party contracts.

However, that is not the only concern. Several other contract terms could offer valuable benefits. Take the example of discount clauses.

Companies able to negotiate and utilize discounts on their supplier contracts could unlock a substantial amount of revenue and redirect the capital towards business-intensive activities, which is often an opportunity often lost due to oversight.

When capital is at a premium, enterprises must look to quickly shed spend by terminating non-essential contracts, making for another activity where speed and accuracy are paramount.

Al-powered contract analysis identifies and extracts information from contracts before providing the most relevant aspects for review. Combined with NLP and computer vision, advanced machine learning techniques are used to automate the evaluation of unstructured contracts, injecting efficiency into the management process. Whether it's the extraction of clauses like non-performance or termination rights from procurement contracts or indemnity, confidentiality, and limitation of liability clauses across other agreements, intelligent contract analysis can substantially reduce the effort involved and improve the quality of contract management. Additionally, advances in AI/ML techniques mean that the technology can now transform the typical error-ridden

and inefficient manual process of analysis by identifying, contextualizing, and extracting various elements such as the header, footer, and even data within a table at speed and with extreme accuracy.

On the one hand, the technology makes for a more effective procurement function by reducing the reliance on legal. On the other, it ensures that legal teams are responsible for generating valuable counsel instead of time-consuming administrative tasks?

#### The Real Impact of Al

Al-based solutions offer a versatile, powerful, and customizable alternative capable of continuous learning. They ensure that early adopters will enjoy an intelligence advantage as the platform evolves to their organizations' needs.

Al platforms often incorporate deep learning and progressive learning to enhance Natural Language Processing capability. They are, therefore, able to track variations in contract language for both simple business terms and even highly negotiated clauses with custom language. The resulting accuracy can be particularly useful for due diligence processes, compliance audits, and even third-party contractual language comparisons with an enterprise's corporate standard.

Moving from a descriptive to a predictive standard, AI can now all but eliminate OCR error-rates. These high accuracy levels and features such as redlining ensure that teams are looking at the most pertinent contract information at every stage of the review process.

By offering a single source of truth in a consumable, searchable, and analyzable format, intelligent contract analysis lends itself to a wide variety of use cases. In the case of M&A, it allows the parent company to evaluate the acquired firm's risk profile and interpret the change of control clause. Enterprises can examine vendor and sourcing contracts across their global supply chain, availing discounts, terminating non-essential spending, and building deeper relationships as required. Compliance, another major challenge, can also be more easily addressed with the speed and accuracy of Al-based contract analysis.

Implementations of AI-based contract analysis have seen clients increase cost savings per contract by 90% while driving a 9x increase in productivity.

Additionally, by deploying predictive and cognitive modules, clients can implement standardized risk analysis and scoring systems, generating accurate and objective risk profiles.

#### Setting the Bar

While the advantage of Al technology is indisputable, it still pays to tread with caution when choosing a solution partner. Enterprises looking to transform their legal process must turn to providers with a demonstrable track record and expertise in the client's domain. Also, the platform should not create a need for rip-and-replace. They must instead offer both upstream and downstream integration out of the box or through customization, working seamlessly with existing applications systems, eSignature products, and downstream visualization systems for dashboarding and other purposes.

The solution must have Machine Learning and Natural Language Processing (NLP) forming the bulk of its Al capability. It must include pre-processing capabilities which can correct document skew and background noise that may have occurred during the scanning process. It should have Computer Vision like capabilities that go beyond the limitations of generic OCR products in understanding the context of document extraction. It should also be adaptable and dynamic, offering multilingual capabilities. Finally, enterprises must determine if their solution provider offers a strong consulting and services arm owing to the risk involved and the speed of resolution required.

As enterprises start to chart their path through the new normal, technology integration will prove to be a driver of resilience and growth. However, technology alone can't deliver growth and business resilience and needs to be complemented by timely and critical human intervention. Instead of Humanin-the-loop soon the world will be talking about Human-is-the-loop. The validation of any Al model by legal and domain subject matter experts is critical and is usually found missing in the cluttered space of AI contract review solutions. You can expect to see the emergence of hybrid roles such as legal technologists tasked with creating enterprise legal teams of the future. Current talent will need to develop technical skills and an understanding of platform workflows to ensure the success of the transformation exercise. We are at an inflection point in the global enterprise journey, and it is safe to say that AI will drive this shift, not least in moving legal from a safety net to a value creator and growth engine.

<sup>&</sup>lt;sup>1</sup> source: https://s3.eu-central-1.amazonaws.com/iaccmportal/ resources/files/10151\_iaccm-elevatewebinar-leakproofingyourcontractprocesses-8may18.pdf

<sup>2</sup> https://dictionary.cambridge.org/dictionary/english/on-the-one-hand-on-the-other-hand

Scan the QR code to know the next steps



## **Business Resilience**

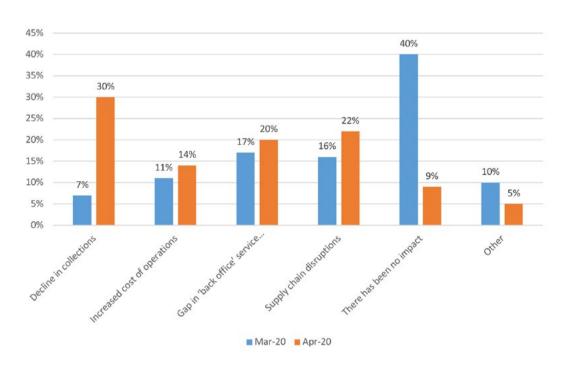
### The Immunity Shield in Times of Crisis

OVID-19 has impacted the world in ways never imagined before. From altering our work situation to affecting our personal lives, we are all engaged in a battle to combat the crisis. Businesses have been equally impacted, from severed supply chains, hampered procurement channels, burdened IT capacity to modified working style. To understand this better, we've conducted a joint survey with SSON for taking a deep dive into how the crisis has impacted businesses and what are the next steps initiated to ensure a future-proof strategy.

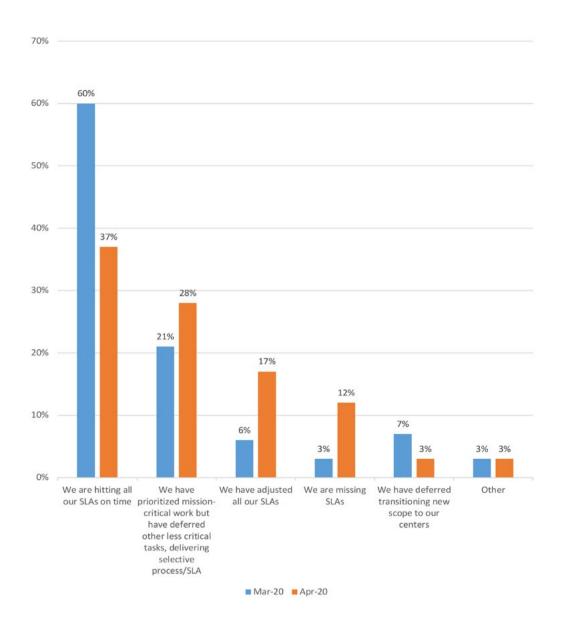
To conduct this survey, almost 200 organizations, headquartered around the globe, took the time to respond. Roughly 3/4 of respondents are corporates. Most claim global footprints, with half of the enterprise respondents having operations in APAC (including China and India), compared to 2/3 of BPO respondents.

Here are some insights:

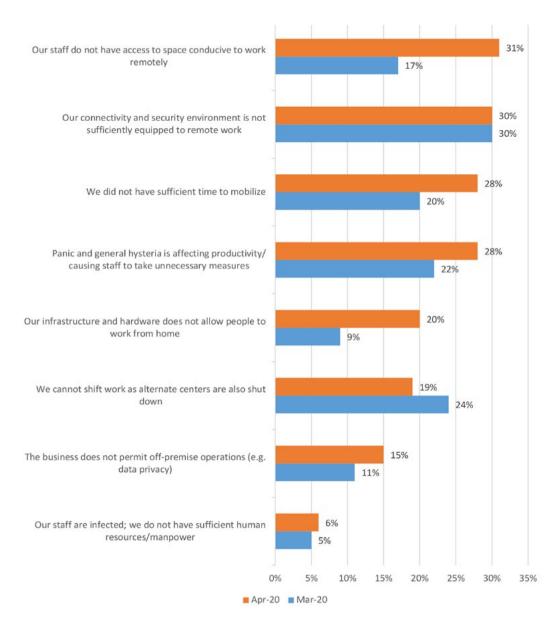
# Which of the following is your most significant business impact as a result of the COVID-19 outbreak?



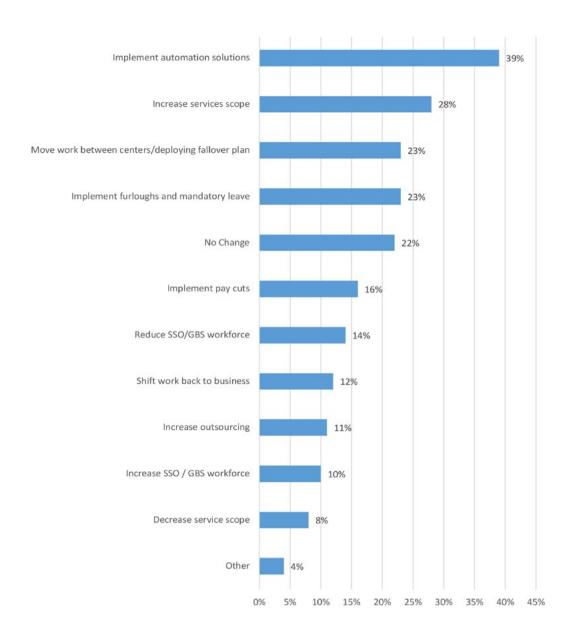
# How would you gauge the impact of the virus thus far on your enterprise productivity?



## What are your major Business Continuity Planning challenges?



# What are you doing today to adapt your service delivery models to the current business environment?



Wanting to delve deeper into these findings, we conducted a video chat with Satish to discuss the survey findings in detail. A seasoned professional with over 20 years of experience. Satish Nair heads Digital Services at Infosys BPM, and is responsible for re-imagination of existing business processes and creation of New Services to help customers navigate their Digital journeys. He has successfully enabled enterprise to navigate their Automation journeys and has also seen some large enterprises exhibit resilience over these difficult times. Here is an excernt to the interview which throws light on how enterprises are coping and what's the way ahead.



#### Satish Nair

Vice President and Business Head, Infosys BPM

Editor: Satish, you have a strong background in supporting enterprises in workflow and BPM. What are the big lessons learned in the current environment?

**Satish:** The past 6 to 8 weeks have seen extreme automation and digitization, coupled with a need for business resilience taking top priority within enterprises, leading to a handful of key learnings and solutions emerging to address a post-pandemic era leveraging automation.

- Decision making: Employing decision-making through the lens of a business function goal or outcome and going beyond individual task-based automation. For example, reconciliations may be a best-use implementation case; however, the business impact may be negligible compared to focusing on the outcome of a closing process, which is critical.
- End-to-end process view: The weakest link in an E2E process will be your point of failure. From a success perspective, you must look at the entire process and not a specific activity when considering automation, to achieve a better business outcome, beyond the focus on tactical effort reduction.
- Speed and Agility: Businesses have a burning platform that necessitates fast decisions and implementations. What's interesting is that we are experiencing enterprises shedding their inhibition rapidly to make a decision that had been stuck in the pipeline for months. It begs the question, what was holding up the decision in the first place? We also witness organizations that have already automated, weathering the situation much better.



- Breaking the silos: Businesses suffer by working in ring-fenced silos, creating disjointed environments that negatively impact decisions and implementations. It's time we build joint task forces across Business and IT to drive digitization with the domain context and prioritization being provided by the business.
- Efficiency and Effectiveness: Enterprises need to look beyond driving digitization only through the lens of efficiency. Instead, they need to consider the effectiveness of their actions. As in the case for one of our customers, it's one thing to be efficient in paying suppliers; the focus now was to rapidly prioritize payments to many smaller suppliers that will retain them in business and evangelizing automation to do that. That's not just about efficiency it's about the effectiveness and stakeholder experience.

Editor: Many organizations are citing "automation" as the solution to embedding resilience in their service delivery models. What's the smartest way for them to do this in the current environment?

Satish: In the past, most automation decisions were based on ROI or simply put — arbitrage. Outsourcing was all about "your mess for less," and automation was "mess for lesser." As a result, efficiency featured heavily in the calculation. Now that we're considering resiliency as key criteria, it means we have to address the opportunity from a business mindset.

For example, Accounts Payable was one of the earliest back-office processes outsourced,

requiring a significant workforce. In recent years, it appeared to present an excellent opportunity for automation, compared to more decision-oriented processes such as month-end closing. But the latter is business-critical, and the former is about squeezing extra efficiencies out of the process.

Organizations embarking on an automation journey have the opportunity to make a business impact and resiliency focused view beyond the short-term financial implications. Additionally, there is a potential to leverage the latest improvements with process discovery tools that provide a comprehensive view of the end-to-end business process to identify areas of automation.

Editor: How can automation support digitized service delivery models? And how will this provide immunity from COVID-like crisis?

Satish: One of the flaws in the past has been the piecemeal approach to digitization. For example, for a process cutting across the front, mid and back-office, the focus of automation was often on back-office activities. What COVID-19 has done is to put the spotlight on the fact that business impact is end-to-end, the new one office®. Given that the process is only as resilient as its weakest link, there is an opportunity to take an end-to-end process view and leverage automation to link all three parts of the business.

There are three key aspects I'd like to highlight.

1. The ability to correctly identify critical processes based on availability and scale:

In IT, the concept of availability and scalability is clearly understood, unlike business services where the idea of high availability in critical processes is limited. BCP is a start but only relates to a small percentage of crucial processes. In an extended lockout, organizations need to sustain a broader range of processes. An automated environment is easy to scale, especially where cloud is the channel for deployment.

2. Ability to "change" and improve the speed to market: Given a basic bot infrastructure, if a process or part of it needs to change as per new business conditions, it's relatively easy to implement. Bots can be programmed fast, compared to training people, which requires unlearning and new learning. A financial services client, for example, realized that the voice process was not able to support increased demand for customer service during COVID-19. This meant pushing voice calls to email and leveraging an existing capability to respond digitally. Moreover, where calls were required, customers could receive a call back instead of waiting in a queue. Given the automated environment, these changes were implemented rapidly with minimal impact on customer experience. The bank has decided to continue with the new operating model post**COVID.** Where automation exists, this can be done quickly —even in hours. But without a basic automated environment, it's not possible. This is where the digital services model of human + bot stands out and provides inherent resiliency.

3. Consistency of experience for stakeholders:
In the first few days, customers may face a
deterioration in service, but it's not sustainable.
Whether your stakeholder is the finance
controller or a supplier — the challenge is to
maintain a consistent experience that can be
enabled easily in a digitized environment. The
challenge is not to slide back once the crisis
passes, but to retain this experience.

Editor: From your clients' perspective, in what way has their level of automation impacted how they have been able to support their businesses through this challenging time? What are some learnings to share?

Satish: There are two dimensions: maturity [of the automation program] and the business imperative — which extends from sustainability to growth-related challenges.

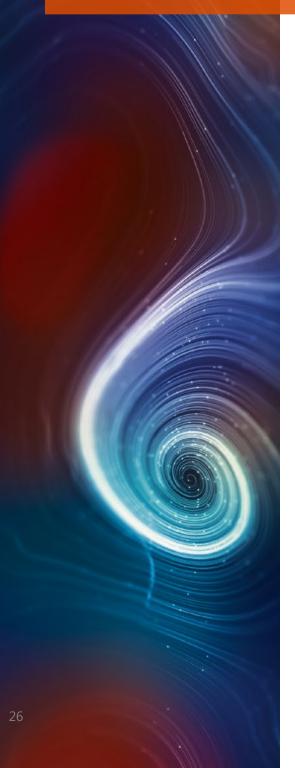
- Enterprise with a mature automation program targeting sustainability: In this case, it needs to maintain critical business processes and target a consistent stakeholder experience.
   Compliance and cost might be key focus areas or working capital. The latter is a perfect example because this would entail a large quantity of data processing enabled rapidly through automation.
- 2. Enterprise with a mature automated environment with a growth imperative: Several enterprises currently are facing a number of queries as a result of COVID-19. Automation should focus on shifting to channels to support that growth.

  One manufacturing organization, for example, experienced a massive surge in customer orders as the imminent lockdown became apparent. Since automation was already quite mature, they were able to deliver on this surge.
- Organizations that are at the beginning of their automation journey with inherent inhibition to make decisions where sustainability is the objective: then the focus needs to be on rapid decision making and implementation of automation required to sustain business services.

What is more difficult is where low maturity coincides with a growth imperative. Without the appropriate automation framework, the problem is staring in your face —and one I don't have an answer to right now.

# **Navigating Turbulence**

An enterprise technology approach





#### Guha R

Senior Director, Product Management, EdgeVerve Systems Ltd. (An Infosys Company)

The last few months have dramatically transformed life as we understand it. An invisible half-alive organism, dismissed as a threat by leaders and populations alike, has affected over 95% of the world's population and stalled global economic activity. It is believed that this crisis will permanently reshape multiple aspects of our life, society, and business. This article seeks to outline the nature of this change for businesses and how a response led by enterprise technology can help them become more resilient.

#### **Drawing on Innate Resilience**

Given the unprecedented nature of the pandemic and uncertainty around effective remedies and the likelihood of follow-on viral waves, it would be foolhardy to predict the timelines or the nature of recovery. While recognizing the scale of impact, it should however be emphasized that humans have endured past tragedies, including the Black Plague, Spanish flu, multiple continental and world wars, and a variety of financial panics. Although the current crisis will cause painful adjustments for individuals, societies, governments, and enterprises, history guides us to the new dawn comprising renewed societies, enhanced business models, and greater resilience.

As the leading financial investor, Ben Carlson, reflects on the crisis in a broader context on his blog, A Wealth of Common Sense,

"...they all come to an end. Stocks recover.

Economies continue to grow. People still get up
every day looking to improve their station in life. If
you're betting against the human spirit, I'll take the
other side of that bet 10 times out of 10."

## History Teaches Us That Deep Crises Drive Radical Change

Like modern societies and enterprises, complex organizational structures tend to have a built-

in equilibrium-seeking mechanism that guides them towards stability. This has been studied in evolutionary biology, with organisms adapting to unfamiliar environments through gradual evolution. However, when the nature of change is dramatic, induced discontinuity can cause sudden structural change that is sustained in subsequent generations – a phenomenon defined by sociologists as punctuated equilibrium<sup>2</sup>.

As an example, women's participation in the US workforce<sup>3</sup> before World War II remained low, with their involvement limited to roles such as store clerks and receptionists. During World War II, workforce shortages inspired campaigns to draw greater women participation in non-traditional roles, including army support, manufacturing, and transport. As this proved effective, female workforce participation continued to increase even after the war concluded. Likewise, while Germany was progressing incrementally towards green energy, the nuclear incident at Fukushima in 2011<sup>4</sup> drove an outright ban of nuclear power and the further prioritization of renewable energy.

Finally, as a cautionary tale and to paraphrase Victor Hugo, acting against 'ideas whose time has come' can be crippling. Johannes Gutenberg's movable type printing press triggered an information revolution, driving the European Renaissance in the 15th century. Blind to its value, the leadership and powerful clergy at the Ottoman empires aimed to keep traditional manuscripts in vogue. Their decision to ban innovation and resist change resulted in the permanent decline of Turkish power.

#### **Taking Charge of Change**

"When written in Chinese, the word 'crisis' is composed of two characters— one represents danger and the other represents opportunity." - John F. Kennedy, Former President, United States of America

Given this historical context, it is pertinent to explore how economies are likely to emerge from the lockdown. Specific industry segments like tourism and travel will undergo a more fundamental churn, with many enterprises in these spaces not surviving the deep downturn. The Federal Emergency Management Agency (FEMA)6 has indicated that 40% of small businesses may perish because of losses from disruptions. It would be foolhardy to suggest that larger organizations are impervious to this threat. Companies across industry segments will experience a radical change in their operating models. The article categorizes this impact around three broad areas—customer acquisition, execution, and risk management.

Sales and Customer Engagement: With the extent of uncertainty and disruption wrought by the pandemic, establishing trust with buyers will be extremely critical. This trust will need to

be built against the backdrop of fewer face-toface interactions. New models of engagement between consumers and vendors will need to be established with traditional models of large conferences, seminars, and wine-and-dine' engagements becoming increasingly rare.

Another significant change will be the nature of contractual models. Given the uncertainty, there will also be a marked preference for flexibility and, consequently, an avoidance of long-term commitments. Currently, most enterprise purchase decisions are predicated on long-standing purchase constructs, built through intensive negotiations. This process will need to undergo transformation with an increased focus around flexible purchase models.

Execution Model for Goods and Services: Over the last four decades, enterprises have invested in developing complex global supply chains that require the free flow of goods, services, and information across borders. The disruption has exposed the gaps and has driven both national governments and enterprises to reduce this extent of dependence—especially for critical components in pharmaceuticals and hi-tech. As a reaction, enterprises will seek to diversify their supply base and ensure that their supply chains are stress-tested for a variety of failures, including natural incidents, political events, and logistical accidents.

Likewise, organizations have experienced the model of a remote workforce and building the ability to coordinate operations. Even after the lockdowns wane, many enterprises are likely to build lessons from this and are unlikely to go back to the conventional work model. This shift reflects a dramatic change from the traditional office construct, built over the last century. The new model can go well beyond being an exercise in improved remote coordination through technology. Instead, it suggests a directional shift from vertically-integrated organizations towards 'enterprise unbundling,' at least in certain pockets. Another response could be creating flexibility through a core-organization and developing dynamic execution capability around it.

I Enhanced Risk Management: In the constant swing in business sentiment between risk and reward, the balance has shifted significantly towards risk aversion. Organizations will continue to seek to take measures that identify and reduce a variety of risks. The change in the execution model and flexible contracts will also create additional risks that must be mitigated proactively. Monitoring and managing risk across the organization with robust checks and control frameworks will be of paramount importance going forward. This approach will require a granular understanding of customers, vendors, business processes and systems being used, to appreciate possible failure points and remedial measures.

Given the above changes, many enterprises will need to question core assumptions around existing organizational structure, decision rights to balance between agility and control, and, finally, developing the next-generational skills required to make the transition. While these themes have been on the anvil for the last few years, responding adequately to the current crisis might drive considerable momentum to initiatives around them.

As Rahm Immanuel, advisor to President Obama mentioned, "You never let a serious crisis go to waste. And what I mean by that, it's an opportunity to do things you think you could not do before."

#### **Leveraging Technology to Drive Change**

Given that organizations are aggregations of processes at varying levels of abstraction, the role of technology is central to deliver impact on processes along dimensions of speed, agility, intelligence, and compliance. Many of these capabilities are closely interlinked and are most effective when operating in concert.

#### | Process Simplicity and Speed

A common business paradigm expressed across industries is the need to remain focused on customer needs with all process executions built around this. However, most business processes have been designed in silos, with division-level efficiency taking primacy. There is an opportunity now to bring down information barriers to bring together a single customer view and enable rapid

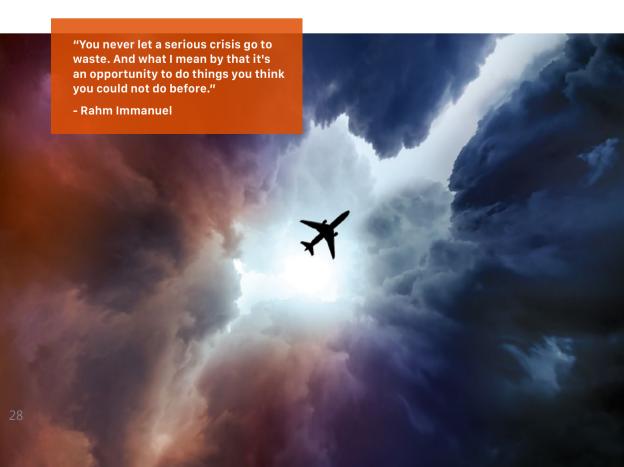
handling of customer inquiries and fulfillment of needs. We can achieve this integration of data and processes through various automation tools, including data aggregation tools, API-based integration between systems, periodic batch scripts, and RPA-based rapid integration tools.

Given the dynamic nature of business needs, organizations would bias their approach towards rapid experimentation and with a focus on short-term projects to achieve quick Rol. Typically, RPA platforms offer the ability to get the integration done quickly through replicating the user actions, avoiding the overhead of requirements gathering, or deep expertise required in API-based integration. A key outcome expected from simpler processes is a dramatic reduction in both cost and cycle time, which could currently be critical for business viability.

#### | Process Intelligence

The ability to leverage data is fundamental to making better business decisions, and references are often made to data as the new oil with significant value unlocking once the data is effectively surfaced and 'refined.' We cannot understate the value of data in today's environment to enable product development, drive execution efficiency, and manage risk better.

To further the analogy of data as a raw material in an information-driven economy, Machine Learning is the new combustion engine to harness its powers. Organizations will leverage this capability



initially as an aide, and progress towards granting greater autonomy as they build confidence around the ability, along with a better appreciation of its limitations. While the technical capability is now easily available and expertise in machine learning is democratized, strategic differentiation can be achieved through creative leverage of these data-driven insights with process integration.

#### | Process Agility

As mentioned earlier, enterprises are likely to re-evaluate their business model and revamp their products, processes, and execution model. The extent of churn might require a significant reinvention of processes and partners across the spectrum. This transition will require hyper-agility to support the needs for rapid experimentation and adapt based on response. It would also need integration with intelligence to be captured on a near-continuous basis.

Another aspect of agility entails an organizational process starting small and scale up rapidly without making long-term resource commitments. This idea is supported by the shift to cloud-based paradigms and building integration with SaaS-like constructs.

#### | Process Security and Compliance

As enterprises drive a variety of changes in their business model and execution structure, organizations need to ensure that required controls are in place. These controls include monitoring solutions for remote working, a better appreciation of user access to systems, and identifying process dependencies.

Traditional security and compliance paradigms add a layer of control—pitting compliance against cost and agility. New-age approaches in this regard suggest that there is no trade-off. Through a combination of data-hooks for sniffing data across the process, and through analytics, enterprises can build the capability to eliminate most checkpoints while retaining the necessary controls and ability to prevent process deviation. As they are driven by self-learning artificial intelligence, these controls constantly improve to reduce false positives while providing a safer playing ground for businesses to operate.

#### **Tying It All Together**

While articulating a variety of themes, I do not suggest a standardized response to all organizations. Enterprises must calibrate their response based on the impact on business, their current sophistication, and the state of their technology architecture. Adapting approaches to the culture within the organization is also critical for sustainable impact. Specific organizations can drive change through a centralized decision-making structure, while others operate in a more federated consensus-based model.

Likewise, the focus of deployment might vary between customer-facing and execution areas. As part of the change management programs. enterprises will increasingly need to factor in skilling, communication, and increased sensitivity towards those affected by the change. Organizations will need to balance reticence and responsiveness. Data-driven development, process integration, efficiency, and proactive risk management will be the key growth levers in the new normal. Enterprises that adapt quickly. identify opportunities, and deliver at scale will build a foundation of resilience designed to withstand crises. This combination of navigating turbulence and charting a new path will create a competitive advantage that defines future leaders.

To learn more about how Automation and Al driven solutions help enterprises navigate the worldwide crisis, visit EdgeVerve's Stronger Together page<sup>7</sup>. ■

<sup>&</sup>lt;sup>7</sup> https://www.edgeverve.com/stronger-together/



<sup>&</sup>lt;sup>1</sup> https://awealthofcommonsense.com/2020/04/what-good-is-historywhen-dealina-with-an-unprecedented-crisis/

<sup>&</sup>lt;sup>2</sup> https://en.wikipedia.org/wiki/Punctuated\_equilibrium\_in\_social\_theory

<sup>&</sup>lt;sup>3</sup> https://www.history.com/news/women-world-war-ii-factories-photos

<sup>&</sup>lt;sup>4</sup> https://www.weforum.org/agenda/2020/02/fukushima-nucleardisaster-solar-wind-energy-plant/

<sup>&</sup>lt;sup>5</sup> https://www.thefridaytimes.com/origins-of-islams-crises/

<sup>&</sup>lt;sup>6</sup> https://www.fema.gov/protecting-your-businesses



"Replace Inventory with Information" was the guiding principle that led to multiple initiatives more than a decade back. This could be a natural outcome of relentless focus on lean six sigma programs in those days. Also, JIT manufacturing approaches focused heavily on aligning inventory as and when needed by the process. These led to significant investments in manufacturing, sourcing and procurement, warehousing, and logistics processes. For vertically integrated organization, data flow was not a problem and such organizations gained a lot from these initiatives.

As a natural extension, the same concepts began gaining traction in industries that have multiple parties in their value chain. Improving IT maturity across demand ecosystem players made the data flow cost-effective. Standardization initiatives like UNSPSC, GS1, and EDI led to acceptance of such programs across industries. In parallel to such initiatives, the industry operating model was moving away from a fixed value chain to a value web/network. That meant enabling higher data standardization and supporting multiple data integration scenarios. Also, global organizations realized the importance of emerging markets as drivers of consumption and not just manufacturing hubs or providers of cheap labor. This meant the information flow was crucial as managing inventory across the globe is a complex problem. Emerging markets rely on a distribution led channel that has more layers than a modern trade setup.

## Visibility and customer centricity iourney

EdgeVerve Systems Ltd. (An Infosys Company)

Increased focus on customer-centricity, sustainability, collaboration, and regulatory requirements around traceability are driving renewed interest in capturing data across the whole value network

Digital transformation of processes and re-imagining of supply chain driven by initiatives like Industry 4.0 have raised the importance of access to data across the value network right to the top.

This means that external data is no more limited to sales and inventory.

Today the whole path to purchase cycle of a product has been disrupted and has become digital-centric. Access to this data is crucial for any CPG organization to ensure that their marketing dollars are generating a good return on investments. Personalization and micro segmentation of offerings force manufacturers to collaborate with channel partners that have direct access to consumers. Brand owners themselves are investing heavily to reach out to end customers directly. Sustainability initiatives are forcing brand owners to track the complete flow from 'Farm to Fork.' Regulatory requirements like traceability mandate tracking the movement of goods so that they

can be audited and corrective actions initiated immediately in case of a recall. Increased data sharing between the partners is becoming the norm. Access to quality data has become essential to drive orchestration and collaboration across multitudes of partners.

The number of partners that a typical brand owner exchanges information with can easily run into few hundreds. All the partners cannot be expected to have high IT maturity, technology homogeneity, data governance standards, or the wherewithal to make such investments even if they understand the importance of data sharing. Multiple large organizations are running transformation programs to incentivize data sharing and reduce the operational cost for partners in complying with such a mandate.

#### **Ecosystem Integration platform**

Any investment in enabling faster onboarding to support the evolving partner landscape needs to be cognizant of a variety of integration scenarios. It could involve anything from scheduled bulk file transfers to event notifications that arrive in real-time. Such data could be posted on an (s) FTP site or accessed via the portal, arriving as an attachment to the email or API interface in multiple formats from CSV to XML, JSON, EDI, PDF or other unstructured formats that may require use of cognitive technologies to decipher the content.

A good supply chain ecosystem integration framework requires great abstraction to support many-to-many connections truly. The semantics of data payload and data communication protocols need to be clearly segregated. Same message can arrive in a different format and can be communicated to another party with enrichment in a totally different format. This segregation of data payload and data protocol using industry-standard canonical models and adapters ensures a more manageable environment with a lower cost of ownership. Given the nature of a network, a partner may be sharing similar information with multiple partners.

Data security (both at rest and during transfer) is non-negotiable, and such a platform must be hosted in the cloud to drive multi-tenancy. Such an integration platform needs to have significant automation towards configurable self-monitoring to drive compliance and data governance requirements.

A comprehensive support policy ensures that enough hand-holding is provided for partners that may be lacking in IT maturity. The SLA-based support model is crucial for the success of ecosystem integration as we onboard newer geographies across developed and emerging markets.

## **Ecosystem Insights and Orchestration**

Once the integration layer enables data acquisition and dissemination, a logical next step is to enable **insights from the data** captured. However, ensuring master data integrity across the ecosystem is yet utopian and can require significant data harmonization effort. This can significantly reduce the value derived from the data and should be of utmost priority for the vast ecosystem. Standardization of master data across the ecosystem deserves its transformation track.

Harmonized data opens a multitude of scenarios to derive insights, causal forecasts, and prescriptive actions to enable a win-win situation for all participants. This is a critical step as it incentivizes every partner to improve data quality and data sharing. Collective learning is one of the prime motivators for ecosystem cooperation.

EdgeVerve has worked together with 20+ large organizations in the CPG domain and created a platform to drive seamless data sharing and collaboration across thousands of partners spanning 130+ countries.

The partners range from global supply chain hall of farmers to a small retail store in developing markets. The platform has **matured over ten years** and is the backbone of a multi-tenant solution processing terabytes of data and meeting stringent SLAs.

The ecosystem-driven operating model is a business reality. Organizations must manage their investments in integration and insights platform with long term transformation mindset and not just an IT initiative.



## **Demand Forecasting and Planning in the Next Normal**

### Beyond COVID-19



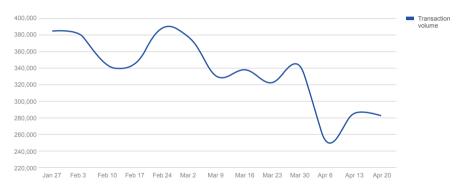
#### **Abhishek Datta**

Associate Director – Data Science, Edge Products, EdgeVerve Systems Ltd. (An Infosys Company)

OVID-19 has wrought unprecedented disruption for global supply chains, with 75% of companies reporting some form of disruption, including longer lead times and delays in receiving orders<sup>1</sup>. Images of empty shelves, deserted airports, etc. splashed around social

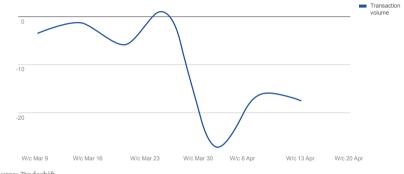
media bring home the grim reality. According to data from supply chain management platform Tradeshift, trade has flatlined in regions under lockdown, and the effects will continue to linger in the coming months<sup>2</sup>.

#### Week by week transaction volume - US, UK, Eurozone<sup>3</sup>



Source: Tradeshift

Average weekly global transactions - percentage increase/decrease against pre-lockdown levels4



Source: Tradeshift

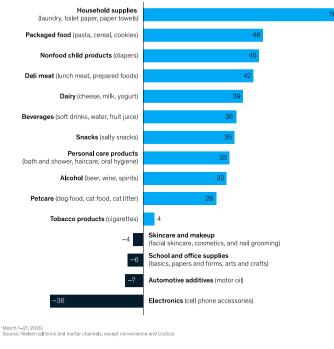
## The shift in consumer behavior and demand trends

This impact on supply chains and the lockdown necessitated by COVID-19 is changing consumer priorities and purchase patterns at a rapid and unanticipated scale and speed. Concerns around health, basic needs, and loss of freedom are manifesting in different ways as consumers adopt new behaviors and lifestyles that might be here to stay beyond the short-term impact of the pandemic.

This abrupt and unexpected change in consumer behavior will induce acute and widespread biases in traditional demand forecast models. For instance, essential services are in full swing, while sectors such as travel, tourism and hospitality are in a slump. This could produce upward or downward trends that not-only deviate from, but also lag the actual results. The model forecasting errors will likely be one of the most critical areas that need to be heavily monitored and minimized expeditiously.

COVID-19 is having varied impact across categories, with most grocery-purchased categories seeing significant increases.

% change in sales (\$) over 3 weeks1 vs 2019



McKinsey & Company

This abrupt and anomalous shift in demand trends - based both on the types of goods and services and the channels through which these goods and services are offered – requires an increased focus on channel-data visibility. For instance, channel data from stores, events, promotions, etc. can help retailers produce accurate demand forecasts. A more in-depth exploration of this topic can be found in Edge Quarterly's previous article – Where sight meets might.

EVALUATE	ASSESS	RECALIBRATE	RESPOND
Evaluate the extent to which changes in consumer behavior will impact their categories, channels, and brands during and beyond this crisis.	Assess what actions they can take now to calibrate their demand forecasting models quickly. Adjust for the forecast errors that are happening and will continue to occur in the models' forecasting horizons.	Recalibrate supply and demand levers to improve business performance while also preparing for the new consumer behaviors which will be the 'new normal,' post-crisis.	Respond to this highly anomalous behavior of COVID-19, due to which their traditional forecasting models are over-correcting their forecasts.

Steps to be taken by retailers and CPG manufacturers to combat the crisis

## A quick guide to forecasting and planning

Forecasting and planning are imperative, especially for retail and CPG business. These are the methods that help create strategies and tactics to achieve business goals like sales targets and inventory sell-throughs.

There are numerous benefits of forecasting and planning; for instance, an analysis of purchase pattern history and projections of future customer demand can help retailers manage channel store merchandise inventory. Planned daily optimizations for price, promotion, and markdown, among others, ensures optimal profitability irrespective of the season. Forecasting and planning also help optimize shelf space, product fulfillment, and manpower. Accurate forecast of demand - by the hour, day, location, promotion, and price change, can help make important decisions pertaining to inventory, staffing needs, call centers, and fleet

#### Forecasting

Mark Twain said, "History doesn't repeat itself, but it often rhymes." Forecasting looks at historic behavior with an assumption that the future is a repetition of the past. Controllable historical events (like promotions) and uncontrollable historic events (like the SARS outbreak, or the present COVID19 pandemic) can be considered during modeling. The insights from forecasting are invaluable for companies in demand planning.

According to one of the world's leading experts in forecasting sciences, Dr. Spyros Makridakis' forecasting techniques fall into two major categories — quantitative (focused in this article) and qualitative.

#### **Quantitative Forecasting Methods**

- Time-Series: Predicting the continuation of historical patterns such as the growth in sales or gross national product (time-series or temporal data)
- Causal / Econometric Modeling: Understanding how explanatory variables such as prices and advertising affect sales (cross-sectional data)
- Combination of both approaches: Models that involve both time series and causal modeling approaches, e.g., dynamic regression models, state-space models, etc.

Best suited to the present times, time-series forecasting can be type-casted as a supervised learning problem. It can be used with machine learning (ML) and deep learning (DL) based methods such as Regression, Neural Networks (RNN/CNN), Support Vector Machines, Random Forests, XGBoost, etc.

However, time series forecasting using ML/DL have their own set of unique quirks – such as the need for retraining the ML/DL model every time you want to generate a new prediction and the need to do away with train/test splits. This requires data-scientists & ML engineers to rethink their approaches to building, evaluating, and recalibrating models.

Not only point-forecasts, but the uncertainty of the forecast (also known as "prediction intervals") are equally as important, or even more so in some cases, than the forecast or the point-estimate itself. In demand forecasting and inventory applications, the uncertainty of a forecast is a critical input for the applications/software that consumes it.

Typically, there is an iterative process to be followed for each step of the forecasting cycle: obtaining the latest data, generating updated forecasts, fixing problem forecasts, conferring with other internal or external parties about the forecasts, adding ad-hoc adjustments based on business knowledge, obtaining executive review and change approval, and publishing the forecasts. These forecasts are then typically used for production planning purposes, supporting marketing plans (promotion planning), resource planning, and financial planning and reporting.

#### **Planning**

While forecasting focuses on what will happen, planning deals with what should happen, under the constraints of available resources in making it happen. Planning techniques involve specific algorithms such as goal-seeking, what-if analysis, and optimization and operations research methods (See box for details).

#### **Planning Techniques**

- Goal-Seeking: This technique is valuable for defining fact-based plans. It requires advanced forecasting models that consist of both "inputs" (like historical business drivers, macroeconomic/weather data, and calendar events) and an "output" (which is the variable to be forecasted). Goal-seeking algorithmically varies the future values of the "inputs" in order to determine the values that achieve a specific goal (profit, revenue, or cost goal) based on the forecast-metrics. This helps in understanding how inputs need to be modified in order to achieve a certain goal.
- Scenario and Sensitivity Modeling (What-If analysis): The aim is to figure out the impact of changes in the inputs on the output. In scenario analysis, the user modifies the future values of the inputs to specific values and then evaluates the effect on the forecasts.
- Optimization and Operations Research Methods: The objective is to arrive at the

most optimal scenario from all possible combinations of inputs. Optimization algorithmically varies the future values of the inputs to find the optimum of an objective function (profit, revenue, or cost function) based on the forecast model.

Planning helps companies answer questions like: What is the optimal mix of the sales price and advertising spend that achieves a prespecified sales target or inventory sell-through? What happens to predicted sales numbers once the organization increases the sales price and decreases advertising spend (as in the scenario of a crisis like COVID-19)? What is the optimal sales price and advertising expenditure trade-off that maximizes profit margins and inventory sell-throughs?

Answering these questions has become very important for businesses struggling to survive this pandemic. However, using legacy forecasting and planning methods is not going to work in these unprecedented times.

## Short term strategy for demand planning in a post COVID world

To minimize the impact of unprecedented disruptions like COVID-19, on-demand planning in the short-term, companies need to apply forecast modifiers. Sound demand forecasting principles with modifiers applied to data from other past events can help adjust forecasts for the short-term scenario. To develop these forecast modifiers, analysts need to consider the factors of timing, magnitude, channels, and product mix<sup>a</sup>.

- Timing and magnitude: To understand the skewed demand in the present situation, the industry needs to look back to a similar timeframe a year ago and compare individual company data with overall industry data from external authoritative sources. For instance, a cosmetic retailer may have seen a sudden spike in sales of hand wash and a drop in makeup products. Is this change consistent with the trend last year around the timing and magnitude of sales? How about the year before? If not, what is the difference? How is it different from what the industry overall is witnessing in these two categories? Analysis of this data can help make intelligent assumptions to assess the impact of the pandemic on demand in the short term and create best, worst, and most likely case scenarios.
- Channels: Analysis of channel data can give valuable insights on where the company should focus its sales and promotional efforts. If in-store sales are frozen due to lockdown, which channels are customers using to buy the product? How are online sales affected? For instance, due to store closures, the cosmetic retailer's mall outlets have

- seen zero sales, but the website traffic has tripled. In this case, creative, attractive online offers would serve them better in converting traffic to sales.
- Product Mix: Analyzing the classes of items most impacted can help get a pulse of customer sentiment. Product-affinity analysis (Market-Basket Analysis) based on current purchasing patterns can help design new and more relevant product bundles for cross-selling. For instance, the cosmetic retailer could bundle an essential hand wash with a hand cream to drive more sales for the hand cream category.

As newer data becomes increasingly available in the mid to long term, companies can go back to their tried and tested forecasting and planning approaches with more recent and reliable data.

The COVID-19 crisis has tested the resilience of every business, and those with strong foundations in data-driven decision making are adapting to the change and recovering faster with strategies suited to the situation. Even when the crisis is past, data discipline will hold organizations in good stead – no matter what the circumstance.

- <sup>1</sup> Source: https://www.instituteforsupplymanagement.org/ news/NewsRoomDetail.cfm?ItemNumber=31171&SSO=1
- <sup>2</sup> Source: https://www.weforum.org/agenda/2020/05/this-iswhat-global-supply-chains-will-look-like-after-covid-19/
- <sup>3</sup> Image: https://www.weforum.org/agenda/2020/05/this-iswhat-global-supply-chains-will-look-like-after-covid-19/
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- 5 Image: https://www.mckinsey.com/industries/consumerpackaged-goods/our-insights/rapidly-forecasting-demandand-adapting-commercial-plans-in-a-pandemic
- 6 https://www.edgeverve.com/the-edge-quarterly/wheresight-meets-might/



- <sup>7</sup> Source: https://towardsdatascience.com/3-facts-abouttime-series-forecasting-that-surprise-experienced-machinelearning-practitioners-69c18ee89387
- 8 https://retailtouchpoints.com/topics/data-analytics/ predictive-analytics/how-to-forecast-the-unforecastabledemand-planning-in-the-time-of-covid-19

# **Building a Resilient Debt Collection Ecosystem in the Next Normal**

### **Beyond Covid-19**



#### Aiav Koushik R

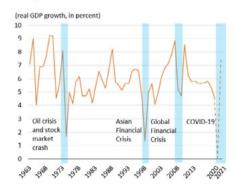
Product Manager, EdgeVerve Systems Ltd. (An Infosys Company)

These are challenging times, much worse than the 2008 crisis. The impact of COVID-19 has brought the world to a standstill. While the aftermath appears similar in both cases, the reality is different. The 2008 economic crisis was a slow event which built up over a period of time. The current scenario is an unforeseen event where immediate global lockdowns have created a dip in the economy.

Unlike the banking collapse of 2008, the 2020 pandemic has muted demand impacting consumption of goods and services across industries. We've seen small businesses shutting down and an increase in layoffs. This can have a potential bearing on an individual's cash flow and the ability to pay off their dues.

#### Historic fall

The COVID-19 crisis is expected to inflict steep declines in output across Asia.



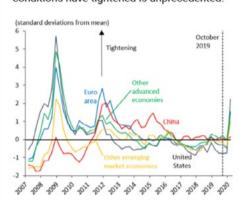
Source: IMF Staff calculations.

#### INTERNATIONAL MONETARY FUND

While the primary focus of governments across the globe is to protect the health and safety of citizens, they are also taking steps to safeguard the interest of the consumer. CARES Act in the US covers direct payments to families impacted by the pandemic, benefits to unemployed individuals, and grants for businesses that have suffered.

Governments across the globe have also stepped by providing short term moratoriums and payment breaks to their citizens.

## Sharp tightening of financial conditions The speed at which global financial conditions have tightened is unprecedented.



Sources: Bank for International Settlements; Bioomberg Finance L.P.; Haver Analytics; IMF, International Financial Statistics database, and IMF staff cactuations. Note: "Other advanced economies" comprises Australia, Canada, Denmark, Hong Kong SAR, Japaca, Korea, Norway, Singapore, Sweden, Switzerland, and the United Kingdom. "Other emerging market economies" comprises Brazil, India, Mexico, Poland, Russia, and Turkey.

#### INTERNATIONAL MONETARY FUND



#### Impact of COVID on the banking system

With growing job losses, slower demand and sales, and declining revenues, borrowers and banking customers will soon start seeking extended financial assistance. This will further stress bank assets and might require extreme measures for recovery. As a result, banks and financial institutions are going to face multifold challenges in short to mid-term basis as below:

- Increase in losses due to sudden spike in delinguencies and loan defaults
- Revenue compression impacted by an individual's ability to borrow further in these challenging times
- Cost optimization in every department without impacting the output

## Challenging times ahead for debt collections

The collections teams within banks are facing a different challenge altogether. Federal and state agencies in different countries have implemented restrictions on debt collection in the short term. Once COVID-19 deferral ends, banks are expecting **delinquencies to rise** and will need to handle the situation with the available workforce.

Borrowers with no history in delinquencies will start entering collections bucket due to COVID-19. It will be essential to identify these customers from perennial defaulters and treat them separately.

Post moratorium, contact centers will have their hands full with an increase in outbound call volumes. Collections manager will have the task of managing the workloads for their teams.

Collections team have been leveraging risk models in the past to identify the risk of their delinquent borrowers and suitably define contact strategies. There is a high chance that these models will underestimate the actual defaults and banks relying on such models could face higher losses.

# Why current banking risk models are not enough

Banks use risk models to predict and identify the risk of a customer. One of the major regulatory requirements for banks is to provision for their credit losses as per IFRS 9 & CECL standards through a forward-looking Expected Credit Loss (ECL) model, which primarily looks at the borrower's probability to default (PD). With the current pandemic, risk managers within the banks have their task cut out and will need to rethink their approach.

Traditional risk models have been built on historical data to predict a borrower's propensity to pay. Risk modelers typically use historical data to build these models. While these models have been performing strongly in a steady economy, they could perform poorly in the current crisis due to the following reasons:

Unprecedented event: Given that COVID-19 is an unprecedented event, historical data in banks will not reflect the current crisis or anything similar to what the model can learn from.



- Varying customer behavior: Traditional models within banks look at limited financial attributes of a borrower like historical payment patterns and credit scores to risk segment borrowers. In the current crisis, there may be a scenario where borrowers with similar credit scores might behave differently and display unpredictable characteristics.
- Lack of insights from external data: The external data used in the models do not capture the shock as a result of the current pandemic, along with the economic measures taken by governments.
- Insufficient testing of models: Risk modelers typically resort to stress testing their models under different scenarios to evaluate the model performance. There is a definite need to carry out more elaborate testing of these models in-line with the current crisis through data simulation.

With the current risk model failing, banks are looking for other avenues to help predict customer risk more efficiently.

#### What banks need to do

While the nature of the current crisis is different from 2008, banks can draw similarities in terms of the failures and misses and learn from the past to plot a more proactive path to recovery. Collection and risk managers will need to come up with intuitive solutions in short to near term as below:

- Augmented Intelligence: Post moratorium, banks will need to quickly identify customers who are at risk and in need of assistance. Collection managers are required to quickly come up with qualification criteria for these at-risk customers and treat them differently through intuitive payment plans and restructuring. There is a definite need for augmented intelligence to identify and predict such customers.
- Customer Experience: In the wake of the current crisis, banks need to be extremely proactive and empathetic to their customers. Customers will need to be respected and receive personalized treatment. Maintaining customer experience, understanding the needs, and providing optimal solutions is the need of the hour.
- Optimize Operating Model: Post moratorium, collections managers will be required to provide a more granular and prioritized list of accounts that they need to call to their teams, as against those which can be reached through cost-effective channels such as text or emails. With a limited workforce and mounting pressure to reduce cost, collections managers will need to revamp their current operating models quickly and test new strategies faster.

#### Way to resiliency:

At a strategy level, collection and risk managers should start taking different measures to tackle the situation. Data analytics and advanced intelligence can help collection organizations make more informed decisions. To handle the situation, collection managers can start with the following:

- Collect more data: While credit bureaus provide information about a borrower's financial health, the personal ability to pay will be key in these challenging times. Hence it is important for banks and financial institutions to tighten the grip and have more information collected, such as borrower's current employment details, the reason for unemployment/ income reduction, their current residential address, their family status. etc. on a more periodic basis.
- Relook at segmentation: It is important to identify customers who are facing hardship and have entered collections primarily due to COVID-19 as against perennially bad customers who have a habit of missing their dues. Subsegments will need to be created based on a borrower's overall impact due to COVID-19.
- Have personalized treatment plans: Customers facing hardship due to COVID-19 must be treated differently. Assistance programs need to be in place for different segments/ sub-segments of borrowers. Banks can look at providing forbearances or payment plans to customers even in early buckets and apply traditional collections risk strategy to non-COVID-19 related delinquent customers.
- Reset strategies faster: Banks will need to be more dynamic and agile with their strategies. Strategies will have to be developed, tested, and executed as frequently as every week or earlier since these might not be valid beyond a short time frame. There is a greater need to quickly simulate strategies, implement champion-challenger on the portfolio faster, and see and evaluate results to identify what is working and what's not. Traditional risk tools might need an overhaul with more agile tools.
- Continuously monitor their portfolios: While the focus is on individual borrowers, collections managers must not lose focus on their entire portfolio and look at their overall exposure to risk. Collections managers should continuously keep an eye on the impact, external factors, and market changes can have on the individual portfolios. There should be a mechanism to quickly incorporate these market variables and retune the segmentation and treatment strategies.

#### Models need to evolve

Model risk managers will need to think out of the box and take a leaf from past disasters to develop new and more robust methods to be employed in the current scenario. Some of these include:

• External factors/ alternative data: Risk modelers have been using external macro-economic variables in the past to assess their impact on

the model. However, in the current scenario, one must look at alternative data that correlates to the current pandemic and provides a view of the overall impact. Unemployment rate by industry, COVID impact on supply chain, industry sectorwise impact and revival, government policies, etc. could prove crucial in the current time. Also, identifying behavior patterns by mining insights from recent borrower call records can go a long way in determining a customer's ability or willingness to pay.

- Need for elaborate stress testing Efficient stress testing becomes a valuable tool to test the resilience of borrowers or a specific asset class in the current scenario. Banks have traditionally been following the pre-determined DFAST and CCAR stress scenarios using variables such as GDP, unemployment rate, CPI, personal income, house/ commercial property price index, equity, market volatility, and interest rates etc. Banks need to develop scenarios that project the possible outcome of COVID-19 and suitable stress test to test their models.
- Past disaster data A look at historical events can provide a view on the impact certain factors have on borrower delinquencies. For instance, increasing unemployment rates have a direct correlation with delinquencies. Similar past trends can be looked into for insights.
- Treat customer risk differently Model developers should take a more heterogeneous sample of data for their analysis and model training. In the current scenario, borrowers with the same credit scores might behave differently. Hence there is a need to incorporate more data and features at the borrower level and the economic level into the model that can help identify these subtle variances in borrower behavior.

- Vintage quality analysis Loans that originated close to the crisis can carry greater credit risk and will be treated differently. Separating data and analyzing based on their vintage period can provide a powerful view on the borrower's risk.
- Focus on speed Risk modelers also need to focus on faster time to value. Portfolio managers are in a greater need for a solution to predict and evaluate a customer's risk on a short-term basis. Traditional timelines to build, test, and deliver models will have to be relooked at. Adaptive modeling approach that can provide robust outcomes with faster time to market is the need of the hour.

#### New approaches in the new normal

Correct identification of customer risk today requires an evaluation of a large number of traditional and non-traditional user attributes.

There is also a greater need to look at alternative data quickly, derive patterns, build-test-deploy-tune intuitive models, identify-simulate-test-deploy strategies, and provide a personalized treatment plan to customers with a clear focus on faster time to market.

Traditional risk models are incapable of sifting through the gigabytes of unstructured data to extract customers' behavioral profiles. FinXEdge by EdgeVerve offers a suite of Al-based business applications that are specifically built to solve the issues banks are facing today. Advanced text analytics and machine learning techniques are highly effective in evaluating and quantifying qualitative aspects. Al models with the right set of data can quickly provide a granular view of customer risk against traditional models. These models can be built, tested, and tuned to help portfolio managers devise and test strategies quickly.



Swift assignment of appropriate programs to assist the borrowers in this time of need will enable lenders to build a strong and lasting bond with their customers. And isn't that what business is all about!

# Accelerating Procurement's Value Creation Through Intelligence

**Beyond COVID-19** 



#### **Avnish Singh**

Head of Sales and Customer Success

– EMEA and Americas,
EdgeVerve Systems Ltd. (An Infosys Company



he coronavirus pandemic has exposed (ves. not created) supply chain vulnerabilities and hurt businesses. across the globe. Although an event unprecedented by scale, COVID-19 would have ideally seen a response backed by robust contingency plans, which will likely be the case in the future. This piece, however. focuses on the present. Supply chains. manufacturing, and operations have all taken a hit, and enterprises are looking for a fix. Over a third of leaders in the US and Mexico, see their supply chain as one of the primary areas of concern in a situation that hasn't fully played out yet, 41% of CEOs expect a large negative impact over the next six months, while 75% of US businesses have experienced a COVID-19-related supply chain disruption.

There are aspects of this situation beyond anyone's control, but too much attention to those areas can create a sense of learned helplessness. Enterprises are in both the prediction and the preparation business. It pays to evaluate the factors they can control while creating a second line of defense for those they may need to address later. Supply chain visibility and intelligence is one such factor. Its simple, limited supply chain visibility is crippling operations and hampering growth. It can be challenging to understand, much less navigate, global supply chains given the amount of complexity, disparate data sources, and local nuances. How then can enterprises develop full visibility and inject intelligence into supply chain management? There is an answer, and it is critical to consider.

# Supply Chain Management Needs Intelligence

Enterprises, and even countries in the current situation, have understood the importance of de-risking and building redundancy in their supply chain in an environment where the unexpected should be the norm, as evidenced by Japan's decision to move manufacturing out of China<sup>2</sup>. Trust in high-risk geographies will take time to restore, and that should not precede continuity. Al-driven technologies can now help enterprises build intelligence into their supply chain models to mitigate supplier risk. With several factors in the value chain disrupted, it is no surprise that global enterprises face the disruptions they do. Risk management is an essential function of procurement teams, and they need to have in-depth supplier knowledge that enables smarter decisions. Demand fluctuations are another area of development. With capacity and capital both at a premium, enterprises must find ways of dynamically

aligning production and sourcing with demand. The resulting efficiency will free up resources, financial and otherwise, that can target business growth and resiliance.

#### The Future of Resilient Supply Chains

By way of supplier understanding, spend analytics, and opportunity identification, procurement intelligence will drive the future of supply chains. Using Al-driven tools ensures that enterprises can develop a central growth engine that delivers focused insights across the organization. The core benefit of procurement intelligence is the ability to integrate data from disparate sources into a single source of truth that allows for efficient and forward-thinking planning. All too often, enterprise teams work within silos that create information asymmetry internally, affecting external efficiency. Consistent and accurate data streams ensure that leaders make smart decisions while considering any external factors that may affect operations.

# Additionally, procurement intelligence can help firms maintain accurate records of suppliers not just by type but also by levels of risk.

The understanding can allow for quick pivots. Furthermore, with access to **near real-time and accurate spend data** through comprehensive spend analytics, procurement leaders are in a better position to renegotiate supplier contracts and create better intelligence reports. Combined with personalized dashboards, this data can offer significant advantages by delivering contextual clarity based on the user's role.

Possibly the most compelling feature of an intelligence-driven procurement team is **opportunity identification**. Opportunity identification signals procurement's shift from reactive to predictive strategy, which is essential to transforming the department into a value center. Procurement intelligence tools can quickly uncover patterns and areas of opportunity before making specific recommendations. Supported by explainability, complete with an audit trail, and a confidence score, these suggestions can offer valuable assistance to procurement team members throughout the sourcing process.

#### The Benefits of a Digital Brain

Procurement intelligence doesn't just free up resources for strategic work but also impacts enterprise performance in many ways.

- Better risk management and greater compliance
- Identification of top-performing suppliers for improved relationship management
- Valuable Business Insights and alternate supplier identification
- Additional Savings with optimized spend
- Improved supplier relations and engagement with

negotiation insights and better supplier analysis

- Improved Visibility
- Increased productivity and reduced turnaround
- Accuracy and consistency with spend classification and data harmonization

## Discover the ProcureEdge Intelligence

To identify exposure to high-risk suppliers, enterprises need to use an approach that integrates insights driven by internal and external data, supplier classification by essential and non-essential supplies, the impact of supplies on revenue, and the risk of disruption to supplies from suppliers' financial constraints. Assimilating this information can help firms identify temporary measures to overcome disruptions while building a more sustained approach to business continuity.

The ProcureEdge Intelligence Hub addresses many such supply risk situations by bringing together internal spend data, supplier data, and external market information before employing advanced AI/ML capabilities. Then, with its proprietary composite risk scoring algorithms and supply classification methods, the tool develops comprehensive risk analysis frameworks.

Times like these remind us that it is crucial to transform supply chain management for greater resilience. Intelligence is essential to every stage of the procurement process. Enterprises must endeavor to build each aspect of their business into engines of growth capable of not just weathering but harnessing challenges to create new opportunities.

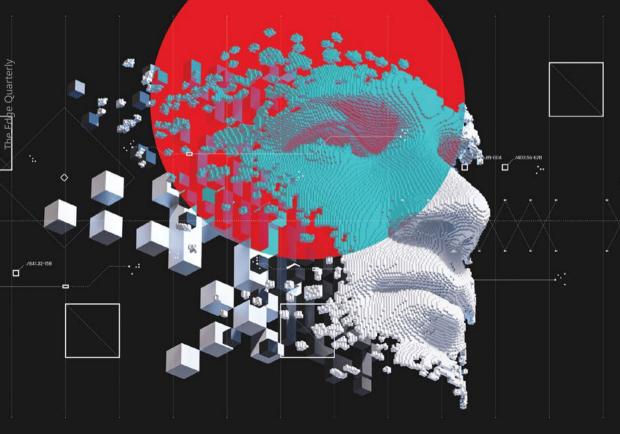
Along with the Intelligence Hub, ProcureEdge also offers a **Data Hub** and **Digital Hub** designed to augment your procurement operations without any changes to your legacy systems. You can learn more about ProcureEdge here.



<sup>&</sup>lt;sup>1</sup> Source: https://www.ypo.org/2020/03/ceos-weigh-in-on-covid-19-pandemic/

https://www.thepoiriergroup.com/infographic-supply-chain-disruption-in-the-face-of-covid-19/

<sup>&</sup>lt;sup>3</sup> https://thediplomat.com/2020/05/tokyo-prods-japanesefirms-to-leave-ching/





Badri Devalla

Senior Manager-Client Services, EdgeVerve Systems Ltd. (An Infosys Company)

# Augmenting Human Intelligence

Al is the key to enterprise resilience because it's just like us

he recent past has been a time of both unprecedented change and remarkable adaptability. The COVID-19 pandemic, possibly the most significant global event of this generation, has also been a testament to the spirit of human resilience. To me, it is no surprise that the most compelling technologies we know today are built on an inherently human foundation. The dynamism, effectiveness, and scalability of AI make it a valuable asset for enterprise growth and resilience. The increased focus will make it a core, and perhaps the most important, element in infrastructure decisionmaking. An enormous part of AI's appeal lies in its ability to mimic human behavior, a crucial feature in developing future-ready strategies. The technology has already disrupted a broad range of areas, from healthcare and customer service to product innovation and crisis management. So, let's inspect how AI has drawn on human behavior to augment enterprise resilience and efficiency during the pandemic.

#### Imitating Efficiency

There are three core functions where AI has made a significant impact during the current crisis. While the overall contribution is broader, it is here that we believe AI's most humanlike tendencies came to the fore.

#### Risk Management

The pandemic has compelled enterprises to revisit their risk management policies, ensuring that a rarely invoked clause was front and center of contract discussions. Force majeure clauses are usually included as a formality under the assumption that they may never need to be enforced or evaluated. In these unprecedented times, however, the unexpected becomes normal. Negotiating contracts with a global supplier and partner base while ensuring diligence and accuracy is no mean feat, much less when required to be completed at speed. Enterprises need help with extracting clauses such as non-performance and termination from procurement contracts, extracting force majeure clauses from contracts both historical and current, and evaluating all contracts for risk and recourse. By using intelligent contracts analysis driven by AI and computer vision, enterprises have been able to inject efficiency into the process, allowing skilled legal teams to focus on adding value through targeted counsel instead of keeping them occupied with mundane and error-prone work. Intelligent contract analysis has also helped procurement teams find ways to unlock contract value by invoking discount clauses and renegotiating supplier contracts efficiently, allowing companies to optimize spending and capital **allocation.** It will enable enterprises to understand the various covenants and SLAs in their agreements while aggregating intelligence to ensure business continuity.

#### Execution during a Disruption

The pandemic has placed a premium on business continuity and agile innovation. To thrive. enterprises must swiftly adapt, deliver new products and services on the go, and deliver exceptional customer experiences. Digital transformation is essential to this end. Consider the case of lending businesses. With capital at a premium, timely credit is the lifeblood of small and medium enterprises, offering them offering unwavering support to tide over this difficult period. Enterprises are now using AI to segment their lender base and de-risk their portfolio through a nuanced understanding of delinquency rates. Even beyond business, enterprises are turning to Al-based applications to adjust. Supply chain disruptions don't just affect consumer-facing businesses but also areas such as relief work, helping organizations deliver food and essentials to those most in need. Smart technologies are now assisting organizations in creating a digital twin of their physical supply chain before allowing human talent to make informed decisions based on near real-time intelligence. We expect Al-led initiatives will continue to lead business continuity plans as enterprises discover the critical role cognitive capabilities play.

#### Continuous Learning

Another key driver of AI consumption is continuous

learning Much like the human mind Al-hased technologies learn from various sources, including training data, application data, and their inferences. This ability to improve continuously makes Aldriven applications an attractive proposition for enterprise adoption. The rapid strides in NLP and computer vision create valuable synergies for AI to move beyond purely deterministic tasks and partner enterprise human capital. Besides. continuous learning has other benefits. Being short on data need not be an obstacle for enterprise AI/ ML adoption because these tools can utilize new data to make better predictions. Testing systems. fraud detection, recommendation engines, and procurement intelligence are just some areas in which AI platforms can get smarter over time. As with any human career, direction, and purpose are integral to success. That's why enterprises would do well to build a robust and specific problem statement to maximize intelligent interventions.

# The Importance of Augmenting Human Capability

Humans, by nature, are resilient beings, both physically and emotionally. It is natural for Al to follow suit and draw on the best our species has to offer. The symbiotic relationship between these core value propositions - efficiency, accuracy, reasoning, creativity, and empathy - will pave the way for enterprises that will thrive in the long run. Either of these approaches in isolation could, however, offer a below-par result. Purely manual intervention is inefficient because deterministic tasks at scale can quickly erode accuracy while human decision-making inevitably carries some bias.

On the other hand, ERP and CRM systems, for instance, can be super-efficient but not adaptive. Furthermore, they cannot consider the nuances available to the human mind. It is here that human-digital work comes into its own, helping organizations move forward on the cognitive continuum from reactive to proactive and then predictive with immense accuracy and agility.

#### A Special Blend

Humans are the most resilient species, and AI the most intelligent technology. Human resilience and creativity combined with Al's hyper-productivity, intelligence at scale, and accuracy will make enterprises more resilient, and companies would do well to harness this value. Organizations must revisit their technology strategy in the crisis's aftermath, and Al-driven transformation must be central to their plan. However, people will remain an enterprise's most valuable asset, which is why organizations would do well to augment their human resources with on-demand intelligence and efficiency. People-first technology-led transformation will be the cornerstone of resilience as enterprises seek to reach unprecedented levels of excellence following a halt that has provided much introspection and courage.



#### Ashok Kumar Ratnagiri

Director and Head - Product Security, EdgeVerve Systems Ltd. (An Infosys Company)

n an era marked by rapid growth, innovation, and endless ambition, the current crisis has created a need for a sharp focus on the things that matter. Enterprises must now be resilient, innovative, and efficient while staying ahead of the competition. The proliferation of technology, specifically intelligent technologies, is set to play an increasingly important role in this endeavor. We are at a juncture where the abilities of machines far exceed productivity goals, impacting even planning and decision-

making processes.
Our current
experience of the
need for robust
technology means
that it won't be long
before cognitive
technologies
permeate
every aspect of

human life from

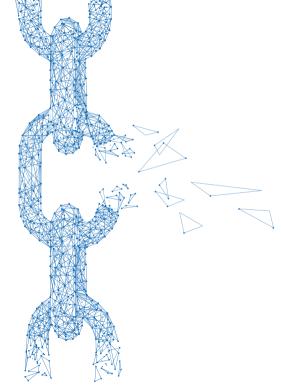
# INTELLIGENT AND SECURE

**Why AI Needs Real Security** 

entertainment and healthcare to transport and, perhaps, even space travel. An average person's life is already so intertwined with technology that they trust machines to help them navigate to a destination, report their vitals, and offer lifestyle recommendations.

For enterprises, this change is even more significant. Across departments, an increasing number of companies will automate business processes alongside a larger volume of decision-making. Al and ML, emerging technologies until recently, are now firmly in the mainstream and will drive the future of enterprise growth. The growth figures are a testament to Al's popularity with a report from market research firm Fortune Business Insights stating that the global Al market is set to touch USD 202.57 billion by 2026, up from just USD 20.67 billion in 2018 at a CAGR of 33.1%.

Procurement, sales, marketing, production, finance, human resources, regulation, and compliance are just some examples of departments seeing the transformative effects of Al-based technology. It is an exciting phase. These Al and Automation-based technologies will augment human productivity, reduce average running costs, and all but eliminate the need for manual intervention in deterministic tasks, creating an environment of agility and continuous innovation. Adoption and implementation, however, are not the only areas for enterprises to consider.



#### A Question of Safety

As enterprise dependency on machine-driven cognitive capabilities increases, it is pertinent to explore AI system security. Are AI systems tamper-proof? How can they be made secure? From a more fundamental standpoint, can the prevailing narrative of security and control, adequately address the potentially unique threats that AI-based systems can pose? To answer these questions, we need to understand the broad themes that determine the resilience and effectiveness of AI implementations. These include:

- The vulnerabilities of AI systems and disruptions
- Al's value drivers and how they can be protected from malicious actors
- The unknown threat actors and attack surface for Al systems
- The differences between traditional security controls and those of AI systems

Before we delve into these topics, it may be pertinent to understand an AI system's life cycle.

#### Stages of Al Lifecycle

Al systems have two stages in their life cycle - learning and inference. In the learning phase, a model is trained using available data. The data can either be labeled (supervised learning) or unlabelled (unsupervised learning). In the inference phase, as the name suggests, a model makes inferences based on the framework developed in the learning phase. Systems can also learn from their inferences

actively through a process known as reinforcement learning. Each of these stages carries distinct security threats. Let's understand them better.

#### Are AI Systems Vulnerable?

Absolutely. Like any software system, Al-based systems are open to attack. If the interfaces to these systems are not secure, they could be susceptible to exploits such as DOS and DDOS. All the defense protocols needed for any software system also need to be in place for Al systems. The question to answer is whether Al systems have any specific vulnerabilities that need attention. Understanding the purpose of Al systems and the model building process will shed some light on the issue.

An Al system in its learning stage relies heavily on the data provided for accuracy and precision. This reliance means that the security of an AI system begins with the security of data. There are several examples of how data breaches have caused financial and reputational losses for enterprises. In 2017, Equifax found itself in a spot of bother when a data breach, one of the largest in history. revealed the personal information of 147 million people, leading the company to pay out a USD 425 million settlement to those affected alongside other state sanctions. While this is an example of breach, the point to be noted here is that any unscrupulous access to enterprise data can tremendously impact an organization's plans of Al program and implementation success.

#### **Understanding the Threat**

A subtle and delicate skew introduced at the right stage during the learning phrase can significantly alter the behavior of predictive or cognitive AI models. Minor variations in data, or perturbations as they are known, can fool the model into believing a contrary view. This impact is evident in areas such as computer vision, image analytics, video analytics, and security systems that rely on them. Several studies demonstrate that people can dupe AI systems designed to identify humans by wearing certain clothing or accessories. Deception like this could compromise a security system that relies on deep-learning-based object detection and computer vision models.

In reinforcement learning and continuous learning systems, where models learn from their inferences, a different set of challenges heightens the security concerns. As models consume new data on the go, they also run the risk of exposure to unsafe or unwanted knowledge. Think of them as children who learn from observation and information. Microsoft's Tay, an Al Twitter bot designed to learn from human interactions, was a classic example of reinforcement learning gone wrong. Since Tay couldn't distinguish between unacceptable and appropriate social conversation, it learnt from the Twitter users who

used abusive, racist and indecent language and began to deliver responses in a similar tone. If an AI model that is part of more business-critical workflows like procurement or risk management could misbehave, perhaps even in a manner more inconspicuous, the consequences could be substantial. While the reason could still be inadequate training or deliberately poor training, I would again consider the possibility as an enterprise security risk. AI blurs the lines between functional issues and security concerns. As these threats increase, so must the need for greater vigilance. The cost of detection and repair after an incident is exponential, while prevention can be challenging, if not impossible.

#### Crown Jewels and New Threat Actors

So, how do these threats manifest in the enterprise context? A characteristic feature of any Al model is the reliance on data, thus protecting this data not just from them but also from manipulation and alien injection is crucial. In this regard, internal threat actors are just as important as external malicious entities.

Data is the most valuable asset, the crown jewel, of today's enterprise. It is the key to model learning. which means that malicious access could introduce bias or skew data, inconspicuously, affecting a model's inferences. I call this 'wanton bias.' The perturbations mentioned earlier are necessarily tweaks that create wanton bias in deep learning models. If an enterprise relies on a decision-making model in its automation line, the loss of consistency due to injected wanton bias that allows unintended exceptions could have disastrous implications. Al systems themselves also increase the attack surface of an organization. An intelligent hacker. in addition to conventional DOS and DDOS attacks, could exhaust the model by crafting complicated inputs that make it unresponsive to other requests. Exposing AI models to external interfaces can intensify this risk.

Another factor widening the attack surface is the use of AI itself to exploit vulnerabilities. In the case of deterministic algorithms, the result is usually binary. The move to stochastic, statistical, and probabilistic models, as is the case with ML, deep learning, and neural networks, creates various shades of grey. Writing tens of thousands of conditional statements to crack a problem may have been a task in the past, but is imminently possible with a neural network with weights adjusted at each layer. The same power can be used to locate an opportunity to exploit, making malicious actors just as powerful as the systems they are looking to hack.

This environment tells us that the defense mechanisms traditionally built on the application security side and perimeter are as relevant as before. It also underlines the importance of increased vigilance, specifically in areas like APT (advanced persistent threat) protection.

#### The Relevance of Conventional Defense

Non-essential, indiscriminate, and unauthorized access to data during the model learning phase is the surest way to compromise an Al system. Enterprises must **prohibit non-essential access**, both internally and externally, and encrypt datasets to protect against malicious injection attacks that can create wanton bias. Also, to secure the perimeter, organizations must implement strong firewalls alongside robust tools and processes for SIEM and APT. Content protection such as antivirus and antimalware software remains relevant as the scope of DLP extends beyond IP leaks.

Auditability is another key security measure.

Appropriate logging and a well-maintained data-use audit trail will ensure the traceability of user and administrator actions. All data and audit files must be stored in a secure location with access control.

It is also important to pay attention to the **separation of concern**. Access to applications and data stores should only be provided on a need-to-know and need-to-have bases. Strict role-based access rules should be enforced within the application as well as in the deployment and management environment.

Enterprises must develop more robust application security frameworks that include Static Application Security Testing (SAST), Dynamic Application Security Testing (DAST), and Interactive Application Security Testing (IAST). There is no alternative to pentesting for testing application security. Furthermore, with open-source components and libraries included in most software applications, open-source security considerations are critical. Frameworks such as Tensorflow and Theano are also open source and make it imperative for enterprises to have a well-defined mechanism, tools, policies, and a certified team of security experts to deal with open source vulnerabilities.

#### The Answer Lies Within

Understanding that AI is a model based on human thinking helps us ask how we would approach security if humans were executing all enterprise functions. What controls would we have then? The following list offers some context:

**Authorization** 

Verification and validation

Auditability of actions and logs

Justification and explanation for decisions

Accountability for actions

We must have these same parameters in place for Al-based systems. Following on from the list above, an effective and responsible Al system would:

Allow access only to authorized users through strict access controls

Only allow the AI to act on authorized areas by delineating boundaries of control clearly

Have a clear log and audit trace of actions taken

Offer explainability

Demonstrate accountability

There has been significant progress in explainable Al where a snapshot of the weights at different neurons in the network is captured. for every Al-base decision. The snapshot can be analyzed further if there are anomalies to establish whether the problem lies in manipulated training data or the AI application implementation. Each Al system outcome must be accompanied by a confidence score or probability metric that influences the model's choice. Al systems should also offer the ability to trace the cause and effect of each decision to support auditability. For enterprises, contracts must reflect their need for Al accountability. Consider including limitations in your contract to protect you in the event of AI system errors and omissions, much like you would do for humans

#### A Safe Journey Ahead

The strength of Al's value proposition means that its proliferation is inevitable. irrespective of temporary concerns from security professionals, regulatory authorities, privacy advocates, system auditors, or even the legal fraternity. Resistance to adoption would be imprudent, if not downright foolish. Moving forward requires preparedness that understands the risks and looks to mitigate them. Data protection must move beyond a mindset of purely legal considerations or GDPR compliances to one that safeguards the most valuable resource we know. Companies should develop data protection and access policies that offer extreme visibility into data use, especially at the learning stages. Enterprises that implement the necessary controls, checks, and balances will enjoy the benefits of a secure Al system that generates valuable, explainable, and justifiable outcomes.

<sup>&</sup>lt;sup>1</sup> https://www.fortunebusinessinsights.com/industry-reports/ artificial-intelligence-market-100114

# Keeping the lights on

**Infusing Resiliency in IT operations with AI** 



Sathish Kumar E V

Senior Product Manager, EdgeVerve Systems Ltd. (An Infosys Company)

ovid-19 nandemic is a disruptive event like no other and has impacted many critical enterprise business operations worldwide. Global enterprises capitalize on technology to better manage their business. IT operations are the operational layer of an enterprise's technology landscape. However, enterprises are prone to disruption as demand, supply, and performance flounder. In this article, the experts share their perspective on how enterprises can future-proof IT operations by adopting AlOps to manage the technology landscape intuitively and avoid disruption. Enterprises use digital technology to integrate applications, manage a massive volume of data, and streamline processes. IT operations constitute the heavy lifting by the IT team across the technology landscape. Business enterprises function with clockwork precision and efficiency when IT operations are seamless and have the ability to scale up without interruption.

To put IT operations in perspective, let us understand how a power utility provides 24/7/365 electricity. The utility needs to align demand for power with power supply. The grid needs to optimize the capacity to manage spikes in consumption. The power utility also needs to provide consumers with a choice to switch between conventional and renewable sources of energy. A digital utility uses a smart grid to 'keep the lights on' always. The bedrock of the digital utility is operational excellence in IT operations.

The smart grid automates the operational aspects of IT to provide a reliable power supply. A digital utility incorporates artificial intelligence (AI) to provide forensic intelligence for managing IT operations. AlOps leverages machine learning and data science to ingest events and metrics from IT systems across the business, while identifying anomalies, correlating events, and taking preventive action to avoid disruption.

Essentially, AlOps applies Al to IT operations so that enterprises can smartly run IT and scale up the business. AlOps tools identify early symptoms of IT dysfunction, find issues that have occurred in the past to accelerate resolution, and address system bottlenecks across the IT value chain.

Al in IT operations improves predictability by leveraging past knowledge for the future, thereby ensuring reliability in business operations. In real-time monitoring, the availability of dedicated Al computed resources allow IT to become increasingly agile and responsive in near real-time.

AlOps empowers enterprises with autonomics
- the ability to be more self-healing, selfmonitoring, self-scaling, and self-managing.
From monitoring IT systems to application
metrics, AlOps helps IT teams evaluate business
metrics in real-time and discover the impact of
business on IT systems.

During the global lockdown in the aftermath of the COVID-19 pandemic, AlOps pre-empts the disruption of critical IT systems. By capitalizing on machine learning and data interpretation capabilities, AlOps reduces human intervention while undertaking automated troubleshooting / investigations.

## Beginning with AlOps - Breaking down siles

AlOps can streamline and enhance company-wide IT functions, reduce repetitive labor and create new and better processes through data-led insight. While a lot of AlOps products in the market talk about applying Al to a few specific IT cases, Al can be applied in any use case where past data is available. Some of the roles, as defined by ITIL, that could easily and effectively reap the benefits of AlOps include service operations teams like incident management, L1 and L2 support teams, request fulfillment teams, access managers, IT operations control teams, and application management teams. Continual services improvement teams such as process owners and process architects, can do a lot with AlOps.

Service design teams like catalog management, service level management, risk management, capacity and availability management, and compliance team members, can also find great advantages with AIOps.

To elaborate on this further, we've listed below seven characteristics that define a true AlOps solution, as mentioned by analysts at Ovum (Omdia). These were featured in a recent eBook created by EdgeVerve in collaboration with AlBusiness.

#### Platform-agnostic

AlOps must be platform-agnostic and operate in all environments, noting that while operating across 100 percent of business environments is "unlikely," AlOps solutions should be capable of working across any on-premise or cloud infrastructure in terms of x86-based workloads.

#### Ease of use in collaboration

To drive collaboration across the IT organization, AlOps must at its heart be easy to use and enable intuitive sharing of information. AlOps should be largely invisible to the people using it, while enhancing existing tools and processes.

#### Data aggregation and correlation

AlOps needs data access and an insight-generating element. The AlOps solution is made up of lots of disparate data sources, and it must be able to evaluate the quality of this data and, if needed, to store aggregated versions. It considers a solution's ability to correlate data and identify new insights as a key benefit of using AlOps that enables IT departments to become faster in identifying issues and resolving problems, leading to their becoming proactive in terms of problem resolution.

#### Compliance and anomaly detection

Security and compliance management are popular use cases for AlOps. Understanding when equipment is out of compliance or when an unusual event has occurred are key capabilities that can shorten the time from a known incident to a resolution. Understanding the known good behavior of a system is critical to identifying an anomaly, which could be a security breach that needs to be investigated.

In terms of compliance, AI should support an IT department to know the status of the system, workload, and when it should be patched.

#### Automation

The baseline for automation with AlOps refers to the ability to automate many tasks is one way that IT operations can begin to regain control of a complex and fast-moving environment. AlOps should be able to identify tasks that need to be automated. Besides, AlOps should drive automation of more and more tasks from simple sysadmin alerts to process automation, driven by learned behavior. AlOps should ensure that the complexity of automation matches the technological maturity of the wider organization.

#### Metric-based analysis

According to Ovum, as AlOps becomes mainstream, reporting and analysis expectations will change. Metric-based reporting and analysis will become a part of the process. Ovum illustrates it with a use case: In metric-based reporting, the organization identifies business outcomes and associates relevant metrics. For instance, if a business change to a customer-facing application has a potential value of US\$ 100,000 per day in increased revenue, a metric that measures time from concept to production can be linked to this value.

#### Connect the entire organization

As a unifying technology, AlOps must be "extensible." According to Ovum, "AlOps is not a suite of solutions that will rip and replace existing management tooling; rather it is a thin management laver that connects all these activities and uses Al

technology to improve the business of IT delivery." AlOps will cover specific areas of complexity and extend to any area of business function in which Al and data-led insight can enhance technology operations.

## AlOps: The answer for too much information

One of the biggest challenges facing the IT organization is information overload. An average IT team in a large business enterprise received nearly 3,000 daily alerts and notifications in 2019, according to software intelligence firm Dynatrace.

Making sense of data and prioritizing critical issues is a difficult task. The IT industry realized that sifting through logs and metrics can be outsourced to artificial intelligence models. AIOps was born to address the need to manage and capitalize on big

In a recent webinar conducted by EdgeVerve and AI Business, Jasdeep Singh Kaler, Global Product Head of Infosys Nia at EdgeVerve, proposed how to streamline enterprise AI deployments. "The volume of all tickets and metrics and logs is increasing at an extremely high pace. It is humanly impossible to link them together," Kaler said.

Al models ingest the data produced by hardware and software, discover the critical issues, and recommend the best course of action. AlOps software will become increasingly sophisticated to a point where remediation takes place automatically.

AlOps is the next phase in the evolution of ITOps. Some key differences between the two: Traditionally, ITOps involved automation for solving problems faster and more efficiently. But given the scale, data velocity, and variety, it is very difficult for a rules-based approach to automation.

With AlOps, we are not just talking about solving problems quicker, we are preventing problems using key technologies of Al. AlOps also serves as the integration layer, bringing information from disparate metal boxes together, without having to rely on proprietary vendor tools.

Ad hoc	Siloed	Basic cross-silo process-oriented	Complete IT operated process-oriented	DevOps-oriented	Customer-centric operationally oriented
Individual selection  No ITSM used (Microsoft Excel)  No standards  No leadership  No targets	Team selection  Basic ITSM used  No communication  No integration  Team targets	Core team selection Basic integration Limited sharing Core processes Few shared targets	Cross IT ops selection  ITSM and DevOps use Good collabora- tion Full use of process Shared targets	Cross IT selection  • CI / CS tooling  • Full collaboration  • Full process mapping  • Business targets	Business selection  • AlOps  • Seamless operations  • Shared processes  • Outcome targets
No specific tools	Limited ITSM processes used	Majority of ITSM process deployed	Limited ITSM to DevOps integration	DevOps tools integrated with ITSM	Al integrated with operational tools

AlOps helps enterprises manage more complexity, more diversity of their application stacks, more telemetry, with fewer resources and more intelligence.

What can enterprises expect from an AlOps solution?

In the short term, IT organizations can look forward to enhanced IT productivity, reduction in the mean time to repair (MTTR), reduction in duplicate tickets, preventing outages, optimizing team effort which is spent, (delivering) other cost savings. In the long term, IT organizations can drive more customer-oriented applications, enhanced business agility, and introduction of new services.

# AlOps success story: Infosys Nia AlOps automates payments for a bank

A bank wanted to improve operational efficiencies in IT services. The enterprise had twin challenges: a tremendous amount of effort was required for highly knowledgeable L2 technical support for Payments service, and several L2 subject matter experts (SMEs) were nearing retirement.

The bank consolidated its Payments ITOps services from multiple vendors into EdgeVerve, leading to swift demand reduction and a simpler daily operating model by applying Al to IT operations.

Infosys Nia AI platform used problem management analytics to identify high impact automation areas. The Infosys team developed nine deterministic cognitive use cases and incorporated automation with an AI-based knowledge model for knowledge management. The skills and expertise of the retiring SMEs were captured in a knowledge base for the future.

#### AlOps success story: Infosys Nia AlOps transforms service delivery at a telecom company

A telecom company wanted to implement a product order activation capability for complex product bundles such as the Internet, TV services, and phone line subscriptions. The telco sought a bundled offering with zero latency, end-to-end order visibility, order monitoring, automated error and notification management, using AI and machine learning models.

The Infosys team adopted the Nia platform to drive an Al and Automation strategy. Events and logs across existing systems were amalgamated for dynamic discovery, and process and order execution. The solution offered a real-time, 'milestone'-based view of an order process.

An Al-led order activation service produced a unified dashboard view supported by a prediction model. It predicts the likelihood of order fallouts, automatically resolving them as they occur, while providing visibility of customers.

An enterprise needs to manage the sprawl of data and applications as the business scales up. The IT team can manage IT operations smartly by adopting advanced automation and data science. AlOps is a catalyst for business growth through smart application of insights from past performance to manage daily IT operations, mitigate unforeseen risks, provide immunity in crises, and plan for future events.





Impact of AI and Automation on how we live, work, and play



#### Glenn VanLandingham

Vice-President Solution Consulting, EdgeVerve Systems Ltd. (An Infosys Company)



I've always debated the balance of cost vs. efficiency in the choice between a virtual meeting versus a face-to-face meeting. COVID-19 has added a new factor to this in-person vs. virtual balance in meetings – that of safety. To deal with the challenges brought forth by this new element, companies will have to be creative, resourceful, and rely on new tools and technologies. A few technologies that will become more useful as well as essential in this new business environment are Automation and Artificial Intelligence (AI).

# Automation, AI, and the new world

Already, the impact that solutions such as Robotic Process

Automation (RPA) have had on business has been nothing short of transformational. Companies are eliminating massive amounts of manual human effort with RPA, freeing up their time to focus on more productive things like customer service.

AssistEdge from EdgeVerve has eliminated 80+ Mn hours of human work at hundreds of

companies.

One of the most important elements in deploying RPA technology is assessing where to use it. There are countless places where RPA makes sense, among processes that are manual, repetitive, and high volume. Besides, there are business functions that involve significant human creativity and decision making, which currently makes them less viable for RPA. However, as RPA technology evolves and more Al is infused into robots making them 'smarter'; more and more types of business process, even if they involve human-like decision making, can be automated.

The tricky ones are business processes that fall somewhere in the middle. These processes can only be partially automated and still need a human involved - not because of the cognitive advantages the human offers, but their personal connections. For instance, there may be functions where you can service your customer with a robot, but the personal connection of a human may create more value.

Analyzing processes to assess where they lie in the robot vs. human balance is a big part of RPA initiatives. In fact, at EdgeVerve, our solutions include technology solely designed to help customers make these process automation decisions.

If you observe at a macro-level how RPA and Al are trending in various industries, you get a sense of where this is going. Businesses are gradually calibrating to an equilibrium of humans and robots in their various departments. Business functions will eventually settle into a state where humans and robots work seamlessly together, capitalizing on the benefits of both for the best outcomes - whether it be customer services, costs, or productivity.

At EdgeVerve, we envision a world where the two forces — the human worker and digital worker (robots) - converge to co-create the future worker, enabling a synergy of people, process, and technology. We call this convergence Automation Singularity.

#### **Moving towards Automation Singularity**

So, what does this have to do with working from home? Over and above the advantage of robots as 24x7 workers that are more accurate and efficient, is the fact that they don't transmit biological viruses. And that's a key advantage for businesses grappling with the 'new normal' of COVID-19. You don't have to worry about robots working in close proximity, taking their temperature, or a testing regimen for COVID-19.

Corporations right are now making tough choices about who really needs to go back to work in the office and will likely continue to grapple with these decisions

In my opinion, the shift in the virtual vs, in-person WFH balance affects the human vs. robot RPA balance. Processes that were previously borderline opportunities for automation may now be fast-tracked. The reduced risk and increased safety associated with robots will shift many processes to become more viable candidates for RPA. The shift to WFH in business will accelerate RPA adoption and get us faster to Automation Singularity.

# Three ways Automation Singularity can help companies in the COVID-19 crisis

Companies are likely to embrace Automation Singularity to improve worker safety and effectiveness by:

#### Reducing on-site worker footprint

Task automation can significantly reduce the need for on-site employees. Consider the case of a procurement or finance or legal function in most companies. One of the critical areas that require employees to sit in an office space is document processing. These can be simple documents such as invoices to be reconciled, or complex documents such as contracts that need to be analyzed and edited.

Automation tools, especially Intelligent Automation which reads and analyzes a document as a human would, can significantly eliminate the need for humans to be physically located with documents. In an automated scenario, a fewer employees might work in an office gathering and ingesting physical documents for smart robots to process. The function of the human here would be to analyze exceptions, perform reconciliation, or clarify things the robots missed.

For example, in the Purchasing function portions of the procure-to-pay lifecycle like the creation, approval, monitoring, and reconciliation of purchase orders can be automated with Al and RPA and humans can do the final verification.

#### Shifting on-site processes to remote locations

Twitter has announced that its employees can work from home forever? - a scenario more and more companies are considering. As WFH becomes the new normal, many on-site processes — like recruitment, onboarding, training, etc. - may shift right to employee doorsteps.

Remember that on-boarding session you went through on your first day, where you met with representatives with IT, Human Resources, and Accounting to learn how to do your job? In the future, these may be robots that are included in a box of things delivered to your house on your first day of work. I'm referring of course to digital (not

physical) robots that will help get many of the things done for you that you used to go to the office for.

RPA, combined with AI, could also replace human intervention in processes that require less personal interaction, such as IT support. Humans could get involved only when technical issues are escalated, and a majority of this could be handled from a remote location. Only when there is a hardware issue the human gets physically involved will it dramatically reduce their human to human touchpoints, thereby improving their safety.

#### Increasing the effectiveness of WFH

As more employees work from home, they will continue to need responsive IT support to be able to do their jobs effectively. Al will play a big role in automating IT support for WFH employees. For example, Al can be used to monitor server logs and systems diagnostics to predict when systems might go down and automatically intervene. RPA robots can also automate many IT support functions such as setting up new logins and re-setting passwords, ensuring seamless access, and connectivity.

While the RPA market growth and the shift to Automation Singularity were already happening, COVID-19 has definitely given WHF a boost. Even companies that earlier had RPA lower on their priority list, possibly because they had few people and thus a lower ROI, may start embracing this new phenomenon.

It's incredibly hard to predict what the post-COVID-19 business environment will look like, but the democratization of Automation Singularity appears inevitable.

<sup>1</sup>https://www.flexjobs.com/blog/post/remote-work-statistics/ <sup>2</sup>https://indianexpress.com/article/technology/social/twitteremployees-work-from-home-forever-covid-19-6407724/



A global beverages company achieved end-to-end supply chain visibility and collaboration with TradeEdge

Getting data down the supply chain beyond your distributers can be a daunting challenge for any business. One of our clients — a global beverage company — were faced with this situation. The lack of data further cascaded into:

- Sub optimal production planning
- No-performance of promotions
- And inability to optimally manage stock.

#### Learn how the enterprise were able to leverage TradeEdge for

- 90% reduction in manual reporting
- ~20% reduction in 'stock out'
- 10% increase in case-fill rates

Scan the QR code to read the case study



# Reimagine New Possibilities

#### **Building intelligent & integrated healthcare systems**



#### Bhushan Deshmukh

AVP-Senior Director & Head-Product Incubation Cell, EdgeVerve Systems Ltd. (An Infosys Company)



#### Maheshwar Damojipurapu

Senior Product Manager, EdgeVerve Systems Ltd. (An Infosys Company)



**Abey Kuruvila** 

Member of Technical Staff, EdgeVerve Systems Ltd. (An Infosys Company)

echnology has always played a significant role in healthcare disruption. Innovation is an everyday affair with pathbreaking discoveries happening across the world. Despite rapid innovation, healthcare is facing many challenges related to systemic issues and changing market dynamics. These include:

- Rising consumerism: Increased use of smartphones, mobile apps, eCommerce platforms, and IoT devices have changed the patient, payer, and provider interactions, increasing the demand for better and personalized experiences.
- Preventable medical errors: Research suggests that there are over 43 million medical injuries or error every year that are avoidable. These preventable errors create liabilities for hospitals and could cost patients their lives. For instance, over a period of 6 years, between 2011 and 2016, misdiagnosis and surgical complications cost New South Wales, Australia, public hospitals over \$262M in damages<sup>2</sup>.
- Medical information explosion: Research<sup>3</sup>
   estimates that medical knowledge will double
   every 73 days in 2020. This makes it next to
   impossible for medical practitioners to keep up
   with the latest medical literature, leading to the
   spread of misconceptions based on dated or
   incorrect information.
- Slow diffusion of correct medical knowledge:
  A 2015 article states that less than 14% of new scientific discoveries become part of daily clinical practice. It takes such findings over 17 years, on average, to be accepted. It takes around eight years for a drug to reach a stable level of prescription and approximately 3.5 years to be withdrawn, in case it is found to be unsafe. For patients, new medicines offer fewer side effects, fewer hospitalizations, improved quality of life, increased productivity, and importantly, extended lives.

Fragmented and siloed healthcare systems, changing regulations, and limited digitization are key contributors to these challenges. Digital technologies can definitely plug systemic gaps making healthcare more connected, organized, and resilient. Digital technologies can also make it easier and more cost-efficient to meet regulatory challenges without compromising data accuracy.

# Creating a better healthcare system with digital transformation

Adopting digital technologies can benefit the healthcare system in many ways. Some of these include:

- Improved diagnostics: Digitization coupled with the deployment of advanced technologies such as Al/ML, AR/VR, Computer Vision and IoMT can improve the accuracy of diagnosis<sup>6</sup> and reduce the chances of errors recurring in future<sup>7</sup>.
- Accessible healthcare: Smart apps on mobile phones and wearable devices are enabling telehealth and m-health initiatives, remote monitoring, and patent administration<sup>®</sup> for accessible and affordable healthcare.
- Personalized medicine: Availability of individual's data, family's health history, and genome analysis can help medical practitioners provide personalized treatment, including advanced, medication-free therapies based on gene editing?
- Fast-tracked drug discovery and clinical development: Building digital solutions powered by Al/ML with visual modules can support clinical trial simulation, modeling, computer-assisted trial design, drug discovery, and development<sup>10</sup>. Digital adoption has the potential to reduce the cost and time to market significantly.
- Improved operational effectiveness:
  Increased digitization using technologies like
  Al and Automation reduces documentation
  effort<sup>17</sup>. Advanced technology-based clinical
  decisioning support system can make healthcare
  professionals extremely efficient in helping them
  focus on high quality and high value tasks<sup>12</sup>.
- Enhanced trust and collaboration: Blockchain based trusted networks can enable access to

documents and healthcare information securely across the network. End-to-end visibility across the supply chain helps support drug safety and reduces fraud. Blockchain also helps in streamlining complex clinical trial management.

Given the benefits of digital transformation, it's hard to believe that the healthcare industry is relatively low on digital maturity - being ranked almost last in a 2015 survey.

The industry, even now, continues to lag in this transformation.

However, investments in digital technologies are on the rise, and industry players need to embark on their digital adoption journey strategically. The need of the hour is to take a planned and incremental approach that is also aligned with an organizational change management journey.

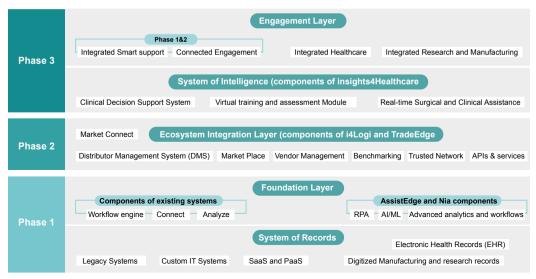
# A three-phased transformation for resilient healthcare systems

We recommend that healthcare organizations follow a three-phase journey for digital adoption (See Fig. 1).

Fig. 1: Functional View of Healthcare Reference Architecture

- Digitize data and integrate systems through data capture, OCR/ computer vision, and crossapplication and environment integration
- Process discovery and identification of automation opportunities
- Robotic process automation to improve process efficiency and employee productivity by automating repetitive tasks and Al-enabled business application automation to transform into data-led businesses.
- Intelligent Automation of IT operations with AlOps to monitor disparate IT systems and take reactive, predictive, and preventive actions to manage disruptions
- Intelligent virtual customer support through chatbots

Many global clients have leveraged EdgeVerve's products to digitize and automate their business processes across customer servicing, customer interaction management, customer onboarding, partner/vendor management, billing & payments, risk management, reporting, document & content management, workflow management, supply chain management, trade fulfilments, collections, compliance management and planning & budgeting, among others.



#### Phase 1. Digitization and optimization

Siloed data, manual processes and workflows, and fragmented applications are some of the key impediments to advancement within the healthcare sector. Suboptimal processes and lack of automation creates inefficiencies and adversely impacts customer experience. We have been helping our healthcare clients overcome these challenges with our comprehensive product suites 14 that include AssistEdge 15, Infosys Nia, 16 and Business Apps.

Some of the key areas where digitization and optimization can offer improvements include:

#### Case in point

Pharma companies can achieve more than 20% cost savings and 10% efficiency gains by using:

- Infosys Nia Vision to automatically identify the ingredients from the scanned images of medicine labels
- AssistEdge and Infosys Nia for Knowledge Modeling, Inference into SOPs and automating them
- Infosys Nia for predicting failures and maintenance requirements of equipment

### Phase 2. Ecosystem integration and interoperability

To function seamlessly, the healthcare ecosystem needs integration with multiple players like healthcare payers, insurers & public bodies, healthcare providers, pharma companies, manufactures/suppliers/OEMs, diagnostics & labs, wearables & devices, patients & consumers, research institutions, regulatory bodies, and other participants.

Our AI/ML-based TradeEdge platform enables this integration and allows interoperability across players through data cleansing, preparation, and contextualization; easy onboarding; end-to-end visibility; and demand-supply mapping within the ecosystem. An integrated ecosystem brings in predictability, efficiency, and improvements in the end-user experience.

#### Case in point

Increase productivity by a third in pharmaceutical corporations using:

- TradeEdge Market connect to acquire data from channel partners & distributors
- AssistEdge and Infosys Nia for automating manual business processes
- TradeEdge Distribution Management System to manage the products, pricing and promotions across the network

#### Phase 3. Digital and smart healthcare

The third stage of the transformation journey leads to a digitized healthcare ecosystem. Customers become the core of the entire system, and the system focuses on proactive preventive care and services. This also reduces the overall inefficiencies with the ecosystems and brings in transparency.

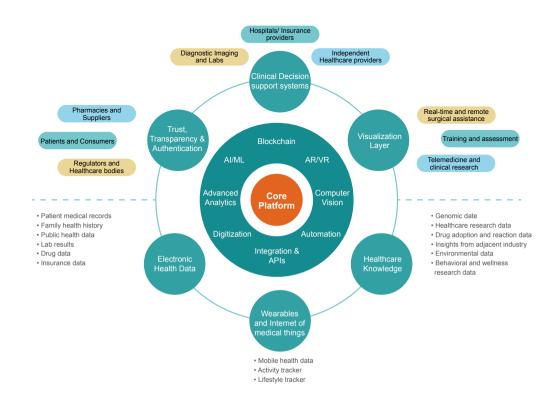
#### In this stage:

- Consumers and patients can avail preventive recommendations and personalized medical administration remotely through AR/VR, Computer Vision, and advanced analytics
- Medical practitioners and researchers get real time assistance from smart systems during surgical procedures or research activities. Smart systems also help the practitioners stay relevant with information on the latest advancements.
- Seamless information flow across the healthcare payers, providers, suppliers, manufactures and researchers makes the ecosystem extremely efficient and agile.

#### A digital healthcare ecosystem

Completing the 3 phases of transformation creates a digital healthcare ecosystem (See Fig. 2) that includes a digital core of healthcare data, clinical decision support system, AR/VR based knowledge enabler, and a blockchain-based trusted network.

Fig. 2: Digital Healthcare Ecosystem-Functional View



#### Digital core of healthcare data

The core of the healthcare platform comprises data related to patient records and digitized healthcare knowledge. This includes:

- Electronic Health Records (EHR) module with digitized patient health care information
- Digitized Healthcare Knowledge and Literature module that captures body, health and healthcare literature and research in real time and processes it along with digitized historical healthcare knowledge.

#### Clinical Decision Support System (CDSS)

A CDSS module leverages patient health records and health care knowledge from the digital core to generate recommendations linked to diagnosis and prescriptions. CDSS can reduce preventable medical errors by helping medical practitioners keep up with the latest knowledge and enabling digital diagnostics. For instance, CDSS can support pathologists, radiologists, and other medical practitioners to prepare accurate summary reports.

#### AR/VR based knowledge enabler

This module uses computer vision and AR/VR capabilities to guide medical practitioners in real-time during surgical procedures. Additionally, this platform enables real-time remote surgical collaboration, helping experts interact remotely. This module also supports VR based knowledge transmission and AR-based simulator for training and assessment.

#### Trusted network

A blockchain-based trusted network can enhance trust and transparency within the healthcare ecosystem by bringing in end-to-end traceability in:

- Drug research to clinical trials and regulatory clearances
- From drug manufacturing to distribution of drugs till the endpoint thus simplifying and authenticating the BMR process and reducing fraud
- Prescription to diagnosis and actual medical administration so it can help validate treatment through a digitized second opinion

#### The way forward

Embracing digitization to create intelligent and integrated healthcare systems is the only way forward for healthcare companies to stay relevant to customer needs and thrive despite complexities, uncertainties, and cost pressures. What's needed is a predictable and consistent approach to transformation to boost the success of the digital journey. Are you ready to take the first step?

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# THRIVE AT SCALE

Driving customer experience at one of New Zealand's Telecom giant



#### **Deepak Kumar**

AVP & Head of Sales for APAC, EdgeVerve Systems Ltd. (An Infosys Company)

Prad is a loyal customer using a TV subscription through a large telecom company. He decided to switch to a more optimized subscription model and save \$15 a month on his current subscription. For Brad, this is a simple plan change, and he expects it to happen quickly and seamlessly. But was it so easy for the telecom company to deliver?

As things were, the telecom company based in New Zealand was operating on three CRM systems as a legacy of a long history of acquisitions. And unfortunately, for the contact center agents, these systems were not integrated. Now when Brad calls the contact center for his plan change, the telecom company's agent needs to do multiple things on disparate systems to fulfill this request.

First, Brad's service on the current CRM and billing software must be disconnected, and a final bill should be sent to him

Then, the agent must migrate Brad from the current CRM to a new CRM, including any further changes made

And finally, the agent needs to set Brad up as a new customer in the new CRM with a new bill, new due date, new bank details to pay, new account number, new credentials, etc.

All of this must be done while masking that Brad is a "disconnect and reconnect" so that

he doesn't get the "Sorry you are leaving..." and "Welcome to..." communications. You can imagine the potential of errors in this transaction!

And this is just one instance. Contact center agents at the telecom company were using a twin-screen setup and toggled between 20+ applications – a mix of CRMs, wizards, and other tools to complete customer transactions. This system was inefficient and led to a broken experience for both the customers and the contact center agents. It was time for a change.

#### Automation takes center stage

In a customer-centric world, the winning formula resides in crafting unique customer experiences (CX). A McKinsey study<sup>1</sup> shows that companies providing a superior experience across customer journeys realized a 10-15% increase in revenue and a 20% increase in customer satisfaction.

Today, contact centers are the key custodians of brand and customer experience and often the first point of contact. The days of 9-5, weekdays-only customer support are long gone. New-age consumers leverage multiple channels to interact with service providers and demand for round-the-clock support. Businesses are being pushed to provide contextual information, faster problem resolution, and personalized service on the channel of the customers' choice to survive in a competitive landscape.

Automation has become essential to ensure efficient functioning of contact centers — and not for the cost implications alone. While automation definitely reduces the cost to serve, its impact on CX can drive sales, boost revenues, improve CSAT, drive customer loyalty, and increase agent effectiveness.

The telecom company, in this case, realized that they needed to reduce complexity and create successful and seamless end-to-end journeys for their agents and customers. They decided to move to a single view system that leveraged Intelligent Automation (IA) to improve the quality and efficiency of their contact centers, delivering business benefits at various customer touchpoints and increasing customer satisfaction.

# The approach to contact center transformation

The key questions facing the telecom company in New Zealand were:

- How do we ensure our frontline provides the best experience to our customers from a contact center perspective and resolve issues first-timeevery-time, without the need for the customer to call back?
- How do we deliver aligned, simple, and easy

interactions, which enable us to execute flawlessly for our customers at an overall lower cost-to-deliver?

 How do we improve visibility and manage efficiency and productivity of what we were doing?

Answering these questions required reimagining the entire process with the customer at its core, stripping out non-value-added work, and redesigning the workflows to ensure seamless execution. A 360-degree single view of customer and automation would play a key role in ensuring that the contact center was able to meet the business goals.

The telecom company decided to implement an aggregator-type solution that could sit over the current Fixed and Mobile CRMs and tools, providing a common view of the customer to the front line (retail, direct sales, care, account managed) and back-office teams (provisioning, bill & credit). The solution would also have the ability to trigger and manage integrated taskflows across systems and could be implemented quickly.

The biggest component of this solution providing a common view was AssistEdge Engage - that helped bring together multiple diverse applications. EdgeVerve's AssistEdge comes with rich capabilities of Al and Automation and helps organizations reimagine their contact center and achieve superior customer experience.

AssistEdge Engage enabled the telecom company to aggregate across multiple CRMs and tools, create a common view of customers from dashboards built atop the automation layer, and manage integrated pathways across systems.

The solution providing the common view also used bots to integrate and automate systems and tasks for agents offering guided assistance to improve outcomes. The solution used intelligent automation and productivity tools to streamline workflows and intelligent workload distribution to prioritize issues.

The two significant changes that happened were the introduction of Single Agent Login and Integrated Dashboard. Single Agent Login simplified the agents' task and reduced effort. Instead of logging into and maintaining access to 20+ applications, the agents could simply log on to one system and get automatic access to all relevant applications. At the same, time they could view key customer information from multiple CRMs on one Integrated Dashboard making it easier to have customer-focused interactions.

# Success imperatives for contact center transformation

When considering contact center automation, it's important to consider all possibilities to deliver improvements actively. A key to this is a deep understanding of the process. Organizations need to understand that, more often than not, a phased approach works best for automation compared to a big bang route that seeks to solve all

major problems in one go. For all Al technologies, there is a learning and stabilization period, and the solution will not work 100% from day one. As some companies have learned the hard way, when introducing these technologies, it's essential to do a pilot and introduce them in a controlled way. And finally, as important as technology is to contact center transformation, it's a significant change in the way people work. It needs leadership buy-in and organizational change management initiatives to succeed.

#### The value created

The new system with automation, self-service, and virtual assistant options helped the telecom company reduce the time taken for resolution, improved agent effectiveness, reduced repeat calls, and customer escalations, and increased conversion rates while reducing costs. They also achieved faster speed-to-competency for the new front and back-office people utilizing the targeted redesigned processes.

For instance, in the fixed sales and order entry process, the telecom company moved from 5+ disparate systems and 17 manual templates for capturing sales order information to one integrated tool and order entry form. This helped reduce the total work time by 15% and reduce repeat calls by 58%. In addition, the revenue per day per agent went up by \$206. Similarly, for the fixed relocations order entry process - that triggers when a customer changes addresses — taskflow validation, automation, and integrated tool helped bring down order reject rates to almost zero from an earlier 5-13%. The total work time across CRMs also reduced by up to 73%.

The real value of contact center automation lies not in the cost savings alone, but the experience it can deliver for the customers and the people engaged in the process.

# Al in the contact center: 5 areas of impact

The massive amounts of information available to contact centers make them ideal use cases for Al implementation. Using historical transaction data, call logs, behavioral patterns etc. Al can help businesses identify why calls arise in the first place. It can also pinpoint if the root cause of the

#### Benefits of contact center automation

# Faster onboarding with guided assistance Reduced complexity Single, intuitive interface

 Ability to spend more time engaging with the customer

#### Customer

- Less wait time
- Contextual and quick resolution
- First-time resolution
- Less hold up
- Less transfer

#### **Brand Promise**

- Improve NPS
- Increase revenues
- Focused customer experience uplift through the contact center

issue is elsewhere or if there is seasonality in a particular type of call. These insights can help companies design proactive communication and process intervention to prevent that call from happening in the first place. Another application of Al would be in assessing, prioritizing, and routing calls based on criticality and the level of support needed. For instance, routine calls could be routed to self-service options or virtual assistants. With 68% people finding messaging to be the most convenient way to contact a business2, the use of Al chatbots in contact centers is only going to grow. In addition, a combination of IVR and NLP engine could improve first call resolution by connecting the customer to the agent most suitable to address their query. Incident automation through RPA can reduce wait times.

And finally, Al can help improve agent performance through unified desktops and guided response. It can also help monitor performance and improve the overall contact center experience by providing actionable business insights for performance management through service performance management dashboards.

#### Al impact in the contact center

Call issue reason prediction intelligence

Call triage and resolution automation

Conversational virtual assistant

Unified agent desktop

Actionable business insights for performance management

#### Thriving in the intelligent future

The possibilities that smart technologies can unearth together are immense. For instance, machine learning (ML) can help identify the best way to contact a customer by identifying the time and manner of communication they prefer. This could dramatically improve collection conversations! Similarly claims could benefit significantly from OCR and Al based information extraction from documents. The customer can click a photo of that document and send that can be immediately processed by the system — no more delays or lags due to manual interventions. As contact centers take a lead in customer engagement, organizations need to move away from point solutions and instead look at a synergy

where these technologies come together to do what they do best and amplify the overall outcome.

¹https://www.mckinsey.com/business-functions/ marketing-and-sales/our-insights/best-of-bothworlds-customer-experience-for-more-revenuesand-lower-costs

<sup>&</sup>lt;sup>2</sup>https://www.adweek.com/sponsored/whymessaging-is-going-to-become-your-mostimportant-marketing-channel/

#### **Editorial Team**

Aamir Malik, Abhishek Sharma, Hari S Nair, Kartik Murugan, Razia Kuvale Zubair, Soumya Saxena, and Surbhi Sharma

#### Design

Apraieeta Anumeh

#### Digital Team

Arul Gunalan, Pasupulati Venkata Vinod

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Professor Ron Bose – Director, Center for Information Technology and Management, Clinical Professor, Naveen Jindal School of Management – University of Texas, Dallas.

Pankaj Purohit, Executive Vice President & Head of IT — Motilal Oswal Financial Services Limited Michael B Sonsteng — Strategic Business Practice Head — Legal Process Management, Infosys Limited

The Shared Services & Outsourcing Network

Satish Nair - Vice President and Business Head, Infosvs BPM

Atul Soneja – Senior Vice President, Global Head of Edge products and Infosys Nia, EdgeVerve Systems Limited (An Infosys Company)

Abhishek Datta, Abey Kuruvila, Ajay Koushik R, Akshat Mathur, Ashok Kumar Ratnagiri, Avnish Singh, Badri Devalla, Bhushan Gunwant Deshmukh, Deepak Kumar D, Glenn VanLandingham, Guha R, Jasdeep Singh Kaler, Kisha Gupta, Kodaneth Sunil Kumar Nair, Mahesh Kumar Kushwaha, Maheshwar Damojipurapu, Manoj Madhusudan, Priyambad Pattanayak, Rajkumar Gopalakrishnannair, Sathish Kumar E V, Soumya Ahuia. Product and Marketing Team. EdgeVerye and Infosys CSG Teams, and Customer Success Team

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