

# THE IMPACT OF TECHNOLOGIES ON THE BUSINESS: A CASE STUDY OF HUAWEI

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***Abstract**--Huawei Technologies established in 1988 and headquartered in Shenzhen, China, specializes in the research and development, production and marketing of telecom equipment, providing customized network solutions in different telecom fields. In 2004, Huawei's contract sales reached USD5.58 billion. Along with the rapid development, Huawei has faced some emerging problems, especially in the high rate problem of employee turnover. A study was undertaken to determine the reasons why workers have the desire to remain employed by an organization. The researcher endeavored to discover those other types of satisfaction that are most often sought by employees regardless of sex, race, education or economic status. If people seek more than pure economic reward from the working environment, it might then be possible to create a profile that could be used to reduce or eliminate undesired employee turnover.*

***Keywords:** Huawei, telecom equipment, customized network solutions, employee turnover*

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## I. Introduction

Established in 1988, Huawei Technologies is a private high-tech enterprise which specializes in research and development (R&D), production and marketing of communications equipment, and providing customized network solutions for telecom carriers in different areas. Huawei's contracted sales in 2004 reached 5.58 billion USD, an increase of 45% year on year 2004, among which 2.28 billion USD came from international sales. Huawei's customers include China Telecom, China Mobile, China Netcom, China Unicom as well as BT, NEUF, and AIS. Currently Huawei provides telecom products and solutions for over 270 operators worldwide and 22 of the world's top 50 operators are using Huawei's products and solutions.

Huawei's products can be divided into the following categories: fixed network, mobile network, data communications, optical network, software & services and terminals- ranging from switching, integrated access network, NGN, XDSL, optical transport, intelligent network, GSM, GPRS, EDGE, W-CDMA, cdma2000, a full series of routers and LAN switches, videoconferencing, terminals to other key telecom technology fields. Most important of all, Huawei products are based on its independently designed ASIC chips (Wu & Zhao, 2007). Its ASIC designing capability is among the most advanced in this field worldwide. This allows Huawei to consider the needs of its customers from start to finish, from the chip to the network.

Huawei has now become a leading vendor in the industry. As far as market share is concerned, Huawei is currently No.1 in digital switches and next generation network, No. 2 in ADSL broadband and No.3 in optical network (RHK). Huawei has also become one of the few vendors in the world to provide end-to-end 3G solutions. Huawei UMTS has been commercially deployed in UAE, Hong Kong, Malaysia, Mauritius and the Netherlands. In order to support its global operations Huawei

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has set up 55 branch offices worldwide. Eight regional headquarters and a host of customer support and training centers have been established. Several research institutes including Dallas (USA), Silicon Valley (USA), Bangalore (India), Stockholm (Sweden), Moscow (Russia), Beijing and Shanghai have been set up. Huawei's products are deployed in over 70 countries, including the United States, Germany, France, UK, Spain, the Netherlands, Russia, Brazil, Thailand, Singapore, Egypt and Nigeria.

Among Huawei's 24,000 employees (around 3,400 foreign staff), 48% are engaged in R&D. Each year, Huawei invests no less than 10% of its sales revenue into R&D. To ensure steady and sustainable growth and to sharpen the core competitive edge, Huawei emphasizes the importance of partnering with leading global players in the industry on both product development and marketing. Huawei has been cooperating with Texas Instruments, Motorola, Microsoft, Intel, Qualcomm, Sun Microsystems and others. Since 1997, IBM, the Hay Group, Towers Perrin, PwC, and FhG have been serving as Huawei's consultants on corporate management, human resources management, the employee stock option plan, financial management, and quality control. Huawei's financial report is audited by KPMG. Globalize synchronous Research & Development is based on advanced technology, expertise and strict quality control processes. CMM5 and IPD (Integrated Product Development) have been widely implemented into product development. Fits R&D divisions (Central software division and institutes in Bangalore, Shanghai and Nan Jing) have been CMM 5 certificates (Y. Zhang & Duysters, 2010). Since 1997, IBM, the Hay Group, To Huawei's Perrin, PwC, and FhG have been serving as Huawei's consultants on corporate management, human resource management, employee stock option plan, financial management, and quality control.

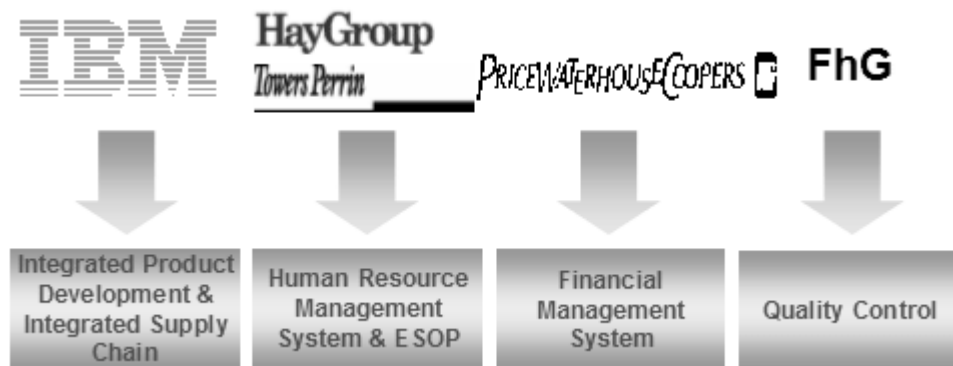


Figure 1: Activities of the Companies

Table 1: Human Resource Practices

Research & Development	Marketing, Sales and Customer Service	Administration	Supply Chain
48%	38%	6%	8%

Among Huawei's 30,000 employees worldwide, 90% of employees hold bachelor's degree or higher. Each year, Huawei invests no less than 10% of its sales revenue into Research & Development. (Source from Huawei annual report)

Table 2: Financial Highlights Huawei technology's cooperation and Subsidiary Companies (USD in millions)

Year Ended December 31	2004	2003	2002	2001(*)	2000
Revenue	3,827	2,694	2,128	2,290	1,933

Net Income	624	384	108	258	345
Cash Flow From Operations	396	385	311	204	255
Operating Profit Margin	18%	19%	10%	17%	24%
Return on Net Assets	31%	23%	7%	20%	47%

Note: (\*) Excluding discontinuing operations. (Source from Huawei website)

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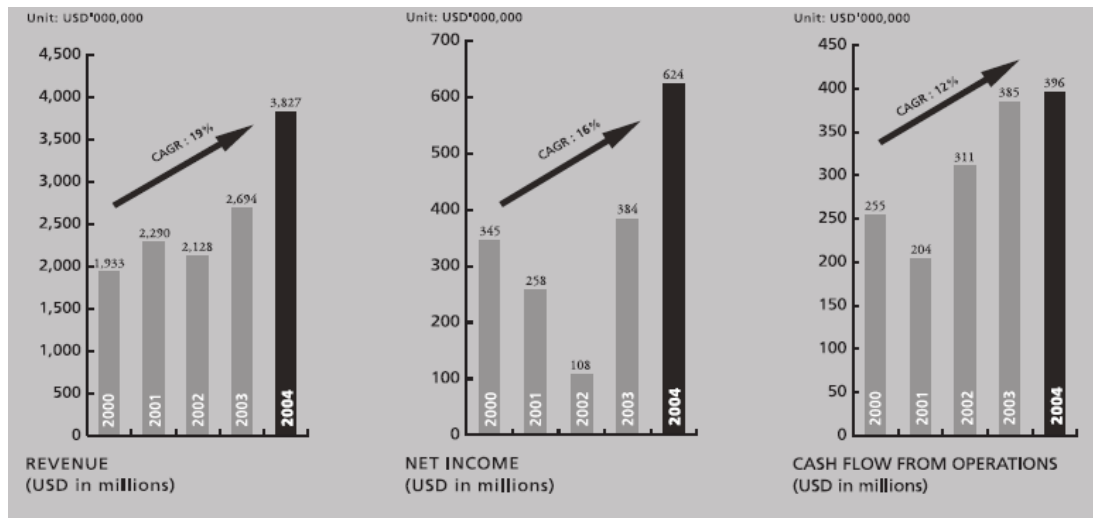


Figure: Financial Highlights

U-SYS, Huawei's end to end Next Generation Network solution, is currently the leading option for different carriers all around the world. In 2004, the shipment of U-SYS exceeded all other competitive solutions and was ranked No.1 in the global market. By May 2005, 100 U-SYS network deployments have been put into commercial operation by 50 telecom carriers in more than 30 countries/regions. The access network plays a very important role in the telecom network and accounts for over 60% of the total telecom network investment. HUAWEI can provide full solutions and series of access products including MSAN, DSLAM, FTTH, BRAS, and others. One of the main products that Huawei has developed is the C&C08 switching system. After 15 years of development, C&C08 has widely been used as toll exchange, tandem exchange, gateway exchange, and local exchange. According a report by Dittberner (a global telecommunications consulting company), by the now, C&C08 had widely been used in more than 50 countries and total worldwide application had reach 160M ports. Huawei has deployed 20 million ports in 2004, taking 32% of the market share of globally installed ports from 2001 to 2004, and ranking No.1 in the world .

As a world-leading vendor for optical networking total solutions, Huawei Technologies has developed, designed, manufactured and marketed a wide range of OptiX series of optical network products, ranked Top 4 in 2003 global ON market and No.1 in Asia-Pacific ON market in the past years ( by RHK) . By the end of Year 2003, more than 200,000 sets of OPTI equipment have been deployed on networks world-wide, they are now efficiently boosting and creating profits for telecom incumbent operators. In the past years, Huawei have provided its clients with world-class successful solutions for XH-DWDM, MSTP, OCS, NG-SDH, NG-SONET, Network Management System in more than 50 countries or regions

including China, France, Germany, Spain, USA, Russia, India, Brazil, Mexico, Korea, Hong Kong and away others (Liu, Zheng, & Wei, 2012).

## II. Literature Review

With the rapid development and increase of technology and market demand for our products, Huawei has made a large investment in customer training. The training base currently being built will be a first-rate international training center with state-of-the-art facilities, capable of accommodating 2,000 people for training at the same time. To overcome the constraints brought about by time or location factors, such training methods as CBT, Multimedia CD-ROM Training, Video Training and Audio Training, Web-based Training will be more widely utilized. Tele-training based on the Internet and television networks will gradually be developed to ensure that, regardless of any time and any place, customers will have access to individualized training from Huawei.

The telecom industry is an investment-type market, and Huawei would never be recognized by operators if Huawei relied on opportunist behaviors. Therefore, Huawei said no to opportunism in the international market. Instead, in accordance with the industry best practices, Huawei are transforming into an international first-class company on a full scale in respect of marketing, R&D, sales, finance, the target markets insistently, build the marketing service networks and teams consistently and, after 9 years of hard work, Huawei have accomplished a full-scale breakthrough in international markets (Yusheng, 2013). Accomplished an international market layout, and doubled the overseas sales in consecutive years. Huawei obtained sales of USD50 million in 1999, and USD2.28 billion in 2004, which was 41% of the total sales, thus In addition to market expansion in developing countries, Huawei have penetrated the market of developed countries. Its target markets such as Russia, Thailand, Singapore, India, Pakistan, Indonesia, Malaysia, Brazil, Egypt, Saudi Arabia, doubled the international sales in five consecutive years. Currently, Huawei's products and solutions have been deployed by over 300 operators in over 90 countries regions, 22 of the world's top 50 telecom operators have selected Huawei's products and solutions.

Huawei have built a global platform that helps us work closely with customers and respond faster to customer requirements. This improves customer satisfaction and supports market expansion in all countries. Huawei have set up 8 regional headquarters and 55 branch offices around the world. Nigeria, Kenya, Zimbabwe and Bulgaria have become the company's major sales bases and helped market expansion. Meanwhile, Huawei are also progressing rapidly in the markets of the developed countries. Based business management systems to create value for customers. Through consistent improvement, Huawei developed its management system in accordance with the best international practices, which has withstood the test of rapid and continuous business growth, commanded the recognition of global customers and partners, and strongly supported the globalization strategy of the company (Xu & Li, 2011).

Process realignment: On the basis of the core process of the company such as the Marketing Management Process, Integrated Product Development (IPD), Integrated Supply Chain (ISC) and Customer Service, complemented by the finance "fits unifications" and the human resource (HAY) project, Huawei staged a business process transformation on a full scale, introduced practical industrial benchmarks, and set up a complete Organization transformation: Starting from product line transformation and navigated by the company's executive management team and its "Strategy and Customer Standing Committee", Huawei strengthened the decision-making support capability of the Marketing System for understanding customer requirements, strategic direction control, and itself IT platform. Quality control and production process: Germany's FhG helped design Huawei's production process system, including the 3D warehouse/automatic warehouse and the whole

production line layout, thus reducing material movement, shortening the production cycle, and improving the production efficiency and quality. Human resource management: Huawei set up a human resource team as a Huawei cohesive force and work efficiency, developed a consummate human resource system (H. Zhang, Rao, & Feng, 2018). Through cooperation with HAY, Huawei made progress in evaluating positions, setting up a remuneration framework, regulating that remuneration, and introducing the KPI system. Huawei kept improving the performance management and introduced the caliber model to improve the business planning. Through effective operation of the Investment Review Board (IRB), marketing management team, product system management team, operation and delivery management team and other supportive teams, Huawei ensured the implementation of Huawei's general strategy driven by customer requirements. And "last one eliminated" system which are navigated by customer requirements and measured by responsibility results, key events and behaviors process.

Financial management: Huawei set up financial services and monitoring systems, implemented and unified financial regulations, procedure, codes and monitoring and fulfilled financial monitoring and management worldwide. Huawei have also set up the flexible planning budget system, full-process cost management concept, the Shenzhen Capital Management Center, and the Hong Kong Capital Management Center. Huawei have established partnerships with over 20 banks to meet the capital requirement for the further business development of the company. The company has accomplished an independent audit system, and is now constructing a 3-level monitoring from external audit to internal control and business audit to minimize the finance risks and operation risks of the company. Supply chain. Huawei developed the capability of a flexible supply chain and obtained the comparative competitive edge of fast, high-quality and cost-effective supply. Huawei formulated pertinent supply guarantee strategies, built flattened manufacturing organizations to meet the market demand efficiently and flexibly; staged the Integrated Supply Chain (ISC) transformation to ensure implementation of the new process and systems; and implemented quality engineering technologies to continue to improve supply chain capabilities and customer service levels (Joo, Oh, & Lee, 2016). Huawei developed partnerships with principal suppliers, enhanced purchase performance management and carried out the supplier certification procedure based on the industrial benchmark TQRDCE.

Internal staff shareholding system: Huawei have implemented the internal staff shareholding system. In the help of international human resource consulting firms, Huawei implemented the virtual limited share, virtual share option scheme and MBO virtual share scheme, which enriched its incentive mechanism. The 15 years of experience gained from the internal staff shareholding system helped the company set up an effective long-term staff incentive mechanism, which supports the long-standing development of the company. Turnover in Huawei was 15.7% – an increase of over 5 percentage points compared to the previous 12 months. Problems recruiting and retaining workers, particularly skilled ones, are raising the cost of doing business. The following is a comprehensive checklist of items to include when calculating the cost of turnover in Huawei. To determine the costs, have the hourly and weekly cost of fully loaded payroll costs (i.e. salary plus benefits) of the vacant position, the management staff, the recruitment staff and others as outlined below.

It should be noted that the costs of time and lost productivity are no less important or real than the costs associated with paying cash to vendors for services such as advertising or temporary staff. These are all very real costs to the employer (Fan, 2011). These calculations will easily reach 150% of the employees' annual compensation figure. The cost will be significantly higher (200% to 250% of annual compensation) for managerial and sales positions. To put this into perspective, let's assume the average salary of employees in Huawei is \$6,000 per year. Taking the cost of turnover at 150% of salary, the cost of turnover is then \$7,500 per employee who leaves the company. A study was undertaken to determine the reasons why workers desire to remain employed by an organization. Without regard to sex, race, education or economic status, the

researcher endeavored to discover those other types of satisfaction that are most often sought by employees. If people seek more than pure economic reward from the working environment, it might then be possible to create a profile that could be used to reduce or eliminate undesired employee turnover. Indeed the results of this analysis reveal support for the theory of profiling as a method of lowering undesired employee attrition. With continued study, this theory could become a beneficial reality in the workplace (Hawes & Chew, 2011).

Calculate the cost of the person(s) who fills in while the position is vacant. This can be either the cost of a temporary or the cost of existing employees performing the vacant job as well as their own. Include the cost at overtime rates. Calculate the cost of lost productivity at a minimum of 50% of the person's compensation and benefits cost for each week the position is vacant, even if there are people performing the work (Hussain, Mosa, & Omran, 2017). Calculate the lost productivity at 100% if the position is completely vacant for any period of time. Calculate the cost of conducting an exit interview to include the time of the person conducting the interview, the time of the person leaving, the administrative costs of stopping payroll, benefit deductions, benefit enrollments, notification and administration and the cost of the various forms needed to process a resigning employee. Calculate the cost of the manager who has to understand what work remains, and how to cover that work until a replacement is found. Calculate the cost of the manager who conducts their own version of the employee exit interview. Calculate the cost of training its company has invested in this employee who is leaving. Include internal training, external programs and external academic education. Include licenses or certifications the Huawei has helped the employee obtain to do their job effectively. Calculate the impact on departmental productivity because the person is leaving. Who will pick up the work, whose work will suffer, what departmental deadlines will not be met or delivered late. Calculate the cost of department staff discussing their reactions to the vacancy (Hussain, Mosa, & Omran, 2018).

Calculate the cost of severance and benefits continuation provided to employees who are leaving that are eligible for coverage under these programs. Calculate the cost of lost knowledge, skills and contacts that the person who is leaving is taking with them out of its door. Use a formula of 50% of the person's annual salary for one year of service, increasing each year of service by 10%. Calculate the cost impact of unemployment insurance premiums as well as the time spent to prepare for an unemployment hearing, or the cost paid to a third party to handle the unemployment claim process on its behalf. Calculate the cost of losing customers that the employee is going to take with them, or the amount it will cost you to retain the customers of the sales person, or customer service representative who leaves. Subtract the cost of the person who is leaving for the amount of time the position is vacant. Calculate the cost of orientation in terms of the new person's salary and the cost of the person who conducts the orientation. Also include the cost of orientation materials. Calculate the cost of departmental training as the actual development and delivery cost plus the cost of the salary of the new employee (Hussain, Musa, & Omran, 2019).

Note that the cost will be significantly higher for some positions such as sales representatives and call center agents who require 4 - 6 weeks or more of classroom training. Calculate the cost of the person(s) who conduct the training. Calculate the cost of various training materials needed including company or product manuals, computer or other technology equipment used in the delivery of training. Calculate the cost of supervisory time spent in assigning, explaining and reviewing work assignments and output. This represents lost productivity of the supervisor. Consider the amount of time spent at 7 hours per week for at least 8 weeks. The Chinese telecommunication sector's growth rate was about 20% between 1997 and 2002. This is the double of China's GDP (Gross Domestic Product) rate and is the strongest and fastest growth in world in this line of industry. China fixed-line and mobile operators have invested an average of 25 billion American dollars on network infrastructure in the last years, more than all western European carriers together. As a result, with 1.3 billion citizens, China

owns the world's largest fixed-line and mobile network in terms of both network capacity and number of subscribers (Hussain, Musa, & Omran, 2018).

Only one out of ten Chinese citizens had a phone five years ago. Today more than one out of three have a fixed telephone subscription and more than 1.25 million cellular subscribers sign up in China every week (Source from Chinese daily newspapers) In five years, there will be more than 950 million fixed and mobile subscriptions, three times more than the entire population of the United States (US). China's accession to the World Trade Organization (WTO) on December 11th 2001 resulted in the gradual opening of the telecom services market to foreign companies. Besides, Beijing's hosting of the 2008 Olympic Games will create great business opportunities for both Chinese and foreign companies. Before 1994, the Ministry of Posts and Telecommunications (MTP) provided telecom services through its operational arm, China Telecom. Pressured by other ministries and dissenting customers, the Chinese government officially started the telecom industry reforms in 1994 by introducing a new competitor: China Unicom. However China Unicom could hardly compete with the giant China Telecom. In 1998, due to a ministerial reorganization, the MTP was replaced by the new Ministry of Information Industry (MII). The MII took two large scale reshuffling actions targeting the inefficient state-monopoly. In 1999 the first restructuring split China Telecom's business into three parts. China Mobile and China Satcom were created to run, respectively, the mobile and satellite sectors but China Telecom continued to be a monopoly of fixed-line services. The second restructuring in 2002 split China Telecom geographically into North and South: China Telecom - North kept 30% of the network resources and formed China Netcom (CNC) and 70 % of the resources were retained by China Telecom - South or simply the new China Telecom. These resources consisted of a 2.200.000 km. long nation-wide optical network, based on ATM (Asynchronous Transfer Mode), SDH (Synchronous Digital Hierarchy) and DWDM (Dense Wavelength Division Multiplex) technologies, and several submarine cables, in particular with the US, Japan, Germany and Russia.

Parallel to this double fission, the telecommunications division of the Ministry of Railways (MOR) established a new actor in 2000. To sum up, in the last decade the Chinese telecom industry has changed from a state-run monopolistic structure to state-run "oligopolistic" structure. The MII is responsible, among other duties, for elaborating regulations, allocating resources, granting licenses, supervising the competition, promoting Research & Development (R&D) and service quality as well as of developing tariff rates. The MII has built up a nation-wide regulatory system composed of Provincial Telecommunications Administrations (PTA) with regulatory functions within their respective provinces. A number of other significant institutions also influence China's telecom picture such as the State Development and Reform Commission (SDRC) following its WTO accession, China is accelerating the establishment of a legal framework for the telecom industry. This framework includes adopting a western-style Telecommunication Law and setting up an independent regulatory and arbitration body to deal with the telecom operators. None of these objectives have been yet truly accomplished:

On the one hand, Telecommunication regulations are still in an infant state. The Telecommunication Law is still expected to appear although the government promulgated the People's Republic of China (PRC) Telecommunications Regulations in 2000 and the Regulations on Foreign Investment in Telecom Enterprises (See next section) in 2001. On the other hand, given the close relation between the MII and the state-owned Chinese telecom companies, the MII is far from being a truly independent telecom regulator. As an example, most senior executives of the Chinese telecom companies have links to the MII, the Government or the Party. Prior to its WTO accession, China's policy protected the national emerging telecom industry since it was and is a national priority sector. Only foreign equipment vendors were allowed to invest in China. Authorization for the investments was conditioned on technology transfer. International telecom carriers were banned from accessing the market. As part of the WTO commitments, the Chinese government is opening gradually the carriers market to foreign investors. There are some geographical limits to this opening but they will be progressively relaxed. In 2005

foreign investors will be allowed for form Joint Ventures, investing up to 50% in Internet services in the whole country, up to 49% in the mobile sector in 17 major Chinese cities and up to 25% in fixed-line basic services in Beijing, Shanghai and Canton (Muhammad Atif Nawaz, Afzal, & Shehzadi, 2013).

Finding a Chinese partner to form a Joint Venture with, preferably a major carrier is mandatory for a foreign company wishing to access the Chinese market. Foreign investments come, in order of importance, from the US, Canada, Sweden, Finland, Germany, France, Japan and South Korea. Main companies from these countries already have one or more Joint Ventures. Notice that many of them result in “divorce”. China Mobile not only operates basic GSM services but also value-added services such as GPRS (General Packet Radio Service) data transfer, IP telephony and multimedia. It ranks the first in the world in terms of network scale and customers base. It is listed in HK and NY stock exchanges. China Unicom is to date the only licensed full telecom service provider in China. Its services include fixed-line, mobile, IP telephony, data and internet. Furthermore, China Unicom is the third largest mobile operator in the world and the only one in China operating a CDMA network. It is concentrating its efforts on CDMA and little investment is expected in GSM. It is listed in HK, NY and Shanghai stock exchanges. China Sitcoms is licensed to engage in all kind of satellite related services such as transponder lease, domestic television broadcasting, public VSAT (Very Small Antenna Aperture) communications, video conference, data broadcasting, IP telephony and satellite based high-speed Internet access. China Railcom grows at a slow pace due to its lack of expertise in daily business operation in addition to the lack of funds to upgrade its existing private network so as to provide services to the general public. The leading international suppliers of network equipment - Alcatel, Cisco, Lucent, Nortel and Siemens - as well as the major international suppliers of portable phone sets - Ericsson, Motorola, Nokia, Samsung, and also Siemens - are well known in China. A large number of Chinese companies have developed under the government’s protection and compete now with foreign corporations not only in the Chinese market but also in third-countries. Datang is the main TD-SCDMA manufacturer, UTStarcom, the main PAS / PHS manufacturer, Huawei leads the SMS market and Great Wall stands out in the broadband sector. Other recognized Chinese equipment suppliers are Shanghai Bell and Zhongxing Telecommunications Equipment (ZTE). Furthermore, Amoi, Konka, Ningbo Bird and Keijan are the most representative Chinese mobile phone manufactures.

The former British colony has one of the most mature, sophisticated and competitive telecom markets in the world. As a result, HK customers get world class services in terms of capacity, speed and price. This has been a decisive factor in HK’s development as a world leading business and financial Centre. The Office of Telecommunications Authority (OFTA) is the legislative body responsible for regulating the telecommunications industry in HK. The HK government, through the OFTA, has fully liberalized all telecom sectors and there are no foreign ownership restrictions. In the local fixed-line market there is neither pre-set limit on the number of licenses issued nor deadline for applications. In 2004, there are nine fixed-line licenses: PCCW-HKT, New World Telephone Ltd., Wharf T&T Ltd., Hutchinson Global Crossing Ltd., HK Broadband Network Ltd., Eastar Technology Ltd., CM Tel. (HK) Ltd., TraxComm Ltd. and HKC Network Ltd. Consequently, the telephone density is, with 56 lines per 100 people, among the highest in the world. In 2004 there are 197 licensed Internet Service Providers (ISP) in HK, providing dial-up or broadband services. HK is second after South Korea in terms of broadband penetration rate (53%). With regard to mobile services, the OFTA awarded four 3G licenses in 2001: HKCSL Ltd., Hutchinson 3G (HK) Ltd., SmartTone 3G Ltd. and Sunday 3G (HK) Ltd. The first 3G mobile services were launched in January 2004. Moreover, these four 3G operators, together with New World Mobility and Peoples Telephone Co. Ltd. operate a total of eleven GSM networks. Thus, the mobile density in 2004 is, once again, one of the highest in the world (106.3 %). HK continues to be a main entrance to the Chinese market for European and American investors. In fact, Western agents in HK are increasingly



important to export networking equipment to China. China's telecom sector is facing a transition from a period of explosive growth to a period of mature growth. The growth rates, which peaked in 1999 for broadband Internet users (350%), in 2000 for mobile users (90%) and in 2001 for fixed-line subscribers (30%), have stabilized (respectively about 40%, 20%, 10% in 2004). As many of China citizens are still poor or live in remote areas, recruiting new customers is getting more difficult. China Capital Expenditure (CAPEX) boom is also over. Chinese Carriers shift focus from network construction towards generating revenue through new and better services. Anyway a slight CAPEX rebound is expected when the new 3G licenses are issued. Nevertheless there is no reason to panic about this decline. China still has a great potential for further development and promises tremendous opportunities for western companies. But given the transition to more stable growth, it is extremely important for these companies to have an objective perspective of the market and to understand which market segments promise the best growth opportunities.

Particularly, best sales prospects for foreign companies in the near future are in the following sub sectors: broadband (WLAN and ADSL), Internet value-added capabilities (e-government, e-banking, e-commerce), mobile and 3G. Broadband is the fastest growing segment. Its future will be determined by pricing, improved services and contents catering for young internet users. Major barriers are the government's continuing regulation of content and the legal void. Regarding 3G, services are expected to have a slow take-off period instead of an explosive one. From today's perspective, it seems that China Unicom will go on CDMA2000 that China Mobile will use W-CDMA and that China Telecom and Netcom will deploy TD-SCDMA, at least in some points of their networks. Despite the "telecom miracle", Chinese customers still pay relatively high prices for products and services well below the quality they expect. This extremely competitive market is characterized by a multitude of complex, multi-layered, political, economic and cultural factors that must be carefully evaluated in order to be successful. Another key aspect for a foreign investor in China is to master the ancient Chinese art of "Guanxi" (network of contacts) especially as long as the MII continues to be both judge and party in the telecom business, rather than an impartial regulator. China's telecom scenario in the next years is difficult to decipher. The MII may remodel the present situation by introducing new players, reorganizing the existing ones or assigning 3G licenses. Whether China will continue to be "El Dorado" for the telecom industry is still a very difficult question to answer. Future is murky. It was always like that.

### **III. Methodology**

As the 'Bull Market' of the 1990's continues to rage into the next millennium, managers in Huawei are finding it increasingly difficult to attract the qualified employees necessary to occupy the plentiful positions available in Huawei. To cope with this shortage, some suggestions are to developed creative employment incentive programs. Others have cultivated labor in new and sometimes foreign markets. Many have resorted to the use of technology as a means of diminishing the severity of the shortage on Huawei. Perhaps the best method of filling important vacancies is to insure that current qualified employees remain a part of the corporation. After all, current employees are a known factor. They are familiar with the internal workings of Huawei. They have been previously trained in the use of the many methods and systems used by the Huawei and they have established the formal and informal networks that are required to help them remain productive within the context of the organization. Further, there is no recruitment costs associated with retaining a current employee.

The research conducted for this report endeavors to discover those personal internal factors that motivate the employee to remain with Huawei. A customized survey was created to accomplish this research. Each person taking the survey was asked to rank how true certain statements were in their individual circumstance. The survey then made specific queries concerning

the number of employees in the respondents departments in Huawei, the number of years that the respondent Zhang Yang was employed by Huawei, the profitability of the Huawei during the previous year and whether the respondent functioned in a managerial or supervisory capacity. The answers provided by the many respondents were then analyzed in an attempt to develop a motivational profile which could be adapted to assist a corporation in determining which employees are at risk for departure within the following three years. There were a total of twenty-one statements listed on the survey. These included seventeen affirmative statements, such as, 'I work for a great company' and 'There is room to grow'. Three non-affirmative statements that are intermingled with the affirmative statements, so as to maintain a more even tone in the total survey. Finally, the respondent must react to the statement, 'I will be with this company in three years'. An analysis of the percentile responses to this survey are presented in Appendix A of this report. The individual completing the survey is at first instructed to consider why they stay with Huawei. They are then asked to rank each statement on a scale of 1 to 5. Where 1 means that the statement is less true in their case and 5 indicates that the statement is truer. Together the statements listed on the survey are intended to capture the respondents' reaction to different dimensions of their individual working environment. These dimensions include items over which the respondent will exercise most, some or little control. A job dimension for which a respondent is likely to have the most control is found in the statement, 'The commute is easy'. In this instance a respondent faced with an undesirable commute can choose to cope with the commute, relocate, change the method of commuting or perhaps find a different job closer to home. Consider the statement, 'My job matches what I do best'. Here the company and the respondent must interact to determine how this person can use their natural strengths to be most productive within the current context of the organization. A job dimension over which the majority of respondents will normally have little control is noted in the statement, 'This Company has a clear mission and positive values'.

The dimensions viewed by the survey touch upon many aspects of the employment environment. When classed together they group into the larger categories of compensation and benefits, interpersonal relationships, personal growth and external factors. While each individual will have a customized mix among the dimensions, individuals having like intentions to stay with or leave Huawei, would be expected to exhibit similar behaviors in their individual responses to the survey.

If this is true, Huawei would have the ability to positively intervene with those essential employees exhibiting behaviors that tend to indicate that they are contemplating a jobs change. It may also be possible to determine those employees who are too far gone to retain. In these cases, Huawei might determine to minimize any negative impact these individuals are having on other employees in the organization.

### **Data Analysis**

A combined weighted analysis of scoring for all survey statements appears in Appendix D. Weighting of responses was desired to ascertain the relative importance of each statement across all responses. Having completed the rudimentary analysis of the survey statements, attention was next given to the questions appearing on the survey. The questions, "Approximately how many people work for this company?" and "Was the company profitable last year?" did not appear to affect how the respondent reacted to the statement, "I will be with this company in three years". In the case of the question, "How many years have you worked for this company?" there appears a correlation between time with Huawei and appearance in any of the three analysis groups. The greater the number of years with Huawei, the more likely that a respondent. Indeed respondents in the 1/2 group tended to have the least time with the Huawei. The population in the 4/5 and 3 analysis groups tended to be evenly split on the question, "Do you manage or supervise others?" However in the 1/2 group, 70.3% of the respondents answered "Yes".

Table 3: Question responses for each analysis group

Analysis Group	Approximate # of employees	# of years with this company	Profitable last year	Manage or Supervise others
4/5	10659 (Average) 300	8.7 (Average) 5.0	68.5% (Yes)	53.7% (Yes)
	(Mode)	(Mode)	13.0% (No)	46.3% (No)
	400 (Median)	8.0 (Median)	18.5% (N/A)	
3	8519 (Average)	7.8 (Average)	78.3% (Yes)	52.2% (Yes)
	3000 (Mode)	3.0 (Mode)	13.0% (No)	47.8% (No)
	500 (Median)	4.0 (Median)	8.7% (N/A)	
½	11428 (Average)	5.7 (Average)	83.8% (Yes)	70.3% (Yes)
	300 (Mode)	1.0 (Mode)	16.2% (No)	29.7% (No)
	350 (Median)	3.0 (Median)	0.0% (N/A)	

### SWOT ANALYSIS

Based on the Huawei annual report 2004 as well as on other material, the following strengths, weaknesses, opportunities and threats (SWOT) were identified by the authors of this case:

#### Strengths

- Strong and cost-efficient R&D
- User-driven organization
- High priority given to customer work, flexibility and adaptability
- Brand is well recognized
- References
- Dedicated personnel (low turnover)
- Positive working atmosphere
- Presence in the customers' market

#### Weaknesses

- Lack of a defined business model
- Shortage of qualified, well-educated personnel (creates bottlenecks and the loss of customers)
- Lack of business experience and non-technical knowledge
- Difficulty of long-term planning
- Insufficient financial turnover

#### Product weaknesses

- Technology develops rapidly; company's resources are too limited to keep up with the pace of development

#### Opportunities

- A growing market (including the domestic market)
- Promotion and advertising
- Increasing presence in various markets (representatives / own sales offices)

#### Threats

- Rising wages

- Aggressive actions by competitors (e.g. recruiting)
- Exhaustion of the workforce pool

#### IV. Discussions and Conclusions

The study performed for this report indicates that factors beyond mere economic reward do indeed influence the decision of an employee to remain with Huawei. There is also evidence to support the theory of profiling as a practical device in determining which employees are at risk for departure from the organization. In reviewing the responses of those who participated in the survey, several themes were consistent among the various analysis groups. Many respondents believed that they could earn more by joining other organizations (Muhammad Atif Nawaz, Azam, & Bhatti, 2019). Despite this, they still responded favorably to the notion that they would remain with their current employer. There seemed a strong need in all analysis groups to feel that what they did at work was important to Huawei. Also, personal autonomy in accomplishing tasks was very significant. In a practical sense, properly training managers to promote these beliefs should have a significant impact on the psyche of every employee. A considerable number of respondents felt that the workplace was not relaxed. Maybe this meant that the pace was too furious, or that the work space was somehow lacking (Muhammad A Nawaz & Hassan, 2016). Perhaps they had an overbearing co-worker or supervisor. Considering the number of hours most people spend in the workplace, it seems obvious that this would be an important dimension for many, if not, most people. From a practical standpoint, every company can take simple steps to create an environment that is more favorable to the employees' ability to perform well.

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