IFLA PRESENTS

Professional Unit Virtual Events

INFORMATION TECHNOLOGY SECTION

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speaker

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INDUSTRIAL REVOLUTON PHASE

TODAY 4IR

1980

1800

1700

Digital Transformation

Cyber Physical System (CPS)

Electronic and IT System Automation

Mass Production and Electricity

Mechanical, Steam and Water Power

Agricultural Society

Assembly Line Production

Digital Revolution

CHALLENGES

- ✓ **PEOPLE**
- ✓ **DATA**
- ✓ **COMPUTERS**
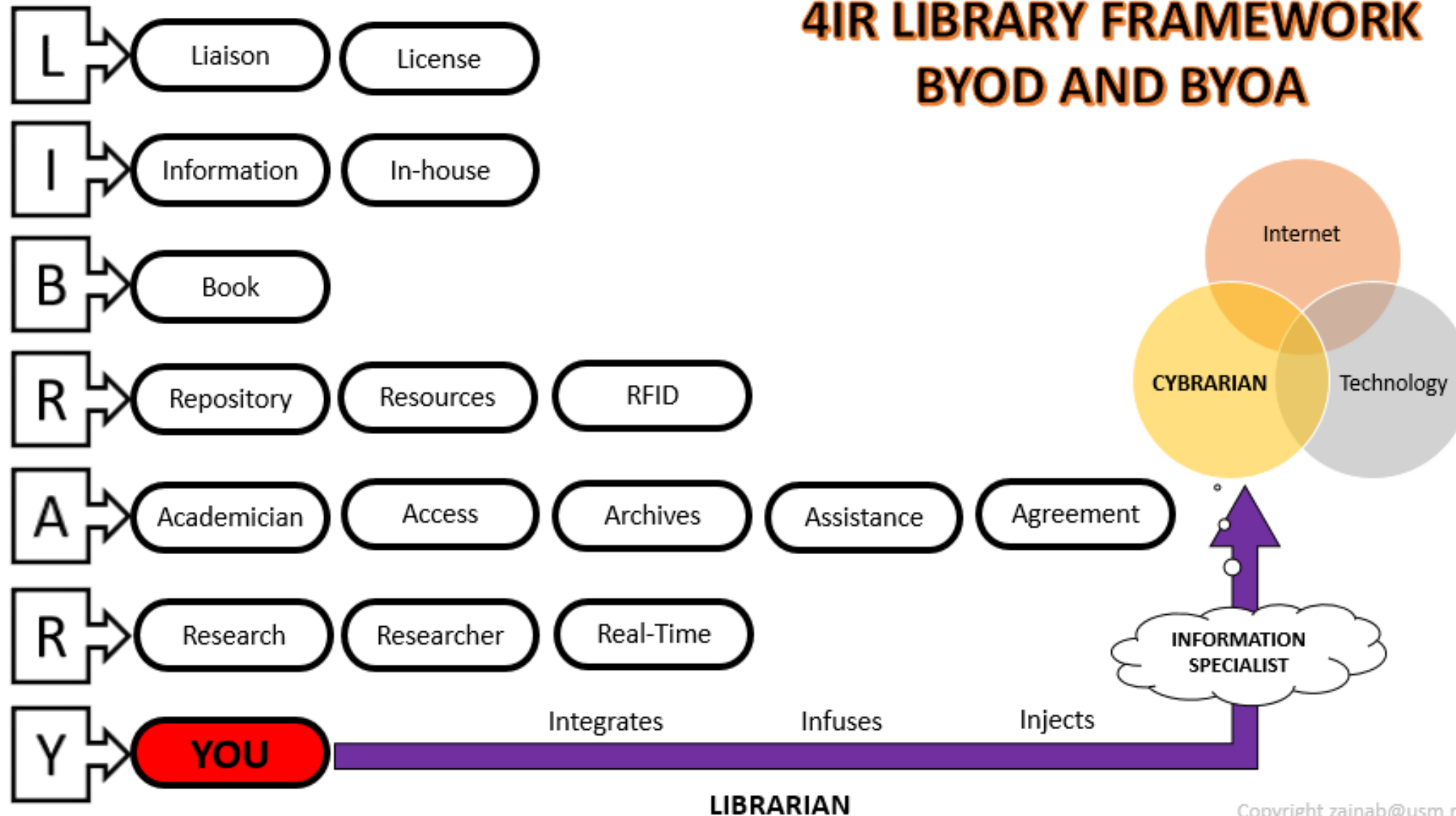- ✓ **PRODUCTS**
- ✓ **PROCESS**

Digital Transformation

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4 INDUSTRIAL REVOLUTON

The 4IR Revolution changes the way we **LIVE** and **WORK**. Technology involves **KNOWLEDGE** and **SYSTEM.**
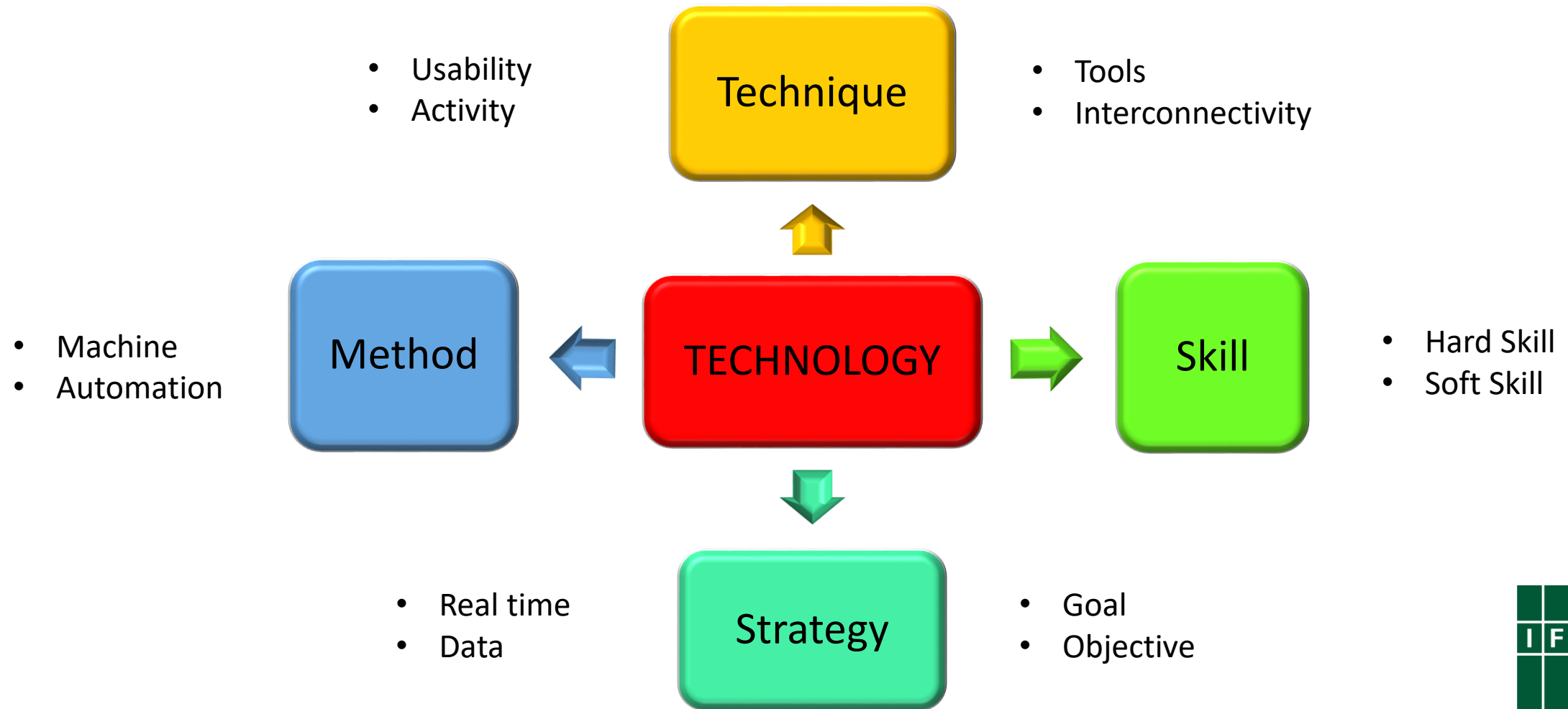
- Usability
- Activity

Technique

- Tools
- Interconnectivity

- Machine
- Automation

Method

TECHNOLOGY

Skill

- Hard Skill
- Soft Skill

- Real time
- Data

Strategy

- Goal
- Objective

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WHERE WE FIT INTO?

A SURVEY TITLED: "WHERE DO WE FIT INTO THE 4IR? LIBRARIANS' PERCEPTION"

QUESTION 1 : State 4IR in simple terms?

QUESTION 2 : Describe past, present and future of 4IR?

QUESTION 3 : Does the library fit into 4IR industry? [Yes/No] and [Why]

QUESTION 4 : Identify 4 IR business case for the library?

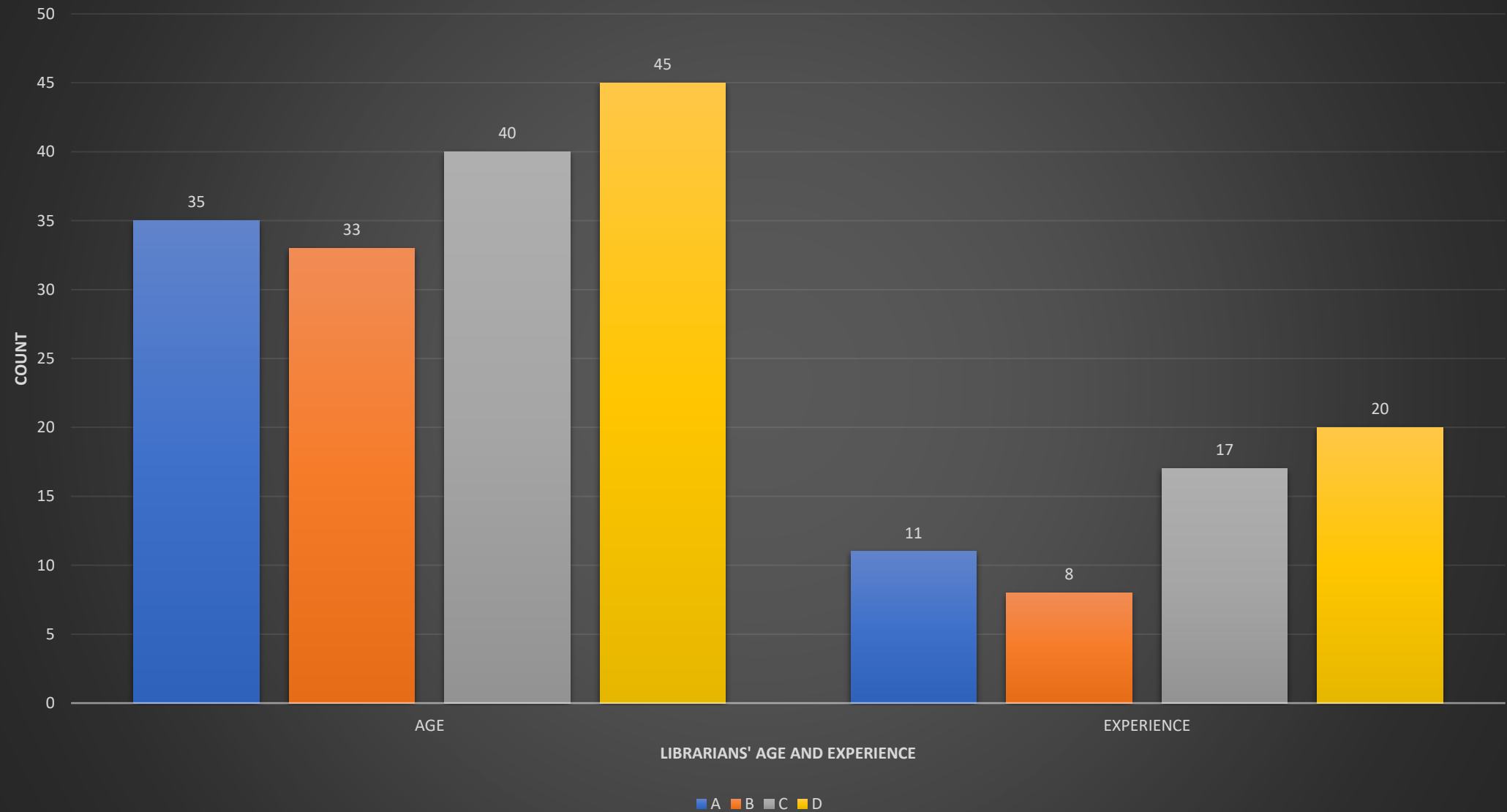**QUESTION 5 : What are the implementation barriers in 4IR industry?**

QUESTION 6 : State the challenges of 4IR in the Academic Library in Malaysia?

QUESTION 7 : Identify the Librarians' skill in the 4IR industry?

QUESTION 8 : Personal perception on where do the librarians' fit into 4IR?

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LIBRARIANS' PERCEPTION

QUESTION 1 : State 4IR in simple terms?

LIBRARIAN 1

*The **disruptive** changes in professional practices and usage of technological appliances that minimize manual job, clerical work and moving forward towards more advanced intelligence on automation infrastructure and ecosystem.*

LIBRARIAN 2

Technology revolution in **industrial process** of managing, delivering and making decision to increase higher efficiency toward fulfilling human needs.

LIBRARIAN 3

Automation, machine learning, mobile computing and artificial intelligence.

LIBRARIAN 4

An era that we're currently going through—after the 3rd IR comes the continuance from digital revolution and information age. 4IR is the age of **disruptive technologies** such as VR technology, IoT and AI.

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LIBRARIANS' PERCEPTION

QUESTION 2 : Describe past, present and future of 4IR?

LIBRARIAN 1

*Have we entered yet 4IR? There is no yet matured times for 4IR in Malaysia. It is irrelevant to describe the past. However, we have just begun in the year 2018. We are still in the process to develop as massive users yet as creators and innovators. **We are still as beginner level.** Cost effective in acquiring or procure the intelligence information, products and services are still main issues.*

LIBRARIAN 2

NOT AVAILABLE

LIBRARIAN 3

The 4IR is characterized by **the merger of digitization and automation to make the machines intelligent, interactive and easy to use**. These new technologies will have a huge impact on working patterns. There will be a **robot** that can interact with human. This technology will complement human activity, in particular cognition, combined with other emerging technologies to give us completely new computer models. Thus, **new skills** are needed to **bridge the gap between engineering and computer science, automatic learning and AI**. The work of the future will be very different from the traditional work, traders will also have some different skills that those required today.

LIBRARIAN 4

Before 4IR **it was the digital and information evolution** but it has developed exponentially and disruptively within a decade. The present **4IR may be felt tremendously by communities living in developed countries but no so much in underdeveloped areas.** However, we can expect a great deal of 4IR pervasiveness in the **future in more aspects of livelihood as more technological breakthroughs** are being discovered at much greater speed than before.

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LIBRARIANS' PERCEPTION

LIBRARIAN 1

*The **readiness is working under individual measures** yet there are unclear about commonalities and mutual agreement to reform together. All resources being use for 4IR are not sharing together especially in term of technological appliances due to legal and ownership restrictions.*

LIBRARIAN 2

Yes. Library business is to serve its customer with reliable, accurate and complete information. 4IR is actually an opportunity for library to introduce a better **services** and information is efficiently delivered.

LIBRARIAN 3

Yes. If whole **services** were changed on these **robust technology** the libraries and librarians will make more contributions for our users. **Social Media, smart phones, digital cameras** are creating more information than before.

LIBRARIAN 4

Yes, definitely. Because you cannot simply take away technological aspects from the library. And with this evolution, the **library will have to go with the flow and take the most out of 4IR**. However I still think we need to be **vigilant in the process** of fitting into 4IR industry

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LIBRARIANS' PERCEPTION

LIBRARIAN 1

➢ The **delivery of digital knowledge** that are being supplied with **low cost** to customers,
➢ **Functionally rich products and systems** that attract customers to use them continuously, and
➢ Highly **multitask skills of staff** that are capable to support customers' demands.

LIBRARIAN 2

Library are more focusing on **research support,** data management to help in learning and teaching process.

LIBRARIAN 3

❖ Libraries services
❖ RFID technology
❖ Artificial Intelligence
❖ MARC Data

LIBRARIAN 4

Big data especially with reference **to research** done in a university, **IoT and VR technology** in terms of services to be offered to users and **AI in terms of library modus operandi.**

I F L A

LIBRARIANS' PERCEPTION

QUESTION 5 : What are the IMPLEMENTATION BARRIERS in 4IR industry?

LIBRARIAN 1

> *Financial crisis and*
> *Incompetent mindset in the library.*

LIBRARIAN 2

- ☐ Cost
- ☐ Re-Designing Human Task

LIBRARIAN 3

• The need for **experimentation and learning**, to give a way for industries to strengthen their business
• **Data explosion**, to send information more and more quickly and increase data volume
• **Transformation of the workforce, integrating the system** operators with new **skills** that enable it to manage work digitally with the help of cyber-physical systems
• Training of staff with specific• The need for **funding** to start planning at **skills in managing digital jobs.**
 the national or regional level for the implementation of systems 4.0.

LIBRARIAN 4

Numero uno – infostructure. Which of course is related to **monetary and fundings**. More **expertise** is needed in this area, and must be pooled to assist **strategically planned framework** for library in relation to 4IR.

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LIBRARIANS' PERCEPTION

LIBRARIAN 1

- ➢ ***Collegiality and commonalities*** *to work together reforms the library staff and systems that being outdated used.*
- ➢ *Transparency and drawback in succession planning and decision making.*

LIBRARIAN 2

- ❑ Infrastructure,
- ❑ Adaptation of new IT, Skills, Organizational culture

LIBRARIAN 3

- ➢ The world's biggest problem is that **we need skills and talent.**
- ➢ The 4IR components such as Internet of things (IoT).
- ➢ **Smart resources** refer to information resources that have to be available in open access (OA) – accessible anytime, anywhere and everywhere, and blurring space and place completely.

LIBRARIAN 4

Gaining trust from stakeholders. Academic librarians need to be assertive and put their best feet forward to begin 4IR initiatives at the library. Another challenge is in terms of expertise and competencies – **librarians need to unlearn, relearn and co-learn in the process of adapting and adopting 4IR in their profession**.

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LIBRARIANS' PERCEPTION

QUESTION 7 : Identify the Librarians' SKILL in the 4IR industry?

LIBRARIAN 1

Master Transdisciplinary skills

LIBRARIAN 2

- ❑ IT,
- ❑ Knowledge Management,
- ❑ Multi-Tasking,
- ❑ Data Curation,
- ❑ Statistic

LIBRARIAN 3

- ❖ Complex problem solving;
- ❖ Critical thinking;
- ❖ Creativity;
- ❖ People management;
- ❖ Coordinating with others;
- ❖ Emotional intelligence;
- ❖ Judgement and decision making;
- ❖ Service orientation;
- ❖ Negotiation;
- ❖ Cognitive flexibility

LIBRARIAN 4

- o Complex problem solving,
- o Critical thinking,
- o Creative and innovative skill,
- o Data management

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LIBRARIANS' PERCEPTION

LIBRARIAN 1

As described in : Ahmat, M. A., & Hanipah, R. A. A. (2018). Preparing the libraries for the fourth industrial revolution (4th IR). *Journal PPM: Journal of Malaysian Librarians*, *12*(1), 53-64.

LIBRARIAN 2

Designing the process of data management, curation as part of big data and open science.

LIBRARIAN 3

- For librarians, we have to shift our mindset.
- Both machines and humans are the result of teamwork.
- Technology didn't replace librarians; it empowered them to do their job

LIBRARIAN 4

Personally I think that **it's still a long way to go before academic library in Malaysia fully adopts 4 IR.** Some libraries may have jump started on their own initiatives but only gradually. The current economic situation may hinder a full fledge adoption of 4IR technologies in libraries as we are dependent on government funding. However, **the plans towards 4IR should be laid out clearly so that all librarians share the same mission and vision.**

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CONCLUSION

- Proposed framework is reliable and acceptable for IR4 in the LIBRARY.
- Librarians' need Transdisciplinary skill to meet the demands and challenges of IR4.
- Collaboration with INDUSTRY.
- Data Librarian : Concern on Data Safety **(Data Forensic Analysis)**
- **Concept L2L (Library To Library)**

CHALLENGES

NEXT PHASE LIBRARY 4IR

QUESTION:
Is ILL relevant when ERP@LIBRARY is about to embark?

- ✓ To establish Resource Sharing Network for Enterprise Resource Planning (ERP) for the LIBRARY
- ✓ To establish LIBRARY INFORMATION SYSTEM - ERP@UNIVERSITI SAINS MALAYSIA (USM)

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LIBRARY UNIVERSITI SAINS MALAYSIA

LIBRARIANS' UNIVERSITI SAINS MALAYSIA

CENTRE FOR KNOWLEDGE, COMMUNICATION AND TECHNOLOGY

UNIVERSITI SAINS MALAYSIA

INTERNATIONAL FEDERATION LIBRARY ASSOCIATION [IFLA]

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