Enhancing Canada's Innovation Landscape: A Data-Driven Consultancy Approach

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Motivation

- Analyze over 20 Innovation Reports
- Propose Potential policies to Boost Innovation in Canada
- Present Practical Steps derived from the Policies

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Based on GII 2023 and Reports from 7 Countries

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01

Data Analysis and Innovation Measurement

Based on GII 2023 and Reports from 7 Countries

Data Source

GII 2023 and Innovation Reports from 7 Countries

Global Innovation Index (GII) 2023	Includes 80 Indicators about Innovation and Ranked 132 Countries Innovation Performance
Canada	8 Reports that Cover Canada's Innovation Strategy, Budget for 2017 and MITACTS[1]
USA	3 Reports that Cover USA's Innovative Technology Strategy, Sustainable Development Planning
UK	5 Reports that Cover UK's Science Techology Framework and Innovation Strategy
Korea	Korea's Strategy for Government Innovation
Japan	Integrated Innovation Strategy 2022
Singapore	The National Innovation of Singapore
Switzerland	Switzerland GLobal Enterprise

1. MITACTS: Mathematics of Informtion Technology and Complex Systems founded by Canadian Mathematicians in 1999

Data Analysis Protocol

Convert the PDF into Words and Remove Special Characters and Stopwords

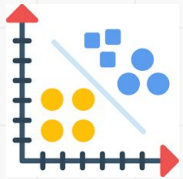
Data Cleaning

Text Analysis

Calculate the Top 40 Most Frequent Works

K-means Clustering

Clustering

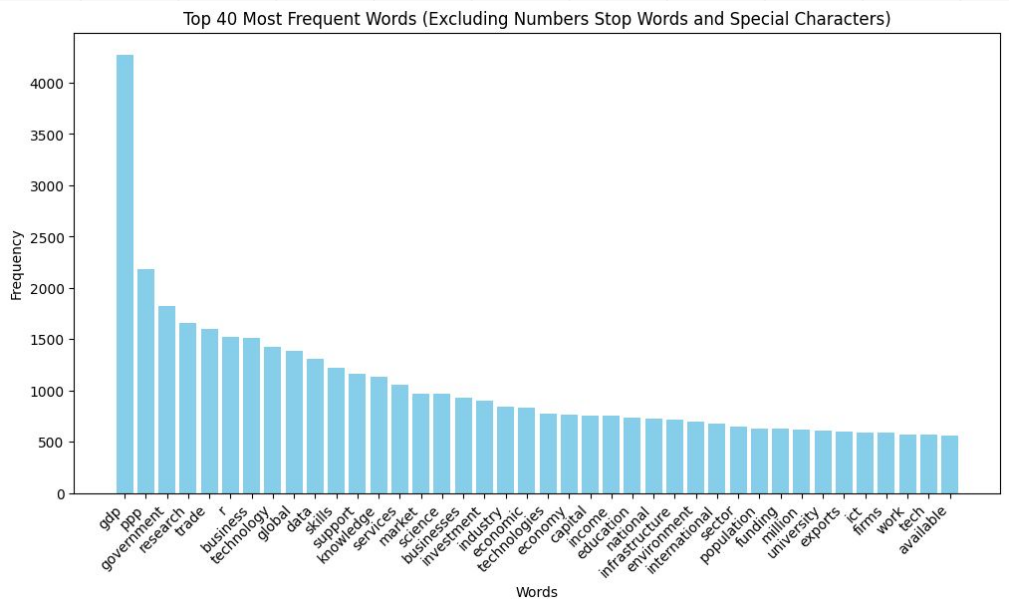


Innovation Measurments

Conclude Innovation Measurements based on Clustring Results

Top 40 Most Frequent Words

- GDP
- PPP
- Knowledge
- Technology
- Business
- Infrastructure

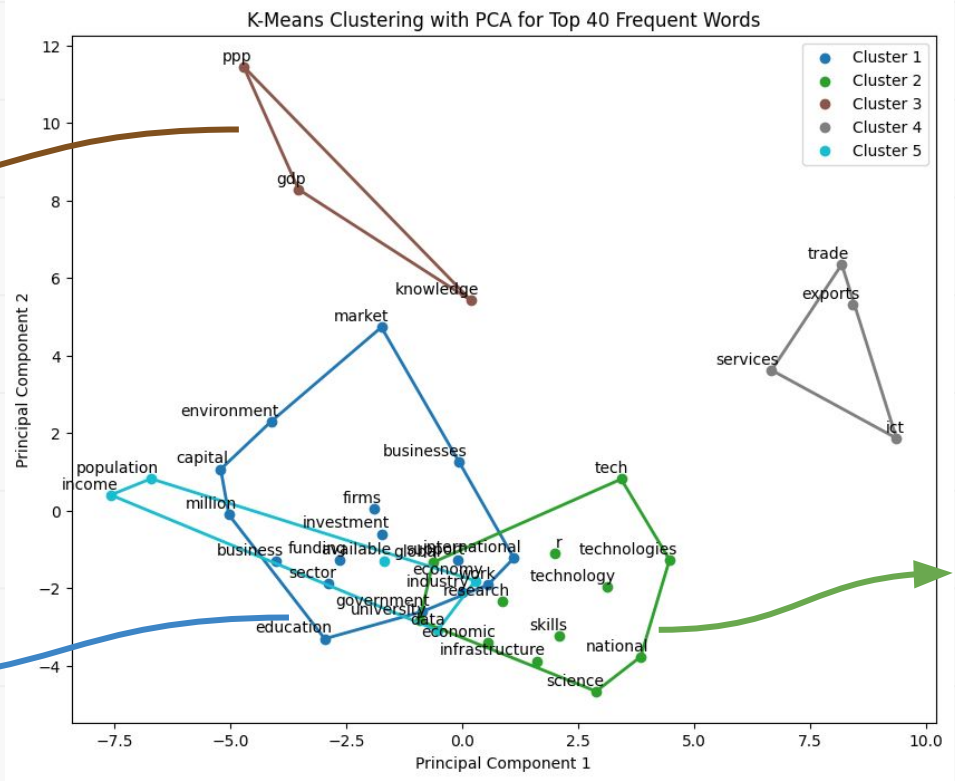


Clustering

Knowledge and Technology Outputs

(focuses on knowledge creation, impact, and diffusion, measured in units such as "%GDP" and "bn PPP$ GDP")

- Knowledge
- GDP
- PPP



Business Sophistication

(evaluates a country's performance in supporting knowledge-based businesses, such as tech-related startups, through actions like investment provision)

- Business
- Firms
- Investment

Infrastructure

(evaluates a country's infrastructure based on Information, Communications Technology and General Infrastructure and ect.)

- Technology
- Infrastructure

Proposal for Canada's Innovation Development

Innovation

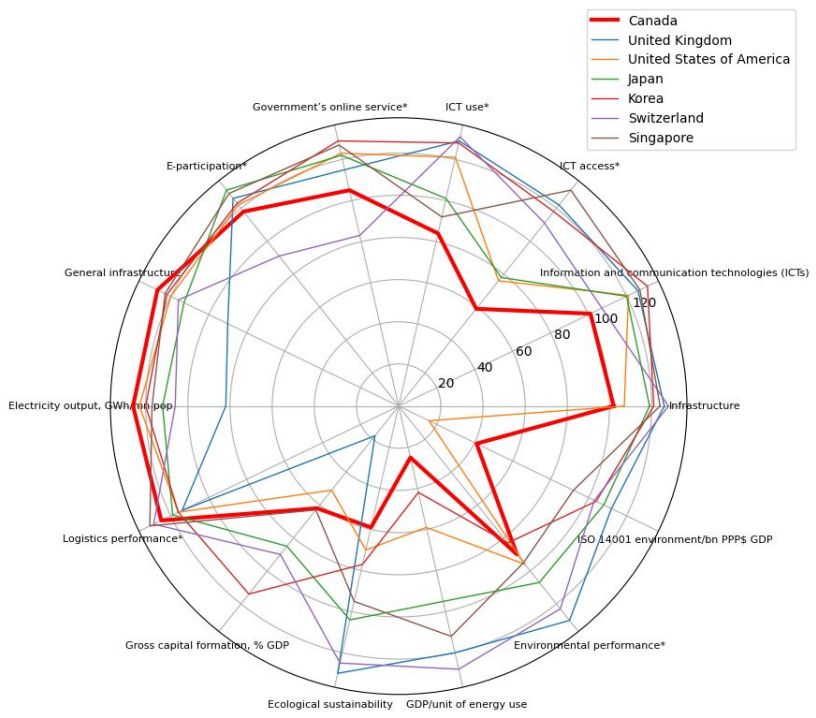
- Infrastructure
- Business Sophistication
- Knowledge and Technology Output

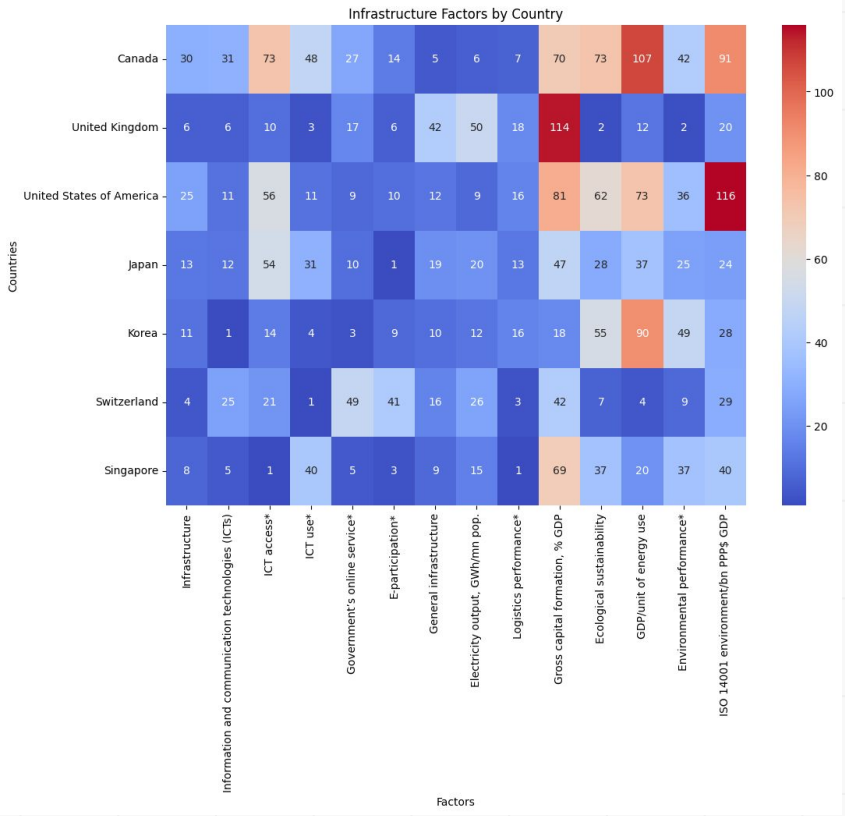
02

Infrastructure

Policies and Practical Strategies for Infrastructure

Infrastructural Factors

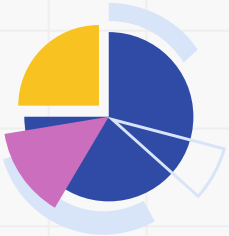




Ecological Sustainability Development

GDP/Unit of Energy Use

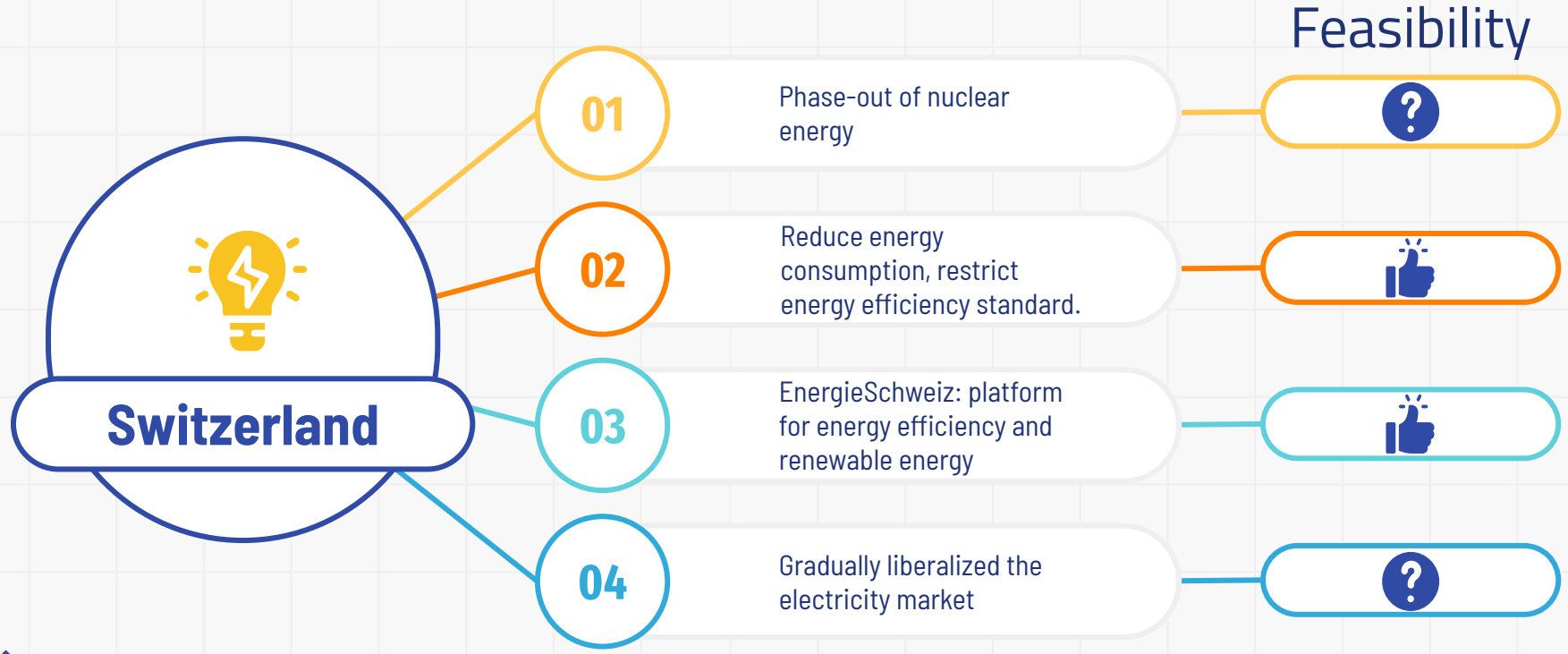
GDP/unit of energy use is an indicator of energy productivity. A higher GDP/unit of energy use means less energy wasted or more efficient energy usage.



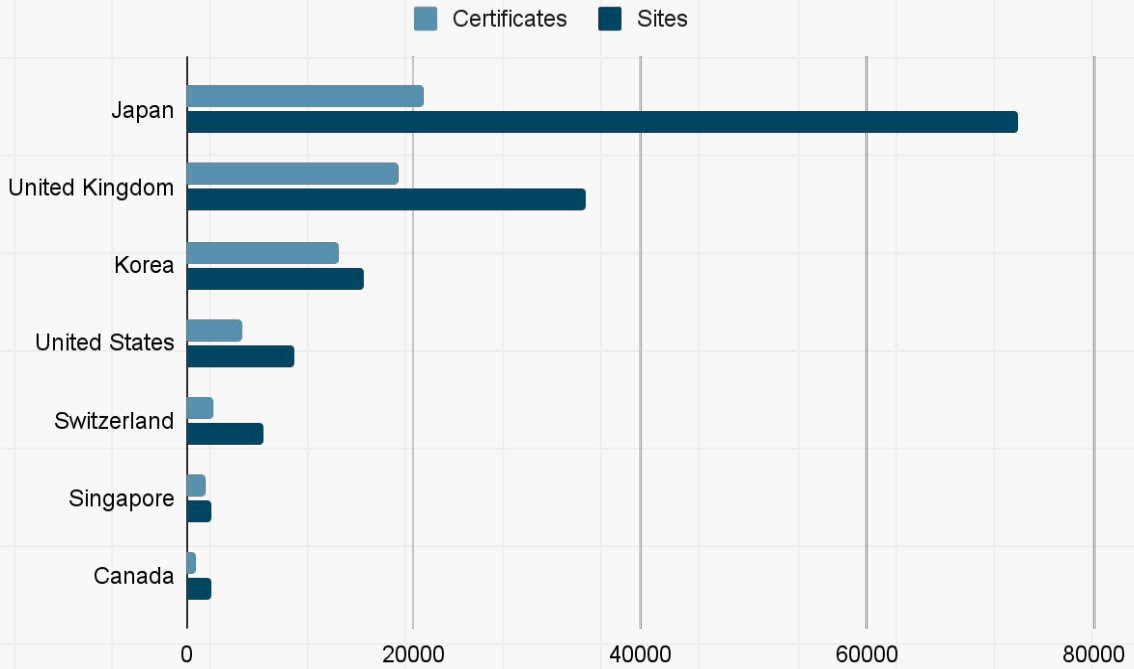
ISO 14001 Standard

ISO 14001 is an internationally agreed standard that sets out the requirements for an environmental management system. Companies and organization could certified it.

GDP/Unit of Energy Use



ISO 14001 Survey in 2022



Legend

Certificates

Number of valid certificates by country

Sites

Number of office sites covered by their certificates

In Canada, only 845 entities registered under ISO 14001, ranked 91st around the world.

Policies and Practical Strategies

Strengthen Government Programs

- Energy Efficiency Standard
- Establish Federal Platform
- Mentorship and Legislation for ISO 14001

Enhance Industry-Academic Collaboration

- Partnerships for Research and Innovation
- Tax Incentives and CCUS Technology Development

Public Relations Strategy

- Nationwide Awareness Campaign
- Engagement and Education Initiatives on Social Media

Example PR Poster in Next Page

Example Social Media Promotion Poster

Why It Matters

Accredited certification to ISO 14001 is not a requirement, and organizations can reap many of the benefits from using the standard without going through the accredited certification process. However, third-party certification is a way of signalling to your buyers, customers, suppliers and other stakeholders that you have implemented the standard properly. What's more, for some organizations, it helps to show how they meet regulatory or contractual requirements.

The main benefits of being certified to ISO 14001:

- Demonstrate compliance with current and future statutory and regulatory requirements.
- Increase leadership involvement and engagement of employee.
- Improve company reputation and the confidence of stakeholders through strategic communication.
- Provide a competitive and financial advantage through improved efficiencies and reduced costs

Get in Touch

We'd love to hear from you! Contact us for inquiries, partnerships, and more.

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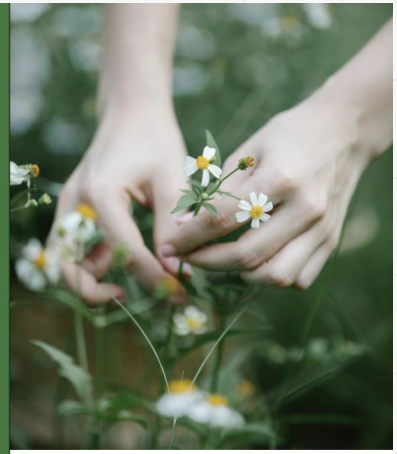
ISO
@isostandards
central@iso.org
https://www.iso.org/iso-14001-environmental-management.html

Scan For More Information

ISO 14001 is an internationally agreed standard that sets out the requirements for an environmental management system.



ISO
International Organization for Standardization

Environmental Management

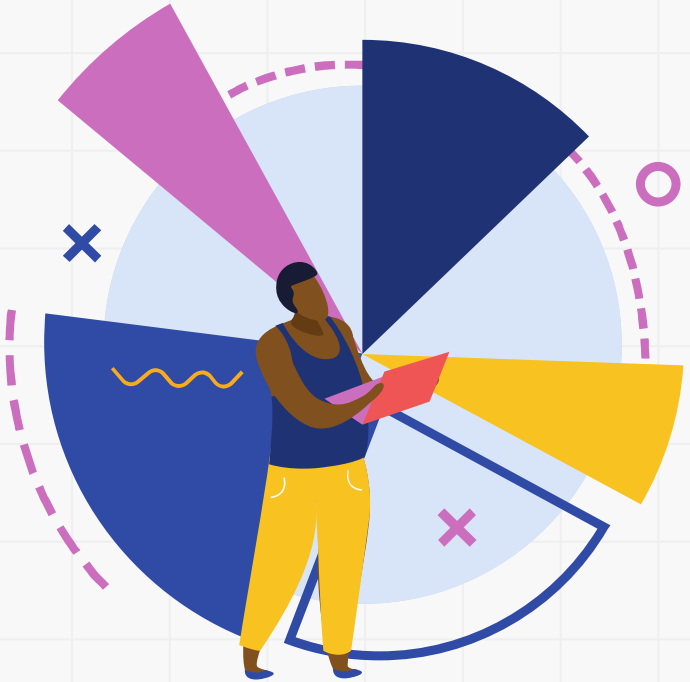
ISO 14001 and related standards

International Organization for Standardization

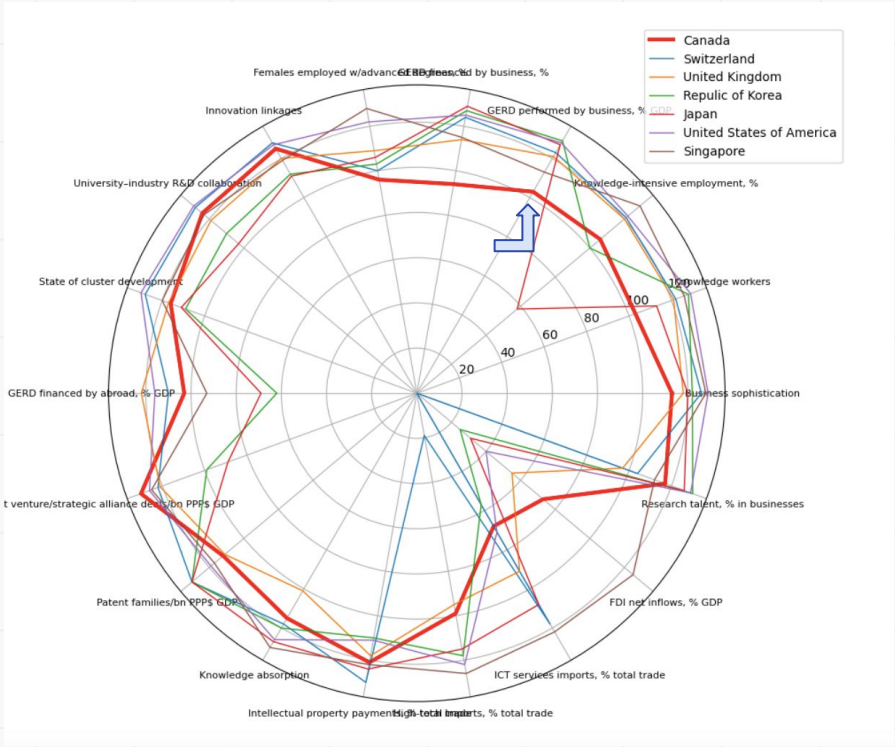
03

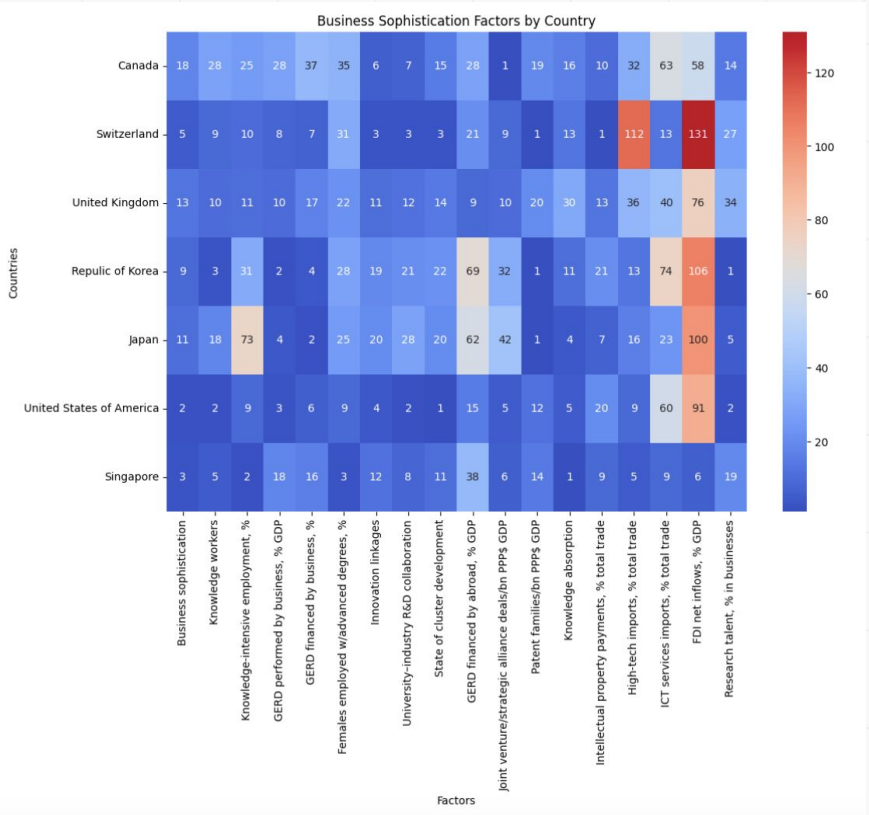
Business Sophistication

Policies and Practical Strategies for Business Sophistication



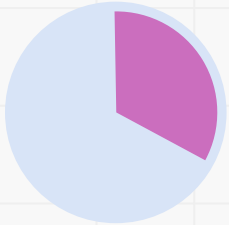
Business Sophistication Factors





GERD financed by business

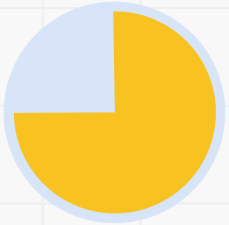
Enhanced R&D Investment



34.291%

Singapore Model

- Characterized by substantial government funding
- Developed a collaborative ecosystem with public research centers and industry partnerships

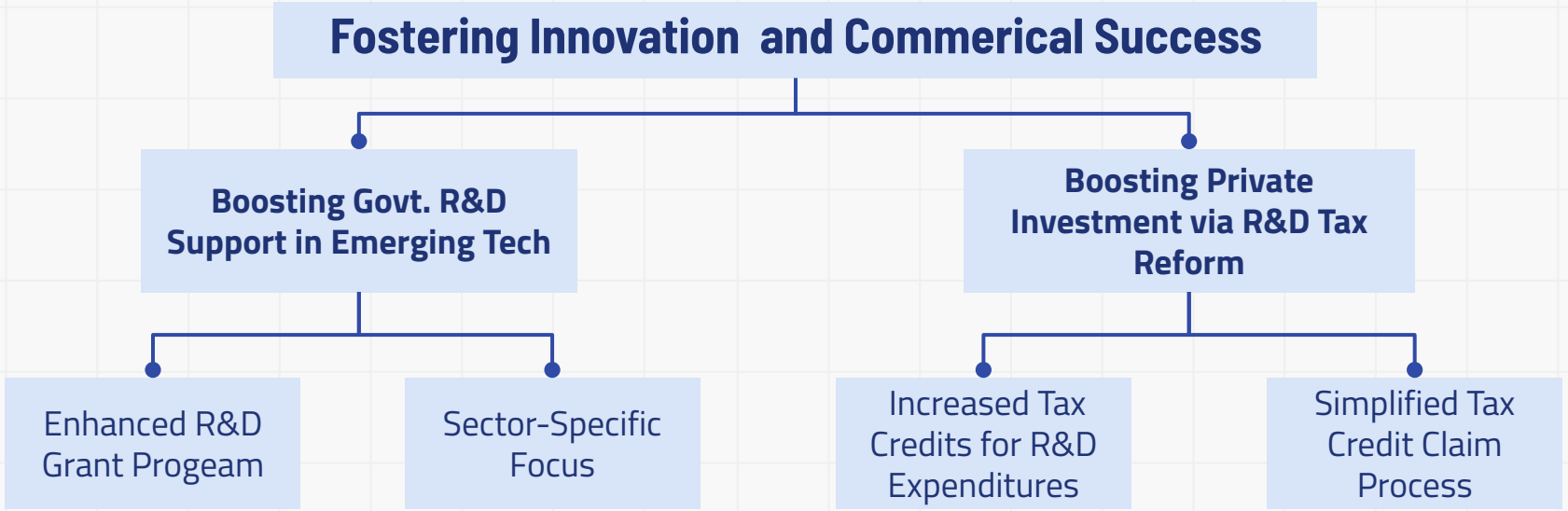


67.908%

USA Model

- Driven predominantly by private sector investment
- underscores the pivotal role of private sector funding in driving innovation

Enhancing Canada's GERD Policy



Anticipated Outcomes and Impact Measurement

25%

increase in funded startups by the end of 2025

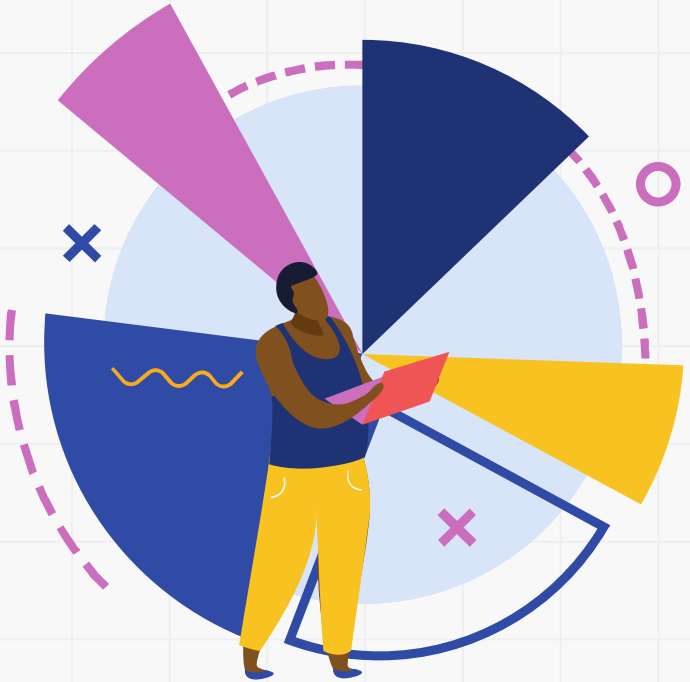
30%

rise in R&D spending by private firm

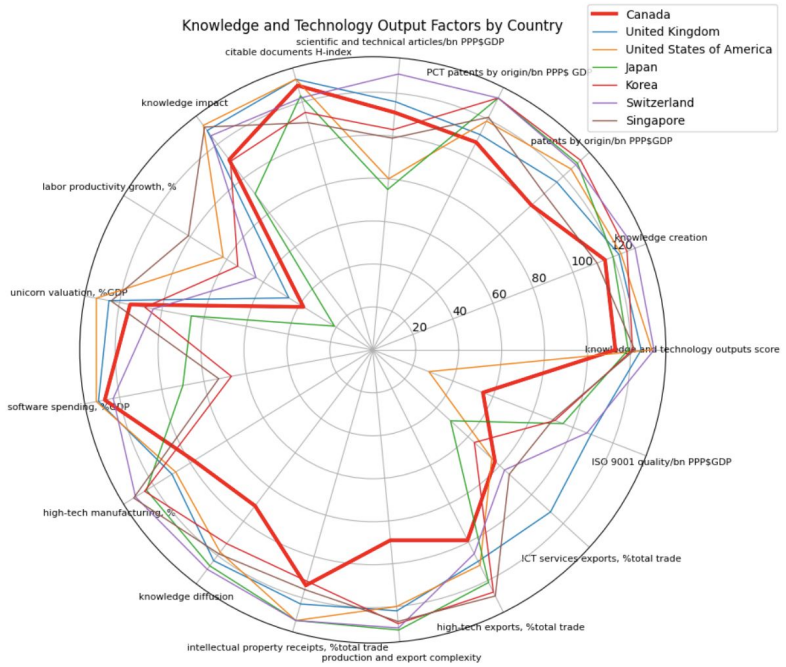
04

Knowledge & Technology Outupts

Policies and Practical Strategies for Knowledge and Technology Outputs



Knowledge & Technology Outputs Factors



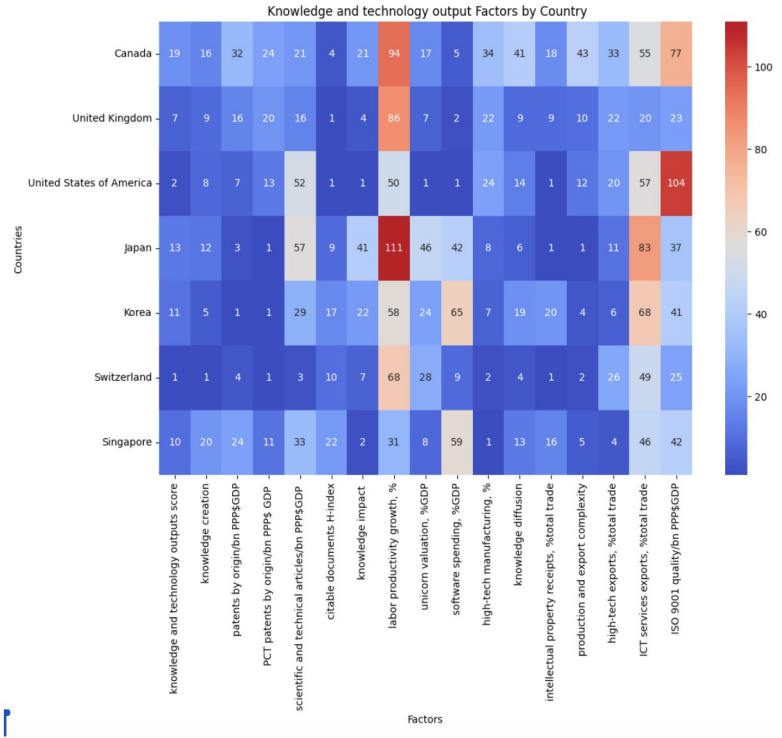
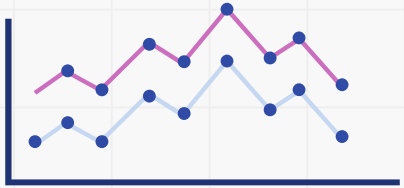


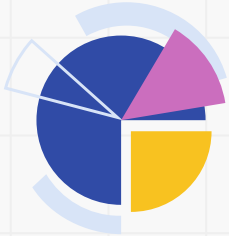
Figure 10. Comparison Heatmap for Countries' Performance on Knowledge and Technology Outputs

Digital & Industrial Workforce Advancement Strategy



Labor Productivity Growth, %

Labor productivity is defined as the amount of real gross domestic produced by an hour of labor. As an economy’s labor productivity grows, it produces more goods and services for the same amount of relative work.



Exports Complexity

Export complexity represents the level of sophistication and diversity in a country's export basket. It measures the variety of products that a country exports. A higher export complexity indicates that a country is exporting more complex products, which often require advanced technology and skills.

Singapore:

- **Education and Skill Development:**
  Singapore places a strong emphasis on education and skill development by **investing in skilled and adaptable workforce through education and training programs** to enhance productivity.

- **Collaboration Between Government, Industry, and Academia:**
  Singapore has successfully fostered collaboration between the government, industry, and academia, such partnerships can **facilitate knowledge transfer, research, and development, leading to advancements** that drive productivity.

Japan:

- **Investment in Digital Infrastructure:**
  Japan has achieved high scores in exports complexity, one reason is it has been deeply focusing on digital transformation, it **invests in robust digital infrastructure, including high-speed internet and advanced communication networks**.

- **Promotion of Digital Skills Development:**
  Japan has made strategic investments in cultivating digital skills within its workforce by **implementing targeted upskilling programs** to ensure a high level of preparedness for the demands of the digital era.

Strategies:

Canada’s Digital Innovation and Infrastructure Enhancement

Multidisciplinary Team Formation:
Form a team from government, industry, academia, and the private sector

Knowledge Exchange Initiatives:
Facilitate workshops, joint projects, and innovation hubs

Cross-Sectoral Collaboration:
Create dialogue platforms

Prioritizing Internet Expansion:
Ensure universal high-speed internet access.

Invest in Robust Infrastructure:
Upgrade for advanced connectivity and security

Tailored Digital Skills Training for Industry-Specific Needs

Create sector-specific digital transformation training programs

Strategic Collaboration

Emerging Technologies

Develop training focused on AI, machine learning, blockchain, and IoT

Forge partnerships with key industries for training alignment

Industry-Alignment Partnerships

Continuous Monitoring & Adjustment

Regularly evaluate and adapt training strategies

Thanks!

Do you have any questions?

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