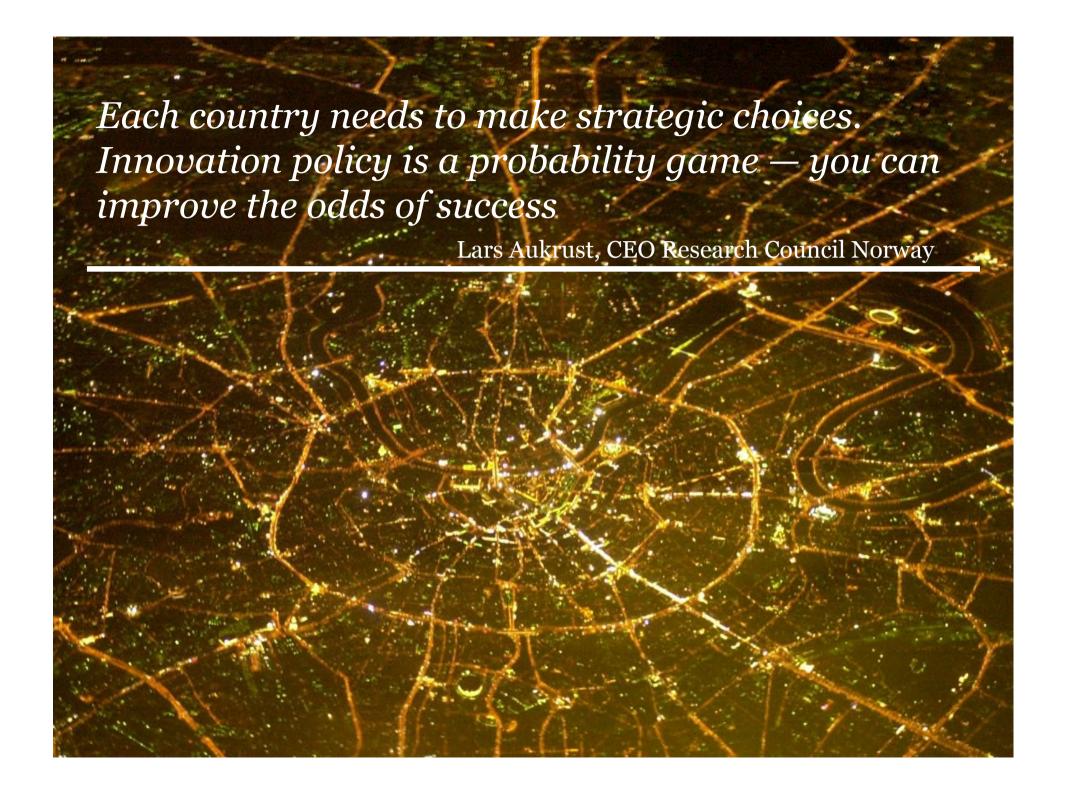
MONITOR

BEIJING CAMBRIDGE CASABLANCA CHICAGO DELHI DUBAI HONG KONG JOHANNESBURG LONDON LOS ANGELES MADRID MOSCOW MUMBAI MUNICH NEW YORK PARIS RIYADH SAN FRANCISCO SÃO PAULO SEOUL SHANGHAI SINGAPORE TOKYO TORONTO ZURICH

STI Policy in Transition Countries Examples in the Middle East

HSE Moscow, September 20, 2011



Point-of-View: Innovation is Needed to Drive Prosperity

Prosperity

 A high and rising standard of living is the proper objective of economic development efforts



Productivity (Competitiveness)

- For wages and profits to grow, workers and their firms must create more value year after year
- They must boost productivity, or competitiveness

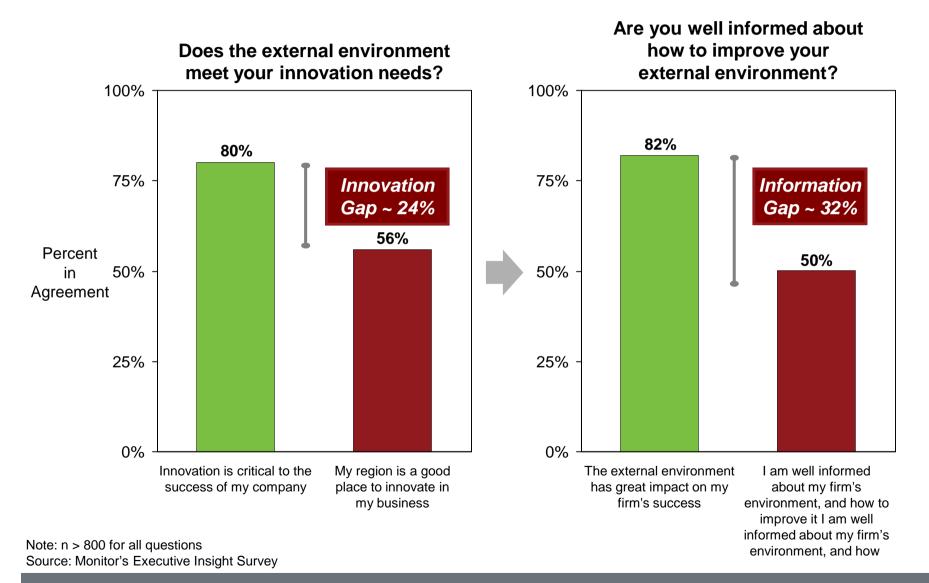


Innovation

- Productivity will not grow if firms keep making the same goods and services using the same methods and processes
- They must do something new and better
- They must innovate

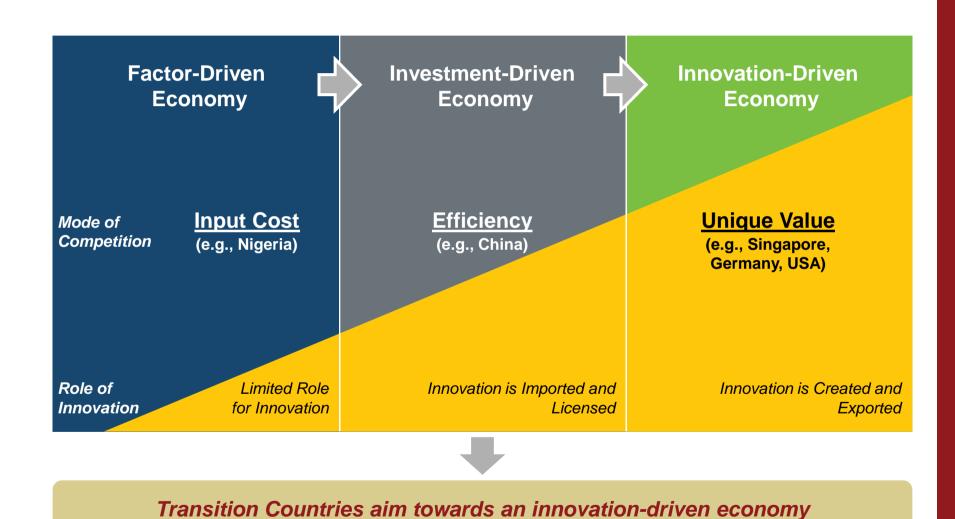
Relevance of STI Policy for Transition Countries

Most Executives are NOT Satisfied with their STI Environment



Relevance of STI Policy for Transition Countries

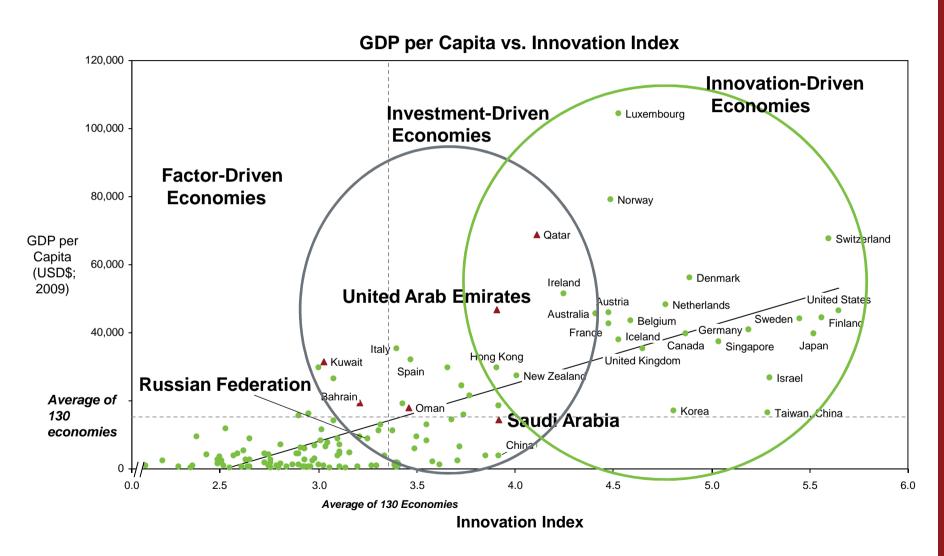
Be Aware of Stages of Economic Development



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Relevance of STI Policy for Transition Countries

Russia Lags Behind on Innovation and Prosperity



Source: World Economic Forum, Global Competitiveness Index 2010, IMF 2009, Monitor Analysis

STI Perspective

Drive Progress from Science to Application

Applications

Technology

Science

• Souped-up laptops, PDAs

 Totally new computer paradigms

Medical tools

- All optical computing
- Extreme bandwidth communication

- Very hard problems inaccessible to conventional computer
- Factoring machine image and signal processing
- Drug design —"very large molecules"

MRAM • New architecture for computer storage / logic combined "O"

storage / logic combined "O" latency

 New forms of semiconductor / magnetic storage

- Megamode fibers 10¹⁰ increase in bandwidth
- Write nanoscale lithographic lines
- Sense single molecules
- All Optical transistor

- Molecular structure~100 Qubits condensed matter physics
- Quantum strategy-coordinator games "2bit Qubit" (1–3 Qubits)
- Repeater long distance (3 Qubits)
- QKD superposition

• Scaling magnetic bits to dimensions less than 30 nanometers

- Use magnetic domain walls for very high density magnetic storage
- Utilizing novel properties of spin momentum transfer to generate microwave sources of electromagnetic radiation 10's to 100's of GHz

Nanophotonics

- Low loss propagation of light on silicon chip — new dielectric waveguides
- Plasmonics Optical frequencies with X-ray wavelengths — match wavelength to device size on silicon

- Coherence and entanglement purification
- High fidelity Qubits 99.99% visibility
- Robust Qubits

Source: Monitor Analysis

STI Perspective

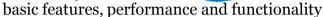
Think Broader than Product and Technology

- **1. Business model** how the enterprise makes money
 - 2. Networking enterprise's structure / value chain



Viation Services

5. Product performance



6. Product system extended system that surrounds an offering

10. Customer experience

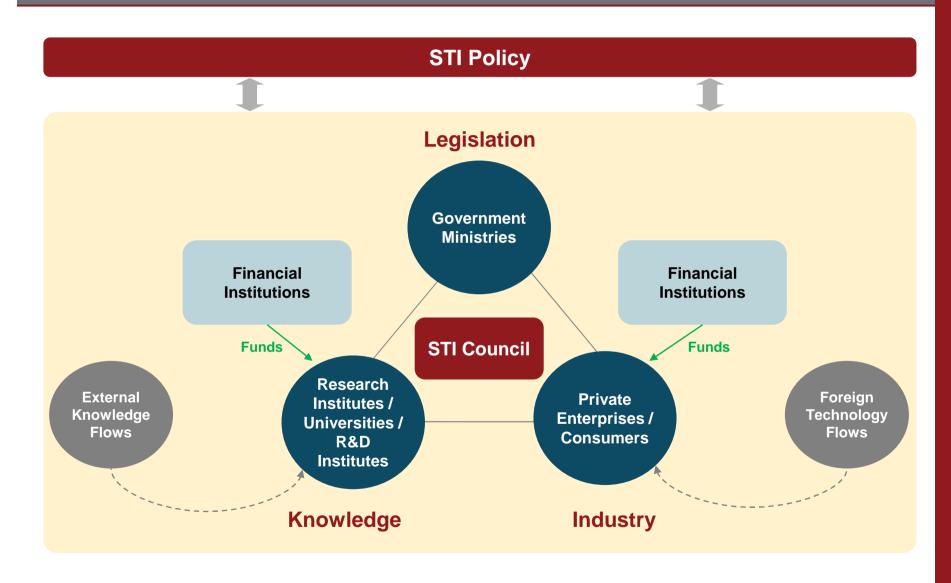
how you create an overall experience for customers

7. Service amazon.com. how you serve your customers

Finance		Process.		Offering			Delivery		
Business model	Networking	Enabling process	Core process	Product performance	Product system	Service	Channel	Brand	Customer experience
3. Enabling process assembled capabilities			8. Channel how you co your offeri your custo				onnect ings to omers Brand	u express	
	4. Core	add value			your offerings benefit to customers				

Note: The Ten Types of Innovation™

Ensure Alignment within the Entire STI Ecosystem



Factors for Successful STI Environment in Moscow

Proven Success Factors

Global Examples In Moscow in 2011

- 1 Develop a clear long-term innovation vision
- Focus city innovation efforts on a limited set of high-potential industries /
- Support innovative organizations through financing, capability building (education), encouraging R&D, linking businesses with R&D organizations, and access to markets
- Develop strong infrastructure for innovation and education, and use it as a platform to create knowledge economy
- Encourage and support commercialization of innovation research by universities
- Invest into innovation with long lifecycle through focusing on future demand
- 7 Adapt and introduce legislation to protect and encourage innovation

Australia, Finland



Singapore, Slovenia



Singapore



Singapore, Austria



Singapore, Brazil



Singapore, Japan



Brazil, South Africa

(1
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Present

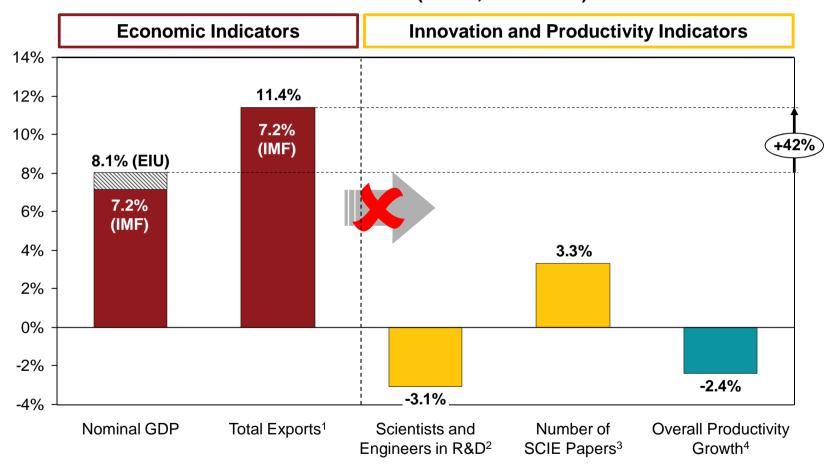


Source: Monitor analysis

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Challenge in Saudi Arabia: How to Ensure Sustainable Growth?

KSA's Indicators (CAGR, 1990-2008)

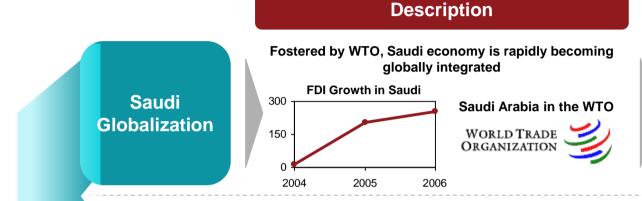


¹ Partially explained by increase in oil prices; ² CAGR for 'number of scientists and engineers in R&D' is for the period 1994–2000;

³ Scientific publications selected under Science Citation Index; ⁴ Productivity growth from ILO (1980–2005), Monitor Analysis

Example Kingdom of Saudi Arabia

Major Questions on Economic and Social Development



2.1%

KSA

Population Growth Rate

2005-2010

Opportunity or Threat

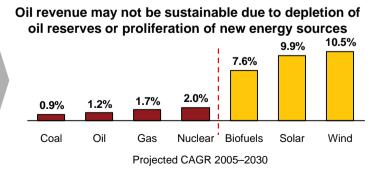
- Increase competitiveness of main industry sectors, making them global
- Key local industries are replaced by foreign players and / or imports
- Improve skills to use young population as a strong work and knowledge base
- Growing population is not productive and generates social problems

Next Generation Energy

Young

Population

Boom



Saudi Arabia has a young and rapidly growing

population demanding education and jobs

1.2%

World Avg

Percent of population 0–14

31.9%

KSA

26.9%

World Ava

- Develop a new knowledgebased KSA, leveraging new sources of energy
- Main source of wealth of the country is significantly reduced without replacement

Source: Monitor Analysis

Example Kingdom of Saudi Arabia

Solution: National Industrial Strategy to Drive STI

Innovation Platforms

Ensure that innovation is focused on, but not limited to, those areas with the greatest potential for impact

Upstream Oil



Well-being



Engineered Plastics



Water for Life



Halal Life



Energy Factory



Governing Institutions



Ensure that governing institutions are in place to coordinate and manage the various innovative activities in KSA

Funding Mechanisms and Support



Provide innovators with the capital, and the business, technical and networking support necessary to succeed

Progran Innovation

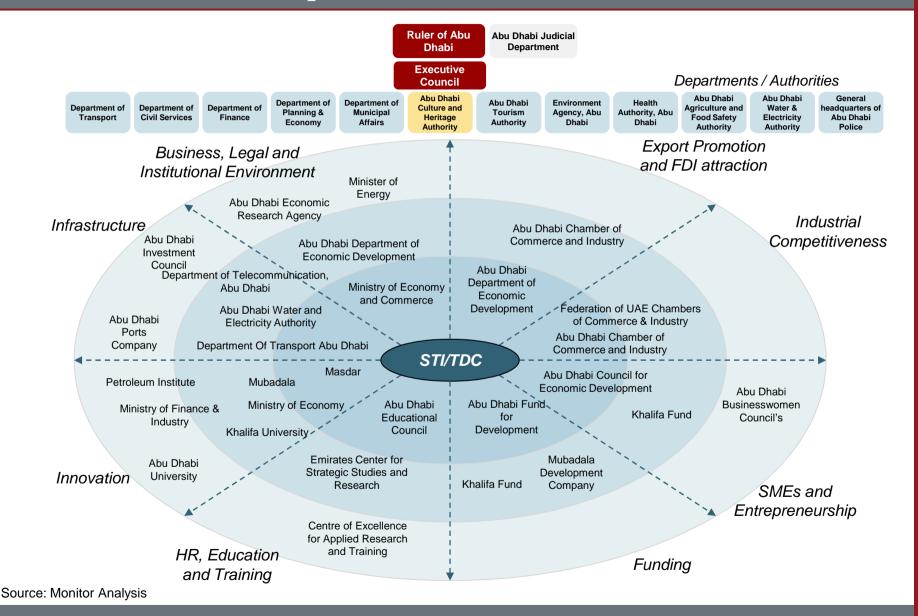


Promote interest in, and awareness of, the benefits of entrepreneurship and innovation across all segments of Saudi Arabia

Source: Saudi Arabia Ministry of Commerce Webpage

Example UAE / Abu Dhabi

Vibrant STI Landscape in Abu Dhabi



Example UAE / Abu Dhabi

Private Sector is Aware of Key Challenges

Competitiveness Issues as Identified by Abu Dhabi Private Companies

Main ssues

- **1** Administrative Barriers
- **2** Work Force Supply Constraints
- 3 Capital Market Fragility

Secondary Issues

- 9 Lack of Institutions for Collaboration
- 4 Weak Innovation Infrastructure
- 5 Underdeveloped Private Sector
- 6 Lack of Private Sector Sophistication
- 10 Lack of Level Playing Field
- **11** Government Effectiveness

Other Issues

- A Lack of Company Legal Framework
- B Direct Competition from Government Companies

Quotes from Private Companies

"We see many companies wanting to invest in Abu Dhabi but are put off by the **difficulties of obtaining necessary approvals** in a reasonable time period."

"The lack of people [from educational and training institutions as well as workers with prior on-the — job experience] leads to increase in cost. Also, the low quality of scientific research causes a drop in experienced people, and we need to offset that by importing them from outside."

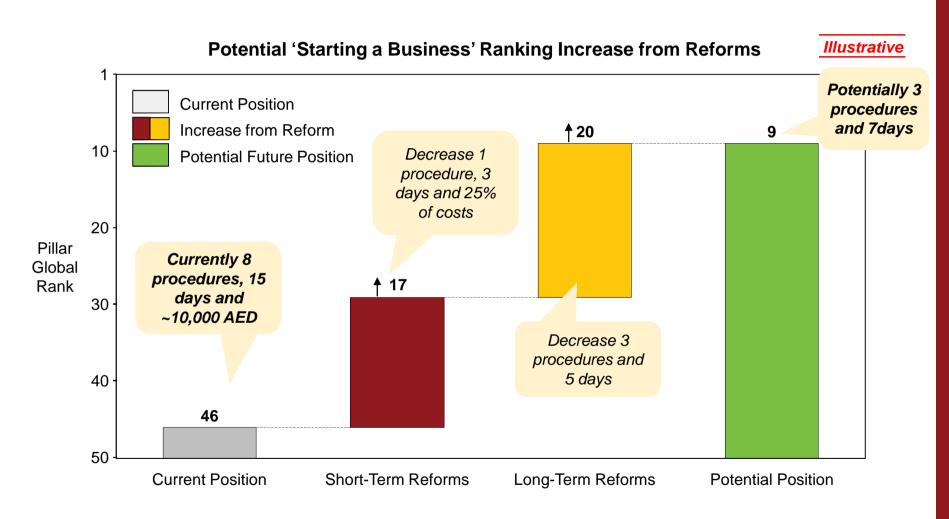
"[There are] Issues with lack of transparency and perceived direct competition from government related companies getting involved in typically private sector business (property development, property leasing, car leasing, logistics, etc.)"

"More influence of central bank on banks. Besides the rules in general, [banks should be] litigated in advance in order to avoid crisis, regulate sectors, balance competition, and quality of business."

Source: Abu Dhabi Department of Development Webpage

Example UAE / Abu Dhabi

First Solutions are Identified — Results can be Measured



Note: Current data available only for UAE; Abu Dhabi specific analysis will be possible shortly. For the UAE, Doing Business studies business procedures in Dubai, therefore any changes would have to take place in that Emirate to be recognized Source: Doing Business Report 2011, Monitor Analysis

16

Initial Positive Impact is Already Visible

Abu Dhabi



Successfully developed a Performance Management Framework





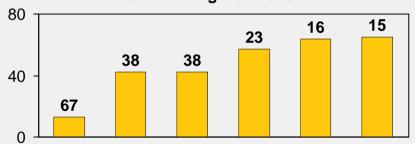
نتقدم باسمى آبات التهاني والتبريكات إلى صاحب السمو الشيخ خليمة بن رايد آل نهيان رئيس الدولة «حفظه الله» و الفريق أول سمو الشيخ و الفريق أول سمو الشيخ ولي عهد أبوظبي نائب القائد الأعلى للقوات المسلحة رئيس المجلس التنفيذي لإمارة أبوظبي «رعاه الله» كما نهنئ كافة الجهات الحكومية بناسبة حصول حكومة أبوظبي على جائزة الصفوة في بطاقة الأداء المتوازن لتنفيذ وأول تطبيق شامل على المستوى الحكومي)

Saudi Arabia

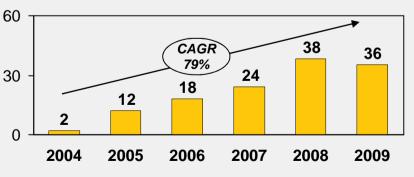


Initiated Business Reform to increase Rankings and Foreign Direct Investment

Ease of Doing Business Rank



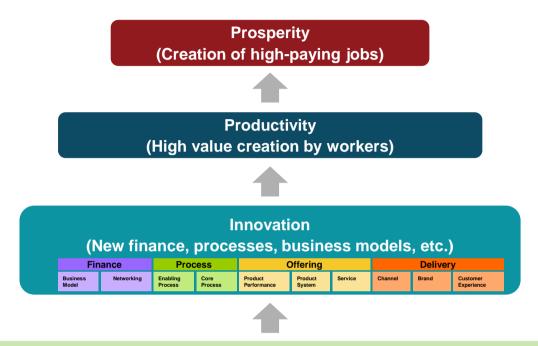
FDI inflows into Saudi Arabia¹



Note: ¹Due to the financial crisis in 2008 FDI inflows declined by 7%, but declined less than in other countries (e.g., FDI in US declined ~60%)

Conclusion

Long Way to Prosperity — But the Ingredients are Clear



Education and Vocational Training

Workforce Motivation

Quality of Life and Talent Attraction

Tax and Regulatory Environment

Transportation and Communication Infrastructure

Technological Progress

University Research and Tech Transfer

Entrepreneurship

Business Recruitment and Retention **Culture of Competition**

Collaboration and Networks

Responsiveness of Government

Monitor's Contact Information

If you require additional information or have any questions, we will be glad to answer you:

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Monitor Group Senior Partner, **Alexander Tolkachev**alex_tolkachev@monitor.com

Monitor Group Senior Advisor, Fred Ledbetter fred_ledbetter@monitor.com



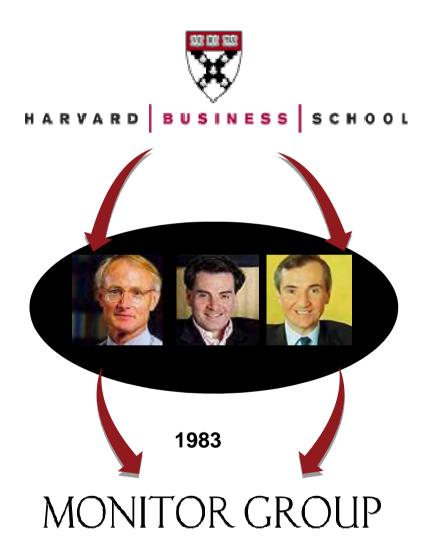
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www.monitorgroup.ru

Introduction to Monitor

Our Origins



- Monitor Group is a strategy consultancy and was established in 1983
- Michael Porter, Mark Fuller and Joe Fuller conceived the idea for the firm while faculty members at the Harvard Business School...
 ... and the three founders continue to be involved with the firm today
- Monitor Group was founded with the purpose of offering a different style of consulting, differentiated from other consulting firms, in both the range of services offered and the style in which we offer them

"Competitive strategy is about being different. It means deliberately choosing a different set of activities to deliver a unique mix of value. A company can outperform rivals only if it can establish a difference that it can preserve."

Michael Porter

Introduction to Monitor

Overview

- Monitor's mission is to help our clients win to grow their enterprise, their value creation, their capabilities, and their social impact
 - We work around the globe with executives of corporations, governments, and nonprofits who aspire to world-class leadership and who seek to harness the power of new ideas
 - We also **invest in and run companies** with \$2.0B assets under management
- Our goal is positive impact
 - We have **doubled growth rates** for relationship clients
 - 85% of our revenues come from repeat clients
 - We achieve top decile investment management performance
 - Our philanthropic efforts touch over 600,000 lives



Introduction to Monitor

Global Footprint

Monitor has over 1,100 professionals in 24 offices functioning as a single firm

