Date: Thursday, 23 May 2024, 3:23 PM

# ITTNA3-22 Assessments (2024)

## Assignment

## 1. Assignment

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| **Faculty:** | Information technology |
| **Module Code:** | ITTNA3 |
| **Module Name:** | 4IR Technologies |
| **Content Writer:** | Ms Alice Zifunzi |
| **Internal Moderation:** | Community of Practice |
| **Copy Editor:** | Mr Kyle Keens |
| **Total Marks:** | 100 |
| **Submission Week:** | Week 6 |

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This module is presented on NQF level 7.

5% will be deducted from the student's assignment mark for each calendar day the assignment is submitted late, up to a maximum of three calendar days. The penalty will be based on the official campus submission date.

Assignments submitted later than three calendar days after the deadline or not submitted will get 0%. [1]

This is an individual assignment.

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**This assignment contributes 40% towards the final mark.**

[1] Under no circumstances will assignments be accepted for marking after the assignments of other students have been marked and returned to the students.

## 2. Instructions to Students

1. Please ensure that your answer file (where applicable) is named as follows before submission: **Module Code – Assessment Type – Campus Name – Student Number.**
2. Remember to keep a copy of all submitted assignments.
3. All work must be typed.
4. Please note that you will be evaluated on your writing skills in all your assignments.
5. All work must be submitted through Turnitin.  The full originality report will be automatically generated and available for the lecturer to assess. Negative marking will be applied if you are found guilty of plagiarism, poor writing skills, or if you have applied incorrect or insufficient referencing. (See the "instructions to students" book activity before this activity where the application of negative marking is explained.)
6. You are not allowed to offer your work for sale or to purchase the work of other students. This includes the use of professional assignment writers and websites, such as Essay Box. You are also not allowed to make use of artificial intelligence tools, such as ChatGPT, to create content and submit it as your own work. If this should happen, Eduvos reserves the right not to accept future submissions from you.

## 3. Section A

# Section A

**Learning Objective**

The assignment covers the following LOs:

- Demonstrate knowledge in relation to transformative technologies.
- Report on the economic impact of 4IR.
- Report on the business impact of 4IR.

- Evaluate impact of the 4IR on individual and society.

**Assignment Topic**

The assignment covers the following topics:

- The future of Jobs
- Digital inclusion in Africa
- Sharing Economy
- Self driving cars

**Scope**

The assignment covers week 1 – 5.

## 3.1. Question 1

| **Question 1** | **20 Marks** |
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Study the scenario and complete the questions that follow:

**Future of jobs**

In tomorrow's world, many new positions and professions will emerge, driven not only by the fourth industrial revolution, but also by nontechnological factors such as demographic pressures, geopolitical shifts and new social and cultural norms. Today, we cannot foresee exactly what these will be but I am convinced that talent, more than capital, will represent the critical production factor. For this reason, scarcity of a skilled workforce rather the availability of capital is more likely to be the crippling limit to innovation, competiveness and growth.

Source: Schwab, K. 2017. The fourth industrial revolution. Cologny/Geneva. Switzerland. World Economic Forum.

1.1 Why does the statement suggest that the scarcity of a skilled workforce may be more limiting to innovation, competitiveness, and growth than the availability of capital?

(10 Marks)

1.2 Comprehensively discuss any two ways organisations can keep up with the changing environment and ensure their employees are up to date with the changing environment.

(10 Marks)

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End of Question 1

## 3.2. Question 2

| **Question 2** | **20 Marks** |
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Study the scenario and complete the questions that follow:

**The Digital Renaissance: Africa's Journey through the Fourth Industrial Revolution**

In the heart of Nairobi, Kenya, a bustling tech hub known as "Silicon Savannah" hums with innovation and possibility. This is where our story begins, amidst the dawn of the Fourth Industrial Revolution (4IR) in Africa.

Nala is a young entrepreneur with a vision to revolutionize agriculture using digital technology. Growing up in a rural village, Nala witnessed firsthand the challenges faced by farmers in accessing market information and agricultural resources. Determined to make a difference, she founded AgriTech Solutions, a start-up aimed at empowering smallholder farmers through digital tools.

With the help of AI-powered drones and IoT sensors, Nala's company provides real-time data on soil quality, weather patterns, and crop health, allowing farmers to make informed decisions and maximize their yields. Through mobile apps and SMS services, farmers can access agricultural training, market prices, and financial services, transforming their livelihoods and driving economic growth in rural communities.

Meanwhile, in Lagos, Nigeria, a group of young engineers is pioneering renewable energy solutions to address the continent's energy challenges. Inspired by the potential of blockchain technology, they launch a decentralized energy grid that enables peer-to-peer trading of solar power. By harnessing the abundance of sunlight across Africa, they are not only providing clean, affordable energy but also creating new opportunities for entrepreneurship and job creation.

As the 4IR unfolds, Africa's economy undergoes a remarkable transformation. Traditional industries such as mining and manufacturing embrace automation and digitization, driving efficiency and competitiveness on the global stage. Smart cities emerge, powered by interconnected systems that optimize energy usage, transportation, and public services.

However, the journey is not without its challenges. Bridging the digital divide remains a pressing issue, as millions of Africans still lack access to basic internet connectivity. Cybersecurity threats loom large, threatening to undermine the progress made in digital innovation. Moreover, there are concerns about job displacement and the need for upskilling the workforce to adapt to the changing economic landscape.

Yet, amidst these challenges, Africa's resilience shines through. Governments, businesses, and civil society organizations collaborate to tackle the barriers to digital inclusion and promote equitable access to technology. Investments in education and skills development empower the youth to embrace the opportunities of the digital age, driving innovation and entrepreneurship across the continent.

As the sun sets on another day in Africa, Nala and her fellow innovators reflect on the remarkable journey they've embarked on. They know that the road ahead will be challenging, but they are fuelled by a shared vision of a prosperous and inclusive future, where technology serves as a catalyst for positive change. In the digital renaissance of Africa, the possibilities are endless, and the journey has only just begun.

Source: Fictious story AI generated.

2.1 How do governments, businesses, and civil society organisations collaborate to promote digital inclusion in Africa?

(10 Marks)

2.2 Reflect on the significance of the digital renaissance in Africa for the continent's future.

(10 Marks)

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End of Question 2

## 3.3. Question 3

| **Question 3** | **30 Marks** |
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Study the scenario and complete the questions that follow:

**Ubuntu: The Spirit of Sharing in Africa**

Once upon a time, in the bustling streets of Johannesburg, South Africa, lived two neighbours, Mbali and Kwame. Both faced financial struggles, but instead of succumbing to despair, they decided to embark on a journey that would change their lives and their community forever.

Mbali, a talented seamstress, had always dreamed of starting her own fashion business. However, she lacked the capital and resources to turn her dream into reality. Meanwhile, Kwame, a skilled carpenter, faced similar challenges in establishing his woodworking workshop.

One day, over a cup of rooibos tea, Mbali and Kwame had a revelation. What if they pooled their talents and resources to create something greater than themselves? Inspired by the African philosophy of Ubuntu, which emphasizes the interconnectedness of humanity, they decided to launch a sharing economy platform called "Ubuntu Marketplace."

The concept was simple yet powerful. Mbali would offer her sewing skills to create custom-made garments, while Kwame would craft unique wooden furniture. Instead of selling their products outright, they would offer them on a shared platform where members of the community could access them through a barter system or at a fraction of the cost.

Word spread quickly about Ubuntu Marketplace, and soon, it became a hub of creativity and collaboration in the neighbourhood. Members could borrow sewing machines, woodworking tools, and workspace, enabling them to pursue their own entrepreneurial ventures. In return, they contributed their skills and resources to the collective, fostering a sense of camaraderie and mutual support.

As the sharing economy flourished, Mbali and Kwame expanded Ubuntu Marketplace to other communities across Africa. In rural villages, farmers shared agricultural equipment and seeds, boosting crop yields and food security. In urban centres, artisans traded goods and services, revitalizing local economies and preserving cultural heritage.

But Ubuntu Marketplace was more than just a platform for economic exchange. It became a symbol of hope and solidarity, proving that when people come together and share what they have, everyone benefits. Mbali and Kwame's vision of Ubuntu—of people helping people—inspired a movement that transcended borders and united communities across Africa.

Today, as the sun sets over the savannah, Mbali and Kwame sit outside their workshop, reflecting on the impact of Ubuntu Marketplace. They may have started with a simple idea, but their belief in the power of sharing has transformed lives and empowered countless individuals to pursue their dreams. In the spirit of Ubuntu, they know that the journey is far from over, and they look forward to building a brighter future for Africa, one shared opportunity at a time.

Source: Fictious story AI generated.

3.1 Using real world example applications discuss how Industry 4.0 enabling the sharing economy to grow and become more efficient?

(15 Marks)

3.2 Reflect on the implications of Ubuntu Marketplace for economic development and social cohesion in Africa.

(10 Marks)

3.3 Imagine yourself as a member of Ubuntu Marketplace. How would you contribute to the collective and benefit from the shared resources and opportunities available?

(5 Marks)

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End of Question 3

## 3.4. Question 4

| **Question 4** | **30 Marks** |
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Study the scenario and complete the questions that follow:

**Are self-driving cars already safer than human drivers?**

Metz argued that in recent weeks, it has become “more and more clear to the people riding the cars, and to other citizens in the city, that they are flawed, that they do make mistakes, that they can gum up traffic, that they can cause accidents.”

Of course self-driving cars are flawed—all technologies are. The important question is whether self-driving cars are safer than human-driven cars. And here Metz proclaimed ignorance.

“We don't know yet whether it's safer than a human driver,” he said.

But we actually do know a fair amount about the safety of driverless taxis. Waymo and Cruise have driven a combined total of 8 million driverless miles (a Waymo spokeswoman told me the company has completed more than 4 million driverless miles, and Cruise has said the same). That includes more than 4 million in San Francisco since the start of 2023. And because California law requires self-driving companies to report every significant crash, we know a lot about how they’ve performed.

For this story, I read through every crash report Waymo and Cruise filed in California this year, as well as reports each company filed about the performance of their driverless vehicles (with no safety drivers) prior to 2023. In total, the two companies reported 102 crashes involving driverless vehicles. That may sound like a lot, but they happened over roughly 6 million miles of driving. That works out to one crash for every 60,000 miles, which is about five years of driving for a typical human motorist.

These were overwhelmingly low-speed collisions that did not pose a serious safety risk. A large majority appeared to be the fault of the other driver. This was particularly true for Waymo, whose biggest driving errors included side-swiping an abandoned shopping cart and clipping a parked car’s bumper while pulling over to the curb.

Cruise’s record is not impressive as Waymo’s, but there’s still reason to think its technology is on par with—and perhaps better than—a human driver.

Human beings drive close to 100 million miles between fatal crashes, so it will take hundreds of millions of driverless miles for 100 percent certainty on this question. But the evidence for better-than-human performance is starting to pile up, especially for Waymo. It’s important for policymakers to allow this experiment to continue because, at scale, safer-than-human driving technology would save a lot of lives.

Cruise vehicles do not seem especially cautious about intersections. For example, a Reddit user posted a video from August 22 showing a Cruise vehicle crossing an intersection several seconds after the opposing traffic got a green light. Cruise says its vehicle was already in the intersection when its light turned red so the vehicle didn’t break the law. Maybe that’s technically true—I’m not an expert on California traffic law. But I’m pretty sure it would have been safer for the car to stay where it was and wait for the next green light.

Source: Lee, TB (2023), [Online] https://arstechnica.com/cars/2023/09/are-self-driving-cars-already-safer-than-human-drivers/ [Accessed on:07052024 ]

4.1 Give an analysis of whether self-driving cars are safer than human drivers.

(10 Marks)

4.2 The minister of transport in South Africa has approached you and asked you to provide a report on what needs to be done for successful implementation of self-driving cars. In your report also identify the challenges that maybe encountered and how they will be dealt with.

(15 Marks)

4.3 Would you as an individual choose a self-driving car or human driver? Support your answer.

(5 Marks)

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End of Question 4