University of Wales Trinity Saint David – London Campus

Digital Skills and Research Methods (BMSW4003_LON)

DHL - A challenge in the new era of Digitalization and Automation

- **MIHAITA MARIUS DAVID – 2113993**
  - Background of the organization;
  - Insights to the modern technology introduced;
- **SANDRA WYSOCKA – 2115155**
  - The challenge(s) before the introduction of modern technology;
- **FLORIAN IULIAN POPA – 2114503**
  - The impact of the technology introduced;
- **COSMIN DANIEL CALIMINTE – 2114810**
  - Lessons that can be drawn from the case study;

Lecturer: Amitave Banik

- Founded in 1969 in San Francisco, USA, the company expanded worldwide by the late 1970s.

- After acquiring shares in DHL beginning in 1998, Deutsche Post became main shareholder in December 2002.

- Today, DHL Express brand is divided in more branches such as DHL Global Forwarding, DHL Supply Chain and DHL Automotive.

Fun Fact - The name of the company comes from the last name of the three founders Adrian Dalsey, Larry Hillblom and Robert Lynn

- Deutsche Post DHL Supply Chain is a division of Deutsche Post DHL and a subsidiary of DHL.

- With more than 500.000 employees, DHL Supply Chain competed predominantly in sectors such as life science and healthcare, automotive and technology in 2016.

- Retail and consumer products are DHL Supply Chain's two largest business segments.

Since its foundation, DHL has used new technologies, revolutionary in their time, for example:

- Aviation
- Internet
- Automotive in motion
- Augmented reality
- Go Green
- Digitalization & Automation
- Artificial Intelligence
- Drone delivery
- Electric vehicles and planes etc

DHL & Eviation
All-electric cargo plane

Source:https://www.dhl.com/content/dam/dhl/local/global/core/images/smart-grid-press-1375x504/g0-core-pr-08032021-1.jpg

- DHL Supply Chain provides international logistics, warehouse and transport services.

- DHL Supply Chain has expertise and experience in the areas of Consumer, Retail, Auto-Mobility, Chemicals, Life Sciences & Healthcare, Technology, Engineering & Manufacturing and Energy.

- Using Digitalization and Automation in UK DHL Supply Chain manages a warehouse for companies like M&S, Argos, Unilever etc.

To meet current requirements and challenges, starting in 2020, DHL has introduced a series of autonomous robots, like Locus Robots and Dorabot.

Industrial robot uptake is expected to grow nearly seven-fold to 20 million globally by 2030 after a slow start in the last two decades.

In addition to having a major impact on industries like logistics, it will transform the way we work today. Among the key drivers are:

- A global labor shortage caused by an aging workforce.
- Millennials and Gen Z Young are replacing the old type workers, seeking more meaningful work, which repeats less, it is flexible and friendly.
- The COVID-19 work policies were quickly adopted by businesses.

It remains to be seen how these changes will continue in the post-pandemic era.

The challenges before the introduction of modern technology

- DHL faced a lot of problems before modern technology was introduced, this is because they could not receive internet orders and it was harder for customers to find nearest location so that the client could use DHL to deliver an item or parcel.
- They did not have lots of opportunities to encourage clients to use their resource and allow the company to deliver items or parcels for customer.
- Also, before modern technologies were introduced, DHL didn’t play a big part in the industry of delivery and receiving items, this is because they didn’t have lots of access to use so that clients can find their company, like now you can go online and find where to go to send with DHL.

- No modern technology means no social media therefore they couldn’t advertise their firm.
- It was harder for DHL to have on demand orders as there wasn’t any online resources to quicken up the number of demands.
- It didn’t allow DHL to have lots of orders on the same time as there were no type of modern technology such as google maps to show the drivers the way to each address.

- They had different challenges before modern technology was introduced. Some of where;
- There were no smart phones for customers to download apps as you can now, to use it to track your package.
- DHL may need some time to adapt to technological changes in cultures not open to change and adaptation
- Changing the nature of the changes discussed in the case study could also create legal issues. For example, the new management systems might have security risks that could have legal implications.

- DHL faced limited financial resources for this reason resulting in preferences made beneath a price range constraint.
- Also DHL faced some challenges before the introduction of modern technology, it took longer for DHL’s Supply Chains to be reported and revealed.
- Without modern technology the supply chain wasn’t as diverse because they couldn’t get orders as quick as they could now

A vision for the future - a full Digitalization and Automation of the entire supply chain

Source: https://www.dpdhl.com/content/dam/dpdhl/en/about-us/about-us-assets/annual-report-2020/automation-digitalization-supply-chain.jpg

Assisted picked robots

- DHL Supply Chain signed a global alliance with Locus Robotics in 2018 as part of its overall global strategy.
- With Locus assisted picked robots you can eliminate unproductive walking time, making work easier and more efficient.
- Locus lets workers do what they do best - pick - because it brings the work to them.
- Using Robot Operating System (ROS) they are much faster in finding locations
- 24/7 working time

Assisted picking robots from Locus Robotics - a solution that thinks outside the box.

Source:https://www.dcvelocity.com/ext/resources/images/articles/2020/202006/Locus-Robotics-Screen-Shot-2020-06-02-at-14703-PM.png?height=667&t=1591122516

Robotic arms (DHLBot)

- As part of a partnership with Dorabot, DHLBot, a robotics arm powered by artificial intelligence (AI) that can sort 1,000 small parcels an hour, increasing efficiency by 40 per cent, has been deployed in Singapore and South Korea.

- By replacing manual sortation of small parcels, the DHLBot will allow hubs and gateways to handle greater volumes, especially during peak season.

- Operated by Robot Operating System (ROS) DHLBot reduces the probability of mis-sorting and thereby, removes the need for secondary sorting.

- 24/7 working time

A DHLbot (Dorabot) Deployed at Gangbuk Service Centre - South Korea

Source:https://www.dhl.com/content/dam/dhl/local/kr/core/images/text-generic-1592x896/kr-core-pr-07202021-1.web.796.448.jpg

Indoor Robotic Transport - Neo floor-scrubbing robots

- In 2019 DHL - North America and Avidbots signed a partnership
- Neo is able to navigate, detect and avoid obstacles.
- Autonomously transports pallets from point-to-point.
- Works safely alongside operators.
- Helps with picking and put-away productivity.
- 24/7 working time.

Avid Neo floor-scrubbing robots in DHL's warehouse

Source:https://www.dhl.com/content/dam/dhl/local/global/core/images/smart-grid-press-1375x504/g0-pr-sg-270420.jpg

Smart Glasses and Wearables

- The use of augmented reality in the warehouse is improving accuracy, productivity, and efficiency through improved picking processes.
- Digital picking lists are viewed on the glasses and the optimal loading route for each order is presented.
- The glasses do the scanning for workers.
- Once workers are at the right location to pick up orders, glasses will use the image recognition software to find the right items on shelves.

Google Glass Enterprise Edition 2

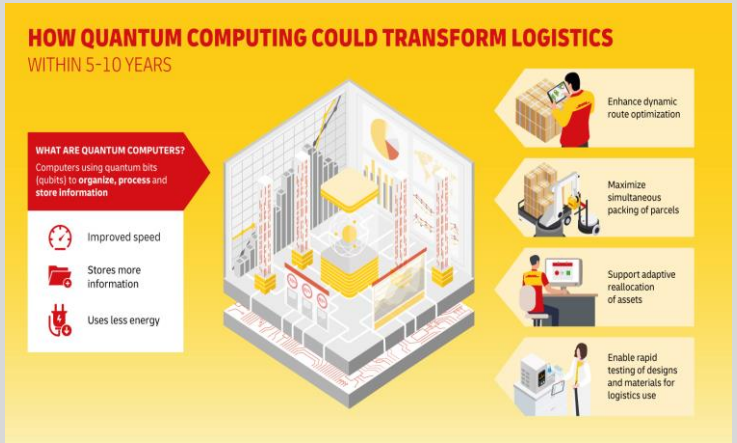
Source:https://www.dhl.com/content/dam/dhl/local/global/core/images/text-generic-1592x896/g0-core-pr-05202019-1.web.796.448.jpg

Impact of technology introduced DHL

- Artificial intelligence, quantum computing, robotics as well as global volatility is under the technological areas of DHL.
- Through the breakthroughs within Quantum Computing DHL can make proper solution towards the problems.
- Growth for the analytics, artificial intelligence, IoT, robotics, Cloud as well as the signal of API is making normal for logistics.
- The technology experts through the technological implication is working under the DHL innovation center.
- The company is accelerating the automation and digital agendas.
- Artificial Intelligence (AI) can find a strong adaptation within the DHL.
- AI is the top priority for the enterprise, and this makes the implication of the supply chain.

Impact of technology introduced DHL

- There is the proper benefit of Quantum computing in DHL.
- Quantum computing is making development for the company towards the next decade.
- Quantum computing can capture the industry's imagination from the financial services. The computer is using the quantum bits for performing the same types of the functions.
- The computing system can make the proper innovation for the organization.
- DHL is using the intelligent robotics that is making the great affordability for the organization.
- Logistics robots can make diversification in the organization.
- The robots are upgraded with the development of the AI and hardware.
- DHL publishes logistic trends regularly that is very beneficial.



Lessons that can be drawn from the case study

With the introduction of modern technology into play, DHL had also another move beyond business as usual, and that was climate change.

1.Develop methods and guidelines for carbon inset accounting and reporting, based on the GLEC Framework and other existing and emerging standards.

2.Win acceptance of carbon inset investments as a viable means for scope 3 emissions reduction.

3.Communicate the positive impact and co-benefits of freight decarbonization projects.

4.Shippers and logistics service providers pledge to invest in freight-related carbon insets.

5.Put together a diverse, effective suite of freight decarbonization projects.

Sustainability on the move

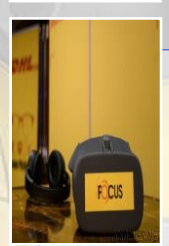
- Introducing the first electric cargo plane for transporting packages
- World`s first heavy-duty electric truck over long distances
- DHL team EV – Powering up electric vehicle logistics
- Zero carbon: the future for warehousing
- Introducing Digitalization and Automation

Introduction of AMR`s and Locus Robotics

Using these robots, you can transport plastic tote around a warehouse in an autonomous manner.

As warehouse associates pick items from the bot, the bot displays what is needed for each bin, and a scanner confirms the items as they are loaded.

As a result, workers can spend more time picking instead of walking around aisles and will be more efficient.



Automated Container Unloading.

In comparison to manual methods, robots can unload more than 35% of the pieces in an hour and increase throughput up to 800 pieces per hour.

Automated vehicle movement of outdoor goods.

Self-driving cars can follow the same routes all day, every day, without tiring or losing concentration, while sensors identify dangers and obstacles, allowing them to react in a safe manner, reducing the risk of an accident.

A safer and cleaner way to work

The Neo robots will be deployed across DHL's global warehouses

Neo navigates autonomously through warehouses, detecting and avoiding obstacles automatically using 3D sensors, cameras, and artificial intelligence.

Neo keeps warehouse floors clean and dust-free, ensuring safe and healthy operations throughout the warehouse

Conclusion

- With the introduction of Neo bots, AMR`s and Locus robotics, DHL proves once again that is the world`s leader in logistics service provider.
- The overall impact of these technologies introduced is to connect people and businesses in a bid to improve lives and businesses.
- The use of technology also drastically improves climate change, as mentioned before, the usage of electro cargo planes, electric vehicle logistics, shifting the workforce towards autonomous vehicles, robots and viable means for scope 3 emissions.
- Less cars, planes, trucks on the roads means less pollution and a way forward Green Logistics.

Reference:

- Nichols, G., 2021. *DHL expands robotic footprint with 1000 autonomous robots | ZDNet*. [online] ZDNet. Available at: <https://www.zdnet.com/article/dhl-expands-robotic-footprint-with-1000-autonomous-robots> [Accessed 5 December 2021].
- International Post Corporation. 2021. *DHL introduces new technologies and delivery solutions in US to meet evolving demands of the urban consumer*. [online] Available at: <https://www.ipc.be/en/news-portal/e-commerce/2018/03/16/09/01/dhl-introduces-new-technologies-and-delivery-solutions-in-us> [Accessed 4 December 2021].
- En.wikipedia.org. 2021. *Robot Operating System - Wikipedia*. [online] Available at: <https://en.wikipedia.org/wiki/Robot_Operating_System> [Accessed 9 November 2021].
- Dcvelocity.com. 2021. *Locus Robotics unveils $40 million venture investment for its AMRs*. [online] Available at: <https://www.dcvelocity.com/articles/46186-locus-robotics-unveils-40-million-venture-investment-for-its-amrs> [Accessed 15 December 2021].
- 2021. *ROBOTICS IN LOGISTICS: WHY THE TIME IS NOW*. [online] Available at: <https://www.dhl.com/global-en/home/insights-and-innovation/thought-leadership/trend-reports/robotics-in-logistics/robotics-in-logistics-why-the-time-is-now.html> [Accessed 16 November 2021].
- 2021. *DHL EXPRESS INTRODUCES FIRST AI SORTING ROBOT IN SOUTH KOREA*. [online] Available at: <https://www.dhl.com/kr-en/home/press/press-archive/2021/dhl-express-introduces-first-ai-sorting-robot-in-south-korea.html> [Accessed 15 November 2021].
- Us, M., Studies, C. and Johnson, S., 2021. *What are some of the challenges Deutsche Post DHL may face as it seeks to implement – CourseBB*. [online] Coursebb.com. Available at: <https://www.coursebb.com/2019/01/16/what-are-some-of-the-challenges-deutsche-post-dhl-may-face-as-it-seeks-to-implement/> [Accessed 3 December 2021].
- Supply Chain Channel. 2021. *DHL Supply Chain report reveals new challenges in automotive industry*. [online] Available at: <https://supplychainchannel.co/dhl-supply-chain-report-reveals-new-challenges-in-automotive-industry/> [Accessed 4 December 2021].
- DHL Express Singapore. 2021. *E-commerce Business: Overcoming the Challenges of Going Global | DHL*. [online] Available at: <https://dhlexpress.com.sg/articles/ecommerce-business-overcoming-challenges-global> [Accessed 2 December 2021].

- www.dhl.com. 2021. *dhl-supply-chain-deploys-latest-version-of-smart-glasses-worldwide*. [online] Available at: <https://www.dhl.com/global-en/home/press/press-archive/2019/dhl-supply-chain-deploys-latest-version-of-smart-glasses-worldwide.html> [Accessed 4 December 2021].
- www.dhl.com. 2021. *dhl-green-logistics*. [online] Available at: <https://www.dhl.com/global-en/home/logistics-solutions/green-logistics.html> [Accessed 5 December 2021].
- www.dhl.com. 2021. *dhl-recognized-as-a-leader-in-gartner-magic-quadrant-for-third-party-logistics-worldwide*. [online] Available at: <https://www.dhl.com/global-en/home/press/press-archive/2018/dhl-recognized-as-a-leader-in-gartner-magic-quadrant-for-third-party-logistics-worldwide.html> [Accessed 4 December 2021].
- www.dhl.com. 2020. *avidbots-expands-partnership-with-dhl-to-install-neo-robots-in-warehouses-worldwide*. [online] Available at: < https://www.dhl.com/global-en/home/press/press-archive/2020/avidbots-expands-partnership-with-dhl-to-install-neo-robots-in-warehouses-worldwide.html > [Accessed 7 December 2021].
- DHL Logistics of Things. 2020. *Quantum computing could transform the logistics industry within the next decade*. [online] Available at: <https://lot.dhl.com/quantum-computing-could-transform-the-logistics-industry-within-the-next-decade/> [Accessed 16 December 2021].
- dhl.com. 2021. [online] Available at: <https://www.dhl.com/global-en/home/insights-and-innovation/thought-leadership/trend-reports/robotics-in-logistics.html> [Accessed 16 December 2021].
- dhl.com. 2021. [online] Available at: <https://www.dhl.com/global-en/home/insights-and-innovation/insights/artificial-intelligence.html> [Accessed 16 December 2021].
- dhl.com. 2021. [online] Available at: <https://www.dhl.com/global-en/home/press/press-archive/2020/dhl-logistics-trend-radar-unveils-trends-that-will-shape-logistics-in-the-future.html> [Accessed 16 December 2021].