

AI for Strategic Growth Use Case - Smart Economy

Statement of Work (SoW)

Overview on Smart Economy

The digital economy is the economic activity that results from billions of everyday online connections among people, businesses, devices, data, and processes. The backbone of the digital economy is hyperconnectivity which means growing interconnectedness of people, organisations, and machines that results from the Internet, mobile technology and the internet of things (IoT), digital platforms among others. The digital economy is taking shape and undermining conventional notions about how businesses are structured; how firms interact; and how consumers obtain services, information, and goods. Recently, TechCrunch, a digital economy news site, noted, “Uber, the world’s largest taxi company, owns no vehicles. Facebook, the world’s most popular media owner, creates no content. Alibaba, the most valuable retailer, has no inventory. And Airbnb, the world’s largest accommodation provider, owns no real estate... Something interesting is happening.” [1]

The new technologies hold great promise. They create new avenues and opportunities for a more prosperous future. But they also pose new challenges. While digital technologies have dazzled with the brilliance and prowess of their applications, they have so far not fully delivered the expected dividend in higher productivity growth. Indeed, aggregate productivity growth has slowed in the past couple of decades in many economies. Consequently, economic growth has trended lower. As technology reshapes markets and alters growth and distributional dynamics, policies must ensure that markets remain inclusive and support wide access to the new opportunities for firms and workers. The digital economy must be broadened to disseminate new technologies and opportunities to smaller firms and wider segments of the labor force [2].

A smart economy is an economy that is driven by innovation, technology, and sustainability. It is an economy focused on creating jobs, driving economic growth, and improving the quality of life for citizens. This article will explore the key elements of transforming local economies towards smart economies and why it is essential for the future of our society. [3].

Technology and Architecture

Since many smart solutions are dependent on data, it is crucial for cities to make data management an area of excellence. This includes gathering and analyzing an array of data, making it accessible to stakeholders, and monetizing its value. Cloud-based technology, mobile apps, citywide data platforms, IoT/sensors, biometrics recognition, and geospatial technology are

now used by more than half of the surveyed cities. For some pillars (mobility, environment, governance, economy, payments), the level of investment increases as cities become more mature, while for others the level of investment decreases (infrastructure, public safety, talent). cities around the world are developing multiple modes of transportation to provide greater efficiencies for residents and businesses.

As cities move to a tech-enabled, multi-modal mobility model, which includes ride and car sharing, smart traffic signals, mobile apps, and smart public transit systems, there can be large returns in time and money. For example, in beginner cities, mobile apps can save riders 10.3 hours annually per capita in waiting time and increase transit ridership, while smart traffic signals can offer per capita annual personal time savings of 9.7 hours and fuel savings of 3.3 gallons per capita. [5].

The world is experiencing tremendous change in how we work, live, and conduct economic activities. Not only are our lives becoming more digital, but money and the way we transact are also evolving. Data flows play an ever-increasing role in this environment, making cooperation on digital policy and digital trade important priorities across society. Benefits from this kind of cooperation include economic growth, improved healthcare, climate risk management, resilience of small businesses, and digital inclusion. A strategic framework helps organize attention on those areas where measured progress is possible, and we have categorized the themes that require attention into primary domains as following [4]:

- **Leadership & Coordination:** Encourage adjusted focus and leadership by international bodies. While they continue working towards international standards, they could increase coordination between regional developments thereby helping combat fragmentation, duplication, and conflict to the greatest degree possible while encouraging mutual recognition and interoperability.
- **Knowledge & Skills:** Support the development of new digital knowledge and skills in the public and private sectors to better understand the economics of data and smart approaches to privacy.
- **Regulatory Architecture:** Advance consistent regulatory architectures for activities across different sectors and borders.
- **Protocols & Standards:** Create interoperable protocols and standards for data flow, safety, and privacy.
- **Digital Trade Enablement:** Encourage agreements between like-minded economies such as the Singapore-Australia Digital Economy Agreement (DEA) which has become part of a wider set of DEAs Singapore has concluded with Chile and New Zealand, United Kingdom, and Korea.

Strategic Growth and Econometrics

Transforming local economies into smart economies is critical for sustainable economic growth, job creation, and improving the quality of life for citizens. To achieve this transformation, all stakeholders must work together towards a common goal, including government, businesses, and citizens. Governments must invest in infrastructure, education, and research to give businesses the necessary resources to succeed. Companies must embrace innovation and technology to create new products and services, streamline processes, and improve efficiency. Citizens must actively participate in the economy, support local businesses, and promote sustainability. The transformation of local economies into smart economies is a continuous process that requires continuous efforts and investments. By adopting a smart economy model, we can create a better future for ourselves and future generations. It will drive economic growth, create job opportunities, improve the quality of life for citizens, and protect our environment [3].

Economists develop economic models to explain consistently recurring relationships. Their models link one or more economic variables to other economic variables. For example, economists connect the amount individuals spend on consumer goods to disposable income and wealth, and expect consumption to increase as disposable income and wealth increase (that is, the relationship is positive). There are often competing models capable of explaining the same recurring relationship, called an empirical regularity, but few models provide useful clues to the magnitude of the association. Yet this is what matters most to policymakers. When setting monetary policy, for example, central bankers need to know the likely impact of changes in official interest rates on inflation and the growth rate of the economy. It is in cases like this that economists turn to econometrics.

Econometrics uses economic theory, mathematics, and statistical inference to quantify economic phenomena. In other words, it turns theoretical economic models into useful tools for economic policymaking. The objective of econometrics is to convert qualitative statements (such as “the relationship between two or more variables is positive”) into quantitative statements (such as “consumption expenditure increases by 95 cents for every one dollar increase in disposable income”). Economic models generally consist of a set of mathematical equations that describe a theory of economic behavior. The aim of model builders is to include enough equations to provide useful clues about how rational agents behave or how an economy works. The structure of the equations reflects the model builder’s attempt to simplify reality—for example, by assuming an infinite number of competitors and market participants with perfect foresight [7].

Other Types of Challenges

Policies for Fair Economy.

Microeconomics Modeling.

Public Financial Management.

Global Economic Risk.

Socioeconomics Modeling.

Situational Global Economic Changes.

AI Solution Specifications

Smart economy transformation significantly relies on innovation in artificial intelligence, modern platforms and data management capabilities extending traditional econometrics. Currently, such transformation is getting mature nation-wide through digital transformation programs in different governmental sectors. The following topics have been identified to be beneficial to start with although they are interlinked as well as representing a short subset out of larger set of topics in the two perspectives of microeconomics and macroeconomics. The rest of the activities in this project from 2 to 18 are focusing on detailed process of getting real-life solution in place:

- Topic #1: Monetary and Public Finance: tackling areas related to governmental policies and financial system including financial regulations, aggregate business cycle, fair pricing, money markets, public spending, taxes, deficit, inflation, and legalization. Modeling the dynamics of the relation between these areas towards economic growth and enhancements of key indicators.
- Topic #2: International Economics: modeling the relations of cross countries activities including international trade, globalization/localization, global value chains, foreign investment, labor flows and immigration, outsourcing, cross-border crises and risks, market competition and comparative advantage, and capital flow. The objective is to develop a country's opportunities in the global market.
- Topic #3: Health and Human Capital: healthcare policies, child health, disability, unhealthy behaviors, medical care provisioning, labor markets and wages, population demography for poverty and skills development, family and household, health in workplace, unemployment and immigration, technology impact.
- Topic #4: Urban and Environmental: Targeting the mutual impact of environment on economy like modeling for sustainable development, management of natural resources, urbanization urban cities planning and analysis like demographic transition, internal mobility, housing, crime, education, healthcare, green facilities.
- Topic #5: Behavioral Economics: Bridging the gap between typical economic frameworks and human behavior in actionable context through modeling social, psychological, cognitive,

and emotional factors. Many areas have potential including demand-supply, consumer patterns, scarce resources sharing, cooperative models, information and digital systems impact, socioeconomics factors, social influencing, gamification, happiness and wellbeing analysis, personal decisions patterns.

- Topic #6: Virtual Economy Advisor: supporting different stakeholders and parties in the connect of economic knowledge extractions, search and retrieval and language models generative capabilities which could help them in better understanding and forming decisions. This could focus on a specific domain like legalizations and regulations, human capital, healthcare or can provide comprehensive cross-domain i.e. nation-wide economy perspective.
- Topic #7: Statistical Modeling and Simulation of Events: set of models to analyze, predict, and simulate important events for data extracted from above topics including columnar and graph structures for example finding patterns in nation-wide cross different economy domains , spatial distribution, seasonality, simulating change impact in pricing, politics, policies, and crisis-events.

References & Resources

#	Topic	Source
1	What is the digital economy and how is it transforming business?	https://www.weforum.org/agenda/2022/05/digital-economy-transforming-business
2	How digital transformation is driving economic change	https://www.brookings.edu/articles/how-digital-transformation-is-driving-economic-change/
3	Transforming Local Economy Towards Smart Economy	https://iotworld.co/2023/04/transforming-local-economy-towards-smart-economy/?utm_source=rss&utm_medium=rss&utm_campaign=transforming-local-economy-towards-smart-economy
4	Strategic framework for digital economic cooperation	https://www.iif.com/portals/0/Files/content/PathForProgress_Final.pdf
5	Smart transformation triggers a virtuous cycle of economic growth in cities	https://newsroom.ferrovial.com/en/news/smart-transformation-triggers-a-virtuous-cycle-of-economic-growth/

6	Artificial Intelligence in Economic Policymaking	https://www.apec.org/docs/default-source/publications/2022/11/artificial-intelligence-in-economic-policymaking/222_psu_artificial-intelligence-in-economic-policymaking.pdf?sfvrsn=341777ad_2
7	Discussion of econometrics, it's models and applications	https://www.imf.org/external/pubs/ft/fandd/2011/12/basics.htm
8	Creating an Architecture for Data Collection, Access and Analytics for Digital Economy	https://www.cigionline.org/static/documents/documents/PB%20no.155web_0.pdf