

Leveraging Big Data Towards Customer Engagement – Case of Genome Sequencing

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The prevalence and growth of the fourth industrial revolution is [distinctly different](#) from the impact that the previous industrial revolutions have had on business, community and humankind, in terms of velocity, scope and systems impact. The fourth industrial revolution [provides opportunities](#) from employee engagement and reskilling to support and accelerate technology adoption, process automation and real-time monitoring of manufacturing equipment, to compliance with regulatory issues and customer engagement. [Customer engagement](#) could be seen as a means to influence consumption experiences and behaviour, with brands engaging in co-creation.

Big data (BD) has an important role to play in the fourth industrial revolution. BD is the ability to [collect, analyse, use and interpret data](#) across functional divisions in order to gain actionable insights while creating value for business and also providing a source of competitive advantage. Big data is looked upon as one of the [next frontiers](#) for innovation, competition and productivity.

There are also other innovative technologies such as Blockchain, deep learning, machine learning and artificial intelligence (AI) which can help [combat crises](#) such as that of Covid-19. Blockchain, with its decentralised platform and [unique features](#) such as impenetrable information infrastructure, transparency and cryptographic encryption tools, helps authenticate participants in a network and makes data manipulation virtually impossible, ensuring transparency among participants.

Another case in point regarding Covid-19 is [genome sequencing](#). Considering that the SARS-CoV-2 virus, among others, is capable of constantly changing and mutating, scientists have resorted to genome sequencing, to [monitor how the virus mutates](#) into new variants. Use of big data is expected to bring about a [paradigm shift](#) in the evolving field of whole genome sequencing. Sequencing genomes is an increasingly appealing option for patients as personalised medicine has had the potential to improve health by analysing genes for disease risk variants.

Further, the cost of sequencing human genome has [nosedived](#) from tens of millions of dollars in the early part of the century to less than a thousand dollars by 2019. It is estimated that around [2 million people](#) around the world would have their genomes sequenced by 2025. The sheer scale of this potential presents challenges and opportunities for businesses in terms of customer engagement involving big data and

other technologies associated with the next industrial revolution.

Challenges in leveraging big data

Loss of control and ownership issues are important challenges in leveraging big data. Conventionally, data related to customers used to be saved within an organisation's customer relationship management (CRM) system. However, the characteristics of [Big Data involve the 5Vs](#) of volume, velocity, variety, veracity and value. This means that data may not be restricted within the CRM systems of the organisation but may involve collection and processing by external parties (such as Google, Facebook, or other cloud-based systems). This has [implications](#) for the extent of control and ownership that organisations have over their data, in terms of ethical and legal issues involved.

Intrusion and privacy concerns are also important. Organisations implementing customer engagement initiatives, powered by the next industrial revolution, could be perceived as getting too close to the customer for comfort. For instance, in a [study by Accenture](#), it was found that 30% of customers thought their brands had become too personal, of which 69% felt they may stop doing business with the brands and would reconsider their relationships with them. Organisations would want to enhance their brand value and prevent it from being diluted through invasive means of customer engagement, which could ultimately lead to customer mistrust and strained relationships.

Technology adoption is also an issue. Adopting new technology that engages in real-time decision making can be hindered by employees not adopting the new technology, lack of trained employees available to implement the systems, as well as lack of senior management buy-in. The other challenges associated with technology adoption have been organisations not investing in such cutting-edge technology, regulatory and compliance requirements, and the presence of outdated technology that comes in the way of [real-time decision making](#).

Opportunities in and for customer engagement

The success of organisations in leveraging big data towards customer engagement in the long run will depend on the ability of companies to manage synergies between the organisations' execution of customer engagement initiatives and the customers' motivations, experiences, preferences as well as expectations with regard to such engagement efforts. In effect, this calls for [co-creation](#), as against the mono-directional flow of innovation from the company's perspective. This is facilitated by an [unprecedented need](#) for organisations to present their brands online, coupled with an increasing rate of adoption of [digital transformation](#) by organisations in the post Covid-19 era.

Privacy concerns related to intrusiveness of big data can also be allayed with adoption of blockchain technology. Blockchain enables tracking of people's movement and more effective examination of patient data while the identities remain protected through a [trusted tracking system](#), thereby addressing control and ownership issues. Privacy concerns could also be addressed using [zero-party data](#), which is data that consumers are willing to part with on their own, as against data that is collected by companies from consumers (first party data) or that which is collected by or for someone else (second or third party data).

There is also a need for structured policies to be framed that put the customer back at the core of customer engagement initiatives and in control of their own data. For instance, next generation sequencing (NGS) has moved from research and rare disease contexts into routine healthcare. This has [ethical implications](#) related to data management, calling for improved stakeholder engagement. This involves obtaining customer consent, promoting public understanding on genome sequencing, earmarking the resources required for obtaining such [consent](#) from the public, and informing customers on the kind of results which participating customers should expect to receive after the sequencing is done. This calls for [structured policies](#) to be put in place to engage with patients for there to be meaningful dialogues between scientists and the medical community on the one hand, and patients, the customers whose benefits are projected to be at the centre of decisions made on the other.

To conclude, organisations and industries aiming to leverage the power of the next industrial revolution towards enhancing customer engagement should embrace the principles of co-creation, using zero-party data and formulating structured policies that address the challenges posed. This would help organisations set forth on a new growth trajectory, exploiting opportunities powered by the next industrial revolution unfolding now and in the near future.

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