C&D 개념과 발전 전략

January 24, 2007

成昌模 공학박사

President

HYOSUNG R&D Business Labs.

집중분석 / 경영트랜드 변천사

1970

1980

경부고속도로 개통(1970.7.7)

중화학공업 육성계획(1973.1.12)

포항제철 준공(1973.7.3)

경영 화두로 풀어본 경영트랜드 변천사

2010년, 어떻게 먹고 살 것인가?

1960년대와 2005년 성과지표 비교:

1. 수출: 8.4억불 (1970) → 2,844억불 (2005)
2. 교역규모: 19억불 (1970) → 5,500억불 (2005)
3. 1인당 GNI: 254불 (1970) → 16,300불 (2005)

1964년 수출은 1억불로 이디오피아, 모잠비크 수준
*이디오피아: 1.1억불('64) → 7억불 ('04)
*모잠비크: 1.1억불('64) → 15억불 ('04)

우리 수출규모는 2005년 기준으로 남미 38개국 전체 수출규모 (2,763억불), 아프리카 전체 53개국 수출규모 (2,317억불) 초과

< 연도별 수출품목의 변천 >

	1위	2위	3위	4위	5위
1961	철광석	중석	생사	무연탄	오징어
1970	섬유	합판	가발	철광석	전자제품
1975	섬유	전자제품	철강제품	합판	신발
1980	섬유	전자제품	철강제품	신발	합판
1985	섬유	선박	전자제품	철강제품	신발
1990	전자전기	섬유	철강제품	선박	화공품
1995	전자전기	섬유	화공품	자동차	선박
2000	반도체	자동차	컴퓨터	선박	무선통신기기

새로운 변화

- 지식 경제 (Knowledge Economy) -> 창의력 경제 (Creativity Economy)
- 미래 핵심 경쟁요인 -> 창의력
- 디자인전략이 혁신적인 제품과 매출을 창출
- 기술 중심 (technology-centric) 보다 소비자 중심 (customer-centric) 의 혁신
- 제품이 어떻게 작동할 것인가 보다 그 제품을 소비자가 어떻게 느끼는가가 더 중요

- GE's CENCOR
  - Calibrate, Explore, Create, Organize, Realize
  - 식스 시그마를 대체할 접근법
- P&G
  - 디자인과 R&D를 통합
- 비지니스 스쿨 -> 디자인 스쿨

선도기업의 디자인 경영

- 애플 스티브 잡스: 디자인을 핵심 경영아젠다로 설정:
  매출 $8 billion (2000) → $19.3 billion (2006)

- P&G Lafley회장: 2000년 디자인 경영 선포.
  디자인 전문인력을 4배 늘림
  매출 $40 billion (2000) → $68.2 billion (2006)

-삼성전자 보르도 TV, Anycall Ultra edition
- LG 전자 초콜릿폰

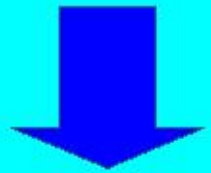
80/20 법칙에서 Long Tail 경제 패러다임으로....

디지털 시대의 무한한 선택가능 환경에서 그동안
무시되었던 틈새상품이 중요해지는 경제 패러다임.

1. Amazon
2. eBay
3. Google
4. iTunes 등

과학기술 기반 사회,

문화/서비스 융합, 글로벌,
창의적 기술개발



“New Business Model”

New Strategies of R&D

P&G's Billion-Dollar Brands

P&G currently produces 16 brands with global sales in excess of $1 billion each.

P&G's New Innovation Model:
From R&D to C&D

For decades, Procter & Gamble fueled its consumer products engine from R&D inside its own walls. But as its markets have matured, P&G has directed its search outward. ***(Harvard Business Review, March 2006)***

CEO A. G. Lafley decided to broaden the horizon by looking at external sources for innovation. P&G's new strategy, connect and develop, uses technology and networks to seek out new ideas for future products. "Connect and develop will become the dominant innovation model in the twenty-first century,"

P&G's Innovation Network Includes:

- Companies
- Individuals
- Independent entrepreneurs
- Government laboratories
- Contract laboratories
- Research institutes
- Communities of practice
- Subject matter experts
- Suppliers
- Academia
- Members of e-R&D networks
  - InnoCentive.com
  - NineSigma.com
  - Yet2.com
  - yourEncore.com

First...

Determine if your product, packaging, technology, process or commercial connection is in the interest of P&G and our global consumers.

- ☑ My innovation addresses a big, unmet consumer need.
- ☑ My innovation offers a new benefit to an existing P&G category or brand.
- ☑ My packaging solution has been demonstrated.
- ☑ My technology is proven and can be quickly applied to a P&G consumer need.
- ☑ My product is in use and has evidence of consumer interest.
- ☑ I have a game-changing technology or approach.

What's Possible? Our Core Competencies

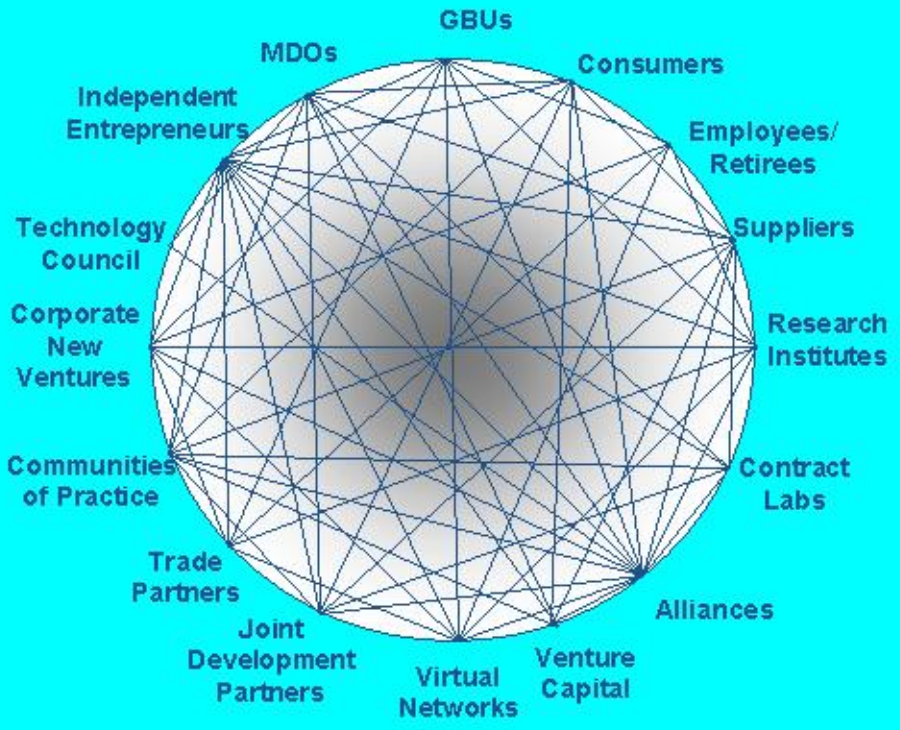
Flavours & Fragrances	Product supply	Skin mildness testing
Enzymes	Product safety	Colloid and surface
Polymers>	Regulatory compliance	Chemistry
Surfactants	Process engineering	Fabric care
Substrates	Consumer understanding	Analytical chemistry
Packaging	Performance testing	Biotechnology

To maximize the possibilities, Procter & Gamble has developed what we call our "core competencies."

Vision

connect + develop

"We will acquire 50% of our technologies and products from outside P&G." – A.G. Lafley



P&G has turbo charged its innovation capability by leveraging ***external*** and ***internal*** innovation assets with key partnerships to deliver superior P&G products and services at greater value to consumers.

Vice President Mark Peterson

April, 2004

Innovation Examples

Ready-to-go Technologies

Procter & Gamble introduced Bounce, the world's first dryer added softener, after acquiring the product technology from the independent inventor who developed the innovative fabric-care solution.

Ready-to-go Products

A great example of this is the Crest Spin Brush. The invention came from Dr. John's - an SME (Small and Medium-Sized Enterprise) in the USA that was active in the toy industry. But what Dr. John's was the first to see was the potential to transform a battery - operated, spinning toy into a powered toothbrush.

In this instance, the deal was struck when Procter & Gamble acquired Dr. John's Spin brush business and added the Crest brand name to the innovation.

Ready-to-go Packaging

Several of our Olay Skin Care products now utilize new consumer-preferred pump dispensers originally developed by a European packaging products company.

Commercial Partnerships

Procter & Gamble found the perfect complement to the Swiffer brand in a hand-held duster developed by a Japanese competitor.

See examples of new technologies and technology needs that are the results of mutually beneficial collaborations we have established through external connections. Go to Connect + Develop and click on "Search for Technology".

Use of networks…..from 7500 people inside to 7500 *plus* 1.5 million outside

- Proprietary networks, including technology entrepreneurs and suppliers….
- Open networks, including NineSigma (RFPs), YourEncore (65plussers) and Yet2.com (IP market place)

P&G Osaka Connection

- When an *technology entrepreneur* discovered in an Osaka grocery store a stain removing sponge, he send it to Cincinnati. The resulting product MR Clean Magic Eraser is now in third generation development and has achieved double projected revenues
- BASF manufactures a melamine resin foam called Basotect for soundproofing and insulation in the construction & car industry; P&G's EBD negotiated its purchase
- LEC, a Tokyo based consumer-products company markets Basotect foam in Japan as a household sponge called Cleenpro; Adjacent Magic products *co-created* with BASF

Ebrahim Rezai, PhD
Associate Director
Global Baby Care - Raw Materials

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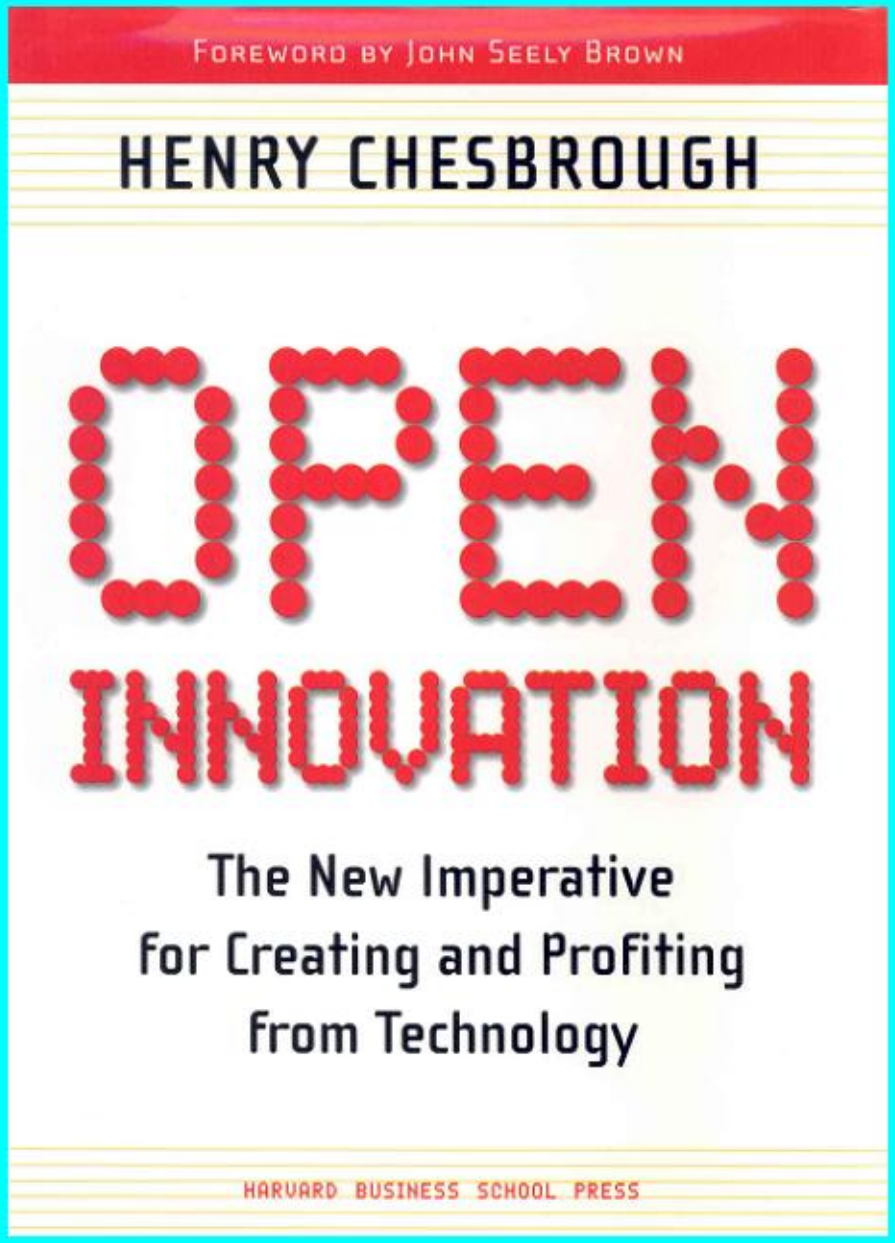
Meeting on April 19, 2007

The model works. Today, more than 35 percent of our new products in market have elements that originated from outside P&G, up from about 15 percent in 2000. And 45 percent of the initiatives in our product development portfolio have key elements that were discovered externally.

Through connect and develop—along with improvements in other aspects of innovation related to product cost, design, and marketing—our R&D productivity has increased by nearly 60 percent. Our innovation success rate has more than doubled, while the cost of innovation has fallen.

R&D investment as a percentage of sales is down from 4.8 percent in 2000 to 3.4 percent today. And, in the last two years, we've launched more than 100 new products for which some aspect of execution came from outside the company.



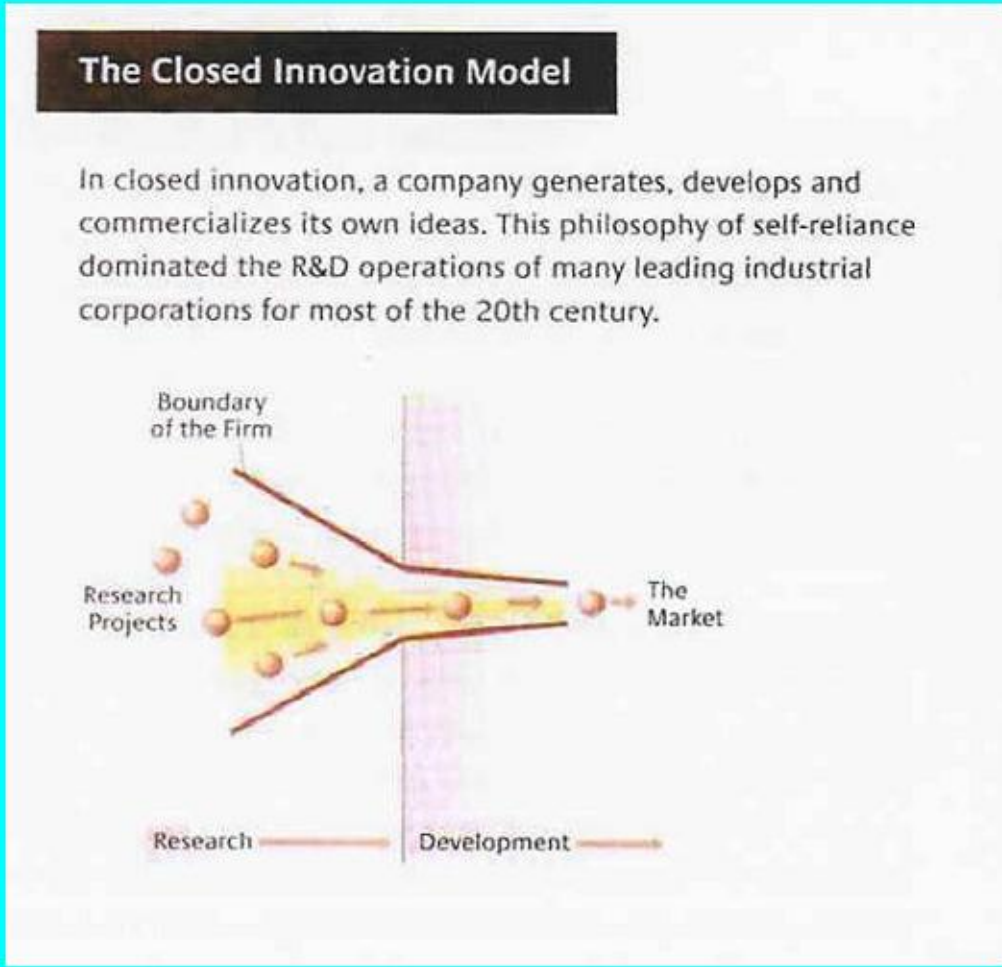
"… firms that can harness outside ideas to advance their own business while leveraging their internal ideas outside their current operations will likely thrive in this new era of open innovation"

Science and application

- 1900
  - Foundation of large industrial laboratories. Linear innovation model. Sci entific research provides leads to Engineering Process and Product Deve lopment Laboratories
- 1945
  - Vannevar Bush, Endless Frontier
  - USA model: scientific (“free”) research in Universities, applied research in governmental laboratories
- 1980
  - Open innovation model: outsourcing of research. Spinoffs from industry and university. Venture capital. Large mission oriented programs (USA) .
  - Science and Application unity

The Closed Innovation Model

- Many innovative firms now spend little on R&D and yet they are able to successfully innovate by drawing in knowledge and expertise from wide range of external sources
- The decline in the strategic advantage of internal R&D is related to the increased mobility of knowledge workers, making it difficult for firms to appropriate and control their R&D investments



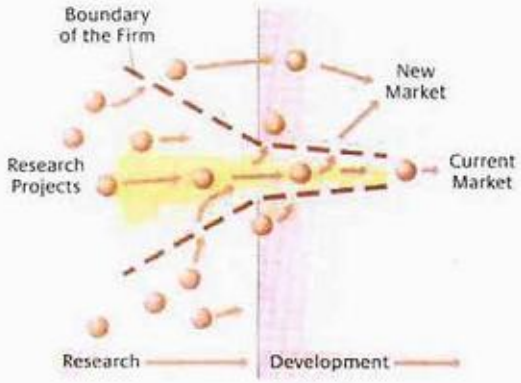
Source: Chesbrough, 2003

The Open Innovation Model

- Open innovators commercialise external id eas by deploying outside (as well as in-ho use) pathways to the market
- Firms become more porous and embeddin g it loosely-coupled networks of different actors, collectively and individual working toward commercialising the new knowledg e
- Firms that are too focused internally are pr one to miss a number of opportunities bec ause many will fall outside the organizatio n's current business or will need to be co mbined with external technologies to unlo ck their potential

The Open Innovation Model

In the new model of open innovation, a company commercializes both its own ideas as well as innovations from other firms and seeks ways to bring its in-house ideas to market by deploying pathways outside its current businesses. Note that the boundary between the company and its surrounding environment is porous (represented by a dashed line), enabling innovations to move more easily between the two.



Source: Chesbrough 2003

Contrasting closed and open models

Closed innovation	Open innovation
The smart people in our field work for us	Not *all* smart people work for us. We need to work with smart people inside ***and*** outside the company
To profit from R&D, we must discover it, develop it and ship it ourselves	External R&D can create significant value. Internal R&D is needed to claim some portion of that value
The company that gets innovation to market first will win	Building a better ***business model*** is more important than getting to market first
If we create the most and the best ideas in the industry, we will win.	If we make the best use of internal ***and*** external ideas, we will win.
We should control our IP, so that our competitors cannot profit from it.	We should profit from other's use of our IP (license out) and we should license in other's IP whenever it advances our business model.
We will own all results from contract research with universities	We will partner with universities to create knowledge and encourage use outside our field

Adapted from Chesbrough

Closed vs. Open Innovation (2)

Closed Innovation	Open Innovation
Examples of industries: nuclear reactors, mainframe computers	Examples of industries: PCs, movies
Largely internal ideas	Many external ideas
Low labor mobility	High labor mobility
Little VC	Active VC
Few, weak start-ups	Numerous start-ups
Universities unimportant	Universities important

Source: Chesbrough (2003)

New role(s) for universities

- Long term investment in excellence in scientific discip lines (*industry will not do it any more*)
- Efficient knowledge transfer with industry in a sustain able way (*building bridges*)= the Responsible Partneri ng initiative
- Enormous need for training of knowledge transfer prof essionals, both in university and industry
- Help develop new business models (support of spin-ou t creation)
- Support entrepreneurship, incubator services, training, education, mostly at regional level.

- **International Review of Technopoles and Science Cities around the world:**

Sophia-Antipolis (France),

Tsukuba-Kansai (Japan),

Daedeok Valley (South Korea)

- **Current Evaluation of North-East (Newcastle City-Region) on it's Innovation Performance (Both Firm Level & Regional Level)**
- **Learning Lessons from Daedeok**

- Forced relocation but good catching up
- Very Strong Collaborative work that has functioned between research institutions and industry
- Universities have formed alliances with some of the other best universities and research institutions around the world.

← **University of New Castle, UK**

This is globalization 3.0

Globalization 1.0 1492–1800

Nations globalize for resources & imperial conquest

Globalization 2.0 1800–2000

Companies globalize for markets & labor

Globalization 3.0 2000–??

Individuals & small groups globalize: connecting all of the world's knowledge pools together

Thomas Friedman *The World is Flat: A Brief History of the Twenty–First Century* NY: 2005: Farrar, Straus and Giroux

The World is Flat:

- **Out-sourcing – 인도 (India)**
- **Off-shoring – 중국 (China)**
- **Open-Sourcing – 리눅스 (Linux)**
- **In-Sourcing -- UPS**
- **Supply Chain Management – Wal Mart**
- **In-forming– Google (접근 수단)**

Conclusions

- **Research and Innovation**
- **Branding and Awareness**
- **Strategic Partnerships**
- **Global Marketplace**
- **Expansion: Digital & Analog Jump!**