IBE505 Exam

1

a)

One solution to improve the efficiency of the company is to deliver a significant portion of packages to a local area with unlockable lockers. This reduces the risk of porch pirates stealing the customers package and reduces the number of locations UPS needs to drive and deliver packages to. This, in turn, reduces spent fuel and work hours for UPS. Delivery time is also cut down by not driving to the customer, as the customer will receive a text or an e-mail notifying them that their package is ready for pick-up. The customer will of course get the option to choose between delivery or picking it up themselves. Reduced fuel consumption leads to less fuel costs, saving the company money, making stakeholders happy.

b)

The customer will be able to open their locker(s) by using an app, then connecting with Bluetooth, scanning a QR code or scanning their phones NFC.

c)

As the CIO of UPS, my task would be to manage, implement and make sure that the information and computer technologies remain usable.

d)

If the business doesn't have sufficient skills from in-house technicians, then the skills could be acquired from a collaboration with a relevant company. As my solution involves an app, a solution would be to commission an app from a programming company with an excellent track record and pay a standard fee for maintenance.

e)

By cutting fuel consumption, my solution would contribute to goal 12, 13 and arguably 15: Responsible consumption and contribution, climate action and life on land.
UPS' reduced consumption of fossil fuels contributes to these goals by reducing pollution. When UPS has an all-electric fleet, the reduced pollution from the debris from tires will still contribute to these goals. The downside of this solution though, is that the customers may pollute more by driving to the pickup-point themselves. This might be a job for the CIO in the future, to optimise the balance between convenience and climate change. Maybe after a couple years, all the data could be analysed with machine learning technologies and then implement a sweet spot between numbers of available lockers and drivers?

2

a)

An interesting solution, albeit much more costly, is to make a VR-game with all relevant lab experiments for the students to play with. The game could include instructions to successfully conducting the experiment and relevant facts about it. A much, much more costly, and probably not as effective solution is to buy a robot *for each student*, controlled by the students with the VR controllers. The problem with this solution is that the video feed might get choppy if the student has poor internet, and the robot might not be as flexible as needed.

b)

It would be possible to monitor the students by requiring a camera behind them, showing the screen and possibly their mouth to ensure that they aren't chatting with somebody both via an online messaging program or in person.

c)

For the first solution, VR is a great choice because the experiments can be done wherever and whenever needed and is potentially safer since they don't need the supervision of a teacher. An emerging technology that could enhance the VR-experience are haptic feedback gloves. It can be hard, if not impossible, to feel the sensation of grabbing things with standard VR controllers, as the vibration function in these controllers are just that: vibrations. The haptic feedback gloves use wires to stop your fingers from "going through" held items, enhancing the VR-experience, and opening for fine motions in the virtual experiments.

There are several programs specifically made for the purpose of monitoring students while they are doing their home exams. These programs monitor both the webcam and audio, as suggested in my solution.

d)

One of the challenges of online learning is that it is hard to determine attendance. If the lectures are given via Zoom and turning on the camera is not mandatory, a student can easily join the lecture and go to bed. If the lecture is recorded, the sleepyhead can watch it later, which is great, but it is still easy to get distracted while sitting in front if the computer. If the student has a question and the teacher isn't watching the messages, it can be hard to get those questions answered.

e)

By making the lab experiments VR and perhaps more interesting and repeatable, I believe the transformation would contribute to SDG #4: Quality education.

3

a)

A digital transformation strategy would be analytics to determine the priority of patients to treat. Apart from the obvious extreme situation of ER-patients, people with broken toes and a medium cold should get a lower priority.

b)

A possible way to optimise the priorities would be to run the data of symptoms, severity and mortality rate through a machine learning algorithm and determine the optimal priorities. This ensures that the resources go to those who need them the most.

c)

Advantages: Possible cost reduction, easier access to files, reduced risk of loss of data, more security,
Disadvantages: Requires internet connection

The four different models:

- Public cloud – Cloud infrastructure is owned and managed by the provider, and users can access the cloud via the internet, hassle-free
- Private cloud – A cloud meant to be exclusively used by one company
- Hybrid cloud – A hybrid between a public and private cloud. Manages workload between public and private cloud, optimising performance
- Multicloud – Combines clouds from two or more providers and at least one SaaS software vendor. Allows more flexibility

d)

A way for the hospital to acquire new technology would be innovation labs. By receiving help from other non-profit organizations, the hospital can be modernized without any additional strings.

e)

This digital solution would contribute to goal #3: Good health and well-being, as it will provide a more effective use of resources and possibly reducing mortality rate.

4

a)

A defensive strategy is used to keep up with the market, warding off market competitors and disruptors. An offensive strategy is used by companies wanting to disrupt said market and creating a competitive advantage.

An example would be the electric car market. Tesla used and offensive strategy and disrupted the market with superior electric cars, reducing the demand for cars with internal combustion engines and increasing demand for electric cars. This prompted other automobile manufacturers to deploy a defensive strategy and shift part of their focus to electric vehicles. Although some electric automobiles sell at a loss, more advanced technology will reduce costs and the market is set to increase in the future.

b)

COVID-19 has modernised society a fair bit. At the checkout counter, the norm is to tap your card instead of rubbing your germs over the terminal's germs, spreading them. If you're shopping for less than a set amount, you don't even need to type your code, reducing physical contact with said germs.

Some stores have deployed post lockers, as I suggested in task 1a, giving people the option to fetch their packages contactless, reducing the risk of spreading the virus.

Working and attending lectures has never been easier. With widespread use of online video conference tools like Zoom and Microsoft Teams, it couldn't be easier to stay home and not spreading viruses.

c)

Technical debt, also known as design debt or code debt, is defined as poorly designed code, and old software and hardware, possibly because of budget constraints. By using shortcuts to achieve a good enough, short-lasting solution, technical debt can snowball and make it increasingly harder to implement changes to the solution.

d)

The leading indicators of failure in digital transformations are:

- Differences between visions and expectations, and the achievable result of the transformation, inadequate IDT-strategy
- Economic failure - Lack of finances, project gets too costly and then gets the axe
- Technical failure, which occurs when wrong assumptions and incomplete information leads to the selection of wrong technology for the transformation.

e)

Lights-out manufacturing means that the entire production line is replaced and automated by machines, eliminating the need for lights to see. The only role people in the factory have, is to maintain and repair said machines.

References:

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"Industrial Digital Transformation: Accelerate digital transformation with business optimization, AI, and Industry 4.0"
Packt Publishing Ltd, 27. nov. 2020