# An Epistemological Investigation of Academic Librarians in the Context of Artificial Intelligence – A Case Study

12 April 2024

Ntobeko Sikhakhane

# Presentation Outline

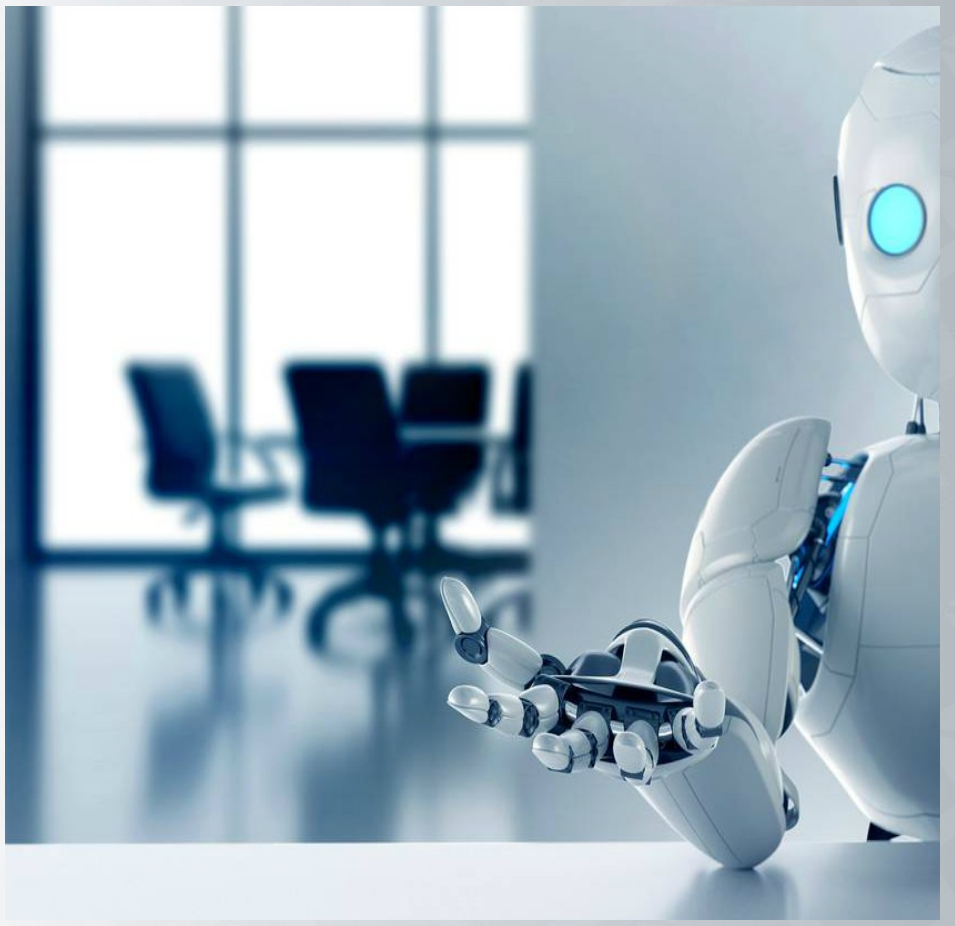
- Introduction
- Pr statement & Objectives
- Literature Review
- Methodology
- Key Findings
- Recommendations
- Concluding remarks

# Introduction

The LIS and technology landscapes have exhibited ongoing transformations, with anticipated changes persisting into the future. Consequently, libraries are compelled to align themselves with the prevailing and dynamic technological advancements to ensure their continued relevance, enhance value optimisation, and expand access to the effective and efficient delivery of information services.

The benefits of using technology include reducing time spent on repetitive and less exciting tasks, minimising the possibility of human errors, and improving results. It is worth mentioning that the attempt to replace human power with machines has been a topic for some time, hence the introduction of the first industrial revolution.

The current discourse surrounding artificial intelligence (AI) underscores its growing prominence, particularly concerning its potential ramifications for humanity.



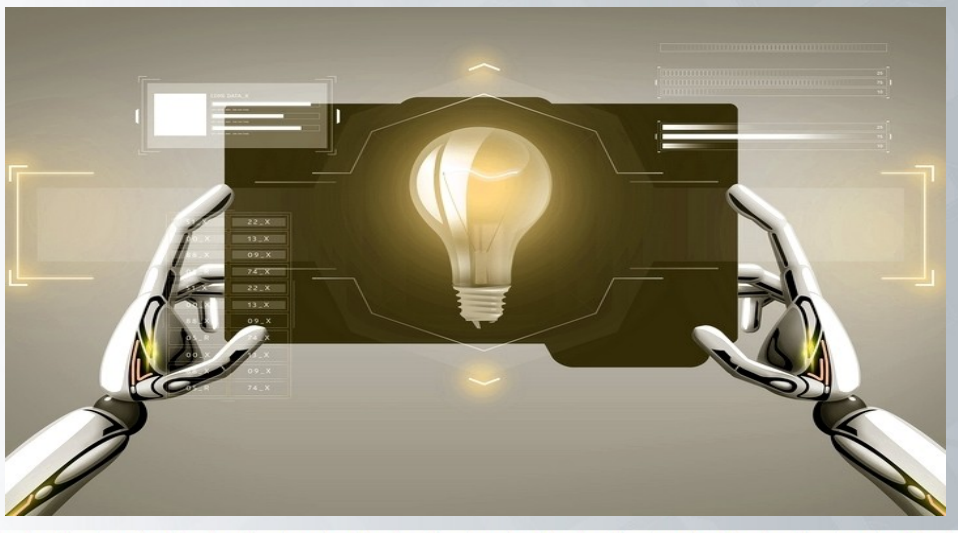
# Problem Statement & Objectives

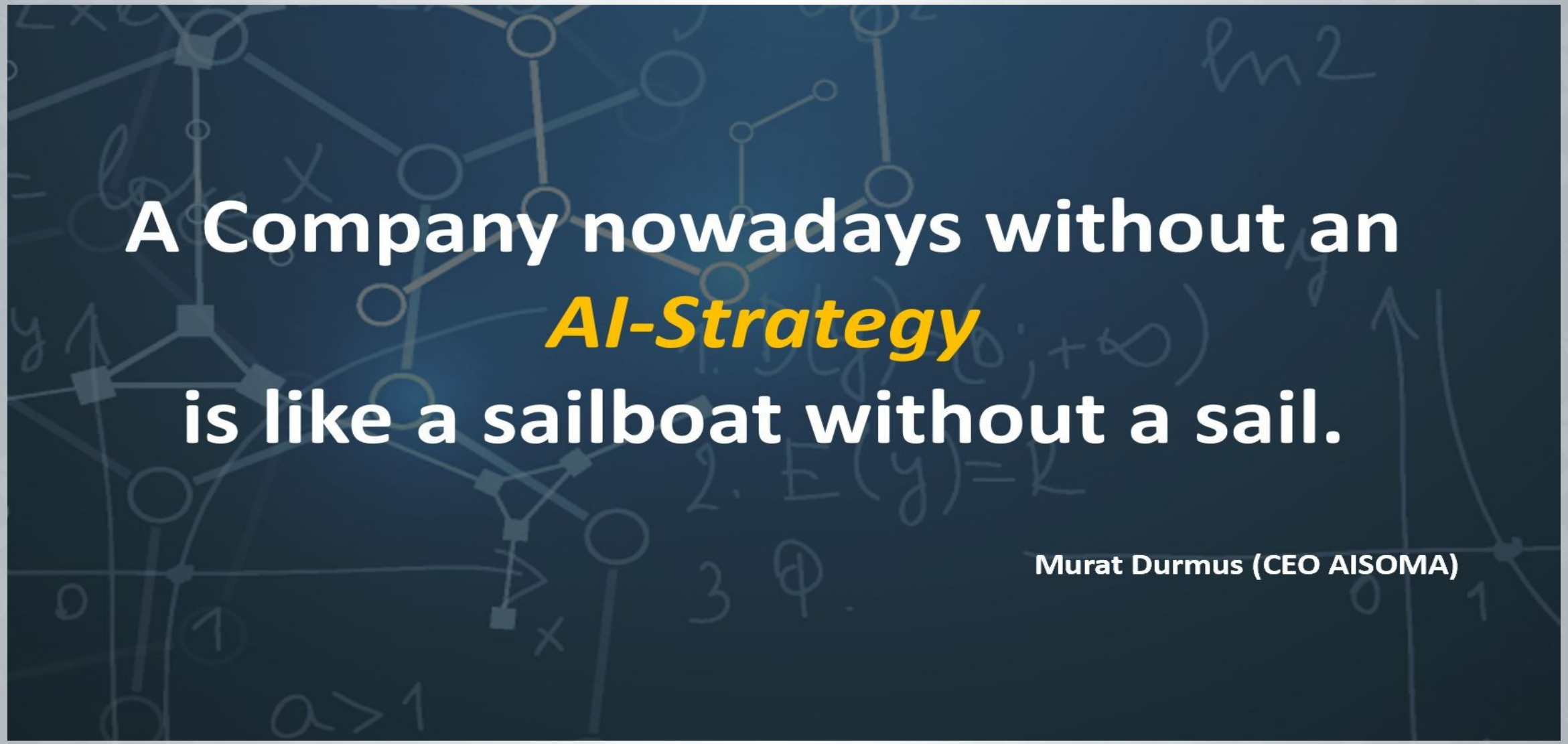
## Problem Statement

The current consensus emphasises the interconnectedness of artificial intelligence (AI) and human endeavours, with this concept's dynamic and evolving nature eliciting apprehension among stakeholders. Notably, the Library and Information Service (LIS) fraternity has increasingly pronounced AI integration, leading to accelerated adoption in numerous academic institutions. However, despite aspirations for widespread acceptance, certain individuals have displayed resistance. This study seeks to examine the underlying factors contributing to this resistance phenomenon.

## Objectives

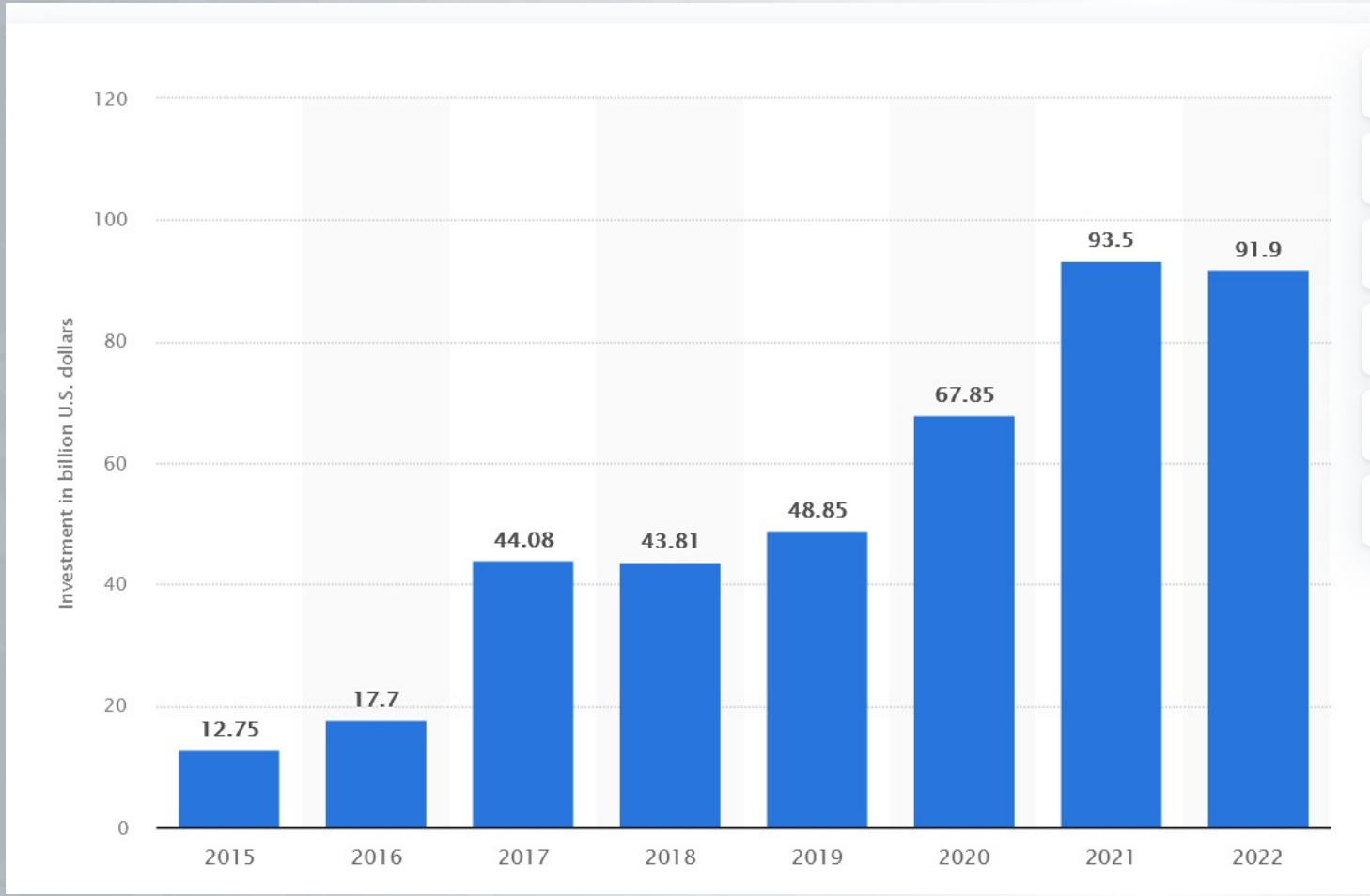
- To ascertain the extent to which AI is adopted and utilised in the academic library
- To establish the root cause of the noticeable apprehension
- To uncover the efficacious AI implementation strategy

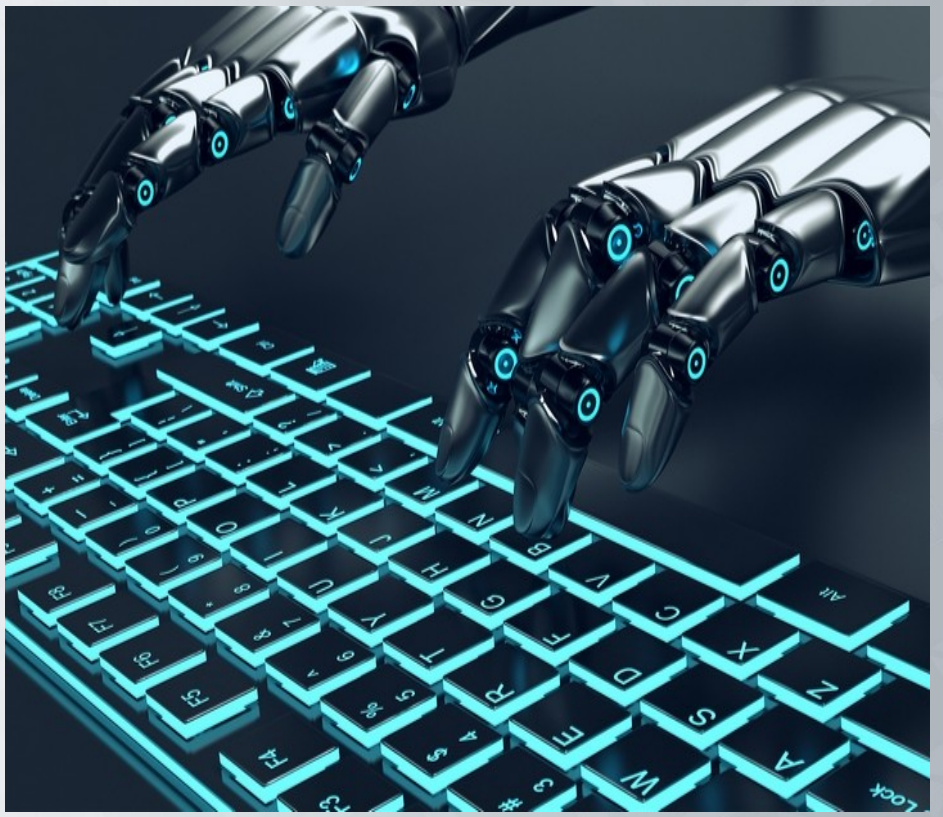



A Company nowadays without an
AI-Strategy
is like a sailboat without a sail.
Murat Durmus (CEO AISOMA)

# Global AI Corporate Investment 2015-2022

(Statista)



# Investing in AI technology is not all rainbows and sunshine


| Challenges Of Investing In AI | Percentage (%) |
|---|---|
| Staff Don't Have Necessary Skills | 56% |
| The Future Of AI Is Unknown | 42% |
| Don't Know Where To Invest | 26% |

# Literature

- The term (AI) was coined in 1956 in a proposal by elite computer scientists and mathematicians who organised a summer workshop called the “Dartmouth Conference”. (Hildebrand, 2019)
- Artificial intelligence (AI) is defined as the intelligence of machines that allows them to comprehend, learn, and perform intellectual tasks much like humans. AI emulates the human mind and behaviour to solve any kind of complex problem. (Kanade, 2022)
- Artificial Intelligence (AI) is commonly defined as a computer-controlled framework exhibiting intelligent thought processes akin to human beings. These electronically designed entities leverage computer assistance to emulate human cognitive functions, systematically recording and analysing user actions. The integration of AI into various aspects of human life, driven by advancements in science and technology, has led to significant contributions to progress and convenience (Nwakunor, 2021).
- In contrast, Haenlein and Kaplan (2019:5) present a slightly different classification, categorising AI into analytical, human-inspired, and humanised AI based on exhibited types of intelligence or into Artificial Narrow, General, and Super Intelligence based on its evolutionary stage.

# Literature cont…

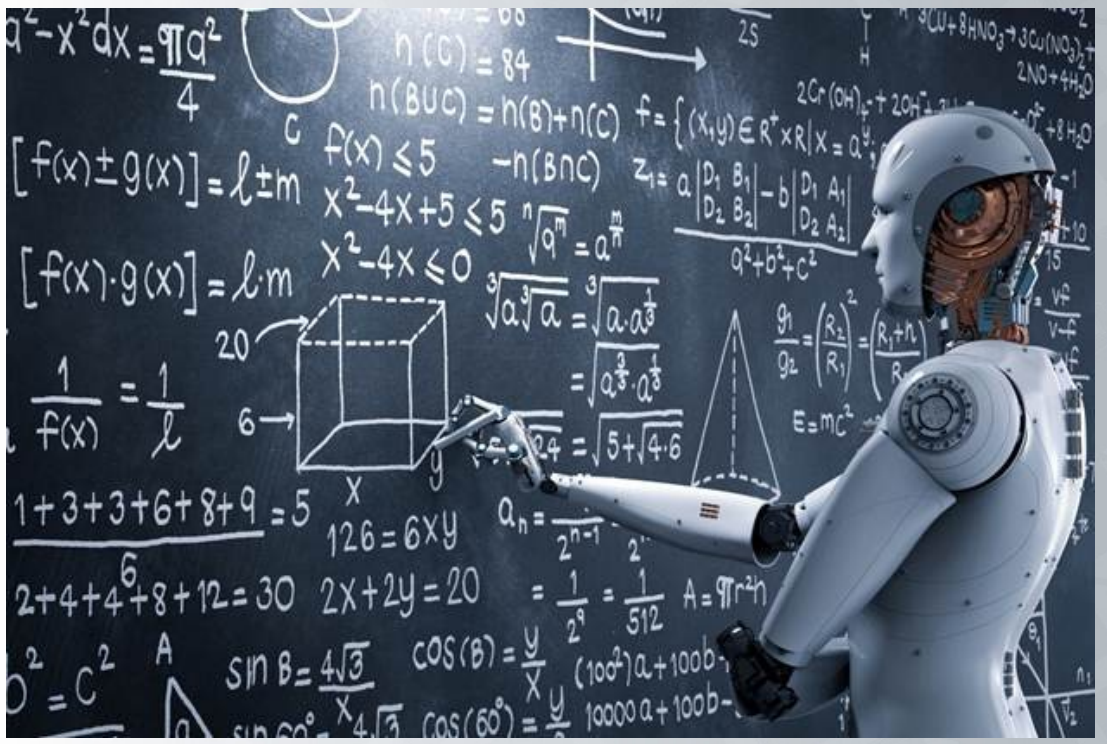
- It is imperative to grasp the dynamic nature of contemporary Artificial Intelligence (AI) research, which continues to evolve at an accelerated pace. Persistent advancements are continually emerging, fostering rapid expansion in the capabilities of AI systems. (Roy, 2023)
- Mhlanga (2021) asserts that AI, in the context of the fourth industrial revolution, is realising its potential by delivering tangible value facilitated by the availability of pertinent data, computational capabilities, and sophisticated algorithms.
- Raj and Seamans (2019:11) distinguish between AI, robotics, and automation, clarifying that robotics pertains to physical task automation, while AI involves computer-based learning without requiring physical manipulation.
- According to Wheatley (2019), the most surprising result from the environmental scan was the discovery that no university or university library mentions artificial intelligence in their strategic plan. While most plans were pretty recent, there are no initiatives to address the rise of artificial intelligence technology.
- A study by Wheatley and Hervieux (2019)  reveals a particularly unexpected finding, revealing that none of the universities or their respective libraries explicitly references artificial intelligence in their strategic plans. Despite the recent nature of most plans, there is a conspicuous absence of initiatives designed to contend with the burgeoning influence of artificial intelligence technology.

Companies, authorities that continue to ignore
***Artificial Intelligence*** or neglect to integrate it
into their organizations and processes
will pay a high price for it soon.
They will no longer be competitive.
***They will drown in Data and Complexity***
because the world is becoming
more and more ***Data-Driven***.

Murat Durmus (CEO AISOMA)

# Methodology

- The researcher employed a mixed-methods case study with probability sampling to collect and analyse both qualitative and quantitative data
- In light of the manageable size of the population, it is feasible for all individuals therein to be included within the scope of the study (census approach). Conversely, in the event of a larger population, an alternative methodology, such as sampling, would be employed, treating it as a representative microcosm.
- Data analysing tool - SPSS
- 5% margin of error



# Data Collection Tools

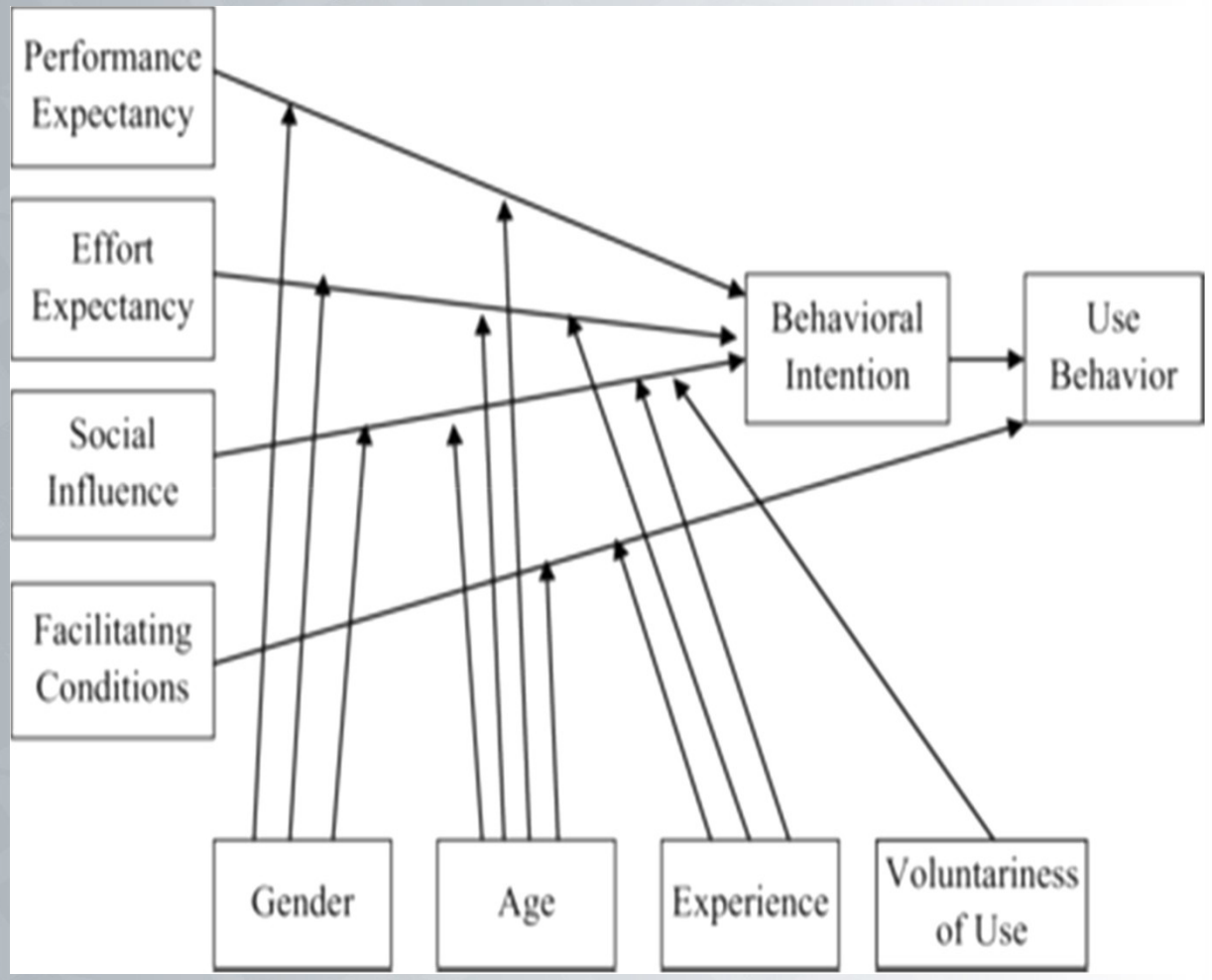
## Personal Interviews

- Flexibility
- High response rates
- Control over who the respondent is and the sequence of questions
- No systematic exclusion (disabled)
- Follow-up questions

## Structured Questionnaires

- Economical
- Respondents are frank and more honest
- No interviewer bias
- Reach participants seamlessly
- Respondents can take time to think about responses

# Theoretical Framework




**Unified Theory of Acceptance and Use of Technology (UTAUT)**

- Venkatesh (2003) asserts that the researchers use the UTAUT model to determine the intention to accept and use ICT for learning and research. According to this author, the UTAUT model directly relates to technology usage.

# Glimpse of the questions and responses

## 10 Most Used AI Tools In Academia (Willing, 2023)

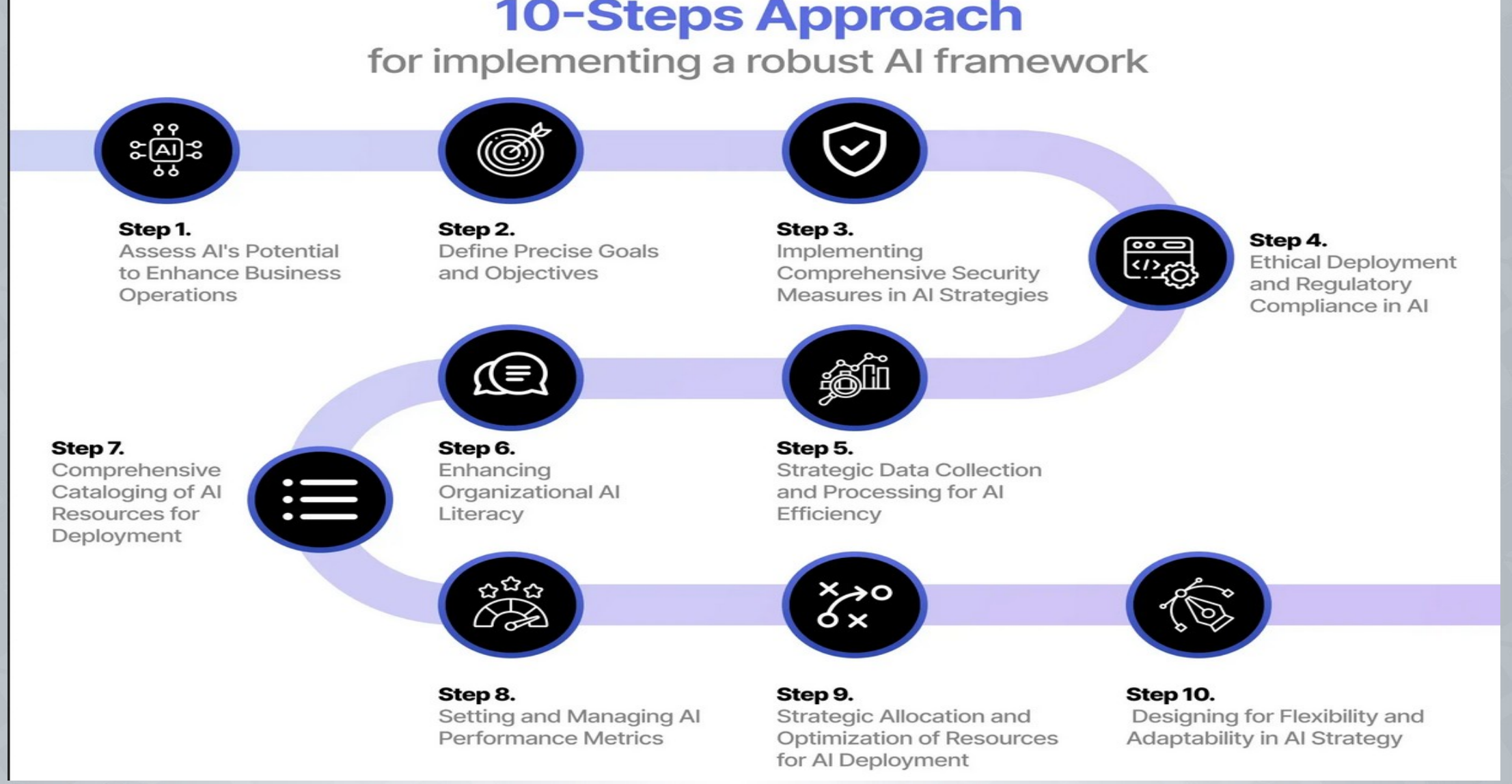
| AI Platform | Cognisance (%) | Proficiency (%) (1-10 scale) |
|---|---|---|
| ChatGPT | 100 | 44 |
| Character AI | 12 | 2 |
| MidJourney | 14 | 2 |
| QuillBot | 86 | 32 |
| Hugging Face | 4 | 0 |
| Google Bard | 22 | 0 |
| NovelAI | 36 | 4 |
| CapCut | 84 | 38 |
| Janitor AI | 20 | 2 |
| Civitai | 6 | 0 |

# Findings Summary

- AI-related decisions are made during executive meetings with minimal consultation with frontline personnel.
- The absence of straightforward strategies to mitigate the adverse impact of AI
- Lack of transparency with reference to risk analysis and corresponding contingency plans poses significant challenges and uncertainty.
- AI advocates exhibit predisposition by predominantly highlighting the advantages of AI while neglecting its disadvantages. Respondents perceive a deficiency in honesty due to this inclination.
- Respondents prefer to contest the policy document rather than directly confronting authorities or superiors.
- Concerns about job redundancy arise due to the possibility that certain positions may not be repurposed due to a mismatch in skills.
- Contrary to the to the executives' view,  suggesting that there is ongoing consultations and information is cascaded down to frontline staff.

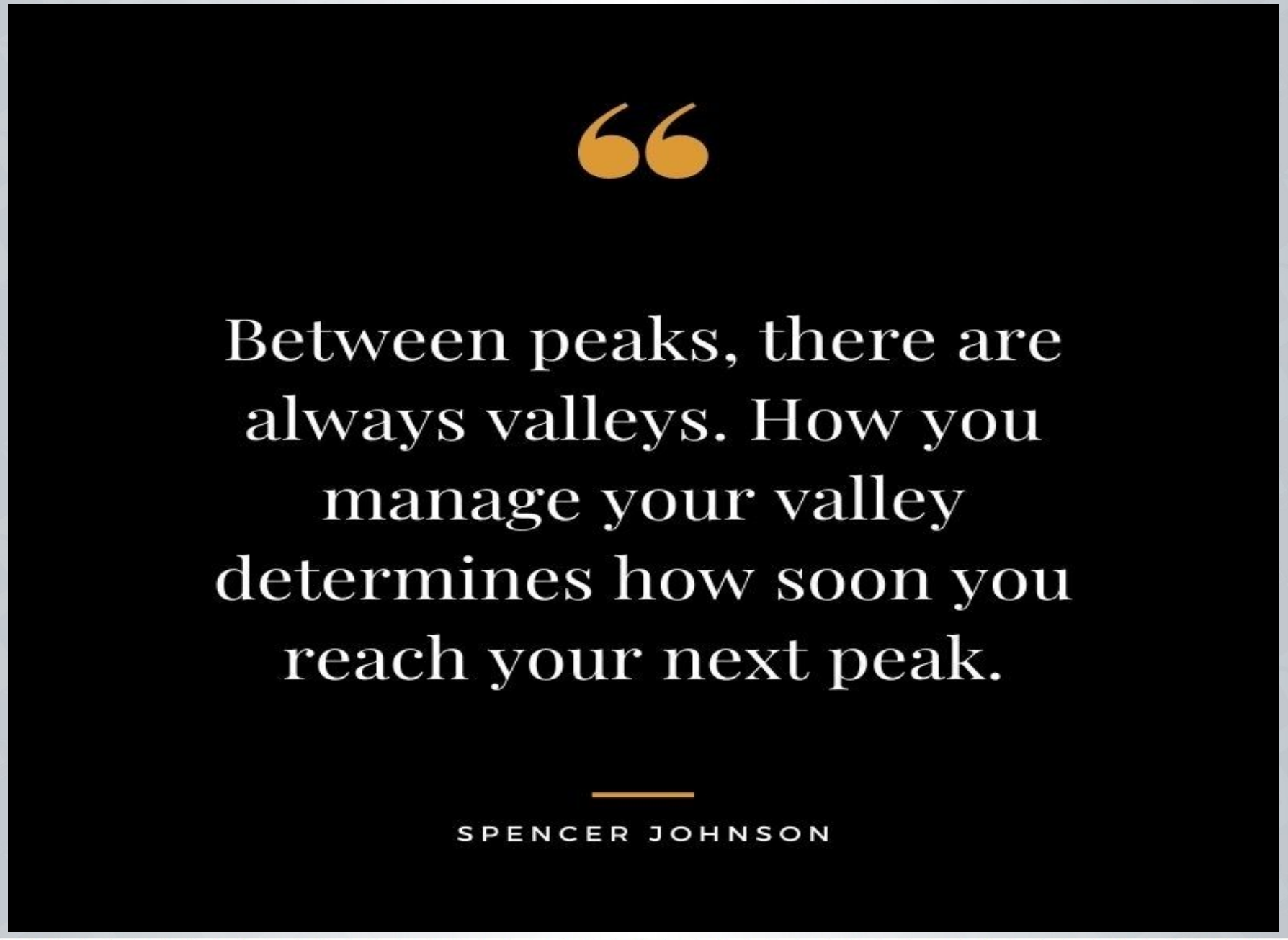
# 10-Steps Approach

## for implementing a robust AI framework



# Concluding remarks

Information professionals must acquire proficiency in AI tools and techniques. The evolving landscape of libraries, influenced by new ICT tools and techniques, promises to make libraries more relevant and acceptable. AI tools, in particular, are bringing about evolutionary changes, transforming library collections and services into more interactive and accessible entities.


Between peaks, there are always valleys. How you manage your valley determines how soon you reach your next peak.
SPENCER JOHNSON

# Reference List


- Heath, N. (2018). What is AI? Everything you need to know about artificial intelligence.
- Kanade, V. 2022. What Is General Artificial Intelligence (AI)? Definition, Challenges, and Trends
- Nwakunor, J. A. 2021. Leveraging artificial intelligence to enhance brand management
- Roy, T. 2023.The History and Evolution of Artificial Intelligence, AI’s Present and Future.
- Sharma, R. 2024. The Blueprint for AI Success: Creating AI Strategy Framework
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology
- Woodward, M. 2024. Artificial Intelligence Statistics for 2024.
- Wheatley, A. and Hervieux, S., 2019. Artificial intelligence in academic libraries: An environmental scan.


Ntobeko.Sikhakhane@nwu.ac.za