

# The Circumplex Model for Structuring Career Anchors of the IT/IS Personnel

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## ABSTRACT

The scope of quantitative study covers five areas, Mainland China (the PRC), Taiwan, India, the UAE, and the US, with 852 responses of IT/IS personnel data to build a more applicable Circumplex Career Anchor Model for IT/IS personnel, and tests a research model of a reorganized (quadrant) anchor. The results of the PLS regression analyses indicate a few contributions: (1) The Circumplex Career Anchor Model has been modified in this study to be appropriate to the IT/IS personnel: managerial competence should be classified into the protean quadrant; technical competence should be classified into the bureaucratic quadrant. (2) Job satisfaction has a significantly negative effect on the IT/IS personnel's turnover intention, but career satisfaction do not have a significantly negative effect on the IT/IS personnel's turnover intention. (3) Four quadrant anchors, bureaucratic, protean, careerist, and social have significantly positive effect on career satisfaction of IT/IS personnel. Three quadrant anchors, bureaucratic, protean, and social have significantly positive effect on job satisfaction of the IT/IS personnel, but the careerist quadrant anchor doesn't. Thus, the result of this study not only provides a reorganized (quadrant) anchors framework for eligible IT/IS personnel, but also adds job satisfaction, career satisfaction, and turnover intention to extend the Circumplex career anchor model to be a more complete research model than before.

## KEYWORDS

Career Anchor, Reorganized quadrant Anchors, Circumplex Career Anchor Model of IT/IS personnel, Career Satisfaction, Job Satisfaction

## 1. INTRODUCTION

Since 2000, information technology (IT), Internet, information systems (IS), social networks service (SNS), and artificial intelligence (AI) have being developed rapidly, and are indeed significant issues to support enterprises to offer their products and services to their global customers. Information systems (IS) play a critical role because it is the core capability in organization (Abubakre *et al.*, 2017; Chang *et al.*, 2011), and its IT/IS personnel have to maintain this core capability for the organization. From SARS crisis in 2003, till COVID-19 epidemic outbreak in the spring of 2020, these technologies have been adopted to help employees and push IT development. The IT and the Internet have become essential tools instead of some physical transactions and works (e.g., e-commerce, e-learning, telemedicine,

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online shopping) (Chang & Fang, 2020; Hardy, 2020; Kim, 2020; Pimentel, 2020). Therefore, the role of the IT/IS personnel will be much more critical in the future. Thus, it is necessary for the organizations to retain qualified IT/IS personnel to improve their organizational competence (e.g., Taiwan Semiconductor Manufacturing Company, Limited, (TSMC); and InfoChamp Systems Corp.).

Due to the limited opportunities to learn state-of-the-art IT knowledge, the IT/IS personnel have a high propensity for voluntary turnover to improve their career ability (Babin *et al.*, 2020; Chang *et al.*, 2012). Meanwhile, the turnover of IT/IS personnel is costly, not only in terms of replacing the staff and training new employees, but also in terms of systems development productivity and quality (Jiang & Klein, 1999-2000; Thatcher *et al.*, 2002-3). Both professionals and academics have serious concerns about how to retain qualified IT/IS personnel (Adams *et al.*, 2006; Joseph *et al.*, 2007). It will be a useful approach for the organization to focus on making the career plan for IT/IS personnel to reduce their turnover rate (Srivastava & Eachempati, 2021; Sumner & Yager, 2004).

The concept of career anchor was originally proposed by Schein (1978) as the guidance for career decisions. Career anchors are a set of career-related aspirations that an individual does not easily surrender even when facing a difficult, major decision (Schein, 1978). Till now, IT researchers (Chang, 2010; Crepeau *et al.*, 1992; DeLong, 1982; Igarria & Baroudi, 1993; Schein, 1978) have identified a number of anchors among IT/IS personnel; such as technical competence<sup>1</sup>, managerial competence<sup>2</sup>, geographic security<sup>3</sup>, challenge<sup>4</sup>, identity<sup>5</sup>, service<sup>6</sup>, lifestyle<sup>7</sup>, and entrepreneurship<sup>8</sup>. This paper presents the career anchor development processes from the career anchor perspectives. Because the new emerging nature of career paths is multidirectional, dynamic, and fluid, some career anchors have similar meanings.

Therefore, Wils *et al.* (2014) classified them more easily into different quadrants for the management; they used two perpendicular axes to divide the circular model into four quadrants (bureaucratic, protean, careerist, and social), and analyzed this model from 240 employees working in a Canadian health care organization. In addition, Wils *et al.* (2016) also analyzed 366 management graduates of a Quebec university and then provided a Circumplex Career Anchor Model. However, both data of these two researches of the Career Anchor Model did not come from the IT/IS personnel. Meanwhile, although the studies of Abessolo *et al.* (2017a, 2017b), and Sommerlund & Boutaiba (2007) have organized the career orientations into protean and boundaryless of employees. However, both data of these two researches were not collected from the IT/IS personnel.

The study of Sumner & Yager (2004) found that the IT/IS personnel emphasized (desired) the geographic security (bureaucratic quadrant), and the challenge (protean quadrant) at the same time. The study of Wynne *et al.* (2002) found that the IT/IS personnel emphasized (desired) the identity (careerist quadrant), and the service (social quadrant). The result of these studies is not consistent with the Circumplex career anchor model of Wils, *et al.* (2016). For this reason, it is necessary to explore each quadrant of IT/IS personnel, including what types of career anchors, and how they are different from the health care employees, and the management graduates. In point of fact, the first purpose of this study is to clarify the conflict result between Sumner & Yager (2004) and Wynne *et al.* (2002), and to build the appropriate reorganized (quadrant) career anchors model for the IT/IS personnel. Therefore, based on the Circumplex Career Anchor Model of Wils *et al.* (2016), what is the suitable reorganized career anchors of IT/IS personnel for fulfilling this gap? This is the first research question of this study.

Due to the leading and pioneer position of the US, Mainland China (the PRC), India, the UAE, and Taiwan in the IT/IS field, the IT/IS personnel data of those five areas has been collected to achieve the key objective of the current study, and via the survey method, the IT/IS personnel data has been globally collected to contribute to clarify the Circumplex Career Anchor Model suitable for the IT/IS and different from other occupations.

In terms of the career management, prior research has argued that career anchors are of paramount importance in understanding the IT/IS personnel's career aspirations (Igarria *et al.*, 1995; Kirton & Robertson, 2018; Reicha & Kaarst-Brownb, 2003). Success in career management is important

because the advancement makes a considerable impact on employee attitudes that may influence worker productivity and retention (Lounsbury *et al.*, 2014; Yavarpour *et al.*, 2016). These attitudes include motivation, job satisfaction (Chang *et al.*, 2012; Chang *et al.*, 2020; Coomber & Barriball, 2007; Lounsbury *et al.*, 2007; Tsai & Huang, 2008; Wynne *et al.*, 2002), career satisfaction, and so on (Lounsbury *et al.*, 2014; Yavarpour *et al.*, 2016).

The job satisfaction of employees is overall affective, cognitive and evaluative reaction towards their job (Wassermann *et al.*, 2017). In contrast, the career satisfaction is a self-referent measure of subjective career success, whereby individuals evaluate their professional development relative to personal standards and aspirations (Abele *et al.*, 2011; Wassermann *et al.*, 2017). Therefore, job satisfaction and career satisfaction have different meanings for nurses (Laschinger, 2012), other workforce (Zingesser, 2004), immigrants (Wassermann *et al.*, 2017), and Swiss French-speaking employees (Abessolo *et al.*, 2019). The second purpose of this study is to explore the relationship between the career satisfaction and reorganized (quadrant) anchors of the IT/IS personnel, and the relationship between the job satisfaction of emphasized (desired) and reorganized (quadrant) anchors of the IT/IS personnel. Then, the career satisfaction and the job satisfaction are different to the IT/IS personnel. The related study has been scarce till now. To fulfill this gap, the second research question of this study is: Whether organizations can satisfy the reorganized (quadrant) career anchors of the IT/IS personnel and thereby increase their career satisfaction, and job satisfaction?

Moreover, studies have found career satisfaction (Chan & Mai, 2015; Guan *et al.*, 2014; Kang *et al.*, 2015; Laschinger, 2012; Nauta *et al.*, 2009), and job satisfaction (Chang *et al.*, 2012; Chang *et al.*, 2020; Coomber & Barriball, 2007; Tsai & Huang, 2008; Wynne *et al.*, 2002) are the indicators of the turnover. Thus, the career satisfaction, and the job satisfaction have negatively affected the intention to leave the organization. For this reason, positive attainment of the career satisfaction and the job satisfaction are important to retain qualify IT/IS personnel. Therefore, the third purpose of this study is to explore whether the career satisfaction and the job satisfaction to the turnover intention have different result. To fulfill the research gap, the third research question to be resolved in this paper is: What is the relationship between the career satisfaction, the job satisfaction, and the turnover intention of the IT/IS personnel?

## 2. LITERATURE REVIEW

### 2.1 Career Anchor

A career anchor is the self-concept of one's career that refers to the combination of the individual's needs, attitudes, values, and talents in the process of their career development (Schein, 1978). Schein defined the career anchor as "one element in our self-concept that we will not give up, even be forced to make a difficult choice" (Schein 1987, p. 158). It is shaped by long-term testing and accumulated experience, in terms of the aspects of self-development, learning, family, and work. The majority of extant research related to the career anchors is based on the conceptualization originally proposed by Schein (1978), adjusted by DeLong (1982), Igbaria & Baroudi (1993).

Schein (1978) conducted in-depth interviews with 44 university graduates and utilized the concept of the career anchors to explain the reason for individual self-recognition. As a result, the individual career decision-making models were generalized into five categories as follows: autonomy<sup>9</sup>, entrepreneurship/creativity, general managerial competence, security (valuing a long-term and stable job), and technical/functional competence. Later, Sehein (1987, 1990) proposed three additional career anchors, service and dedication to a cause, challenge, and lifestyle.

After Schein, Delong (1982) asserted that career planning will emerge out of the work and the life experience of the individual. The career anchor will nurture their values and incentives, which they will pursue and be reluctant to surrender in any critical decision-making situation. The career anchor, therefore, functions like an anchor that stabilizes a ship. If there is a major change in career,

the anchor(s) will adhere unswervingly to the individual's inner career path. For this reason, Delong (1982) adopted Schein's original definition as the basis of his investigation, and surveyed graduated students (1963~1973) of Purdue University, USA, then suggested three additional career anchors: identity, service, and variety<sup>10</sup>. The study of Igarria & Baroudi (1993) suggested that the security/stability of the IT/IS personnel has different meanings in different contexts such as geographical security and organizational stability<sup>11</sup> (Crepeau *et al.*, 1992; Igarria & Baroudi, 1993), which should be discussed separately.

Meanwhile, some additional career anchor characteristics of the IT/IS personnel are: (1) Managerial competence anchor: They are the critical skills for the IT/IS personnel because they can combine the technical competence to perform qualified IS (Lee *et al.*, 1995; Lounsbury *et al.*, 2007). (2) Technological competence anchor: The IT/IS personnel have to keep modifying their knowledge, skills, and abilities of the state-of-the-art IT, therefore, this anchor is quite significant for them (Chang *et al.*, 2011; Koscho, 2003; Lounsbury *et al.*, 2007). Career anchors also reflect the changes in careers as IT/IS personnel advance through their career stages (Chang *et al.*, 2011). Technical competence and security anchors are important at all stages of the IS career; managerial competence becomes more important in the later stages (Chang *et al.*, 2011). There is a positive relationship between the career satisfaction of the IT/IS personnel and the service anchor (Jiang *et al.*, 2001; Lounsbury *et al.*, 2007).

## 2.2 Career Anchor Development Process

The boundaryless (Arthur & Rousseau, 1996) and the protean (Hall, 1976) career concepts seem to be ideal for examining the strengths and the weaknesses of various career orientations. The boundaryless career emphasizes seemingly infinite possibilities the career presents and how recognizing and taking advantage of such opportunities lead to success (Arthur *et al.*, 1999; DeFillippi & Arthur, 1996). The protean career emphasizes a self-directed approach to the career, and the career that is driven by ones' values (Briscoe & Hall, 2002).

Therefore, Arthur *et al.* (2005) provided the boundaryless career theory, and Sullivan & Arthur (2006) based on this theory, provided two dimensions of the boundaryless career concepts (e.g., security, unique challenge; organizational stability; managerial competence; variety) to examine the physical and psychological mobility of the employees (Arthur *et al.*, 2005). They believed that the boundaryless career is a multi-faceted phenomenon that encompasses and transcends various boundaries and levels of analysis-physical and psychological, objective and subjective.

Briscoe *et al.* (2006) defined the protean career as a career in which one is: (1) values-driven: in the sense that one's internal values provide the guidance and the measure of success for the individual's career; and (2) self-directed: in personal career management - having the ability to be adaptive in terms of performance and learning demands. Briscoe *et al.* (2006) joined the boundaryless and the protean delineations to produce eight career profiles (including trapped/lost, fortified, wanderer, idealist, organization man/woman, solid citizen, hired gun/hired hand, and protean career architect). However, the boundaryless career theory was less applied by scholars, and the protean career has been applied by Wils *et al.* (2014, 2016). In point of fact, this study has focused on the series based on the Schein's career theory (1987).

Although Abessolo *et al.* (2019) confirmed eight career values, the Swiss French-speaking employees, social, management, specialization, mobility, independence, salary, work-life balance, and variety. However, four career values, social, specialization, mobility, salary are different from the career anchors of Schein (1978, 1987, 1990), Crepeau *et al.* (1992), DeLong (1982), and Igarria & Baroudi (1993), and these four career values were not found in the IT/IS personnel (Chang, 2010; Chang *et al.*, 2011, 2012).

## 2.3 Reorganized Career Anchors

Some scholars (Abessolo *et al.*, 2017a, 2017b; Derr, 1986; Driver, 1979; Feldman & Bolino, 1996; Schein, 1987; Uysal & Ak, 2020; Wils *et al.*, 2014) have suggested that reorganized career anchors

can clarify which one will complement or be in conflict with each other, and it is a good approach to provide the IT/IS personnel's needs. By doing so, it is easier for the management to retain valuable IT/IS personnel, and in turn, to achieve the goal and enhance their job performance and organizational effectiveness.

Feldman & Bolino (1996) believed that an important factor to be considered is that which career anchors are complementary or mutually inconsistent, i.e. whether it is possible to find a job to fulfill either or all preferences. They proposed the possibility as to whether the dominant anchors are complementary or non-complementary and have a differential impact on their career outcomes (Ramakrishna & Potosky, 2003). Therefore, they proposed an octagonal career anchor structure model. This model illustrates the "proximity" of "compatible" or "complementary" anchors (i.e. connected to the octagon, such as technical competence and challenge), and opposition between security/stability and entrepreneurial creativity, considered "incompatible" and diametrically opposed points of the octagon. Security, service, and lifestyle would cluster together.

Chapman (2009) proposed a version of the model of opposite career anchor relationships based on Schein's model. In addition to the three oppositions (technical/functional competence *vs.* management; autonomy/independence *vs.* security/stability; service/dedication to a cause *vs.* entrepreneurial creativity) in Schein's (1990) model, he added a fourth: pure challenge *vs.* lifestyle (Chapman, 2009).

Wils *et al.* (2014) has provided a circular logic (Circumplex) model and the value career structure quadrants which includes four quadrants are defined by two axes whose poles link contiguous quadrants:

1. The first axis includes two poles, individual and collective orientation: the careerist quadrant and the protean quadrant have an individual self-concept in common: individuals with a careerist value rely on individualistic interests to stand out from others in society, and individuals with a protean value use flexibility to flourish as an individual. Thus, the careerist quadrant and the protean quadrant belong to a person-centered perspective based on self-directed career values.

In contrast, the social quadrant and the bureaucratic quadrant are based on a collective value. The social quadrant implies alignment with others (teamwork or contribution to society), while the bureaucratic quadrant refers to the organization.

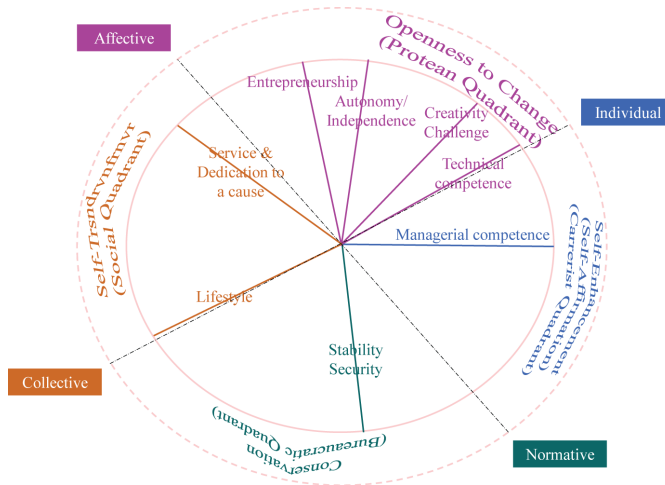
2. The second axis includes two poles, normative and affective orientation: the careerist quadrant and the bureaucratic quadrant focus on the normative (external perspective based on extrinsic or instrumental values), and the social quadrant and the protean quadrant place importance on the affective values (internal perspective centered on intrinsic or cognitive values).

The careerist quadrant and the bureaucratic quadrant focus on societal and organizational standards, which emphasizes calculated organizational commitment. Individuals with the careerist value see their career as a short-term transaction. They build a career in a given organization only for extrinsic rewards, such as forthcoming promotions and related rewards (e.g., money, power). By comparison, individuals with the bureaucratic value see their career as the long-term transaction. They loyally build their whole career in the given organization in exchange for extrinsic rewards such as job security and good employee benefits.

In contrast, the social quadrant and the protean quadrant reflect intrinsic values: the social quadrant favors values resulting from social relationships, whereas the protean quadrant emphasizes values resulting from the work itself.

After that, Wils *et al.* (2016) tested the model of Wils *et al.*, (2014), and they provided a circular logic (Circumplex) model (Figure 1). Thus, these two studies have provided a theoretical model by arranging the career anchors in the Circumplex to represent their dynamic.

Figure 1. Circumplex Model for Structuring Career Anchor (adopted the Study of Wils *et al.*, 2016)



1. The bureaucratic quadrant (conservation): covers the anchor of security/stability, which is directly associated with the motivational area of security.
2. The protean quadrant (openness to change): groups three anchors, i.e. technical competence, pure challenge, entrepreneurial creativity and autonomy/independence. On the one hand, the technical competence, and pure challenge anchors are associated with the values such as a varied or exciting lifestyle. On the other hand, the autonomy/independence anchor is associated with a value such as independence (Wils *et al.*, 2016). Between these two anchors, Wils *et al.* (2016) placed the entrepreneurial creativity anchor, which is straddled between the stimulation (the value such as the daring or the take risk associated with entrepreneur) and the self-orientation (value of creativity).
3. The careerist quadrant (self-enhancement): covers the managerial competence, and the identity anchors. In fact, the values such as the social power or the hierarchical authority can characterize the managers who have the managerial competence anchor (Wils *et al.*, 2016).
4. The social quadrant (self-transcendence): the service/dedication anchor, based on the shared values of which the motivational areas of universalism and benevolence, has values required for serving others (open-mindedness, being helpful, a meaning for life).

In which, the careerist and the social quadrants are negatively correlated, as are the bureaucratic and the protean quadrants. However, the studies of Sumner & Yager (2004), and Wynne *et al.* (2002) found that the IT/IS personnel emphasized (desired) anchors are not consistent with the study of Wils *et al.* (2016). For this reason, it is necessary to explore each quadrant of the IT/IS personnel and the most suitable types of the career anchor for them.

## 2.4 Career Anchors, Job Satisfaction and Career Satisfaction

The influence of the career anchors is not only on the choice of occupation and job, but also on the IT/IS personnel reactions to their work (Erskine *et al.*, 2020; Jiang *et al.*, 2020). When the organizational environment does not match the employee's career anchors, it is still possible for the employee to adapt and perform well, but the IT/IS personnel will look for alternative employment that matches their career anchors (Chang, 2010). Career anchors have been related to several indicators such as career satisfaction (Agarwal *et al.*, 2007; Chang, 2010; Hsu *et al.*, 2003; Jiang & Klein, 1999-2000; Laschinger, 2012; Lounsbury *et al.*, 2007, 2014; Yavarpour *et al.*, 2016), job satisfaction (Chang *et*

*et al.*, 2011, 2012; Chang *et al.*, 2020; Coomber & Barriball, 2007; Tsai & Huang, 2008; Wynne *et al.*, 2002), and job performance. For this reason, the career anchor is a critical factor to retain valuable IT/IS personnel.

Job satisfaction considers the status quo of an individual's job situation, relates to one's current work situation and is dependent on many factors including marketplace, work conditions, job location, and other dynamic influences (Chang *et al.*, 2011, 2012; Silvina Codaro *et al.*, 2017; Zingesser, 2004). Wassermann *et al.* (2017) believed that the career satisfaction refers to the contentment employees and is derived from various aspects of their career trajectories including success, advancement, income, and development opportunities. It is defined as the overall affective orientation of the individual toward their career, and is considered to be an indicator of perceived quality of life (Chang *et al.*, 2011, 2012; Lounsbury *et al.*, 2007; Wassermann *et al.*, 2017). Meanwhile, it is a certain level of happiness, being through one's choice of occupations, considered progress to date and anticipated achievement (Chang *et al.*, 2011, 2012; Lounsbury *et al.*, 2007; Silvina Codaro *et al.*, 2017; Wassermann *et al.*, 2017).

Career satisfaction has been strong and steady in recent years, but job satisfaction has been fluctuating (Lounsbury *et al.*, 2007; Zingesser, 2004). Some may perceive the dissonance between their current situation and their desired career because their current job does not provide adequate opportunities for skill growth and career development (Anderson & Winefield, 2011; Guan *et al.*, 2014; Lounsbury *et al.*, 2007, 2014; Maynard *et al.*, 2015; Wassermann *et al.*, 2017).

Eight career values for Swiss French-speaking employees have different work meanings to job and career satisfaction (Abessolo *et al.*, 2019). Furthermore, compared to job satisfaction, career satisfaction encompasses a broader range of relevant aspects, including work-life balance and sense of purpose (Chang *et al.*, 2011, 2012; Guan *et al.*, 2014; Heslin, 2005; Hong *et al.*, 2013; Lounsbury *et al.*, 2007; McKevitt *et al.*, 2017; Silvina Codaro *et al.*, 2017; Srour *et al.*, 2013; Wassermann *et al.*, 2017). Therefore, the relationships among these two variables, reorganized career anchors, and turnover intention will be clarified.

### 3. HYPOTHESES DEVELOPMENT

#### 3.1 Turnover Intention

Because the intention is the best indicator to forecast behavior (Fishbein & Ajzen, 1975), the construct of the turnover intention was added into the turnover model of Mobley *et al.* (1979). Although the turnover behavior might not be measured through the turnover intention, however, it has been used in many academic fields to forecast the turnover behavior of employee (Mobley *et al.*, 1979).

Many studies have found that job satisfaction and career satisfaction have different meanings for the workers (Abessolo *et al.*, 2019; Chang *et al.*, 2012; Guan *et al.*, 2014; Laschinger, 2012; Lounsbury *et al.*, 2007, 2014; Wassermann *et al.*, 2017; Zingesser, 2004). Some studies have found career satisfaction (Aburumman *et al.*, 2020; Chan & Mai, 2015; Guan *et al.*, 2014; Kang *et al.*, 2015; Laschinger, 2012; Nauta *et al.*, 2009) is an indicator of turnover, and negatively affects the intention to leave an organization. Hence, this study posits:

**H<sub>1a</sub>:** The Career satisfaction of the IT/IS personnel has a negative effect on their turnover intention

On the other hand, there are many studies have found that job satisfaction can be a critical indicator of turnover (Chang *et al.*, 2011, 2012; Chang *et al.*, 2020; Coomber & Barriball, 2007; Farr & Lind, 2019; Lee *et al.*, 2017; Lin & Huang, 2020; Rouibah & Al-Hassan, 2019; Silvina Codaro *et al.*, 2017; Tsai & Huang, 2008; Wynne *et al.*, 2002). If employees have lower level job satisfaction, they have higher intention to leave their organization. Thus, this study posits:

**H<sub>1b</sub>:** The Job satisfaction of the IT/IS personnel has a negative effect on their turnover intention

### 3.2 Reorganized (Quadrant) Anchors and Career Satisfaction and Job Satisfaction

Career planning activities present an approach that management uses to coach employees through self-assessment and goal setting to increase their career satisfaction (Punnett *et al.*, 2007). Career satisfaction refers to the extent to which IT/IS personnel express a positive orientation toward their career (Chang *et al.*, 2012; Igbaria & Baroudi, 1993). Career anchors, reflecting the needs and wants of employees from a career standpoint, are critical for goal setting (Chang *et al.*, 2012). Numerous scholars have found that many respondents had dominant multiple career anchors (Chapman, 2009; Feldman and Bolino, 1996; Martineau *et al.*, 2005; Wils *et al.*, 2014, 2016). Their findings are particularly compelling because the dominance was operated in different ways. Thus, the majority of individuals might possess several dominant career anchors simultaneously. Moreover, Coetzee & Schreuder (2011) explored that career anchors are potentially flexible and adaptable to people's work and life circumstances. Some strive to redefine their career priorities when they have met their most important career goals.

Existing research reveals that career anchors have significant effect on their career satisfaction (Agarwal *et al.*, 2007; Chang, 2010; Hsu *et al.*, 2003; Jiang & Klein, 1999-2000; Laschinger, 2012; Lounsbury *et al.*, 2007, 2014; Yavarpour *et al.*, 2016), and job satisfaction (Chang *et al.*, 2012; Chang *et al.*, 2020; Coomber & Barriball, 2007; Tsai & Huang, 2008; Wynne *et al.*, 2002). When an organization can provide sufficient career anchors which their IT/IS personnel want, their career satisfaction and job satisfaction also improve. For this reason, one's career anchors significantly predict their career satisfaction, job satisfaction, overall life satisfaction, and the importance they attach to work. An individual's career-related value system will be correlated with, or even predict career satisfaction (Agarwal *et al.*, 2007; Chang, 2010; Hsu *et al.*, 2003; Jiang & Klein, 1999-2000; Laschinger, 2012; Lounsbury *et al.*, 2007, 2014; Yavarpour *et al.*, 2016) and job satisfaction (Chang *et al.*, 2012; Chang *et al.*, 2020; Coomber & Barriball, 2007; Lounsbury *et al.*, 2007, 2014; Tsai & Huang, 2008; Wynne *et al.*, 2002). Therefore, the hypotheses are proposed as following:

- H<sub>2a-1-2a-4</sub>**: The Satisfied dominant quadrant of anchors of the IT/IS personnel has a positive effect on their career satisfaction.
- H<sub>2a-1</sub>**: The Satisfied Bureaucratic Quadrant of anchors of the IT/IS personnel has a positive effect on their career satisfaction.
- H<sub>2a-2</sub>**: The Satisfied Protean Quadrant of anchors of the IT/IS personnel has a positive effect on their career satisfaction.
- H<sub>2a-3</sub>**: The Satisfied Careerist Quadrant of anchors of the IT/IS personnel has a positive effect on their career satisfaction.
- H<sub>2a-4</sub>**: The Satisfied Social Quadrant of anchors of the IT/IS personnel has a positive effect on their career satisfaction.
- H<sub>2b-1-2b-4</sub>**: The Satisfied dominant quadrant of anchors of the IT/IS personnel has a positive effect on their job satisfaction.
- H<sub>2b-1</sub>**: The Satisfied Bureaucratic Quadrant of anchors of the IT/IS personnel has a positive effect on their job satisfaction.
- H<sub>2b-2</sub>**: The Satisfied Protean Quadrant of anchors of the IT/IS personnel has a positive effect on their job satisfaction.
- H<sub>2b-3</sub>**: The Satisfied Careerist Quadrant of anchors of the IT/IS personnel has a positive effect on their job satisfaction.
- H<sub>2b-4</sub>**: The Satisfied Social Quadrant of anchors of the IT/IS personnel has a positive effect on their job satisfaction.



The research model (see Figure 2) is proposed on the basis of the literature review provided above to understand the interactions among the reorganized career anchors of the IT/IS personnel, career satisfaction, job satisfaction, and turnover intention.

Finally, based on the studies of Wils *et al.* (2016) test on the model of Wils *et al.* (2014), the research model of the current study believed the career anchors that belong of the Protean quadrant were incompatible with the career anchors that belong of the Bureaucratic quadrant, the career anchors that belong of the Careerist quadrant were incompatible with the career anchors that belong of the Social quadrant. This study has used the R software with package CircE library so as to better understand the circular logic of the model, to explore each quadrant of the IT/IS personnel, and what the types of career anchors, and what the relationship among the four quadrants (Protean, Bureaucratic, Careerist, and Social) of the IT/IS personnel.

## 4. RESEARCH METHOD

### 4.1 Survey Administration

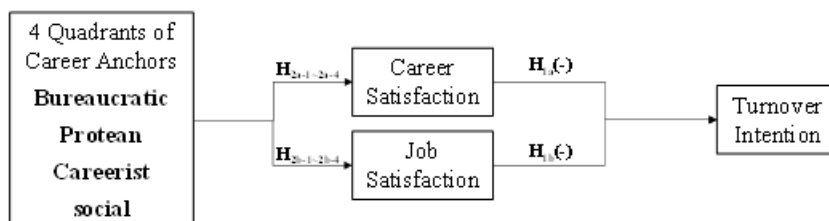
The core purpose of this study is focused on building a suitable Circumplex Model for structuring Career Anchors of the IT/IS personnel and a more complete research model for eligible IT/IS personnel than before. For generalizing the suitable Circumplex Model for Structuring Career Anchors of the IT/IS personnel well, the data were collected from the IT/IS personnel in the IT/IS fields of five leading and pioneering countries, the PRC, Taiwan, India, the UAE, and the US. The long survey had been conducted for 18 months since July 2017.

In order to maximize the survey response rate, researchers via an internet survey randomly telephoned the senior managers of a large number of institutions and companies, inviting them to complete the questionnaires. Upon acceptance of the invitation, the IT/IS personnel in the participating companies became the survey subjects of this study. Meanwhile, because the survey platform was in public, and participants were anonymous, the participants of this study were not limited to the participating companies. To ensure confidentiality, all the participants were informed that their responses were anonymous and used only for academic purposes.

### 4.2 Measure Development

The measurement has been developed by adopting the existing scales that had been validated in prior studies, and modified the items to fit the context of this study. The questionnaire consisted of 41 items to measure four constructs by a 5-point Likert scale (1=strongly disagree; 5=strongly agree) in the research model. A total of five questions obtained from Greenhaus *et al.* (1990), were used to measure career satisfaction. A total of three questions obtained from McKnight (1997), were used to measure job satisfaction. A total of three questions obtained from Mobley *et al.* (1978) were used to measure turnover intention. A total of 30 questions obtained from DeLong (1982), Igbaria & Baroudi (1993) were used to measure career anchors.

Figure 2. Research Model (this study)



A pre-test of the questionnaire was performed with help from three specialists in the management information systems (MIS) department and three professors in the IS domain to assess the validity of its content including the ease of understanding, sequence of items, and contextual relevance. The questionnaire was slightly modified according to the comments from these experts, and according to their suggestions, the following items has been deleted: (1) two items of the technical competence anchor (to build my career around some specific functional or technical area, I will accept a management position only if it is in my area of expertise); (2) one item of the challenge anchor (working on problems that are almost insolvable); (3) one item of the management competence anchor (I will feel successful in my career only if I become a high-level general manager in some organization); (4) one item of the lifestyle anchor (I have always tried to give equal weight to my family and to my career); (5) one item of the service anchor (I want a career in which I can be committed and devoted to an important cause); and (6) The autonomy, variety, and the organizational stability three anchors. Finally, in the Chinese and English questionnaires, 30 people were selected to do the pre-test. All scales were demonstrated to be an acceptable internal consistency (Cronbach's  $\alpha > 0.6$ ) (Hair *et al.*, 2022; Hulin *et al.*, 2001).

Because English is the second official language in India, and UAE, the IT/IS personnel in India and the UAE can read English well. However, as Chinese is the most commonly used language in the PRC and Taiwan, the questionnaire items translated into Chinese were responded with a higher rate. Meanwhile, both Taiwan and the PRC speak in Mandarin Chinese, but in writing, people in the PRC uses Simplified Chinese, and Taiwan uses Traditional Chinese. Basically, these two types of Chinese can be exchanged easily by language tools. A backward translation was employed to ensure the consistency between two versions, Chinese and original English. Two professional translators independently translated the English questions into Chinese. The translated Chinese question sets were then reviewed by a professor to ensure the meanings of the Chinese questions in consistence with the English ones. This final set of Chinese questions was translated back into English by another professional translator in order to check the consistence of translation. The translators then collaborated on the comparison of the original English questions with the back translation. Based on the discussions among the translators, a final set of questions was confirmed. Finally, domain experts reviewed the instrument to ensure its validity and to identify ambiguity, and provided suggestions, by which the wording of certain items was modified.

### 4.3 Demographics of Respondents

Out of the 852 responses received, the demographic information of these respondents is listed in Table 1. The data shows that males (68.75%) responded more than females (30.75%). Most respondents were under the age of 40 and obtained Bachelor or Master degree. Over 70% (70.42%) respondents are IT/IS technical personnel (including system, software, hardware, and network engineers, programmer, DBA, and system analyst), only 12.21% respondents have manager position. 44.01% respondents have 1~6 years' work experiences, 48.94% respondents have 7~17 years' work experiences, and only 5.99% respondents have over 18 years' work experiences.

### 4.4 Reliability and Validity

Item reliability, convergent validity, and discriminant validity tests are often used to evaluate the measurement model in PLS. A generally accepted rule is that 0.6~0.7 indicates an acceptable level of reliability (Hair *et al.*, 2022; Hulin *et al.*, 2001). Hair *et al.* (2022) also suggested that a Cronbach's alpha value of 0.6 was acceptable. All the scales demonstrated the acceptable internal consistency (Cronbach's  $\alpha > 0.6$ ). Reliability can be ensured through composite reliability (CR  $> 0.6$ ), Cronbach's alpha ( $> 0.6$ ), and factor loading ( $> 0.5$ ). The results indicated that all CRs exceeded 0.6 (range: 0.67~0.92), all Cronbach's alphas exceeded 0.6 (range: 0.61~0.87), and all indicator loadings exceeded 0.5 (range: 0.60~0.91). The results listed in Table 2 show that all criteria were met, indicating satisfactory item reliability.

Table 1. Sample demographics

Demographical Characteristics	Contents	Number (#)	Percentage (%)
<b>Gender</b>	(1) Male	586	68.78
	(2) Female	262	30.75
	(3) Missing Data	4	0.47
<b>Age</b>	(1) <=25	96	11.27
	(2) >25 and <=30	278	32.63
	(3) >30and <=35	250	29.34
	(4) >35and <=40	163	19.13
	(5) >40 and <=45	40	4.69
	(6) >45 and <=50	13	1.53
	(7) over 50	9	1.06
	(8) Missing Data	3	0.35
<b>Education</b>	(1) High school	10	1.17
	(2) Junior college graduates	27	3.17
	(3) Bachelor's degree	519	60.92
	(4) Master	285	33.45
	(5) Ph. D	6	0.70
	(6) Missing Data	5	0.59
<b>Industry</b>	(1) Government	70	8.22
	(2) Information Service	451	52.93
	(3) Medicine	48	5.63
	(4) Financial	40	4.69
	(5) Others	243	28.52
<b>Job Title</b>	(1) System Engineer	106	12.44
	(2) Software Engineer	82	9.62
	(3) Hardware Engineer	24	2.82
	(4) Network Engineer	47	5.52
	(5) Programmer	272	31.93
	(6) DBA	15	1.76
	(7) Project Manager	90	10.56
	(8) MIS Manager	14	1.64
	(9) System Analyst	54	6.34
	(10) MIS Sales	9	1.06
	(11) Others	139	16.31

*continued on following page*

Table 1. Continued

Demographical Characteristics	Contents	Number (#)	Percentage (%)
Job experience	(1) 1~3 years	157	18.43
	(2) 4~6 years	218	25.59
	(3) 7~9 years	173	20.31
	(4) 10~13 years	159	18.66
	(5) 14~17 years	85	9.98
	(6) 18~21 years	24	2.82
	(7) 22 years or more	27	3.17
	(8) Missing Data	9	1.06
Married	(1) Yes	505	59.27
	(2) No	335	39.32
	(3) Missing Data	12	1.41

Convergent validity should be tested when multiple indicators are used to measure one construct. This can be examined by testing the CR ( $> 0.6$ ) and the average variance extracted (AVE  $> 0.5$ ) by constructs (Hair *et al.*, 2022). The results indicated that all CRs exceeded 0.6 (range: 0.67~0.92), and all AVEs exceeded 0.5 (range: 0.50~0.79). The results listed in Table 2 show all the criteria. For the required discriminant validity, the correlation between construct pairs should be lower than 0.90 and the square root of the AVE should be higher than the inter-construct correlation coefficients (Hair *et al.*, 2022), revealing a satisfied discriminant validity. Data shown in Table 3 indicate that all the minimum requirements were met.

## 5. DATA ANALYSIS AND RESULTS

In this research, this study used the R software with package CircE library (Grassi, 2014; Grassi *et al.*, 2010), and Smart PLS 3 software (Hair *et al.*, 2022). The package CircE library was developed with R that estimates the structural models for Circumplexes (Fabrigar *et al.*, 1997). The mathematical details of this technique are explained in Browne (1992) who was behind the CIRCUM software in the DOS environment. CircE is a more up-to-date version of this software, which was developed with R (Grassi *et al.*, 2010). Figure 3 represents the circular logic of the model with the package CircE library.

Hypothesis testing was conducted through the PLS regression analyses using the SmartPLS 3 with bootstrapping as a resampling technique (5000 random samples) was used to estimate the structural model and the significance of the paths (t-value) (Chin *et al.*, 2003). All the path coefficients and explained variances for the model are as shown in Table 4 and Figure 4. All hypotheses are supported, with the exception of two ( $H_{1a}$  and  $H_{2b-3}$ ).

First, the analysis of this study showed that the path from career satisfaction to turnover intention was not significant ( $\beta = -0.04$ ,  $t = 0.85$ ,  $p > 0.05$ ), which did not support  $H_{1a}$ . This study found that the job satisfaction ( $\beta = -0.45$ ,  $t = 10.89$ ,  $p < 0.001$ ) had a significantly negative impact on the turnover intention. Thus,  $H_{1b}$  was supported. Career satisfaction and job satisfaction explain 23% of the variance ( $R^2$ ) in turnover intention.

Second, four proposed antecedents (bureaucratic, protean, careerist, and social quadrants) were found to have a significantly positive impact on career satisfaction. The coefficient from bureaucratic quadrant to career satisfaction was 0.24 ( $t = 6.68$ ,  $p < 0.001$ ), the coefficient from protean quadrant to career satisfaction was 0.13 ( $t = 3.33$ ,  $p < 0.001$ ), the coefficient from careerist

Table 2. The results of factor analysis

Constructs		Items	Factors Loading	Cronbach's Alpha	CR	AVE
Bureaucratic Quadrant	Technical Competence	TC1	0.80	0.61	0.79	0.56
		TC2	0.83			
		TC3	0.60			
	Geographic Security	GS1	0.73	0.73	0.85	0.65
		GS2	0.85			
		GS3	0.83			
Protean Quadrant	Challenge	CH1	0.66	0.69	0.81	0.51
		CH2	0.76			
		CH3	0.73			
		CH4	0.72			
	Entrepreneurship	ES1	0.72	0.77	0.84	0.57
		ES2	0.83			
		ES3	0.80			
		ES4	0.67			
	Management Competence	MC1	0.73	0.742	0.83	0.56
		MC2	0.70			
		MC3	0.73			
		MC4	0.82			
Careerist Quadrant	Identity	ID1	0.79	0.80	0.86	0.55
		ID2	0.73			
		ID3	0.75			
		ID4	0.73			
		ID5	0.71			
Social Quadrant	Lifestyle	LS1	0.71	0.62	0.78	0.50
		LS2	0.72			
		LS3	0.68			
		LS4	0.61			
	Service	SE1	0.75	0.65	0.67	0.59
		SE2	0.75			
		SE3	0.80			
Career Satisfaction		CS1	0.84	0.86	0.90	0.63
		CS2	0.84			
		CS3	0.78			
		CS4	0.78			
		CS5	0.74			
Job Satisfaction		JS1	0.90	0.87	0.92	0.79
		JS2	0.86			
		JS3	0.91			
Turnover Intention		TI1	0.88	0.84	0.90	0.76
		TI2	0.88			
		TI3	0.85			

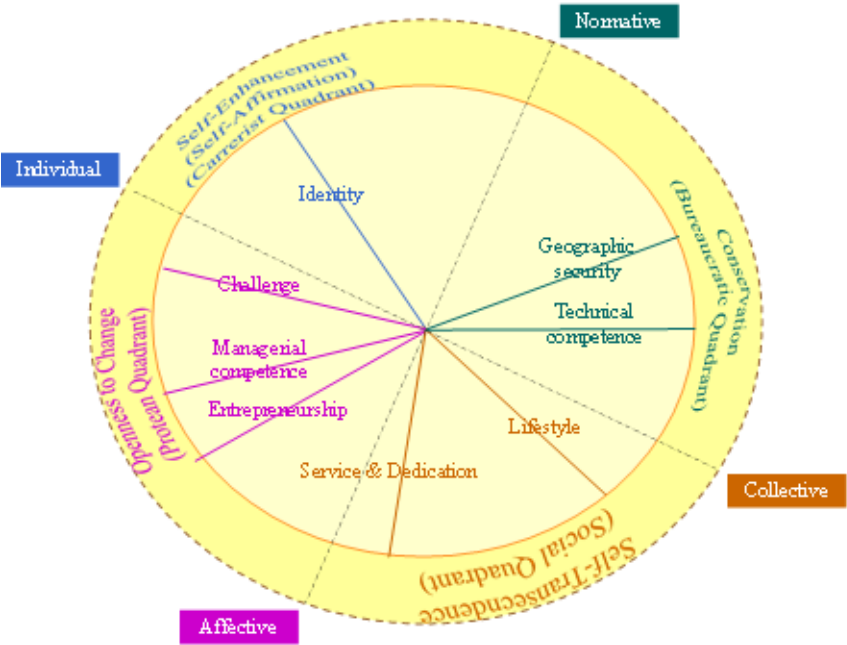
Table 3. Correlation matrix

Constructs	ID	LS	SE	TC	GS	CH	ES	MC	CS	JS	TI
<b>ID</b>	<b>0.74</b>										
<b>LS</b>	0.34	<b>0.68</b>									
<b>SE</b>	0.32	0.43	<b>0.77</b>								
<b>TC</b>	0.24	0.17	0.19	<b>0.75</b>							
<b>GS</b>	0.23	0.19	0.19	0.37	<b>0.81</b>						
<b>CH</b>	0.43	0.31	0.45	0.24	0.15	<b>0.72</b>					
<b>ES</b>	0.26	0.25	0.32	0.21	0.01	0.38	<b>0.76</b>				
<b>MC</b>	0.42	0.29	0.35	0.09	0.07	0.44	0.49	<b>0.75</b>			
<b>CS</b>	0.28	0.27	0.32	0.33	0.23	0.33	0.18	0.20	<b>0.80</b>		
<b>JS</b>	0.23	0.26	0.30	0.23	0.21	0.27	0.22	0.17	0.54	<b>0.89</b>	
<b>TI</b>	-0.04	-0.16	-0.14	-0.05	-0.04	-0.08	0.10	0.05	-0.28	-0.47	<b>0.87</b>

ID: Identity, LS: Lifestyle, SE: Service, TC: Technical Competence, GS: Geographic Security, CH: Challenge, ES: Entrepreneurship, MC: Management Competence, CS: Career Satisfaction, JS: Job Satisfaction, TI: Turnover Intention

Note: Diagonal elements (in bold) represent the square root of the AVE

Figure 3. Circumplex model for structuring career anchors of IT/IS Personnel (this study)



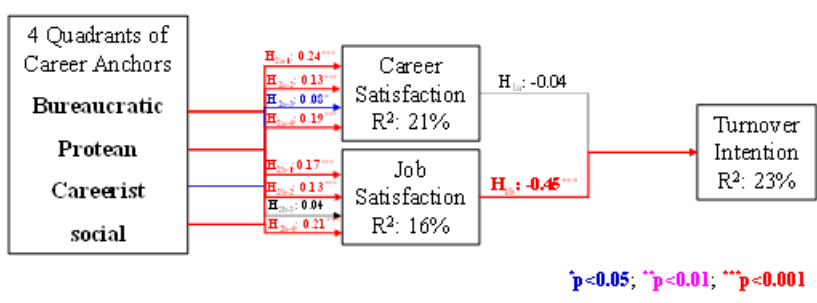
quadrant to career satisfaction was 0.08 ( $t=2.06$ ,  $p<0.05$ ), and the coefficient from social quadrant to career satisfaction was 0.19 ( $t=4.72$ ,  $p<0.001$ ). This result indicates that  $H_{2a-1}$ ,  $H_{2a-2}$ ,  $H_{2a-3}$  and  $H_{2a-4}$  were supported. Bureaucratic, protean, careerist, and social quadrants explain 21% of the variance ( $R^2$ ) in career satisfaction.

Table 4. The results of hypotheses

Hypotheses	$\beta$	t-value	Results
H <sub>1a</sub> : Career Satisfaction → Turnover Intention	-0.04	0.85	Non-Supported
H <sub>1b</sub> : Job Satisfaction → Turnover Intention	<b>-0.45***</b>	<b>10.89***</b>	Supported
H <sub>2a-1</sub> : Bureaucratic Quadrant → Career Satisfaction	<b>0.24***</b>	<b>6.68***</b>	Supported
H <sub>2a-2</sub> : Protean Quadrant → Career Satisfaction	<b>0.13***</b>	<b>3.33***</b>	Supported
H <sub>2a-3</sub> : Careerist Quadrant → Career Satisfaction	<b>0.08*</b>	<b>2.06*</b>	Supported
H <sub>2a-4</sub> : Social Quadrant → Career Satisfaction	<b>0.19***</b>	<b>4.72***</b>	Supported
H <sub>2b-1</sub> : Bureaucratic Quadrant → Job Satisfaction	<b>0.17***</b>	<b>4.36***</b>	Supported
H <sub>2b-2</sub> : Protean Quadrant → Job Satisfaction	<b>0.13***</b>	<b>3.30***</b>	Supported
H <sub>2b-3</sub> : Careerist Quadrant → Job Satisfaction	0.04	0.81	Non-Supported
H <sub>2b-4</sub> : Social Quadrant → Job Satisfaction	<b>0.21***</b>	<b>5.47***</b>	Supported

\*p<0.05, \*\*p<0.01, \*\*\*p<0.001

Figure 4. The result of research model (this study)



Third, for job satisfaction, three proposed antecedents (bureaucratic, protean, and social quadrants) were found to have a significantly positive impact on job satisfaction. The coefficient from bureaucratic quadrant to job satisfaction was 0.17 ( $t=4.36$ ,  $p<0.001$ ), the coefficient from protean quadrant to job satisfaction was 0.13 ( $t=3.30$ ,  $p<0.001$ ), and the coefficient from social quadrant to job satisfaction was 0.21 ( $t=5.47$ ,  $p<0.001$ ). This result indicates that H<sub>2b-1</sub>, H<sub>2b-2</sub> and H<sub>2b-4</sub> were supported. In addition, this study found the path from careerist quadrant to job satisfaction was not significant ( $\beta=0.04$ ,  $t=0.81$ ,  $p>0.05$ ), which did not support H<sub>2b-3</sub>. Furthermore, Bureaucratic, protean, careerist, and social quadrants explain 16% of the variance ( $R^2$ ) in job satisfaction.

Finally, based on the study of Falk and Miller (1992), R-squared value ( $R^2$ ) of 0.10 is a minimum acceptable level. Thus, the  $R^2$  of career satisfaction, job satisfaction, and turnover intention in this study are higher than the minimum acceptable level.

## 6. DISCUSSION

For understanding the difference between the result of this study and prior reorganized career anchor models, this study compares the current study with the Octagonal Career Anchor Structure Model of Feldman and Bolino (1996), the Chapman's Anchor Structuring Model (2009), and the Circular Model of Wils *et al.* (2016) (as section 6.1); The result model, the value, and the contribution of this study can exhibit well (as section 6.2).

## 6.1 Compare the Result of This Study and Prior Reorganized Career Anchor Models

See Table 5.

### 1. Compare the Result of This Study with the Model of Feldman & Bolino (1996).

The model of Feldman & Bolino (1996) proposed a Circumplex of eight anchors with four oppositions, in which challenge was incompatible with lifestyle, managerial competence was incompatible with service, entrepreneurship was incompatible with security, and autonomy was incompatible with technical competence. The current study found that challenge was incompatible with lifestyle, and entrepreneurship was incompatible with geographic security for IT/IS personnel, and these two results are the same as the study of Feldman & Bolino (1996).

In contrast, the managerial competence anchor was on the same side with the service for the IT/IS personnel and the result was inconsistent with the study of Feldman & Bolino (1996). This could be due to the characteristics of the IT/IS personnel job in that it always needs to serve others (service); thus, the higher position of the IT/IS personnel can serve more people (service).

### 2. Compare the Result of This Study with the Model of Schein (1990), and Chapman (2009).

Schein (1990) proposed three oppositions, and Chapman (2009) added one opposition of eight career anchor, in which, technical competence was opposite to managerial competence, autonomy was opposite to security, service was opposite to entrepreneurship, and challenge was opposite to lifestyle. The current study found that technical competence was opposite to managerial competence and challenge was opposite to lifestyle, and this result is the same as the studies of Schein (1990) and Chapman (2009).

**Table 5. Reorganization of career anchors**

<b>Octagonal Career Anchor Structure Model of Feldman and Bolino (1996): Compatible vs. Incompatible Anchors</b>	<b>Chapman's Anchor Structuring Model (2009): Opposite Career Anchor Relationships</b>	<b>The Circular Model of Wils <i>et al.</i> (2016): Four Quadrants</b>	<b>The Circular Model of IT/IS Personnel</b>
Technical competence Managerial competence Entrepreneurship/ Creativity Challenge	Technical competence Autonomy/Independence Entrepreneurship/ Creativity Challenge	<b>Careerist Quadrant</b> Managerial competence Identity	<b>Careerist Quadrant</b> Identity
		<b>Protean Quadrant</b> Technical competence Challenge Entrepreneurship/Creativity Autonomy/Independence	<b>Protean Quadrant</b> Challenge Managerial competence Entrepreneurship
Autonomy/Independence Service & Dedication Security & Stability Lifestyle	Managerial competence Security & Stability Service & Dedication Lifestyle	<b>Social Quadrant</b> Service & Dedication to a cause Lifestyle	<b>Social Quadrant</b> Service & Dedication to a cause Lifestyle
		<b>Bureaucratic Quadrant</b> Security & Stability	<b>Bureaucratic Quadrant</b> Technical competence Geographic Security



Nevertheless, the service anchor was closer to and on the same side as the entrepreneurship anchor, and this could be due to building their own business (entrepreneurship), and can be a good approach and opportunity to serve many more people and the IT industry (service).

### 3. Compare the Result of This Study with the Model of Wils *et al.*, (2016).

Wils *et al.* (2016) proposed a Circumplex model, which provided four quadrants: (A) careerist quadrant: covers two anchors, managerial competence, and identity; (B) protean quadrant: covers three anchors, challenge, entrepreneurial creativity and autonomy/independence; (C) social quadrant: covers service/dedication anchor; and (D) bureaucratic quadrant: covers the security/stability anchor. The result of this study exhibits (see Figure 4) that the protean quadrant is on the opposite side of the bureaucratic quadrant, the careerist quadrant is on the opposite side of the social quadrant, and the result is consistent with Wils *et al.* (2014, 2016). However, each quadrant covering an anchor of this study is not the same as the study of Wils *et al.* (2014, 2016), and it will be discussed in the following sections:

1. There is only the identity anchor in this position, therefore, this study classifies it into the careerist quadrant. The result is consistent with the study of Wils *et al.* (2014, 2016). Because some IT/IS personnel expect that they can work for a company with good reputation that can increase their social status.
2. These three anchors, entrepreneurship, managerial competence, and challenge are close together, thus, this study classifies them into the protean quadrant. Because the IT/IS personnel prefer taking new challenge and resolving difficult IT problems, they like to build their own business, but only those with a high position can achieve the “Mission Impossible” goal.
3. These two anchors, lifestyle and service are close together, therefore, this study classifies them into the social quadrant. The most significant thing for some IT/IS personnel is to serve others (service), and take care of their family, as this is the critical goal of their career life.
4. These two anchors, technical competence and geographic security are close together, hence, this study classifies them into the bureaucratic quadrant. Accordingly, the technical competence is the basic ability for IT/IS personnel, thus, if they can use their IT knowledge and their job location closer to home, it will be very important for some IT/IS personnel.

Based on the aforementioned results, this study concludes that: (A) Protean quadrant vs. Bureaucratic quadrant: in the protean quadrant, the technical competence anchor is on the opposite side of the managerial competence, entrepreneurship, and challenge three anchors; meanwhile, the geographic security anchor is on the opposite side of the managerial competence anchor. Therefore, the career anchors in both of the protean quadrant and the bureaucratic quadrant should be modified; and the managerial competence anchor is classified into the protean quadrant, and the technical competence anchor is classified into the bureaucratic quadrant, it will be suitable for the IT/IS personnel.

The service anchor of the social quadrant and the managerial competence anchor of the protean quadrant are on the same side due to the managerial competence anchor of the IT/IS personnel that has been classified into the protean quadrant. Due to the data of Wils *et al.* (2014) collected from the health care organization, a heavy health care job is always done by the first line employees to help (service) (social quadrants) the patient; therefore, their managerial competence anchor (careerist quadrants) belongs to the different and the opposite side quadrants. Meanwhile, Wils *et al.* (2016) data was collected from the management graduates, and their work experience is different from the IT/IS personnel. In light of this, the Circumplex career anchor model of Wils *et al.* (2014), and Wils *et al.* (2016) are indeed not suitable for the IT/IS personnel of this study. Further, whether the Circumplex model of Wils *et al.* (2014, 2016) suitable for other occupations is also in doubt.

## 6.2 Discussion of Result Model

### 1. The Career Satisfaction and The Job Satisfaction to Turnover Intention.

On the one hand, career satisfaction has not had a significantly negative effect on the IT/IS personnel's turnover intention. The finding of this study is inconsistent with the conception of Chan & Mai (2015), Guan *et al.*, (2014), Kang *et al.*, (2015), Laschinger (2012), and Nauta *et al.*, (2009); hence, not supporting the  $H_{1a}$ . This could be that they are satisfied with their career, but it doesn't mean they like their job enough to stay. They might really enjoy their careers, but not their jobs, so they might change jobs, but not change careers.

On the other hand, job satisfaction has a significantly negative effect on the IT/IS personnel's turnover intention. The finding of this study is consistent with the conception of Chang *et al.* (2012), Chang *et al.* (2020), Coomber & Barriball (2007), Tsai & Huang (2008), Wynne *et al.* (2002); hence, supporting the  $H_{1b}$ .

### 2. Reorganized (Quadrant) Anchors to career Satisfaction.

The bureaucratic quadrant ( $H_{2a-1}$ ), the protean quadrant ( $H_{2a-2}$ ), the careerist quadrant ( $H_{2a-3}$ ) anchors, and the social quadrant ( $H_{2a-4}$ ) anchors have a significantly positive effect on the career satisfaction of the IT/IS personnel. Thus, the result has supported the  $H_{2a-1\sim 2a-4}$ . The findings are consistent with the conception of Agarwal *et al.* (2007), Chang (2010), Hsu *et al.*, (2003), Jiang & Klein (1999-2000), Laschinger (2012), Lounsbury *et al.* (2007, 2014), Yavarpour *et al.* (2016), in that career anchors should be an antecedent variable of the career satisfaction.

The result exhibits that the four quadrants reorganized anchors of the IT/IS personnel are indeed critical to their career satisfaction.

### 3. Reorganized Career Anchors to Job Satisfaction.

The bureaucratic quadrant ( $H_{2b-1}$ ), the protean quadrant ( $H_{2b-2}$ ), and the social quadrant ( $H_{2b-4}$ ) anchors have a significantly positive effect on the job satisfaction of the IT/IS personnel. Thus, the result supported  $H_{2b-1}$ ,  $H_{2b-2}$ , and  $H_{2b-4}$ . The findings are consistent with the conception of Chang *et al.* (2012), Chang *et al.* (2020), Coomber & Barriball (2007), Tsai & Huang (2008), Wynne *et al.*, (2002), in that career anchors should be an antecedent variable of the job satisfaction. In contrast, the careerist quadrant ( $H_{2b-3}$ ) anchor has not had a significantly positive effect on the job satisfaction of the IT/IS personnel. Thus, the result has not supported the  $H_{2b-3}$ .

The result exhibits that: (1) three (bureaucratic, protean, and social) quadrants career anchors of the IT/IS personnel are indeed critical to their job satisfaction. For this reason, the management can provide these three quadrant anchors to their IT/IS personnel, thereby increasing their job satisfaction, and in turn, decreasing their turnover intention. (2) The careerist quadrant covers the identity anchor which cannot influence the IT/IS personnel's job satisfaction, as this could be caused by the fact that an organization has a good reputation, and can improve their title and status, however, it is not enough to increase their job satisfaction.

## 7. CONTRIBUTIONS

### 7.1 For Academic

Firstly, the contribution to the Circumplex Model for Structuring Career Anchors of the IT/IS personnel is more appropriate to IT/IS personnel than other occupations: (1) Managerial competence and service

anchors are compatible with each other, and the result is inconsistent with the study of Feldman & Bolino (1996), and Wils *et al.* (2016). (2) Service and entrepreneurship anchors are compatible with each other, and the result has the same result of the study of Wils *et al.* (2016), but is inconsistent with the study of the Schein's Model (1990), and Chapman (2009). (3) Managerial Competence anchor belongs to the protean quadrant, technical competence belongs to the bureaucratic quadrant, and the result is different from the study of Wils *et al.* (2016). Therefore, this Model can provide scholars to confirm in any future study.

Secondly, bureaucratic, protean, careerist, and social quadrant anchors of the IT/IS personnel will indeed increase their career satisfaction; however, careerist quadrant anchors will not increase their job satisfaction. This means that the identity anchor (careerist quadrant) for the IT/IS personnel is not critical to their job satisfaction. Moreover, although the four reorganized (quadrant) anchors only have the 16%  $R^2$ , this does not mean that the job satisfaction is less important/critical accordingly, three reorganized (quadrant) (bureaucratic, protean, and social) anchors have made a significant impact on the job satisfaction of the IT/IS personnel, in turn, decreasing their turnover intention for retaining qualified IT/IS personnel. Therefore, the result of the quadrant anchors of the IT/IS personnel will be a new insight to the MIS scholars, and it is worthy of study in the future.

Thirdly, the job satisfaction of the IT/IS personnel will decrease their turnover intention, however, the career satisfaction will not. The result exhibits that the career satisfaction and the job satisfaction have different meanings for the IT/IS personnel. Thus, scholars can apply the research model of this study to other occupations to explore whether it is suitable or not.

Fourthly, there has been a critical theoretical contribution of the current study: it not only provides a reorganized (quadrant) anchors framework to eligible IT/IS personnel, but also adds the job satisfaction, the career satisfaction, and the turnover intention to extend the Circumplex career anchor model of Wils *et al.* (2016) to be a more complete research model than before.

Finally, this study had provided a suitable Circumplex Model for Structuring Career Anchors of the IT/IS personnel and it can generalize to global IT/IS personnel well, because the current study had collected data from five leading pioneering countries in the IT/IS field. Meanwhile, the role of the IT/IS personnel in all industries is more critical than before COVID-19. Therefore, it will be beneficial to adopt the Circumplex Model for Structuring Career Anchors of the IT/IS personnel for scholars in future.

## 7.2 For Practice

Firstly, the Circumplex Model for Structuring Career Anchors of the IT/IS personnel exhibits that they have emphasized the multiple dominant simultaneously, thus, how to manage these dominant anchors is an important significance to the management. It has been confirmed that which anchors will be compatible/in conflict with each other, and the reorganized (quadrant) anchors, indeed, can provide management a constructive approach to provide the IT/IS personnel emphasized multiple dominant anchors efficiency and effectiveness.

Secondly, the result of the research model of the IT/IS personnel can provide the management, in that if they only provide the careerist quadrant anchor to the IT/IS personnel, it will not be good enough to increase the IT/IS personnel's job satisfaction, because the management cannot depend on their good reputation to improve the IT/IS personnel's title and status to retain the qualified IT/IS personnel. In addition, the management can focus more on how to satisfy their bureaucratic, protean, and social three quadrant anchors, as this will be a useful approach to increase their job satisfaction.

Thirdly, the management can notice that sustaining the job satisfaction of the IT/IS personnel is a critical issue to retain qualified IT/IS personnel, so as to improve their job performance and organizational effectiveness because the job satisfaction is a possible way to decrease their turnover intention. In contrast, although satisfying the IT/IS personnel's career satisfaction does not mean they are willing to stay in their current organization, and they could leave at any time. However, the

management can still provide these four quadrant anchors to the IT/IS personnel, thereby increasing their career satisfaction, then it might inhibit their turnover intention.

Finally, the world is becoming more interconnected, international strategic alliances are increasing because the IT/IS progress speedily. The role of the IT/IS personnel will be significant for all of the industries in the future; thus, the result of this study can provide the management to manage their IT/IS personnel more easily. In addition, when the organization can retain qualified IT/IS personnel, then the organizational advantage competence will be substantial growth at the same time.

## **8. CONCLUSION**

The Circumplex Career Anchor Model has been modified in this study to be more suitable than before for the IT/IS personnel, in which the career satisfaction and the job satisfaction have different meanings for the IT/IS personnel. Although these three quadrant anchors bureaucratic, protean, and social can increase the career satisfaction and the job satisfaction of the IT/IS personnel; however, the careerist anchor can only increase their career satisfaction. Finally, the result of this study not only provides a reorganized (quadrant) anchors framework to suitable IT/IS personnel, but also adds the career satisfaction, the job satisfaction, and the turnover intention to extend the Circumplex Career Anchor Model to become a more complete research model than before. Meanwhile, because the data of this study has collected data from five different areas, thus the research model of this study can be generally adapted to global IT/IS personnel.

However, there are three limitations of this study that need to be resolved in the future: (1) because this study has collected data from the IT/IS personnel only; thus, it cannot provide enough information to investigate the Circumplex Career Anchor Model of the IT/IS personnel whether it is different with other occupations. For this limitation, researchers can collect data from professional in other fields to better understand what the model gap between them, then it can more effective way to help management to retain both of qualified IT/IS personnel and in other fields. (2) Because the authors of this study are familiar with researchers on these five different areas having the leading and pioneer position in the IT/IS field areas: US, Mainland China (the PRC), India, the UAE, and Taiwan. It is convenience for authors to collected random survey data via an internet public survey platform from these five different areas. Meanwhile, the budget and schedule of this study is limited, therefore, this study only surveyed the data of these five different areas, and did not include the IT/IS personnel in Europe, Australia, and South America. This is also another limitation. Therefore, scholars can collect data from these different areas to test the Circumplex Career Anchor Model of the IT/IS personnel, whether it is suitable for the IT/IS personnel in other areas. (3) Although this study has collected the date from five different cultural areas, however, this study did not analyze them from the cultural issue, and did not analyze the impact of cultural differences; thus, this is the third limitation of the current study. In point of the fact, after adding the data of Europe, Australia, South America; the cultural issue also can lead to some interesting findings and thereby stimulate further investigation.

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## ENDNOTES

- <sup>1</sup> Technical Competence: focusing primarily on the exercise of technical expertise.
- <sup>2</sup> Managerial Competence: preferring speedy promotion, and believing that analytic ability, stable emotions, and interpersonal skills give an individual competitive advantage.
- <sup>3</sup> Geographic Security: linking oneself to a particular area on a long-term basis.
- <sup>4</sup> Challenge: preference for conquering difficult tasks or problems and for overwhelming competitors.
- <sup>5</sup> Identity: a strong desire for status and prestige from organizations.
- <sup>6</sup> Service: dedication to helping others and contributing to doctrines.
- <sup>7</sup> Lifestyle: concern for the integration of individual, family, and career.
- <sup>8</sup> Entrepreneurship: preferring challenge and new projects.
- <sup>9</sup> Autonomy: seeking maximum freedom and exploiting one's talent.
- <sup>10</sup> Variety: a desire for a number of different tasks.
- <sup>11</sup> Organizational Stability: seeking loyalty, and tenure security.

## APPENDIX: MEASURING ITEMS FOR EACH CONSTRUCT

### **Bureaucratic Quadrant**

#### *Technical Competence*

1. Remaining in my specialized area as opposed to being promoted out of my area of expertise.
2. Remaining in my area of expertise throughout my career.
3. I would rather leave my company than be promoted out of my area of expertise.

#### *Geographic Security*

1. Remaining in one geographical area rather than moving because of a promotion.
2. It is more important for me to remain in my present geographical location than to receive a promotion or new job assignment in another location.
3. I prefer to work for an organization that will permit me to remain in one geographical area.

### **Protean Quadrant**

#### *Challenge*

1. Competing with and winning out over others.
2. The only real challenge in my career has been confronting and solving tough problems, no matter what area they were in.
3. Competition and winning are the most important and exciting parts of my career.
4. I feel successful only if I am constantly challenged by a tough problem or a competitive situation.

#### *Entrepreneurship*

1. Building a new business enterprise.
2. I am always on the lookout for ideas that would permit me to start and build my own enterprise.
3. Entrepreneurial activities are the central part of my career.
4. I have always wanted to start and build up a business of my own.

#### *Management Competence*

1. The process of supervising, influencing, leading, and controlling people at all levels.
2. To be in charge of a whole organization.
3. To rise to a high position in general management.
4. I would like to reach a level of responsibility in an organization whereby I would supervise others in various business functions and my role would primarily be to integrate their efforts.

### **Careerist Quadrant**

#### *Identity*

1. I want others to identify me by my organization and my job title.
2. To be recognized by my title and status is important to me.
3. I like to be identified with a particular organization and the prestige that accompanies that organization.
4. It is important for me to be identified by my occupation.
5. Being identified with a powerful or prestigious employer is important to me.

## Social Quadrant

### *Lifestyle*

1. Developing a life cycle that balances my career and family needs.
2. Developing a career that permits me to continue to pursue my own life-style.
3. A career is worthwhile only if it enables to lead my life in my own way.
4. Choosing and maintaining a certain life-style is more important than is career success.

### *Service*

1. Using my skills to make the world a better place to live and work in.
2. Being able to use my skills and talents in the service of an important cause.
3. I have always sought a career in which I could be of service to others.

### *Career Satisfaction*

1. I am satisfied with the success I have achieved in my career.
2. I am satisfied with the progress I have made toward meeting my overall career goals.
3. I am satisfied with the progress I have made toward meeting my goals for income.
4. I am satisfied with the progress I have made toward meeting my goals for advancement.
5. I am satisfied with the progress I have made toward meeting my goals for the development of new skills.

### *Job Satisfaction*

1. Generally speaking, I feel satisfied with this job.
2. Overall, I feel satisfied with the kind of work I do in this job.
3. In general, I feel satisfied with my job.

### *Turnover Intention*

1. I think a lot about leaving this organization.
2. I am actively searching for an acceptable alternative to this organization.
3. When I can, I will leave the organization.

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