

Chapter 6

Technology Breakthrough and Mutability Management: Market Disruption with Disruptive Innovation

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ABSTRACT

This world is experiencing increasing flows of outsourcing of technologies and management behaviors from industrial technology-led countries to selected part of the developing and emerging world. Technology breakthrough implies market disruption as well as disruptive innovation processes. A weak capability of absorption partly explains delays in the technological mutation of selected part of the society. Mutability is gradually becoming an integrated part of a breakthrough paradigm that aims at sustaining disruptive innovation. Mutability management might be the appropriate tool to deal with agility with those forthcoming emerging changes.

1. INTRODUCTION: TOWARDS EMERGING MARKET DISRUPTION

With USD 1,313,457 millions of high-technology exports in high income countries and USD 467,925 millions in low and middle-income countries, the divide between advanced technology and

innovation-driven countries and those who are less advanced is obvious (World Bank, 2010: 342). At the level of countries, the present gap, which is in the process of being reduced with emerging countries, may become a structural constraint for countries unable to generate and promote more breakthrough and disruptive technologies. The delocalization process benefiting countries such

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as China or India did not take place in Nigeria or Côte d’Ivoire (see Table 1). The issue of technology solidarity may need to be brought at the top of the development and cooperation agenda.

Sustainable economic expansion or contraction in countries’ history is primarily related to four main factors:

- The capability to end existing pro-active technological inertia (Amaïzo, 2004);
- The level of total factor productivity reached;
- The achieved levels of prosperity and effective distribution of purchasing power among the population;
- The level of technology diffusion and technological absorption capabilities.

The correlation between total factor productivity and technology innovation and its diffusion in a given economy is noticeable for selective as well as comprehensive and cohesive progress. Microeconomic issues such as entrepreneurship (Kirchhoff and Walsh, 2000) and management, mezzo-economic considerations such as institutional support, capabilities and macroeconomic factors, government wise strategic supports to the wealth creation (non exhaustive list) are crucial in provoking disruptive technology patterns.

The “*creative destruction*” concept of Joseph Schumpeter (1934) might need a serious update in today’s interconnected and digital-led world economies. Disruptive technologies and innovation at global and local levels have tacit and implicit implications for efficiency, market dominance and distribution of power relations among market actors. Multicriteria approaches and systemic analyses in integrating uncertainty in unpredictable technological trends are part of a quadrilemma challenges summarized in four open questions:

Table 1. High-technology exports in 2008, in USD million

| Selected Countries | High-Technology Export (HTE) | World HTE (in Percentage of) |
|---------------------------|-------------------------------------|-------------------------------------|
| World | 1,856,930 | 100% |
| Australia | 4,157 | 0.223% |
| Austria | 15,230 | 0.820% |
| Brazil | 10,572 | 0.569% |
| China | 381,345 | 20.536% |
| Côte d’Ivoire | 180 | 0.009% |
| Cuba | 248 | 0.013% |
| Germany | 162,421 | 8.746% |
| India | 6,497 | 0.349% |
| Japan | 123,733 | 6.663% |
| Korea, Rep. | 110,633 | 5.957% |
| Mexico | 41,201 | 2.218% |
| Nigeria | 15 | 0.000% |
| Russia Federation | 5,107 | 0.275% |
| Saudi Arabia | 121 | 0.006% |
| Senegal | 46 | 0.002% |
| Singapore | 120,345 | 6.480% |
| South Africa | 2,011 | 0.108% |
| Switzerland | 41,111 | 2.213% |
| Togo | 0 | 0.000% |
| Tunisia | 674 | 0.036% |
| Turkey | 1,807 | 0.097% |
| United States of America | 231,126 | 12.446% |
| Zimbabwe | 48 | 0.002% |

Source: From World Bank, *World Development Indicators 2010*, Washington D.C, USA: World Bank, pp. 340-342.

- How to achieve mutability and still lead a segment of the market based on technology advance and preserve a peaceful but competitive market environment?
- Could technology breakthroughs supported by agile management lead to the emergence of a disruptive creation paradigm which should not take place at the expense

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