FIBERROAD

MARKET RESEARCH

NAVIGATING MALAYSIA'S DIGITAL TRANSFORMATION: THE RISE OF SMART CITIES AND IOT

PREPARED BY DARIO GREENE, DIRECTOR MARKETING ANALYTICS, FIBERROAD

Contents

INTERNET OF THINGS (IOT) - MALAYSIA

The Internet of Things (IoT) market is poised for significant growth, with projected revenues expected to soar to an impressive US$6.53 billion in the year 2023. Among the various sectors within IoT, the automotive industry stands out as a dominant force, with a projected market volume of US$2.10 billion for the same year.

This growth trajectory in IoT revenues is not expected to taper off any time soon. From 2023 to 2028, the market is anticipated to experience a robust annual growth rate, commonly referred to as a Compound Annual Growth Rate (CAGR), of 13.20%. This sustained growth is expected to culminate in a substantial market volume of US$12.14 billion by the year 2028, underscoring the enduring and lucrative nature of IoT technologies.

In a global context, the United States is primed to lead the charge in IoT revenue generation. In 2023, it is forecasted that the United States will contribute a substantial US$172.30 billion to the global IoT market, underscoring its dominant position in the industry and its significant role in shaping the future of IoT technologies.[1]

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[1] (Internet of Things - Malaysia, n.d.)

REVENUE BY SEGMENT

REVENUE BY SEGMENT

REVENUE CHANGE BY SEGMENT
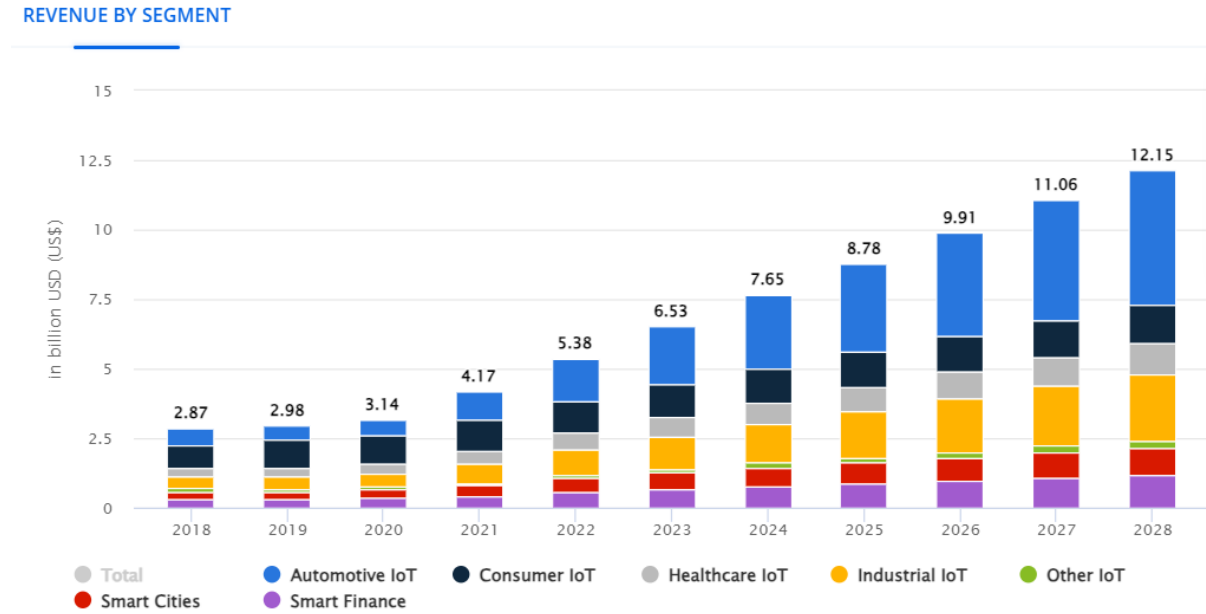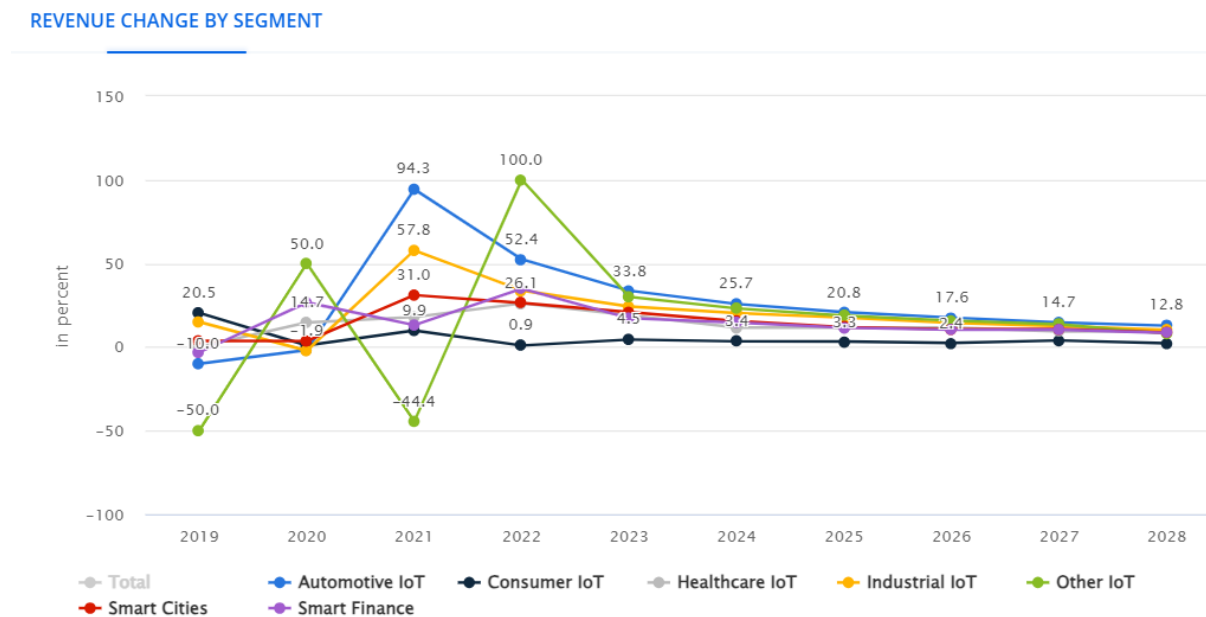
REVENUE CHANGE BY SEGMENT

INVESTMENT
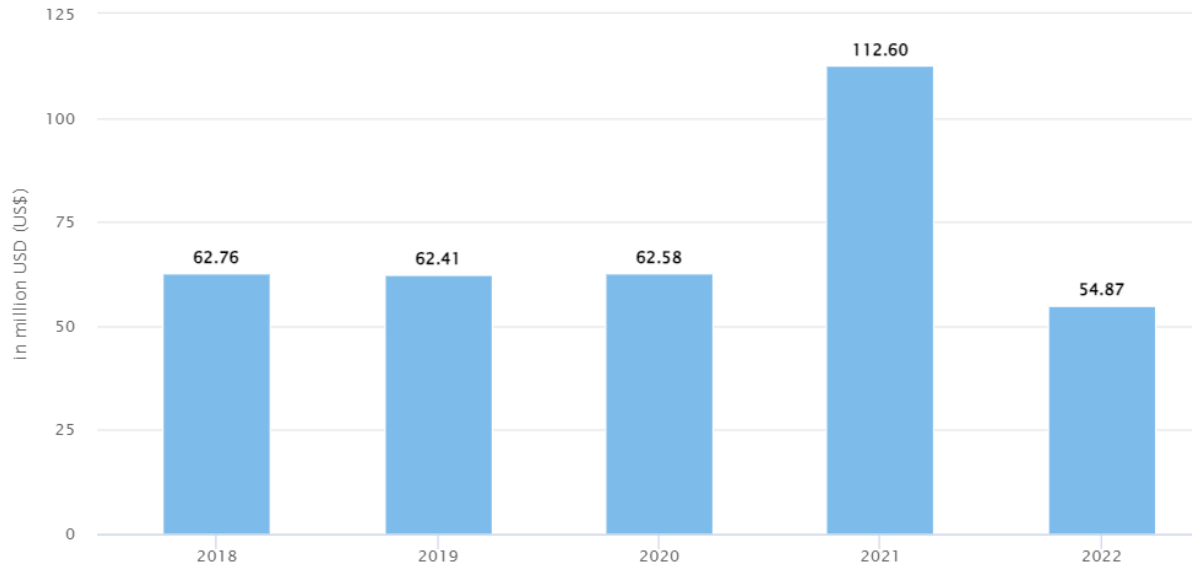
NUMBER OF IOT CONNECTIONS
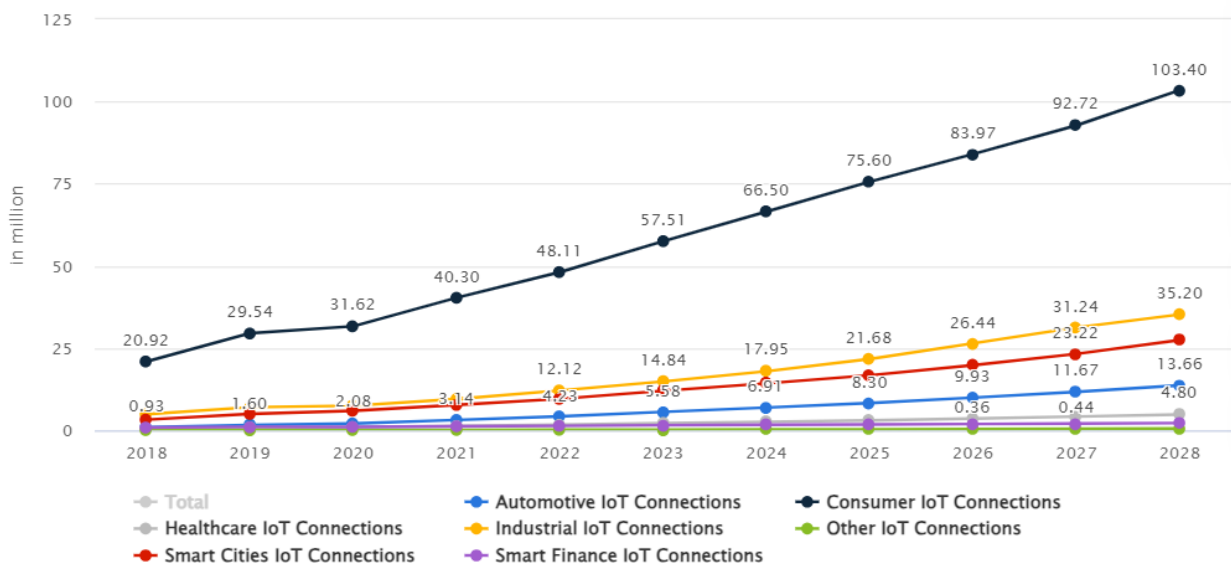
REVENUE OF THE IOT INDUSTRY IN MALAYSIA 2018-2028
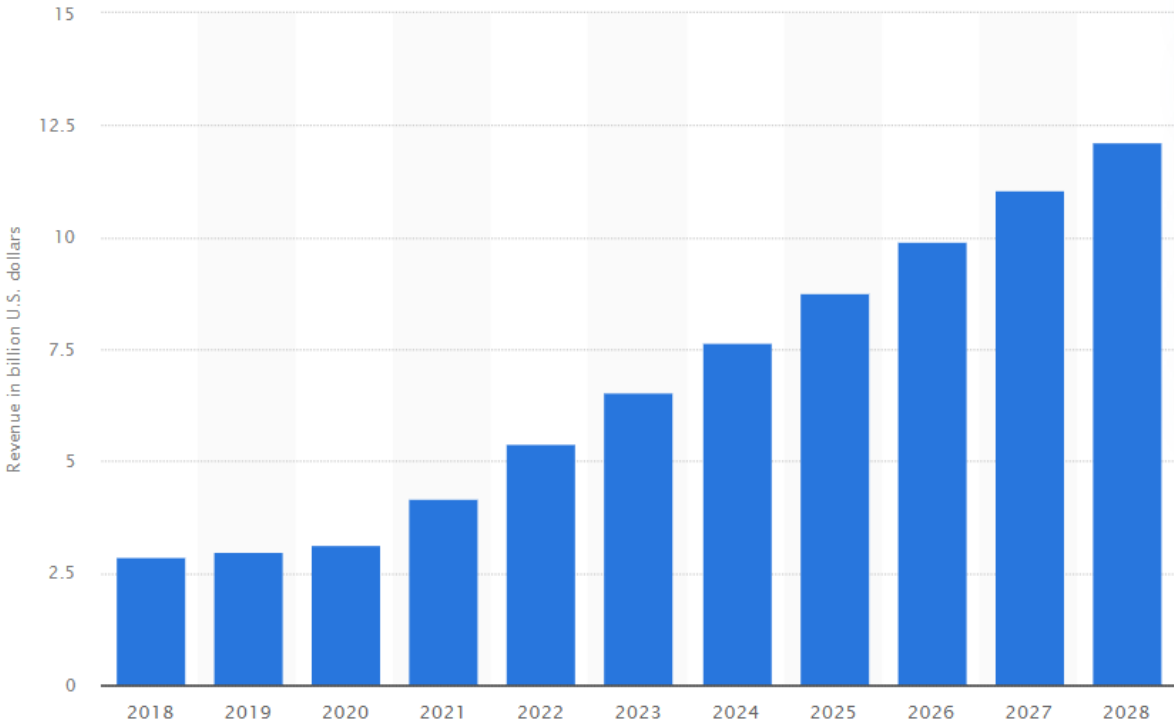
In 2022, the revenue for the Internet of Things (IoT) market in Malaysia amounted to around 5.38 billion U.S. dollars, an increase by more than one billion U.S. dollars compared to the previous year. Statista Digital Market Insight estimated that the revenue for the IoT industry in the country will continue to increase and reach more than 12 billion U.S. dollars by 2028.[2]

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[2] (Revenue of the IoT industry in Malaysia 2018-2028, n.d.)

SMART CITIES – MALAYSIA

The Smart Cities market is on the cusp of a transformative journey, with projected revenues poised to reach a significant milestone of US$0.58 billion in the year 2023. This projection underscores the growing interest and investments in developing urban landscapes that are technologically advanced and sustainable.

The growth trajectory of the Smart Cities market is anticipated to be robust in the coming years. From 2023 to 2028, experts project an impressive annual growth rate, represented by the Compound Annual Growth Rate (CAGR) of 11.51%. This consistent growth is expected to culminate in a market volume of US$1.00 billion by the year 2028, highlighting the burgeoning opportunities within the Smart Cities sector and the increasing demand for innovative urban solutions.

In a global context, the United States emerges as a prominent player in the Smart Cities landscape, with significant revenue contributions. In 2023, it is forecasted that the United States will lead the way by generating a substantial US$11.12 billion in Smart Cities revenue. This underscores the country's commitment to adopting and promoting smart technologies and urban planning strategies.[3]

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[3] (Smart Cities - Malaysia, n.d.)

REVENUE

REVENUE
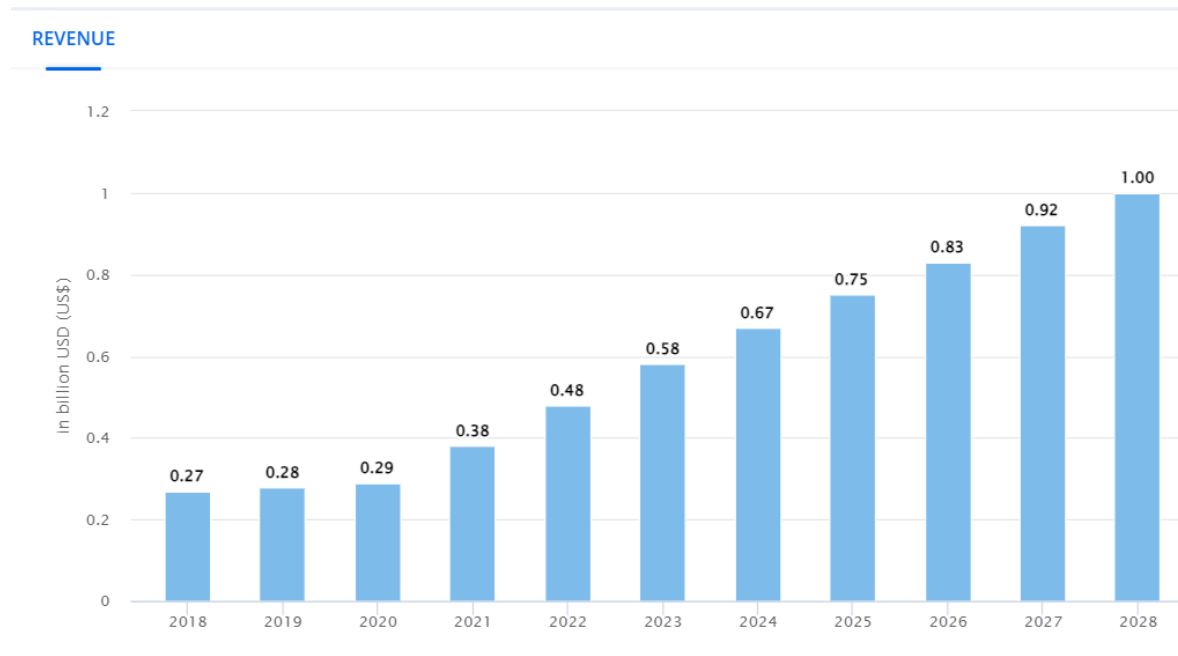
REVENUE CHANGE

REVENUE CHANGE

NUMBER OF SMART CITIES CONNECTIONS
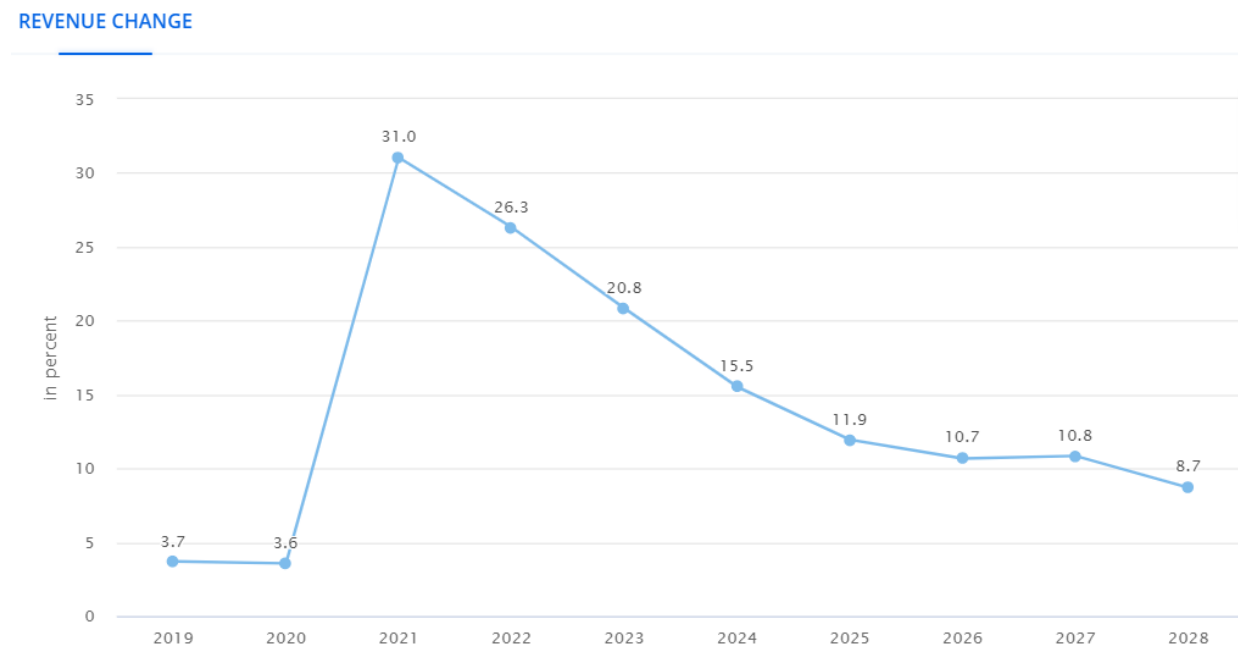
NUMBER OF SMART CITIES CONNECTIONS
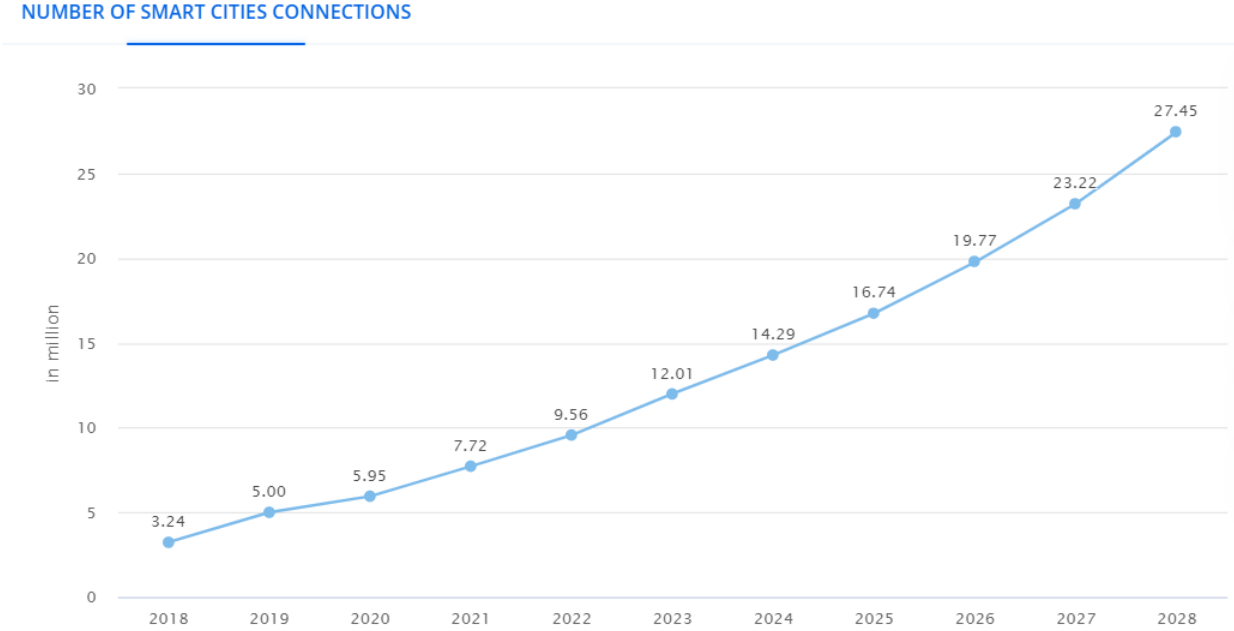
SMART CITY GOVERNANCE INDEX SCORE IN KUALA LUMPUR, MALAYSIA 2023, BY TYPE
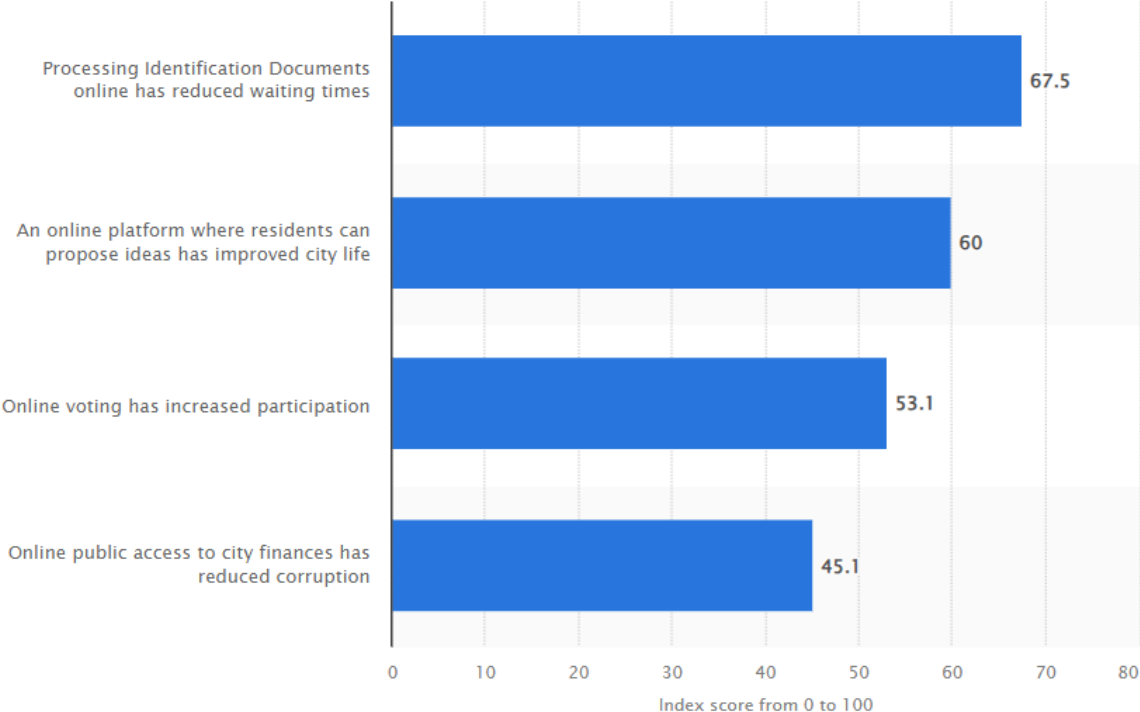
In 2023, processing identification documents had the highest index score among governance technologies in a smart city Kuala Lumpur in Malaysia, with 74.8 out of 100 total score, which had reduced waiting time among citizens. This was followed by an access to online platform where residents can proposed ideas, with an index score of 60.[4]

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[4] (Smart city governance index score in Kuala Lumpur, Malaysia 2023, by type, n.d.)

INDUSTRIAL IOT – MALAYSIA

The Industrial Internet of Things (IIoT) market is poised for substantial growth, with projected revenues expected to reach an impressive US$1.18 billion in the year 2023. This projection underscores the increasing adoption of IoT technologies in industrial sectors, driving efficiency and innovation.

The growth trajectory of the IIoT market is expected to be robust in the coming years. From 2023 to 2028, it is anticipated to experience an impressive annual growth rate, quantified by the Compound Annual Growth Rate (CAGR) of 14.97%. This consistent growth is projected to result in a substantial market volume of US$2.37 billion by the year 2028. This signifies the expanding opportunities within the IIoT sector, driven by the imperative for enhanced automation and data-driven decision-making in industrial settings.

On a global scale, the United States is poised to take the lead in revenue generation within the IIoT landscape. In 2023, it is forecasted that the United States will contribute a substantial US$66.28 billion to the global IIoT market. This underscores the nation's commitment to industrial digital transformation and the deployment of IoT technologies to bolster productivity and competitiveness.[5]

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[5] (Industrial IoT - Malaysia, n.d.)

REVENUE
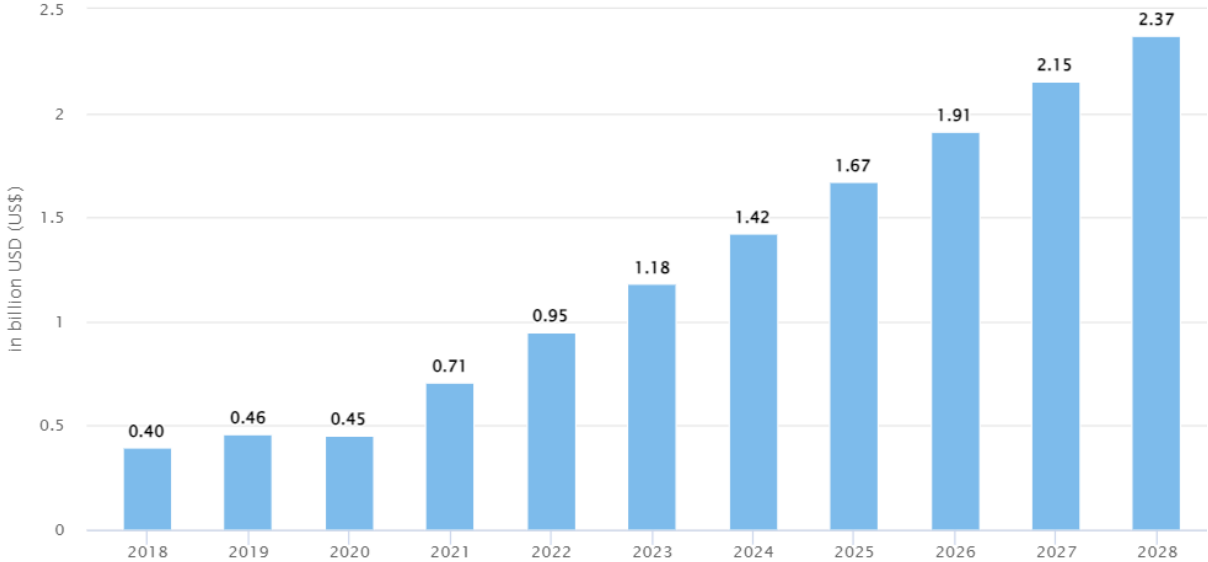
REVENUE

REVENUE CHANGE

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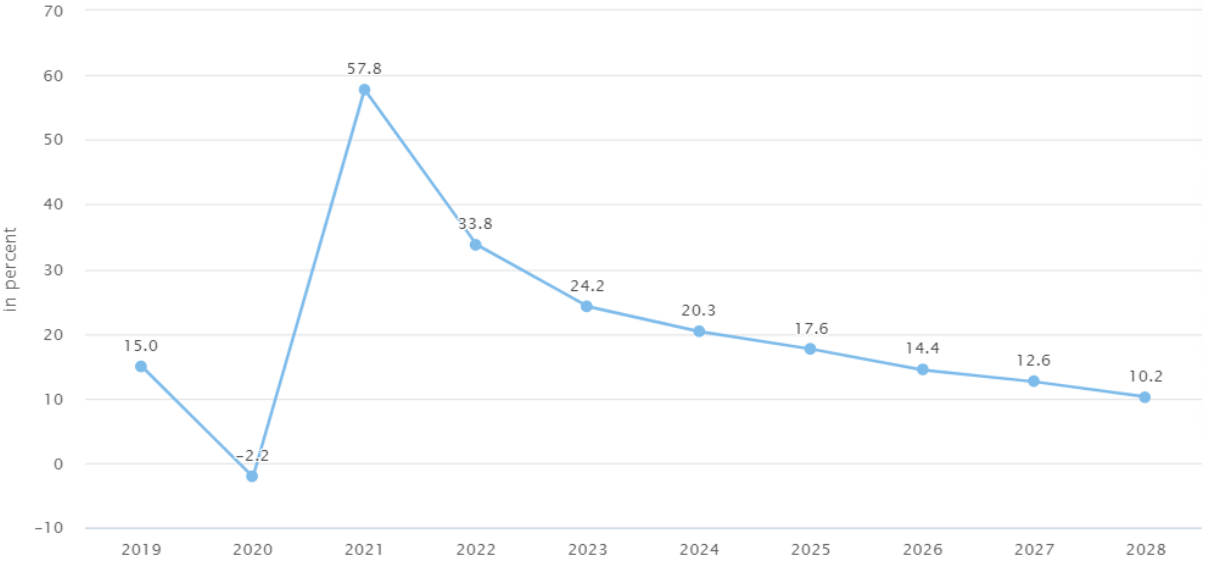
NUMBER OF INDUSTRIAL IOT CONNECTIONS

NUMBER OF INDUSTRIAL IOT CONNECTIONS

In million

Year	Value
2018	4.90
2019	7.01
2020	7.50
2021	9.50
2022	12.12
2023	14.84
2024	17.95
2025	21.68
2026	26.44
2027	31.24
2028	35.20

IMPACT OF ROBOTS AND AUTOMATION ON JOB CREATION IN MALAYSIA
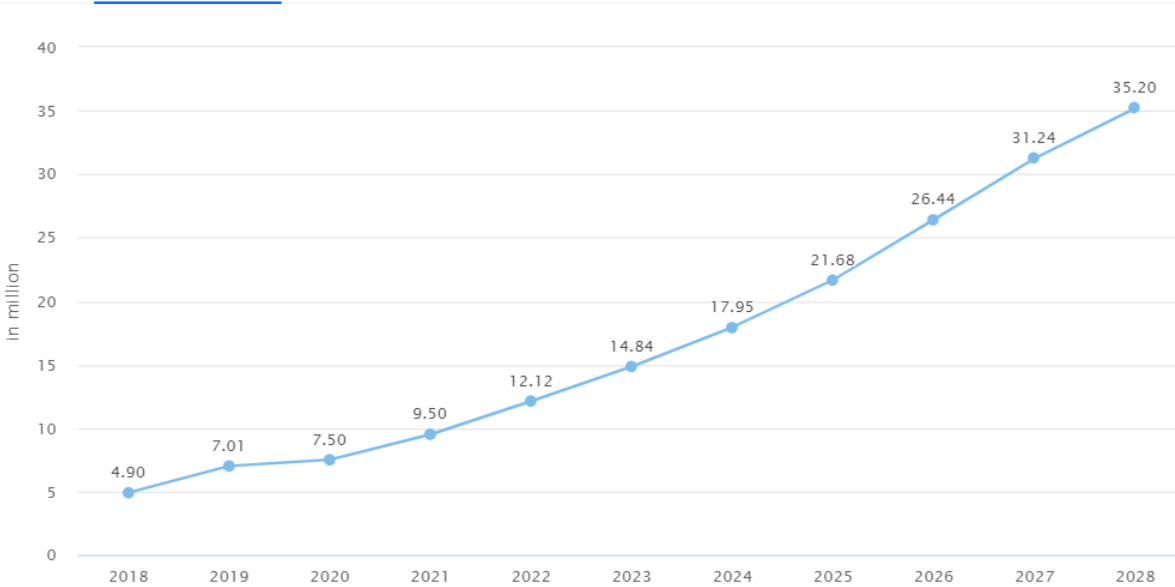
- Lead to creation of jobs 31%
- Lead to a loss of jobs 69%
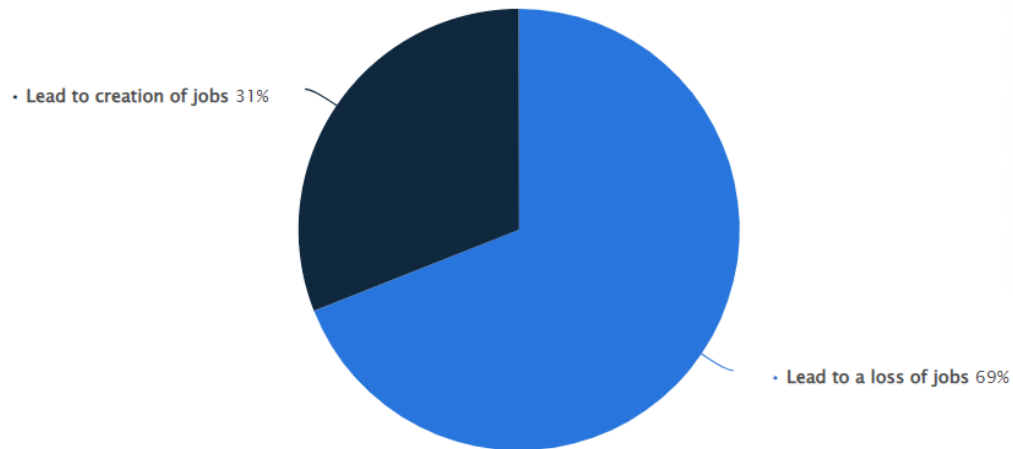
This statistic shows the results of a survey on whether robots and automation would lead to a loss of jobs or create more jobs in Malaysia as of April 2019. During the survey period, the majority of respondents, 69 percent, believed that robots and automation will lead to a loss of jobs.[6]

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[6] (Impact of robots and automation on job creation in Malaysia 2019, n.d.)

GOVERNMENT POLICIES SUPPORTING IOT IN MALAYSIA

The Malaysian government has implemented a series of policies aimed at fostering the adoption of Internet of Things (IoT) technologies and driving the country's digital transformation. These policies play a pivotal role in creating an environment conducive to IoT development:

1. **National IoT Strategic Roadmap**: The National IoT Strategic Roadmap serves as a comprehensive blueprint for guiding Malaysia's IoT development. It aligns with existing policies such as the National ICT Strategic Roadmap (2012-2020), the Digital Malaysia initiative, and Digital Government initiatives. This roadmap outlines clear strategies for building a successful IoT ecosystem in Malaysia, with a focus on innovation and growth.

2. **Smart City Initiatives**: The government has launched various smart city initiatives, including Smart Selangor, Penang, and Perbadanan. These initiatives aim to transform urban areas into more connected and sustainable environments through the integration of IoT technologies. They promote efficiency, sustainability, and improved quality of life for residents.

3. **National Fourth Industrial Revolution (4IR) Policy**: The National 4IR Policy positions Malaysia to stay ahead of the curve in the Fourth Industrial Revolution. It encourages the adoption of advanced technologies, including IoT, to enhance productivity and competitiveness across industries.

4. **Industry4WRD**: Industry4WRD is Malaysia's National Policy on Industry 4.0. This policy blueprint aims to position Malaysia as a leader in global manufacturing by integrating cutting-edge technologies such as IoT, cloud computing, artificial intelligence (AI), robotics, and machine learning into the manufacturing sector.

These policies collectively create a favorable environment for IoT adoption and development in Malaysia. The government is committed to advancing IoT technologies to improve the country's digital landscape.

Investment Opportunities in Malaysia's IoT Industry

The IoT industry in Malaysia is poised for significant growth, with anticipated investments and strategic partnerships between 2023 and 2031. The convergence of IoT, AI, and automation presents substantial opportunities for both local and international businesses:

1. **Integration of IoT, AI, and Automation**: The synergy between IoT, AI, and automation is creating numerous investment opportunities. Businesses can leverage these technologies to enhance efficiency, productivity, and innovation.

2. **Booming Digital Economy**: Malaysia's digital economy is one of the fastest-growing sectors, attracting substantial investment. In the third quarter of 2022 alone, the digital economy received $15.7 billion in investments, highlighting the country's attractiveness to investors in the technology sector.

Government Initiatives Supporting IoT Adoption

The Malaysian government has taken proactive steps to support IoT adoption across various sectors. These initiatives aim to create an enabling environment for IoT development:

1. **National IoT Strategic Roadmap**: The National IoT Strategic Roadmap seeks to position Malaysia as a regional hub for IoT development and innovation. It promotes the adoption of IoT technologies in various industries and offers a framework for collaboration between stakeholders.

2. **Smart City Initiatives**: Smart city initiatives are designed to transform urban areas into more connected and sustainable environments. These projects leverage IoT technologies to enhance urban planning, transportation, and infrastructure.

3. **Industry4WRD**: Industry4WRD, Malaysia's National Policy on Industry 4.0, encourages the integration of IoT and other advanced technologies in the manufacturing sector. This policy fosters competitiveness and innovation.

Applying for Government Support for IoT Initiatives

Businesses in Malaysia can seek government support for their IoT initiatives through various programs and initiatives. One such program is the MyReskill IoT Programme, which targets small and medium-sized enterprises (SMEs) in manufacturing, manufacturing-related services, agriculture, and services sectors. This program aims to upskill the workforce and address the skills gap in IoT. Participation is free, and it offers access to resources and training.

Benefits of Participating in the National IoT Strategic Roadmap

Participating in the National IoT Strategic Roadmap in Malaysia can provide several advantages to businesses:

1. **Access to Funding**: The government has allocated funds for IoT initiatives, and participation in the roadmap can grant businesses access to these financial resources.

2. **Networking Opportunities**: Being part of the roadmap facilitates networking with other businesses and organizations in the Malaysian IoT industry, fostering collaboration and partnerships.

3. **Access to Resources**: The roadmap provides businesses with access to crucial resources such as training, research facilities, and development support, aiding in the development and implementation of IoT solutions.

Capital Input

Malaysia's IoT landscape has attracted substantial capital investments from both venture capital firms and private investors. For instance, TH Capital, a private investment firm based in Kuala Lumpur, has shown interest in fintech, IoT, e-commerce, and mobile gaming sectors. Similarly, KK Fund, a Singaporean venture capital firm, provides seed capital to internet and mobile startups in Malaysia. Globally renowned IoT venture capital firms like Intel Capital, Robert Bosch Venture Capital, Qualcomm Ventures, Northern Light Venture Capital (NLVC), and

Khosla Ventures are also active participants in the Malaysian IoT investment ecosystem.

Enterprise Participation

Malaysian enterprises, particularly small and medium-sized businesses (SMEs), are proactively engaging in IoT adoption and implementation. Research has indicated that Malaysian SMEs are actively exploring the current state, practices, and challenges associated with IoT implementation in the context of Industry 4.0. The Malaysia Productivity Corporation (MPC) has set ambitious targets, aiming to involve 5,000 SMEs in the MyReskill IoT Programme. Furthermore, prominent Malaysian companies such as ARB IOT Group, specializing in IoT system integration and support services, have demonstrated their commitment to the IoT sector by increasing their proposed share offering ahead of a $7 million US IPO.

Current State of IoT in Malaysia

Malaysia boasts a high internet penetration rate of 96.8%, positioning it 10th in the world for internet usage in 2023. This tech-savvy environment is characterized by over 33 million people actively using the internet.

However, despite the evident potential of IoT in Malaysia, several challenges persist. These include the need for open standards to ensure interoperability, cybersecurity concerns, and cost-related issues. Although the government has acknowledged the significance of IoT and crafted the National IoT Strategic Roadmap, progress has been somewhat slow due to the absence of a dedicated agency overseeing and guiding IoT development efforts.

IoT Applications and Breakthroughs

IoT applications in Malaysia encompass various sectors, including smart city initiatives, smart home technologies, and cybersecurity solutions. This IoT adoption has led to notable enhancements in customer experiences, the proliferation of digital services, and the emergence of innovative business models.

IoT in Malaysian SMEs

A study focusing on Malaysian SMEs has shed light on their active exploration of IoT implementation, particularly within the framework of Industry 4.0. The MPC's MyReskill IoT Programme targets the involvement of 5,000 SMEs, underlining the importance of SMEs in Malaysia's IoT ecosystem.

IoT Ecosystem and Trends

The Malaysian IoT ecosystem is characterized by three critical pillars: government policy, capital investment, and enterprise participation. These pillars work in synergy to foster IoT development and adoption. Government initiatives like 1GovCloud complement private sector investments from venture capital firms. Concurrently, enterprises, both large and small, are actively embracing IoT technologies, with some companies even seeking public investment to support their IoT endeavors.

Government's Role in Promoting IoT in Malaysia

The Malaysian government plays a pivotal role in promoting IoT by recognizing it as a critical technology for the country's advancement. The National IoT Strategic Roadmap aligns with overarching policies and initiatives, fostering a conducive environment for IoT growth. The government's commitment is further exemplified through projects like 1GovCloud, which specifically target IoT implementation in the public sector.

Examples of IoT Companies in Malaysia

1. **LANARS**: An international IoT company catering to the northern European market, LANARS specializes in IoT, Industrial IoT (IIoT), embedded systems, software development, and hardware.

2. **Indeema Software**: Headquartered in Washington, United States, Indeema Software offers a wide range of IoT development services and boasts a team of experienced IoT developers and engineers.

3. **ARB IOT Group**: A Malaysian IoT system integration and support services provider, ARB IOT Group has recently increased its proposed share offering by 8% ahead of a $7 million US IPO.

4. **HEXAIoT**: A wholly-owned Malaysian company specializing in Industry 4.0 environmental, agriculture, and manufacturing IoT solutions.

These companies are pivotal players in the Malaysian IoT industry, contributing through the development of innovative IoT solutions, opening new business opportunities, and driving the adoption of IoT technologies across various sectors.
[789101112131415]

SMART CITY INITIATIVES IN MALAYSIA

Smart cities are a critical focus for both the private and public sectors in Malaysia. While some cities in Malaysia have readily embraced smart initiatives, others consider smart city technology based on the specific needs and requirements of their residents. The success of smart city initiatives depends on the collaboration

[7] (The State of IoT Adoption in Malaysia: Opportunities and Obstacles, n.d.)

[8] (Malaysia National IoT Strategic Roadmap, n.d.)

[9] (National Internet Of Things (IoT) Strategic Roadmap, n.d.)

[10] (NATIONAL FOURTH INDUSTRIAL REVOLUTION (4IR) POLICY, n.d.)

[11] (Malaysia accelerates tech transformation with industry4WRD, n.d.)

[12] (Learn About Raspberry Pi and Arduino in MyReskill IoT Programme, n.d.)

[13] (Malaysia Productivity Corp (MPC) is targeting 5,000 participating companies from small and medium-sized enterprises (SMEs) , n.d.)

[14] (Digital Transformation in the Age of COVID-19 BUILDING RESILIENCE AND BRIDGING DIVIDES, n.d.)

[15] (Malaysia – Driven by digital evolution, n.d.)

of various stakeholders, including the community, local government, and the private sector, to create human-centric and people-first smart cities.

The Malaysian government has implemented several policies to bolster smart city initiatives, marking a significant shift toward urban development and technology integration. These policies play a pivotal role in reshaping urban landscapes and fostering innovation:

Malaysia Smart City Framework (MSCF): Launched in September 2019 by the Ministry of Housing and Local Government, the MSCF serves as a comprehensive policy document defining the concept of smart cities in Malaysia. It outlines three fundamental pillars:

Digital Economy Vision: The Malaysian government's digital economy vision, initiated in 1996, began with the establishment of Cyberjaya, Malaysia's first smart city. This vision aimed to position Malaysia as a hub for the digital economy. Over time, it expanded to include various other smart city initiatives across the country.

Public-Private Partnerships (PPPs): The Malaysian government has actively encouraged public-private partnerships to facilitate the development and implementation of smart city projects. PPPs involve collaborative efforts between the government and the private sector, leveraging expertise and resources from both sectors.

These government policies have significantly impacted urban development in Malaysia, with the emergence of smart cities such as Cyberjaya and the Smart Selangor initiative. The government's commitment to smart cities and smart communities aligns with global trends, reflecting the growing importance of technology and innovation in urban planning.

Factors Affecting Stakeholder Acceptance of Malaysian Smart Cities

Several factors influence stakeholder acceptance of smart cities in Malaysia:

> **Perceived Privacy and Security**: Concerns about data privacy and security are crucial for gaining stakeholder trust in smart city technologies.

Trust in Technology: Stakeholders must have confidence in the reliability and effectiveness of smart city solutions.

Self-Efficacy: The belief in one's ability to use and benefit from smart technologies plays a role in acceptance.

Effort Expectancy: Stakeholders need to perceive that using smart city technologies is straightforward and efficient.

Government Trust and Price Value: Trust in government initiatives and perceived value for the price paid are essential for stakeholder buy-in.

Malaysian Smart City Framework (MSCF)

The Malaysian government has formulated the MSCF, a policy document launched in September 2019 by the Ministry of Housing and Local Government. The MSCF defines smart cities as those utilizing technology and innovation to enhance citizens' quality of life, create economic opportunities, and manage resources efficiently and sustainably.

The MSCF is structured around three main pillars:

Smart and Sustainable Solutions: This pillar encompasses policies related to a clean environment, environmental protection, green development, green infrastructure, and a green economy. It aims to promote economic growth, value creation, and innovative economic growth while ensuring equitable wealth distribution.

Smart Planning: Policies under this pillar focus on entrepreneurship, public participation, efficient public and social services, private-public partnerships, and transparent governance. These policies aim to support economic growth and value creation while enhancing the planning process.

Smart Infrastructure and Technologies: This pillar emphasizes efficient road accessibility, public transportation, non-motorized accessibility, availability of ICT infrastructure, and economic growth and value creation. It underlines the importance of technology and infrastructure for the development of smart cities.

The MSCF aims to achieve a competitive economy, sustainable environment, and improved quality of life for citizens. However, the implementation of smart city concepts in Malaysia faces challenges such as stakeholder partnerships, funding, and infrastructure.

Enterprise Participation in Smart Cities

Enterprises play a pivotal role in the development of smart cities in Malaysia. They contribute in various ways:

> **Providing Smart Solutions**: Enterprises offer smart solutions that assist local authorities in improving the quality of life, creating economic opportunities, and managing resources sustainably.

> **Investing in Smart City Projects**: Enterprises invest in smart city projects, providing essential capital input necessary for project implementation.

> **Developing Smart Infrastructure**: Enterprises develop smart infrastructure and technologies critical for the advancement of smart cities, supplying the technology and infrastructure needed by local authorities.

> **Supporting Entrepreneurship**: Enterprises support entrepreneurship and small business development, contributing to the growth of the smart city's knowledge economy.

Latest Successful Smart City Projects in Malaysia with Enterprise Participation

Malaysia's smart city development is advancing, with various successful projects showcasing enterprise participation in the transformation of urban centers. These initiatives aim to enhance the quality of life, promote sustainability, and harness technology for urban management. Here are some of the latest successful smart city projects in Malaysia involving enterprise participation:

1. Smart Selangor:

- **Objective:** The Smart Selangor initiative aspires to position Selangor as the most livable state in the region by 2025.**2. Cyberjaya:**

- **Background:** Cyberjaya holds the distinction of being Malaysia's inaugural smart city, established in 1996 as part of the nation's digital economy vision.

- **Enterprise Engagement:** Cyberjaya serves as a thriving hub for technology and innovation, drawing the interest and participation of enterprises specializing in smart solutions. These enterprises play a pivotal role in the city's continued development.

3. Putrajaya and Petaling Jaya:

- **Testbed for Governance:** Putrajaya and Petaling Jaya were chosen as testbeds for a study on participatory governance in smart cities.

- **Citizen Participation:** The study highlighted the significance of e-participation platforms, such as the Putrajaya Mobile App and the PJKita Website, in promoting citizen engagement and participation in various smart city projects.

4. Smart Traffic Management System (STMS):

- **Project Objective:** The STMS project was implemented in Kuala Lumpur with the aim of improving traffic flow and alleviating congestion in the city.

- **Enterprise Involvement:** The project's success relies on the active participation of various enterprises specializing in smart solutions. Their contributions are instrumental in enhancing urban mobility.[16171819202122]

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[16] (Pushing Malaysia's Smart City Development in 2022, n.d.)
[17] (Factors Affecting Stakeholder Acceptance of a Malaysian Smart City, n.d.)
[18] (The Transformation Revealed Concept of Smart City Application in Urban Planning, n.d.)
[19] (Implementing the Smart City Concept in Malaysia: Contemporary Challenges, Strategies and Opportunities Facing Local Authorities in the COVID-19 Era, n.d.)
[20] (Participatory Governance of Smart Cities: Insights from e-Participation of Putrajaya and Petaling Jaya, Malaysia, n.d.)
[21] (Malaysia - Smart Cities, n.d.)
[22] (Malaysia Smart City Framework (MSCF), n.d.)

THANK YOU!

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