Unit 1 – Collaborative Discussion – The 4th Industrial Revolution

Initial Post

Initial Post

by Sahr Solar Sumana - Tuesday, 19 March 2024, 4:56 PM

Schwab (2016) described the fourth industrial revolution as "an extension of the third industrial revolution which blurs the lines between physical, digital and biological spheres". It's a highly disruptive revolution that focuses on the integration of technology and automation within our everyday processes.

We can see how the fourth industrial revolution has affected the financial services industry with the rise of the FinTech sector. Fintech startups have disrupted the industry and have utilised the benefits of the fourth industrial revolution by providing; "alternatives in the payments space, offering loans and delivering financial planning services, something that in the past was only available to high-net-worth individuals. Technology has also made it possible to reach clients and markets previously deprived of banking services, thereby opening up new and untapped revenue streams" (Axxsys Consulting, 2018).

Although there are a multitude of benefits to the integration of technology within banking there have been shortfalls to information systems that introduced to the industry following the third and fourth industrial revolutions. TSB a bank located in the UK, were under fire when their IT systems failed during an attempt to migrate their old system to an upgraded IT system. This system migration failure led to customers being locked out of their accounts and TSB's online banking, branch and telephone services malfunctioning. Furthermore, failure for TSB resulted in a significant financial cost for the bank, they were fined "a total of £48.6m for operational risk management and governance failures and a further £32.7m to customers who had suffered detriment" (FCA, 2022). In addition to the financial loss experienced by TSB they are reported to have lost 80,000 customers within 12 months of the incident occurring. Despite the leaps and bounds technology has taken to make financial services more accessible to the population, precautions need to made to ensure information systems are implemented correctly, if not then companies could face the same repercussions that TSB faced.

Reference List:

Axxsys Consulting (2018) *The Fourth Industrial Revolution: Impact on Financial Services*, *Axxsys Consulting*. Available at: https://www.axxsysconsulting.com/the-fourth-industrial-revolution-impact-of-fintech-on-the-buy-side/wp-fintech-white-paper-2/ (Accessed: 18 March 2024).

FCA (2022) *TSB fined £48.65m for operational resilience failings*, *FCA*. Available at: https://www.fca.org.uk/news/press-releases/tsb-fined-48m-operational-resilience-failings (Accessed: 18 March 2024).

Schwab, K. (2016) *The Fourth Industrial Revolution: What It Means and how to respond*, *World Economic Forum*. Available at: https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/ (Accessed: 18 March 2024).

Responses to my initial post

Peer Response

by Christopher Butterworth - Tuesday, 26 March 2024, 3:02 PM

This post (Solar Sumana, 2024) provides a good exposition of Industry 4.0 and its beneficial effects on financial technology, making good use of a quote about the blurring of "the lines between physical, digital and biological spheres" (Schwab, 2016). In the second paragraph are listed various ways in which technology has facilitated the various mechanisms of the financial industry, including payment methods, new lending services and the availability of financial or business planning. The main thrust of this argument is that these new services are "opening up new and untapped revenue streams" (Axxsys Consulting, 2018). Other papers could have been cited, for their coverage of the impact of new technology on the financial sector (Ferraro, G. et al., 2022; Machkour & Ariane, 2020).

The chosen "incident" is the failure of the TSB's systems during a migration to a more powerful system, which severely affected their banking operations. Customers were unable to access their accounts and branches experienced outages in their banking and even phone systems. The detrimental effects of all these failures on the bank are described, including a fine of £48.6m for infractions of various banking regulations that are there to minimise risk, and a £32.7 payout to customers who had been adversely affected (FCA, 2022). I found background information at the Bank of England website, where it gave the month of the incident as April 2018 (Bank of England, 2022). Solar Sumana quotes a figure of 80,000 customers leaving the bank in the first year after the incident.

The post might have been improved by going into more detail about the root cause of the problem, for technical readers, and the long-term effects on the bank's reputation, for financial readers. Other than that, it was very well written and clearly described the incident.

References

Bank of England. (2022) TSB fined £48.65m for operational resilience failings. Available from: https://www.bankofengland.co.uk/news/2022/december/tsb-fined-for-operational-resilience-failings [Accessed 23 March 2024]

FCA (2022) TSB fined £48.65m for operational resilience failings, FCA. Available from: https://www.fca.org.uk/news/press-releases/tsb-fined-48m-operational-resilience-failings (Accessed: 23 March 2024).

Ferraro, G. et al. (2022) Fintech meets Industry 4.0: a systematic literature review of recent developments and future trends. *Technology Analysis & Strategic Management* 34 DOI: https://doi.org/10.1080/09537325.2022.2117025

Machkour, B. & Ariane, A. (2020) Industry 4.0 and its Implications for the Financial Sector. *Procedia Computer Science* 177: 496-502. DOI: https://doi.org/10.1016/j.procs.2020.10.068

Solar Sumana, S. (2024) Collaborative Discussion 1: The 4th Industrial Revolution. Available from: https://www.my-course.co.uk/mod/forum/discuss.php?d=217531 [Accessed 23 March 2024]

Re: Initial Post

by Alex Mutebe - Friday, 29 March 2024, 2:30 PM

Hi Sahr, in reference to your second paragraph, Malinga & Maiga (2020) state that mobile money service technology has completely transformed Uganda's banking industry. This technology has facilitated access to financial services in remote areas of the country where traditional banking infrastructure is lacking. All that is required is a mobile phone connection to conduct transactions. Initially piloted in Kenya through M-Pesa, this technology has now proliferated, transforming transactions across East Africa (Ahmad et al., 2020).

Regarding technological failure, it's regrettable that TSB's technology malfunctioned and resulted in such a significant loss, but there are lessons that can be learned from such an incident. According to Baumann (2021), the system migration project should have been overseen by managers using the toughest risk-reduction strategies. There are currently a large number of machine learning techniques available that can be used to predict risks related to bank operations. According to Martin et al. (2019), Industry 4.0 has shown that research has been done on the application of machine learning in the management of banking risks, particularly operational risk. I believe that a new set of skills built on data science methods will strongly reduce the frequency of software failures (Dauda et al., 2021).

References:

Ahmad, A.H., Green, C. and Jiang, F. (2020) Mobile money, financial inclusion and development: A review with reference to African experience. Journal of economic surveys, 34(4), pp.753-792.
Malinga, R.B. and Maiga, G. (2020). A model for mobile money services adoption by traders in Uganda. The Electronic Journal of Information Systems in Developing Countries, 86(2), p.e12117.
Bill. B. (2021) Lessons Learned from the TSB Software Failure. Available from: https://www.panorama-consulting.com/tsb-software-failure/ [Accessed on 29 March 2024].
Leo, M., Sharma, S. and Maddulety, K.(2019) Machine learning in banking risk management: A literature review. Risks, 7(1), p.29.
Dauda, I.A., Nuhu, B.K., Abubakar, J., Abdullahi, I.M. and Maliki, D. (2021) Software Failures: A Review of Causes and Solutions.

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Summary Post

Summary Post

by Sahr Solar Sumana - Sunday, 2 June 2024, 1:20 PM

My initial post first outlined the fourth industrial revolution by quoting the Schwab (2016) definition where it is an extension of the third industrial revolution which blurs the lines between physical, digital and biological spheres. My post then went on to describe how industry 4.0 has affected the financial services industry, where I found that a multitude of benefits have come about due to the disruptive wave of this revolution. These benefits included how financial services are far more accessible and how there are a ton of alternatives and competitors. Lastly my initial post used TSB bank as an example of an information system failing, where a migration to an upgraded IT system led to detrimental social, financial and ethical downfalls and costs.

I also received two responses from peers assigned to the same task. It was suggested that I read through the journal named 'Fintech meets Industry 4.0: a systematic literature review of recent developments and future trends' (Ferraro, Ramponi and Scarlatti, 2022) to gain a deeper insight on industry 4.0 on the financial sector. I found that this article was a literature review that provided a plethora of other journals that covered many ways that industry 4.0 has changed the financial services sector. I was also advised that my initial post could be improved by going into more detail about the root cause of the problem, for technical readers, and the long-term effects on the bank's reputation, for financial readers (Butterworth, 2024). The second response I received spoke about the benefits of migrating systems and how the failure that TSB encountered could have been prevented using machine learning in the management of banking risks particularly operational risk (Mutebe, 2024). To summarise it would be a good idea to look further into the effect industry 4.0 is having on the financial services sector and to also see if any machine learning techniques have led to this disruption of the industry.

Reference List:

Butterworth, C. (2024). *Peer Response*. [online] Collaborative Discussion 1: The 4th Industrial Revolution. Available at: https://www.my-course.co.uk/mod/forum/discuss.php?d=217531 [Accessed 2 Jun. 2024].

Ferraro, G., Ramponi, A. and Scarlatti, S. (2022). Fintech meets Industry 4.0: a systematic literature review of recent developments and future trends. *Technology Analysis & Strategic Management*, pp.1–17. doi: https://doi.org/10.1080/09537325.2022.2117025.

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Schwab, K. (2016). *The Fourth Industrial Revolution: what it means, how to respond*. [online] World Economic Forum. Available at: https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/.

My response to Chris Butterworth (2024)

Peer Response

by Sahr Solar Sumana - Thursday, 4 April 2024, 9:24 PM

The initial post made by Christopher outlines the definition of the 4th industrial revolution and how the emergence of the aforementioned industrial revolution intertwines the "internet of things (IOT) along with the internet of services which consists of databases and applications" (Kagermann et al., 2013). The post then goes on to explain how this new industrial revolution that we are currently witnessing is beneficial when it comes to manufacturing processes. With these benefits including "cleaner, safer and well-regulated environments" (Krenkel et al., 2016).

Furthermore, there is increased accessibility with custom manufacturing processes with 3-D printing which is now available to the average consumer. Christopher's example of an information system failing detailed a chatbot called Microsoft Zay which had to be terminated as it had learned "anti-social ideals and offensive language" (Schwartz, 2024). It could be argued that there is still a long way to go for chatbots to function correctly there recently has been another example of a chatbot that had to be terminated by "The National Eating Disorder Association (Neda) had to take down an AI chatbot, "Tessa", after reports that the chatbot was providing harmful advice" (Aratani, 2023).

Christoper, the question may need to be asked if more supervised and reinforced learning may be required to tackle the mishaps that chatbots can encounter.

Reference list:

Aratani, L. (2023) *Us eating disorder helpline takes down AI chatbot over harmful advice*, *The Guardian*. Available at: https://www.theguardian.com/technology/2023/may/31/eating-disorder-hotline-union-ai-chatbot-harm (Accessed: 04 April 2024).

Kagermann, H. et al. (2013) Industrie 4.0: Mit dem Internet der Dinge auf dem Weg zur 4. industriellen Revolution [Translated: "Industry 4.0: The Road to the Fourth Industrial Revolution with the Internet of Things"]. *acatech DEUTSCHE AKADEMIE DER TECHNIKWISSENSCHAFTEN*.

Krenkel, W. et al. (2016) Additive Manufacturing as Enabler for Industry 4.0. *Procedia CIRP* 54(2016): 13-17

Schwartz, O. (2024) *In 2016, Microsoft's racist chatbot revealed the dangers of online conversation*, *IEEE Spectrum*. Available at: https://spectrum.ieee.org/in-2016-microsofts-racist-chatbot-revealed-the-dangers-of-online-conversation (Accessed: 04 April 2024).

My response to Alex Mutebe (2024)

Peer Response

by Sahr Solar Sumana - Monday, 1 April 2024, 8:12 PM

The initial post (Alex Mutebe, 2024) outlines how the fourth stage of the industrial revolution has spurred a technological revolution within a variety of industries. The main focal point of this initial post is how the healthcare industry has been affected by the fourth industrial revolution with Araújo (2020) stating that "the fourth industrial revolution is changing the healthcare industry by fusing the digital, biological and physical domains".

The instance of a failed information system that was focused on covered the Covid-19 pandemic and the lack of success these information systems had when preventing and controlling the spread of the virus. The post also detailed the losses that came at the result of the failure of the information system which included "a weakened health industry, fatalities and job losses" losses (Khetrapal & Bhatia, 2020).

A suggestion for this post or the summary post could be how the healthcare industry learnt from the outbreak of the virus and how there were some adaptations once knowledge was gained to prevent the further spread of the virus. Examples of this include "smart thermometers, proximity devices, telemedicine which were introduced to handle the ongoing crisis to mitigate the spreading of the virus, and implement contactless services" (Mondal & Mitra, 2022). Most of which included the use of IOT.

Reference List:

Araújo, N.M.F., (2020) Impact of the fourth industrial revolution on the health sector: a qualitative study. Healthcare informatics research, 26(4), p.328.

Khetrapal, S. and Bhatia, R., (2020) Impact of COVID-19 pandemic on health system & Sustainable Development Goal 3. *Indian Journal of Medical Research*, *151*(5), pp.395-399.

Mondal, S. and Mitra, P. (2022) 'The role of emerging technologies to fight against COVID-19 pandemic: An exploratory review', *Transactions of the Indian National Academy of Engineering*, 7(1), pp. 157–174. doi:10.1007/s41403-022-00322-6.

Mutebe, A. (2024) Collaborative Discussion 1: The 4th Industrial Revolution. Available from: https://www.my-course.co.uk/mod/forum/discuss.php?d=218108 [Accessed 01 April 2024]

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