

How to Develop a High-Quality Job for ChatGPT Era in Developing Country?

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Abstract: This paper focuses on job creation of developing countries that have the limited budget and infra. To do that, this paper suggests that those who are working in responsible position have to significantly recognize the megatrend of current technology and make a policy and build roadmap to use the limited fund and save time. This paper also recommend that they should have development strategy to present well their characteristics of the existing traditional culture and heritage or their typical landscape to implement within the limited budget and the short-time.

Now, technology of the biggest impact on everywhere is AI and its related technologies, if we make narrow, it will be a ChatGPT. AI and ChatGPT is giving an influence on many areas and job pattern. However, policymaker or government person may not catch its important because their work is so much wide and complex. However, the impact of AI will continue to grow, it will be essential in every place and every works. For that, developing countries must prepare to adapt for their job market and their paradigm and culture.

Lots of jobs will be lost due to the automation by AI and ChatGpt (AI robot). So, they must develop strategies to support workers who are at risk of displacement and to ensure through training and education. This paper does not emphasize on policy and scientific function but describes on how much important to educate AI, earlier and why developing country has to do on exactly on-time, now to build knowledge-based job development. To develop knowledge-based job by their traditional culture and heritage, as an example, this paper candidate the specified education, tourism-convergence. As an example of ChatGPT, this paper introduces Nepal case and attaches appendix-1 (Fashion and beauty design by ChatGPT) and appendix-2 (Optima control of Coffee roasting technology by ChatGPT) as an example. These examples are also not absolutely all true but shows on how we can use ChatGPT to get an idea and how we can use it as an example. Through this example, some beginners can have curious and will understand AI or LLM or related technology to application.

Keywords: AI, ChatGPT, Education, Cosmetic, Education.

I. INTRODUCTION

Currently, AI covers all areas even education and beverage of coffee [39] as well as such as manufacturing, beauty, smart farm [38], design, medical, and so on. As current developing speed of AI is giving an impact on many jobs, they needs prepare and education [40]. The impact of AI on job gives an impact on workforce, employment, and job replacement by AI [34-36]. First One is replaced by AI. Second one is created by AI. Third is change of workspace by AI. Any case, they have to prepare. The jobs of replacement are the traditional low-cost repeat work and industries can be significant job displacement. There are many areas for replacement such as voice actress (or actor), investment analyzer (trader), secretary of office and reception of hotel, news getting and writer, data analysis, S/W engineer (coding), lawyer, graphic and fashion designer, beauty adviser, drivers, guiders, tele marketing, promotion, and so on.

Currently, AI support teacher's analysis about students' personal characteristic and motivation through chatbots or other AI tools. AI also can help design idea and creativity of students as well as experts.

Anyway, regardless developing country people agree or not, AI and its related technology is changing economic driving forces and job pattern [26-37].

Especially, many are interested in the ChatGPT on how to use it, how to have an application it, where to use it, after released Chat GPT in March 2023 (test version, Dec. 2022). Some reports (Brad D. Lund, 2023) mention the value of ChatGPT that its impact is over the impact of the steam engine of the 1700s of 2nd industrial revolution.

Some beginners, educator (teacher or negative professor) and NGO worry about its impact on all sorts of jobs. However, currently, almost experts do not deny its creativity as well as AI and ChatGPT have productivity and reasoning such as writing, drawing, analysis, music, and so on. It means AI jobs and productivity will be affected.

Many technologies, such as fuzzy (Zadeh, 1965), PSO (James, 2011), and Immune (Jerome, 2000) have been leading AI related technologies, and they have been impacting economic development and jobs whenever we had an experience by revolutions such as agriculture, industrial revolution, and information revolution so far. Now, we have the new AI and ChatGPT revolution. That is, all the amazing technologies of AI (H.B. Jeon, 2020, Chung-ang Univ. 2022) and the combination of D.N.A (Data + Network + Artificial Intelligence) (HODS, 2022) have been improving economic growth and changing jobs patterns over the last decade.

The trigger of impact was absolutely AlphaGo Zero. The AlphaGo event of Google in 2016 enable many countries and experts to recognize this AI function and possibilities for economic growth and job replacement. Among them current ChatGPT has the top ranking of interesting topics and many companies are releasing other products or similar (S/W, business, job, analysis, etc.) based on ChatGPT.

Over the last decades, of course, their wages, productivity growth, and business capabilities have been changing because of ICT and updated servicing philosophy (University of Washington, 2006).

Herein, we must seriously have an idea what impact and how much on the economy and jobs in the future by ChatGPT and AI (or AI related technologies).

After opening ChatGPT from and Dec. 2022 (Chat3.5) and Mach 2023 (Chat4.0), several issues and worries about education, and social situations are increasing. Here, we must have an idea on how scientists and engineers will create the positive application of ChatGPT? using this technology for their areas. Some advanced countries and rich persons can have much chance to advance and property but developing country and poor person will not have a chance to survive for the future. That is, AI inequality issues and problems will increase. Therefore, they are not interested in current technologies because of their current working.

Basically, ChatGPT has an ability with human-like writing and additionally Google released Bard trained DALL-E2 model, which can generate images on demand by huge amounts of data. MS also OpenAI developed another model LaMDA (it has two stages for trains like pre-training and fine-tuning with 1.56 trillion word, 137 billion parameters) for their completion against Google model (<https://www.searchenginejournal.com/how-google-lamda-works/442064/#close>).

MS announced Bing AI powered OpenAI GPT-4 and they can use it on real time service. Also, many ventures and companies are trying to build new business by using these Chatbot technologies through conversation communication. That is, economic growth paradigms are changing because of this powerful ChatGPT of OpenAI and related Chatbot. The ChatGPT (Dinesh Katta, 2023) is a big power engine for economic growth and job changing.

The first aim of his paper aims to provide how ChatGPT and related technology is impacting on job through analyzing and reviewing reports and papers. The second purpose is to design how we should educate for AI including ChatGPT. Especially, this paper focuses on how we have to introduce into your education system for the young generation's job. It is very important to understand and decide on how and what we have to teach and learn because of current confusion paradigm of AI.

In case of workspace, the workforce is rapidly transforming by AI. Even they do not have a basic and powerful technology, application of AI should be developed continuously for target businesses, adaptation, competitiveness, and efficient, and so on regardless their job patterns. We also have to explore how AI is affecting the workforce, how it can help workers and businesses become more effective, and the potential benefits and drawbacks of implementing AI.

The automation by robot with AI (AI Robot) is transforming the workplace and impacting job roles across various industries as well as high-tech manufacturing. Thanks to advanced technologies, many manual and repetitive tasks already have been changed and they are leading economic pattern by efficiency and productivity. For example, manufacturing workers have to acquire new skills to operate and maintain machines and robots that are taking over manual tasks. Additionally, AI application of high-tech manufacturing processes is creating new job roles like data analysts, AI programmers, and machine learning specialists. The workers of the future should absolutely be required a mix of technical skills, creativity, and adaptability to leverage the power of automation and AI effectively.

As AI continues to transform the job and employment patterns, individuals need to study or educate to obtain competitiveness in their works through contents such as data analytics, machine learning, and programming. Another

way to adapt is to learn how to work with AI tools and technologies and collaborating with AI systems to achieve better results.

According to the report of the WEF (World Economic Forum) published in 2025, AI will have displaced 75 million jobs globally, but will have created 133 million new jobs [26]. This means that there will job be displaced significantly in everywhere.

This paper aims how we can recover short jobs and develop new jobs in case of developing countries with no infra within the limited budget and time. Right not, it will not be easy and sometimes, or somethings will be a difficult. However, it is better than not think. For that, this paper analyzes situation by limited report and paper, and suggests the possible ways of job development without heavy investment and facilities.

II. EXAMPLE (NEPAL) AS DEVELOPING COUNTRY

A. Economic Status of Nepal

Developing countries have trying, with many strategies, to develop their countries' economic situation. For example, in case of Nepal, they have an estimated GDP of \$33.7 billion and per capita annual income of \$1,155.10 in fiscal year (FY) 2019/20 (Nepal's fiscal year runs from July 16 to July 15) [1]. Nepal's population (estimated) is 29.6million (male to female ratio of 0.92 to 1) [3], and a median male age of 24.56 years old and a median female age of 27.32 years old. That is, this country has young generations. For example, a young nation of the median age in Nepal is 24.6 and more than half of the population is under the age of 25 [3, 4, 51]. So, it is a very positive for economic development and national dynamic characteristics. The suggestion contents described in section IV of this paper is based on this dynamic and positive situation.

	Country/Territory	IMF ^{[4][5]}		World Bank ^[6]		United Nations ^[7]	
		Estimate	Year	Estimate	Year	Estimate	Year
160	 Benin	1,587	2025	1,435	2023	1,394	2023
161	 Timor-Leste	1,533	2025	1,648	2023	1,503	2023
162	 Nepal	1,486	2025	1,377	2023	1,363	2023
163	 Zambia	1,466	2025	1,369	2023	1,331	2023
164	 Tajikistan	1,367	2025	1,189	2023	1,161	2023

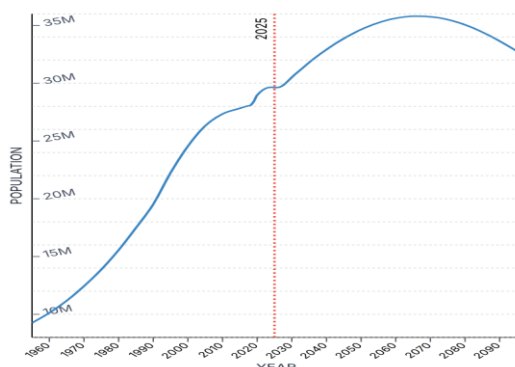


Fig. 1. Ex. Nepal population trend [3, 4].

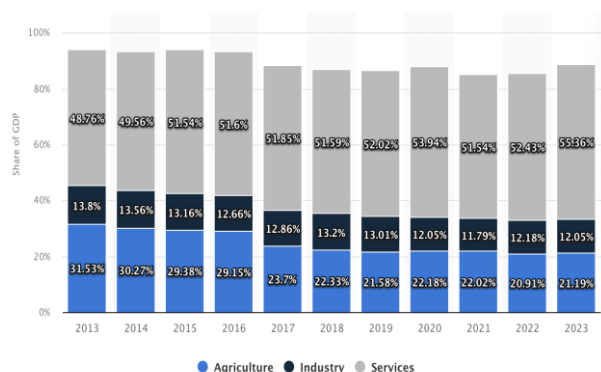


Fig. 2. Ex. Nepal's GDP leading sector.

For development as population of these sizes, nation has been trying to develop economic driving forces by several areas. Structurally, developing countries are highly dependent on agriculture or their labor. In case of Nepal, it's economy is still highly dependent on agriculture, but the services sector is the largest contributor to national GDP [5-8].

B. Economic Leading Factor Status

Almost developing countries do not have a special economic leading sector. Mainly they are rely on agriculture. In case of Nepal, agriculture accounts for 21-27.5 percent of GDP and 65.7 percent of employment (Depends on descriptions, it is a slightly different. However, it is over 20% and big portion). The industrial sector—whose largest sub-sectors consist of manufacturing and construction—contributes 15.1 percent of GDP. The services sector—whose largest sub-sectors include real estate, trade, transport, communications, and education—contributes 57.4 percent of GDP [5]. (Agriculture: 21.2% (2023 est.), industry: 12.1% (2023 est.), services: 55.4% (2023 est.) [5-8].

C. Export Status

Usually, developing countries do not have many industrial products. Therefore, they export simple product. Nepal's top 10 exporter products are shown in Ref. [10-13]: 1. Readymade Garments, 2. Woolen Carpets, 3. Pashmina Products, 4. Leather and Leather Products, 5. Pulses, 6. Handicrafts, 7. Spices, 8. Floricultural Products, 9. Medicinal Herbs and Essential Oils, 10. Tea and Coffee, 11. Silver Jewelleries, 12. Honey, 13. Nepalese Paper Products [44-46].

D. Import Status

Nepal's Top 10 import is as follows [12]: 1. Mineral fuels including oil: US\$2.3 billion (23% of total imports), 2. Iron, steel: \$933.4 million (9.2%), 3. Electrical machinery, equipment: \$745.5 million (7.4%), 4. Machinery including computers: \$676.7 million (6.7%), 5. Vehicles: \$486 million (4.8%), 6. Cereals: \$366.7 million (3.6%), 7. Plastics, plastic articles: \$315.4 million (3.1%), 8. Pharmaceuticals: \$312.2 million (3.1%), 9. Vegetables: \$196 million (1.9%), 10. Optical, technical, medical apparatus: \$169.9 million (1.7%) [44-46].

E. Current Job Patterns in Nepal

Fig. 3 shows the current demand job pattern in Nepal [14]. From this figure, we can see that young generations want to get the new technologies like S/W and data. About these, this paper will comment and discuss. Healthcare and related human care will be increased in the future because humans age will be longer. Nurse and other care area will need more care technology including the care robotics.

The care robot will increase including S/W and AI. However, many report warn medical Dr. will be risk because AI medical Dr. will do well more. Amazon [16] releases all reasoning tool instead of human. As an example, the WATSON of IBM is impacting on the medical market in S. Korea [17]. The Gachon medical University introduced IBM WATSON (AI doctor) to operate in 2016 and operating to decide all patients. All patients believe AI doctor than Human's medical Dr.

Soft and digital skill will absolutely increase in the future because all industry will go to this trend.

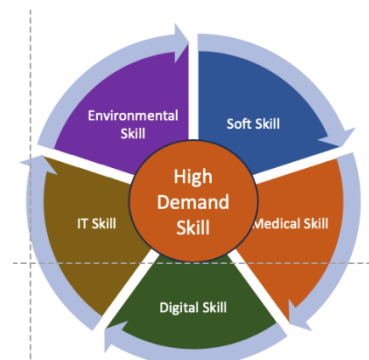


Fig. 3. High demand skill in Nepal.

Agricultural technology is also introducing AI and robot technology because of labor cost. In Nepal will go the modernization. Because of these, all education will be changed for new tech education. These good jobs will lead job market. Especially, vocational training is driving demand for educators and trainers. Tourism is quite important sector in Nepal and Nepal has wonderful sources such as Himalaya Mt, its natural sources, and environment. As far as there is Himalaya Mt, tourism will give a good opportunity for jobs. However, it will be innovated to give driving forces for economy. Smart farm and care robot is so popular topic in the word and the advanced countries are studying deeply to replace labor. In case of S. Korea, there are much investing to develop smart farm and care robot. Its basic technology is S/W and AI. If Nepalese young generations recognize the world market situation, they can develop this technology because a young nation of the median age in Nepal is 24.6 and more than half of the population is under the age of 25 [3, 4, 51] as far as specified education can be performed, well.

F. Industry and Manufacturing Status

Figure 4 presents the pattern of manufacturing to the GDP impact of Nepal.

The World Bank defines that manufacturing refers to industries belonging to ISIC (International Standard Industrial Classification of All Economic Activities of UN) divisions. World Bank mentions value added is the net output of a sector after Manufacturing, value added (% of GDP) in Nepal was reported at 4.5716 % in 2023, according to the World Bank collection of development indicators, compiled from officially recognized sources.

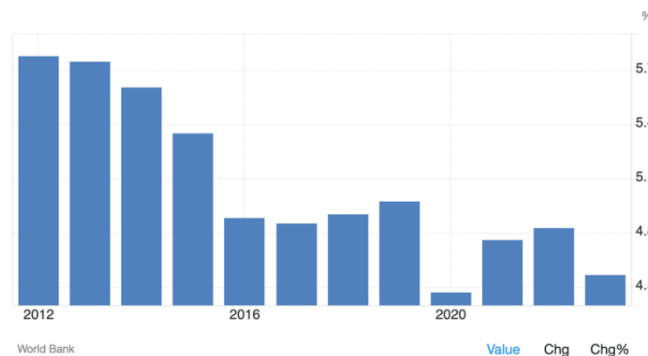


Fig. 4. Manufacturing factor in Nepal.

However, Ref. [41] mention Gross Domestic Product (GDP) contribution of manufacturing in Nepal decreased to NPR 128,580.44 million in 2022 from NPR 131,257.46 million in 2021. The average contribution to GDP by manufacturing has been NPR 108,462.35 million between 2010 and 2022. The industrial sector's contribution to GDP is around 13.5%. Among the industrial sectors, manufacturing (section C of NSIC) covers around 5.3% of the GDP (National Statistics Office, 2022).

The government of Nepal ministry of finance announces that manufacturing sector contribute to the GDP from 5.16% to 4.87% (2023-2024) [42].

According to the Governmental of Nepal Investment Board [43], contribution of industrial sector to GDP (2022/23) is 13.5%, contribution of manufacturing to GDP (2022/23) is 5.3%, number of registered industries is 9,085, number of manufacturing industries is 3,393.

III. HOW TO DEVELOP A NEW JOBIN DEVELOPING COUNTRY?

Basically, developing countries have many difficulties in developing new jobs and economic driving because of limited budget, shortage of technologies, limited time to build infra, and the shortage of engineer that have a good experience. To build H/W such as heavy industry, semiconductor, chemical area, and high-tech robotics, it takes a long time and it needs much investment budget and manpower. Sometime, it is impossible because of limited technology. The advanced countries will not open these high technologies. However, developing countries can advance and lead economy, and also develop a new job through niche areas. This paper suggests the way of a new job development through such as bio-cosmetic, new education method for AI era, and tourism convergence (Tour + Meeting network + New paradigm creation), in Nepal. This paper introduces the example of countries that have done job development through only education.

A. Ireland Model of Job Development through Education

This paper strongly candidate Ireland job development model that succeed through only education. Of course, as Ireland locate in EU and Nepal is at the Eastern Asia, they are different culture and working pattern between both countries. However, the difficult problem was the same situation. Ireland' land size is about 7,028,000m², population is 7,185,600 (2023) [47, 48]. Fig. 5 shows the GDP trend of Ireland. From this figure, we can see how fast increase their GDP and over UK. Once a time, they were the poorest country in Europe and almost young generators go outside to get jobs. Government innovates their university education for niche areas. 3-years later, the effect of education grow and the global company recognize young people's capability. Their university education is different USA, EU, and S. Korea.

Now, Ireland is the European hub to over 1,000 leading multinational companies. Highly capable workforce through only education drives their success and move the global companies to Ireland. Recently, over 1,000 FDI giants in ICT, social media, Pharmaceuticals and Finance have made Ireland the hub of their European operations, with names such as Google,

HP, Apple, IBM, Facebook, LinkedIn, Twitter, Pfizer, GSK and Genzyme [49, 50]. How they can do it? Ireland also does not have any special sources but they innovate university and education. They nurture capable students, reduce tax. Then global companies move to Ireland. Young and public people can get the jobs easily through choosing job. To invite students from overseas, they had ever visited many years S. Korea.

Ireland's per capita GDP is now twice that of the UK
GDP per capita since 1961 (current US\$)

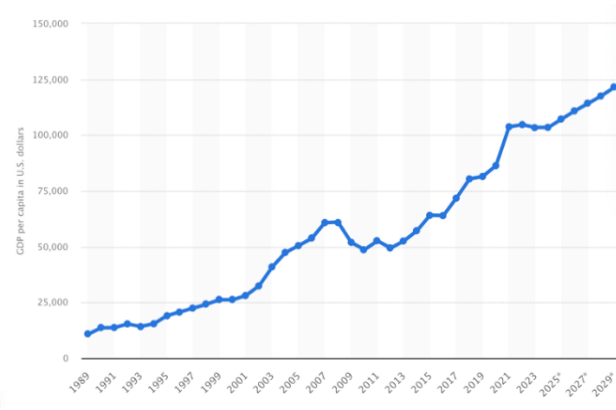
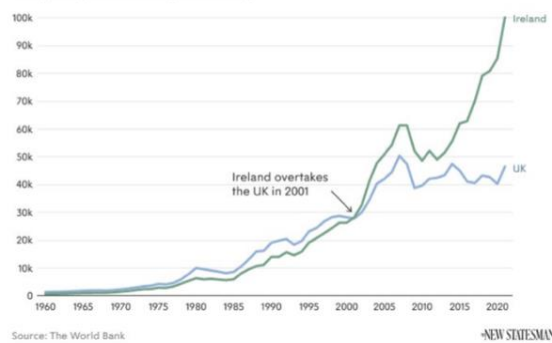


Fig. 5. Ireland GDP Trend.

GDP (in USD) per capita by country, territory, non-sovereign state or non-IMF member

	Country/Territory	IMF[4][5]		World Bank[6]		United Nations[7]	
		Estimate	Year	Estimate	Year	Estimate	Year
1	Luxembourg	141,080	2025	128,678	2023	128,936	2023
	Bermuda	—		125,842	2023	125,842	2023
2	Switzerland	111,716	2025	99,565	2023	100,831	2023
3	Ireland	107,243	2025	103,888	2023	106,106	2023

B. S. Korea Model for Education and Strategy Building

Basically, S. Korea does not have any natural sources such as coal, iron, and others. There is no gas and petroleum in this land. Even though the only cause that they can be an advanced country is that they have a national character with diligence and sincerity.

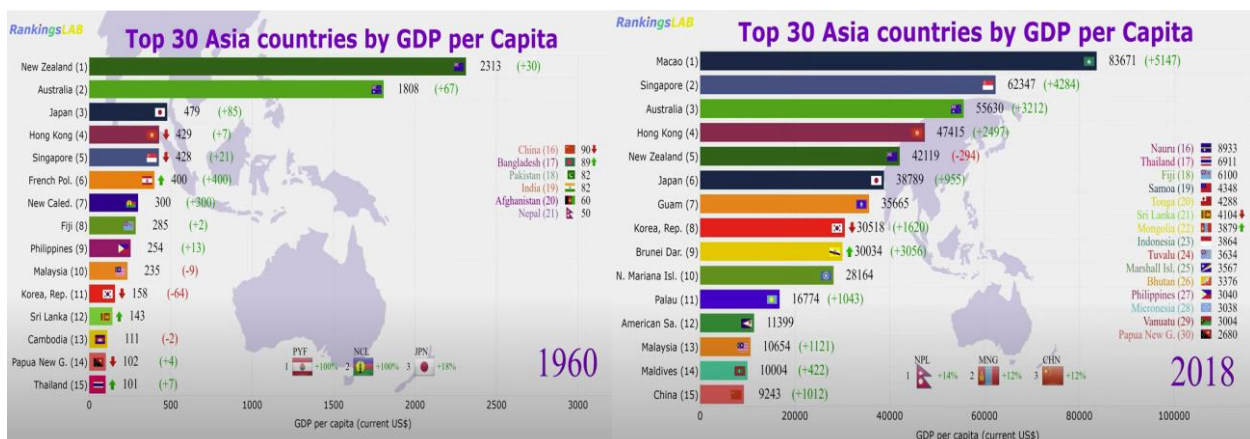


Fig. 6. S. Korea's GDP per capita (1960 and 2018)

And then, they have a good strategy to develop as shown in Fig. 7. They do not have enough budget as a small country and condition of no natural sources. So, they have to build a strategy to use the budget effectively.

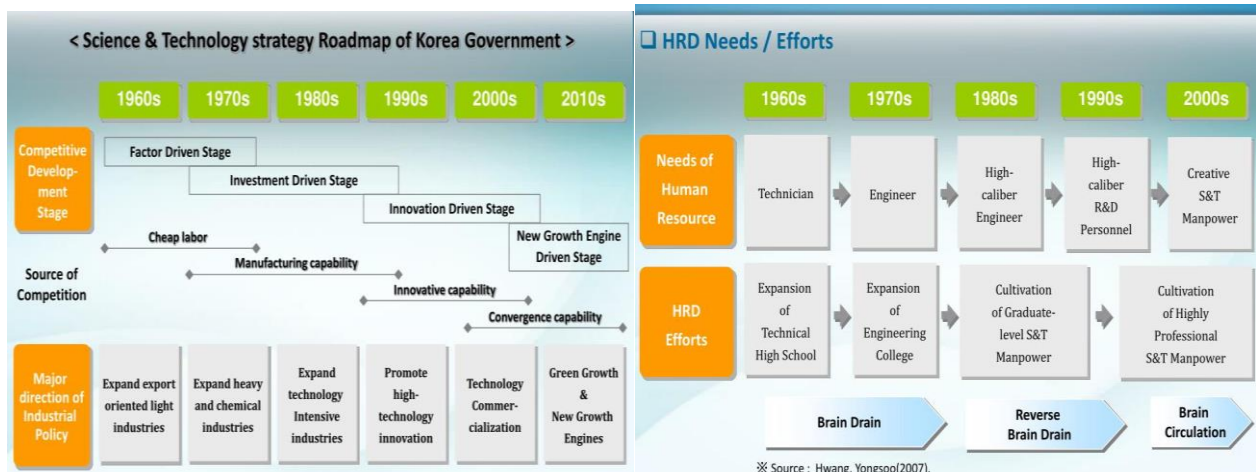


Fig. 7. Manpower load map: The education system was adaptive for the load map (Ref. 39).

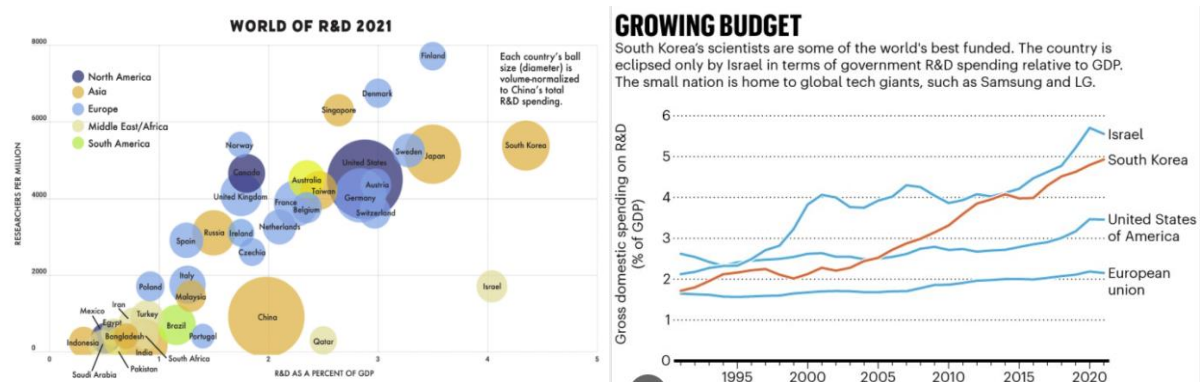


Fig. 8. S. Korea R&D status [51].ⁱⁱ

Fig. 8 illustrates the R & D expenditure from 2019 to 2021. In 2024, 2025, it increases.

The Republic Korean government has been investing heavily in R&D, making it one of the world's most innovative countries from a technology perspective through research as we can see from Fig. 8.

The country also has a highly-skilled talent pool with a high number of leading universities and engineers. Many scientists and engineers who have experience in those areas in Daeduck Science Town can still work and they have a passion for working (Fig. 9).

This paper like to strongly recommend countries that if you want really to develop your countries you can invite these good scientists and engineers to learn knowhow.

To build a good country, you must establish your strategy to match your country. Here, you need experienced know-how.

South Korea ranks in terms of its Institutional Environment for its technology policy, economic climate, and legal environment. South Korea scores well for its access infrastructure 5G.

In terms of Demand, South Korea ranks sixth globally. Organization on 4th industrial revolution of S. Korea.ⁱⁱⁱ

The South Korean government has championed the technology sector as a key driver of economic growth. It has maintained a steady path in terms of its overall AI strategy, announcing several inter-ministry sector-focused guidelines and roadmaps since 2014.

Fig. 9 is the photo of Daeduck science town (Innopolis). It started in 1973 nobody understands why we must build a research center at Korea's GDP as shown in Fig. 8 and Table (279\$, 1970). That is one of the biggest motivations to

develop today's Korea. S. Korea has also policy and strategy on 4th industrial revolution of S. Korea (Chairman: President).

Currently, the Presidential Committee on the Fourth Industrial Revolution, which was established in 2016, is responsible for guiding investments into new technologies.



Fig. 9. One part of Daeduck Innopolis Science town at the heart of S. Korea R&D.¹

Keyword		Core Tech		8-Smart Manufacturing	
S	Safety & Security	Chemical: Zero Accident	Communication: IoT, Industrial Security	Smart Sensor: Realtime Monitoring	Cloud: Industry Info Protection Tech
M	Manufacturer	Machine: Cooperation with Robot	Electronics: Smart Prediction/Preserve	Bigdata: Deep Learning Robot	IIoT: Factory Info Tech
A	Adaptive	Car: Only my Car	Fashion: Fast Fashion	3D Printing: Reducing Pilot Product	Hologram: AR Design Tech
R	Recycling	Heavy Industry: Industrial Site, Energy share	Electricity: Smart peak management	Energy Save: Energy Sharing Tech.	CPS: Realtime Energy Management System
T	Time to Market	Pharmaceutical: Incurable Disease Development	Steel: Smart Logistics	Bigdata: New Pharmaceutical source	Smart Sensor: Smart Steel Logistic

Fig. 10. Manufacturing industry innovation 3.0 (MII 3.0).^{iv}

It was named Manufacturing Industry Innovation 3.0 (MII 3.0) and was launched as part of the Creative Economy Initiative in June 2014 (Fig. 10).

MII 3.0 focuses on the convergence of IT and software with manufacturing and is focused on eight core technologies: smart sensors, cyber-physical networks, 3D printing, energy-saving, IoT, big data, cloud, and holograms.

The initiative center largely on SMEs and is aimed at narrowing the technological difference between smaller Korean businesses and their larger more-established counterparts.

A second key initiative called Smart Manufacturing Innovation Vision 2025 was launched in February 2017 and is aimed at increasing the number of smart factories to 30,000 and training 40,000 skilled engineers by 2025.

The Korean Ministry of Science and ICT (MSIT) is largely responsible for guiding these AI investments. Korea has a very competitive digital ranking as shown in Fig. 11 and 12.

When a developing country can learn and benchmark from Korea because many scientists and engineers are working even, they are old but they have many experiences.

However, an experienced person of other advanced countries has already pass way.

How can they Build Strategy: Firstly, government and policymakers must understand the impact of AI. And then, they should plan and make strategies. Of course, the budget is always short. These issues have always been the same problem in every country and every organization. So, they have to select and prepare step and step.

To build infra for AI, it is necessary to make a detailed strategy because each countries' situation is quite different from others.

For instance, manpower, existing situation, culture, education system, working style, and level of technology is different. Also, budget and funds were limited for the AI based industrial revolution.

Establish: To build and research effective each national type Policy and Strategy, a research center is absolutely needed including 4th wave and AI.

For instance, the Republic of Korea has two research institutes for only policy and strategy such as STEPI (Science and Technology Policy Institute)^v and KISTEP (Korea Institute of S&T Evaluation and Planning)^{vi}. Two research centers produce many strategic and policy reports, R & D roadmap, and future technology.

5G is an area in which South Korea has made significant progress (They open 2019): the MSIT has issued action plans for shared 5G infrastructure rollouts among mobile operators while getting operators to agree on a simultaneous launch to prevent price competition.

The telecoms regulator was the first major Asian body to have a competitively allocated spectrum; wavelengths in the 3.5GHz and 26- 28GHz bands were auctioned to mobile operators in June 2018.

Industry 4.0 includes standardization of systems, platforms, protocols; changes in work organization reflecting new business models; digital security and protection of know-how; availability of appropriately skilled workers; research and investment.

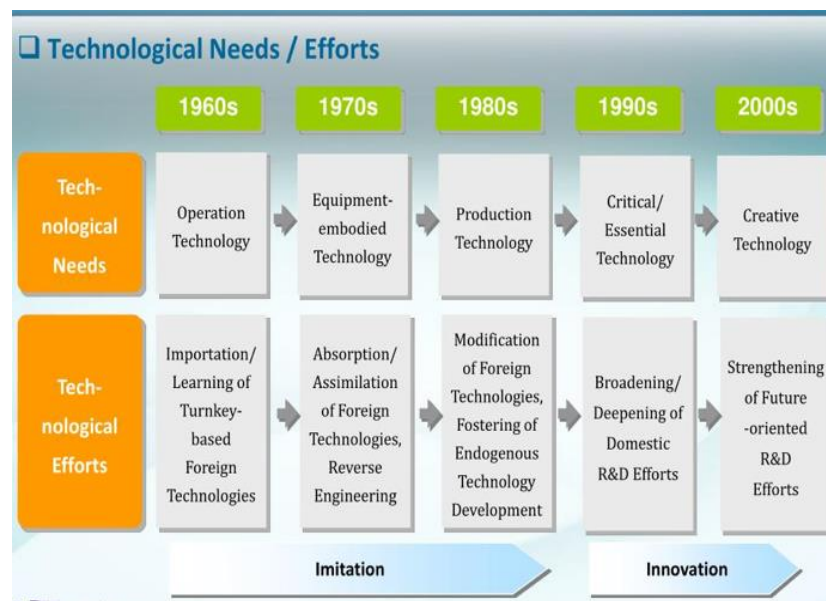


Fig. 11. Technological needs load map: Education system adaptive for this need (Ref. 39).

The potential benefits of Industry 4.0 relate to productivity gains, revenue growth, and competitiveness. The implementation horizon is to have pilots running in 2016 and full implementation as of about 2025.

The policy approach in support of Industry 4.0 is to develop new lead markets in a dual strategy: Industry 4.0 technology and services; manufacturing system's competitiveness gains. A key to succeeding with this strategy will be to integrate SMEs. Fig. 11 shows needs and efforts of the technologies for education road map build.

Table 1 shows the GDP trend of 4 countries. This table's meaning is quite import to develop country and social. When agriculture contribute to the GDP till 1970, Philippine was a wonderful country and top-ranking rich country in Asia. However, they do not invest technology. After then, their economic growth very slow and now, the GDP situation is as shown in Table 1.

Table 1 GDP Trend in 4-countries (IMF)

Country	Land	Pop	1961	1970	1980	1990	2000	2010	2012	2013	2014	2017	2018
S. Korea	22 (9.9)	51	92	279	1689	6308	1,1865	2,2170	2,4696	2,6205	28,100	29,115	32,000
Thailand	51.3	71.7	101	192	696	1,489	1,938	4,596	5,261	5,425	5,444	5,426	7,000
Philippines	300	114.9	267	289	744	703	1,223	2,946	3,087	3,311	2,865	2,917	3,100
Mongolian	156.4	3.48	N/A	N/A	N/A	1,153	472	2,079	3,352	3,787	4,095	4,179	4,100

Country	2019	2020	2021	2022	2023	2024	2025
S. Korea	31,900	31,730	35,140	32,420	33,150	36,130	37,670
Thailand	7,810	7,170	7,230	7,070	7,300	7,530	7,750
Philippines	3,510	3,330	3,580	3,620	3,860	4,150	4,440
Mongolian	4,310	3,970	4,480	4,950	5,350	6,670	7,580

	Country/Territory ⬆	IMF ^{[4][5]}		World Bank ^[6]		United Nations ^[7]	
		Estimate ⬆	Year ⬆	Estimate ⬆	Year ⬆	Estimate ⬆	Year ⬆
28	 South Korea	37,675	2025	33,121	2023	35,538	2023
29	 Spain	37,362	2025	33,509	2023	33,814	2023
30	 Bahamas	37,180	2025	35,897	2023	35,896	2023
31	 Brunei	37,023	2025	32,963	2023	32,963	2023
32	 Slovenia	36,495	2025	32,610	2023	32,642	2023
33	 Japan	35,611	2025	33,767	2023	33,806	2023
	 New Caledonia	—		33,516	2022	34,981	2023
34	 Taiwan	34,924	^[n 3] 2025	—		—	
35	 Saudi Arabia	33,287	2025	32,094	2023	32,094	2023
36	 Estonia	33,225	2025	30,133	2023	30,201	2023
37	 Czech Republic	33,038	2025	31,591	2023	31,750	2023

C. Japan University Model and Singapore, Estonia, Finland Model.

Japan AIZU (<https://u-aizu.ac.jp/intro/outline/number/>)

The location of this university is at Fukushima that the accident of nuclear power plant was done on March 11, 2011. This university (BS: 1,134, MS: 187, Ph. D: 63, the number of professors: 192, student/professor = 7.2, 2024) was established by the province of Fukushima in 1992 to recover local problem. This university educate focusing on computer program. When this university was established, the province of Fukushima invested 4-times of general establishment fund. This university was very famous when MS was going to develop NT of OS (Operation System), MS invited to their developing team. At that time, this university was two years after established. They invited faculties from overseas and Japan.

APU (Asia Pacific University) (<https://en.apu.ac.jp/home/about/content8/>) of Japan

This university was established in Japan in 1995 to nurture the global student. It is private university but its education system is focusing on students come from overseas. So many global companies like to invite this student.

Finland Model

The education index of Finland is ranking No.1. Swiss, IMD announces No.1 as comparativeness index, every year. Of course, education index is No.1 from 1997. The land size of Finland is 33,840,000m², population 5,635,000, GDP 54,700(https://en.wikipedia.org/wiki/Finland). Finland do not have any technologies and small country, also always have risk against Russia, historically. They decided the innovation of education system to survive as nation's priority policy for the future's knowledge society. And then they invest R&D, firstly. The teachers and education administration team of S. Korea had ever several time to learn their system for benchmarking.

Estonia Model

This country is small country as population 1,370,000, land size 43,335km² (GDP 3,320\$, IMF 2025). This country innovate education, especially they changed university education and increase R&D. It is very famous to register system and operation of star-up within 5-min, even foreigners.

D. Job Development and Manufacturing Product Increase through Bio-Cosmetic Strategy

This paper describes that this bio-cosmetic is the best area in product areas of Nepal. Nepal has many wonderful natural sources in Himalaya Mt and others. There are many bio-natural sources there. The cosmetic sector refers to the manufacture area. However, this area does not need big equipment and lots of investment. By using bio-natural sources, they can develop new cosmetic and products. As a good example, this paper introduces the case of S. Korea. There are many cosmetic small and medium companies, and start-ups in S. Korea. They are developing a new cosmetic product and challenge in the global market because of limited domestic market (S. Korea population 51million). However, they challenged that which material is improving more beauty and which area is niche. Many young generations are visiting to buy only these new cosmetics from overseas. Before 2000years, almost cosmetic was French. But currently, they (French cosmetic company) order their bland to S. Korean cosmetic company for their products as ODM (Original Design Manufacturer) or OEM (Original Equipment Manufacturer). It means they can develop many jobs with small investment. As references, here it is the best Top 10 Cosmetic Companies in Nepal [18]: Skya Transdermic (the renowned cosmetic company brands in India. A New Zealand-based cosmetic company, Skya delivers the best quality cosmetic products at reasonable prices.); NewLook Beauty For Life (NewLook Beauty offers services in cosmetic areas like skincare, haircare, make-up); Blush Beauty Pvt. Ltd. (Blush Beauty Pvt. Ltd. are among the top companies manufacturing personal care products in Nepal. The company was established in 2006 in Kathmandu.); The Beauty Lab (The Beauty Lab was established to raise the standards of the cosmetic industry within the country and to provide knowledge of international marketing strategies.); Look Me Cosmetic Pvt. Ltd. (Skin hydration, any specific concerns, hair shine, etc. are their focus); Royale Cosmeceuticals (founded in 2017, skincare, body care, haircare hygiene, toiletry, and home care products); Sonata Cosmetics Pvt Ltd (Nepalese makeup brand that sells internationally approved cosmetic and personal care products); Herveda Botanicals (haircare, skincare, and health brand that scientifically crafts all-natural products in Nepal); Patanjali Ayurved Pvt. Ltd (Numerous herbal skincare, haircare, soaps, and other personal care products are crafted by the organization from natural ingredients without any harsh effects); Beauty Box Nepal Pvt. Ltd (a supplier of UK and US-based original products). From this article, there are many niche areas in the global market even domestic market of Nepal is important. This paper attaches as an example to get an idea by ChatGPT in appendix.

E. Job Development and Brand Making Through Tourism Convergence

The tourism is the best economic leading area. Nepal has the best tourism sources such as Himalaya Mt, beautiful land, beautiful traditional heritage, kinds and sincerity nationality, and so on. Of course, so far there were many tourists for hiking, climbing, to see heritage. However, this paper suggests more high-level tourism and high-level networking. Here, we call as 'Nepali-Tourism-Convergence'. [52-58]

Design Concept: We know well WEF (The World Economy Forum) [19]. It was started in 1971, during the first phase, they started as a not-for-profit foundation, promoting stakeholder responsibility, the concept that companies, in addition to generating economic prosperity, have a responsibility towards society and nature. However, Today, they have 10 centers spans over 130 initiatives for our Partners and constituents to take action and generate impact. These initiatives include the Reskilling Revolution, which aims to provide 1 billion people with better education and skills by 2030. In the beginning of new year, the president of almost countries including USA, Japan, EU, and S. Korea, etc. as well as the global companies like to visit the first time to make a good partnership and discuss for issues during meeting terms. We can image how many jobs can creative and how much can give money in Swiss. Basically, this WEF called as Davos Forum [20]. Davos has a permanent population of 10,832 (2020) and is located on the river Landwasser, which are 1,560 m (5,120 ft) above sea level as small village in the mountain. In 1971, nobody recognizes the importance of networking and future strategy. As another example, this paper introduces the blockchain education of Nicholas University of Cyprus [21, 22]. This country has area (9,251 km²), population size (923,000: 2021 census), GDP per capita \$4,055 (IMF, 2025). Their basic economic driving area is tourism. Even though, they have a good economic situation.

NICS [21] first started education of blockchain in the University level from 2013. At that time, nobody recognizes the network technology and the security importance.

Now, they have top level education know-how in this area and so many global research company are staying nearby this University to invite a good student [23]. Of course, they develop many good jobs without using heavy equipment and high-techs. In case of Nepal, they have more wonderful infra. like a famous Himalaya Mt.

How can build Infra.?: General speaking, when they want to organize good meeting and network, they think that they should build a good hotel and to road to go to the place. Of course, they are right absolutely. However, in this case, they can develop idea to implement. This paper strongly suggests air hotel by application of Smart Farm of MIDBAR Co. [24]. This air smart farm was developed by small company (Start-up) in S. Korea in 2022 and export overseas. And they have wards in CES2024. When they use this air building, they can build structure with the application of air pump within one day. Of course, they cannot use this technology and some part is useless. However, they can use the concept of this tech. Because when they build a good hotel or conference, it takes a long time and lot of money is needed. In the world, there are very few global networking and meeting forum because of facility but they should recover from idea and niche areas.

Serving System: Basically, the core of conference and forum is serving system for the global concept. I am sure they have many capabilities because of experience [52-58]. It is like display technology of department and show window. Whenever we visit airport, we can see the airport situation on how they show and promote several materials. Usually, the advanced countries display well (it is not absolutely) and some countries think that display is not import and they just show goods in the window. Therefore, they already learn serving system and operate know-how through the visiting and organizing forum and seminar.

Place and Manpower: Nepal has a wonderful place to build international forum and conference. To upgrade forum like Davos forum, place is quite important but Nepal already has in the Himalaya Mt. Near the Himalaya Mt, they can organize the forum and it is a useful near the Kathmandu city and others. In case of manpower, it is not problem because of many young and smart persons with fluently English, here. Other countries have to invest for English.

E. Job Development through New Education of AI Era

As developing jobs and innovation for brand making, education method is one of the best areas as far as they have a good strategy like Ref. [21]. This paper strongly suggests like S. Korea, Singapore, Estonia, Ireland, AIZU of Japan. Especially, AIZU is a small university. Even though, they obtain a high-level ranking and make a high-quality job within a very short (2-years). Their strategy exactly matched with computer S/W (1992). Now, it is AI and ChatGPT season. After releasing ChatGPT, March 2023 (First version: Dec 2022), education and research paradigm has been changed. AI Manpower Nurture (Education) system also have been changing absolutely. Nepal can focus on this area with small budget.

However, in the world, any nations do not have initiative in this area because of too early and fast coming up us. As far as they start earlier, they can have many initiatives like Ref. [21, 22]. The Ministry of Education, Science, and Technology of Nepal has received a budget of Rs. 2 trillion 3 billion 66 crore rupees for the upcoming fiscal year. The government has allocated this budget for the implementation of various educational programs in the coming fiscal year [25]. Education system focusing on developer is better than basic theory (Korea Education example)

Education for Impact of AI

We should compare each prediction on what will change and how much will be changed when the revolution comes. When design the curriculum, we must consider this paradigm (All fields will be changed). This figure is reorganized by the editor using the WEF report. Using this comparison, they can build a strategy and plan for AI.

Depending on the situation of prediction, the results are different. However, all methods predict a similar expression in job disappearance and creation, the change of education, vocational system for the AI revolution, economic and social impact.

Policy for AI education

The policy is a key at the milestone of the AI development and application as well as education in the country. AI-related technology and direction can contribute to countries' economies and expand into societies, and public persons attract or are unlearned with AI and high technology, depending on government actions. Therefore, the role of policymakers is quite important in the direction of technology. Of course, many stakeholders can play different roles because the government is not uniquely capable of taking a broad view of only AI. However, its impact on economic growth is determined by policymakers' the legal, regulatory, and it gives an influence on the business environment that can

encourage innovation, investment, and technology-based development. Many policymakers of Africa recognize that AI and the 4th wave are important in the digital economy^{vii,viii}. However, their activities are very low to be implemented in national education systems and research institutes. The policy of governments is a quite important platform for information and bringing directions together stakeholders. They influence research activities and share information between the public sector, the private sector, and academia. Cooperation with these parties is also important to identify and design effective researches that will arise from AI. For that, an advanced countries such USA^{ix}, UK^x, Japan^{xi}, Australia^{xii} including S. Korea^{xiii} have been operating agency long time ago. The government of Nigeria^{xiv} has announced the formation of a National Agency for Research in Robotics and Artificial Intelligence in March 2018. Kenya was also the first African country to launch an open data portal to make information on education, energy, health, population, poverty, and water and sanitation^{xv}. Application development in Kenya is high, and the government wanted to support the industry's growth. The South African Department of Trade and Industry formed for Future Industrial Production and Technologies in 2017 to examine the impacts of emerging digital technologies, including the Internet of Things, big data, AI, robotics, and new materials. South Africa's government aims to boost its investment in the research industry to enhance South Africa's readiness and development, support for entrepreneurs, and skills development. As usual, like other governments, they say that budget is not enough. However, they should invest in niche areas to have initiative with small money. AI is one of the best areas that can invest with a small budget in Nepal.

The Role of the University in Developing Countries

University is the most important agency for AI infra building and can nurture manpower (scientists and engineers) who lead experiments and new ideas. Faculties of universities can support ideas for policy and reference of current megatrend technology sources for policymaking.

As an example, even African University, the University of Pretoria (UP) in South Africa created the Intelligent Systems Group (ISG) for the theory and application of systems^{xvi}. They invite some research groups and institutes around the world, including Cambridge University Engineering Department, the United States Office of Naval Research, and the United States Space and Naval Warfare Center as members of the ISG collaboration. The University of Pretoria has also established the Institute of big data and data science in September 2017. The Center for AI Research (CAIR) in South Africa aims to contribute to South Africa's digital transformation and economic competitiveness^{xvii}.

It is cooperating with five South African universities: The University of Cape Town, University of KwaZulu-Natal, North-West University, University of Pretoria, and Stellenbosch University. Strathmore University (Strathmore) of Nairobi has established the @iLabAfrica Research Center for emerging technologies such as big data, artificial intelligence (AI), Blockchain technology, Internet of Things (IoT)^{xviii}.

Dedan Kimathi University of Technology (DeKUT)^{xix} in Nyeri, Kenya, focuses on research, innovation, technology transfer, entrepreneurship, and quality education to contribute to the attainment of national development goals.

The University of Lagos recently launched the first AI Hub in Nigeria. This Hub serves for developing AI in the country by focusing on deep learning and encouraging young talent discovery within the innovation and data analytics space.

Manpower Education

To do the fast growth of AI technology and to reap the benefit through AI, the education systems should be prepared. Applications and development of AI can only be poised to prepare the nature of work in ways of education systems. AI-driven processes and jobs will be more productive and jobs of the future will be different. Because economic transformation can happen in different sectors, we should recognize what types of jobs and what specific skills will be needed at their country level. That is, education reformation is absolutely needed:

First, the level of primary and secondary education needs to refocus on core skills or specific AI-related technical skills through improved STEM (science, technology, engineering, and mathematics) skills, including coding. It is important to allow people to assume high technology jobs through this coding and a workforce. It is also important to build a workforce that is an effective curriculum of AI tools. STEM and coding subjects are needed compulsory requirements and the gap can be filled through collaboration between industry and academia.

Research Center of University and Company

Research center of university and industry is the core to the application of AI ecosystem in everywhere from entrepreneurs, start-ups, and SMEs. As an example, SyeComp^{xx} of Ghana focuses on enhancing agriculture through ICT and advanced geospatial solutions. DataProphet^{xxi} is a South African start-up that has focused on the finance and insurance sector through machine learning solutions.

Kudi of Nigeria has developed a chatbot for the financial sector. It allows users to make payments and send money.

Microsoft started for the Research Ph.D. Scholarship Program to support research collaborations between academics in Europe, Middle East, and Africa (EMEA) region (Kenya and Nigeria)^{xxii} with researchers at the Microsoft Research

Cambridge Lab. Projects accepted to the program involve research on AI, infrastructure for the cloud, the future of work, and biological. Nepal also can do it as far as the have an intention.

IBM Research Africa (IBM-RA) center in Kenya and South Africa^{xxiii} is also the first commercial technology research center in Africa conducting both applied and far-reaching exploratory research.

Google recently announced the opening of a Google AI Research Centre in Accra, Ghana^{xxiv}, Africa to collaborate with local universities and research centers.

It will be helping to bridge the gap between technologies as a catalyst for African growth. Why Nepal cannot do it?

Start-up for S/W and AI

To encourage and give some motivations for AI wave related industry as well as education, business, and start-up building should be done easily.

Of course, if there are some abundant funds, you can build industrial infra by using the existing based or H/W based industry because those can bring many jobs such as worker, cleaner, seamster, etc. However, there are several risks at this point.

- First, those need lots of budget because of H/W.
- Second, there is no vision for the future. It means those jobs are low-wage jobs.
- Third, after corona-19, many companies and countries are considering AI based business.
- Fourth, AI and robotics will penetrate faster into the manufacturing system and repeat work.

Many global manufacturing companies such as smartphones, the sewing industry, and chemical processes were built in China because of cheap labor costs. But a few years ago, they have been moving to Vietnam and others.

Currently, they are coming back to their home country because of collapsing unstable global manufacturing chain, home government's suggestion, easier application of strong robot and AI technology, logistic system, and high quality and cheaper by the robot. This progress of global companies will come faster and faster in the future.

As an example, to avoid these difficult situations, I would like to strongly suggest developing and undeveloped country must encourage and give motivation to build S/W based start-ups. In that case, there are many advantages:

- Firstly, there are young and smart students in their countries.
- Other countries have also many young and smart students and they want to have a job eagerly.
- As far as we can focus on teaching entrepreneurship and S/W for AI related technologies, they can develop new ideas, high-quality jobs, and survive through global competition. I had already mentioned at previous by MS, Google, and other examples in S. Africa and Nigeria, Kenya.
- Secondly, S/W-based investment is cheaper than H/W-based industry and can build within shorter terms. We can establish using only PC and S/W and there is also a vision for the new wave. In that case, we must consider why it is not successful^{xxv} and not many companies^{xxvi, xxvii}.
- Thirdly, all students have to know English. That is one of the strongest powers in the world.
- Fourthly, the curriculum should be operated intensively. As an example, we can consider concepts like UoA in Japan^{xxviii}. This University focused on only S/W established by Fukushima province in 1992.
- They have also BS and Ph. D course and had ever joined the team together with 10 Universities such as MIT, Carnegie Mellon University when MS developed Window NT in 1995.

Building of AI education

How can we build strategy: Firstly, government and policymakers must understand the impact of AI as Fig. 12. And then, they should plan and make strategies. Of course, the budget is always short. That is always the same in every country and every organization. So, they have to select and intense by step and step.

To build infra for the AI revolution, it is necessary for you to make a detailed strategy because developing country's situation is quite different from others (They are focusing on agriculture and low wage job because of political situation). This paper like to recommend it as follows.

Establish: To build and research an effective country's type policy and strategy, the research center is absolutely needed including the AI based industrial revolution.

For instance, the Republic of Korea has two research institutes for only policy and strategy such as STEPI (Science and Technology Policy Institute)^{xxix} and KISTEP (Korea Institute of S&T Evaluation and Planning)^{xxx}. Two research centers produce many strategic and policy reports, R & D roadmap, and future technology.

The university can establish a policy and strategy research center to produce developing country strategy and policy within faculty.

The Innovation of University Curriculum: We, first, must start from the university education system. Of course, if we can build again from primary school, it is better. However, it is not an effective approach and it takes a long time to get fruit to build all infrastructure.

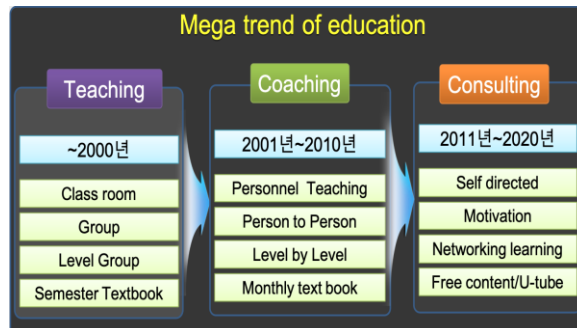


Fig. 12. Megatrend of education.



Fig. 13. Megatrend of smart education.¹

So, to build infrastructure and application within the near term, University's curriculum must be changed to the AI based industrial revolution affordably.

Fig. 12 and Fig. 13 show the education paradigm well. This figure illustrates that current education is self-study or problem solved education. The role of the teacher (Professor) is the advisor. So, students study themselves through finding current problems or issue. And for those, group study or discuss study is so common. So, students select a team leader and must discuss always with the team. However, we must consider because of changing of educational paradigm:

- Need more idea generation
- Need emphasis on doing projects that are more open-ended and less structured with the support from the open community and open source
- Need to increase the scope and improve the quality of internship programs to:
- Raise students with a sense of responsibility and practicality
- Encourage more collaboration between universities and industries

If they do not know exactly, they can take advice from advisors or others.

Fig. 16 shows the paradigm of R & D and education relation.

It is changing from H/W based work to S/W based work.

represents an example of curriculum from primary to university. Those subjects should be established in all departments or schools despite any subjects cause AI industrial revolution technology can be applied in everywhere such as material science, computer science, chemical science, food science, and so on.

For instance, developing new material takes a long time due to the experiment with the traditional method, but it is enough to obtain good material as several times or days depend on material by using AI.^{xxxi,xxxii}

Fig.17 shows vision, teaching method, and implementation method. Vision has to have nation's education purpose and target.

High school and Middle school Stage: It takes about 3 or 4 years to get the results from the first stage because students must learn basic theory, conception, and philosophy at university for 2 or 3 years. After students graduate, they can teach at high school and have a job in industrial areas and research centers.

So, it takes about 3 or 4 years at these terms. When we start right now, at least, it will be taken 7 or 8 years to build infrastructure and obtain results.

Primary school Stage: As stage that they can do well-related industry or plan building or project of 4th industrial revolution by themselves, it takes about 2 or 3 years. Therefore, some results can be obtained after 10-years or more from now. Problem is that advanced countries have already started 2 or 3 years earlier as I mentioned previously and they have already manpower and infrastructure for the 4th industrial revolution or related job or research or education system (Ref. 34, 35, 36).

Technology and business can be prepared immediately. However, the education system takes a long time to change and prepare. Especially, the role of the university is quite important because university students graduate and they must teach at primary or high school.

Also, country culture as well as literature and philosophy should be introduced first to build philosophy, their national purpose, ethics, and culture (Fig. 10).

Establishing AI University or Department: I like to suggest strongly this approach. MIT (USA), Japan, S. Korea already established this AI department for the undergraduate course (BS) and MS courses. Of course, there are many Universities to teach AI and Ph.D. degree courses.

Fig. 18 is an example of curriculum including educational philosophy to build specified education of AI after reviewing UNESCO, Finland, Canada, and Ministry of Edu of S. Korea about AI education recommendation [66-74]. MIT established an AI school in 2018.^{xxxiii,xxxiv}

This is a strategy like the University of Nicosia (Cyprus)^{xxxv}.

This University started in 1980 and they focused on education of Blockchain and now their reputation is one of the best in Blockchain areas as mentioned before.

THE (Times Higher Education) ranked in the world. They selected niche areas for the future and educate intensive methods by using a small investment. Undeveloped countries do not have abundant money.

So, even though, they do build at least one famous university and other areas can have the advantage. University's curriculum should adapt national R & D program (Fig. 17). University's curriculum should adapt to R & D program.

IBM AI center was established in 2018 to research AI at the SUNNY Polytechnic Institute campus. They invested \$2 billion.

Nurturing Leader: I like to suggest nurturing leader education for the Country. Almost advanced countries such as the USA, France, Germany, Japan, Singapore, and others have programs for lead nurturing to lead Country or organization. They are operating strategically that program in the long term from primary school.

Singapore has the best program from primary to graduate courses. After graduating, they work in government or leadership with their country's philosophy.

France also has a very strong and strict course for leadership. At least, when they have a course in science and technology, they can do work well in this area.

Of course, developing countries will not be able to do like these such as Korea, Swiss, the USA, Israel, Finland, and so on. Because in some countries, public person is hungry, people need bread immediately, the government is always short on budget.

However, if they have the intention, they can save small money even on a limited budget. And then they can invest in niche areas of R&D.

At the beginning of the 1970s, Korea was so poor at 279\$^{xxxvi}.

Even though they invested in R&D first and President visited often R&D center to encourage and give pride to scientists and engineers. Developers of the R&D center could have so much pride and young science and engineer wanted to return to S. Korea from Western University or R&D center. Of course, their salary was small compared to in USA or others. However, they had a big pride in working in the Korea R&D center.

The Importance of R & D in the University

AI revolution will give an impact on everywhere and everything over the world. Therefore, they have to prepare all areas. Of course, education system should be changed but additionally, university's research activity is quite more important. When they produce good results through R & D, university brand increase as well as directly education effect because they have to cooperate with students. The advanced countries have so many good universities. That is what this paper like to say.

IV. EXAMPLE OF JOB CREATION USING CHATGPT

A. Overview

The function of LLM (ChatGPT) provides to cover all over the world and every area, such as industry, art, movie product, story-telling, after unveiled ChatGP 4.0 in March 2023 following ChatGPT 3.5 in Nov. 2022.

This ChatGPT released by OpenAI is changing technology paradigm and social, and giving an impact on everything and everywhere in our community and business. The basic theory of this technology is not so difficult and it impact on everywhere. Therefore, so many companies and countries are interested in developing or how to use this related technology.

This LLM (ChatGPT: Chat Generative Pretrained Transformer AI) technology has learning system (supervised learning, unsupervised learning, and reinforcement learning to train language) as basic learning and they combine for the situation effectively learning. The ChatGPT models are also not difficult to understand technology but its impact is a very huge and is changing social as well as the paradigm of research and coding.

The generative AI model based LLM (Large Language Model), TIM (Text-to-Image Model), and ITM (Image-to-Text Model) are rapidly increasing for applying in everywhere because a new generation of user-friendly tool (Generative AI: Chat GPT) is useful for texts, images, and videos.

Of course, economic effect of generative AI is quite huge such as automation by generative AI, heighten labor productivity by generative AI, higher education, and higher wages occupations (McKinsey, in June 2023). A new revolutionary paradigm of generative model will mainly impact on leading economic growth with the new content, LLM based collaboration swells, lifelong learning for old ages, and several tasks because its impact is wide and more profoundly in tasks such as storytelling writers, translators, customer servers, marketing, legal professionals, document analyzer and makers, graphic designers, architects, artists, image generators, educator, students, and visual contents.

The first aim of his paper is to provide study strategies on how generative model and related technologies apply to coffee roast processing and what we have to prepare and study. It is very important to understand and decide on how and what we have to do coffee process and roast process.

B. The Status of LLMs

This AI technology has a very strong trigger role to develop new AI and has initiative in AI areas. There are several LLM (ChatGPT) and related LLM after releasing GhatGPT 3.5 and 4.0 for ChatGPT5o based technology. That is, many ChatGPT-based applications are developing it is changing for our economic growing pattern and job changing. This paper provides current patterns for ChatGPT technologies and its application for coffee roast process.

Social Patterns Leading of LLMs based Techniques: Many companies are developing generative AI for application models (Appl) as well as basic models, related technologies, and coding methods after releasing of OpenAI. The results impact on social areas as shown in Fig. 6. Its applications influence the marketing, art, industries, medical, and biotech as well as prediction and simple application, translation using GAN, transformer functions, and variational auto-encoders. The LLM combines with robots and its results have much more impact on education patterns.

Major investments by Top 5 companies: Ref. [131] shows the market size of LLMs. Apple's stock price increased by 36% in 2023. The company's growth was largely driven by solid earnings for a consumer slowdown. Microsoft's stock price rose by 37% in 2023. The company's growth was supercharged by the excitement over generative AI, a technology to which Microsoft has close ties. Alphabet, the parent company of Google, saw its stock price increase by 39% in 2023. Like Microsoft, Alphabet's growth was fueled by the hype around generative AI. Amazon's stock price grew by 44% in 2023. The company's growth was largely driven by remarkably solid earnings that delisted earlier expectations for a consumer slowdown. Nvidia, a leader in AI and graphics processing units, saw a massive surge in its stock price by 159% in 2023. The company's growth was driven by the excitement over AI-related advancements.

Job Patterns: The potential benefits of the generative AI are to transform technology by using confusion and speed up to developing terms. Generative AI also can easily estimate productivity growth using wide and huge data. It will give an impact on widespread adoption and add trillions of dollars a year to global economic output (WJS).

Fig. 20 and Fig 23 show on how impact will give areas by generative AI by summarized author based on [135]. LLM-based economic patters is changing so fast and millions of employees at labor jobs including higher jobs have been decreasing by LLM based robots. It means so-called knowledge workers and white-collar professionals such as designer, art producer, movie producer, story teller writer, project manager, and so on. will be impacted more pain because of these fusion technologies based on generative AI.

Applications of generative AI ready to penetrate into business and many startups of generative AI based business is developing business system as well as generators for text, computer code, images, video, design, voice and music.

Illustrators, healthcare workers, actors, educators, legal researchers, office workers and drug-company technicians could be the first occupations threatened with this new form of this AI.

The impact of generative AI by business functions do vary but the report notes very compelling specific examples: Generative AI could increase sales productivity by 3-5% of current global sales expenditures.

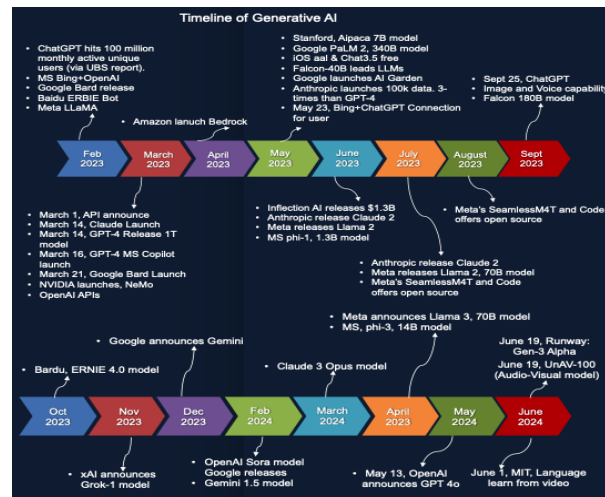


Fig. 14. Current development history of ChatGPT

Across 63 use cases, generative AI has the potential to generate \$2.6 trillion to \$4.4 trillion in value across industries.

V. CONCLUSION

This paper deals with job development method with low invest and within a short-time in developing country. It is not easy to develop job with high-quality and wages because the government budget is always limited and there is no infra. Always, they have to distribute their budget to many areas. Especially, the jobs of good high-quality are required the education or training of high-quality. However, when we have a good strategy matching for season (technology paradigm), we can develop several jobs within short-time, with limited budget.

This paper does not emphasize but describe on how much important to educate AI, earlier and why developing country has to do on exactly on time, now. As an example, this paper attaches appendix-1 (Fashion and beauty design by ChatGPT) and appendix-2 (Optimal control of Coffee roasting technology by ChatGPT). These examples are also not absolutely all true but shows on how can use ChatGPT to get an idea and how we can use it as an example. Through this example, some beginners can have curious and will start AI or LLM or related tech.

There are many high-quality jobs as far as they have a capability like AI Trainers and Teachers, Data Analysts and engineer, AI Ethics and Policy Specialists, and so on.

The impact of AI on unemployment rates will also vary by region and industry. For example, the manufacturing industry is likely to experience significant job displacement as a result of AI, while the healthcare and education industries are expected to see significant job growth [Fig. 23].

In addition to its impact on employment, AI also has the potential to impact the economy as a whole. AI can lead to increased productivity and output, which can stimulate economic growth. However, there are concerns about the potential for AI to widen the wealth gap, as those with the skills and knowledge to work with AI may earn higher salaries than those who do not have these skills.

As the use of AI continues to grow, it is essential that we take a proactive approach in ensuring that the benefits of AI are balanced with the needs of workers and society as a whole. We must ensure that we are adequately prepared to adapt to the changes in the job market and acquire new skills to thrive in the digital age.

Furthermore, it is crucial to address the potential loss of jobs due to automation. We must develop strategies that support workers who are at risk of displacement and ensure that they have access to training and education to equip them with the skills needed to adapt to new job roles.

Despite the challenges, the integration of AI in job roles has the potential to drive innovation, increase efficiency, and improve our quality of life. By leveraging the full potential of AI, we can create new job opportunities, drive economic growth, and make significant strides in addressing some of the world's most pressing challenges.

The impact of AI on job roles is significant and far-reaching. It is essential to approach this transformation proactively, ensuring that the benefits of AI are balanced with the needs of workers and society. By doing so, we can create a future where AI and human workers can work together seamlessly to achieve shared goals and drive progress.

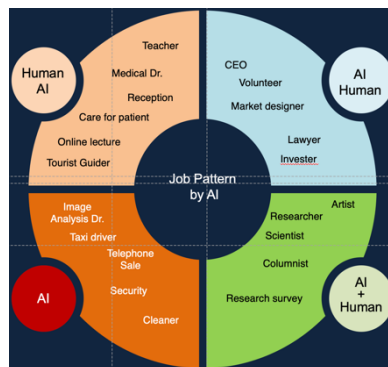


Fig. 15 (b). Job pattern of future.

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Appendix-1: Nepal Fashion

<https://openai.com/>

<https://chatgpt.com/c/67ecd9ee-0b78-8001-ac35-3fef4ff3ed1e>

Prompt: Explain the characteristics of Nepalian clothing for lady.

ChatGPT Response:

Nepali women's clothing is incredibly diverse and colorful, shaped by the country's rich ethnic mix, geography, climate, and religious traditions. Here's an overview of the **characteristics of traditional and modern Nepali women's clothing**:

1. Sari (सारी)

- The **sari** is a traditional and widely worn garment across Nepal.
- It's a **long, unstitched cloth (usually 5–9 yards)** wrapped around the body with elegant pleats and a draped pallu (end piece).
- Worn with a **blouse (cholo)** and **petticoat** underneath.
- Often seen in bright colors with rich embroidery or woven patterns.
- Common for **festivals, weddings, and formal events**.

Brides typically wear a red sari with heavy gold embroidery.

2. Gunyo Cholo (गुन्यू चोलो)

- A **traditional coming-of-age dress** for young girls (especially among Newars and Brahmins).
- Includes a **gunyo (sari)**, **cholo (blouse)**, **patuka (belt)**, **har (ornament)**, and **mantikka (headpiece)**.
- Usually worn during the **Gunyo Cholo ceremony**, which is a rite of passage.

3. Kurta Suruwal (कुर्ता सुरुवाल)

- A popular **semi-traditional outfit** that consists of:
 - **Kurta**: A long tunic
 - **Suruwal or salwar**: Loose trousers or leggings
 - Often worn with a **scarf or shawl (dupatta)**
- Comfortable, elegant, and commonly worn for **daily wear, school, or office**.
- Available in modern prints and cuts too.

4. Traditional Ethnic Outfits (by community)

Newar:

- Women wear **Haku Patasi** – a black sari with a red border, paired with a red *cholo* and *shawl*.
- Often accessorized with **antique silver jewelry** and beads.

Tamang, Rai, Limbu, Gurung:

- Traditional wrap skirts called **gunyo** or **lungi**, colorful blouses, and **handwoven belts**.
- Rich in texture and tribal prints.

Sherpa:

- Thick woolen **bakhu** or wrap-around dresses for high-altitude cold.
- Worn with aprons and headscarves.

Tharu:

- Women wear **colorful embroidered skirts and blouses**, with heavy bead necklaces and silver jewelry.



- Distinctive use of **body art and tattoos** as cultural expression.

5. Cholo (Blouse)

- A **fitted upper garment** often worn with a sari or wrap skirt.
- Can be long or short-sleeved.
- In some communities, it's part of a daily outfit; in others, it's for rituals and ceremonies.

6. Shawls and Scarves

- **Woolen shawls** in the hills and mountains for warmth.
- **Silk or chiffon scarves (dupatta)** in warmer regions.
- Used both as accessories and for modesty.

7. Modern Influence

- Younger generations often mix **Western fashion** with traditional elements.
- **Maxi dresses, jeans with kurtas, or fusion sarees** are increasingly common in urban areas.
- Nepali designers are creating **modern bridal wear** with cultural motifs.

ⁱ <https://www.youtube.com/watch?v=3ZZDdcGTwoM>

ⁱⁱ <https://www.rdworltonline.com/2021-global-rd-funding-forecast-released/>

ⁱⁱⁱ Its objective: the PCFIR deliberates upon and coordinates important policy matters pertaining to the development and acquisition of new science and technology, including artificial intelligence (AI) and data technology, as well as new industries and services necessary for Korean society's adaptation to the 4th Industrial Revolution. The committee's legal basis can be found in the Presidential Decree on the Creation and Management of the PCFIR, promulgated and effective as of August 22, 2017; <file:///Users/kimdonghwa/Desktop/Presidential%20committee%20on%20the%20fourth%20industrial%20revolution.w ebarchive>.

^{iv} <http://www.motie.go.kr/www/main.do>

^v <https://www.stepi.re.kr>

^{vi} <https://www.kistep.re.kr>

^{vii} The 2nd African Science, Technology and Innovation; and the 6th African Sustainable Development Forums are being held in Victoria Falls, Zimbabwe, Feb. 24, 2020.

^{viii} Africa should not be too quick to embrace the fourth industrial revolution, Sept. 24, 2019.

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