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The individual influence factors of voluntary turnover among knowledge workers in China: A case study of Huawei

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"Knowledge worker" is a term used to describe highly educated people whose role in the workforce involves the use of information and knowledge. Knowledge workers are key to the success of a great many organizations. Many Chinese companies find that the voluntary turnover rate among their knowledge workers is high. The purpose of this paper is to explore, from the perspective of knowledge workers and the characteristics peculiar to them, the factors that influence this high voluntary turnover rate. The models used in this paper, that will enable understanding of the characteristics of knowledge workers in China, are the Chinese Personality Assessment Inventory and the Five Factors Model. In the case of Huawei, analysis using these models leads to the conclusion that the main factors that influence the voluntary turnover of knowledge workers in China are: age; gender; degree of extraversion and how open the person is to new experiences; family orientation; and occupation. This study leads to the conclusion that the company should pay closer attention to three groups: female employees who put a high value on their families; employees from non-R&D departments; and younger employees who show a high degree of openness to new experiences.
Keywords: voluntary turnover, knowledge worker, Huawei

Introduction

The primary subject of this research is individual characteristics of knowledge workers influencing their rate of voluntary turnover. In 2016, the overall turnover rate averaged 20.1% in China, rising to 25.1% in high-tech industries; the voluntary component of that 25.1% was 21.6%[3]. Comparison with the rate of turnover in ICT (Information and Communications Technology) in

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[3] Related news reports: CHINA NEWS: "High-tech turnover increased dramatically in 2016 (In Chinese)." http://news.cyol.com/content/2016-12/19/content_14993331.htm, accessed October 14, 2017.

the USA (approximately 3%[4]), it can be seen that the rate in China is some eight times that in America. On the basis that the characteristics possessed by employees are the most important factor in shaping their behavior (Marmenout, 2010), there must be value in exploring which characteristics are most influential in the matter of voluntary turnover.

Knowledge workers make it possible for companies to innovate and create quickly in response to changes in the market. According to Micklethwait and Wooldridge (1996), knowledge workers are, because of their skills and ability to analyze and form judgements, the most valuable component in the resources company has. It follows that the organization loses when knowledge workers voluntarily leave. To ascertain which individual factors are most likely to generate voluntary turnover in Chinese knowledge workers, this research studies the enterprise, Huawei Technologies Co. Ltd.

Knowledge workers or such importance to a company that retaining them is a significant managerial task (Iverson and Pullman, 2000). What is meant by "voluntary turnover" is that the decision to leave is made by the employee; "involuntary turnover" means that the employers have terminated the employment (Dess and Shaw, 2001). In this paper, we are concerned only with voluntary turnover; the aim is to assist managers in understanding why voluntary turnover happens so that they can make plans to deal with it.

Voluntary turnover is not entirely disadvantageous to the organisation, since those who leave will be replaced and the new employees may generate new ideas and new ways of looking at things. There remains, though, a negative impact from voluntary turnover, the effects of which can be direct or indirect: a loss of technology; a fall in productivity; and/or reduced ability to compete (Hunter *et al.*, 2008). In addition to the economic cost, employee turnover also has other costs which include a reduction in the effectiveness of the organization (Price, 2001) so that, over the longer term, companies in any industry and any country should regard employee turnover as a matter of critical importance.

While voluntary turnover rates have been thoroughly researched, studies have made little or no distinction between knowledge workers and other employees. It must be faced, though, that the costs incurred when knowledge workers choose to leave can be greater than is true for other employees. This paper, therefore, distinguishes between knowledge workers and other employees, and what is examined in this study is voluntary turnover on the part of knowledge workers. No useful suggestions can be made until we have first understood the individual factors that lead to a knowledge worker's voluntary departure from the company. To this end, we have chosen Huawei as a suitable company, and we will examine the individual factors that lead to the voluntary turnover of knowledge workers in that company.

[4] Data sources: United States Department Labor: JOB OPENINGS AND LABOR TURNOVER –2016,

https://www.bls.gov/news.release/archives/jolts_02072017.pdf (Jan. to Mar.);
https://www.bls.gov/news.release/archives/jolts_10122016.pdf (Apr. to Jun.);
https://www.bls.gov/news.release/archives/jolts_05102016.pdf (Aug. to Dec.), accessed October 14 2017.

This paper is divided as follows. First comes the literature review, which examines the literature on knowledge workers, on voluntary turnover, and on theoretical models. The next section uses Five Factor Model and the Chinese Personality Assessment Inventory to examine knowledge workers' characteristics. The impact of these factors on the rate of voluntary turnover will then be analysed and discussed.

Literature Review

Knowledge worker

For at least the last two decades, most organizations' most valuable assets have been knowledge workers. It is what knowledge workers know and can do that drives the company (Henard and McFadyen, 2008). A knowledge worker as someone with expertise in relation to concepts and symbols and who has the ability to deal with specific knowledge and information (Massaro, 2012). As the knowledge economy develops, this definition may fall short of a complete description of today's knowledge workers, and so the term has been more restrictively defined. Different researchers have defined knowledge workers in different ways. The most common ways are set out in Table 1.

Table 1 Definition of knowledge workers

View	Emphasis	Definition
Job content	Work resource Work process	Knowledge workers are people who mainly use computers and the internet (Gates, 1999).
Work output	High value High productivity	Knowledge workers possess knowledge capital and make high-value contributions to the organization (Hvide and Kristiansen, 2012).
Employees	Employee characteristics	Knowledge workers deal with intellectual input, are creative and possess independence (Davies *et al.*, 2005).

The assumption emphasized by this study will be that an organization's most valuable employees are the organization's knowledge workers. One consequence is that voluntary turnover among knowledge workers will be much more of a problem for the enterprise employing them than would be voluntary turnover among other members of the workforce. This corresponds to Griffeth and Hom (2001)'s turnover model.

Some researchers have analyzed the way the economy has developed historically and have found a number of characteristics possessed by knowledge workers and not by other sections of the workforce. These include a high degree of independence and mobility (Davies *et al.*, 2005, Darr and Warhurst, 2008). Understanding that may make it easier to understand why knowledge workers may seek new employment, and these two characteristics will be treated in this research as the most significant component in the knowledge worker definition.

A comparison of literature defining knowledge workers makes it possible for this study to integrate those definitions. In doing so, this study will be focused on the people who are able to create high value for their organization but who are highly independent and mobile. The Davenport (2005) classification tells us that, in the case of Huawei, the most significant departments employing knowledge workers are: R&D; business finance; management; and legal.

Voluntary turnover

Turnover classification：

At the top level, turnover management is concerned with only two types of turnover (Wild and Hill, 1970): voluntary turnover and involuntary turnover. In the case of involuntary turnover, it is the organization that makes the decision to part with the employee (Croucher *et al.*, 2012). In this study, we have no concern with involuntary turnover.

Beneath that top level of voluntary turnover, this study proposes four categories: functional voluntary turnover; dysfunctional voluntary turnover; unavoidable dysfunctional voluntary turnover; and avoidable dysfunctional voluntary turnover (Griffeth and Hom, 2001). Knowledge workers falling into the functional voluntary turnover category are those who have not performed well and who leave of their own volition, while those falling into the dysfunctional voluntary turnover category have performed well. It is those in this latter category who are most likely when they leave to inflict on the organization and negative impact (Allen and Bryant, 2012).

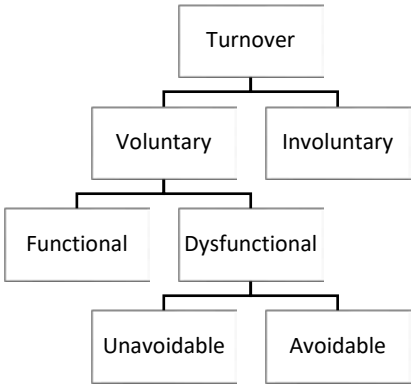

Figure 1 Turnover classification
Source: Griffeth and Hom(1991)

An important question when considering the factors influencing the departure of knowledge workers is: could the departure have been avoided? (Allen and Bryant, 2012, Stovel and Bontis, 2002). The category, unavoidable voluntary turnover, describes the situation where neither the individual nor the organization would have been capable of changing whatever it was that leads the individual to leave. Examples would be a health condition, or the fact that the worker was moving to another region (Hur, 2013, Hunter *et al.*, 2008, Price, 2001). In the case of avoidable voluntary turnover, responsible factors might include: a negative organizational culture; poor

supervision; and dissatisfaction with the work involved (Barrick and Zimmerman, 2005). This study will examine both unavoidable and avoidable turnover.

Consequences of knowledge worker turnover:
From an economic standpoint, high turnover usually means increased direct costs for the organization resulting from the recruitment and training of replacement staff and a reduction in productivity (Chi *et al.*, 2013).

Apart from the economic impact, high turnover also produces intangible costs including reduced efficiency until replacement staff become sufficiently proficient to restore performance to previous levels (Trevor, 2001, Allen *et al.*, 2007). This view was supported by Ladelsky (2014), who found similar results when she examined high-tech operations in the USA; she found a reduction in productivity of about 2% for each turnover of 10 employees. There have also been a number of other studies into knowledge worker turnover in developed countries (Armstrong *et al.*, 2007, Hayes *et al.*, 2012), though fewer in China. What research has been done into Chinese companies has found that, generally speaking, they had not planned how to deal with turnover until it happened (Chi and Wang, 2009). The result was a level of concern when a company in China experienced turnover, and at least some reduction in competitiveness.

Theoretical models
The standard characteristics of knowledge workers in China:
The majority of research into knowledge workers has been concerned with the work they do (Henard and McFadyen, 2008, Huang, 2011) and how they can best be managed (Wang *et al.*, 2008, Mitchell and Meacheam, 2011), with relatively little focus on the knowledge workers themselves and the characteristics that distinguished them. Notwithstanding that, it was the opinion of Englmaier *et al.* (2014) that it is necessary to understand the personality of employees in order to manage them effectively, and it is that subject – the characteristics that knowledge workers have – that we will first examine.

In order to analyse Chinese knowledge workers' personality, we will first examine the models having to do with human personality. FFM (the Five Factors Model) put forward by Tupes and Christal (1961), and looks personality from five perspectives. Personality is divided into five categories: openness to new experience; degree of conscientiousness; degree of extraversion; degree of agreeableness; and degree of neuroticism. Openness to new experience measures the extent to which a person wants to participate in social activities, and the degree to which a person is interested in the acquisition of knowledge on different subjects, or of a different sort. Degree of conscientiousness is concerned with the extent to which people work hard and take a high level of responsibility for the work that they do. Degree of extraversion deals with how assertive and how socially able person is. Degree of agreeableness describes the extent to which, should a conflict arise, a person is likely to defer to another or to others. Highly agreeable people will exhibit concern about the feelings of others. Degree of neuroticism is the extent to which a person is able

to regulate emotions and to which a person's emotions may be said to be stable. Highly neurotic individuals will normally experience feelings of stress and emotion.

Liang *et al.* (2012) use the Five Factors Model to demonstrate differences between men and women. Laher (2013) provide a comprehensive study into the personalities of people employed by a consulting company and drew the conclusion that knowledge workers in China like long-term planning and cooperative, indicating high degrees of both conscientiousness and agreeableness. On the other hand, the same research found that knowledge workers in China had few hobbies and did not take exercise, suggesting low levels of both extraversion and openness to new experiences. These studies are subject to limitation because they take no account of Chinese culture all the way in which personality in China is formed by the national culture.

This has led a number of researchers in China to take the view that the Five Factors Model is insufficient to explain Chinese personality (Cheung *et al.*, 2003). They therefore built on the Five Factors Model to develop a theory of Chinese Personality Assessment Inventory (CPAI) which takes account of Chinese culture and has produced scales allowing a definition of the personalities of the Chinese people. This means that CPAI is the theoretical framework most useful to this study. Cheung *et al.* (2003) defined 26 personalities and 12 clinical scales – but they made no distinction between ordinary workers and knowledge workers, with the result that this study's results and the research of Cheung *et al.* (2003) may differ.

The Chinese Personality Assessment Inventory sees the ideas of Confucius as the typical Chinese culture, and the most pervasive influence on Chinese workers' characteristics (Tong and Mitra, 2009). Confucianism's central idea is the system of hierarchy, creating clear boundaries at various levels both in the family and in the organization (Yan *et al.*, 2011). This culture leads Chinese knowledge workers to place value on relationship inside the company, and this relationship is with colleagues as well as with management (Jiang and Barnett, 2013).

Tong and Mitra (2009) regard the central factor uniting all Chinese people as the fear of loss of face. This factor is more important than any other in decreeing the behavior of Chinese people. It is, for example, very rare for an employee to seek help from an older employee because that would lead to embarrassment. There is, though, no evidence to show that this trait is shared by knowledge workers, and this study will examine this question further.

Voluntary turnover:
Table 2 summarizes the most significant models of voluntary turnover, drawing attention to the different perspectives involved in discussions of what causes voluntary turnover.

Table 2 Theoretical models of voluntary turnover

Authors	Dimensions
Abelson and Baysinger (1984)	individual attributes (skill level, type of rewards desired, occupational characteristics, demographics)

Lee and Mitchell (1994)	varying interpretations of work levels of satisfaction availability of alternatives
Dale-Olsen (2006)	payment policy workplace conditions involvement of work practices
Guidice, Heames and Wang (2009)	social exchange organizational justice organizational commitment
Flint, Haley and McNally (2013)	organizational commitment job attributes

Individual, economic, and organizational factors all come into play in influencing voluntary turnover, and were chosen for the help they give in designing the research and analyzing the case study in this paper.

Abelson and Baysinger (1984) produced a paper that looks to explain in a comprehensive manner the factors influencing employee turnover. "Individual propensity to quit" indicates the possibility that a decision to leave may stem from an environmental, organizational, or individual attribute. This model contributed strongly to the present research by providing a framework of logic and theory.

Many factors that could contribute to voluntary turnover have been researched. At the level of the organization, most of the studies have used theories of human capital resources to investigate turnover of staff; these included policies on payment, workplace conditions, and practices in the workplace (Dale-Olsen, 2006, Zheng and Lamond, 2010). There is also evidence in the literature that a worker may leave a job for social exchange, or on account of justice and/or commitment in the organization, but those studies took no account of job attributes (Guidice et al., 2009). On the other hand, job attributes were considered by Flint et al. (2013) who researched the staff of a call center where the work involves a high degree of customer service and technical support and found that organizational commitment was a good predictor of turnover rate and that turnover rates were lower where organizational commitment was high (Flint et al., 2013).

Turning to the level of the individual, HR practices have an influence on voluntary turnover (Lee and Mitchell, 1994). Interpersonal relationships are significant. Research that has been done has, for the most part, concentrated on the behavior of the leaving employees and not of the organization. Chi et al. (2013) carried out survival analysis when they interviewed voluntary job leavers asking for reasons for the decision to go. Gender, education, performance and salary were all included in the outcomes and indications were that female employees are more likely than male employees both to think about leaving and actually to leave (Chi et al., 2013), but that the likelihood of leaving was in inverse proportion to the level of the academic qualification. They

also found a negative correlation between turnover rate on the one hand and level of salary and performance rating on the other, with a lower rate of turnover being seen in better paid and better performing employees.
Other research, however, takes a different line. Flint et al. (2013) looked at supervisor commitment, by which is meant the approach the supervisor or manager takes towards staff as well as the employer/employee interaction, and showed a positive correlation between a low turnover rate and good supervisor commitment. Good work performance may be encouraged by supervisors' support (Stinglhamber and Vandenberghe, 2003). While both of these studies looked at a number of factors, they focused not only on whether a relationship exists between voluntary turnover and particular factors but also on the relationship between those factors and the length of time for which an employee stays in the organization.

While there has been a good deal of discussion of employees' voluntary turnover, the research has not differentiated between knowledge workers and others. The turnover rate in Chinese high-tech industries is high, and this has received very little attention from scholars. Research is lacking into the reasons for voluntary turnover in particular cases. This study seeks to address that gap by use of a case study concerning Huawei, in which the behavior and characteristics of knowledge workers at Huawei will be analyzed using the Five Factors Model and the Chinese Personality Assessment Inventory.

Findings

Sample collection
In deciding on the required sample, two conditions needed to be satisfied. The first is that the case study should be in a Chinese organization and should be focused on knowledge workers. The second is that the sample should be sufficiently typical to elucidate the matter of turnover as it applies in China. A case study based on Huawei satisfies both of those conditions.

Huawei Technologies Co. Ltd. was set up in China in 1988 and is a leading provider of ICT solutions around the world. The Fortune Global 500 List 2017 ranks Huawei at No. 83[5]. In this company, "knowledge workers" describes workers in managerial, technical, and professional grades, and this includes managers and computer engineers. Knowledge workers comprise some 45% of the total Huawei workforce, and this is a large percentage (Huawei, 2016). Huawei is typical of knowledge-based companies in China (The Economist, 2012).

The research method adopted by this study is qualitative analysis and includes a good deal of work in reviewing the available literature on the subjects of managing knowledge workers, employee turnover, and in investigating of posts on the official forum of Huawei: Xinsheng Forum.

[5] Related report: Fortune Global 500 List 2017. http://fortune.com/fortune500/list/, accessed October 14 2017.

The conditions of employees' voluntary turnover

The Huawei Sustainability Report of 2016 indicates that the company has at least 155,150 Chinese employees, of whom at least 45% are knowledge workers. In addition, mail workers greatly outnumber female workers, with almost 80% of the total workforce being male. One of the questions of this study was the degree (if any) to which gender is a factor in turnover. The Sustainability Report also indicated that 29% of employees were under 30 years of age and that 69.1% were aged between 30 and 50. Only 1.9% of employees, all of whom were high-level managers, were older than 50 (Huawei, 2016).

Because turnover rate data are confidential, and because there are not many studies on turnover management at Huawei, specific voluntary employee turnover rates cannot be shown. However, the company's voluntary turnover rate has been investigated from the point of view of the leaver's gender, the department in which the leaver worked, and the age of the leaver.

Huawei's HR departments should draw up a plan to retain female workers, because there is a higher rate of voluntary leaving among female workers (Huawei, 2016). It's also true that voluntary turnover is lower in R&D than in other departments, possibly because workers can apply from R&D to work in other departments (Jie and Meng, 2017). Since all employees in the company over the age of 50[6] are managers[7], their rate of voluntary turnover is very low because they have accumulated high status and value stability highly. To make management more mobile, the company should develop a system for removing older managers (Yongde, 2012). Table 3 illustrates the main points from the data.

Table 3 Main features of voluntary turnover of Huawei's employee

Degree of Voluntary Turnover	Gender, Occupation and Age
High	● Female workers ● Non-R&D department ● Employees younger than 50 years old
Low	● Male workers ● R&D department ● Employees older than 50 years old

The characteristics of Knowledge workers in Huawei

Data will be classified on the basis of the Five Factors Model and the Chinese Personality Assessment Inventory, with the two models being combined. No model is without its limitations;

[6] As the classification of ages from Corporate Social Responsibility Report of Huawei (2016), this research defined "older employees" as workers whose age is older than 50 years old.

[7] Huawei will fire unqualified employees and those remaining are more likely to be mangers who are older than 50 years old (Yongde, 2012).

the Five Factors Model is not wholly relevant to Chinese employees, while the Chinese Personality Assessment Inventory covers an excessive number of personalities and clinical scales.

Eight factors have been selected for the joint model, and Table 4 illustrates the extent to which each trait is possessed by knowledge workers.

Table 4 Characteristics of knowledge workers in Huawei characterized according to the joint model of Five Factors Model and Chinese Personality Assessment Inventory

Traits	Details	Extent
Openness to new experience (High innovation and curiosity)	High Volume of patents; High willingness to research and share experience.	High
Conscientiousness (hard working, technical expertise)	High responsibility.	High
Agreeableness (belief in cooperation)	Teamwork leads to success.	High
Extraversion (sociability)	R&D employees dislike social activities, but other colleagues like them.	Non-R&D workers: High R&D workers: Low
Neuroticism (ability to deal with anxiety)	Three suicide cases in 2007-2008	High
Family Orientation	Leaving Huawei because of family	Female workers: High Male workers: Low
Fear of Losing Face	Workers are loath to ask questions	Low
Value Relationship	Care about relationship with co-workers.	High

There is a considerable level of openness to new experience among knowledge workers. By the close of 2016, the company had 62519 patents. The number of R&D employees has shown a regular annual increase, with more than 80,000 people employed by R&D in 2016; the majority of R&D workers have contributed to innovation. In addition, Huawei as set up an "iLearning" platform to encourage creativity among workers. Ren, the company's CEO, issues regular encouragement to senior as well as junior employees to keep their minds open to new ideas (Jie and Meng, 2017), and the iLearning platform as more than 48,500 courses which, in addition to professional skills, enable employees to improve their ability in a foreign language as well as their management skills and to develop other interests. The platform was used more than 10 billion times in 2016 (Huawei, 2016).

Knowledge workers are highly conscientious and very agreeable. They prefer working according to long-term plans, and they believe in cooperation (Laher, 2013). The company's success may be

the result of having a very hard-working staff who take a high level of responsibility for their work. Employee cooperation is responsible for the company's present good results, showing that the company's knowledge workers have a high degree of both conscientiousness and agreeableness (Jie and Meng, 2017).

Workers in R&D are less extroverted than those in other departments. Interviews with 10 employees and an investigation of posts on the Xinsheng[8] forum in the past two years showed a lower willingness to join in social activities and part of R&D workers than on members of other departments. This may stem from the fact that, when people are recruited into R&D, a high priority is placed on their technical skills and very little attention is paid to their other characteristics. It is also true that workers in R&D are primarily concerned with research and development and pay less attention to social occasions – something shared with other Chinese high-tech companies.

The degree of extraversion shown by knowledge workers in China depends on the work that they do, and this result differed from the findings of Laher (2013). There is a belief that extraversion is low among knowledge workers because they do not have much time to spend on hobbies and other interests (Laher, 2013). It could be the difference between this study and the Laher's research is that this study is into a high-tech business, while Laher's research was focused on a consulting company.

There is a high degree of neuroticism among knowledge workers, who experience stress through a combination of high workloads, over time, and an elimination system. I stress is normal in Chinese start-ups and high-tech companies, and the military Management practiced by Huawei increases the level of pressure on employees. Three employees committed suicide in 2007/8 and the company's CEO made a public declaration that he was concerned about high levels of anxiety experienced by employees[9]. Reducing the amount of pressure experienced by employees should become an essential part of managing knowledge workers.

The most common reason for women to leave companies is based on the family. We examined turnover reasons in the last two years discussed on the Xinsheng Forum and found that family reasons and not dissatisfaction with the company were the cause of most female voluntary turnover. The inference must be that women place a high value on family, and that the situation of the family will be a factor influencing their decision to stay or to leave. It was, therefore, a conclusion of this research that family orientation[10] is gender-specific and not in itself a characteristic of knowledge workers.

[8] Xinsheng Forum is the official forum of Huawei, in order to provide a place that employees could express their personal thoughts and communications. Relates links: http://xinsheng.huawei.com/cn/index/guest.html, accessed September 14, 2017.

[9] Related news reports: SoHo: "Employees of Huawei have suicided, CEO Ren published an open letter (In Chinese)." http://it.sohu.com/20080418/n256371490.shtml, accessed September 14, 2017.

[10] The degree of the significance of family is describe as family orientation (Cheung *et al.*, 1996).

Examination is needed of the degree to which fear of losing face is a factor in turnover at Huawei. The company's culture embraces a belief that actions and achievements earn "Face." A training program is in place for new staff and is called "One help one." In this program, a mentor is appointed for each new employee. In addition, the company encourages experienced workers to learn creative skills and new approaches in their turn from new employees. Age and level are not regarded as appropriate factors in limiting the transfer of knowledge (Yongde, 2012).

Knowledge workers place a high value on relationships. Huawei places a high value on teamwork, because they regard this as maximizing team profitability. The quality of a team is dependent primarily on the leader, and team leaders are expected to respect team members, to listen to their advice, and to pay attention to their feelings (Valero, 2015). Good team leaders recognize the existence of negative emotion in their team members and take action to deal with it from the outset. The company does not value leaders who work only by giving orders and do not provide support or act as guides (Yongde, 2012). Knowledge workers in China are greatly influenced by the Confucian culture (Tong and Mitra, 2009) and the Chinese care about colleague interaction.

Discussion

This section deals with the way knowledge workers' personal characteristics affect their rate of voluntary turnover, and what steps are open to companies to reduce that rate. Our investigations revealed six factors likely to influence the rate in China: age; gender; degree of extraversion and how open the person is to new experiences; family orientation; and occupation. Knowledge workers also have other characteristics but (see Table 4) there is no evidence of a connection between those characteristics and voluntary turnover. In this section, then, discussion will focus on those characteristics we have found to be influential.

Female employees and their concerns with family

Both family orientation and gender have an influence on voluntary turnover decisions by knowledge workers; as Table 3 shows, there is a higher degree of voluntary turnover among female knowledge workers. Gender, then, is one of the factors determining voluntary turnover among knowledge workers. Table 4 illustrates a high degree of family orientation among female workers, and some decisions by female knowledge workers to leave the company are based on family matters, so that family orientation can also be considered a determining factor in voluntary turnover by knowledge workers. The same result was found when Chi et al. (2013) interviewed people after they had left, and concluded that gender was a significant factor in voluntary turnover (Chi *et al.*, 2013). There is, though, a difference between the Chi et al., (2013) research and the present study, because the present study finds a strong correlation with family orientation.

For Chinese female employees, taking care of the family always has the highest priority. Work and family can sometimes produce high stress levels and, sometimes, physical trauma. Emotional highs and lows are a frequent consequence. Companies would be wise to consider three courses of action with regard to female employees. The first would be implementing national welfare policies for female employees, and not placing on them such heavy workloads that they

are, in effect, deprived of their rights. The second would be introducing flexible working for female employees, so that they find it easier to manage the work/family balance. And the third would be provision of psychological counselling for female employees to improve their resilience (Kyujin, 2016), so that they have a resource that goes beyond family and friends to help deal with mental pressures and psychological fluctuations.

Concerns regarding non-R&D employees

A similar methodology was used for the discussion of occupation and extraversion. There is a relationship between occupation and extraversion, though it has not proved possible to calculate the exact extent of that relationship. Knowledge workers working in high-tech, such as R&D and engineering workers, have low levels of extraversion and seek stability, which is why their turnover rates are lower. The voluntary turnover rate among other knowledge workers is higher.

Something that contributes to high turnover among non-R&D knowledge workers is that Huawei's R&D employees are allowed work rotations. If they no longer want to be involved in R&D, they can apply to transfer to another department. This option is not available to non-R&D knowledge workers. R&D employees can have a choice: ask for an internal transfer, or leave. For other knowledge workers, the only choice is: to leave.

This study's conclusion would be that Huawei should pay greater attention to three aspects of the employment of knowledge workers in departments other than R&D. The first would be to introduce career development programs. Employees should be assisted in thorough self-knowledge and should be given reason to believe that hard work will be known and rewarded (Barnett, 2011). A sense of self-realization and achievement is likely to promote loyalty. The second would be to monitor the management of employee turnover, making it part of HR management. This should include staying in touch with those who have left, knowing where they have gone and what they are doing there, and updating them as to the company's situation and how it is developing. Even occasional communication via SNS (Social Networking Services) would be better than none (Skoric *et al*., 2015). And the third, which goes hand-in-hand with the second, is to have a mechanism for re-hiring leavers. People who have worked for the company in the past are aware of the culture and business, and the cost of training them would be less than in the case of new hires; at the same time, rehired employees would bring with them the experience of working in other companies, introducing to the company a pluralistic culture and the new ideas that are part of a company's life blood.

Giving young employees a diverse work and life environment

On the questions of age and openness to new experience, it was pointed out by Cobb-Clark and Schurer (2012) that openness to new experience is illustrated by how curious people are about travel, other countries, and hobbies. Their suggestion was that there could be a negative relationship with age in that younger people might be more interested in travel and exploration generally. That would also be a reason for the voluntary turnover rates to be higher among younger knowledge workers. Employee participation in social activities was identified in research by Lee and Mitchell (1994), and case studies can be a good reason for finding similar results.

Because young employees are more likely to move on, they should receive particular attention. One way to reduce young employees' voluntary turnover rate is to provide them with more diversified work and life conditions. Personality tests will reveal which employees have a high openness to new experiences; scheduling these employees for long, repetitive, or boring tasks will encourage them to leave, so the opposite should be done. It would also be possible to provide on Huawei's 'iLearning' platform a greater variety of courses so that, as well as improving employees' professional skills, the platform would also give employees deeper and more varied interests and meet their need for something new. Finally, regular team building, and programs directed towards the interests of young employees could help in reducing voluntary turnover due to boredom.

Conclusion

Voluntary turnover by knowledge workers may be regarded as dysfunctional, in the sense that the company is losing core workers and will therefore suffer loss. It is therefore necessary to examine two questions: what are the reasons for voluntary turnover; and how can a company's voluntary turnover rate be reduced? Little research into this topic in Chinese companies exists, at least from the perspective of employee characteristics, and so this study gives academics in this field a valuable source of data and provide suggestions for ways of managing knowledge workers in Chinese companies.

Looked at from the point of view of Huawei, the conclusion of this research is that Chinese knowledge workers are characterized by high levels of openness to new experiences, conscientiousness, agreeableness, neuroticism, and value placed on relationships. The research also identified as more prone to voluntary departure: female employees who value family life highly; non-R&D knowledge workers; and younger knowledge workers characterized as highly open to new experiences. The company should pay more attention to the needs of these groups; tracking employees who have left and implementing rehire mechanisms are among the introductions they could make. Such reductions in the voluntary turnover of knowledge workers would improve company profitability by reducing unnecessary costs.

This research, though, is subject to some limitations. The first is that, while Huawei does provide a typical example of knowledge-intensive organizations in China, the investigation is limited to the ICT provider industry, and there may be factors that influence workers in other industries and do not affect this one, or factors that influence workers in this industry but do not affect others. The second limitation is that this study is restricted to qualitative data, and the addition of quantitative data would provide greater strength to the results.

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