Human Capital Readiness in Facing Industry 4.0 – Study Case Shared Services Finance in Energy Company, PT Perminyakan

Mia Ayuning Rarasputri[1], Achmad Fajar Hendarman[2]

[1,2] School of Business and Management, Bandung Institute of Technology, Indonesia

ABSTRACT: PT Perminyakan established a new organization named Shared Service Center (SSC) in 2018 as one of the embodiment of digital transformation of the company. SSC consist of four functions called multitower, they are Finance, IT, Human Capital and Asset Management. Shared Service Finance (SSF) provide services to stakeholders (customers, suppliers, and other function inside PT Perminyakan) in finance operation activities. In the daily job, SSF face many challenges, high volume and repetitive jobs are occurs every day. SSF helped by the management team that provide technologies industry 4.0 based to help and assist them in doing their daily activities. But the utilization of the tools is still low. Based on these problems, in this final project a research was conducted using a combination of quantitative and qualitative methods using questionnaire and equipped with semi-structured interviews to obtain data and information that will be included in the concept of Human Capital Readiness. Human Capital Readiness seen from four aspects: Knowledge, Hard Skill, Soft Skill, and Attitude. Furthermore, interviews were conducted to determine and give deeper information about the questionnaire result and gain insight about how company respond to the condition. SSF also has SIERA, it is an industry 4.0 based tool that develop by SSF itself. It uses Artificial Intelligence based technology. Writer also use the quantitative and qualitative method to find out the Human Capital Readiness of SSF in implementing SIERA. Furthermore, from Human Capital Readiness assessment that provide Human Development Index (HDI), a gap was used to determine some aspects that defined as ready, optimal, not ready. From the questionnaire and interviews that validate the questionnaire result, writer also give some recommendation of implementation plan to the company. The findings in this study are divided into two scopes. The first is about readiness to face the industrial 4.0, and the second is about the readiness in implementing SIERA. First scope give result that Knowledge and Soft Skill are not ready, but Hard Skill and Attitude are optimal. By this result, writer give recommendation to increase digital literation, upskilling and re-skilling, and culture development (digital leadership and digital mindset). Second scope give result that Hard Skill and Attitude are not ready, meanwhile Knowledge is optimal and Soft Skill is ready. Writer give three recommendations: upskilling, solve application issues and update, and aggressive branding for SIERA.

KEYWORDS: Artificial Intelligence, Human Capital Readiness, Human Development Index, industry 4.0, Shared Services Finance

1. INTRODUCTION

PT. Perminyakan is a state-owned enterprise in the energy sector which has a portfolio from upstream to downstream by supplying energy throughout Indonesia. To become world class energy company has been its vision, to call the future challenges in the energy sector. President Director of PT Perminyakan said, "In line with taking several strategic steps. One of them is by establishing a Shared Services Center (SSC) which is part of Perminyakan's digital transformation.". So, with the establishment of SSC in Perminyakan, it is one of an indicator that the company has commit to do digital transformation inside the organization in facing more challenging era, industry 4.0.

(Udovita, 2020) said that digital transformation is arise from the intersection of cloud computing, Big Data, IoT, and AI, and it is vital to industries across the market today. The term *Industry 4.0* was first mentioned at the Hannover Fair in 2011, which refers to the industrial revolution 4.0. Currently, the world is witnessing the fourth industrial revolution. Since the start of the Industry 1.0 revolution in the 17th century until today, the entire world has gone through various stages of rapid industrial evolution with a rapid pace of technological change. PT Perminyakan establish SSC as one of the answer to face industry 4.0 in the future.

2. BUSINESS ISSUE

SSC Directorate in PT Perminyakan already using some Industry 4.0 technologies. But base on the questionnaire in the company, the utilization of the technologies founded and considered as still low (Consultant, Company Internal Data). Meanwhile, the department already has so that, writer take this as the problem in the company.

In facing new technology era, human capital readiness holds important role in the company. Changes brought by industry 4.0 might be new for some companies, because some of technology implementation that are more sophisticated in some department such as human capital, even related to norms (Bloem, et al., 2014). So that, train and educate human capital to be able to adopt new technology might be new challenge for the company.

This research poses key questions are:

1. How ready is the organization in facing Industry 4.0?
2. How ready is organization in implementing early artifical intelligence technology (SIERA)?
3. What are proposed solution in the organization to increase human capital readiness in facing industry 4.0 era?
4. What are proposed solution in the organization to increase human capital readiness in implementing SIERA?

   The research was conducted by creating questionnaire to calculate the Human Development Index and interview of several workers who understand the operational processes and business processes that occur so that it is hoped that the best and most easily applied solutions can be obtained.

3. METHODOLOGY

This research methodology uses both quantitative and qualitative approach. Quantitative method approach using questionnaire that being spread to the SSF employees in PT Perminyakan and using the formula of Human Development Index. Meanwhile, the qualitative method approach conducted using interview method within SSF employees including management team. SSC being chosen because SSC is one of the industry 4.0 initiatives by PT Perminyakan that conduct operational activities to be simpler by utilizing some technology and has new business process design compare to old PT Perminyakan. SSC also increase PT Perminyakan human capital productivities. SSC utilize many technologies such as robotic automation, control the cybersecurity and cloud computing, and has develop a virtual assistant that to be intended as the first AI in the company. The research method based on human capital questionnaire that being developed based on (Hendarman, Primatasya, Sufiadi, & Sonia, 2021) Researcher got 104 total respondents that is being gathered from February until March 2022. The questionnaire designed in online survey. Statistical analysis and interview method will be additional insight and perspective to support the data survey.

4. DATA ANALYSIS

A. Human Development Index - Questionnaire

Based on Hendarman et al (2020a), Human Development Index calculated based on the gap to give depiction of readiness relativity interfactor after calculating the data realiability and validity.

Human Development Index formula can be calculated as follow:

$$\frac{X - \text{minimum value}}{\text{Maximum value} - \text{minimum value}}$$

Where,

X = gap value, expected value minus current condition value

Minimum value = smallest gap value

Maximum value = biggest gap value

Refer to the questionnaire list, writer aims are to find the HDI rate for every aspect: Knowledge, Skill and Attitude. Here it is the Human Development Index (HDI) Range Value (both for assess the readiness to face industry 4.0 and the HDI of the readiness of SIERA implementation in the organization:

Table 1: HDI Range Values

Value Range	Level
0.00-0.20	Optimal
0.21-0.40	Receptive
0.41-0.60	Ready
0.61-0.80	Initial Stage Readiness
0.81-1.00	Not Ready

Reliability Test Result

Table 2: Reliability Result – HDI in facing industry 4.0

Assessment Aspect	*Cronbach Alpha*	Category
Knowledge		
Existing	0.875	> 0.60 (Reliable)
Expected	0.886	> 0.60 (Reliable)
Hard Skill		
Existing	0.908	> 0.60 (Reliable)
Expected	0.942	> 0.60 (Reliable)
Soft Skill		
Existing	0.921	> 0.60 (Reliable)
Expected	0.834	> 0.60 (Reliable)
Attitude		
Existing	0.743	> 0.60 (Reliable)
Expected	0.761	> 0.60 (Reliable)

Table 3: Reliability Result – HDI in implementing SIERA

Assessment Aspect	*Cronbach Alpha*	Category
SIERA Knowledge		
Existing	0.673	> 0.60 (Reliable)
Expected	0.692	> 0.60 (Reliable)
SIERA Hard Skill		
Existing	0.636	> 0.60 (Reliable)
Expected	0.809	> 0.60 (Reliable)
SIERA Soft Skill		
Existing	0.624	> 0.60 (Reliable)
Expected	0.823	> 0.60 (Reliable)
SIERA Attitude		
Existing	0.724	> 0.60 (Reliable)
Expected	0.831	> 0.60 (Reliable)

Factor Analysis (Validity Test) Result

Table 4: Validity Result – HDI in facing industry 4.0

Variable	Existing	r pearson	Expected	r pearson	Note
Knowledge	KE1	0.693	KH1	0.773	> 0.3 (valid)
	KE2	0.698	KH2	0.774	> 0.3 (valid)
	KE3	0.74	KH3	0.724	> 0.3 (valid)
	KE4	0.568	KH4	0.682	> 0.3 (valid)
	KE5	0.617	KH5	0.803	> 0.3 (valid)
	KE6	0.731	KH6	0.676	> 0.3 (valid)
	KE7	0.506	KH7	0.711	> 0.3 (valid)
	KE8	0.488	KH8	0.711	> 0.3 (valid)
	KE9	0.573	KH9	0.567	> 0.3 (valid)
Hard Skill	HSE1	0.735	HSH1	0.845	> 0.3 (valid)
	HSE2	0.667	HSH2	0.765	> 0.3 (valid)
	HSE3	0.741	HSH3	0.796	> 0.3 (valid)
	HSE4	0.726	HSH4	0.765	> 0.3 (valid)
	HSE5	0.635	HSH5	0.845	> 0.3 (valid)
	HSE6	0.765	HSH6	0.845	> 0.3 (valid)
	HSE7	0.715	HSH7	0.845	> 0.3 (valid)
	HSE8	0.69	HSH8	0.838	> 0.3 (valid)
Soft Skill	SSE1	0.752	SSH1	0.589	> 0.3 (valid)
	SSE2	0.754	SSH2	0.653	> 0.3 (valid)
	SSE3	0.736	SSH3	0.472	> 0.3 (valid)
	SSE4	0.607	SSH4	0.698	> 0.3 (valid)
	SSE5	0.788	SSH5	0.472	> 0.3 (valid)
	SSE6	0.736	SSH6	0.894	> 0.3 (valid)
	SSE7	0.756	SSH7	0.894	> 0.3 (valid)
	SSE8	0.814	SSH8	0.709	> 0.3 (valid)
Attitude	AE1	0.405	AH1	0.699	> 0.3 (valid)
	AE2	0.506	AH2	0.772	> 0.3 (valid)
	AE3	0.55	AH3	0.424	> 0.3 (valid)
	AE4	0.645	AH4	0.48	> 0.3 (valid)
	AE5	0.536	AH5	0.621	> 0.3 (valid)

Table 5: Validity Result – HDI in implementing SIERA

Variabel	Exixsting	r pearson	Expected	r pearson	Note
SIERA	SIKE1	0.522	SIKH1	0.394	> 0.3 (valid)
Knowledge	SIKE2	0.518	SIKH2	0.562	> 0.3 (valid)
	SIKE3	0.424	SIKH3	0.628	> 0.3 (valid)
SIERA	SIHSE1	0.504	SIHSH1	0.731	> 0.3 (valid)

International Journal of Current Science Research and Review

ISSN: 2581-8341

Volume 05 Issue 05 May 2022

DOI: 10.47191/ijcsrr/V5-i5-44, Impact Factor: 5.995

IJCSRR @ 2022

www.ijcsrr.org

Hard Skill	SIHSE2	0.4	SIHSH2	0.809	> 0.3 (valid)
	SIHSE3	0.467	SIHSH3	0.561	> 0.3 (valid)
SIERA *Soft Skill*	SISSE1	0.517	SISSH1	0.83	> 0.3 (valid)
	SISSE2	0.601	SISSH2	0.735	> 0.3 (valid)
	SISSE3	0.343	SISSH3	0.814	> 0.3 (valid)
SIERA *Attitude*	SIAE1	0.703	SIAH1	0.715	> 0.3 (valid)
	SIAE2	0.67	SIAH2	0.724	> 0.3 (valid)
	SIAE3	0.311	SIAH3	0.633	> 0.3 (valid)

Questionnaire Result

Table 6: Questionnaire Result

Aspect	No	Item	HDI	Level
Knowledge	1	I understand definition of Industry 4.0	0.779	ISR
	2	I know all / some types of industry 4.0 technology	0.716	ISR
	3	I know and have used the Internet of Things technology	0.798	ISR
	4	I know and have used the Cybersecurity technology	0.538	R
	5	I know and have used the Additive Manufacturing technology	0.815	NR
	6	I know and have used the Augmented Reality technology	0.813	NR
	7	I know and have used the Cloud Computing technology	0.519	R
	8	I know and have used the Autonomous Robot technology	0.596	R
	9	I know and have used the System Integration & Simulations technology	0.543	R
Hard Skill	1	I am capable do data collecting in my computer (example: data MySAP, excel dll)	0.548	R
	2	I am capable to solve problems by analyzing the data and create reports	0.579	R
	3	I am always prioritizing data in my computer and in the field in making decision	0.736	ISR
	4	I use my logic and data that can be easily accessed through my computer in making decision	0.830	NR
	5	I know relationship between my company and other company because provided in the integration data system and ease of access	0.601	R
	6	I can focus in solve problems started from the biggest impacted base on factual data	0.420	R
	7	I can store new knowledges in my computer / devices	0.468	R
	8	I am capable using industry 4.0 technology in my job	0.378	Receptive
Soft Skill	1	I can adapt easily and fast when faced new program / tools at work (ex: VIM, BMC, SIERA, RPA, Onedrive, POWER BI, Ms Teams, authenticator, dll)	0.788	ISR
	2	I can handle stress when learning new tools and technology at work	0.810	NR
	3	I am already prepared myself in facing industry 4.0 era	0.728	ISR
	4	I am pleased and always wanted to learn new technology at work	0.611	ISR
	5	I can adapt with the new culture at work regarding industry 4.0 (example, not using traditional way such ad paper based anymore)	0.679	ISR
	6	I am not afraid that my job will be replaced by systems and or robots	0.829	NR
	7	I can analyze and or solve problems if there's any technical issue in the technology I used for work	0.596	R
	8	I am able to innovate to maximize the existing technology	0.750	ISR

Attitude	1	I accept the use of technologies in my daily work	0.555	R
	2	I believe that communicating or exchanging data using computers, software, or using the internet is an easy thing to do	0.332	Receptive
	3	I always use computers, software, and the internet to communicate and exchange data	0.596	R
	4	I believe that regular maintenance of the technology I use is very important	0.483	R
	5	I do regular checks on the technology I use everyday	0.718	ISR
SIERA Knowledge	1	I know and understand the definition of itu Artificial Intelligence	0.388	Receptive
	2	I know and understand SIERA function	0.474	R
	3	I know where and how to access SIERA	0.609	R
SIERA Hard Skill	1	I can use SIERA services well	0.609	R
	2	I understand the relationship of SIERA serices with other applications	0.651	ISR
	3	I use SIERA regularly	0.353	Receptive
SIERA Soft Skill	1	I adapt quickly when I use SIERA for the first time	0.612	ISR
	2	I want to learn more about SIERA	0.423	R
	3	I am able to accept the new culture when implementing the use of SIERA (example: no longer ask manually via email but using SIERA services)	0.163	O
SIERA Attitude	1	I welcome the use of SIERA in my daily work life	0.644	ISR
	2	I believe that in communicating and exchanging information, SIERA is a medium that is easy to apply	0.433	R
	3	I do routine check on SIERA	0.346	Receptive

Gap and HDI Findings

Table 7: GAP and HDI in Facing Industry 4.0

Aspect	Current condition	Expected	Gap	HDI	Category
Knowledge	4.059	4.940	0.886	0.901	Not ready
Hard Skill	4.341	4.976	0.635	0.007	Optimal
Soft Skill	4.042	4.951	0.909	1.000	Not ready
Attitude	4.285	4.917	0.633	0.000	Optimal

Table 8: GAP and HDI Value in implementing SIERA

Aspect	Current condition	Expected	Gap	HDI	Category
SIERA Knowledge	3.789	4.891	1.112	0.000	Optimal
SIERA Hard Skill	3.221	4.942	1.721	1.000	Not ready
SIERA Soft Skill	3.571	4.955	1.385	0.447	Ready
SIERA Attitude	3.189	4.888	1.699	0.963	Not ready

B. Interview Analysis

Writer also conduct interview process to ensure and support the questionnaire validity. The interview process conducted with expert in the organization. They are all the management team of the SSF personal in the organization. Their point of view as management team will give additional explanation how company overcome this industry 4.0 challenges. The interview conducted with semi structured method. According to (E. Newcomer, P. Hatry, & S. Wholey, 2015), Semi-structured interview conducted conversationally with one respondent at a time and employs a blend of closed – and open – ended questions, often accompanied by follow up why or how questions. The dialogue can meander around the topics on the agenda – rather than adhering slavishy to verbatim questions as in a standardized survey – and may delve into totally unforeseen issues.

Table 9: Interviewee Profile from SSF PT Perminyakan

Interviewee Profile - Shared Services Finance Department (SSF)						
Name initials	Mr. HM	Mr. DO	Mrs. EV	Mr. ST	Mrs. FK	Mrs. LE	Mrs. SR
Title	Vice President	Ast. Vice President	Manager	Ast. Manager	Analyst II	Analyst II	Analyst II
Role	Department Head	Ast. Dept. Head	Manager	Ast. Manager	Sr Supervisor	Sr Supervisor	Sr Supervisor
Responsibilities	- Lead the Department - Design the Department's business process - Design and Lead the administrative tasks - Conduct coaching and motivate the management team - Identify and resolve big issues - Build good relationship within stakeholders and image of the department	- Assist and help The Department Head in dealing with daily tasks	- Lead the managerial tasks with the lower level in the Department - Monitor daily administrative tasks - Solve problems based of the authority given - Lead the team, give them coaching and motivation - Communicate & build relationship with the stakeholders	- Lead the operational team and solve problems based on authority given	- Lead smaller team and solve administrative problems		

Table 10: Summary of Interview Results

INTERVIEW QUESTIONS	SUMMARY OF RESPONSES
How is company commitment in giving knowledge to the employees about industry 4.0 and the implementation in SSC Finance? HDI result not ready	Commitment already shows by company with the programs such as POLS (Perminyakan Online Sharing) and some socializations. But some activities are still using conservative ways in terms of transition to the digital era.
Does company have programs to increase hard skill of the employees about industry 4.0 implementation in SSC Finance? HDI shows optimal result	Today many training, and courses related to industry 4.0 such as RPA 9Robotic Process Automation) training, VIM (Vendor Invoice Management), SMARTGEP etc.
How company facilitate Soft Skill of the employees related to implementation of industry 4.0 technology? HDI shows not ready	Company facilitate the soft skill via online since the pandemic situation.
How is company programs to build attitude of the human capital related to industry 4.0 in daily work? HDI result shows optimal.	The Company's program in building a culture and attitude of industry 4.0 technology in daily work has led to increased automation, for example at SSF to process third party bills using softcopy and can be done anywhere without the need for physical documents, machine-to-machine communication, for example, question and answer with chatbots and web shared services are available FAQs that will answer questions about SS, God willing, in the future Chatbots will use AI technology, as well as sustainable technology development.
Does company commit to implement industry 4.0 and how do employees' commitment as the technology users?	Company already commit to implement the industry 4.0 in the daily activities, it is shown from the KPI of the management that already included industry 4.0 assessment.

About SIERA knowledge, HDI shows optimal, is it already as the same in the reality?	Yes, because SIERA knowledge already being socialized through many media in the company, such as broadcasts, sharing knowledge, and socializations.
HDI – Hard Skill aspect shows that employee are not ready regarding SIERA. Why it can be?	Because SIERA is a brand-new technology product in the company. Besides, many channels are provided before the launching of SIERA. Needs to build customer engagement and rebranding SIERA to improve SIERA positions and image to the stakeholders.
HDI Soft Skill aspect shows that SSC Finance employees are ready in implementing SIERA, is it already suitable with real condition?	Yes. If we don't adjust, we will be left behind than other companies.
What is your opinion regarding HDI – Attitude aspect that shows not ready? Do you think the organization support for development of Knowledge Management?	Many channels are still provided to help stakeholders. And this situation can be solve with more socializations and branding the SIERA itself to get intentions of the stakeholders.

C. Human Development Index Solutions

Based on the measurement, questionnaire and the interview result, hereby writer provide some analysis, resulting in improvement designs that can be proposal to the company to increase HDI score. The improvement design can be seen in the table below:

Table 11: Improvement Design Based on Gap and HDI Value of Human Capital Readiness in Facing Industry 4.0

Aspect	Current condition	Expected	Gap	HDI	Category	Improvement Design
Knowledge	4.054	4.94	0.886	0.9161	Not ready	- Increasing digital literation by engage employees into some broadcasts knowledge series related to industry 4.0 knowledge's. - Giving an extra point to the employees that has a high willing to learn new technologies by giving them more score in the performance evaluations. - Conduct webinar inside company and invite people that mastery in technology industry 4.0
Hard Skill	4.341	4.976	0.635	0	Optimal	- Do the re-skilling regarding the industry 4.0 technologies that already used in the daily works and conduct upskilling for new technologies (besides the familiar ones). - Conduct talent pool inside SSF function and involve them in some new technologies development.
Soft Skill	4.042	4.951	0.909	1	Not ready	- Increasing desire to innovate, especially related to industry 4.0 tools, based on the daily experiences and problems - Conduct more sharing knowledge regarding how important industry 4.0 in our future
Attitude	4.285	4.931	0.646	0.0401	Optimal	- Give some broadcast how to check out digital devices daily to help employee checking their own devices in good way.

Table 12: Improvement Design Based on GAP and HDI Value of Human Capital Readiness in implementing SIERA

Aspect	Current condition	Expected	Gap	HDI	Category	Improvement Design
Knowledge	3.788	4.907	1.119	0	Optimal	Knowledge aspect for implementing SIERA already said as optimal. But the company may also continue the literation of SIERA to increase engagement to the tool. This can be done by periodically spread broadcast via email, or Microsoft Teams, regarding SIERA functions, SIERA update, and benefit in using SIERA.
Hard Skill	3.221	4.942	1.721	1	Not ready	Hard Skill is an important point in the digital implementation. Company should conduct upskilling and training to the SIERA users about using SIERA. The SIERA developer may also clean some bug that maybe still exist on SIERA. Training for trainers should also be conducted to the employees, since they will be SSF ambassadors to use SIERA and spread the SIERA implementation to the SSF stakeholders.
Soft Skill	3.571	4.955	1.384	0.4402	Ready	Keep doing the sharing knowledge, via Perminyakan Online Learning & Sharing, and also can be via KOMET website (knowledge management system that already owned by PT Perminyakan).
Attitude	3.189	4.888	1.699	0.9635	Not ready	Increasing engagement SIERA usage to the employees. This can be done with some improvement, conduct quiz to the employee and give some prises to the employee that can answer SIERA challenges (via Quiz), reviving SIERA usage by reminder by Microsoft teams and pop up notification in the employee's desktop.

D. Digital Business Agility Solutions

Writer also discribes following digital business agility proposal in order to increase the Human Development Index related to the Human Capital Readiness in facing industry 4.0, for Shared Services Finance function. Hereby the analysis using the digital business agility method:

Table 13: Digital Business Agility Solutions

	Digital Business Agility Solutions	Focus Area	Current Situation	Opportunities for Enablement	Digital Enablers
Hyperawareness	Behavioral Awareness	Employees	Employees already have sufficient level of awareness in facing industry 4.0 especially in hard skill aspect, since the technology are being used daily such as MySAP, P-Office, RPA, etc. But still only for certain technologies. Employees use the technologies daily since it is	Company may increase awareness for other technology (industry 4.0) to the employees that employees aren't familiar enough such as big data analytics and artificial intelligence.	E-training platform, Knowledge Sharing, other technology training, and challenges.

International Journal of Current Science Research and Review

ISSN: 2581-8341

Volume 05 Issue 05 May 2022

DOI: 10.47191/ijcsrr/V5-i5-44, Impact Factor: 5.995

IJCSRR @ 2022

www.ijcsrr.org

			being requirements by the company, but they don't have enough time to increase their skill in other technology.		
	Situational awareness	Business environment	Internal operations already used such a technology, called it MySAP, p-office, digital signature, RPA, etc. Company also already has SIERA in support business environment, but the usage level and engagement are still low.	Increasing user engagement of artificial intelligence-based technology such as SIERA, because it will reach not only shared services finance employees, but also employees from other function (whom are SSF customer as well) and can be developing to reach external customer for the future business environment	Knowledge Sharing and Socialization, technology development.
Informed Decision Making	Inclusive decision making	Inclusive environment	There is still silo mentality can be seen in the SSF body. Sometimes employees in the SSF are still not in touch each other in solving some problems addressed by customers.	Develop integrated decision-making platform which is broader than FAQ (Frequently Asked Questions). This platform can be used by employees, and also customer and can be integrated with SIERA, so that it will give not only employees knowledges, but also customers outside SSF.	Integrated Informed Decision-Making Platform
	Augmented Decision Making	Automated decision maker tools	SIERA is one of the tools, but the basis is still only FAQ.	Enriched SIERA knowledges and train the machine (since SIERA also consider as machine learning) so that the communications via SIERA can be solutions to many disputes and can lead customers also employees to decision made.	SIERA development phase 2
Fast Exceecutions	Dynamic resources	Agile Talent	Some of SSF employees come from millennials generations. But since the rapid, high volume and repetitive job that exist in the organizations, the talent pools are needed to be develop.	involved talent management function to give challenge and targeting some talent pool inside SSF, to develop and sharing knowledge regarding industry 4.0 to the employees, also involved them in some training and in some technology development.	Talent Management & IT Directorate

Dynamic processes	Agile and rapid enablement	There is change management function in the Shared Service Center, but maybe can be occupy with the strategic plan regarding digital transformation plan and make exact target.	Role of Research and Development also needed to form digital transformation strategy plan.	Research and development team, Digital Transformation Champion

5. CONCLUSION

From the result of the questionnaire, it is known that there are two aspects of Human Development Index that capture Human Capital Readiness of SSF in facing industry 4.0 era that show not optimum enough, they are Knowledge and Soft Skill. This result also being discussed in the interview sections with some employees and management team in SSF body. Interview was held in form semi-structured interview. The result may show not ready, perhaps affected by many factors. For the knowledge aspects, it is being discussed that there are some factors that affects the situations:

- The tools being utilize in the SSF are not so many in varieties. Current tools being used are related to MySAP, mySSC, RPA, SIERA, etc.
- Employees knowledges are limited to the tools that they use everyday. We know that SSF job description are very high volume and repetitive, writer can conclude that they don't have spare time to gain own knowledge (outside the daily job).

    Other aspects that shows not ready result is Soft Skill aspects. Soft Skill will bring relations to individual adaptive ability to new technologies, and this thing become company strength to endure and sustain from disruption threat as consequences of industry 4.0 digital era (Hendarman, Primatasya, Sufiadi, & Sonia, 2021).

    Other questionnaire was conducted and asked about Human Development Index in implementing SIERA – an Artificial Intelligence based technology owned by Shared Services Finance. The result was shows there are two aspects of HDI that got score as "not ready", which are Hard Skill and Attitude aspects. There are some causes that writes gets from the interview section:

- The usage level of SIERA still low. This can be seen from internal data that SIERA engagement are still low. Customers, Suppliers, even employees were still in their "comfort zone", being served with conventional method: phone, chat, and ticketing from MySSC websites. As the interview result, the SIERA was being created also to educate the users, so that they can do by themselves by asking to SIERA. But it is shown that they are still prefer with conventional method, since the channel are still being open. But the traffic was high enough. This is not help reducing with the customer service load, and the stakehodlers will still need to have queue, even just for asking simple question.
- SIERA also a new player in the company. Not every employees are using this applications. Unfortunately, Shared Service Finance's employee as well. Since the are rarely using the app, the engagement wasn't high. Socialization and re-upskilling can be done to increase the Hard Skill of HDI aspects for SIERA implementation.

REFERENCES

1. AI in oil and gas market - growth, trends, and forecast (2020-2025). (n.d.). From https://www.reportlinker.com
2. Bonekamp, L., & Sure, M. (2015). Consequences of Industry 4.0 on human labour and work organisation. Journal of Business and Media Psychology, 33-40. https://www.researchgate.net/publication/332414147_Industry_40_Implications_on_Human_Capital_A_Review
3. Bloem, J. v. (2014). The Fourth Industrial Revolution: Things to Tighten the Link Between IT and OT. Groningen: Sogeti VINT. https://www.sogeti.com/globalassets/global/special/sogeti-things3en.pdf
4. C. Hong, C. B. (2020). Application of fbg technology in additive manufacturing: Monitoring real-time internal temperature of products. IEEE Sensors Journal. https://www.researchgate.net/publication/351705051_Process_monitoring_for_material_extrusion_additive_manufacturing_a_state-of-the-art_review

5. Cahyarini, F. D. (2021). Digital Leadership Implementation In Developing Digital Competency In Public Services. Journal of Communications and Media Vol 25 No. 1, 47-60. https://jurnal.kominfo.go.id/index.php/jskm/article/view/3780

6. Chen , C., & Huang, J. (2009). Strategic human resource practices and innovation performance - The mediating role of knowledge management capacity. Journal of Business Research, 104-114. https://www.sciencedirect.com/science/article/abs/pii/S0148296308000192

7. Creswell, J. W. (2003). Research design: Qualitative, quantitative, and mixed methods approaches (2nd ed.). Thousand Oaks: CA: Sage. Newcomer, K., P. Hatry, H., & S. Wholey, J. (2015). Handbook of Practical Program. CRMS.

8. Frazier, W. E. (2014). Metal additive manufacturing: a review. Journal of Materials Engineering and performance vol. 23, no 6, 2014. https://www.semanticscholar.org/paper/Metal-Additive-Manufacturing%3A-A-Review-Frazier/019615181a80b6dca5d79a8e72e5eec21eb5cfde

9. Harjanto, A. L. (2021, December 14). From Website Institut Teknologi Bandung: www.itb.ac.id

10. Hems, R. K. (2013). Cloud computing in the upstream oil & gas industry: A proposed way forward. Energy Policy, vol 56, 732 - 737. https://econpapers.repec.org/article/eeeenepol/v_3a56_3ay_3a2013_3ai_3ac_3ap_3a732-737.htm

11. Hendarman, A. F. (2018). Soft skills, hard skills, and individual innovativeness. Eurasian Business Review.

12. Hendarman, A. F. (2020a). Human CapitaL Mapping For Industry 4.0: Gap and Index. International Journal of Advanced Science and Technology, Vol 29 No. 02, 112-119.

13. Hendarman, A. F., Primatasya, A. A., Sufiadi, A. N., & Sonia, V. (2021). Human Capital Readiness 4.0 in Manufacturing, Banking, and Telecommunications Industry. Technology Management Journal, SBM ITB, 175.

14. Indonesia, I. M. (2020). Making Indonesia 4.0. Jakarta: Industrial Ministry of Indonesia.

15. Kaplan, R. S. (2004). Strategy Map : Converting Intangible Asset Into Tangible Asset. USA: Harvard Business School Press.

16. Kaplan, R. S., & Norton, D. P. (2002). Strategy maps. Converting Intangible Assets Into Tangible Outcomes. HarvardBusiness Review.

17. Kechagias, K. (2011). Teaching and assessing soft skills. Thessaloniki (Neapolis): 1st Second Chance School of Thessaloniki, as part of the Measuring and Assessing.

18. Klein, M. (2020). Leadership Characteristics in The Era of Digital Transformation. Business & Management Studies: An International Journal 8(1), 883-902. https://doi.org/10.15295/bmij.v8i1.1441

19. M. Shafiee, I. A. (2019). Decision support methods and applications in the upstream oil and gas sector. Journal of Petroleum Science and Engineering, vol 173, 1173–1186. https://researchonline.gcu.ac.uk/en/publications/decision-support-methods-and-applications-in-the-upstream-oil-and

20. Maskuriy, R., Selamat, A., Maresova, P., Krejcar, O., & Olalekan, D. (2019). Industry 4.0 for the Construction Industry: Review of Management Perspective. Economies, 7, 68. https://www.mdpi.com/2227-7099/7/3/68

21. Mulyadi. (2001). Alat Manajemen Kontemporer untuk pelipat ganda kinerja keuangan perusahaan, BSC. Jakarta: Salemba Empat.

22. Mulyadi. (2007). Sistem Perencanaan dan Pengendalian Manajemen, Sistem Pelipat Ganda kinerja Keuangan. Jakarta: Salemba Empat.

23. MySSC Website. (n.d.). From MySSC Website.

24. O. Elijah, I. O. (2017). Enabling smart agriculture in nigeria: Application of IoT and. IEEE 3rd International Conference on Electro Technology for National Development (NIGERCON) (pp. 762-766). IEEE.

25. Official Perminyakan Website. (2022). From Official Perminyakan Website.

26. Olakunle Elijah, P. A. (2021). A Survey on Industry 4.0 for the Oil and Gas Industry: Upstream Sector. IEEE Access. https://www.researchgate.net/publication/355420255_A_Survey_on_Industry_40_for_the_Oil_and_Gas_Industry_Upstream_Sector

27. Pereira, A., & Romero, F. (2017). A review of the meanings and the implications of the Industry 4.0 concept. Procedia Manufacturing, 1206-1214. https://www.sciencedirect.com/science/article/pii/S2351978917306649

28. Pratama, D. (2021, February 11). Rencana Strategis Indonesia Oil and Gas (IOG) 4.0. From www.skkmigas.go.id: https://www.skkmigas.go.id/infografis/rencana-strategis-indonesia-oil-and-gas-4-0

29. (2021). PT Perminyakan Annual Report. Jakarta: PT Perminyakan.
30. Thomas. H., S. R. (2013). Human Capital and Global Business Strategy. Research Collection Lee Kong Chian School Of Business.
31. Udovita, P. (2020). Conceptual Review on Dimensions of Digital Transformation in Modern Era. International Journal of Scientific and Research Publications. http://www.ijsrp.org/research-paper-0220/ijsrp-p9873.pdf
32. Union, I. G. (2017). The Challenge of Industry 4.0 and The Demand for New Answers. Internal Working Paper, 2nd Draft, 38.
33. Vasja Roblek, M. M. (2016). A Complex View of Industry 4.0. SAGE Journals. https://journals.sagepub.com/doi/full/10.1177/2158244016653987
34. Venes, D. (. (2001). Taber's cyclopedic medical dictionary (19th ed.). Philadelphia: F. A.
35. Wade, M. M. (2017). Orchestrating Digital Business Transformation: Working in Concert to Achieve Digital Excellence. Switzerland: Global Center for Digital Business Transformation.
36. www.bumn.go.id. (2021). From BUMN Ministry Website: www.bumn.go.id