

PREDICTING SUSTAINABLE DEVELOPMENT GOALS THROUGH THE INDUSTRY 4.0: INSIGHTS FROM PUBLIC LISTED COMPANIES

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ABSTRACT – In an ideal world, publicly listed companies would be forced to publish a report on the Sustainable Development Goals (SDGs). The abandonment of SDG reporting in annual reports by public corporations is the focus of this study. We noticed in recent years that many companies are unable to recognise and commit to the Sustainable Development Goals (SDGs) in their annual reports. We observed that Malaysia prioritises economic growth above environmental concerns. Malaysia's economic growth and health system have been jeopardised as a result of the current COVID-19 outbreak. It will be difficult to achieve the other sustainable development objectives if there is a significant prevalence of chronic infectious and non-infectious diseases, as well as a lack of physical, mental, and social well-being in society. In this study, a collection of primary data gathered from the Bursa Malaysia will be used for performance analysis and forecasting. The analytical tools used for this inquiry were Power BI and RapidMiner. In the first activity, we discovered that software and services businesses who use IR 4.0 had the best SDG implementation performance. According to the study, there is a significant relationship between organisations' use of IR 4.0 and their efforts to fulfil the SDGs. It will be easier to meet the Sustainable Development Goals with broad IR 4.0 adoption in a company. According to the results of the survey, Selangor is the state with the highest degree of company SDG implementation. In conclusion, predicted data reveal that states and specific SDGs have a substantial influence on corporate adoption of SDGs. Finally, Selangor-based software and service enterprises provide the most contribution to the achievement of the Sustainable Development Goals.

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Introduction

The term "industry 4.0" refers to the notion of fast change in technology, industries, and social patterns and processes as a result of increased interconnection and smart automation (Majied, 2021). Customers, vendors, manufacturing systems, machinery, logistics, goods, and services are all part of the digital ecosystems ushered in by Industry 4.0. All of this is integrated within the digital scene, with the matching virtual representation (Alcácer, 2019). However, there are disparities in the focus placed on SDG implementation among geographical regions (Salvia, 2018; Brandli, 2018; Griebeler, 2018). Some nations can improve, while others are still struggling to implement it. Malaysia is also working to better the environment and the SDGs, but it will be difficult to do so without dedication, awareness, and comprehension of the local sustainability concerns that communities confront (Musa, 2021). As a result, the effort to increase performance is still increasing steadily rather than rapidly.

According to the literature, research on SDGs suggest that the barriers to enhancing SDGs include a lack of information, motivation, and experience (Powell, 2021), whereas variables to assist the government enhance SDGs are to collaborate across policy domains. 2017 (United Nations) Technology adoption, or in the case of a country, technology transfer from companies originating in wealthy countries to companies originating in underdeveloped countries, is one strategy to enhance SDGs. However, this is a delicate subject (Division for Sustainable Development Goals, n.d). As a result, knowing IR 4.0 technology will help to improve SDGs. There are several studies that illustrate how technology may help businesses function better. Cascio and Montealegre (2016). Similarly, these are the goals that the SDGs sought to improve, but on a greater scale.

Malaysia is one of the nations pioneering Industry 4.0. (IR4.0). (Isa, 2021). Although some Malaysian businesses have begun to implement IR4.0 technology, not all are aware of the SDGs and its relationship to digitalization. The 2030 Agenda for Sustainable Development, endorsed by the United Nations' 193 Member States in September 2015 at the General Assembly, presents a revolutionary vision for economic, social, and environmental development and will drive the Organization's activity for the next 15 years. 2018 (United Nations). The SDGs aim to eliminate poverty, hunger, AIDS, and gender discrimination against women and girls. 2022) (United Nations Development Programme). To fulfil the SDGs in whatever setting, everyone's creativity, know-how, technology, and financial resources are required.

Technology, through IR 4.0, now plays a critical role in environmental and economic growth. If every company in Malaysia that has adopted IR4.0 can address at least one of the SDGs, the world will gradually improve and become more sustainable. This study has since offered some information on how to enhance SDGs, particularly through IR 4.0 adoption, with a focus on how Malaysian corporations may take activities to improve SDGs:

1. Firstly, this paper presented the demographic profiles of the companies invested in SDGs and IR 4.0.
2. Secondly, this paper will be observed the correlation on IR 4.0 companies' demographic profile and SDGs.
3. Thirdly, this paper has investigated the descriptive statistics such as the highest state that implemented SDGs in business.
4. Lastly, review and recommend future actions are provided for Malaysian companies on how they should embark on tackling the SDGs through IR 4.0 technologies.

To fulfill the research gaps, this study will focus on the companies in Malaysia with IR 4.0 technologies are tackling the SDGs which as well give beneficial to other Malaysian company. Further, this study will propose future actions for Malaysian companies on how they should embark on tackling the SDGs through IR 4.0 technologies. This paper is divided into six sections. The first section briefly describes the study's motivation. Section 2 discussed the relevant literature review. Sections 3 and 4 discussed the methods and results. The discussion is shown in Section 5. Section 6 concludes with the limitations and conclusions.

Related Work

Various types of publications on firms adopting SDGs through IR 4.0 adoption were evaluated. Industry 4.0 provides benefits and can help businesses operate better. Using the digital platform of Industry 4.0 boosts the manufacturing industry's productivity and efficiency dramatically. Today, there is a lot of excitement about how the private sector may help achieve sustainable development goals. Because of the global financial crisis of 2007/8 and the subsequent tightening of public development budgets, as well as the magnitude of global development challenges, attention has shifted to the private sector to increase funds available and bring relevant know-how to address development issues (Cléménçon, 2012; Eyben, 2022; Savage, 2012; UN, 2012). The SDGs provide a chance for stakeholders to collaborate in order to achieve a more sustainable future for mankind and the earth. However, the private sector has great hurdles in making a productive contribution. Nonetheless, imagine there is any prospect of reaching these objectives. In that situation, we must go beyond "business as usual" and work toward changing the basic neoliberal agenda that shapes how business and society operate. The subtopic is further covered below:

Sustainable Development Goals in Malaysia

The SDGs call for global action from governments, businesses, and civil society organisations to achieve shared and sustainable prosperity (Khaled, 2021). According to Jayasuriya (2016), Malaysia is committed to fulfilling the short-term goals, objectives, and indicators by 2020 and the long-term goals, targets, and indicators by 2030. However, there is a lack of adoption of an SDG framework among social sector delivery personnel, agencies, and organisations. Mudin (2018) investigated how smart energy will improve the university's energy management, including lower electricity bills, as well as the university's commitment to aligning itself with national and international policies in sustainable development, specifically Goal 7 - Ensure access to affordable, reliable, sustainable, and modern energy for all - and Goal 13 - Take urgent action to combat climate change and its impacts.

Furthermore, according to Yong (2019), waste-to-energy (WTE) as part of the solution to Malaysia's waste and energy concerns aids in meeting some of the UN-SDGs. Goal 3 (good health and well-being), Goal 6 (clean water and sanitation), Goal 7 (affordable and clean energy), Goal 8 (decent work and economic growth), Goal 11 (sustainable cities and communities), Goal 12 (responsible consumption and production), and Goal 13 (responsible consumption and production) are examples (climate action). However, according to Lim (2021), Malaysia's current SDGs are being set in the wrong path by capitalist-thinking politicians. Although the SDGs are backed by the MDGs, the decision not to prioritise and defend the planet vision is an evidence and symptom of Malaysia's environmental damage.

Dependent Variable

Goal 1: No Poverty

SDGs, as we all know, have 17 goals. To begin, this objective seeks to eradicate poverty in all of its manifestations worldwide. Emara (2020), Mohieldin (2020), Banerji (2003), and Humphreys (2003) all emphasise the need of competent governance in poverty reduction. Meanwhile, domestic investment, trade openness, currency rates, per capita income, and oil rents, according to Ncube, are important poverty-reduction variables (2013). Malaysia is on pace to meet this objective by keeping the poverty headcount ratio between \$1.90 and \$3.20 per day.

Goal 2: Zero hunger

This objective strives to eliminate hunger, enhance nutrition, and promote sustainable agriculture. Hunger and malnutrition are depressing realities that will have a significant influence on future generations. Malaysia's prevalence of malnutrition and cereal yield are on track. Meanwhile, undernutrition among children mal the age of five is a big concern, and children under the age of five are more likely to die (Grebmer, 2018).

2.2.3 Goal 3: Good Health and Well-Being

Goal 3 is concerned with ensuring healthy lifestyles and encouraging well-being for people of all ages. According to Nunes (2016), the SDGs will be difficult to complete until everyone has good health and well-being since health and well-being are dependent on the successes of other SDGs. Health, for example, is connected to poverty, gender equality, education, economic prosperity, and other factors. As a result, it is critical to provide the proper conditions for long-term growth. Maternal mortality rate, teenage fertility rate, and newborns who survived after getting two WHO-recommended immunizations are some of Malaysia's outstanding achievements.

Goal 4: Quality Education

Goal 4 focuses on ensuring inclusive and equitable quality education and encouraging opportunities for lifelong learning for everyone. Target 4 aims to develop work-related talents in both kids and adults. Target 4.5 focuses on the distribution of educational access among a variety of demographics, with specific emphasis paid to the needs of people with disabilities, indigenous peoples, and vulnerable groups. According to Target 4.6, all children will have access to literacy and numeracy, and adult illiteracy will be greatly decreased. Objective 4.7, which aims to enhance knowledge and skills for sustainable development, human rights, gender equality, and peace and nonviolent cultures, is the sole target containing instructional content. Malaysia is on pace to meet this target by maintaining its net primary enrollment rate and literacy rate.

Goal 5: Gender Equality

Goal 5 seeks gender equality and the empowerment of all women and girls. Malaysia has done well in keeping the ratio of female to male mean years of schooling received. The desire for contemporary family planning techniques, as well as the number of female seats in national legislatures, are two important issues.

Goal 6: Clean Water and Sanitation

The primary purpose of this goal is to guarantee universal access to and sustainable management of water and sanitation. The population is on track, with at least basic sanitary services and low water use included in imports. The major source of concern is treated anthropogenic wastewater.

Goal 7: Affordable and Clean Energy

The main goal is to supply everyone with affordable, dependable, sustainable, and contemporary energy. Malaysia is performing well in terms of maintaining population access to power and clean fuels and cooking technology. However, CO₂ emissions from fuel-burning for power and heating as a percentage of total electricity output continue to be a significant concern.

Goal 8: Decent Work and Economic Growth

Goal 8 seeks to foster inclusive, long-term economic growth, full and productive employment, and decent work for all. Malaysia has performed well and maintained track of unemployment, deadly work-related accidents embodied in imports, adults with a bank or other financial institution or a mobile-money-service provider, and so on. Meanwhile, the difficulties of adjusted GDP growth, victims of contemporary slavery, and effective protection of fundamental labour rights remain.

Goal 9: Industry, Innovation, and Infrastructure

Goal 9 aims to improve infrastructure resilience, promote equitable and sustainable industrialization, and support innovation. Malaysia meets this goal by tracking the number of internet users, mobile broadband subscriptions, the Logistics Performance Index: Quality of commerce and transportation-related infrastructure, and The Times Higher Education Institutions Ranking: Average score of the top three universities. Aside from that, just one issue remained: research and development funding.

Goal 10: Reduced Inequalities

This objective seeks to reduce inequality both inside and between countries. However, Malaysia has two major hurdles in accomplishing this goal: the Gini coefficient adjusted for top income and the Palma ratio.

Goal 11: Sustainable Cities and Communities

This objective aims to make cities and human settlements more inclusive, safe, resilient, and long-lasting. Malaysia has met this target and is on pace to continue improving piped water access. Satisfaction with public transportation is one of the remaining obstacles to accomplishing this aim. Klopp (2017) and Petretta (2017), on the other hand, highlight three major challenges relevant to SDG 11, including (i) a lack of standardised, open, and comparable data; (ii) a lack of city-level organisations to facilitate data collection and monitoring; and (iii) a lack of localisation and context specificity.

Goal 12: Responsible Consumption and Production

Goal number 12 is to ensure long-term consumption and production patterns. Malaysia's largest challenge in accomplishing this goal is electronic trash. Other difficulties, such as municipal solid waste, SO₂ emissions embodied in imports, nitrogen emissions embodied in imports, and so on, remain.

Goal 13: Climate Action

Goal 13 demands rapid action to combat climate change and its implications. The most significant impediment to Malaysia attaining this goal is CO₂ emissions from fossil fuel combustion and cement manufacture. Other concerns remain unanswered, such as CO₂ emissions embodied in imports and CO₂ embodied in fossil fuel exports.

Goal 14: Life Below Water

This objective strives to protect and utilise oceans, seas, and marine resources in a sustainable manner for long-term development. Malaysia is on pace to meet this goal by saving fish taken from overfished or failed populations, as well as fish caught and subsequently discarded. However, other difficulties, such as trawling or dredging for fish and the Ocean Health Index: Clean Waters score, have remained stable or have decreased.

Goal 15: Life on Land

This objective strives to maintain, restore, and promote the sustainable use of terrestrial ecosystems, manage forests sustainably, prevent desertification, and halt or reverse land degradation and biodiversity loss. The accomplishment of this goal by Malaysia remains a significant problem. The mean area protected in terrestrial biodiversity hotspots, the Red List Index of species survival, and persistent deforestation are only a few of the key issues.

Goal 16: Peace, Justice, and Strong Institutions

This objective seeks to foster peaceful and inclusive societies for long-term development, as well as to ensure equal access to justice and to construct effective, responsible, and inclusive institutions at all levels. This aim remains a significant challenge because Malaysia's performance is only marginally improving. Among the concerns include homicides, the Corruption Perception Index, access to and cost of justice, and other issues.

Goal 17: Partnerships for The Goals

The ultimate objective is to improve implementation tools and re-energize global cooperation for long-term development. Malaysia confronts challenges in meeting this aim in terms of government spending on health and education, as well as government revenue, excluding grants.

Independent Variable

This study includes three independent variables. The three factors in this study are location, industry, and year founded.

Geographic Location

The geographical location of a country is important in accomplishing the SDGs. Researchers agreed that a country's growth is determined by its geographical position, which includes factors such as weather, disease prevalence, agriculture, transportation costs, and market access (Diamond, 1999; Glass, 2019; Newig, 2019). As a result, a country's geographic position is critical to achieving the SDGs.

Type of Sector

According to Khaled (2021) and Gandia (2008) research, firms in the technology industry appear to outperform others. Companies that require big intangible investments, such as technology, are more likely to engage in ESG initiatives. This is consistent with prior study (Lourenço, 2013; Branco, 2013; Garcia, 2017), which found that corporations in ecologically and socially sensitive industries, such as energy and telecommunications, are more vulnerable to causing social and environmental damage. As a result, the sector type is an essential indicator of a company's participation in ESG operations.

ISO Code

According to the International Organization for Standardization, Switzerland (2021), this ambitious action plan to promote peace and prosperity, reduce poverty, and safeguard the environment is widely regarded as critical to our planet's long-term viability. It encourages everyone in society to contribute, including local and national governments, corporations, industries, and people. Consensus, cooperation, and invention are required for the process to be effective. More than 22 000 Worldwide Standards and associated papers have been issued by ISO, representing internationally recognised principles and frameworks based on international collaboration. Furthermore, a well-established business is more likely to have a higher ISO. Using ISO international standards usually benefits the government, the customer, and the industry. As a result, a large number of ISO codes assist businesses by providing guidelines and frameworks on everything from employee health and well-being to energy consumption, to resilient and eco-friendly infrastructures, which, in the end, is an indicator of a company's performance in terms of SDG implementation. The variable in this study is represented by the total number of ISO code variables, which is the total number of ISO codes held by the firm.

METHODS

This study was carried out quantitatively, with no surveys or questionnaires. This study, however, makes use of secondary data: IR 4.0 data from the FMM directory and SDGs data from the SDGs dashboard. The research entails gathering data online and analysing numerical data for statistical analysis with the Rapid Miner tool. Furthermore, this

study collected and analysed data using Microsoft Excel and Power BI. The dashboards were created to assess the firms' SDG performance. This research examined the types of Malaysian firms that use IR 4.0 technology to address one of the SDGs. The inquiry was then undertaken to analyse the highest state that applied SDGs in business. A cross-sectional research was conducted, and data was gathered electronically in four weeks. This work was completed in a natural context, which is a non-contrived situation. Figure 1 depicts the research procedure.

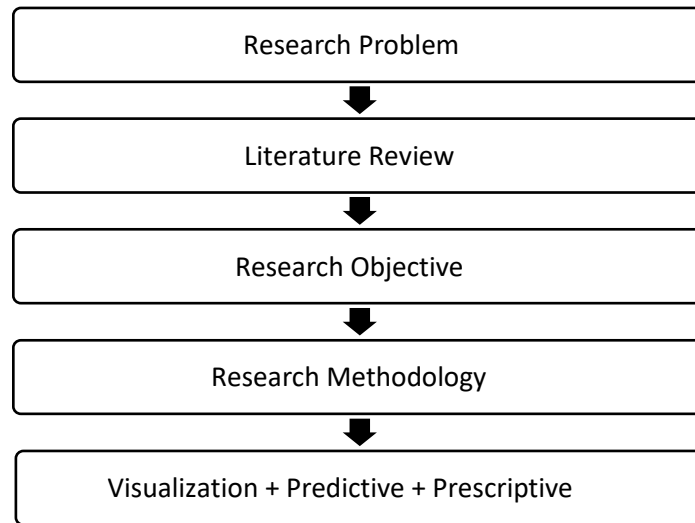


Figure 1. Flow of Research Process

- Rapid Miner, Microsoft Excel, and Power BI were employed as research tools in this study. RapidMiner is a data science platform for businesses that analyses the cumulative effect of personnel, knowledge, and data.
- RapidMiner's data science platform is designed to accommodate a large number of analytics users across the AI lifecycle. (2022, Rapid Miner). Rapid Miner is used to analyse and evaluate the data correlation. It is a highly quick and efficient tool for analysing data. In this study, rapid miner is used to characterise and anticipate the company's SDG performance. It also investigated the link between the demographic characteristics of IR 4.0 firms and the SDGs.
- Microsoft Excel is a component of the Microsoft Office software suite. It is a type of electronic spreadsheet with several rows and columns that is used to organise data, visually portray data(s), and conduct various computations. It is made up of 1048576 rows and 16383 columns, with each row and column forming a cell. (2021, Deepika). The data was collected and analysed using Excel. Data collection, cleaning, and management are all simple processes.
- Power BI is a business intelligence-focused interactive data visualisation programme developed by Microsoft. 2016 (Microsoft). It is a Microsoft business analytics service that can analyse, visualise, and extract insights from data. So, in this study, Power BI was used to analyse the data and create dashboards to analyse the companies' SDG performance, to identify which types of Malaysian companies take actions to address one of the SDGs through the adoption of IR 4.0 technologies, and to investigate the highest state that implemented SDGs in business.

Validity and reliability are crucial in establishing and explaining the quality and accuracy of the study data. The validity and reliability of the results must be given in order to appraise the study's quality. As a result, while predicting data with RapidMiner, the proportion of mistakes and accuracy are taken into account in this study. The lowest number of mistakes and the greatest degree of validity are critical when selecting a model. As a result, it is a critical step in verifying that the model chosen is proper.

Structural Measurement

In this investigation, the simulator from the chosen model is employed. It is due to how the simulator depicts predictive and prescriptive analytics. As a result, the researcher must employ the simulator in order to acquire precise data forecasts.

RESULT

A total of 199 Malaysian Companies' data have been collected, which referred from FMM Directory of Malaysian Industries and other trusted websites.

Demographic Profile

Table 1. State and Total number of companies

State	Total Companies (n=199)	Percentage (%)
Selangor	97	49%
Kuala Lumpur	42	21%
Penang	39	20%
Johor Bharu	9	5%
<i>Pahang</i>	5	3%
<i>Kedah</i>	4	2%
Perak	2	1%
Melaka	1	1%
TOTAL	199	100%

The number of states and enterprises in Malaysia is shown in Table 1. There are 199 firms in this survey, and only six states have been chosen. According to this table, Selangor has the most firms (97), followed by Kuala Lumpur (42 companies). Johor (9 firms) enters the picture. Perak and Melaka come in third and first, with two and one, respectively.

Table 2. Type and Total number of companies

Sector	Total Number of Companies' (n=199)	Percentage (%)
Software & Services	79	40%
Technology Hardware & Equipment	58	29%
Commercial & Professional Services	32	16%
Capital Goods	16	8%
Diversified Financial	4	2%
Automobile & Components	4	2%
Retailing	2	1%
Semiconductors & Semiconductor Equipment	2	1%
Food & Staples Retailing	1	1%
Energy	1	1%
TOTAL	199	100%

Table 2 displays the kind of sector and the total number of companies in each sector. This study makes use of 10 different sorts of sectors. According to this table, the software and services industry has the most firms, with 79. Meanwhile, energy has the fewest number of enterprises, with only one.

Descriptive Analysis

To begin, the dashboards below provide four basic charts. The first is the number of SDGs by company type. The second is the total number of SDGs and ISO locations. The third figure shows the number of SDGs by place, while the final chart shows the total IR4.0 by location. This dashboard's filter option is also enabled by the researcher. For example, the user may choose which sector to analyse, and the results will be reflected in other charts. Users can also select the goals they wish to analyse in these dashboards.

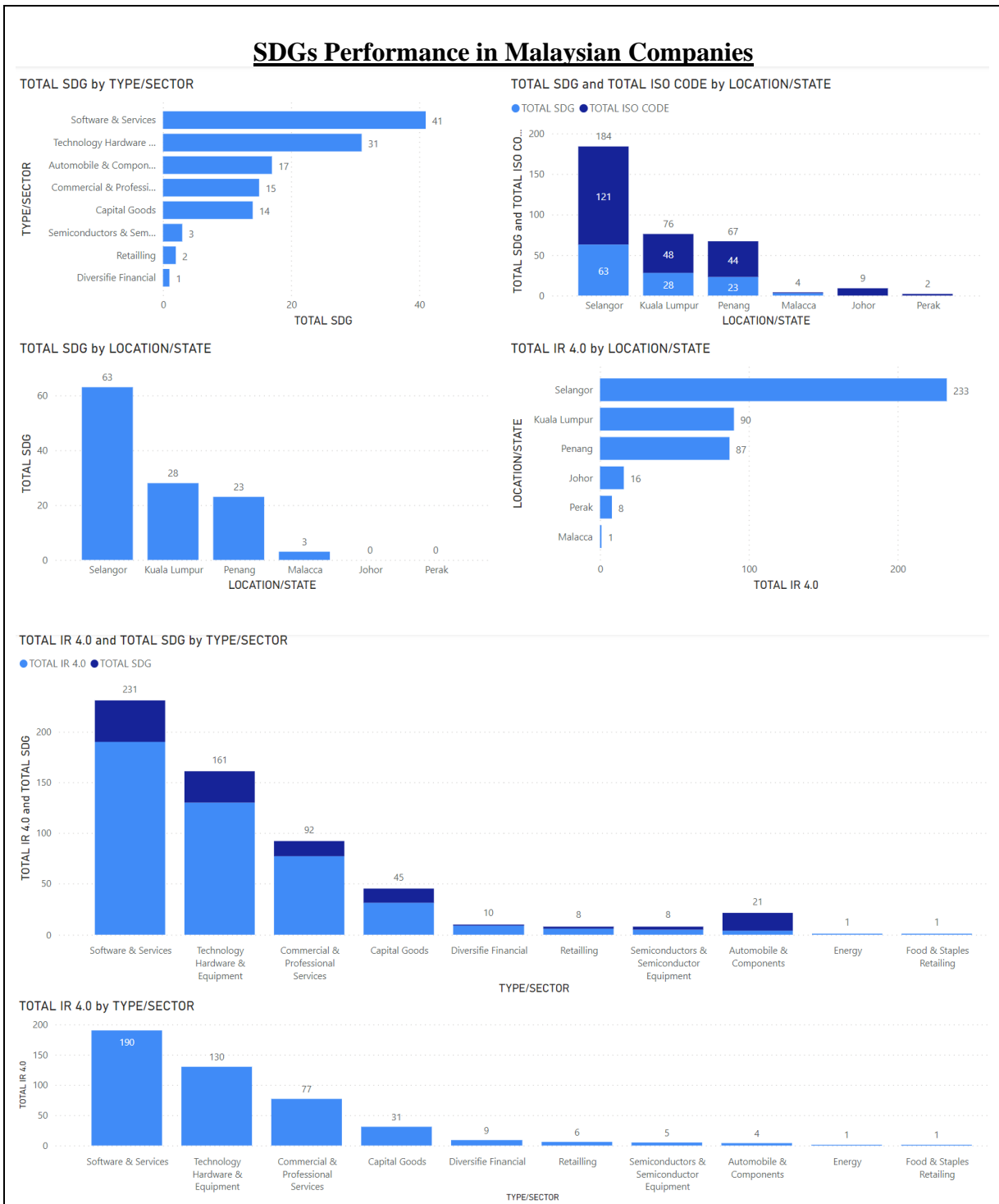


Figure 2. SDGs Performance in Malaysians Companies Dashboard

Based on the first bar chart, Total SDG by Type/Sector we can see that the Software and Services sector has the highest total SDGs with 41. On the other hand, the lowest sector is both energy and food & staple retailers with 0.

Based on the second chart, total SDG and total ISO code by location/state, we can conclude that the more ISO code a sector has, the stronger the chance for that company to be involved in tackling SDGs. As for this, we can see that the state of Selangor has a high value in the ISO code, leading to high implementation in SDGs.

The next chart shows the count of SDGs by location. According to the chart, Selangor is the highest state involved with SDGs. The second highest is Kuala Lumpur, followed by Penang. The lowest state is Johor and Perak, with 0.

The next chart shows the type of companies' that take actions to tackle one of the SDGs through IR 4.0 technologies adoption. As we can see, the software and services sector have a high IR 4.0 implementation and a high SDGs implementation. Thus, we can conclude that the higher the IR 4.0 implementation, the more likely it is for a company to tackle SDGs.

Lastly, the total IR is 4.0 by sector. The software and services sector with the highest IR 4.0 implementations, followed by technology hardware and equipment. The least are energy and food and staple retailing.

Predictive and Prescriptive Analysis

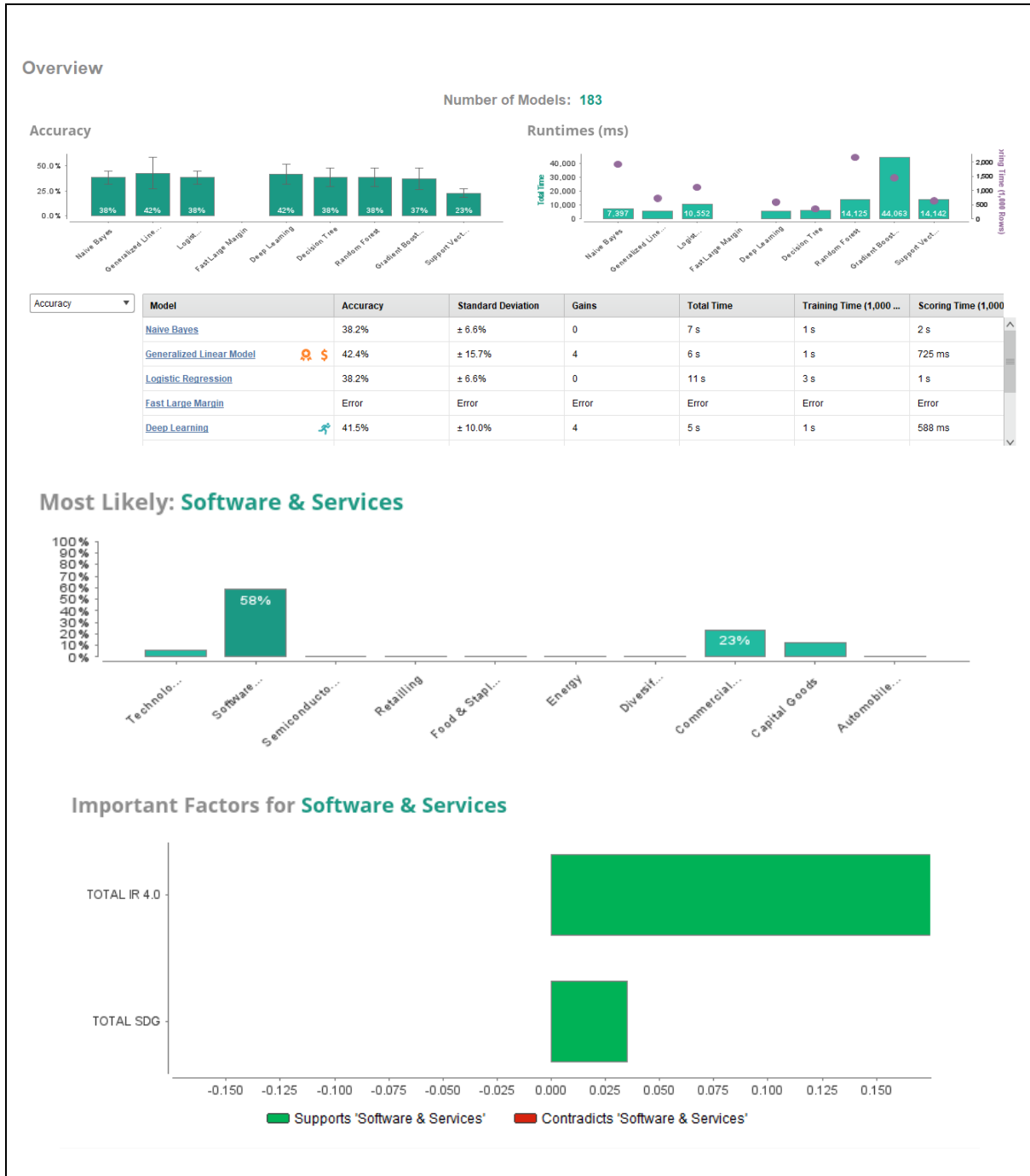


Figure 3. Predictive & Prescriptive Analysis of the sector with IR4.0 implementation for SDGs

First, the sector's predictive and prescriptive analysis with IR4.0 implementation for SDGs. According to the summary in Figure 3, the Generalised Linear Model, Logistic Regression, Random Forest, and Deep Learning are the most accurate. The accuracy of the three models is 38.8 percent, with the lowest classification error of 61.2 percent. Following that, the standard deviation is 11% with two gains. However, the overall time for the Generalized Linear Model is the shortest among the others, at 4s. As a result, the Generalized Linear Model is selected to do a predictive and prescriptive analysis for the industry.

In addition, a simulator has been used to do predictive and prescriptive assessments. As indicated in Figure 5, all variables have been optimised accordingly. Following optimization, the predictive study results reveal that when a firm implements IR 4.0, they will most likely address SDGs.

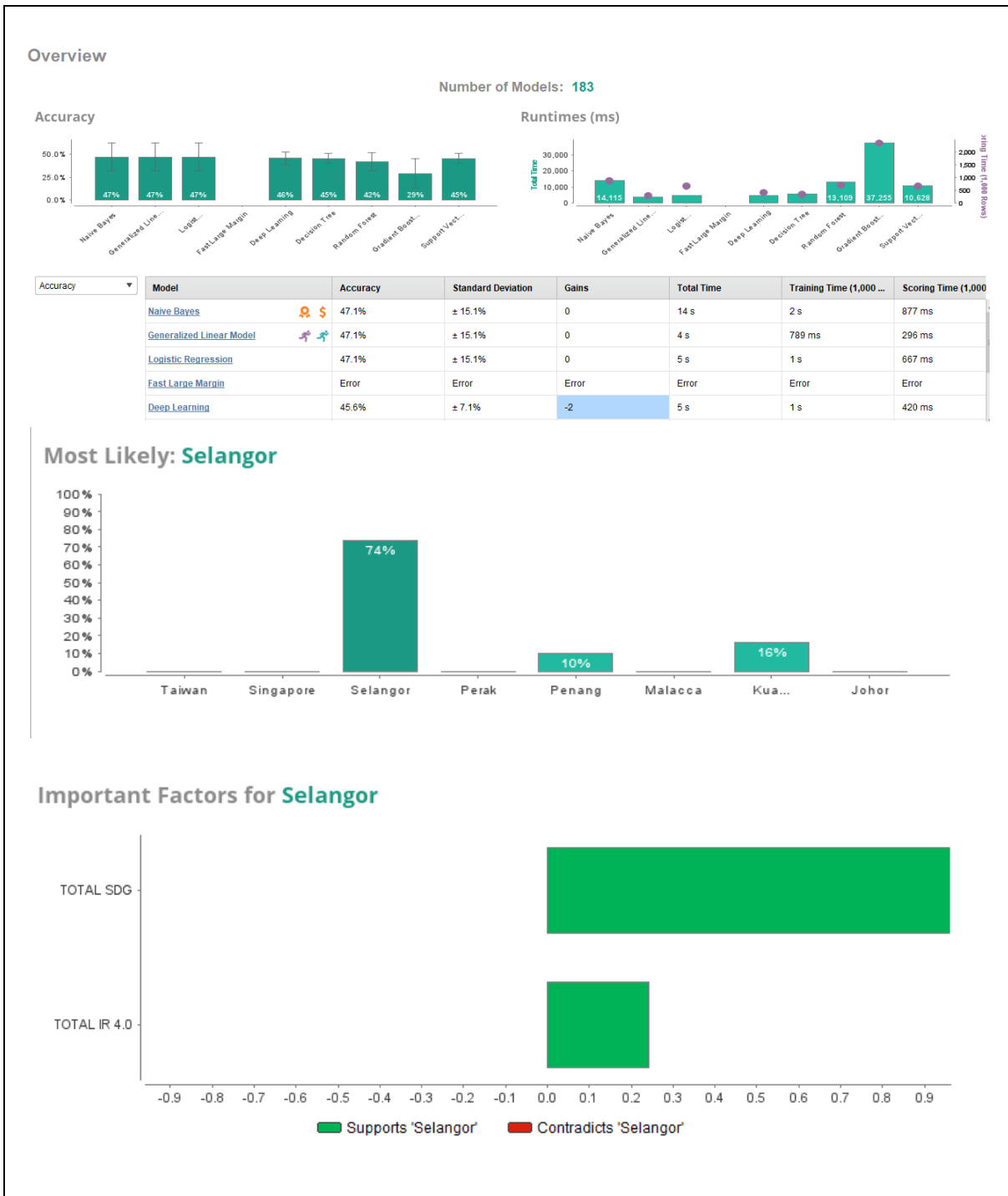


Figure 4. Predictive and Prescriptive Analysis for correlation of total SDGs and total IR4.0 implementations for States

The following predictive and prescriptive analysis focuses on states. According to the summary in Figure 4, the Naive Bayes Model, Generalized Linear Model, and Logistic Regressions are the most accurate. It is also the most efficient. I picked the generalised linear model for a predictive and prescriptive state analysis based on numerous parameters.

Furthermore, a simulator has been used to do predictive and prescriptive assessments. Figure 4 shows how all of the variables have been optimised. Following optimization, the predictive study results suggest that Selangor (74 percent) is the most likely state, followed by Kuala Lumpur (16 percent). In terms of prescriptive analysis, Selangor is supported by the entire number of SDGs and IR 4.0. This is due to Selangor being Malaysia's most developed and advanced state. It serves as the country's main entrance point and is conveniently placed near the capital city of Kuala Lumpur. Based on this, we can conclude that firms are actively using IR 4.0, leading to a greater involvement in addressing SDGs in Malaysia's developed states.

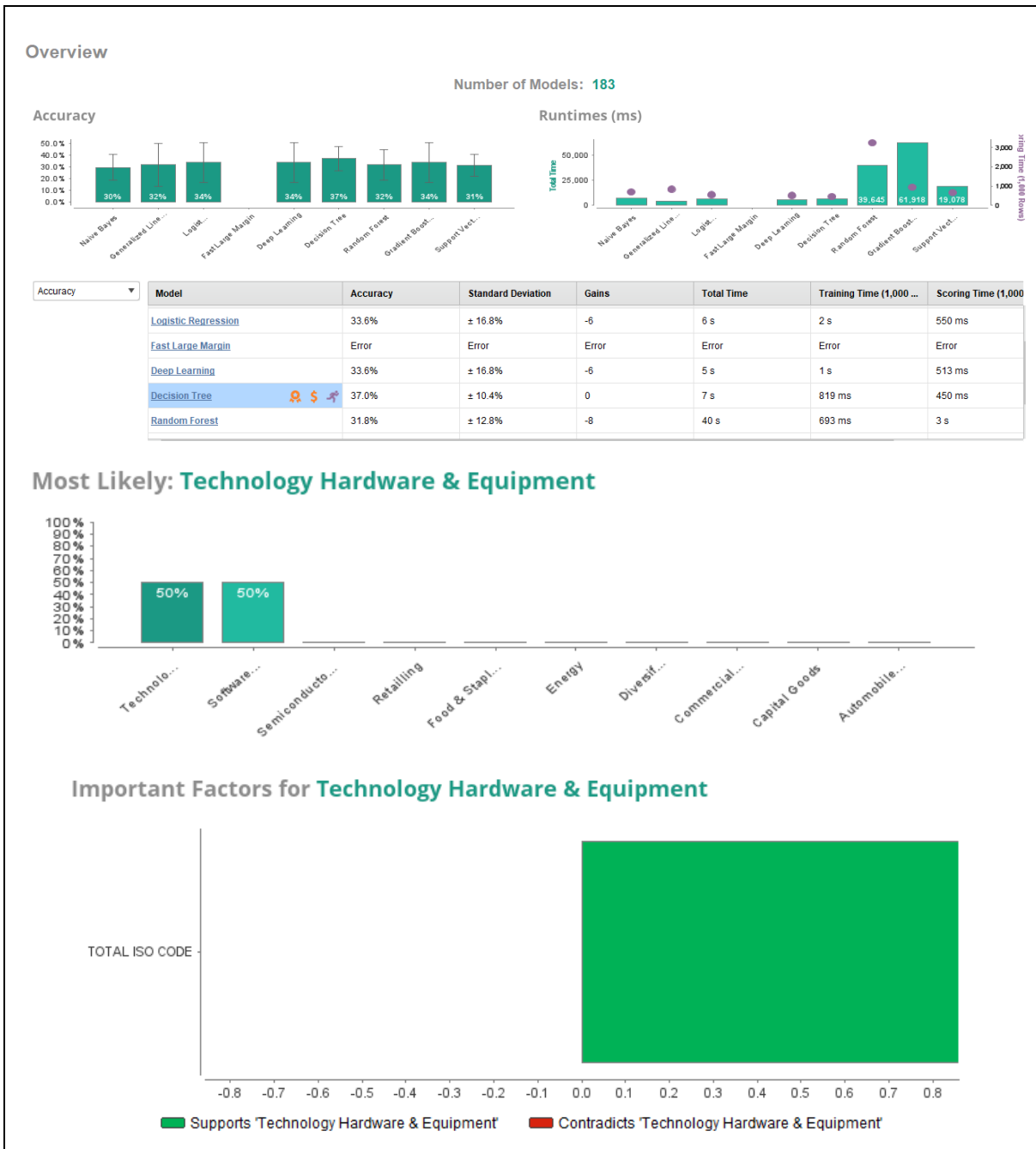


Figure 5. Predictive and prescriptive for companies' ISO code

The last predictive and prescriptive study is for the ISO code of a company. According to the overview in Figure 5, the Decision Tree Model is the best model with the highest accuracy among the others. It is also the most efficient. I picked the Decision Tree model for a predictive and prescriptive study of organisations' ISO codes based on numerous parameters.

Furthermore, a simulator has been used to do predictive and prescriptive assessments. Figure 6 shows how all of the variables have been optimised. Following optimization, the predictive study results suggest that the technological hardware and equipment sector and software and services sector are the most likely for enterprises to rely on the ISO code, with 50 percent and 50 percent, respectively. The entire amount of ISO codes supports technological hardware and equipment in terms of prescriptive analysis. As a result of the high ISO code, we may deduce that the technology hardware industry is successful with SDGs, driving them to be more active in confronting SDGs.

DISCUSSION

To answer the research aims and questions, the researchers performed an examination of 199 Malaysian publicly traded businesses. The first question, Q1, is: What types of Malaysian firms use IR 4.0 technology to address one of the SDGs? According to the data obtained, the majority of Malaysian enterprises who take action to address one of the SDGs through the use of IR 4.0 technologies are in the software and services sector, followed by technology hardware and equipment. Malaysian firms with the lowest profits include energy, food, and basic merchants. The findings of this study

contradict those of Lourenco (2013), Branco (2013), and Garcia (2017), who found that firms in ecologically and socially sensitive areas such as energy and telecommunications perform better in ESG. As a result, our analysis found that energy performs poorly in SDGs as compared to the software and technology industry. Q2: What is the link between the demographic profile of IR 4.0 organisations and the SDGs? The study found a high association between IR 4.0 installations by businesses and SDG achievement. As a result, we can infer that broad IR 4.0 deployment in a firm will make it simpler to address SDGs. The location also has a vital influence. Companies in Malaysia's developed states are more active with IR4.0 implementation and addressing SDGs challenges.

Furthermore, Q3: What is the highest state in terms of SDG implementation in business? According to Diamond (1999), Glass (2019), and Newig (2019), a country's growth is determined by its geographic location, which encompasses several challenges such as weather, disease prevalence, agriculture, transportation expenses, and market access. According to this survey, Selangor has the greatest state implementation of SDGs in business. The predictive research also reveals that businesses in Selangor are actively implementing IR4.0 and addressing SDGs. As a result, we may conclude that Selangor has the best SDG performance since it is close to Kuala Lumpur.

CONCLUSION

To begin, the drop in SDG reporting in annual reports by Malaysian publicly traded corporations has resulted in Malaysia's SDG ranking being stable, despite the fact that the country still has many SDGs to achieve. The UN has constantly emphasised the relevance of SDGs to both the public and commercial sectors, pushing them to utilise their ingenuity to develop value for the common good, such as poverty reduction, biodiversity conservation, and hunger eradication. With the expansion in the number of firms in all states in Malaysia, the majority of Selangor companies have demonstrated strong performance in achieving SDGs. Selangor is the highest-ranking state in terms of SDG implementation. This demonstrated that the majority of Selangor enterprises are committed to the SDGs.

Furthermore, the industry has an impact on the commitment to implementing IR 4.0. According to the findings of this study, the Software and Services sector has the greatest implementation of SDGs, while the Energy and Food & Staples Retailing sectors have the lowest, with little interest in addressing SDGs. The ISO code was also very essential. According to the findings, firms with a large number of ISO codes likely to implement more SDGs.

The researcher has made several suggestions to enhance the study's findings. To begin, those states with lesser SDG performance should begin to understand the relevance of SDGs and how to tackle them one at a time. The government should organise a workshop for the public and commercial sectors to discuss how they might address at least one SDGs issue. Other industries, in addition to the software and services sectors, could strengthen their commitments to SDG implementation by implementing IR 4.0.

Finally, in terms of future research, it is worthwhile to examine the success of the SDGs in relation to a certain state and industry. As a consequence, more thorough findings may be obtained. The researcher might do study using surveys and questionnaires. The researcher can also do an analysis using IBM SPSS and add data from the prior year to compare the company's performance in SDGs.

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CONFLICT OF INTEREST

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