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Exploring Barriers and Pathways towards Sarawak 2030 Skills Condition: A Causal Layered Analysis

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Abstract

Sarawak aspires to become a developed state in Malaysia by 2030. The Sarawak Digital Economy blueprint calls for the public sector to steer and facilitate a digital transformation to the industry, communities, and other stakeholders. Considering the infrastructures and technology that assent, it signifies the crucial need for the public sector to be equipped with the fitting skills and people strategies to effectively embark on this 2030 vision. Such skills condition needs to be addressed by relevant policy actors. Challenges to the condition pose in many layers (i.e., Litany, Systemic, Worldview, Metaphor). This paper seeks to explore the viewpoints of seven policy enablers on the barriers and pathways pertaining to the skills condition in the public sector for Sarawak 2030. Using Inayatullah's Causal Layered Analysis, the paper reveals the short-term vs long-term challenges and solutions to those conditions. Results suggest the urgent need for planning and a reconnection among public sector to improve the current skills condition. Findings are further discussed with a transformed future as a guiding description for Sarawak 2030. This paper contributes to understanding a condition within a context, towards conscious policymaking via futures study method. The study's scope and future directions are also discussed.

Keywords: Sarawak, Skills Condition, Digital Transformation, Causal Layered Analysis, Public Sector

Declarations of interest: none

Introduction

Located just above the Equator in the northwest corner of Borneo, Sarawak is the largest of Malaysia's thirteen states. The State's economy holds the third largest in the nation, contributing 9.50% of the Malaysia's Gross Domestic Product (GDP) in 2020 (Department of Statistics, 2021). For decades, the Sarawak economy heavily relies on conventional natural resource extraction and exports such as oil, gas and palm oil. But since 2016, the Fourth Industrial Revolution (4IR) has sparked a general appreciation from Sarawak. Inherently, the State government gathered the need for a significant shift for improvement in its economy to leapfrog to the current 4IR to better serve its people, through digital transformation.

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As a result, the State introduced the Sarawak Digital Economy (SDE) blueprint in 2017, with a vision to transform Sarawak into a "*new economy powered by knowledge, innovation & digital technology*" (Sarawak Government, 2017). With 47 strategic actions, the blueprint aims to accelerate the State's economic growth, reduce socio-economic divide, and increase employment of youth by embarking a digitised approach to its economy, in all economic sectors.

In 2020, however, the State's economy is estimated to contract between 3.5% to 5.0% because of the Covid-19 pandemic (Sarawak Government, 2021). There was a 24.2% drop in the State's exports, which led to a less favourable job market. At the national scale, Department of Statistics Malaysia (2021) reports that Malaysia's unemployment rate rose from 3.1% in 2019 to 4.3% in 2020. 723 local workers were laid off within a year, leaving them with no choice but to reskill or retool themselves to survive and sustain their livelihoods.

It is because of this that the State government has worked on a development plan called the Post Covid-19 Development Strategy (PCDS 2030). While the SDE blueprint lays out the overall digital economy structure, PCDS 2030 is an extension plan to help the economy grow again after the pandemic. Consequently, the Sarawak 2030 Aspiration was born, in which: "*Sarawak will be a thriving society driven by data and innovation, where everyone enjoys economic prosperity, social inclusion, and a sustainable environment*" (Sarawak Government, 2018).

The ten-year recovery plan is visioned by the State government, with an optimistic outlook for Malaysia's economy and livelihood[2]. With digital economy vis-à-vis 4IR, there is a promising trend for services sector in Sarawak[3]. We argue that the public sector services are fundamental in ensuring efficient services for the State's economic revival. The services sector calls for innovative solutions via digital means of accelerating services, arguably even more so after the pandemic. But to what extent is the public sector workforce equipped with the skills to make sense and use of the technology in facilitating all economic sectors in Sarawak? This means that developing human capital, or more precisely, skills, is critical to the State's socio-economic sustainability.

To support socio-economic development, PCDS 2030 intends to make the best use of assets and government funding, while also developing human capital (Sarawak Government, 2021). To progress, human capital investment should be focused on the appropriate trainings to meet the State's industrial needs. Hanna (2018) claims that investing in human capital and institutional learning across all sectors will ensure digital dividends and inclusion, which is also in line with Sarawak 2030 social inclusivity goal. To achieve all of this by 2030, policy actors will need both the technology *and* the skills to avoid further retrenchments and irrelevance attributed to the new economy.

Therefore, the focus of this article is on Sarawak's current skills situation—as in, *what do policy enablers talk about when they think about skills?*, rather than what are the specific skills required—and how it can be improved for Sarawak 2030. Skills conditions in this article refer to the descriptions revolving around skills in the public sector in the current and future settings in Sarawak. These descriptions derive from issues and challenges observed and experienced by policy enablers in their respective organisations in the State.

[2] One of the greatest highlights of PCDS 2030 is to increase the State's economy from RM136 billion in 2019 to RM282 billion in 2030 by growing the economy at an annual rate of 8.0% from 2021 to 2030. (Sarawak Government, 2021).
[3] The working population is 70.2% of the State's 2.82 million people, with its services sector contributing the most to the economy in 2019, followed by manufacturing, mining and quarrying, agriculture, and construction. Though the State's GDP rate inevitably fell in 2020 because of the pandemic, the services sector suffers the lowest by -5.6%, with government services accounting for nearly 20% of Sarawak's RM46 billion GDP (Department of Statistics Malaysia, 2021).

Public Sector Roles in the Digital Transformation for Sarawak 2030

"*There will be a paradigm shift in the relationship between the business, public, social and third sectors and this will require more effective collaboration between the sectors. The result of these far-reaching changes is the need for a strong, outcome focused and collaborative leadership across all sectors, and specifically in the public sector. Leadership will be critical.*" (Tizard, 2012, p.182)

We term the Tizard's reference to sectors as *groups* in this article. In line with SDE, PCDS 2030 involves four groups: the public sectors; the private sectors and industries; the education and higher learning institutions; and the communities (which include non-governmental and non-profit organisations). This structure contrasts with the previous but ongoing SCORE initiative[4] in the State, that focuses solely on private sectors and industries that lack involvement with other groups.

Given the State's mandate on PCSD 2030 vis-à-vis SDE, the undertaking of the public sector and their leaderships is pivotal in driving the digital transformation towards achieving Sarawak 2030. Furthermore, Bose's (2020) study finds that public sector undertakings contribute significantly to the country's economy, and are essential to the public good. However, the sector must be transformed into a dependable and efficient sector by ensuring good governance and implementing a proper assessment system to meet the aspirations of stakeholders (or groups), thereby ensuring accountability (Maizatul, Alam, & Said, 2016). Such transformation calls for adequate skill sets, in which we must study its condition or landscape first.

In Sarawak, the public sector includes ministries, departments, agencies, and offices that operate to not only implement SDE but also play an active role in facilitating other groups in achieving Sarawak 2030. So there is an ecosystem in the design. In parallel to Sarawak's digital transformation agenda, Hanna's (2018) study suggests four elements to nurturing such ecosystem: building an innovative digital economy; building an inclusive digital economy; creating digital government capabilities; and learning to master digital transformation. We find these to resonate with this article's findings in Sarawak's current and future skills condition, with the help of Futures Study's (FS) method.

In that light, we scope this study's respondents to an enabling unit called Digital Skills and Talent Management of SDE. This unit comprises policy actors from various State organisations, working together to develop and manage skills and talent related affairs and policies for the State. This article establishes the unit as a population and samples the leading State officials or implementors from this unit, at their respective organisations. For this article, we term these officials as *policy enablers*.

Policy enablers are essential in materialising the Sarawak 2030 aspiration. Their hands-on roles as gatekeepers and implementors provide contextual insights into future skills-related policy developments. But what *are* the current public sector skills condition, in their views? What *condition* do they envision for 2030 and *how* do they get there? This article hopes to answer those questions. Based on their professional and personal experiences and observations about the public sectors' skills condition two years after SDE, their perspectives

[4] The Sarawak Corridor of Renewable Energy (SCORE) is one of five economic development corridors created by the Federal Government of Malaysia as part of its plan to stimulate investment-led growth in traditionally rural areas. More information on Sarawak's involvement of SCORE can be found at this website: https://recoda.gov.my/sarawak-corridor-of-renewable-energy/

serve as the subject of this article, using FS's Causal Layered Analysis (CLA) as a method to explore the issues, solutions, and trajectories of the skills conditions in Sarawak.

Following Rijkens-Klomp (2012), we believe that by unravelling those questions through FS is significant to raise awareness of the (future) policy-related issues and the development coherence of skills conditions of the future. On a larger scale, we view the findings to help in setting the agenda by placing new policy issues, and eventually, building argumentation for longer term policy design.

Thus, the objectives of this article are a) to break down the paths and barriers regarding the skills condition towards achieving Sarawak 2030; and b) to identify the short term and long-term solutions that are needed to improve the skills condition. Based on the pathways, we reveal the Sarawak 2030 skill conditions' transformative futures at the end of this article.

Causal Layered Analysis (CLA) as a Method for Conscious Policy Development

Renesch (2012) talks about "shaping the future", which means: instead of thinking about what is going to happen in the future, we ought to think about what we *want* to happen. Now that Sarawak has established its 2030 aspiration, it is a matter of moving from Point A (i.e., now) to Point B (i.e., 2030). He also argues that, in shaping the future, *context*—rather than *content*—is key to lasting improvements. In other words, Sarawak can always change the content of its policies, but without considering the underlying assumptions, conscious and unconscious, attitudes, perceptions, and beliefs of the receiving ends to that policy process (i.e., enablers), the policies will unlikely provide meaning for people in their work and in their personal lives.

This concept of "Conscious Evolution" (Renesch, 2012) strikes a resemblance to the purpose of CLA—as a tool for unpacking consciousness. CLA is a method introduced and continuously refined by futurist Sohail Inayatullah since the late 1990s, influenced by the works of Johan Galtung's[5] notion of deep civilizational codes, Michel Foucault's[6] concept of genealogy, P.R. Sarkar's[7] tantric philosophical thought, and Richard Slaughter's[8] typology of FS (i.e., popular futures, problem-solving and epistemological futures).

There are four layers to CLA according to Inayatullah (2009): *Litany*—the observational description such as events or trends pertaining to the condition; *Systemic*—the social causes (economic, cultural, political and historical factors) to the condition; *Worldview*—the deeper social, linguistic, cultural structure or the discourse surrounding the condition, that are not dependent on the actors in inquiry; and *Metaphor*—deep stories that represent from the unconscious and often emotive dimensions of the condition, providing an emotional level experience to the Worldview level under inquiry. **FIGURE 1** depicts the layers and their timeframe in CLA.

[5] Galtung, J. (1981). Social Cosmology and the Concept of Peace. *Journal of Peace Research*, 18 (2).
[6] Foucault, M. (1973). *The Order of Things: An Archaeology of the Human Sciences*. New York, Vintage Books.
[7] Sarkar, P.R. (1978). *Idea and Ideology (5th Ed)*. Calcutta, Ananda Marga Publications.
[8] Slaughter, R. (1991). *Futures Concepts and Powerful Ideas*, Kew, Victoria, Australia, Futures Study Centre.

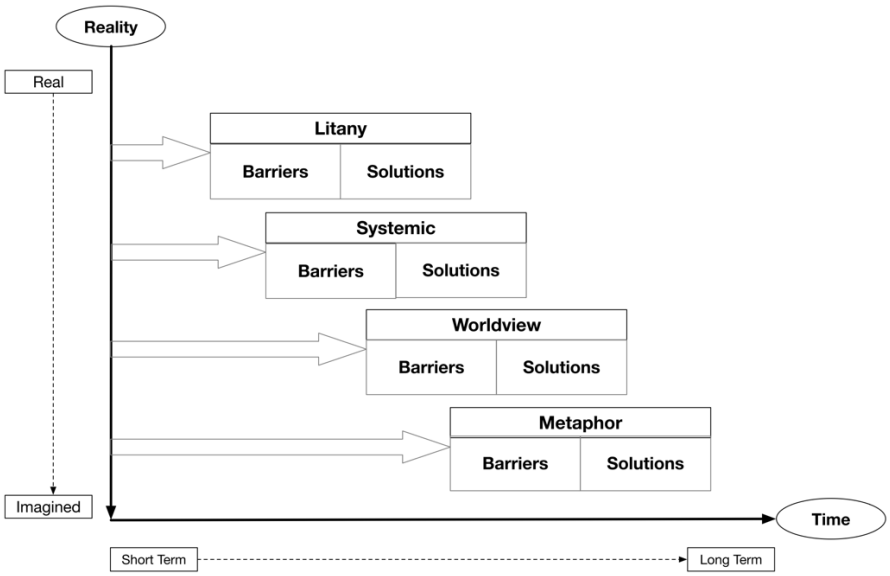

Figure 1*: CLA Layer vs Timeframe (adopted from Inayatullah (2009)*

We extend the empirical reality of a certain condition towards what is imagined or believed from a certain standpoint, which, in this case, is from the policy enablers. Changes become more challenging and long-term as the layers deepen. This is because the culture, society and civilisation through time, imbed the mechanisms that make up such narratives. Nevertheless, we argue that through deeper level narratives, conditions can be understood and improved because of the context of those narratives, that is Sarawak. And hence, giving meaning to future policy development and implementation, as implied by Renesch. Fittingly, CLA is associated with the "consciousness" iceberg (Inayatullah, 2004), with Litany on the surface, Systemic just beneath the surface above the Worldview, and Metaphor on the iceberg's deepest foundation.

Terranova (2004) believes that the strength of CLA lies in its ability to a) broaden and deepen discussion, b) understand about an issue or problem, and c) move away from the obvious and superficial to the deeper levels of beliefs, experiences, and emotions. In her study for human resource planning at Brisbane City Council, Australia, she uncovered and expanded the strategic thinking of senior managers about workforce ageing. She writes she used CLA to ensure that business-as-usual interventions did not result. She also argues that CLA's "non-threatening and non-judgmental" approach eventually leads participants to consider a wider range of policy solutions.

FS is acknowledged and applied in various contexts in Malaysia. On a larger scale, a platform called myForesight is initiated by the Ministry of Science, Technology and Innovation in Malaysia for the government, industry and academia to share their experiences, insights and expertise on strategic issues[9]. By using various FS methods, myForesight highlights topics on the futures of society that are affected by technology, including workforce futures in the 4IR[10].

[9] Malaysian Foresight Institute. (2018). *About Us*. https://www.myforesight.my/about-us/
[10] For articles on workforce and skills related futures, see: Saaid, M.H.M. (2021a). The Value of Technology in Shaping the Future of Work. myForesight, *32*(1), 31-32; Saaid, M.H.M. (2021b). Foresight & Futures Thinking Mind of Work for the Futures. myForesight, *32*(1), 37-39; Ramanathan, S. (2021). Workforce 4.0: The Future of Work. myForesight, *32*(1), 18-21.

Apart from that, the International Islamic University Malaysia (IIUM) has also introduced FS in its framework[11], addressing digital transformation (i.e., digital economy, digital education) as a trigger and a pathway towards improving policies in Malaysia. Other policy-related works by FS pertain to the study of transformative futures in higher education institutions in Malaysia towards 2050[12], a case study of city futures in Penang, Malaysia[13] and strategic direction process by leaders in public institutions in response to government demands (Karim, 2011), who finds FS to contribute in preparing leaders to take up strategic actions in the nearer term.

To put it another way, CLA takes us beyond the conventional framing of issues in a condition. While traditional analysis stays in the Systemic layer and perhaps to the Worldview layer, the Metaphor layer is seldom considered (Inayatullah, 2009). The values embedded in the Metaphor layer can be useful to provide meaning and purpose for understanding and handling the issues at hand. In turn, the longer-term solutions to the condition in inquiry will manifest.

Indeed, Slaughter (1997) asserts that the "forward view" that is definitive of FS is not an abstraction. FS tells us that there are several actual threats to avoid and an equally impressive number of opportunities to be taken up and developed. This pattern of threats and opportunities (or barriers and pathways) is highly relevant to everything that the four groups involved in Sarawak 2030 attempt to do. A well-crafted forward view reduces uncertainty and reveals the grounds of otherwise-unavailable strategic options, even in the short-term timeline (Slaughter, 1997). Therefore, we argue that using CLA can help in conscious policy development for Sarawak 2030, because it unravels issues as much as their solutions, in both short and long-term timeline.

To unpack the issues related to the current Sarawak's public sector skills condition, in-depth interviews were conducted. Based on the reviews of literatures, media reports and observations, we developed a semi-structured instrument to collect insights from seven policy enablers. We sample policy enablers based on criteria, such as top management/leadership position in state-owned or state-linked agencies, high level of involvement in enabling and supporting SDE, high level of knowledge on skills condition in Sarawak's public sector, and are Sarawakians. The instrument comprises nine main open-ended questions, structured in respect to the four elements of CLA, that are Litany, Systemic, Worldview, and Worldview. Each respondent was given a research information sheet and a consent form to ensure ethical conduct and assurance of the data collection.

A second instrument was used to analyse the transcription of the data. From this standardised template, we sought themes and commonalities among the barriers and pathways of the public sector skills condition among respondents. We utilised a computer-aided qualitative data analysis software, Atlas.ti ver. 9, to code and categorise the data and analyse the themes. We present the findings of those themes in the form of matrix tables, as detailed in the next section.

Litany Layer: The highs, lows, and those in between

[11] IIUM. (2020). *IIUM Futures Studies*. https://www.iium.edu.my/page/IIUM-FUTURES-STUDIES. Other notable universities that adopted FS in their frameworks are University Sains Malaysia (USM) and Universiti Teknikal Malaysia Melaka (UTeM).
[12] Ithwin, F., & Inayatullah, S. (2018). *Transformation 2050: the Alternative Futures of Malaysia Universities*. Universiti Sains Islam Malaysia.
[13] Cruz, S., & Villanueva, C. H. (2014). City futures for city leaders Penang Malaysia. *Journal of Futures Studies*, *19*(1), 115-125.

TABLE 1 lists the observational description pertaining to the skills condition in Sarawak. Four themes emerged, involving all four groups: a) public sectors in terms of workloads; b) higher learning institutions in terms of research output; c) private sectors in terms of industrial resources; and d) community in terms of acceptability rate.

Each barrier has its own pathway. Most of the pathways are transformed into initiatives or strategic actions that are currently in place through SDE. The excessive workload in the Sarawak Civil Service (SCS) is addressed in their new transformative framework, which includes specialised trainings for the public sector workforce such as reskilling, upskilling, retooling, and professional certificates.

Table 1: *Litany Layer on the Barriers and Pathways to Skills in Sarawak's Public Sector*

Layer	Barriers	Pathways
Litany	• High workload	⇒ New SCS framework
	• Gap in developing and translating research output	⇒ Commercialisation of research output
	• Lack of resources	⇒ Diagnose and provide resources
	• Low community acceptability	⇒ Inclusive strategies

The public sector addresses the skills gap in translating research output by encouraging higher education institutions to pursue commercialisation opportunities and develop entrepreneurial skills. This is in line with Hanna's (2018) findings that research and development support, as well as taking an entrepreneurial approach to research and testing, is critical to the development of new digital platforms and technologies. Furthermore, the public sector must work with the business sector, industries, and communities to overcome the shortage of resources and community acceptance of SDE. With this, the public sector needs better communication and collaborative abilities, as well as individual learning skills like problem-solving and change management, to diagnose problems faced by industries and to design inclusive strategies.

Systemic Layer: Disconnection, imbalance, and dependency

The social causes and solutions to the Litany issues suggest specific and structured involvement from the public sector as well as education and higher learning institutions, as listed in **TABLE 2**.

Policy enablers in the public sector acknowledged the major Systemic barrier—the disconnection between agencies. Because of the "fragmented, manual ways of doing things" before SDE, the sector is accustomed to functioning in silos. The previous SCORE initiative, as mentioned earlier in this article, is indirectly attributed to this because it has always been "focused on their own areas." As a result, the public sector's skills condition becomes fragmented across agencies, if not completely uncoordinated, making it difficult to ensure that every ministry, department, agency, and office is on board with the Sarawak 2030 vision, which places a strong emphasis on integration in the digital transformation.

The public sector in Sarawak addresses this challenge by introducing Chief Information Officers (CIOs). The CIOs are appointed in every public sector agency as aides to ease Sarawak's digital transformation. Nevertheless, the unclear directions of their appointments are detected within the organisation they are placed. Therefore, policy enablers revealed of a new structured framework for CIOs that is currently underway. This structured framework revisits and revises issues such as appointment processes, employment packages, skill

requirements, career pathways, and terms of reference to improve and reconnect the (digital) skills condition in Sarawak's public sector.

Table 2: *Systemic Layer on the Barriers and Pathways to Skills in Sarawak's Public Sector*

Layer	Barriers	Pathways
Systemic	• Disconnection between agencies	⇒ Coexist in an ecosystem
	• Unclear CIO directions	⇒ Structured appointment of CIO
	• Local supply-demand imbalance	⇒ Synergy between education and workforce
	• Industries prefer nonlocal universities	⇒ Build confidence re: local universities, schools

Another highly addressed Systemic issues to the skills condition in Sarawak pertains to the local workforce's supply and demand. While local (Sarawakian) graduates are in high demand in the public sector, talented local graduates—particularly those trained outside of Malaysia—are more likely to find work in the private sector outside of Sarawak. This raises the question of how the public sector can develop a people strategy that will entice these graduates to return home. Industries in Sarawak, on the other hand, have a high demand for graduates from universities outside of Malaysia, which leads us to another question: to what extent are local graduates from local and foreign universities are fulfilled should there be a placement for them in the public sector, versus the private sector in Sarawak?

The public sector needs to synergize with the education and higher learning institutions group to ensure local talents and graduates have a place in SDE, through policies (i.e., based on diagnosing strategies in the Litany layer mentioned above), and revamping pedagogics in schools (i.e., after school STEM activities, instilling relevancy of local knowledge through high-quality research outputs). This will build industries' confidence towards locally educated graduates. This will also lead to a balanced local talent pool that can be generated and optimised within the *SDE ecosystem*,—a term repetitively mentioned in the next two layers of analysis.

Worldview Layer: "In the SDE ecosystem—there is an opportunity to do more, *together*"

All respondents implied to the quotation in this section's title. In which, overviews the four key themes found in the discourse or perceived cultural realities of the current skills condition, as shown in **TABLE 3**.

First is the unclear understanding of the concept of what skills entail within the *Sarawak version of 4IR*. They link this to the nervousness among the public sector, where great expectations are put to them in keeping up with the universal (and first world) values of 4IR. This is attributed to several benchmarking being made by the State, with countries like United Kingdom, Estonia, and Japan. While the State are aware of the socio-economic and cultural variance (and thus, the skills needed) between those countries with Sarawak, such variance has yet to be fully articulated and understood at the grassroots level. In turn, the public service workforce has various yet ambiguous definitions of their capacity and capability in the current digital transformation agenda.

Table 3: *Worldview Layer on the Barriers and Pathways to Skills in Sarawak's Public Sector*

Layer	Barriers	Pathways
Worldview	• Unclear understanding of concept	⇒ Understanding the purpose
	• Digital divide	⇒ Community driven thinking
	• High government dependency	⇒ Self-sustaining economy, government as facilitators

- People take learning for granted ⇒ Embody what you learn

Along those lines, there's also debate of the digital divide, with residents in Sarawak's rural and remote areas still lacking the resources and skills needed to take part in 4IR. This is handled by prioritising the skills needed to bridge the digital divide and amplifying the community's perspective in terms of their needs and capacity.

In the economic sense, high dependency from multiple stakeholders has become an archaic weight for the State, even more so with SDE. Dependency in the context of SDE involves providing expensive infrastructures to nurture talents and to ensure the skills needed for 2030 are met. Which leads to the recurring mindset of the "people taking learning for granted"—be it private or education sectors, community, and largely public sector—who has always been supported by the State. Those mindsets are tackled by flipping the perspective towards asserting a self-sustaining agenda, whereby the State's role is to facilitate rather than overindulge. The pathway is to nurture the public sector into valuing knowledge and embodying what is learned. Conversely, such pathway shows a cyclical link to understanding the purpose of *why are we here*, and *what can I do about to make it fit to Sarawak?*—in the first Worldview barrier/pathway mentioned in the table.

There is a continuity to such Worldviews, that is deepened in the last layer: through metaphors.

Metaphor Layer: "All for One, One for All"

We asked policy enablers about how they find meaning to the current skills condition through analogies. As **TABLE 4** shows, we found three main projections.

Table 4: *Metaphor Layer on the Barriers and Pathways to Skills in Sarawak's Public Sector*

Layer	Barriers	Pathways
Metaphor	• Fragmented system	⇒ All for one and one for all
	• Never perfect	⇒ Best things do not mean they serve the purpose
	• I don't have energy, there's too much to consume	⇒ Energy is indestructible

Interestingly, the current metaphorical barriers appear to come from a collectively unhinged, lethargic narratives from the policy enablers.

The first metaphor revolves around the need to have "all in the system". For example, one respondent explained how many digital applications are still disintegrated when one tries to get into different online services (i.e., logging in with multiple usernames and passwords in disjointed applications and websites)—despite the irony that these services are catered for the *same user* with the *same identity and purpose*. The respondent likened this to the root cause of the current skills condition, stating that skills should be integrated into a system that is not redundant and does not obstruct or confuse the end user, or to put it in context, the people.

Which brings us to the second metaphor. There is an obsessive strive for perfection and being the best at *everything* when it comes to skills. But as three of the respondents argued, the skills condition in the 4IR era is about effectively providing means to a specific purpose. Rather than merely finding the "perfect" talent, the pathway to this is to find the "*best fit* for the public sector, and the *right people* who have the right skills to offer".

The final metaphor that we found equally prominent is the pessimists' "energy platitude". Since SDE demands a significant shift in roles and skills in the public sector, some say that there is "too much to consume" that they "have no energy left in them" to grasp the new skills needed for SDE. The pathway to this metaphor is bluntly literal because—"*scientifically*, energy is indestructible". Therefore, such claim of having no energy cannot stand as an excuse for the public sector to *not* reskill themselves in order to sustain. In other words, this witty tribute to 4IR's era of scientific vigour shows a reality check, or self-awareness, in the policy enablers' consciousness, towards improving the skills condition for 4IR Sarawak.

Solutions towards improving Sarawak's Skills Condition for 2030

FIGURE 2 overviews the findings that might give insights into the development of policies to improve Sarawak's 2030 skills condition.

At Litany layer, the policy enablers address these four strategies: diagnose, develop, commercialise and include—to solve the current gaps within the skills condition. From there, such strategies are to be planned and implemented through policies (Systemic layer). The skills condition in Sarawak 2030 acknowledges the Systemic domain beyond just the people, but also the processes and technology that extend them.

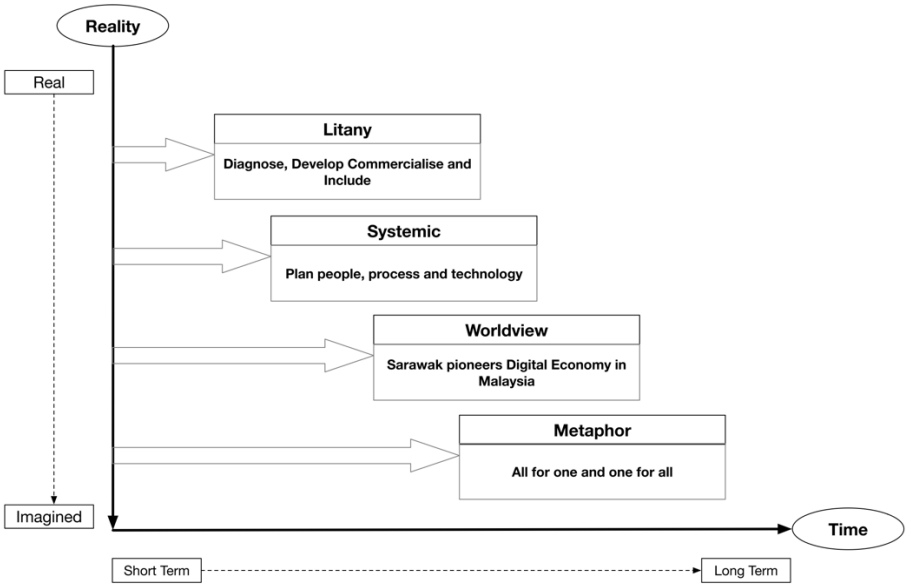

Figure 2: *Solutions towards improving Sarawak's Skills Condition for 2030*

The discrepancy between the universal notion of 4IR and the reality that comprises Sarawak's socio-economic and geographical structures can be resolved by value-matching what is found at these layers. Thus, addressing this nervousness (or, to some extent, *indifference*) in the public sector's worldviews is the long-term solution to improving the skills condition. Interestingly, much work has been done by the public sector in addressing barriers found in both Litany and Systemic layers through SDE blueprint.

To an extent, the Worldview level is shared and understood by the policy enablers. Policy enablers are proud of the government's pioneering role in launching Malaysia's digital economy. Claims that "Sarawak has not arrived" in terms of 4IR's universal qualities ought to be replaced with a pragmatic, context-specific approach

to the Sarawak version of 4IR. This is a reminder of Renesch's (2012) argument that "context trumps content" that was discussed before in this study. Such a mindset is accompanied by the responsibility of building a self-sustaining economy by 2030—one that is not necessarily subsidised, yet actively facilitated by the State and its unique resources.

The deepest layer of the policy enablers' standpoint highlights the meaning of integration *beyond* the hardware and systems, but the people, more so, of the public sector. To achieve Sarawak 2030 means that every ministry, department, and agency are working together consciously, hoping to get a piece of the prize—"all for one and one for all". Along with being a part of a working ecosystem, we argue that this metaphor ought to be articulated and embed in the skills-related policy development, enrich the skills condition in Sarawak for years to come.

Transformed Futures: "We can't be leapfrogging anymore; we should be quantum leaping!"

Across findings, there is a pattern on the push for inclusivity towards better skills condition in Sarawak. The policy enablers envision this as the overarching value that is long accomplished by 2030. With that leads to a transformed futures condition. We summarise the four-layered projections of the condition attributes in **FIGURE 3**.

All policy enablers prominently mentioned phrases like "working together" and "SDE ecosystem" throughout the interviews. They expected that by 2030, the needed talents with additional value will be readily available. They tied this to the current public sector framework, which employs a transferrable workforce structure. The idea of availability implies that public sector employees are equipped with 4IR skills and are ready to use them wherever and whenever they are needed. This calls for a higher level of maturity in the workforce futures and therefore explains the multiple mentions from the policy enablers of an improved educational attainment within the workforce conditions in the pipeline by 2030.

Conversely, the public sector employees keep up with one another across agencies, thus acknowledging their presence and importance in the SDE ecosystem. This also connects to the *adaptability* worldview, which we discuss later in this section.

In a similar vein, policy enablers addressed digital divide that was found in the Systemic layer of the current condition, by closing that gap in 2030. As of 2019, internet access per household is 85.4% but only 64.8% owns a computer, according to the Department of Statistics Malaysia. PCDS 2030 mentions in its Social Inclusivity thrust, that it aims to promote economic and social benefits for all Sarawakians by focusing on the impoverished segments of its population. It plans to provide the community with basic infrastructure and undertaking coordinated programmes to help improve household income (Sarawak Government, 2021). This supports Hanna's (2018) argument for digital transformation, that expanding telecommunication infrastructure and ensuring inclusive and inexpensive internet access are vital.

Additionally, the Department of Statistics Malaysia (2021) reports that Sarawak's compounded annual growth rate of household income has increased for rural areas by 4.4% compared to urban areas by 3.4% from 2016 to 2019. This means that Sarawak is already on the way to reducing the urban and rural developmental gaps (Sarawak Government, 2021), as aspired for Sarawak 2030. While this aligns with SDE's mission of digital

inclusivity, much of it comprises *tangible* resources for Sarawak, such as digital infrastructures, ICT towers, and artificial intelligence robots. What about skills?

Of course, PCDS 2030 also addresses the *adoption* of technology in its Digital and Execution thrust. By establishing a state-wide network coverage of telecommunication infrastructure and services, the *adoption* of digital technology will ideally take place to *generate outcomes* (Sarawak Government, 2021). This invites a further question of: now that even the remotest area of Sarawak is equipped with digital technology, *what is next*? Now that the people in Sarawak provide equal opportunities, how does the public sector address the possibility of *unequal outcomes*? Will the people have the skills to optimise technology in the digital economy, and to what extent does the public sector have the skills to play a role in this?

As Miroshnichenko, Morozova & Meshcheryakova (2021) put it, the "*modern understanding of digital inequality is connected not so much with the issue of Internet access as with the user's ability to apply digital technology for improving his/her life*". In other words, while the digital divide is resolved in 2030, there is another trajectory from this discourse that needs attention—digital *inequality*—to which policy enablers believe that digital literacy is key to bridging the gap.

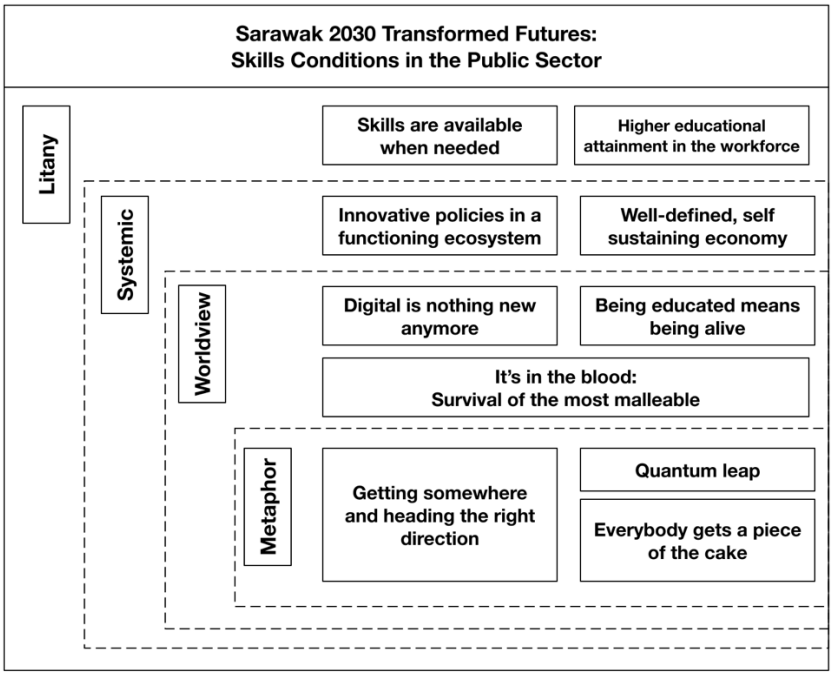

Figure 3: *Transformed Futures to Skills in Sarawak's Public Sector (Policy Enablers' Perspective)*

In this regard, Miroshnichenko et al. (2021) state that, soon, the degree of success of policy development and implementation for overcoming digital inequality will be linked with an *integrated approach*, that allows changes towards a digital transformation in all spheres of society within a context or setting. This brings us to another Systemic issue.

In the transformed futures, Sarawak will have a functioning ecosystem, driven by clear, innovative skills and talent development policies that help self-sustain the State's economy. But the caveat remains on the timeliness of those changes, especially on digital literacy. High schoolers and universities graduates are the future workforce of 2030, and therefore, policy enablers stressed the need to revise the syllabus in schools and

universities, to focus more on STEM education that applies innovative teaching and learning approaches. However, the public education in Sarawak is bounded by a centralised system that is the Federal government of Malaysia, and therefore formalising changes are time constricting to Sarawak.

This calls for, as Hanna (2018) argues, setting new policies for the digital age and aligning digital initiatives with the national development strategy. With this, two trajectories transpire: a) towards creatively *extending* STEM and 4IR skills-related pedagogy in the public sector while waiting the transformation go fully nationwide, and b) towards establishing more private or community-based educational institutions that caters for the demography and Sarawak 2030 vision. Again, this involves all four groups, in which largely requires public sector's skills to consolidate and coordinate.

On the standpoint of policy enablers, the condition in 2030 means using skills to provide more opportunities for the people. In line with digital inclusivity and the need for digital literacy mentioned above, policy enablers signify education as a sign of "being alive" in 2030. Thus, the education attainment for public sector workforce should be improved, as acknowledged in the litany layer. Furthermore, another survival trait in 2030 is adaptability, or malleability, in the public sector, as being the facilitator of the SDE agenda. It is interesting to side note this worldview trajectory – while the current pathway takes pride in the effort to stand out as a pioneering State to implement digital economy in Malaysia, the transformed futures however, underlines the need to generally fit in. Arguably, this is contextual to the skills itself (i.e., adaptability skill, agility skill), instead of the overall condition. For example, one respondent stated that by 2030, the public sector workforce will not be irrelevant should they "think like a machine to coexist with them".

The conversation about the transformative futures for Sarawak 2030 revolves around the *journey*, instead of the prize. Policy enablers mentioned about quantum leaping towards achieving 4IR, in which they specify more on *how* quantum leap works, rather than *what* manifests when they arrive to the other side. In a similar vein, one respondent analogises the future condition to the Zeno's paradox. That "*we're getting somewhere, but not quite there yet. And perhaps we will never be, but we're heading in the right direction*." This shows the policy enablers' ideal projection – futures that value the purpose and the process within a condition. We argue such metaphors fit well in this scope of respondents, given their leading intermediatory role in the public sector.

It is important to note that this article's representation of transformative futures must not be confused with the *plausible futures*. The term transformative futures, in this context, are the preferred futures that are envisioned by the respondents—ideal futures that they hope to transpire in 2030. The plausible futures on the other hand, is more than that. Plausible futures are collectively established as a product of a much more thorough research involving macrohistories[14] and rigorous document triangulations, that will serve as a well-rounded reference for policy making. In the grand scheme of things, nevertheless, the transformed futures *are* fundamental for refining and reviewing the more plausible futures.

Conclusion and Recommendations

[14] Galtung, J., & Inayatullah, S. (1997). *Macrohistory and Macrohistorians: Perspectives on Individual, Social, and Civilizational Change*. Praeger.

In the Litany and Systemic layers, we find the barriers and pathways to largely involve the public sector workforce's skills in planning and strategizing the four groups' cooperation to participate in the SDE ecosystem. In which, we find akin to Hanna's (2018) observations in nurturing a digital transformation ecosystem mentioned earlier in this article. The identified pathways will ideally corroborate the 4IR skills in Sarawak. While the first two layers are addressed and translated through the current SDE blueprint, we claim that the final two layers have yet to be fully articulated. In the Worldview and Metaphor layers, policy enablers put a strong meaning on clear purpose of roles and integration of skills within the public sector towards a self-sustaining economy for the State. Moving forward, policy enablers have projected the Sarawak 2030 skills condition to reach *beyond* readiness and willingness of the public sector to reskill, upskill, retool and, most importantly, *include* themselves with an appreciation for the journey. We found that the trajectory from now is about moving consciousness on the relevant skills for 4IR in Sarawak into action—inevitably normalising and regulating them by 2030.

We also discussed the transformative futures by highlighting several questions, regarding opportunities vs outcomes in digital inequality, the delimitation of the State vs. the centralised authority, and the metaphorical shift from *the survival of the fittest* to *the survival of the most malleable* in enduring the 4IR era. We believe that these findings and discussion can be further enhanced and examined from a higher-level perspective. While we base this article's findings from the standpoint of policy intermediaries between the thinkers (policy makers) and the implementers (public sector workforce), we recommend extending the scope of respondents to the policy makers or higher decision-making posts in the public sector as respondents. Their perspectives will capture how they make sense of such *underlying* skills condition and its relation to skills-related policy development for Sarawak 2030.

Method wise, other FS tools can enrich the findings, for example, *characterising* conditions. Skills condition can be explored using *Futures Landscape*. This tool describes and analyses the attributes of the condition based on the respondents' narratives. These attributes will reveal which category, or landscape, the studied condition leans onto—The Struggle, The Strategy, The Big Picture, or The Vision (Inayatullah, 2008). We argue it can add structure to the appraisal of Sarawak skills condition.

Finally, we recommend on advancing the article's projections for the transformative futures towards establishing the *plausible futures* for Sarawak 2030. There are two methods to achieve this. One is the *Futures Triangle* (Inayatullah, 2008), which can be a powerful tool for mapping the plausible futures conditions for Sarawak 2030. While this article only lays out the pulls of the future (i.e. transformative futures), this tool also further deliberates the pushes of the present and the weight of the past related to the studied condition. The method will holistically display a future that is more grounded, conceivable, and context-related to the Sarawak version of skills condition. Another method extends the CLA by looking at developing scenarios that derive from the layers, through *Scenario Planning*[15]. This method can uncover multiple futures trajectories, such as technological and environmental sustainability and innovations that can form the preferred futures of Sarawak 2030.

[15] For a wholesome insight to this method and other relevant ones, including Backcasting, see: Ki Mua, M. O., Inayatullah, S. & Milojevic, I. (2021). *Visions of Wellbeing for Aotearoa New Zealand 2050-2070.* Washington State Department of Transportation Infrastructure Commission Te Waihanga and the Ministry of Transport Te Manatu Waka. https://www.transport.govt.nz/assets/Uploads/Futures-report-Oct-11th-.pdf

As a developing nation, Malaysia has been supportive of Sarawak's digital transformation, perhaps because of Sarawak's early recognition and action towards the bigger picture – i.e., the contribution of GDP, or the prospect of a fluid, effective people strategies in the changing landscape. As of now, other states in Malaysia, such as Johor and Melaka are leapfrogging towards visioning smart cities and digital economy policies, much akin to Sarawak's framework of 2030.

Nevertheless, such sophisticated visioning of the futures might be regressive should they lack meaningful and innovative policies. Alongside case studies reviews, predictive measures, and other traditional methods of policy making, using FS methods can be a refreshing approach to aid the policy development process for aspiring states, like Sarawak. And on that note, we argue, that it is time we react from the future.

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