

The Economist's Annual Innovation Awards. Huawei Technologies of China is doubly impressive but is the investment in R&D overstated?

We look at one of the award winners, Huawei Technologies (Huawei), and are impressed by its success and try to better understand which management practices may have contributed to this success. Huawei has many of the management practices found in highly-innovative companies in the West.

1. The Economist's Innovation Awards

The Economist's Innovation Awards were announced¹ and one cannot help but be impressed with the winners. All are outstanding innovators but it is the dominance of the IT or computer-based winners which is especially noteworthy. Of the 9 awards, 6 are to companies engaged in various forms of IT and telecommunications.

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Award Winner	Organization	Topic	Field of endeavour
Harald zur Hausen	German Cancer Research Centre	Vaccine development	Bioscience
Peter Thiel and Max Levchin	Co-Founders of firm which became PayPal	Secure on-line payments	IT
John Cioffi	Assai	Assymetric digital subscriber line (ASDL)	Computing and telecommunications
Steve Jobs	Apple	Industry-transformative electronic devices	Electronics
Michael Biddle	MBA Polymers	Mixed-plastics recycling	Polymers
Peter Diamandis	Founder of xPrize Foundation	Using prizes for spurring innovation	Space flight, electrical vehicles, genomics, etc.
Nick Hughes and Susie Lonie	M-PESA	Kenya's mobile money-transfer	IT
Corporate use of innovation	Huawei Technologies	Telecom equipment	Telecom
Readers award		Fourth generation (4G)	IT and networks

It is almost as if there should be a separate category for IT/Telecommunications companies since, as we all know, spending on R&D by these organizations is almost always beyond 6% and tends, on average, to be closer to 10% of sales. Dramatic sales increases are also the order of the

¹ The Economist, December 11th, 2010. And the winners were...

day. Other innovative industries, fine chemicals, auto-sector, cannot, and some would say do not have to compete, with these numbers but many of these companies are also innovative.

2. Huawei Technologies – An Overview

Huawei Technologies, established in 1988, received the award for the ‘corporate use of innovation’. Fast Company had earlier ranked Huawei as the fifth most innovative company in the world.

Huawei makes the point that over 50% of its employees are engaged in research and development; and the company employs either 60,000 worldwide (according to their video message) or 90,000 (according to their written material). By either measurement, the number is overwhelming but is it believable? The company spent, according to its own most recent statement ²CNY13,340 million on R&D, in 2009. It has established 17 research centres³ in 6 countries including China, along with 20 joint innovation centres. It is rapidly filing patent applications⁴ and ranks 2nd according to the WIPO. Their success is almost unparalleled.

Not only is Huawei innovative, as measured by the standards quoted, but it has managed to do this while generating a 14.1% operating margin in 2009, increasing sales by 19%, and, at the same time, maintaining solid cash flow.

CNY Million	2009	2008	2007	2006	2005
Revenue	149,059	125,217	93,792	66,365	48,272
Operating profit	21,052	16,197	9,115	4,846	6,752
Operating margin	14.1%	12.9%	9.7%	7.3%	14.0%
Net profit	18,274	7,848	7,558	3,999	5,519
Cash flow from operating activities	21,741	6,455	7,628	5,801	5,715
Cash and cash equivalents	29,232	21,017	13,822	8,241	7,126
Working capital	41,835	29,588	23,475	10,670	10,985
Total assets	139,653	118,240	81,059	58,501	46,433
Total borrowings	16,377	14,009	2,731	2,908	4,369
Owner's equity	43,316	37,454	30,032	20,846	19,503
Liability ratio	69.0%	68.3%	63.0%	64.4%	58.0%



This is but one example of the rapidly emerging research and development effort in China.

3. China's Spending on R&D

China is reported⁵ to be set to overtake Japan in R&D spending according to the Battelle Memorial Institute. The U.S. remains the most dominant in spending on R&D, accounting for over one-third of global spending.

² Web site; Despite the challenging economic environment, the Company continued to increase its R&D investment in 2009. The R&D expenses in 2009 amounted to CNY 13,340 million, an increase of 27.4% from that of 2008.

³ We have more than 43,600 employees engaged in R&D and have established 17 research institutes in countries including the U.S., Germany, Sweden, Russia, India, and China. We have set up over 20 joint innovation centers with top operators to transform leading technologies into a competitive edge for customers and achieve business success.

⁴ The Company filed 6,770 new patents in 2009, thus accumulatively filed 42,543 patents. According to the World Intellectual Property Organization (WIPO), Huawei ranked second in terms of patents applications under the WIPO Patent Cooperation Treaty (PCT). In addition, Huawei is holding a leading position in terms of essential LTE patents applications.

⁵ The Globe and Mail, Report on Business. December 15th, 2010. Wall Street Journal Report.

A number of high-profile U.S.-based companies cut their spending on R&D⁶ in the early part of 2009 compared to the same period in 2008 due to the economic climate; including Intel Corp., Cisco Systems, Microsoft Corp., International Business Machines Corp. and Johnson & Johnson. Huawei did not cut its spending; further evidence of its commitment to R&D.

Battelle states that over half of Huawei's employees work in R&D. Is there an interpretation around spending on 'customer-centric systems development' (a term used by Huawei and might even include R&D paid for by the client) and spending in research laboratories? Is there a differentiation between basic and applied research? Definitions may figure into the way in which we interpret these figures for Huawei and for the country as whole.

R&D, however, is a major feature of the success of this company from its very beginning in 1988.

- 1990, Embarks on independent research and commercialization of PBX technologies targeting hotels and small enterprises.
- 1992, Initiates R&D and launches rural digital switching solution
- 1999, Establishes R&D centre in Bangalore, India, which achieves CMM level-4 accreditation in Year 2001 and CMM level-5 accreditation in Year 2003
- 2000, Establishes R&D center in Stockholm, Sweden
- 2001, Establishes four R&D centers in the United States
- 2008, Largest applicant under WIPO's Patent Cooperation Treaty (PCT), with 1,737 applications published in 2008; accounts for 10% of LTE patents worldwide

Huawei defines⁷ R&D as 'continuous customer-centric innovation which sounds like it could include coming up with solutions for clients which other companies might note a project work and not R&D, certainly not experimental R&D.

There are more questions here than answers.

4. Parsing the Reasons for Huawei's success

There is not much information available on Huawei but there are some hints, included in various reports, on the way in which Huawei manages its affairs and the direction of its strategy.

Twenty-five Factors⁸ have been chosen to portray the management practices which typify the actions, attitudes and management practices associated with the world's most innovative companies. Based on **researching 28 of the most innovative companies in the world** and augmented by the **opinions of respondents to our Calibration Survey**, Huawei's management practices are parsed so as to better understand how Huawei cultivates, grows and sustains innovation.

⁶ Wall Street Journal. Article by Gautam Naik. Published in The Globe and Mail, December 15th, 2010.

⁷ Web-site information. In order to meet the needs of our customers, we focus on a strategy of continuous customer-centric innovation. The goal of our product R&D is to deliver timely solutions for anticipated and actual customer needs by developing innovations in technologies, products, solutions and services.

⁸ For background information on the Factors, go to <http://www.corporateinnovationonline.com>.

Information available to date permits some conclusions on only 9 of the 25 Factors; red indicates there is no information available.

2. The company organizes and manages day-to-day affairs

- which management places strong emphasis on people – human resources and interaction (F#6)
- degree of formal communication in the company ? (F#10)
- use independent (groups with authority to make changes) work groups to accomplish projects and special tasks (F#11)
- decisions are made with input from several sources in the company (F#12)
- too much or too little staff involvement in decision making? (F#20)
- the formality of the decision process and the approach to organization (F#13)
- management is shifting to decentralize decision making (F#18)
- is the organization action oriented or lost in planning processes ? (F#15)

1. Leadership at Huawei

- management (and Board level people) explicitly look for innovation (F#2)
- the emphasis by senior management is on achieving long-term goals and not on short-term profit (F#1)
- planning/business/strategic/planning/budgeting all emphasize cost cutting or rationing of resources rather than finding opportunities (F#4)
- tolerance for risk in the planning process ? (F#9)

3. Approach to idea generation and realization

- tolerance for mavericks ? (F#3)
- tolerance for failure ? (F#5)
- tolerance for variances from a defined or undefined corporation norm (F#8)
- reward mechanisms are in place for innovators/innovations (F#14)
- there is a sense that resources are available should attractive ideas/projects be identified (F#19)
- R&D spending levels are high when compared to the competition (F#23)

The Economist makes the point that Huawei's success challenges 'the notion that Chinese firms are merely imitators rather than innovators'. The management practices, which are drawn from a review of company literature, also challenge the stereotypical view of Chinese organization as a top-down, hierarchal, with a rigid style. Huawei has many of the characteristics of innovative companies; auguring well for its future success.

For some of the Factors the evidence is reasonably clear but for the majority of the Factors, it will take much more research to actually understand the management practices behind the success of this company. More transparency about company practices would be useful.