THE EFFECT OF WORKPLACE FUN AND ORGANIZATIONAL IDENTIFICATION ON EMPLOYEE INNOVATION BEHAVIOR IN IT COMPANIES

WEI HUANG

**A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF MANAGEMENT IN MANAGEMENT SCIENCE
INSTITUTE OF SCIENCE INNOVATION AND CULTURE
RAJAMANGALA UNIVERSITY OF TECHNOLOGY KRUNGTHEP
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ABSTRACT

This study explores how workplace fun, organizational identification, and demographic factors influence employee innovative behavior (EIB) in Chinese IT companies. Based on Social Exchange Theory and Affective Events Theory, the research collected 400 valid responses via a questionnaire. It analyzed the data using linear regression, t-tests, and Analysis of Variance (ANOVA). The results indicate that both workplace fun and organizational identification positively impact employee innovative behavior. Additionally, demographic factors such as age, education level, work experience, and position significantly influence employee innovative behavior, while gender does not. This study finds that workplace fun provides employees with positive emotional experiences, enhancing their intrinsic motivation and willingness to innovate. Organizational identification fosters a sense of belonging and alignment with organizational goals, further stimulating innovative behavior. Furthermore, older employees who are more educated, have longer work experience, and hold technical or R&D positions demonstrate higher levels of innovative behavior. This research offers valuable insights for IT companies. It suggests that managers should create a fun workplace environment and promote organizational identification to enhance employees' innovation capabilities, helping companies maintain a competitive edge in a fiercely competitive market.

Keywords: Workplace Fun, Organizational Identification, Employee Innovation Behavior, IT Companies
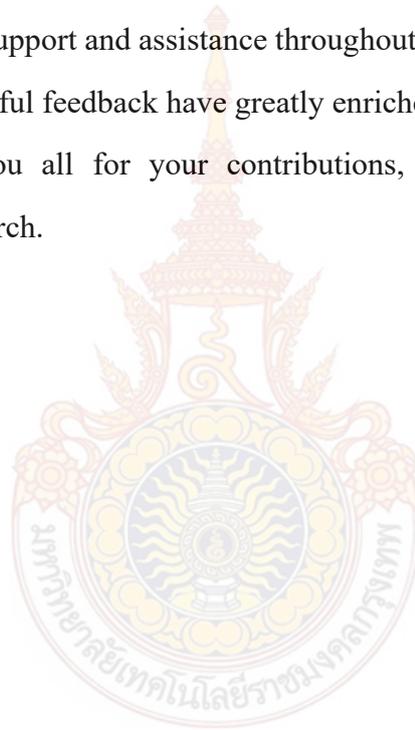
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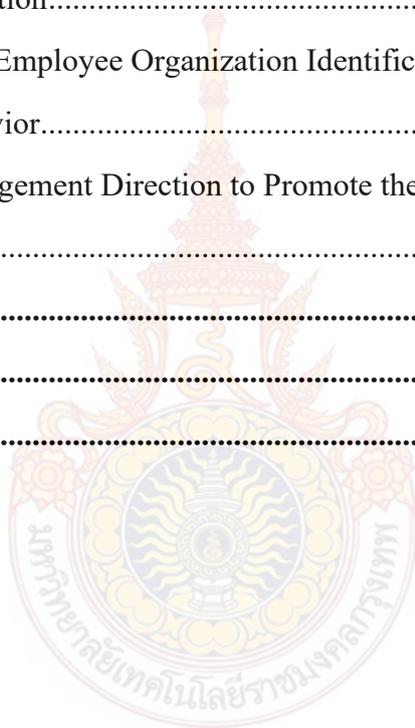
Wei HUANG

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CHAPTER I

INTRODUCTION

1.1 Background and Rationale

With the continuous deepening and development of global informatization, as of December 2022, the "Statistical Report on the Development of the Internet in China" reveals that the number of Chinese Internet users had reached 1.067 billion, with an Internet penetration rate of 75.6%. The widespread adoption of the Internet has provided IT companies with unprecedented opportunities for rapid development. According to statistics, by 2022, the number of IT companies in China had reached millions. These companies are not only large in scale but also demonstrate significant capabilities in product development, innovation, and iteration. However, with the increasing number of IT companies, market competition has intensified. To stand out in such a competitive environment, Chesbrough argues that innovation has become the core of IT companies' competitiveness, and that the key to fostering innovation lies with employees. As the primary agents of organizational innovation, employees' innovation consciousness and behaviors directly influence a company's ability to innovate.

For IT companies, employees are typically characterized by high levels of knowledge and advanced technological expertise. Traditional frameworks do not constrain them; they are courageous in facing challenges and excel at generating new ideas and taking action. These qualities should make employees the source and driving force behind enterprise innovation. However, IT companies today are grappling with two critical issues: a severe brain drain and a lack of employee-driven innovation. These problems can be attributed to several key factors:

First, IT companies often focus not only on pioneering new fields but also on closely monitoring market dynamics. They adapt to market changes by updating and iterating their products to maintain industry leadership (Liu & Lord, 2011). With the

rapid growth of the IT industry, Teece observes that companies require a significant number of highly skilled employees to drive innovation. Consequently, IT managers frequently attract talent by offering competitive salaries. This creates an environment where employees are presented with numerous employment opportunities, increasing the likelihood of job-hopping and resulting in severe brain drain.

Second, due to the generally high salaries in IT companies, employees' material needs are mainly met, leading to a greater emphasis on fulfilling their spiritual and psychological needs. A single salary-based incentive system is increasingly limited in its ability to engage the new generation of employees and stimulate their creativity and innovative drive. Unlike traditional companies, IT firms place greater emphasis on their employees' innovative spirit and willingness to experiment. They aim to foster an organizational culture that encourages innovation while actively exploring effective management strategies to inspire innovative behaviors among employees (Cheng, 2022).

Third, the nature of work in IT companies often involves high-intensity, continuous efforts, especially in the lead-up to the launch of new products. This can lead to employee burnout and further elevate turnover rates. The pressure of working long hours, including overtime and late nights, frequently results in both physical and mental health challenges for employees (Meng, 2017). To address these issues and meet the psychological needs of employees born in the 1990s and 2000s, some IT companies have begun integrating elements of "workplace fun" into their management practices. For example, they create comfortable working environments and strengthen interpersonal connections through team-building activities and flexible work hours, aiming to stimulate employees' creative energy.

To gain deeper insights into these challenges, a survey of job preferences among post-90s and post-00s employees found that "workplace fun" has become an increasingly important factor for this generation. As a result, IT managers are placing greater emphasis on creating enjoyable work environments, not only to attract and

retain talent but also to inspire innovative employee behaviors.

Since the 1980s, "workplace fun" has been recognized as a crucial criterion for employees when evaluating job satisfaction (Amabile, 2011). Organizations across industries are striving to create engaging work environments to boost employee motivation, and IT companies are no exception. For instance, Google, a global leader in the IT industry, has made innovation and development its core strategy. To unleash the innovative potential of its employees, Google designed its headquarters as a fun and stimulating workplace, incorporating features such as secret gardens and leisure parks to cater to diverse needs. In recent years, domestic IT companies have also recognized the importance of workplace fun and have followed Google's example. For example, 360, a leading Chinese IT company, created the "Pumpkin House," which not only features a distinctive design but also provides employees with spaces to relax and collaborate. This environment fosters informal idea exchange and inspiration in a stress-free setting. By incorporating workplace fun, IT companies are discovering new solutions to the challenges of talent retention and employee innovation.

It is evident that workplace fun, as a vital component of the employee work environment, profoundly influences attitudes and behaviors. Therefore, studying the relationship between workplace fun and employee innovation behaviors is critical for stimulating innovative thinking and promoting the sustainable development of companies.

1.2 Research Questions

Workplace fun is widely regarded as a crucial psychological reward that enhances employee engagement and involvement in their work. Amabile stated that workplace fun and challenge are among the most significant factors driving employees' innovative behavior. Employees who experience pleasure and excitement at work are more likely to become deeply engaged in their tasks, demonstrate proactive attitudes,

and initiate new ideas and solutions to challenges.

According to social exchange theory, employees' contributions to an organization create a psychological expectation of reciprocity. Cropanzano and Mitchell argue that workplace fun, as a form of psychological reward, can stimulate employees' intrinsic motivation and foster innovative behavior. To better understand this relationship, the following section will examine social exchange theory and how workplace fun influences employee innovation across three dimensions: employee engagement, work enjoyment, and innovative behaviors.

Workplace fun plays a pivotal role in driving organizational innovation and sustaining growth. Employees' innovative behaviors are a critical source of competitive advantage for organizations in dynamic, competitive environments. Theoretical perspectives such as social exchange theory and affective event theory provide a comprehensive framework for understanding the mechanisms through which workplace fun impacts employee innovation. Social exchange theory emphasizes the reciprocal exchange between employee contributions and organizational rewards, whereas affective event theory focuses on the impact of emotional experiences on workplace behaviors. This paper aims to integrate these two theories to explore the mechanisms by which workplace fun promotes innovative behaviors among employees and to propose actionable management strategies to foster innovation within organizations.

Affective event theory emphasizes the significant impact of emotional experiences on employee behaviors. Workplace fun, as a positive emotional experience, shapes employees' behavioral tendencies, including their willingness and capacity to engage in creative and innovative activities. The following sections will explore how affective event theory explains the relationship between workplace fun and employee innovation, focusing on the dual impact of affective experiences: (1) the effect of affective experiences on employees' behaviors, and (2) the effect of workplace fun on shaping those affective experiences.

Barsade posits that positive emotional experiences motivate employees to actively engage in innovative activities, as such experiences enhance their creativity and sense of exploration. Similarly, George and Zhou's research indicates that employees who experience pleasurable and euphoric emotions at work are more likely to participate in innovative activities and exhibit heightened levels of innovation. Workplace fun indirectly promotes employees' innovative behaviors by fostering positive affective experiences that stimulate creativity and a willingness to experiment.

Additionally, workplace fun has a significant impact on employees' emotional experiences, further enhancing their innovative potential. As a form of positive emotional engagement, workplace fun increases job satisfaction and overall happiness. Fredrickson's broaden-and-build theory suggests that positive emotions, such as those derived from fun experiences, enable employees to perceive greater meaning and value in their work, leading to heightened commitment and deeper involvement in organizational objectives. Amabile further emphasizes that positive emotional experiences encourage employees to explore new ideas and approaches, thereby fostering innovative organizational development. Thus, workplace fun contributes to organizational innovation not only by directly enhancing employees' affective experiences but also by indirectly shaping their innovative behaviors through improved emotional well-being and satisfaction.

Although prior studies have examined the relationship between workplace fun and employee innovation, significant gaps remain that warrant further investigation. Specifically, this paper seeks to address the following three questions:

1) Does workplace fun influence employees' innovation behavior in IT companies?

2) Does organizational identification influence the innovation behavior of employees?

3) What personal characteristics of employees in IT companies influence their innovation behavior?

1.3 Research Hypotheses

The research hypotheses formulated for this study are as follows:

H1: Workplace fun positively influences employees' innovative behavior. Specifically, when employees in IT companies experience a fun and engaging work environment, they are more likely to demonstrate innovative behaviors by generating new ideas, solving problems creatively, and contributing to the organization's innovation capabilities.

H2: Organizational identification positively influences employees' innovative behavior. In other words, employees who develop a strong sense of identification with their organization—through shared values, goals, and a sense of belonging—are more likely to exhibit innovative behaviors. This connection fosters their commitment to advancing the company's innovation.

H3: Demographic differences affect employees' innovative behavior. Variations in demographic factors, including gender, age, educational background, years of service, and job position, may influence employees' propensity for innovation. These factors can shape their perspectives, motivations, and approaches to creativity and problem-solving within the workplace.

1.4 Research Objectives

The primary objectives of this paper are as follows:

1) To analyze the factors influencing employees' innovation behavior in IT companies from the perspective of workplace fun.

This objective aims to identify how elements of workplace fun—such as engaging work environments, team dynamics, and recreational activities—affect employees' creativity, problem-solving abilities, and willingness to innovate.

2) To explore the role of organizational identification in shaping employees' innovation behavior in IT companies.

The study aims to explore how employees' sense of belonging, alignment with organizational goals, and emotional connection to their organization influence their innovative behaviors and drive the company's innovative development.

3) To provide practical management implications for fostering innovation and enhancing human resource management practices in IT companies.

By analyzing the influence of individual employee characteristics, such as demographic factors, this objective aims to provide actionable strategies to enhance talent management, foster innovation-friendly environments, and promote sustainable organizational growth.

1.5 Scope and Limitations of the Research

The scope and limitations of this study are as follows:

1.5.1 Scope

This research explores the relationship between workplace fun and employee innovation behavior in Chinese IT companies. By employing a combination of quantitative research methods, particularly structured questionnaires, this study aims to provide insights into how workplace fun, organizational identification, and demographic factors influence employees' innovative behaviors.

The primary objective of this research is to uncover the positive impact of workplace fun on employees' innovative behaviors and to demonstrate how organizational identification also plays a crucial role in shaping these behaviors. These findings will help organizations design work environments that are not only enjoyable but also conducive to innovation, ultimately enhancing employee creativity, engagement, and overall organizational performance.

The research population comprises employees of IT companies based in Yunnan Province, China. This group is characterized by its diversity and represents a significant segment of the IT workforce in the region.

To determine the appropriate sample size for the study, Yamane's formula was used, with a 95% confidence level to ensure statistical reliability. The formula for calculating the sample size is as follows:

$$n = \frac{N}{1 + Ne^2}$$

Where:

n = sample size

N = overall size

e = permissible error value

Based on Yamane's guidance, when the total population size is either significant or not precisely known, an appropriate sample size for the study is approximately 400 participants. This ensures that the study findings are both statistically valid and representative of the target population.

1.5.2 Limitations

Firstly, this study may have specific limitations in terms of research methodology. While interviews provide valuable insights into the relationships among variables, respondents' answers may be influenced by the social desirability effect, potentially biasing the findings. Furthermore, results from questionnaires may be affected by respondents' subjectivity, such as personal interpretations of questions, and by random errors, which can compromise the accuracy and reliability of the collected data.

Secondly, limitations also arise in terms of data collection. Due to time and resource constraints, the scope of this study was limited to IT company employees, resulting in a relatively small sample. This limited scope might reduce the generalizability of the findings, as the sample may not fully represent the diverse characteristics of all IT organizations or their employees. Additionally, focusing exclusively on a single industry and region—IT organizations in Yunnan Province—may overlook variations across other sectors and geographic areas, thereby further limiting the broader applicability of the results.

1.6 Research Framework
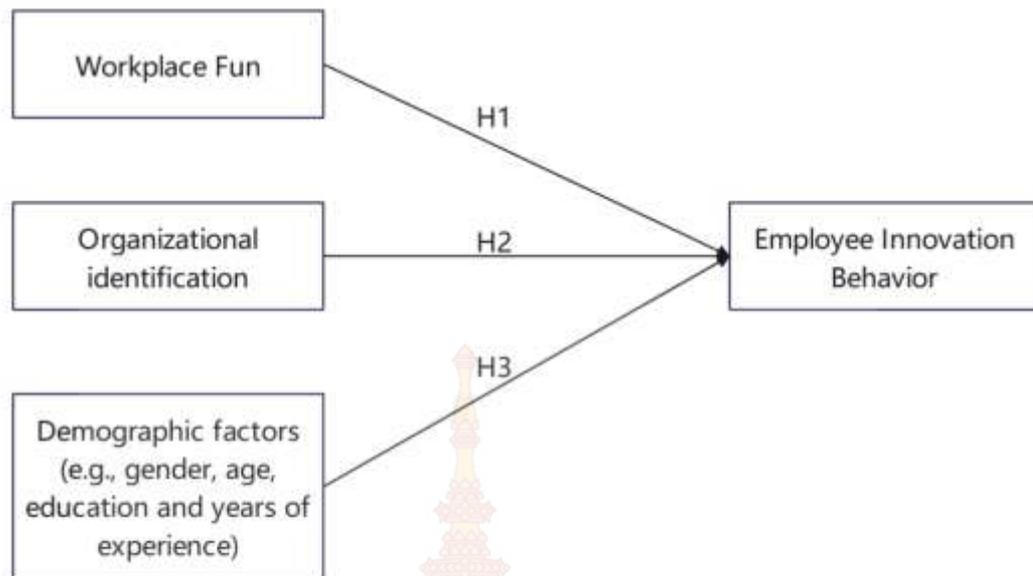
Figure 1.1 Research Framework

1.7 Definition of Key Terms

1) IT Companies

IT companies are firms specializing in information technology-related products and services. These companies use information technology tools, such as computers, networks, and communication systems, to develop or deliver offerings, including software, hardware, network equipment, information security solutions, and cloud computing services. By addressing the evolving digital needs of individuals and businesses, IT companies not only provide technical support and solutions across industries but also drive the broader economy's rapid growth through continuous innovation and improvement. Their contributions extend beyond technological advancements, fostering growth and transformation across diverse sectors.

2) Workplace Fun

Workplace fun refers to the positive, pleasurable emotional experiences

employees derive from their work environment. These experiences are often associated with factors such as the intrinsic interest, challenge, and sense of accomplishment derived from work tasks, as well as harmonious and supportive relationships with coworkers. Workplace fun enhances employees' job satisfaction and overall well-being, fostering greater engagement in their roles. Additionally, it has the potential to stimulate innovation and creativity by fostering a positive, supportive work environment that encourages idea generation and problem-solving.

3) Organizational Identification

Organizational identification is defined as the degree to which employees feel a sense of belonging to and alignment with the organization they work for. This is reflected in their agreement with the organization's values, goals, culture, and mission. A strong sense of identification can lead to increased work motivation, greater commitment, and a greater willingness to contribute to the organization's success and growth. Employees who identify with their organization are more likely to engage in behaviors that align with organizational objectives, fostering innovation, collaboration, and long-term growth.

4) Employee Innovation Behavior

Employee innovation behavior refers to proactive efforts by employees to generate new ideas, methods, or solutions to improve work processes, products, or services. Such behavior encompasses activities such as developing innovative products, optimizing operational processes, and crafting novel market strategies, all of which contribute to an organization's innovation and growth. By engaging in innovative behaviors, employees create competitive advantages and drive value creation for their organizations, positioning them for sustained success in an ever-changing business landscape.

1.8 Benefits of the Study

The theoretical significance of this study lies primarily in its examination of the applicability of workplace fun. Currently, most empirical research on workplace fun originates from foreign contexts, with limited domestic research in China, which remains in its early exploratory stages. Through empirical investigation, this study aims to examine whether foreign theoretical studies on workplace fun exhibit cross-cultural variability when applied in Chinese organizations. By doing so, it seeks to contribute to refining the theoretical framework of workplace fun, specifically its applicability boundaries within the Chinese cultural context.

This study also endeavors to deepen the understanding of workplace fun's applicability in the Chinese cultural setting and the mechanisms that influence employees' innovation behaviors. Additionally, it explores the influence of organizational identification on employee innovation behavior. These insights are expected to enrich and expand the theoretical systems of workplace fun and organizational identification. By integrating these concepts, the research provides a robust foundation for understanding how to foster a positive work atmosphere and enhance employee innovation, thereby contributing to the broader field of organizational behavior and management theory.

The practical value of this study for IT enterprise management lies in its exploration of the close relationship between workplace fun and employee innovation behavior, as well as the actionable recommendations it offers managers. As a positive emotional experience, workplace fun can stimulate employees' creativity and exploratory spirit, encouraging the generation of innovative ideas and behaviors. By cultivating an enjoyable and relaxing work environment, addressing employees' intrinsic need for fun, and activating their innovative potential, IT companies can achieve several benefits:

1) Improved Job Satisfaction and Happiness: A fun work environment enhances employees' overall job satisfaction and emotional well-being, creating a more

engaged workforce.

2) Strengthened Organizational Cohesion: By fostering shared positive experiences, workplace fun can strengthen team dynamics and organizational cohesion, increasing employee loyalty and collaboration.

3) Enhanced Corporate Competitiveness: Encouraging innovation through workplace fun enables companies to remain competitive in fast-changing markets, particularly in IT, where innovation is a key driver of success.

4) Sustainable Development: By aligning employees' creative contributions with organizational goals, companies can ensure long-term growth and adaptability in a dynamic business environment.

Ultimately, this study provides valuable insights for IT companies seeking to leverage workplace fun as a strategic tool to enhance employee innovation, boost morale, and achieve sustainable development. Managers are encouraged to adopt practices that integrate fun into daily work routines, such as team-building activities, flexible work arrangements, and creative office designs, to stimulate both individual and organizational performance.
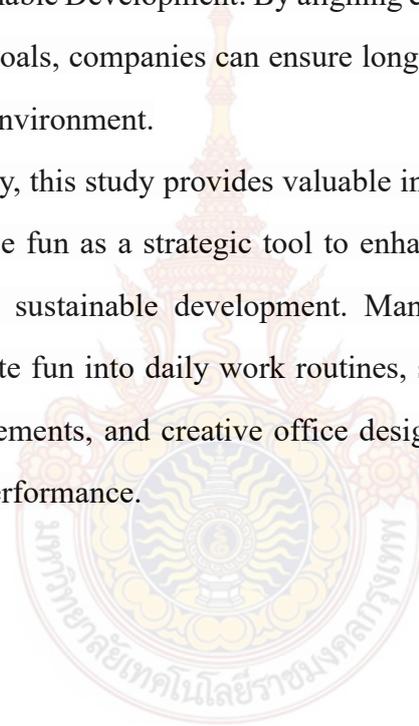
CHAPTER II

LITERATURE REVIEW

2.1 Related Theories

2.1.1 Social Exchange Theory

Social exchange theory is an important theoretical framework for understanding and explaining individuals' behavior in social relationships. The theory suggests that people engage in social exchange by balancing the returns they expect to receive with the costs of their inputs. From the perspective of employee-organization relationships, social exchange theory helps to explain behaviors such as employee loyalty to the organization, level of commitment, and willingness to leave.

In social exchange theory, individuals consider several factors when deciding whether or not to participate in a particular social exchange. First, individuals expect to receive some reward or benefit from participating in an exchange, such as money, status, and social recognition (Blau, 1964). Second, individuals will evaluate the costs they incur, including investments of time, energy, and labor (Homans, 1958). Finally, individuals will compare themselves with other possible alternatives to determine whether they choose to participate in this exchange relationship (Emerson, 1976).

From the perspective of the employee-organization relationship, the employee's input to the organization can include contributions of resources such as time, labor, and skills. In turn, the organization provides rewards such as pay, benefits, and opportunities for advancement. This social exchange relationship influences employees' attitudes and behaviors toward the organization. For example, when employees perceive that the rewards offered by the organization are disproportionate to their efforts, they may reduce their work inputs, leading to employee turnover and a decline in organizational performance.

In addition, social exchange theory emphasizes reciprocity in exchange relationships. Employees tend to respond accordingly to the rewards offered by the organization, thereby creating a reciprocal relationship that fosters a positive relationship between the organization and its employees (Blau, 1964).

Overall, social exchange theory offers a robust theoretical framework for understanding the relationship between employees and organizations, highlighting the balance between individual inputs and rewards, as well as the importance of reciprocal exchange in fostering and sustaining organizational relationships.

2.1.2 Affective Event Theory

Affective events theory is a concept in management and sociology that emphasizes the significant impact of affective events on employee behavior and organizational effectiveness. According to this theory, affective events refer to occurrences within an organization that can trigger emotional experiences, including those related to leadership behavior, coworker interactions, and the work environment. Affective events not only influence employees' moods and affective states but also impact their work attitudes, performance, and organizational commitment.

The theory of affective events emphasizes the impact of three aspects of affective communication —namely, affective labor, affective cognition, and the employee-organization relationship.

First, affective transmission refers to the process by which emotions spread within an organization. According to Ashkanasy et al. (2002), leaders' emotional expressions and behaviors influence employees' emotional experiences, which, in turn, impact their work attitudes and performance.

Secondly, emotional labor refers to the need for employees to display emotions at work that are inconsistent with their genuine emotions. Hochschild (1983) noted that this emotional labor can lead to emotional fatigue and job stress among employees, ultimately affecting their job satisfaction and overall quality of life.

Ultimately, affective cognition highlights the influence of employees'

perceptions and interpretations of emotional events on their emotional experiences and subsequent behavioral responses. Cropanzano and Mitchell (2005) demonstrated that employees have varying perceptions of fairness events within organizations, and that these perceptions influence their emotional experiences and motivation to work. For example, employees' perceptions of fairness may enhance their commitment and work engagement with the organization.

2.1.3 Workplace Fun

(1) Antecedent variables of workplace fun

The formation of workplace fun is not accidental; both individual and organizational levels influence it. At the individual level, employees' attitudes and preferences regarding fun are key factors in shaping the workplace experience. Research has shown that gender and personality traits play a significant role in this. For example, a study by Ford et al. (2003) found that organizations with a higher proportion of males were more likely to engage in frequent fun activities. Meanwhile, employees who are optimistic, positive, and outgoing are more likely to experience workplace fun, as shown in a study by Karl et al. (2007). In addition, preferences for fun activities vary by gender, with men being more inclined to engage in competitive activities, such as games. At the same time, women may favor social activities, such as group dinners (Menzifang, 2013).

At the organizational level, the type of organization and organizational trust significantly influence the formation of fun in the workplace. Different types of organizations show different preferences in promoting fun activities. For example, Zhang's (2012) study showed that private companies tend to focus more on the fun aspect of activities, such as company group building, while state-owned companies tend to focus more on promoting communication among coworkers. Additionally, organizational trust is a crucial factor that influences workplace enjoyment and fun. When employees have low trust in their coworkers or leaders, they may be resistant to workplace fun activities and be less willing to participate (Gong, 2021).

(2) Outcome variables of workplace fun

The impact of workplace fun is dual, as it can foster both positive and negative work attitudes and behaviors.

In terms of positive impact, it first manifests in improved employees' work attitudes. Fun activities can create a relaxing and enjoyable work environment, enhancing trust among employees, their colleagues, and leaders, and thereby increasing employee satisfaction with the organization (Chan, 2010). Additionally, fun can enhance employees' work engagement, particularly when they feel supported by their supervisors and have a good rapport with their coworkers (Müceldili, 2016). According to the Job Requirements-Resources Theory, fun activities can serve as job resources that promote employees' work engagement through psychological capital (Tsaur et al., 2019). Also, fun can reduce employees' tendency to leave their jobs and make them more willing to work towards the organization's goals (Tews et al., 2014).

In addition to its positive impact on work attitudes, fun also promotes better employee performance through work behaviors. Research has shown that fun can stimulate employees' intrinsic motivation, thereby enhancing their creativity (Ni, 2022). In addition, fun activities can promote innovative behavior, enhance performance, and facilitate informal learning among employees (Shi et al., 2019; Tews et al., 2014).

However, workplace fun can also have adverse effects. Some employees may be resistant to overly relaxed work environments, especially when fun activities are not formalized enough or affect their productivity (Yu, 2021). Additionally, overly enjoyable work environments may also lead employees to develop work derailment behaviors (Plester, 2016).

In summary, the formation of fun in the workplace is influenced by a combination of individual and organizational factors, which can lead to both positive and negative attitudes and behaviors. Therefore, when designing and implementing fun activities, organizations need to consider a combination of factors to maximize their positive effects and avoid potential negative impacts.

Based on social exchange theory, organizations create a relaxed, enjoyable work environment through team building and by improving both internal and external conditions. In this way, organizations can motivate employees to develop a rewarding sense of obligation, which, in turn, inspires them to innovate in their work, thereby achieving the goal of organizational innovation and development.

2.1.4 Organizational Identification

(1) Antecedent Variables of Organizational Identification

Comprehensive research by related scholars on organizational identification has found that a combination of organizational- and individual-level factors influences the formation of an individual's organizational identification.

At the organizational level, several factors significantly influence individuals' organizational identification. For example, organizational reputation is considered a crucial antecedent variable influencing organizational identification. A strong organizational reputation enhances employees' pride and identification with the organization (Ashforth & Mael, 1989). On the other hand, poor organizational reputation may lead to employee alienation and dissatisfaction with the organization (Smidts et al., 2001). Organizational climate also significantly impacts organizational identification. Employees are more likely to identify with the organization when the internal and external environments are consistent and provide positive support for employee development (Mael & Ashforth, 1992). However, an overly competitive organizational climate may weaken employees' identification with the organization, prompting them to seek exit options (Hogg, 2001). Organizational culture is another influential factor; a supportive organizational culture enhances employees' identification with the organization (Chatman & Jehn, 1994), whereas a bureaucratic organizational culture may lead to employees' alienation from the organization (Ashforth & Mael, 1989). In addition, organizational support is a key factor influencing organizational identification (Eisenberger et al., 1986). Employees are more likely to identify with an organization when they feel supported and cared for by the organization.

At the individual level, factors such as positive emotions and psychological capital also influence organizational identification. Positive emotional states promote employees' positive perceptions of the organization, thereby enhancing organizational identification (Rhoades & Eisenberger, 2002). Additionally, psychological capital, a positive state of mind, contributes to employees' sense of identification and belonging to the organization (Luthans et al., 2007).

(2) Outcome Variables of Organizational Identification

By synthesizing research by domestic and international scholars on organizational identification, it can be observed that its impact on individuals primarily falls into two categories: positive and negative.

First, from the perspective of the positive impact of organizational identification, it is closely related to an individual's work attitude, pro-organizational behavior, creativity, happiness, and employees' proactive change behavior, among other factors. Riketta's (2005) study reveals a positive relationship between organizational identification and work attitudes and pro-organizational behavior, indicating that employees with high organizational identification are more likely to exhibit positive work attitudes and engage in pro-organizational behaviors. Brown's (2013) study found that the higher an employee's identification with the organization, the higher his/her job performance and creativity tend to be. Li (2020) noted that employees who strongly identify with the organization are more likely to prioritize the organization's interests, leading to greater happiness and a stronger sense of belonging. In addition, Li's (2022) study demonstrated that the extent to which employees identify with the organization influences their acceptance of change, particularly among veteran employees who contribute more to the organization.

Second, the negative impact of organizational identification may lead to adverse outcomes, such as mergers and acquisitions, individual turnover, and job burnout. In terms of organizational mergers and acquisitions and employee turnover, it has been found that employees with a high level of organizational identification are

more inclined to form a close psychological bond with the organization and are willing to work towards the organization's goals, but in the context of change, this psychological bond may be negatively impacted (Luo, 2015; Wang, 2022). In addition, scholars such as Vuuren (2010) have argued that employees' disapproval of the merged organization may lead to problems, including decreased work efficiency. Regarding job burnout, Hao's (2022) study found that organizational identification has an adverse predictive effect on job burnout, particularly in specific industries such as smart manufacturing.

2.1.5 Employee Innovation Behavior

(1) Antecedent Variables of Employee Innovation Behavior

By combining the relevant literature, we found that several antecedent variables, including individual, organizational, and social environment factors, influence employee innovation behavior.

In terms of individual factors, personal traits and leader type are important influences. Personal traits include intrinsic motivation, self-efficacy for innovation, and job insecurity. Research has shown that when employees perceive differences in identification within the organization, intrinsic motivation may decline, thereby reducing the generation of innovative behaviors (Chen et al., 2021). Additionally, an individual's confidence in their ability to innovate can impact their performance at work (Mussner et al., 2017). In terms of leader type, leaders differ in their effects on employees' innovation behavior. For example, empathetic leaders can stimulate employees' motivation to innovate, while abusive leaders may harm employees' innovation behavior (Kock et al., 2019; Zhang, 2016).

Organizational factors include organizational climate and innovation climate. A good organizational climate can stimulate employees' motivation and enhance work efficiency (Jiang, 2020; Gu et al., 2010). In addition, the organizational innovation atmosphere plays a significant role in shaping employees' innovation behavior, thereby influencing the organization's overall innovative performance (Shu,

2018).

Social environment factors mainly include ethnic conflict and family support. Research has shown that when members within an organization experience less racial conflict and frustration, it is conducive to stimulating employees' innovative awareness and behavior (Reade et al., 2016). Additionally, family support can alleviate employees' work-related concerns, allowing them to focus more on their work and exhibit more innovative behavior (Ma et al., 2020).

(2) Outcome Variables of Employee Innovation Behavior

The outcome variables of employee innovation behavior exhibit both positive and negative impacts.

In terms of positive impact, employee innovation behavior can enhance job satisfaction and overall organizational innovation performance. Studies have shown that job satisfaction is closely related to innovation behavior, and that innovation behavior can also promote the organization's innovative performance (Cao, 2021; Zhou, 2003; Li et al., 2017).

In terms of negative impacts, employees' innovative behaviors may lead to feelings of alienation, generate tension and anxiety, and foster a tendency toward job hopping. For example, innovative behaviors may exacerbate tensions among employees, leading to increased feelings of alienation (Janssen, 2003; Liang, 2021). At the same time, employees with a strong willingness to innovate may be more inclined to job-hop in pursuit of greater challenges and opportunities (Shih, 2011).

2.2 Related Studies

2.2.1 Study on Workplace Fun and Employees' Innovation Behavior

After combing through the relevant literature, this paper finds that the impact of workplace fun on employees' innovation behavior is as follows:

First, Ford found that employees tend to experience positive emotions when

they feel supported by their organizations, which promotes organizational satisfaction and, in turn, encourages them to generate new ideas and behaviors.

Second, Fluegge et al. (2014) demonstrated that the organization's implementation of engaging activities can enhance employees' motivation, including job performance and innovative behavior. The study by Qu et al. (2019) showed that employees' positive emotions not only enhance job satisfaction but also create greater value for the organization, including engaging in more challenging work and generating innovative behaviors.

Finally, Shi's (2016) findings showed that workplace fun positively affects employee innovation behavior. According to social exchange theory, employees who believe that the organization's fun activities will obligate them to reciprocate will put in greater effort at work and contribute to the organization's development.

Therefore, based on the above research, this paper proposes the following hypotheses:

H1: Workplace fun positively influences employees' innovative behavior.

2.2.2 Organizational Identification and Employees' Innovation Behavior

Based on a review of the literature on the relationship between organizational identification and employee innovation behavior, scholars generally agree that organizational identification positively promotes employee innovation. Zhao (2022) found that organizational identification positively affects employee innovation behavior in the Chinese corporate environment. Xiong (2023) et al. investigated the relationship between high-performance work systems and employee innovation behavior, finding that organizational identification partially mediates this relationship. They concluded that organizational identification is positively related to employee innovation behavior. Based on the above studies, this paper proposes the following hypotheses:

Meanwhile, organizational identification is influenced not only by extrinsic and intrinsic factors but also affects individual thoughts and behaviors. Firstly, from the perspective of the influence of extrinsic and intrinsic factors on organizational identification, scholar Zhan (2011) studied in depth the factors affecting the job performance of new generation employees and found that employees' intrinsic feelings of work happiness can positively impact both organizational identification and job performance. Lu (2013) investigated the relationship between transformational leadership and employee performance in Chinese companies, finding a correlation between transformational leadership and organizational identification. Secondly, regarding the influence of organizational identification on employees' thoughts and behaviors, Yang (2013) argued that organizational identification positively affects employees' job performance during the work process.

Affective event theory explains employees' affective responses from the path of "event-emotion-attitude-behavior", and IT companies organize team building activities (events) for employees, who tend to have positive emotions (feelings), which increase their sense of identification with the organization, and then affect their performance at work, and are more likely to produce innovative behaviors. Behavior. For example, employees who spend a long time in a boring workplace are more likely to experience negative emotions, and their sense of organizational identification is further reduced, leading them to be more reluctant to make new attempts and work towards achieving innovative goals for the organization. Based on the above research, this paper proposes the following hypothesis:

H2: Organizational identification positively influences employee innovation behavior.

2.2.3 Effects of Demographic Variables on Employee Innovation Behavior

In addition to examining the relationship between workplace fun and employee innovation behavior, this study will also consider the potential impact of

demographic variables. Age is positively correlated with experience accumulation, and older employees may have accumulated more experience in the workplace and in innovation. They may have a better understanding of how to innovate and solve problems, and have a better foundation for innovation. More educated employees usually have more education and training. They may possess stronger observation, problem-solving, and innovation skills, all of which contribute to promoting innovative behavior. Research shows that women tend to be more sensitive in perceiving the work environment. They may be adept at detecting subtle changes in the workplace, which can facilitate innovative behavior. Additionally, female employees may be more detail-oriented, which can enhance their innovation behavior. Based on the above research, this paper proposes the following hypotheses:

H3: Differences in demographic factors (including gender, age, educational background, and years of service) can affect employee innovation behavior.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Research Design

The purpose of this study is to investigate the effect of workplace fun and organizational identification on employees' innovation behavior. To achieve this objective, the study employed the questionnaire method as its primary research approach. The questionnaire method was chosen because it is effective for collecting large amounts of data and allows quantitative analysis of variables.

The research sample was randomly selected from employees of local IT companies in Kunming, with an expected sample size of 400. The questionnaires were distributed via an online platform, with appropriate measures in place to ensure anonymity and confidentiality, thereby protecting participants' privacy.

The questionnaire for this study utilized established scales from both domestic and international sources, supplemented with basic demographic information, such as gender, age, and education. It focused on three core issues: workplace enjoyment, organizational identification, and employee innovation behavior. Data analysis was conducted using SPSS to examine the direct and indirect effects of workplace fun on employee innovation behavior, employing descriptive statistics, correlation analysis, and regression.

Throughout the study, ethical norms were adhered to, and the wishes of each participant were respected, ensuring that they could participate voluntarily and had the right to withdraw at any time. At the same time, the researcher solemnly promised that all data collected would be strictly limited to the use for the study, and that appropriate measures were taken to properly store and dispose of the data after the completion of the study to ensure that the privacy of the participants was adequately protected, and that there was no leakage or misuse of the data.

3.2 Research Population and Samples

Research population: The target population of this study comprised employees of IT companies in Yunnan Province.

Sample selection: To obtain a representative sample, the researcher employed two random sampling methods. First, from the IT companies within the scope of Yunnan Province, 10 companies were randomly selected that have been in regular operation for more than 10 years. Then, within these 10 companies, another 40 employees were randomly selected as the research sample.

Sample size and representativeness: The final sample comprised 400 employees from IT companies across diverse regions and types of IT companies in Yunnan Province. This sample size was considered sufficiently large to represent IT companies across the entire province of Yunnan.

Throughout the study, we consistently uphold employees' privacy and rights and protect them. The researcher informed all participating employees of the purpose, methodology, and significance of the study, and ensured that they voluntarily participated and signed the informed consent form based on a complete understanding. In addition, the researcher is fully aware of the importance of data security and confidentiality and has therefore taken strict, thorough measures to ensure that the data collected from our employees is fully protected and never leaked or misused. It is committed to using the data solely for research and analysis, and not for any other purposes. Through these initiatives, the researcher aims to create a safe and secure research environment in which employees can participate with confidence and work together to promote further research.

3.3 Data Collection

This questionnaire was collected mainly online. The selected research subjects are all employees of IT companies, currently holding positions such as

management, sales, and technology. Before data processing, the following steps were taken to ensure the accuracy and reliability of the research data, providing a solid foundation for subsequent data analysis.

First, excluding questionnaires with response times of less than 30 seconds is an effective quality control tool. A shorter response time may imply that the filler did not read or understand the questionnaire content carefully, but instead filled it out randomly or answered quickly to complete the task. Data from such questionnaires is likely to be inaccurate or invalid, so it is reasonable to exclude them.

Secondly, questionnaires whose completion targets do not fit the scope of this study should also be excluded. Since the target of this study is employees of IT companies, and the positions include management, sales, technology, etc., only questionnaires that meet these conditions have research value. Non-target groups may have completed questionnaires that do not meet these conditions, and their data may not accurately reflect the information needed for the study; therefore, they should be excluded from the analysis.

In addition, questionnaires with inconsistent options or those that do not conform to common sense should also be considered invalid. Such questionnaires may result from carelessness or misunderstanding on the part of the person completing them, and their data may contain obvious logical errors or be unrealistic. Therefore, excluding these questionnaires can improve the consistency and reliability of the data.

Finally, invalid questionnaires with only one completed record should also be excluded. This may be due to problems or interruptions in the filler's completion process, resulting in incomplete or unusable questionnaire data. Excluding these questionnaires ensured that the final data set is complete and valid.

3.4 Research Instrument

This study aims to thoroughly examine the relationships among various

variables among employees in IT companies. To achieve this, questionnaires were distributed and relevant information was collected through online and multi-channel methods, revealing the intrinsic connections among these variables. To ensure the scientific validity of the study, this study utilized established scales from both domestic and international sources as the primary components of the questionnaire, with their reliability and validity verified to be above 0.7. Additionally, the questionnaire included basic information such as gender, age, and education to provide a comprehensive understanding of employees' personal characteristics.

In terms of questionnaire design, this study's questionnaire is divided into two parts. The first part focuses on personal information, including key elements such as gender, age, education, etc. This information helps us understand employees' background characteristics and provides an important reference for subsequent analysis. The second part is the core part of the questionnaire and contains measurement scales for three key variables.

The first is the Workplace Enjoyment Measurement Scale, a 19-item scale designed to assess the degree of workplace enjoyment employees experience and how this enjoyment affects their attitudes and behaviors at work. This scale provides insight into the specific manifestations and mechanisms of workplace fun.

Next is the Organizational Identification Scale, comprising 6 items that measure an employee's sense of identification and belonging to the organization. Organizational identification is a crucial foundation for establishing a strong bond between employees and the organization, and has a significant impact on employee loyalty, job satisfaction, and overall performance. Through this scale, we can explore the specific role of organizational identification in employee behavior.

Finally, the Employee Innovation Behavior Scale, comprising 6 items, is designed to assess employees' innovative performance and willingness to innovate at work. Innovation is an indispensable element in modern companies and is of great significance to their competitiveness and sustainable development. Using this scale, we

can understand the specific performance and influencing factors of employees' innovation behavior, providing powerful support for companies in formulating innovative strategies.

3.4.1 Scales

Workplace fun: To better match the actual working environment and cultural background of Chinese IT employees, this study selected the Workplace Enjoyment Scale, developed in the Chinese context and successfully adopted by Tang et al. (2015). The scale consisted of 19 items that cover diverse aspects of workplace enjoyment, such as "fun team building activities" and "fun internal welfare activities." The scale used a 5-point Likert scale and is designed to systematically and objectively assess the degree of enjoyment employees experience in the workplace. Using this scale, the researcher aims to gain a deeper understanding of how employees in Chinese IT companies experience fun at work, thereby providing strong support for enhancing job satisfaction and stimulating creativity. At the same time, the researcher has retained the original citations and made appropriate rewrites based on them to ensure the study's accuracy and rigor. As shown in Table 3.1.

Organizational identification: To comprehensively and accurately assess employees' organizational identification in IT companies, this study used the scale developed and compiled by Ashforth et al. (1992). This scale, with six items, was well-designed and effectively captured employees' sense of identification and belonging to the organization in depth. For example, the items in the scale, such *as "I feel bad when someone makes bad comments about my company*" and *"I care about the evaluation and attitude of the outside world toward my company*," reflect not only the sensitivity and concern of employees about organizational reputation, but also the sensitivity of employees to the reputation of the organization. Concern, but also reflects employees' recognition and maintenance of organizational values. In terms of data collection, this study employed the 5-point Likert scale, a widely used attitude scale that effectively quantifies the varying degrees of employees' identification with the organization.

Through this method, we can analyze employees' organizational identification and its influencing factors more objectively and precisely, thereby providing targeted suggestions for corporate management practices. As shown in Table 3.2.

Employee Innovation Behavior: To thoroughly examine employees' innovation behavior in IT companies, this paper uses the Employee Innovation Behavior Scale developed by Scott et al. (1994). This scale has been widely validated and demonstrates high reliability and validity, enabling it to comprehensively and accurately assess employees' innovative performance. The scale consisted of six items, each closely related to the innovation behaviors demonstrated by employees in their daily work, such as "*I often look for new ways*" and "*I often come up with creative ideas*."As shown in Table 3.3.

For data collection and analysis, the researcher employed the 5-point Likert scale, a commonly used attitudinal scale that can effectively quantify the different levels of employees' innovation behaviors. Through this method, the researcher was able to assess employee innovation more objectively and accurately and to explore its relationship with organizational performance and personal development.

Table 3.1 Workplace Fun Scale

Serial No.	Aspects	Question Items
1		Colleagues share jokes and humor in various forms.
2		Colleagues play jokes on each other through fun activities.
3	socialization	Social activities, such as drinks, meals, or small celebrations, are held among colleagues after work.
4		Informal themed events, such as mixers or family events, are organized among colleagues.
5		Entertainment activities, such as listening to music or surfing the internet, can be enjoyed while working.
6	attitude	Flexibility is allowed in deciding work hours and scheduling.
7	environment	The workplace environment is designed to be pleasant and conducive to productivity.

Serial No.	Aspects	Question Items
9		Leisure facilities, such as pool tables or internet cafes, are added to enhance the workplace environment.
16		The internal and external landscape environment of the organization is improved and constructed.
8		Small games and entertainment activities are provided during breaks or lunchtime.
14	atmospheres	Refreshments or working meals are provided to enhance communication among colleagues and foster a positive team atmosphere.
10		Small celebrations are held to celebrate good performance.
11		Psychological counseling or adjustment activities are provided to support employees' mental health.
12		Fun team-building activities, such as outdoor expansion and group-themed games, are organized.
13		Relaxing, enjoyable workshops and training sessions are held, covering topics such as art appreciation.
15	activities	Collective outings for entertainment, such as movie screenings or picnics, are organized to promote team cohesion and foster relationships among employees.
17		Fun internal welfare activities, such as lotteries or product auctions, are held to add fun and surprises for employees.
18		Consolation activities, such as holiday family visits or gift-giving, are organized to express care and gratitude to employees.
19		Celebrations for holidays or other commemorative days, featuring singing and dancing performances, are held to create a joyful atmosphere and showcase the team's vitality and charm.

Table 3.2 Organizational Identification Scale

Serial No.	Question Items
1	I feel uncomfortable when the company I work for is negatively reviewed.
2	I care about what the outside world says about the company I work for
3	Whenever I talk about the company I work for, I use the word "we" instead of "they"

Serial No.	Question Items
1	I feel uncomfortable when the company I work for is negatively reviewed.
4	I consider the company's success to be my success.
5	I feel proud when people praise the company I work for
6	I get embarrassed when confronted with criticism from the news media about the company I work for

Table 3.3 Employee Innovation Behavior Scale

Serial No.	Question Items
1	In my work, I frequently seek innovative solutions to problems.
2	I am always able to come up with creative ideas.
3	I often share my new ideas with others.
4	In order to realize the new idea, I will find a way to get the resources I need
5	To realize the new idea, I will plan accordingly.
6	Overall, I have a creative spirit.

3.4.2 Data Analysis Tools

In this study, the researcher used SPSS to analyze the collected questionnaire data thoroughly. SPSS, a powerful statistical analysis tool, offers a wealth of data analysis methods and a flexible interface, enabling us to process and analyze data quickly and accurately.

First, strictly screened and organized the collected questionnaires. In this process, the researcher eliminated all invalid questionnaires to ensure the accuracy and reliability of the data. The exclusion criteria for invalid questionnaires included a response time that was too short, the target population not fitting the study's scope, and options that were inconsistent or did not make sense. Through this step, we successfully screened out the valid questionnaires, laying a solid foundation for the subsequent data analysis.

Next, the researcher organized the screened, valid questionnaires and analyzed the basic information in detail. The basic information included key elements such as gender, age, education, etc. The analysis of this information helped us

understand the sample's basic characteristics and distribution. Through descriptive statistics analysis, we obtained statistical quantities such as the mean, standard deviation, and frequency distribution of the sample, which provided an important reference for further understanding the sample.

After completing the analysis of the basic information, the researcher also utilized the powerful functions of SPSS 25.0 for more in-depth data mining and statistical analysis. We used correlation analysis, regression analysis, ANOVA, and other statistical methods to explore relationships among variables and reveal patterns and trends hidden in the data.

3.5 Content Validity and Reliability

In this study, Cronbach's alpha coefficient was used to test the reliability of the collected data. This coefficient is a commonly used indicator of internal consistency reliability and can effectively measure the degree of correlation among questionnaire items. Using SPSS, we conducted an in-depth reliability analysis of the scale. According to academic consensus, the minimum acceptable reliability coefficient is typically set at 0.7. In this study, we also adhered to this standard and used Cronbach's alpha as the primary measure of scale reliability. When the coefficient value reaches or exceeds 0.7, we can consider the scale to have high internal consistency and that the collected data are reliable and valid. By applying the Cronbach's Alpha coefficient to the test, we can not only ensure the data's reliability but also provide a solid foundation for subsequent statistical analysis. This step is crucial in research, as it helps enhance the accuracy and credibility of the study, ensuring the reliability of the conclusions.

In terms of content validity, the measurement scales for the three variables selected in this paper are all derived from established scales developed at home and abroad, which have been widely verified and applied and possess high standardization and reliability. Standard judgment thresholds are set for each scale, providing a clear

basis for data analysis and interpretation of results. Specifically, the Workplace Pleasure Measurement Scale, the Organizational Identification Scale, and the Employee Innovation Behavior Scale are grounded in a substantial body of theoretical and practical research and have undergone rigorous compilation and revision to ensure accuracy and validity. These scales are not only well-designed in terms of item content but also comprehensively reflect the core characteristics of each variable, thereby ensuring the accuracy and depth of our study. Therefore, it can be concluded that the measurement scales for the three variables used in this paper demonstrate good content validity, providing strong assurance of the study's smooth conduct and the reliability of the results. This also further enhances our confidence in the study's findings, making the results of this paper more persuasive and practically instructive.

3.6 Data Analysis

This paper employed a range of analytical methods to provide a comprehensive and in-depth exploration of the variables under study and their relationships. The specific analytical methods to be used, along with their overviews, are presented below.

3.6.1 Descriptive Statistics

Descriptive statistics were used to analyze the demographic characteristics of the respondents, including gender, age, education, and years of service.

Descriptive statistical analysis was used to describe and summarize the data, and includes the following metrics:

Mean: The average of the data, used to measure the central tendency of the data.

Standard Deviation: A measure of the degree of dispersion of the data, indicating the variability of the data.

Frequency: The number of times each value occurs in the data set and

applies to categorical data.

Percentage: Percentage of respondents in each category.

3.6.2 Inferential Statistics

The data were analyzed using inferential statistics to test the hypotheses at a 0.05 statistical significance level. Additionally, the collected data underwent reliability and validity tests to ensure the consistency and accuracy of the measurement instruments. Correlation analysis was also performed to examine the relationships among the variables, providing further support for the study's findings.

H1: Workplace fun positively influences employees' innovative behavior. In other words, when employees in IT firms feel fun in their work environment, they are more likely to exhibit innovative behaviors.

This hypothesis was tested in this study using correlation and linear regression analyses.

H2: Organizational identification positively influences employees' innovation behaviors. This means that when employees have a strong sense of identification with the organization, they are more likely to exhibit innovative behavior and contribute to the company's innovation.

This hypothesis was tested in this study using correlation and linear regression analyses.

H3: Differences in demographic factors (including gender, age, educational background, and years of service) affect differences in employee innovation behavior.

This hypothesis was tested in this study through one-way ANOVA.

CHAPTER IV

ANALYSIS RESULT

In this paper, the collected data were thoroughly analyzed using data analysis software such as SPSS 25.0. Firstly, the researcher thoroughly screened the collected questionnaire data, eliminating invalid responses to ensure the accuracy and representativeness of the remaining data. Then, the valid data were organized and analyzed, with a particular focus on descriptive statistics of the participants' basic information, laying a solid foundation for subsequent in-depth analysis.

4.1 Descriptive Statistics

A total of 400 valid questionnaires were selected for this survey. The gender distribution of participants was relatively balanced, with slightly more female respondents. In terms of age, the majority of participants fell within the 26-35 and 36-45 age groups, reflecting the active involvement of middle-aged and young adults. Regarding education, most respondents held a bachelor's degree or higher, indicating a high level of educational attainment. For work experience, the majority had 4-6 years, suggesting that participants generally possessed a certain level of professional expertise. As for job roles, most were concentrated in functional departments and technical or research and development positions. The specific statistical characteristics of the sample data are shown in Table 4.1, and the basic statistical information of the participants is analyzed as follows:

1) In terms of gender in this survey, males accounted for 47.5% (190 participants), while females represented 52.5% (210 participants). The proportion of females was slightly higher than that of males, resulting in a relatively balanced gender distribution with a slight female predominance. This gender composition may be

influenced by the data-collection method or respondents' willingness to participate, suggesting greater engagement among females in the surveyed group.

2) In terms of age distribution, the age distribution of the survey respondents is as follows: 18-25 years old accounts for 23.5% (94 participants), 26-35 years old accounts for 33.5% (134 participants), 36-45 years old accounts for 25.75% (103 participants), and over 45 years old accounts for 17.25% (69 participants). The sample was mainly concentrated in the middle-aged and young age groups of 26-35 (33.5%) and 36-45 (25.75%), with the cumulative percentage of these two age groups reaching 59.25%. This suggests that the participants are primarily in the golden stage of their careers, with some experience and vigor.

3) In terms of education distribution, 15.25% (61 participants) have high school/secondary education or below, 23.5% (94 participants) have junior college, 44% (176 participants) have a bachelor's degree, and 17.25% (69 participants) have a master's degree or above. Participants with a bachelor's degree or higher accounted for 61.25%, indicating that the sample's overall educational level was high. This distribution of education helps ensure that survey participants have a higher cognitive level and a better understanding of the research topic.

4) In terms of the years of service, 17% (68 participants) of the participants had less than 1 year of work experience, 25% (100 participants) had 1-3 years of work experience, 33.25% (133 participants) had 4-6 years of work experience, and 24.75% (99 participants) had more than 6 years of work experience. Among the participants, those with 4-6 years of work experience accounted for the highest percentage at 33.25%, while those with 1-3 years and more than 6 years also accounted for larger percentages. On the whole, the work experience of the survey respondents is primarily concentrated in the 4-6 year range. These respondents may have a certain degree of career maturity and work experience.

5) In terms of job distribution: technology/R&D positions accounted for 24.75% (99 participants), product/project management positions accounted for 18.25%

(73 participants), marketing/operations/sales positions accounted for 15% (60 participants), customer service positions accounted for 17% (68 participants), and functional staff (such as human resources/administration/finance, etc.) accounted for 25% (100 participants). Functional positions (25%) and technical/research and development (24.75%) accounted for the largest share, indicating that a larger proportion of employees in the survey sample held support and technical positions. Additionally, product/project management and customer service positions are also represented, indicating that the sample encompasses various functions within the company's operations.

Table 4.1 Analysis of the Sample

Name	Option	Frequency	%	Cumulative %
Gender	Male	190	47.5	47.5
	Female	210	52.5	100
Age	18-25	94	23.5	23.5
	26-35	134	33.5	57
	36-45	103	25.75	82.75
	45	69	17.25	100
Education	High school or below	61	15.25	15.25
	Junior college	94	23.5	38.75
	Bachelor	176	44	82.75
	Master's or above	69	17.25	100
Years of service	<1 year	68	17	17
	1-3 years	100	25	42
	4-6 years	133	33.25	75.25
	6 years	99	24.75	100
Job Position	Tech/R&D	99	24.75	24.75
	Product/Project	73	18.25	43
	Marketing/Sales	60	15	58
	Customer Service	68	17	75
	HR/Admin/Finance	100	25	100
Total		400	100	100

Table 4.2 presents the descriptive statistics for the 19 items of Workplace Fun (WF) (labeled WF_1 to WF_19), which measure responses on a five-point Likert

scale, where 1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree, and 5 = Strongly Agree. The data includes frequencies for each response category, along with the mean and standard deviation (SD) for each item.

The frequency of each item shows the distribution of responses across the five-point scale. The most frequent response tends to cluster around "3 = Uncertain" or "4 = Agree," indicating a general tendency towards neutrality or agreement among respondents.

The mean scores for all items range from 2.93 to 3.02, suggesting that responses generally lean towards neutrality or mild agreement. Items WF 1, WF 17, and WF 16 have the highest mean scores of 3.02, indicating slightly higher agreement levels for these items. Item WF_15 has the lowest mean score of 2.93, indicating relatively less agreement or more uncertainty compared to other items.

The standard deviation across all items ranges from 0.846 to 0.958, indicating moderate variability in responses. WF_16 has the lowest SD (0.846), indicating that responses to this item are more consistent. WF_15 has the highest SD of 0.958, indicating greater variability in respondents' perceptions of this item.

Table 4.2 Descriptive Statistics of Workplace Fun

Question	1	2	3	4	5	Mean	SD
WF_1	20	89	177	91	23	3.02	0.939
WF_2	19	95	186	89	11	2.95	0.871
WF_3	10	102	182	91	15	3.00	0.857
WF_4	15	101	174	88	22	3.00	0.919
WF_5	17	105	171	89	18	2.97	0.914
WF_6	16	99	180	92	13	2.97	0.877
WF_7	20	110	160	96	14	2.94	0.924
WF_8	20	109	156	99	16	2.96	0.938
WF_9	19	94	180	94	13	2.97	0.889
WF_10	14	96	187	85	18	2.99	0.880
WF_11	14	96	186	90	14	2.99	0.864
WF_12	16	88	193	84	19	3.01	0.884
WF_13	16	109	168	85	22	2.97	0.931
WF_14	10	107	175	91	17	3.00	0.876

Question	1	2	3	4	5	Mean	SD
WF_15	30	92	170	92	16	2.93	0.958
WF_16	17	90	189	96	8	2.97	0.846
WF_17	14	97	173	100	16	3.02	0.891
WF_18	15	104	173	98	10	2.96	0.869
WF_19	15	103	183	87	12	2.95	0.862

Note: 1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree, 5 = Strongly Agree

As shown in Table 4.3, the descriptive statistics for six Organizational Identification (OI) items (OI_1 to OI_6) were measured on a five-point scale, where 1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree, and 5 = Strongly Agree. The data includes the frequency distribution for each response category, along with the mean and standard deviation (SD) for each item.

Frequency for each item displays the distribution of responses across the five categories.

The majority of responses for all items fall within "3 = Uncertain" and "4 = Agree," indicating a general trend toward neutrality or agreement. The frequency of "5 = Strongly Agree" responses is consistently lower than that of other categories.

The mean scores for all six items range from 3.21 to 3.29, indicating moderate agreement. Item OI_3 has the highest mean score of 3.29, reflecting slightly higher agreement levels. Items OI_4 and OI_5 share the lowest mean score of 3.21, indicating relatively less agreement compared to other items.

The standard deviations for all items range from 0.856 to 0.902, indicating moderate variability in responses. Item OI_1 has the lowest SD of 0.856, indicating more consistent responses. Item OI_4 has the highest SD of 0.902, indicating greater diversity in respondent opinions.

Table 4.3 Descriptive Statistics of Organizational Identification

Question	1	2	3	4	5	Mean	SD
OI_1	7	69	175	127	22	3.22	0.856
OI_2	5	78	160	135	22	3.23	0.868
OI_3	9	61	159	149	22	3.29	0.869

Question	1	2	3	4	5	Mean	SD
OI_4	11	75	153	140	21	3.21	0.902
OI_5	12	66	166	133	23	3.22	0.894
OI_6	10	58	171	136	25	3.27	0.874

Note: 1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree, 5 = Strongly Agree

Table 4.4 presents descriptive statistics for six items (EIB_1-EIB_6) measuring Employee Innovation Behavior (EIB). The responses are recorded on a five-point Likert scale, where 1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree, and 5 = Strongly Agree. The data includes frequency counts for each response category, as well as the mean and standard deviation (SD) for each item.

In the Frequency aspect, the majority of responses are concentrated around "3 = Uncertain" and "4 = Agree," indicating a neutral to slightly positive tendency. The frequency of "5 = Strongly Agree" responses is consistently low across all items, suggesting limited strong agreement with the statements.

The mean scores range from 2.97 to 3.04, reflecting a tendency towards neutrality or mild agreement. Item EIB_4 has the highest mean score of 3.04, indicating slightly stronger agreement compared to the other items. Item EIB_2 has the lowest mean score of 2.97, suggesting less agreement or greater neutrality than the other items.

The SD values range from 0.696 to 0.812, indicating moderate variability in responses. Item EIB_4 has the lowest SD of 0.696, meaning responses to this item are more consistent. Item EIB_1 has the highest SD of 0.812, indicating a broader range of opinions.

Table 4.4 Descriptive Statistics of Employee Innovation Behavior

Question	1	2	3	4	5	Mean	SD
EIB_1	14	83	206	88	9	2.99	0.812
EIB_2	9	83	223	82	3	2.97	0.730
EIB_3	9	76	231	82	2	2.98	0.711
EIB_4	5	73	227	93	2	3.04	0.696
EIB_5	9	88	199	97	7	3.01	0.790
EIB_6	6	88	209	91	6	3.01	0.754

Note: 1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree, 5 = Strongly Agree

4.2 Inferential Statistics

In inferential data analysis, the primary focus is on verifying relationships between variables, and the research hypotheses are progressively validated. The specific analysis method includes the following steps:

1) Reliability test: Cronbach's alpha coefficient was used to assess the reliability of each scale in the questionnaire, thereby evaluating the internal consistency of the scales and ensuring the reliability of each index.

2) Validity test: The validity test includes content validity, convergent validity, and discriminant validity. Content validity is ensured through the use of mature and reliable scales, which ensures the scientificity and rationality of measurement. Convergent and discriminant validity are established through factor analysis, ensuring that the scales accurately and effectively measure the concepts.

3) Correlation analysis: Pearson correlation analysis was employed to investigate the relationship between the variables, aiming to understand the initial connection between them and to provide a reference basis for subsequent causal analysis.

4) Regression analysis: Hierarchical regression was used in the regression analysis to verify the relationship between the independent and dependent variables. Hierarchical regression can help identify the relative influence of different variables, thereby revealing the interaction mechanisms between them in greater depth. In addition, workplace fun and organizational identification are continuous variables, so linear regression is used to test their influence on employees' innovative behavior.

5) Independent samples t-test: In this survey, gender is a two-point discrete variable; therefore, an independent samples t-test was used to analyze whether there is a difference between the demographic factor of gender and employee innovative behavior.

6) One-way analysis of variance (ANOVA): a one-way ANOVA was conducted for demographic variables (e.g., age, education level, years of experience,

and job position) to test whether there is a significant difference in the impact of these factors on employee innovative behavior, thus providing a more nuanced perspective on the results.

4.2.1 Reliability Test

In this paper, Cronbach's Alpha was used to assess the reliability of the collected data, ensuring the scale's internal consistency. Specifically, the reliability of each questionnaire item was analyzed using SPSS version 25.0. Cronbach's alpha is a statistic commonly used to measure the consistency of items within a scale, with values typically ranging from 0 to 1. It is widely accepted in academia that when the coefficient of reliability (Cronbach's alpha) is unsatisfactory, the scale cannot be used for reliability analysis. It is generally recognized that when the reliability coefficient (Cronbach's Alpha) is 0.7 or higher, the scale has acceptable reliability. This means that the scale items more effectively reflect the same concept.

Table 4.5 Variable Reliability Test Results

Variables	Item	Alpha
WF	19	0.966
OI	6	0.897
EIB	6	0.917

As shown in Table 4.5, the Cronbach's alpha coefficient for workplace fun is 0.966, exceeding 0.8, indicating very high internal consistency. This indicates that the correlation among the items is exceptionally high and that the measure's reliability meets the study's requirements. The Cronbach's alpha coefficient for organizational identification is 0.897, indicating a value above 0.8, suggesting the scale has high reliability. This indicates that there is a strong correlation among the scale items and that the scale has good reliability. The Cronbach's alpha coefficient for Employee Innovation Behavior is 0.917, exceeding 0.8, indicating high internal consistency. The correlation among the items is substantial, indicating greater reliability of the scale. The Alpha coefficients of the scales used in this study exceeded the minimum reliability

criterion of 0.7, indicating that all scales have reached a reasonable level of reliability and can measure the variables more accurately.

4.2.2 Validity Test

The validity test of the scale includes three main aspects: content validity, discriminant validity, and convergent validity. In this paper, the scale validity of the three variables was assessed from each of these three perspectives in order to ensure the scientific validity and accuracy of the study.

Content validity refers to whether a scale can comprehensively and accurately measure the variables under study. To ensure the content validity of the scales, the scales used in this paper for the three variables are based on mature scales that are widely used in China and abroad. These scales have been validated multiple times, feature a standardized design structure and clear determination thresholds, and can more effectively capture the core content of each research variable. Given their broad application and validation, these scales have sufficient content validity, enabling them to reflect the actual characteristics of each variable accurately.

Validity refers to a scale's ability to distinguish between different concepts or variables effectively. To test discriminant validity, the correlations among the variables were analyzed in this study. The arithmetic square root of the AVE value of each variable is greater than the correlation coefficient between the factor and other factors, as the criterion for determination.

Table 4.6 Discriminant Validity Test Results

Variables	WF	OI	EIB
WF	0.775		
OI	0.547**	0.77	
EIB	0.349**	0.504**	0.807

Note: ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$

As shown in Table 4.6, the data on the diagonal of the table (0.775, 0.77 and 0.807) are the arithmetic square roots of the AVE values of the variables, all of

which are greater than the correlation coefficients of the three variables, which is in line with the criteria for determining the discriminant validity of the scales, and indicates that the discriminant validity of the scales is good.

Convergent validity refers to the correlation between individual items within a scale. It is typically assessed by calculating the average variance extracted (AVE) and the composite reliability (CR) for each item.

Table 4.7 Convergent Validity Test Results

Variables	Questions	CR	AVE	Std. FL
Workplace Fun	WF_1	0.966	0.601	0.779
	WF_2			0.741
	WF_3			0.78
	WF_4			0.781
	WF_5			0.763
	WF_6			0.725
	WF_7			0.751
	WF_8			0.802
	WF_9			0.751
	WF_10			0.727
	WF_11			0.718
	WF_12			0.752
	WF_13			0.752
	WF_14			0.755
	WF_15			0.772
	WF_16			0.785
	WF_17			0.778
	WF_18			0.748
	WF_19			0.76
Organization Identification	OI_1	0.897	0.592	0.723
	OI_2			0.712
	OI_3			0.749
	OI_4			0.745
	OI_5			0.739
	OI_6			0.78
Employee Innovation Behavior	EIB_1	0.918	0.651	0.821
	EIB_2			0.808
	EIB_3			0.816
	EIB_4			0.814

Variables	Questions	CR	AVE	Std. FL
	EIB_5			0.806
	EIB_6			0.788

As can be seen from Table 4.7, the combined reliability CR value of each variable in this paper is greater than 0.7 in the range of 0.897~0.966, the average variance extracted AVE value is greater than 0.5 in the range of 0.592~0.651, and the standardized factor loading is greater than 0.5 in the range of 0.712~0.821, which is in line with the criterion of determination, and therefore indicates that the convergent validity of the scales is good.

4.2.3 Correlation Analysis

In this paper, SPSS 25.0 was used to test the correlation of the variables in the data, and the results of the test are shown in Table 4.8:

Table 4.8 Correlation Matrix

	1	2	3	4	5	6	7	8
1	1							
2	.547**	1						
3	.349**	.504**	1					
4	0.083	0.053	-0.045	1				
5	.336**	.485**	.933**	-.099*	1			
6	.204**	.235**	.395**	-0.079	.427**	1		
7	.297**	.475**	.936**	-0.068	.902**	.312**	1	
8	-.260**	-.367**	-.779**	.120*	-.843**	-.134**	-.849**	1

Note: N=400, *p<0.05, **p<0.01, ***p<0.001

Variables 1-3 represent workplace fun, organizational identification, and employee innovative behavior, respectively; variables 4-8 are the control variables: gender, age, education, years of experience, and job position.

Table 4.8 presents the results of the correlation analysis test between the eight variables. Although the correlation coefficients between the control variables are low, this paper focuses on the impact of workplace fun on employee innovation behavior, mainly exploring the relationship between workplace fun, organizational

identification and employee innovation behavior, while the basic information of individual employees, gender, age, education, years of service, and job position are not consistent with the research theme, so they will not be explored in the aspect of correlation. Based on the correlation analysis, the following correlations are drawn:

1) Workplace fun shows a significant positive correlation with employee innovation behavior ($r = 0.349$, $p < 0.01$). This indicates that when employees feel more fun at work, their innovative behavior increases significantly. Workplace fun can stimulate employees' motivation and creativity, thus enhancing their innovative performance in their daily work. This means that if companies want to promote employees' innovative behavior, they can create a more relaxed and enjoyable work environment by enhancing employees' job satisfaction.

2) There is also a positive correlation between organizational identification and employee innovation behavior ($r = 0.504$, $p < 0.01$). When employees have a high sense of organizational identification, their innovation behavior performance will be more active. Strong organizational identification makes employees feel a sense of belonging and responsibility, so they are willing to contribute more to the company's innovation and development. Enhancing employees' identification with the company effectively promotes their innovative behavior at work.

3) There is also a positive correlation between workplace fun and organizational identification ($r = 0.547$, $p < 0.01$), indicating a strong link between the two. When employees experience fun at work, their identification with the organization increases. This positive feedback helps build a stronger organizational culture, and employees are more likely to develop a sense of belonging and loyalty to the company in a happy work environment. By increasing the amount of fun at work, companies can not only improve their employees' ability to innovate but also strengthen their sense of identification with the organization.

4.2.4 Regression Analysis

The Influence of Workplace Fun and Organizational Identification on

Employees' Innovative Behavior.

In order to test research hypotheses 1 and 2: workplace fun has a positive Influence on the innovation behavior of employees in IT companies, as well as organizational identification has a positive Influence on the innovation behavior of employees in IT companies, this paper uses the SPSS 25.0 software to conduct regression analysis on the relationship between workplace fun as well as organizational identification and the employee innovation behavior of employees. The specific steps are as follows: employee innovation behavior is the dependent variable, workplace fun and organizational identification are the independent variables, and linear regression analysis, as well as covariance diagnosis and Durbin-Watson Statistic calculation, are employed. The regression results are shown in Table 4.9.

Table 4.9 Linear Regression Analysis Results

	Regression Coefficient	t	p	95% CI	Collinearity Diagnosis	
					VIF	Tolerance
Intercept	1.438	10.38	0.000	1.166 ~ 1.710	-	-
WF	0.094	2.045	0.042	0.004 ~ 0.184	1.426	0.701
OI	0.395	8.671	0.000	0.306 ~ 0.484	1.426	0.701
Sample Size				400		
R²				0.262		
Adjusted R²				0.258		
F-Statistic				F (2,397)=70.420,p=0.000		

Note: *Dependent Variable = Employee Innovative Behavior*
D-W Statistic = 1.812

Based on the analysis in Table 4.9, a regression analysis was conducted to evaluate the effects of Workplace Fun (WF) and Organizational Identification (OI) on Employee Innovative Behavior (EIB). The table summarizes the results, including regression coefficients, model fit, and collinearity diagnostics. Regression Coefficients shows that the intercept is 1.438, with a t-value of 10.38 (p < 0.01) and a 95% confidence interval (CI) ranging from 1.166 to 1.710. This value indicates the baseline EIB level when both WF and OI are zero. Workplace Fun (WF): The coefficient for WF

is 0.094, indicating that a one-unit increase in WF is associated with an increase of 0.094 in EIB. This relationship is statistically significant (t = 2.045, p = 0.042, 95% CI = 0.004-0.184). These results suggest that workplace fun has a positive, albeit weaker, influence on employee innovative behavior. Organizational Identification (OI): OI has a stronger positive effect on EIB, with a coefficient of 0.395 (t = 8.671, p < 0.01, 95% CI = 0.306-0.484). This indicates that a one-unit increase in OI corresponds to a 0.395-unit increase in EIB, making OI the more influential predictor in the model. The regression analysis was conducted with a sample of 400 observations, ensuring robust statistical power. The model explains 26.2% of the variance in EIB (R^2 = 0.262; Adjusted R^2 = 0.258), indicating moderate explanatory power. The F-statistic for the model is $F_{(2, 397)}$ = 70.420, p < 0.01, confirming the model's overall statistical significance. The variance inflation factor (VIF) values for both WF and OI are 1.426, with corresponding tolerance values of 0.701, indicating no multicollinearity concerns among the predictors. Durbin-Watson Statistic: The Durbin-Watson (D-W) statistic is 1.812, indicating no significant autocorrelation in the residuals, which supports the validity of the regression assumptions. The results demonstrate that both Workplace Fun (WF) and Organizational Identification (OI) significantly influence Employee Innovative Behavior (EIB). Among these predictors, OI has a more substantial effect, as evidenced by its larger regression coefficient and higher t-value. These results suggest that fostering a sense of identification with the organization is a key driver of employee innovation. Although WF also positively impacts EIB, its effect size is smaller, indicating that while creating a fun and engaging workplace can enhance innovation, it may be less influential than employees' alignment with organizational goals and values. The overall model fit (R^2 = 0.262) indicates that other factors beyond WF and OI also contribute to EIB, which future studies should explore.

The analyzed data in the table can be used to verify the hypotheses proposed in this paper.

Hypothesis 1: Workplace fun has a positive Influence on Employee

Innovation Behavior in IT companies.

Hypothesis 2: Organizational identification has a positive Influence on Employee Innovation Behavior in IT companies, which is established.

4.2.5 Independent t-test and One-way ANOVA

To test Research Hypothesis 3, which examines the influence of demographic factors (gender, age, education, years of service, and job position) on Employee Innovation Behavior in IT companies, this paper uses SPSS 25.0 to analyze the relationships between these factors and Employee Innovation Behavior. The specific steps are as follows: taking Employee Innovation Behavior as the dependent variable and demographic factors as the independent variables, an independent t-test and one-way ANOVA were conducted.

1) Analysis of demographic factor gender

In this paper, gender is a two-point discrete variable, so an independent-samples t-test was used to analyze the relationship between the demographic factor, gender, and Employee Innovation Behavior. The specific analysis is shown in Table 4.10:

Table 4.10 Results of t-test Analysis

| | Gender (Mean ± Standard Deviation) | | t | p |
	Female(n=210)	Male(n=190)		
EIB	2.97±0.63	3.03±0.63	-0.897	0.37

* p<0.05 ** p<0.01

As shown in Table 4.10, the mean value of men's Innovation Behavior is slightly higher than that of women's, but the difference is not statistically significant. The T-value of -0.897 indicates that, in the difference between the gender groups, men's scores are slightly higher than women's, but the magnitude of this difference is not statistically significant. P-value = 0.37, which is greater than the commonly used level of significance of 0.05 or 0.01, suggests that there is no significant Influence. Therefore, it can be concluded that there is no significant Influence of gender on Employee

Innovation Behavior; in other words, male and female employees perform similarly in terms of innovation behavior.

2) Analysis of demographic factor age

In this paper, one-way ANOVA was used to analyze the interrelationship between the demographic factor - age, and Employee Innovation Behavior. The specific analysis is shown in Table 4.11:

Table 4.11 Results of Analysis in Age Variance (ANOVA)

	Age (Mean ± Standard Deviation)				F	p
	18-25(*n*=94)	26-35(*n*=134)	36-45(*n*=103)	45+(*n*=69)		
EIB	2.14±0.34	2.88±0.12	3.31±0.14	3.92±0.25	985.953	0.000**

* *p*<0.05 ** *p*<0.01

The analytical results presented in Table 4.11 indicate that Employee Innovation Behavior increases gradually with age. F-value = 985.953, a tremendous value indicating that the difference between the age groups is highly significant. P-value = 0.000, which is less than 0.01, indicating a highly significant difference in the Innovation Behavior of employees across different age groups. It can be concluded from this analysis that age has a significant Influence on Employee Innovation Behavior. The level of Employee Innovation Behavior gradually increases with age, especially among employees over 45 years old, whose average Innovation Behavior is much higher than that of other age groups. This suggests that older Employee Innovation Behavior may be more prominent due to accumulated experience or other factors. Since the ANOVA in Table 4.11 indicates significant variability in Employee Innovation Behavior across all age groups, multiple comparisons will be conducted among age groups using Tamhane's T2 Method. The results of these comparisons are presented in Table 4.12.

Table 4.12 Post Multiple Comparison Results of Age

	(I) Group	(J) Group	(I) Mean	(J) Mean	Mean Difference (I-J)	p
EIB	18-25 years old	26-35 years old	2.142	2.881	-0.739	0.000**

(I) Group	(J) Group	(I) Mean	(J) Mean	Mean Difference (I-J)	p
18-25 years old	36-45 years old	2.142	3.314	-1.172	0.000**
18-25 years old	45 years old and above	2.142	3.923	-1.781	0.000**
26-35 years old	36-45 years old	2.881	3.314	-0.433	0.000**
26-35 years old	45 years old and above	2.881	3.923	-1.042	0.000**
36-45 years old	45 years old and above	3.314	3.923	-0.609	0.000**

* p<0.05 ** p<0.01

As presented in Table 4.12, the mean Employee Innovation Behavior score for the "18-25 years old" group is 2.142. The difference in mean score compared to the "26-35 years old" group is -0.739, with a p-value of 0.000 (indicating a highly significant difference). Similarly, compared to the "36-45 years old" group, the difference in mean score is -1.172, with a p-value of 0.000 (also highly significant). Compared with the "45 years and above" group, the mean difference is -1.781, with a p-value of 0.000, confirming a highly significant difference. These results show that the "18-25 years old" group scores significantly lower on Employee Innovation Behavior than all other age groups. Notably, the most significant gap is with the "45+" group, suggesting that employees in the youngest age group exhibit the lowest levels of innovative behavior.

The mean score for the "26-35 years old" group is 2.881. Compared to the "36-45 years old" group, the mean difference is -0.433 (p=0.000), indicating a highly significant difference. Similarly, the mean difference compared with the "45 years and above" group is -1.042, with a p-value of 0.000, which is also highly significant. These comparisons indicate that the innovative behavior score for this group is higher than that of the "18-25 years" group, but remains significantly lower than those of the "36-45 years" and "45+" groups.

For the "36-45 years old" group, the mean score is 3.314, and the difference in mean compared to the "45 years and above" group is -0.609, with a p-value of 0.000, signifying a highly significant difference. The results demonstrate that the innovation behavior score of the "36-45 years old" group is significantly higher than that of the

"18-25" and "26-35" groups, yet still notably lower than that of the "45+" group.

The "45 years and above" group achieves the highest mean score for Employee Innovation Behavior at 3.923, which is significantly higher than all other age groups. The differences in mean scores compared to the other groups are all statistically significant (p-value of 0.000). Post hoc multiple comparisons confirm that Employee Innovation Behavior increases with age, peaking in the "45+" group. This trend is likely attributed to employees in this age group having accumulated greater experience and knowledge, thereby enhancing their ability to innovate. The analysis reveals a clear age-related trend: Employee Innovation Behavior improves progressively with age, with the "45 years and above" group demonstrating the highest level of innovative behavior.
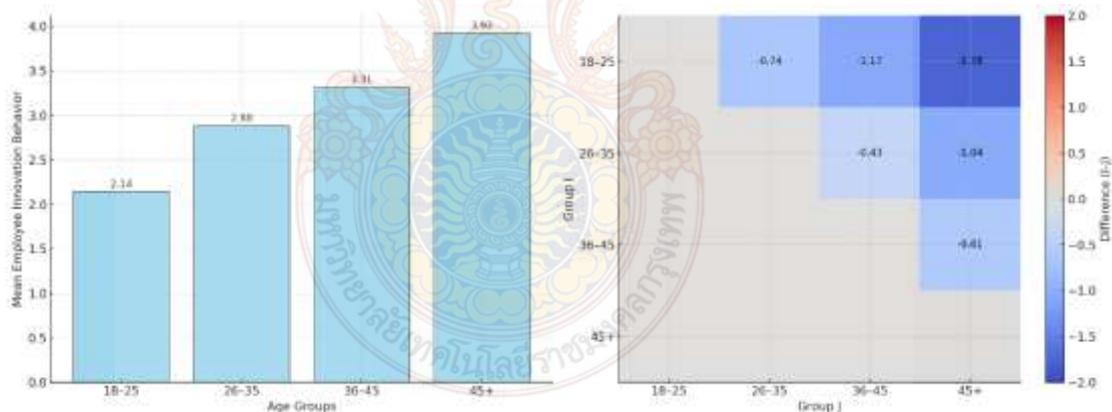
Figure 4.1 The EIB Across Age Groups and Pairwise Differences

Figure 4.1 provides a comprehensive visualization of employee innovation behavior across different age groups. The left figure highlights the average trends, while the right figure focuses on the differences between the groups.

Left Figure (Bar Chart):

This figure illustrates the mean employee innovation behavior across four age groups: 18–25, 26–35, 36–45, and 45+. The horizontal axis represents the age

groups, while the vertical axis displays the mean values of innovation behavior.

The mean values increase progressively with age: 18–25: 2.14; 26–35: 2.88; 36–45: 3.31; 45+: 3.92. Each bar is labeled with its corresponding value for clarity.

The data suggest that older employees exhibit higher levels of innovation behavior on average, possibly due to accumulated experience, increased responsibilities, or other age-related factors.

Right Figure (Heatmap):

The heatmap shows the pairwise differences in employee innovation behavior between age groups. The horizontal axis represents the comparison group (Group J), while the vertical axis represents the reference group (Group I). The color scale ranges from blue (negative differences) to red (positive differences), with darker shades indicating larger differences.

Each cell is labeled with the exact difference (I – J). Notable examples include: 18–25 vs. 45+: -1.78 (the most significant negative difference), 26–35 vs. 45+: -1.04, and 36–45 vs. 45+: -0.61.

In the heatmap, the negative values indicate that younger groups consistently scored lower than older groups in innovation behavior. The most significant difference (-1.78) is observed between the youngest (18–25 years old) and the oldest (45+ years old) groups, indicating a notable disparity.

The two figures provide complementary perspectives on the data:

The bar chart emphasizes the overall trend, showing that innovative behavior increases with age. The heatmap quantifies the differences between groups, reinforcing the conclusion that older employees outperform younger ones in innovation behavior.

3) Analysis of demographic factors in education

In this paper, one-way ANOVA was used to analyze the interrelationship between demographic factors—education and Employee Innovation Behavior. The specific analysis is shown in Table 4.13:

Table 4.13 Results of Analysis in Education Variance (ANOVA)

| | Education (Mean ± Standard Deviation) | | | | | |
	High School or Below (*n*=61)	Junior college (*n*=94)	Bachelor (*n*=176)	Master or Above (*n*=69)	*F*	*p*
EIB	3.42±0.08	2.14±0.34	2.95±0.16	3.92±0.25	925.099	0.000**

* *p<0.05* ** *p<0.01*

According to the analysis results in Table 4.13, the Employee Innovation Behavior scores of junior college students are the lowest. The scores increase with higher education levels, particularly among employees with master's degrees, who exhibit the highest performance. The F-value of 925.099 indicates that the difference in Employee Innovation Behavior between the different education groups is statistically significant. P-value = 0.000, which is less than 0.01, indicating that the effect of different education levels on Employee Innovation Behavior is highly significant. It can be concluded that education has a significant Influence on Employee Innovation Behavior. The higher the education level, the higher the level of Employee Innovation Behavior. In particular, employees with a master's degree or higher have the highest scores in Employee Innovation Behavior, indicating that higher education levels may be associated with more pronounced innovation behavior at work due to a richer knowledge base, broader vision, and enhanced innovation ability.

On the other hand, Employee Innovation Behavior with junior college has the lowest average score, indicating that their innovation ability may be relatively weak. Since Employee Innovation Behavior shows significance across all educational backgrounds, further comparisons can be made between the different educational background groups using Tamhane's T2 Method. The results of multiple comparisons are shown in Table 4.14.

Table 4.14 Post Multiple Comparison Results of Education

	(I)Group	(J)Group	(I)Mean	(J)Mean	Mean Difference(I-J)	p
EIB	Junior college	Bachelor	2.142	2.949	-0.807	0.000**

(I)Group	(J)Group	(I)Mean	(J)Mean	Mean Difference(I-J)	p
Junior college	High School	2.142	3.415	-1.273	0.000**
Junior college	Master	2.142	3.923	-1.781	0.000**
Bachelor	High School	2.949	3.415	-0.466	0.000**
Bachelor	Master	2.949	3.923	-0.974	0.000**
High School	Master	3.415	3.923	-0.507	0.000**

* p<0.05 ** p<0.01

As shown in Table 4.14, the mean Employee Innovation Behavior score for the Associate Degree group is 2.142. Compared to the Bachelor's Degree group, the difference in mean scores is -0.807 (p=0.000), indicating a significant difference. Compared to the High School and Below group, the mean difference is -1.273, which is highly significant (p-value = 0.000). Compared with the Master's Degree and Above group, the difference in mean scores is -1.781, again highly significant (p-value = 0.000). These results suggest that the Associate Degree group scores significantly lower on Employee Innovation Behavior than all other education groups.

For the Bachelor's Degree group, the mean score is 2.949. Compared to the High School and Below group, the mean difference is -0.466 (p=0.000), indicating a significant difference. Compared to the Master's Degree and Above group, the difference in mean scores is -0.974, which is highly significant (p-value = 0.000). These findings show that the Bachelor's Degree group has a higher Employee Innovation Behavior score than the Associate Degree group, but significantly lower scores than the Master's Degree and Above group. Additionally, the Bachelor's group scores higher than the High School and Below group.

The High School and Below group has a mean score of 3.415. When compared to the Master's Degree and Above group, the mean difference is -0.507, with a p-value of 0.000, indicating a significant difference. Results indicate that this group scores higher than both the Associate Degree and Bachelor's Degree groups, but significantly lower than the Master's Degree and Above group. This somewhat surprising outcome suggests that employees in this group may not underperform in

Employee Innovation Behavior, potentially due to industry- or role-specific factors in which practical work experience and skills outweigh formal education requirements.

The Master's Degree and Above group has the highest mean score of 3.923, which is significantly higher than all other education groups. This confirms that this group demonstrates the highest levels of Employee Innovation Behavior.

Post hoc multiple comparisons reveal significant differences in Employee Innovation Behavior scores across all educational groups, with scores increasing progressively as education levels rise. The Junior Degree group scores significantly lower than all other groups, indicating a pronounced gap in innovation performance. The High School and Below group, while outperforming the Associate and Bachelor's groups, still scores below the Master's Degree and Above group, likely reflecting differing educational requirements across industries and roles. The Master's Degree and Above group leads in innovative behavior, highlighting the advantages of higher education in fostering innovative performance.
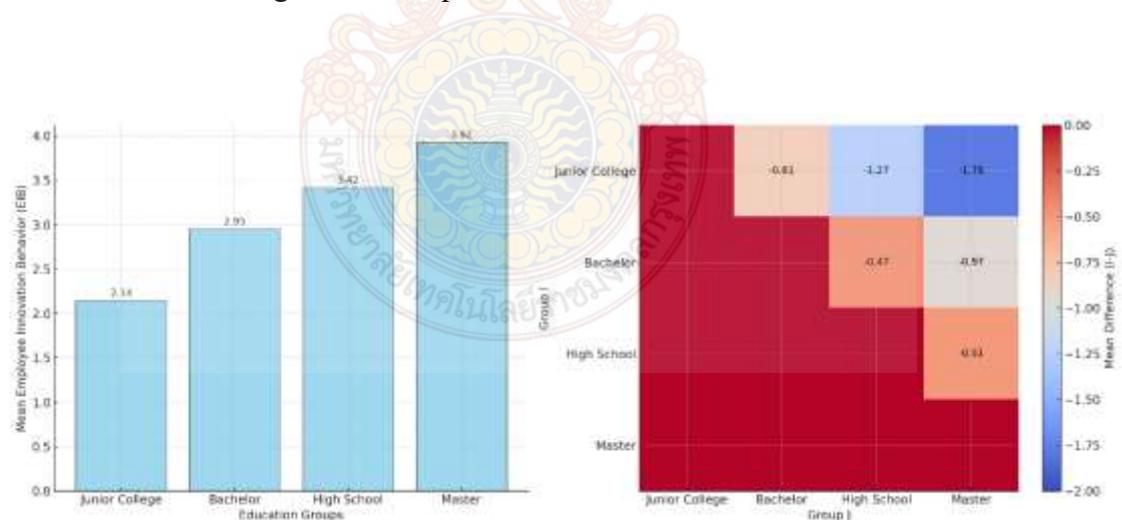

Figure 4.2 The EIB Across Education Groups and Pairwise Differences

Figure 4.2 illustrates the relationship between education levels and employee innovation behavior (EIB), offering complementary perspectives through a bar chart and a heatmap.

Left Figure (Bar Chart):

This figure presents the mean of employee innovation behavior (EIB) for individuals with different educational levels: junior college, Bachelor's degree, High School, and Master's degree. The horizontal axis shows the education groups, while the vertical axis indicates the mean EIB values.

The average values are: Junior college, 2.14; Bachelor's, 2.95; High School, 3.42; Master's, 3.92. Each bar is annotated with its exact mean value for clarity.

The data reveal a positive trend: higher education levels are associated with higher EIB scores. Individuals with a Master's degree exhibit the highest mean EIB, while those with a Junior college degree have the lowest.

Right Figure (Heatmap):

The heatmap visualizes the pairwise differences in EIB between education groups, with Group I on the vertical axis and Group J on the horizontal axis. The color scale ranges from light red (more minor differences) to dark blue (larger differences), representing negative mean differences (I–J). Specific examples of pairwise differences include: Junior college vs. Master: -1.78 (the most significant negative difference), Junior college vs. High School: -1.27, and Bachelor vs. Master: -0.97.

Negative differences indicate that individuals with lower education levels consistently scored lower on EIB than those with higher education levels. The most significant difference is observed between the Junior college and Master groups, emphasizing the significant influence of education on innovation behavior.

Figure 4.2 demonstrates that education level is a strong determinant of employee innovation behavior. The bar chart (Left Figure) highlights the overall trend, showing a steady increase in EIB with higher education. The heatmap (Right Figure) quantifies the specific differences between groups, reinforcing the conclusion that junior college students exhibit significantly greater innovation behavior than those with higher education levels. These visualizations offer actionable insights for organizations to highlight the value of education in promoting employee innovation.

4) Analysis of demographic factors, years of service

In this paper, one-way ANOVA was used to analyze the interrelationship between demographic factors—years of service and Employee Innovation Behavior. The specific analysis is shown in Table 4.15:

Table 4.15 Results of Analysis in Years of Service Variance (ANOVA)

	Years of Service (Mean ± Standard Deviation)				F	p
	<1 Year (n=68)	1-3 Years (n=100)	4-6 Years (n=133)	6+ Years (n=99)		
EIB	2.00±0.30	2.71±0.14	3.13±0.13	3.79±0.28	1015.514	0.000**

*$p<0.05$ ** $p<0.01$

According to the analysis results in Table 4.15, it is evident that employee innovation behavior increases gradually with years of service, and the longer the years of service, the higher the score. F-value = 1015.514, which is a tremendous value, indicating that the differences in Innovation Behavior between different groups of years of service are highly significant. P-value = 0.000, which is less than 0.01, indicating that the Influence of the years of service on the innovation behavior of the employees is highly significant. It can be concluded that years of service have a significant Influence on employee innovation behavior. The level of Employee Innovation Behavior increases with years of service, especially among employees with more than 6 years of service, who have the highest scores. This may be because, as they accumulate work experience, employees are better able to engage in creative thinking in the workplace and may also receive more resources and opportunities to demonstrate innovative behavior in their career development. From the results of the analysis, it can be seen that the differences in employee innovation behavior are significant in all years of service groups, so it is necessary to go deeper to conduct multiple comparisons of different work experience groups through Tamhane's T2 Method, and the results of the comparisons are shown in Table 4.16.

Table 4.16 Post Multiple Comparison Results on Years of Service

	(I)Group	(J)Group	(I)Mean	(J)Mean	Mean Difference(I-J)	p
	<1 Year	1-3 Years	2.005	2.71	-0.705	0.000**
	<1 Year	4-6 Years	2.005	3.13	-1.125	0.000**
EIB	<1 Year	6+ Years	2.005	3.795	-1.79	0.000**
	1-3 Years	4-6 Years	2.71	3.13	-0.42	0.000**
	1-3 Years	6+ Years	2.71	3.795	-1.085	0.000**
	4-6 Years	6+ Years	3.13	3.795	-0.664	0.000**

* p<0.05 ** p<0.01

As shown in Table 4.16, the mean Employee Innovation Behavior score for the group with less than 1 year of working experience is 2.005. Compared with the 1-3 years group, the mean difference is -0.705 (p-value = 0.000**), indicating a significant difference. Compared to the 4-6 years group, the mean difference is -1.125 (p-value = 0.000**), also significant. Similarly, compared to the 6+ years group, the mean difference is -1.79 (p-value = 0.000**), showing a highly significant difference. These results show that the scores for the "<1 year" group are significantly lower than those of the other experience groups, with the most significant gap observed relative to the "6+ years" group.

For the 1-3 years group, the mean score is 2.71. Compared to the 4-6 years group, the mean difference is -0.42 (p-value = 0.000**), a significant difference. When compared to the 6+ years group, the mean difference is -1.085 (p-value = 0.000**), also highly significant. These results indicate that the scores for the "1-3 years" group are higher than those of the "<1 year" group but remain significantly lower than those of the "4-6 years" and "6+ years" groups. This suggests that Employee Innovation Behavior improves as work experience increases, but it still lags behind that of those with more years of service.

For the 4-6 years group, the mean score is 3.13, with a mean difference of -0.664 (p-value = 0.000**) compared with the 6+ years group, indicating a significant difference. The results reveal that the "4-6 years" group scores significantly higher than the "<1 year" and "1-3 years" groups, yet remains significantly lower than the "6+

years" group. These findings suggest that Employee Innovation Behavior tends to improve as employees gain more experience, likely due to the accumulation of knowledge and skills.

The 6+ years group has the highest mean score of 3.795, significantly surpassing all other experience groups. This suggests that employees with longer work experience exhibit a significant advantage in innovation behavior, likely due to their expertise, accumulated experience, and deeper understanding of organizational operations. The results from the multiple comparisons confirm that Employee Innovation Behavior scores differ significantly across groups with varying years of experience. The scores increase progressively as work experience increases. The "<1 year" group has the lowest scores, likely due to limited experience. In contrast, the "6+ years" group achieves the highest scores, reflecting the positive impact of extensive experience and organizational familiarity on innovation behavior.
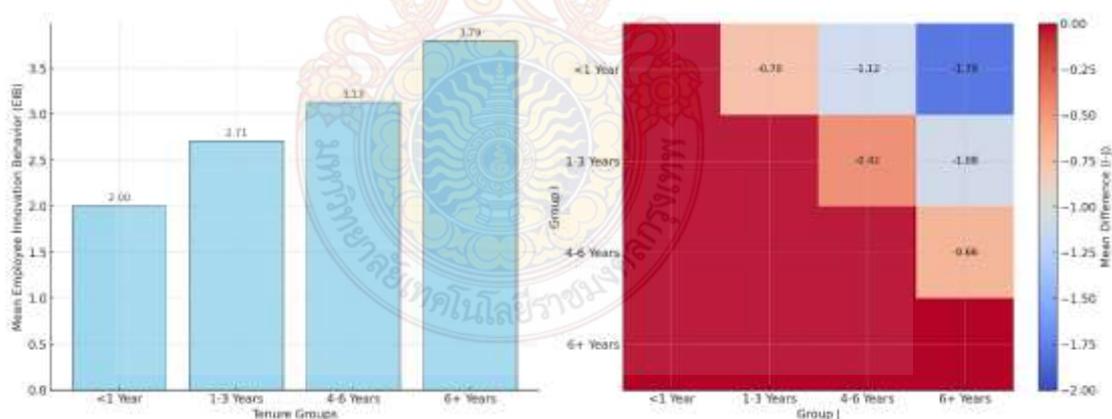

Figure 4.3 The EIB Across Years of Service Groups and Pairwise Differences

Figure 4.3 provides a detailed visualization of the relationship between years of service and employee innovation behavior (EIB). The left figure shows the average EIB across tenure groups, while the right figure highlights the differences between them.

Left Figure (Bar Chart):

This figure illustrates the mean EIB for employees with years of service: <1 Year, 1-3 Years, 4-6 Years, and 6+ Years. The horizontal axis represents the tenure groups, while the vertical axis displays the mean EIB values. The group means are as follows: <1 Year: 2.00; 1-3 Years: 2.71; 4-6 Years: 3.13; 6+ Years: 3.79.

The data show a positive trend: employees with longer years of service exhibit higher EIB scores. Employees with 6+ Years of service demonstrate the highest EIB, while those with <1 Year have the lowest.

Right Figure (Heatmap):

This figure visualizes the pairwise differences in EIB between years of service groups, with Group I on the vertical axis and Group J on the horizontal axis. The color scale ranges from light red (more minor differences) to dark blue (larger differences), representing negative mean differences (I–J).

Key pairwise differences include: <1 Year vs. 6+ Years: -1.79 (the most significant negative difference), <1 Year vs. 4-6 Years: -1.13, and 1-3 Years vs. 6+ Years: -1.08.

Negative differences indicate that employees with fewer years of service consistently score lower on EIB than those with more years of service. The most significant difference is observed between the <1 Year and 6+ Years groups, emphasizing the strong correlation between years of service and innovation behavior.

5) Analysis of demographic factors in job positions

In this paper, one-way ANOVA was used to analyze the interrelationship between demographic factors—job position and Employee Innovation Behavior. The specific analysis is shown in Table 4.17:

Table 4.17 Results of Analysis in Job Position Variance (ANOVA)

	Job Position (Mean ± Standard Deviation)					F	p
	Tech/R&D (n=99)	Prod/Proj (n=73)	Mkt/Sales (n=60)	Cust Serv (n=68)	Func Dept (n=100)		
EIB	3.79±0.28	3.24±0.08	3.00±0.00	2.00±0.30	2.71±0.14	856.856	0.000**

* $p<0.05$ ** $p<0.01$

According to the analysis in Table 4.17, employees in the Technology/R&D position exhibit the highest performance in Employee Innovation Behavior. In contrast, those in the Customer Service position have the lowest score in this area. F-value = 856.856, indicating a significant difference in Employee Innovation Behavior across different jobs. P-value = 0.000, which is less than 0.01, which indicates that the Influence of different job positions on Employee Innovation Behavior is highly significant. It can be concluded that job positions have a significant Influence on Employee Innovation Behavior. Employee Innovation Behavior scores for Technology/R&D positions are the highest, which may be related to the high relevance of this position to the need for innovation. They need to continuously engage in technological innovation and product development, thereby exhibiting higher innovation behavior. Employee Innovation Behavior scores for customer service positions are the lowest, possibly because the job is relatively fixed and offers fewer opportunities for innovation. Employee Innovation Behavior scores for Product/Project and Marketing/Sales positions are in the middle of the list, while functional positions show slightly lower Scores. Since all jobs and Employee Innovation Behavior in the table show a high degree of significance, it is necessary to use the Tammany T2 method to group multiple comparisons of Employee Innovation Behavior scores of different jobs, in order to further analyze in depth the differences between different jobs and Employee Innovation Behavior, and the table of results of multiple comparisons is shown in Table 4.18.

Table 4.18 Post Multiple Comparison Results in Job Position

	(I)Group	(J)Group	(I)Mean	(J)Mean	Mean Difference(I-J)	p
	Cust Serv	Func Dept	2.005	2.71	-0.705	0.000**
	Cust Serv	Mkt/Sales	2.005	3	-0.995	0.000**
	Cust Serv	Prod/Proj	2.005	3.237	-1.233	0.000**
	Cust Serv	Tech/R&D	2.005	3.795	-1.79	0.000**
EIB	Func Dept	Mkt/Sales	2.71	3	-0.29	0.000**
	Func Dept	Prod/Proj	2.71	3.237	-0.527	0.000**
	Func Dept	Tech/R&D	2.71	3.795	-1.085	0.000**
	Mkt/Sales	Prod/Proj	3	3.237	-0.237	0.000**
	Mkt/Sales	Tech/R&D	3	3.795	-0.795	0.000**
	Prod/Proj	Tech/R&D	3.237	3.795	-0.557	0.000**

* p<0.05 ** p<0.01

As shown in Table 4.18, the mean Employee Innovation Behavior score for customer service positions is 2.005. Compared to the functional departments, the mean difference is -0.705 (p-value = 0.000**), indicating a highly significant difference. Compared to the marketing/sales department, the mean difference is -0.995 (p-value = 0.000**), which is highly significant. Compared to the product/project department, the mean difference is -1.233 (p-value = 0.000**), and compared to the technology/R&D department, the mean difference is -1.79 (p-value = 0.000**), both of which are highly significant. These results indicate that customer service positions have significantly lower Employee Innovation Behavior scores than those in all other departments, with the most significant gap observed compared to the technology and R&D departments. This may be due to the relatively repetitive nature of customer service tasks, which demand less innovation and result in lower scores.

The mean score for functional department positions is 2.71. Compared to the marketing/sales department, the mean difference is -0.29 (p-value = 0.000**), a highly significant difference. When compared to the product/project department, the mean difference is -0.527 (p-value = 0.000**), and when compared to the technology/R&D department, the mean difference is -1.085 (p-value = 0.000**), both of which are highly significant. These findings indicate that functional departments

score higher than customer service positions in Employee Innovation Behavior but remain significantly lower than marketing and sales, product and project, and technology and R&D departments. This may be attributed to the fixed, routine nature of functional department tasks, which offer limited opportunities for innovation.

The mean score for marketing and sales positions is 3.000. Compared to the product/project department, the mean difference is -0.237 (p-value = 0.000**), and compared to the technology/R&D department, the mean difference is -0.795 (p-value = 0.000**), both of which are highly significant. These results suggest that marketing and sales departments have higher innovative behavior scores than customer service and functional departments, but lower scores than product/project and technology/R&D departments. Marketing and sales roles require adaptability to market changes, fostering a need for innovation; however, this need is still less pronounced than in departments such as technology and R&D.

For the product/project department, the mean score is 3.237. Compared to the technology/R&D department, the mean difference is -0.557 (p-value = 0.000**), indicating a highly significant difference. The results demonstrate that the product/project department scores significantly higher in innovative behavior than customer service, functional, and marketing/sales departments, with only the technology/R&D department scoring higher. This can be explained by the inherent demands of product and project roles, which involve development and project management and require a high level of innovation.

The mean score for technology/R&D positions is 3.795, the highest among all departments, significantly surpassing those of all other departments. This finding aligns with expectations, as technology and R&D roles are inherently innovation-driven, requiring employees to generate new ideas and solutions to advance technology and product development. The multiple comparisons show significant differences in Employee Innovation Behavior scores across departments. The scores follow a descending order: Technology/R&D, Product/Projects, Marketing/Sales, Functional

Departments, and Customer Service. Lower scores in customer service and functional departments likely stem from the fixed, routine nature of their work, with fewer opportunities for innovation. In contrast, higher scores in technology/R&D and product/project departments reflect the critical importance of innovation in these roles.
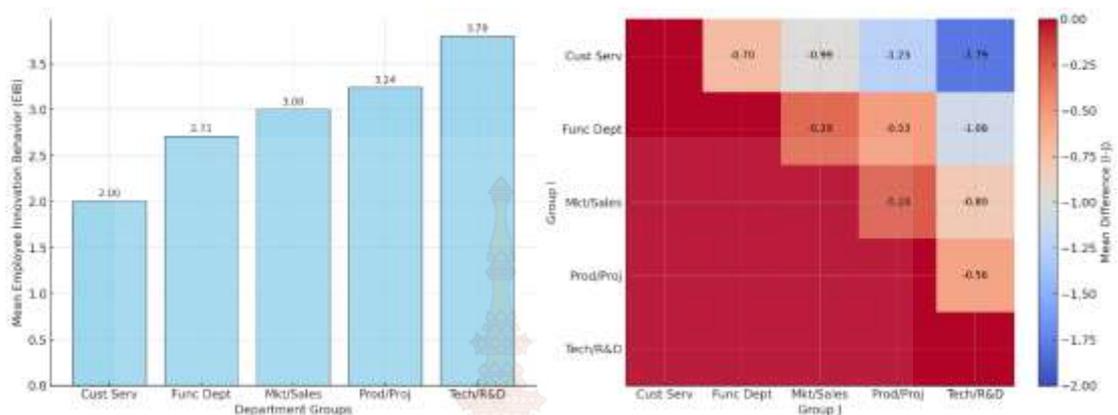
Figure 4.4 The EIB Across Job Position Groups and Pairwise Differences

Figure 4.4 provides a comprehensive visualization of employee innovation behavior (EIB) across different job positions. The left figure shows the mean EIB for each job position, and the right figure highlights the pairwise differences between them.

Left Figure (Bar Chart):

This figure illustrates the mean EIB for employees in five job positions: Customer Service (Cust Serv), Functional Department (Func Dept), Marketing and Sales (Mkt/Sales), Production and Project (Prod/Proj), and Technology and R&D (Tech/R&D). The horizontal axis represents job positions, while the vertical axis indicates the mean EIB values. The average values are as follows: Customer Service: 2.00; Functional Department: 2.71; Marketing/Sales: 3.00; Production/Project: 3.24; Technology/R&D: 3.79. The data shows that employees in Tech/R&D exhibit the highest mean EIB, followed by Prod/Proj, Mkt/Sales, Func Dept, and Cust Serv. This suggests that the nature of work in technical and R&D roles may inherently encourage greater innovation.

Right Figure (Heatmap):

This figure visualizes the pairwise differences in EIB between job positions, with Group I on the vertical axis and Group J on the horizontal axis. The color scale ranges from light red (more minor differences) to dark blue (larger differences), representing negative mean differences (I–J). Key pairwise differences include: Cust Serv vs. Tech/R&D: -1.79 (the most considerable difference), Cust Serv vs. Prod/Proj: -1.23, Func Dept vs. Tech/R&D: -1.08, Mkt/Sales vs. Tech/R&D: -0.80, and Prod/Proj vs. Tech/R&D: -0.56.

The differences suggest that employees in Customer Service consistently report significantly lower EIB than employees in other job positions, particularly in Tech/R&D. This may reflect differences in job roles or an organizational focus on innovation across job positions.

6) Summary of results of demographic factor analysis

Based on the above t-tests, one-way ANOVA, and Post multiple comparisons, the results of the demographic factor analysis are summarized as in Table 4.19.

Table 4.19 Summary of Results of Demographic Factor Analysis

Demographic Factors	Significant Relationship with Employee Innovative Behavior
Gender	No Impact
Age	Significant Impact
Education	Significant Impact
Years of Service	Significant Impact
Job Position	Significant Impact

Note: At a significance level of 0.05

As can be seen from the summary results in the table above, gender has no significant Influence on Employee Innovation Behavior: this indicates that there is not much difference in the performance of both male and female employees in terms of innovation behavior, and that gender is not a major factor influencing the innovation behavior of employees. Age has a significant Influence on employee innovation

behavior. As age increases, Employee Innovation Behavior may change, probably because older employees have greater experience and knowledge reserves, making it easier for them to engage in innovative behavior. Educational level is significantly related to Employee Innovation Behavior: the higher the educational level, the higher the employees' innovative behavior scores. Highly educated employees typically possess a broader range of knowledge and skills, and therefore may exhibit greater creativity and innovation when facing workplace challenges. Years of service have a significant Influence on employee innovation behavior. Employees with more years of service may be more innovative in their thinking and problem-solving approaches, as they have accumulated greater work experience and industry insights. Different job positions also have a significant Influence on Employee Innovation Behavior: certain positions (e.g., technology research and development, etc.) may have higher requirements for innovation, while other positions (e.g., customer service, etc.) have fewer requirements for innovative behaviors, and thus there is a greater difference in innovation performance between different positions.

This leads to research hypothesis 3, that the Influence of demographic factors (gender, age, education, years of experience, and job position) on Employee Innovation Behavior shows different variability.

CHAPTER V

CONCLUSION

After analyzing the data collected from the questionnaire survey, this chapter presents the conclusions and discussion on the Influence of Workplace Fun and Organizational Identification on Employee Innovation Behavior. Moreover, based on the results of the analysis of the data in this study, corresponding practical management suggestions and strategies for Chinese IT companies are proposed in the hope that it can help Chinese IT companies, through the corresponding means and measures, in order to stimulate the innovation motivation of all employees, to improve the competitiveness and overall performance of IT companies in the market competition.

5.1 Conclusion

5.1.1 Summary Table of Research Results

Table 5.1 Table of Research Results

Hypothesis	Content	Verification Results
H1	Workplace fun positively influences employees' innovative behavior	Established
H2	Organizational recognition has a positive influence on employees' innovative behavior.	Established
H3	The impact of demographic factors on employees' innovative behavior	Partially established
	Gender	Not significant
	Age	Significant
	Education	Significant
	Work experience	Significant
	Job position	Significant

From Table 5.1, it can be seen that the hypothesis H1: Workplace fun has a

positive influence on Employee Innovation Behavior is valid. This study found that workplace fun does promote Employee Innovation Behavior, probably because the relaxed atmosphere helps to stimulate creativity.H2: Organizational identification positively influence Employee Innovation Behavior is similarly valid, suggesting that when employees are highly attuned to the organization's culture and goals, they are more likely to exhibit innovative behaviors because they are more willing to contribute to the organization's growth and innovation.H3: The Influence of Demographic Factors on Employee Innovation Behavior examines whether demographic factors, including age, gender, and educational attainment, affect employees' innovative behavior. The results of the study indicate partial validity, i.e., there are differences in the Influence of different demographic factors on employee innovation behavior, but not every factor significantly influences innovative behavior. The analysis of specific demographic factors shows that gender has no significant Influence on Employee Innovation Behavior, indicating that gender differences have no significant Influence on innovation behavior. This means there is no significant difference between male and female Employees in terms of innovation performance. The significant influence of age on Employee Innovation Behavior implies that age may influence innovation behavior; for example, younger employees may be more innovative and energetic, while older employees may be more experienced and stable in innovation performance. The influence of education on Employee Innovation Behavior is significant, suggesting that highly educated employees possess more knowledge and skill reserves, and can provide both theoretical and practical support for innovation. Employee Innovation Behavior is significantly influenced by years of working in the company, suggesting that older employees may have more in-depth knowledge of the company and thus have an advantage in innovation.

In comparison, newer employees bring fresh perspectives and contribute to innovation. The influence of job position on innovation behavior is significant. Different jobs may have varying requirements and incentives for innovation, resulting

in differences in the performance of innovative behavior. This suggests that when motivating employees to innovate, organizations should focus on employees' work experience, cultural identity, and also consider individualized management of different demographic factors.

5.2 Discussion

This paper conducts an empirical analysis of the Influence of Workplace Fun and Organizational Identification on Employee Innovation Behavior in Chinese IT companies, primarily through an online questionnaire survey. For the three hypotheses proposed in this paper, the data analysis based on the questionnaire survey of this paper was carried out, in the process of analysis, it was found that both workplace fun and organization identification have a positive Influence on Employee Innovation Behavior in IT companies, but what is more unexpected is that the Influence of the organization identification plays a more significant role in comparison with the workplace fun. Meanwhile, in the corresponding analysis of demographic factors, it is also unexpected to find a significant difference in the Influence of different educational backgrounds on Employee Innovation Behavior.

5.2.1 Discussion on the Influence of Workplace Fun and Employee Innovative Behavior

This paper verifies that workplace fun has a significant positive influence on Employee Innovation Behavior in IT companies, as determined through a questionnaire survey and empirical analysis. With the rapid development of the IT industry, workplace fun has gradually attracted widespread attention in IT companies. Scholars have mainly studied the Influence of workplace fun on employees' work attitudes and behaviors. Most previous studies have explored the Influence of Workplace Fun on Employee Innovation Behavior based on Resource Conservation Theory. The study by Guanfeng Shi and Polan Yao (2019) demonstrated that employees

who felt a sense of workplace fun were more likely to seek work feedback actively, which in turn enhanced their creativity. Yang Jie et al.'s (2019) study also highlighted that employees' active participation in enjoyable activities helps enhance their work vitality, which in turn promotes the generation of new ideas and behaviors. Therefore, this paper verifies the positive Influence of workplace fun on Employee Innovation Behavior from the perspective of social exchange theory.

Based on the social exchange theory, when employees enjoy the activities, they tend to develop a sense of duty to return to the organization and thus exhibit Employee Innovation Behavior. Firstly, there is a social exchange relationship between employees and the organization, whereby employees receive rewards provided by the organization in exchange for their work. In this basic exchange relationship, employees typically follow established processes to complete their tasks and strive to avoid mistakes. The organization obtains the employee's labor through the payment of compensation, aiming to achieve a certain level of performance; however, it does not achieve a significant performance improvement. The organization continues to pay the employee after achieving the target performance, and the employee continues to work for the reward, forming a basic circular relationship. Second, on top of this basic cyclical relationship, based on the principle of reciprocity, IT companies provide employees with support measures such as a comfortable working environment or fun-filled activities. Employee Innovation Behavior occurs after individuals feel these organizational supports as a reward for the support they provide. As employee innovation promotes the development of companies, the organization is also more willing to continue providing employees with a fun work environment, thus forming a virtuous cycle. Thus, workplace fun has a positive Influence on Employee Innovation Behavior.

To enhance Employee Innovation Behavior at work, managers of IT firms need to recognize the importance of creating a fun, relaxed, and enjoyable work environment. On the contrary, if managers ignore the spiritual needs of employees and

keep them in a monotonous work environment for an extended period, employees may feel burned out at work, which in turn reduces their willingness and innovative behavior.

5.2.2 Discussion on the Influence of Organization Identification and Employee Innovation Behavior

This paper investigates the Influence of organizational identification on Employee Innovation Behavior. The results of the study indicate that organizational identification has a significant positive influence on Employee Innovation Behavior, a finding consistent with those of Yan Liu (2019). Organization identification, as an internal psychological phenomenon, can effectively drive employees' external innovative behavior.

Based on the emotional event theory, this phenomenon can be further explained by the path of "event-emotion-attitude-behavior". Firstly, the events experienced by employees at work can trigger either positive or negative emotional reactions, which have a significant impact on employees' behavior and attitudes. Specifically, when employees feel supported by the organization, they will gradually develop a sense of identity and belonging within it. The enhancement of organizational identification makes employees more willing to regard themselves as an integral part of the organization and form a community of destiny with the organization. Second, employees' positive emotions and attitudinal changes will further strengthen their sense of commitment and responsibility to the organization, inspiring them to be more proactive in their innovative work activities.

Notably, the current study found that for employees in IT companies, the influence of organization identification on Employee Innovation Behavior was significantly greater than that of workplace fun. This result suggests that in the fast-changing and competitive IT industry, employees are more inclined to base their motivation to innovate on their organizational identification and trust. The workplace environment, which includes relaxation and fun, has a limited Influence on stimulating Employee Innovation Behavior in IT companies. This may be closely related to the

complexity of work tasks, a high sense of responsibility, and the high demand for teamwork in IT companies. Organization identification not only enhances employees' sense of belonging but also motivates them to align their personal goals with those of the organization, thereby increasing their involvement.

Therefore, enhancing organizational identification is an important means to promote Employee Innovation Behavior, especially in IT companies. Organizational managers should further enhance employees' sense of belonging to the organization by establishing a fair and transparent management mechanism, providing growth opportunities, and fostering a positive organizational culture, thereby laying a strong foundation for achieving the organization's innovation goals.

5.2.3 Discussion on the Influence of Demographic Factors and Employee Innovation Behavior

This paper examines the Influence of five demographic factors—gender, age, education, years of service, and job position—on Employee Innovation Behavior in IT companies. Among them, gender has no significant Influence on Employee Innovation Behavior, and male and female employees perform similarly in terms of innovation behavior. Age has a significant Influence on Employee Innovation Behavior, the analysis shows that with the growth of age, the level of Employee Innovation Behavior gradually increases, especially for employees over 45 years old, the average value of their Innovation Behavior is much higher than that of other age groups, indicating that older employees may be due to factors such as accumulation of experience and other factors, the performance of Innovation Behavior is more prominent. Influence of education on Employee Innovation Behavior is significant, with the increase of education, the level of Employee Innovation Behavior is also gradually high, especially employees with master's degree and above have the highest score of Innovation Behavior, which indicates that the employees with high education may be more prominent in Innovation Behavior in their work due to richer knowledge reserve, vision and innovation ability. The innovative behavior of the college education

group is significantly lower than that of other education groups, showing a clear gap in innovation performance. The scores of the high school and below education group are higher than those of the college and bachelor's degree groups, but lower than those of the master's degree and above groups, which may reflect the differences in educational demand across various positions or industries. Years of working experience have a significant Influence on Employee Innovation Behavior. The level of Employee Innovation Behavior increases with the increase of working years, especially employees with more than 6 years of working years have the highest score of Innovation Behavior, which may be since with the accumulation of working experience, employees are more capable of creative thinking in the workplace, or they get more resources and opportunities to demonstrate Innovation Behavior in their career development. Job position has a significant Influence on Employee Innovation Behavior, with Technology / R&D Positions having the highest scores for employee innovation behavior. This may be related to the high relevance of these positions to the need for innovation, which requires constant technological innovation and product development, thereby demonstrating higher levels of innovative behavior. Employee Innovation Behavior scores for Customer Service positions are the lowest, possibly due to the relatively static nature of the job and fewer opportunities for innovation. Employee Innovation Behavior scores for product/project and marketing/sales positions are in the middle of the pack, while functional positions show slightly lower performance.

The fact that the performance of innovative behavior is not related to gender suggests that the IT industry may have made some progress in a gender-equal innovation environment, suggesting that managers should focus on individual capabilities and characteristics rather than gender differences when formulating innovation incentive policies. The accumulation of experience may be a significant reason why older employees exhibit higher Employee Innovation Behavior. Older employees can put innovative behavior into practice through their rich work experience,

knowledge reserves, and a stable career development mindset, suggesting that companies can leverage the innovation strengths of older employees through mentorship or experience-sharing mechanisms while providing younger employees with opportunities to learn and grow. Employee Innovation Behavior may be higher due to richer knowledge reserve, broader vision, and stronger analytical ability. The weaker innovation performance of college-educated employees may be related to insufficient training in innovative thinking, stemming from their educational background. Organizations should focus on providing specialized training in innovative thinking and skills to college-educated employees, while designing more challenging innovation tasks for highly educated employees. The increase in working years not only improves employees' professional skills but also enables them to accumulate more resources and opportunities for innovation practice in the workplace. Organizations should prioritize the career development of long-term employees and provide a diverse platform for innovation practice, as well as motivate new employees to cultivate a sense of innovation, thereby shortening the cycle of experience accumulation and influencing employee innovation behavior. In terms of job positions, technology and R&D roles have a high demand for innovation, and Employee Innovation Behavior is naturally prominent as employees are required to develop new technologies or products continuously. In contrast, customer service positions have fewer opportunities for innovation, and the lack of demand for innovation may result in limited innovative behavior. Enterprises can enhance the innovative behavior of customer service positions by redesigning jobs or providing them with more autonomy for innovation (e.g., process optimization, customer relationship management innovation).

5.3 Recommendation

Based on the data presented in this paper, the following recommendations are proposed to enhance the organizational performance and market competitiveness of

IT companies in China.

5.3.1 Renewed Management Concepts and Active Creation of a Fun Workplace

Employees of IT companies are typically characterized by high education and exposure to high technology, and at the same time, pay more attention to realizing their self-worth, which is an important driving force for promoting the innovative development of companies. However, due to the rapid development of the IT industry, the increasing demand for high-end technical talents has led to frequent problems, such as high-pay competition for talents and employee turnover. In addition, the high-pressure working environment is prone to a negative Influence on the physical and mental health of employees. Therefore, the search for a relaxing and pleasant work environment has become an important consideration for IT company employees when choosing a job. How to attract and retain talent, while also attending to the spiritual needs of employees and relieving their work pressure, has become a key issue for IT companies to achieve innovative development.

Considering the development trend, the traditional strategy of offering high salaries is no longer sufficient to attract IT employees. Material satisfaction is no longer the only criterion for employees to choose a job; they are now paying more attention to the spiritual level of satisfaction in their work. Especially for the new generation of employees born in the 1990s and 2000s, a relaxing and enjoyable work environment has become an important factor in their decision to choose a company. Interesting workplaces not only help attract top talent but also play a crucial role in retaining it. In the face of intense work pressure, IT companies can establish a pantry and provide snacks in the workplace to help employees alleviate stress, thereby enhancing their overall work experience.

Therefore, managers need to change the traditional management concept, from relying solely on high salaries to attract talent to paying attention to the spiritual needs of employees, and actively creating a fun workplace for employees. First of all,

managers need to deeply recognize the importance of workplace fun and start from the perspective of employees. When organizing fun activities, it is essential to consider the personalized needs of employees, thereby designing activities that align more closely with their interests and preferences. This approach helps stimulate the creative consciousness and potential of employees. For example, a comfortable lunch room can be set up for employees to address the issue that, in the past, they could only lie on their desks and take a nap, allowing them to recover their energy and devote themselves to their work more efficiently under better rest conditions. Can also build entertainment and leisure facilities, such as those equipped with massage chairs and a billiards room, allowing employees to engage in appropriate exercise or relaxation to enhance work efficiency.

Additionally, when designing team activities, IT companies should prioritize the diversity and personalization of these activities to enhance engagement and productivity. For example, to meet the interests of young employees, team activities such as camping, script killing, and Frisbee can be organized, which align more closely with their spiritual needs. At the same time, managers need to pay attention to encouraging and mobilizing employees to participate actively, especially those who are introverted. By grouping introverted employees with familiar colleagues in group activities, they can be helped to better integrate into the team, complete tasks more effectively, and foster a positive organizational atmosphere.

5.3.2 Focusing on employees' positive emotions to enhance their identification with the organization

With the rapid development of the IT industry, innovation has become the key to the sustainable growth of IT companies, and employees are the crucial driving force behind corporate innovation. Therefore, attracting and retaining innovative talent has become a core task for the innovative development of IT companies. Employees' identification with the organization is an important Influence on whether they are willing to stay in the company for a long time. However, due to frequent overtime work

and high-intensity work pressure, many employees are prone to physical and mental problems, which in turn trigger negative emotions. Such emotions may lead to Employee resistance to the organization, making it difficult for them to identify themselves as part of the organization, thus reducing their commitment to the organization's innovation and development, and even resulting in behaviors such as tardiness and leaving the company.

However, in the traditional model of company management, managers often overlook the emotional needs of employees and resort to simplistic responses, such as blaming and punishing employees for their negative emotions. This approach may force employees to work in isolation due to financial concerns. However, it will also make them feel less connected to the organization, exhibiting a lack of enthusiasm for their work. In this challenging work environment, employees may choose to leave once they find a better opportunity. In particular, the new generation of IT employees, mainly post-90s and post-00s, are less dependent on their livelihood and pay more attention to the comfort and emotional experience of the work environment. This positive emotional state not only enhances employees' motivation but also inspires new ideas, thereby contributing to the innovative development of companies.

Therefore, IT companies' managers need to attach great importance to the role of positive emotions in employees' work, and enhance employees' sense of identity and belonging to the organization by creating a relaxing and pleasant working environment. For example, managers should pay attention to the psychological state of employees at work, promptly identify their emotional fluctuations, and enhance their positive emotions through appropriate interventions. For example, organizing celebrations: when employees achieve excellent results in their work, organizing small celebrations can not only stimulate employees' enthusiasm for their work but also demonstrate the company's concern for their growth, thus enhancing employees' trust and identification with the organization. Provide psychological support: Provide psychological counseling services to employees who are under greater pressure to help

alleviate their psychological problems. Such support not only reduces the slackness of work and departure behavior caused by negative emotions but also effectively improves the overall mental health of employees. Creating a relaxing atmosphere: By setting up comfortable workplaces, such as pantries and relaxation areas, employees can unwind and alleviate stress after a busy day at work, thereby restoring their motivation and creativity.

5.2.4 Enhancing Employee Organization Identification and Stimulating Employee Innovation Behavior

Innovation is the core driving force for the development of IT companies, and Employee Innovation Behavior is crucial to the innovative development of the organization.IT enterprises are staffed mainly by post-90s and post-00s individuals, and this generation has become the main driving force behind corporate innovation. The new generation of employees focuses on individuality and unique ideas, and is the backbone of promoting continuous innovation in IT companies. In the process of stimulating Employee Innovation Behavior, the employee's identification with the organization also plays a crucial role. Suppose employees of IT companies work in a monotonous and boring environment for an extended period. In that case, they are prone to negative emotions, which in turn lead to a lack of identity and a sense of disconnection from the organization. This situation will hinder employee creativity and pose difficulties for the innovative development of companies. Therefore, enhancing employees' organizational identification and stimulating their Employee Innovation Behavior through practical management tools has become crucial for achieving the sustainable development of IT companies.

Looking back at past management practices, many managers fail to fully recognize the positive Influence of organization identification on Employee Innovation Behavior. They tend to overlook whether employees genuinely identify with the organization and whether they voluntarily stay and contribute to its development. The result is that employees lack enthusiasm for their work, are unwilling to try new things,

and tend to retreat in the face of difficulties, thereby hindering the enhancement of innovation within companies. If this situation persists for an extended period, the organization's innovation capacity may decline significantly.

However, the new generation of post-90s and post-00s employees places more emphasis on positive emotions in the work process, such as organizational identification and sense of belonging. Organization identification is an important prerequisite for employees' willingness to initiate innovation. Enhancing employees' sense of organizational identity can stimulate their enthusiasm for creativity and encourage them to participate in innovation practice activities actively. Therefore, managers need to pay attention to the positive emotions of employees, provide support for them, and enhance their sense of organizational identification to promote Employee Innovation Behavior and help companies achieve their innovation and development goals.

Managers should recognize the important role of positive emotions in Employee Innovation Behavior and give full play to the Influence of organizational identification. In management, managers need to closely observe employees' emotions and behaviors, solve problems promptly for employees, and organize enjoyable activities to enhance employees' positive emotions and sense of organizational identification. This approach not only inspires employees to feel good about the organization but also encourages them to contribute more actively to the company's innovative development. For example, managers can organize themed visits for employees who encounter innovation bottlenecks, broadening their horizons through the visits. These visits not only enhance their goodwill and sense of identity towards the organization but also inspire them with new ideas and help them try new methods and solutions.

5.2.5 Clear Management Direction to Promote the Sustainable Development of Companies

In the rapidly evolving IT industry, employees often face the unavoidable

challenge of work pressure, which frequently leads to dissatisfaction with the work environment and the phenomenon of job hopping or resignation. Nowadays, employees in IT companies generally have higher salary levels, and their material needs have been satisfied; their spiritual needs have gradually become the focus of attention. Employees are increasingly seeking a more relaxed and pleasant work environment, valuing whether companies offer leisure facilities to help alleviate stress. Workplace fun is not only about providing a comfortable working environment for employees, but also about organizing team-building activities and offering meals to meet their spiritual needs. In a fun and relaxing workplace, employees are more likely to develop positive emotions, enhance their sense of identity with the organization, and be more willing to reciprocate the organization's support through their efforts. Therefore, managers should pay attention to the personalized pursuit of employees' spiritual needs in their work and actively create a comfortable work environment to motivate Employee Innovation Behavior and help companies achieve sustainable development.

According to the study's conclusion, workplace fun can, to a certain extent, stimulate employees' positive emotions and promote Employee Innovation Behavior, thereby fostering the innovative development of companies. However, many IT company managers still overlook the crucial role of workplace fun in Employee Innovation Behavior. Although some companies recognize the importance of workplace fun, they often face challenges in implementing it effectively. For example, team-building activities often fail to cater to introverted employees, and fitness facilities remain unused due to the remote location of the setup, which undermines the actual impact of fun activities.

Managers should not only focus on creating a fun workplace, but also on effectively meeting the spiritual needs of their employees. To this end, managers can collect employees' opinions on the work environment and activity arrangements through anonymous surveys to gain a deeper understanding of employees' needs and concerns regarding the implementation of activities. In this way, managers can truly

address the spiritual needs of employees and tailor the services provided to meet their expectations better.

In management practice, paying attention to creating a fun workplace and listening to employees' opinions on the construction of the work environment helps managers clarify the management priorities of employees in IT companies and stimulate Employee Innovation Behavior at work. This not only promotes the innovative development of companies but also lays a solid foundation for achieving long-term sustainable development.

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APPENDICES

Questionnaire

Dear Sir/Madam:

Hello, this questionnaire is intended for academic research, and the information you provide will be kept strictly confidential. Please feel free to fill in your basic information and your true feelings at work. Your sincere answers are vital to our research, and we sincerely appreciate your support.

Part One: General Information

1. Your gender
A. Male   B. Female

2. Your age
A.18-25 years old   B. 25-35 years old   C. 36-45 years old   D. Over 45 years old

3. Your education
A. High school/secondary school and below   B. Junior college
C. Undergraduate student   D. Master's degree or above

4. How long have you been working at your current company?
A. Less than 1 year   B.1-3 years   C.4-6years
D. More than 6 years

5. What is your job?
A. Technology/Research & Development   B. Products/Projects
C. Marketing/Operations/Sales   D. Customer service
E. Functional staff (personnel administration/finance/procurement, etc.)

Part two: To what extent do the following statements apply to your workplace?

1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree, 5 = Strongly Agree

No.	Aspects	Question Items	1	2	3	4	5
1	social	Colleagues share jokes and humor in various forms.					
2		Colleagues play jokes on each other through fun activities.					
3		Social activities, such as drinks, meals, or small celebrations, are held among colleagues after work.					
4		Informal themed events, such as mixers or family events, are organized among colleagues.					
5	attitude	Entertainment activities, such as listening to music or surfing the internet, can be enjoyed while working.					
6		Flexibility is allowed in deciding work hours and scheduling.					
7	environment	The workplace environment is designed to be pleasant and conducive to productivity.					
9		Leisure facilities, such as pool tables or internet cafes, are added to enhance the workplace environment.					
16		The internal and external landscape environment of the organization is improved and constructed.					
8	atmosphere	Small games and entertainment activities are provided during breaks or lunchtime.					
14		Refreshments or working meals are provided to enhance communication among colleagues and foster a positive team atmosphere.					
10	activities	Small celebrations are held to celebrate good performance.					
11		Psychological counseling or adjustment activities are provided to support employees' mental health.					
12		Fun team-building activities, such as outdoor expansion and group-themed games, are organized.					
13		Relaxing and enjoyable workshops and training sessions are held, covering topics like art appreciation.					
15		Collective outings for entertainment, such as watching movies or going on picnics, are organized to promote team cohesion and foster relationships among employees.					

No.	Aspects	Question Items	1	2	3	4	5
17		Fun internal welfare activities, such as lotteries or product auctions, are held to add fun and surprises for employees.					
18		Consolation activities are organized, such as family visits during holidays or sending gifts to express care and gratitude to employees.					
19		Celebrations for holidays or other commemorative days, featuring singing and dancing performances, are held to create a joyful atmosphere and showcase the team's vitality and charm.					

Part three: To what extent do the following statements apply to your identification with the organization?

1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree, 5 = Strongly Agree

No.	Question	1	2	3	4	5
1	I feel uncomfortable when the company I work for is negatively reviewed					
2	I care about what the outside world says about the company I work for					
3	Whenever I talk about the company I work for, I use the word "we" instead of "they"					
4	I consider the success of the company to be my success.					
5	I feel proud when people praise the company I work for					
6	I get embarrassed when confronted with criticism from the news media about the company I work for					

Part four: To what extent do the following statements apply to your performance at work?

1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree, 5 = Strongly Agree

No.	Question	1	2	3	4	5
1	In my work, I often try to find new ways to solve problems					
2	I am always able to come up with creative ideas.					
3	I often share my new ideas with others.					

No.	Question	1	2	3	4	5
4	In order to realize the new idea, I will find a way to get the resources I need					
5	To realize the new idea, I will plan accordingly.					
6	Overall, I have a creative spirit.					

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