Current Progress and Future Strategy of Technology Commercialization in Agricultural Sector of Korea: An International Perspective

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Open Innovation

A business concept developed by Henry Chesbrough which encourages companies to acquire outside sources of innovation to order to improve product lines and shorten the time required to bring products to market, and to market or release internally developed innovation which does not fit the company's business model but could be effectively used elsewhere.

- Business Dictionary
What is the ‘Technology Commercialization?'

Technology Commercialization is the process of acquiring ideas, augmenting them with complementary knowledge, developing and manufacturing saleable goods and selling the goods in a market. This process begins with product conception, including product definition, design, prototyping and pre-testing stages, and is consummated by effective product manufacturing and marketing.

- Zahra and Nielsen (2002)
Current status of agriculture
Less rice and poor sustainability

Rice consumption per capita

136.4 kg 106.5 kg 80.7 kg 67.2 kg

National Statistic Office

The rate of self-sufficiency of grains

43.1% 29.7% 23.6% 23.1%

1970년 1995년 2005년 2013년
1990년 2000년 2012년 2013년
Decline and old age
Problems that agriculture is facing in Korea

1. Changes: Self-subsistence → Commercialized agriculture
2. Intensified competition: local farmers vs. multinational companies
3. Confliction: Corporate farming vs. Family farming
4. Priority: Agricultural industry vs. Rural Communities

Coexistence of Discordances?
Research and Development & technology commercialization
Changes of agricultural R&D budget and the ratio of Agricultural R&D to governmental R&D budget
Declining of real agricultural income

- Expected import will be over 31,700 million USD in 2025, which is about 75% of total agricultural production in 2013.
  - The import of agri-product from China is likely to be over 3,700 million USD in 2025, which is about 4 times as much as the import in 1994.

- The consumption of rice and grains is been declining by year, and as well as major vegetables and fruits.
  - Rice consumption: 52.5 kg/person in 2024, which is about half of the 1994’s
  - 5 major vegetables: ('94)123 kg → ('04)129 → ('14)115 → ('25) 95

Sales declining, price drop of agro-product, price increase of input materials
New measures should be in place

RDA’s institutes

- National Institute of Agricultural Science
- National Institute of Crop Science
- National Institute of Horticultural and Herbal Science
- National Institute of Animal Science

Organizational Reform

Technology Commercialization

Extension

Consulting and Training

Enterprises in agribusiness

FACT

Research output

Commercialization
New Player: Foundation of Agri. Tech. Commercialization & Transfer (FACT)

4 Business Sectors

- Tech. Commercialization
- Creative Agri-Business development
- Analysis and Certification Service
- Seed and Seedling Business
- Planning and Management
Expansion of FACT

Personnel
Experts: 177

* lawyer(1), patent lawyer(3), CPA(2)

Budget
Total budget: 87m (USD)

2010 2013 2016
161 171 177

2010 2013 2016
18 36 87

M USD
What have been changed?
IPs produced by RDA institutes

Number of patents produced by RDA’s institutes
Number of patents transferred to private enterprises by FACT

Technology transfer
The number of companies supported by FACT’s startup incubation program.

Number of projects supported by FACT as a part of technology commercialization.

What makes changes?
Life Cycle Approach for Facilitating the technology commercialization

- R&D planning for the creation of strong IP
- Survey of progress and consulting
- Feedback
- Evaluation of technology
- Supporting marketing and sales
- Technology transfer
- Supporting business development
Creative economy and Start-up boom
Start-up Challenge in agribusiness
* Sourcing organic product from local farmers, producing baby food
Coexistence of Discordances
Future Challenges
How to integrated smart-tech into agriculture?
Building ICT based business supporting platform

Building Test-bed to support agri-business

- Nutrient management for calf
- Smart-farm
- Transporting robot
- Weeding robot
- Drone
- Spraying robot

Introducing new technologies for preserving fresh products

- Korean melon
- Melon
- Paprika
- Strawberry
- Tangerine and etc.
Export of fresh products by marine transport

Post harvesting + intelligent container

- **Extending of freshness**
  - **Strawberry**: 7~9 days → 9~11 days
  - **melon**: 14 days → 20 days
  - **K. melon**: 11 days → 20 days

- **Monitoring system of intelligent container to export**
Conclusion

• R&D itself is not good enough to trigger open innovation, and hence organizational reform to support technology commercialization should be taken into account.

• A proper facilitating scheme for technology commercialization should be set up such as business incubation, support fund as well as post development of technology, and marketing for SME.

• Having good enterprises to support farmers is an important factor that decides competitiveness of agriculture of a country. Business ecosystem surrounding agriculture as well as companies should be considered as key factors, providing sufficient buffering of price fluctuation, sustainability of farming.

• When we set up an agricultural development strategy, measures to support SME in agribusiness should be bear in mind, which can give a huge potential for commercial agriculture.

• The future agriculture will be more dependent on the new technologies based on ICT, robotics, and biotechnology which are able to save labor and cost as well as provide new functionalities. Convergence of multidisciplinary technologies will be playing an important role for the agricultural innovations in terms of global competition.
Thank You!

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