

THE IMPACT OF GOAL SETTING THEORY ON R&D EMPLOYEE PERFORMANCE AT Y MEDICAL IN CHINA

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ABSTRACT

This research aims to study personal factors that influence R&D employee performance at Y Medical Company in China. And to examine the goal setting factors that affect R&D employee performance at Y Medical Company in China. The samples were of 216 R&D employee from Y Medical Company in China. The questionnaire was administered to collect the data, adopting purposive sampling methods. Data analysis by frequency, percentages, mean, standard deviation, t-test, F-test, and multiple regression analysis. The result indicated that personal factors, including Incomes and Working experience, have a statistically significant impact on R&D employee performance at Y Medical Company in China, with differences observed at the .05 significance level. And Goal setting factors, such as Goal difficulty, Goal specificity, Goal proximity, and Goal source, significantly affect R&D employee performance at Y Medical Company in China, with a forecasting power of 44.3 percent.

Keywords: Goal Setting, Employee Performance, Y Medical

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INTRODUCTION

The increasing attention to healthcare services in China has led to rapid growth in the medical equipment market, making it one of the most promising industries in the country. However, research and development (R&D) and high-end medical equipment manufacturing in China are still dominated by developed countries, putting domestic medical companies at a disadvantage in the market competition. To enhance competitiveness and adapt to market challenges, the government needs to establish more stringent regulations in the medical device industry. This will stimulate companies to improve their capabilities for primary competition (Zhang & Rao, 2021). Furthermore, the hospital market demands higher functionality from medical equipment. Outdated and similar products no longer attract customer interest. For many medical R&D companies, the rapid development of new products that meet market demands has become a successful strategy for sustainable and rapid growth (Cheong, 2020).

Continuous updating and enhancing the features of products, as well as adding additional functionalities, can increase profitability in product sales. This will improve the survival capabilities of R&D companies in the market and expand the company's lifecycle. For organizations, having an excellent product development team is essential to achieving this vision (Takeuchi & Nonaka, 1986).

Performance management is a crucial management tool for achieving team goals and improving team performance. It plays a vital leadership role in the R&D team's capabilities. Therefore, conducting research and applying effective performance management practices are therefore key components in achieving success in managing an outstanding team (Brudan, 2010).

In the role of a private Chinese hi-tech medical company, Company Y faces fierce competition in the market. The company places great importance on product development and considers its R&D employees one of the most valuable resources. Therefore, efficiently managing the R&D employee, continuously developing products that meet market expectations, showcasing technological innovations, and core competitive capabilities have become crucial focal points for the company's growth and development. (Fulmer & Ployhart, 2014).

The management of performance within the R&D team focuses solely on individual performance evaluations. This can lead team members to be concerned only about their own assigned tasks, showing no interest in the work of their colleagues, and ignoring collaboration among team members. (Kahn & McGourty, 2009). The lack of team cohesion can be addressed by setting common goals, which can help engineers work together and cooperate with team members. By establishing shared team objectives, engineers can communicate and coordinate more effectively with one another, working together to achieve the team's goals. This fosters team unity and a collaborative spirit, ultimately improving the overall team performance (Fapohunda, 2013).

However, focusing solely on team performance and overlooking the individual contributions and personal growth of engineers can lead to a lack of motivation and vision. By setting clear, specific, and challenging work goals, engineers know what to strive for and have a clear direction on work, which helps improve performance. Additionally, it directs their attention towards their energy and unlocks their potential, stimulating them to think of innovative solutions, apply new methods and technologies, and drive technological advancements. This helps enhance the quality of products and services, enabling the company to maintain a competitive edge (Arena & Uhl-Bien, 2016).

Therefore, in the practical guidelines for performance management in R&D activities, it is crucial to set and efficiently manage goals. This helps members of the R&D team to achieve improved individual performance. Ultimately, it leads to an overall enhancement of the R&D team's performance and increases the company's competitiveness in the market.

According to goal setting theory, providing employees with clear and specific goals will increase their commitment and focus on their tasks. Moderately challenging goals often lead to higher efficiency compared to goals that are too easy or too difficult. Achieving challenging goals can give individuals a sense of accomplishment and satisfaction, enhancing their self-efficacy and job satisfaction, and motivating them to strive for higher levels of performance (Bohórquez, Caiche, Benavides, & Benavides, 2022). The practice of goal setting theory has been proven to improve job performance (Locke & Latham, 2019). Based on this rationale, Company Y has adjusted its systems and indicators to be appropriate for goal management and performance management in the R&D department. Implementing goal setting theory has resulted in improved work performance and team performance in the R&D department.

From the current situation and the specific characteristics of Company Y's R&D team, it is crucial to practice enhancing performance management process. Using goal setting for the R&D team can improve training efficiency and individual performance by goal management effectively. Additionally, facilitating communication throughout the goal setting process can enhance overall organizational performance. Considering the unique nature of the medical equipment industry, this provides valuable experiences and reference data for theoretical research and management practices in other knowledge-based organizations. This approach is relevant for companies developing medical products and advanced technology organizations. This research aims to study personal factors that influence R&D employee performance at Y Medical Company in China. And to examine the goal setting factors that affect R&D employee performance at Y Medical Company in China.

LITERATURE REVIEWS

Concept and Goal Setting Theory

The Goal Setting Theory (GST), conceived by Locke and Latham over five decades of research (Locke & Latham, 1990), stands as a widely applicable framework, demonstrated across diverse fields. GST, with its emphasis on clear and challenging goals, has proven instrumental in motivating employees, influencing task performance, and enhancing job satisfaction (Locke & Latham, 2013). The theory's five characteristics—goal difficulty, specificity, proximity, source, and type—provide a practical foundation for goal setting across various real-world settings (Latham & Locke, 2007). Integrated with the Self-Determination Theory, GST highlights the pivotal role of intrinsic and extrinsic motivation, along with autonomy, in shaping work motivation and performance outcomes (Deci, Olafsen, & Ryan, 2017). The application of GST extends to diverse domains, such as consumer behavior (Chen, Wang, & Gao, 2019), education (Bush, 2020), and healthcare (Miller & Bauman, 2014). However, challenges arise when applying GST to complex or creative tasks, where overly specific goals may limit innovation (Jeong, Healy, & McEwan, 2021). Therefore, practical implementation requires a nuanced approach, adapting goal-setting strategies to task characteristics. In essence, GST stands as a comprehensive and influential theory, offering insights into effective goal-setting practices that drive motivation, performance, and satisfaction across a spectrum of professional domains.

Concept and Theory of Employee Performance

Employee performance, a crucial aspect in organizational success, has been extensively researched across disciplines and cultures. Scholars, such as Bono and Judge (2003) and Piccolo and Colquitt (2006), aim to understand factors influencing performance and develop strategies for enhancing productivity. Interdisciplinary approaches, including psychological and economic perspectives, delve into personal and motivational influences on performance (Carlson, 2013; Dobre, 2013). Cultural factors play a significant role in studying variations in performance, providing valuable insights for managing cross-cultural teams (De Jong & van Houten, 2014). Performance, a multifaceted concept, encompasses process dimensions like

behavioral engagement and expected outcomes (Roe, 1999). Work performance relies on factors such as knowledge, skills, and work habits, encompassing technical, managerial, and leadership aspects (Conway, 1999; San, 2014). Evaluating performance involves challenges related to job roles, perspectives, and setting clear assessment criteria (Campbell, 1990). Organizational support, management efficiency, and individual capabilities collectively impact overall performance (Simansuntak, 2011). Job complexity, challenges, and job-related stress also influence performance (Pradhan & Jena, 2017). Performance evaluation, a crucial management tool, provides insights into employee performance for decision-making and development plans (Murphy). The process requires clear criteria aligned with job requirements and organizational goals (Grigoroudis & Zopounidis, 2012). In the context of the National Civil Service, performance evaluation assesses quality, quantity of work, and time spent, ensuring fairness and accuracy (Rodriguez & Walters, 2017). This study focuses on evaluating R&D employees in Company Y using criteria such as quality, quantity of work, and time, emphasizing the importance of comprehensive performance assessments aligned with organizational objectives.

The Relationship between Goal Setting and Employee Performance

Goal Setting Theory (GST) is crucial for improving employee performance by emphasizing clear and challenging goals. According to Latham and Locke (2013, 2019), explicit goals stimulate focused efforts, improving individual and collective performance. The theory extends beyond individuals to teams and organizations, where collective goals foster collaboration and align employees with organizational objectives (McEwan et al., 2017). The difficulty of goals is a crucial factor influencing human behavior, and suitable goal difficulty stimulates higher performance (Golparvar, Vakili, & Atashpour, 2020). Empirical evidence suggests that setting specific goals enhances motivation and vision in employees' work. Proximity of goals generates motivation when employees perceive closeness between their current performance and set goals (Latham & Locke, 2007; Locke, 2018). In the medical equipment industry, performance and learning goals impact employee performance, encouraging continuous learning and self-development (McClelland et al., 1953; Locke & Latham, 2013, 2019). Setting goals aids employees in self-awareness and continuous improvement based on performance evaluations (Villeval, 2020). In summary, GST plays a crucial role in motivating employees, enhancing performance, and providing direction for personal and organizational development (Werdhiastutie, Suhariadi, & Partiw, 2020).

Related Research

The Goal Setting Theory (GST) has widespread applicability in psychology, management, and various fields, especially in enhancing employee performance. Zhu (2022) demonstrates its impact on R&D teams, emphasizing participative goal setting for fostering creative behaviors. Li (2021) corroborates the theory's significance, linking goal difficulty to organizational effectiveness. Ping's (2020) dissertation on English reading education and Chao's (2016) insights into university students' motivation further support GST's positive influence in educational settings. Chunping's (2019) research on performance evaluation in higher vocational colleges underlines its practical application. Gustave's (2022) study explores entrepreneurial goal commitment and innovation performance, providing insights into goal commitment's positive relationship with innovative outcomes. Moreover, Locke and Latham (2019) offer a comprehensive review of GST's development, emphasizing its role in stimulating R&D teams and predicting that increased goal difficulty leads to enhanced individual and team performance. Urgo and Arguello's (2023) research in medical research and device development supports the application of GST for improving learning outcomes. Kang, Jethani, and Foster's (2023) article stresses the importance of person-centered goal setting in Parkinson's disease patients. Bohórquez et al.'s (2022) exploration of motivation and job performance underlines the role of human capital in organizational success. Sijbom, Stegmann, and Van Yperen (2019)

discuss the dual impact of goal setting on employee stress and well-being, highlighting the need for balanced management strategies. Palacio's (2023) study on mathematics anxiety emphasizes the positive role of goal setting in reducing anxiety and enhancing learning outcomes. The overall objective of examining goal setting dimensions in a Chinese medical equipment company aligns with GST components proposed by Locke and Latham (1990, 2002, 2013, 2019), including goal difficulty, specificity, proximity, type, and source. These studies collectively emphasize the versatility and effectiveness of GST in diverse contexts, providing practical insights for optimizing performance management and organizational success. From the literature review, the conceptual framework can be drawn as shown in Figure 1.

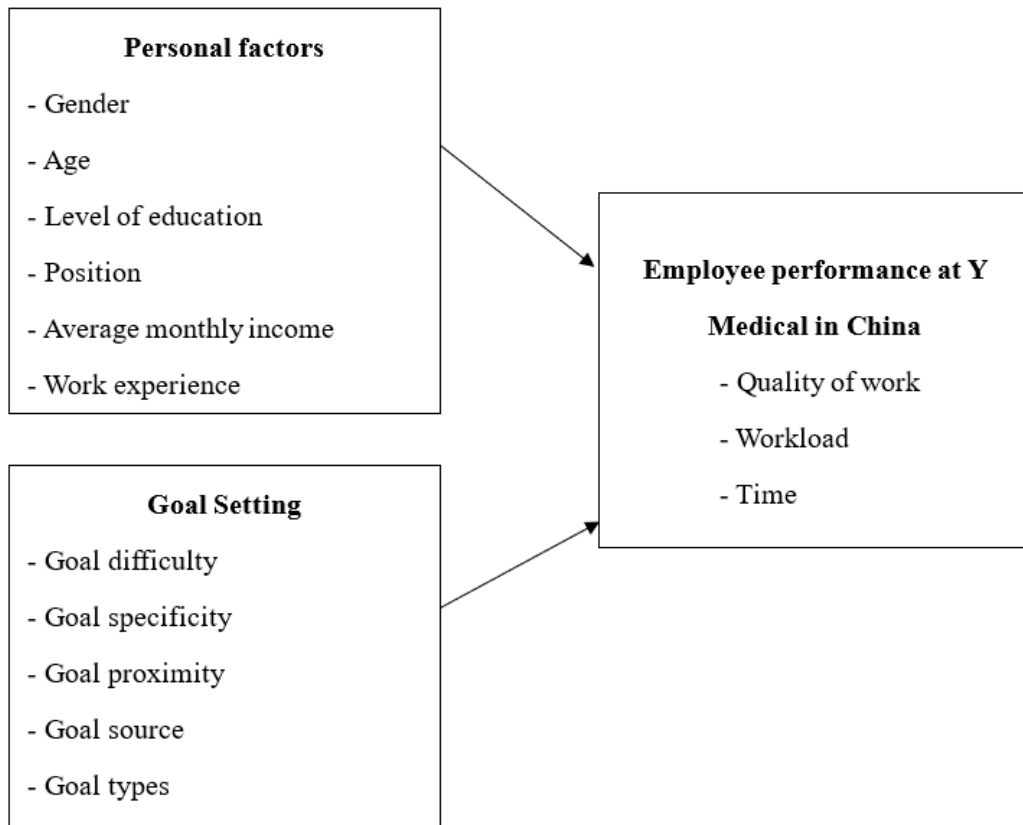


Figure 1 Conceptual Framework

RESEARCH METHODOLOGY

The independent study titled "The impact of goal setting theory on R&D employee performance at Y medical in China" is a quantitative study that utilizes questionnaires to gather opinions from a sample group. The population and the sample group consist of 470 employees in R&D department of Y Medical Company. The sample size determination in this research used Yamane's formula (1973), which is a formula for calculating the sample size when the population size is known. Therefore, the sample size was calculated using the appropriate formula and resulted in 216 samples.

The data collected through the questionnaire will provide valuable insights into the practical implementation and influence of management strategies. The questionnaire is divided into 4 parts as follows: Part 1 part of the questionnaire on personal employee; Part 2 Questionnaire about goal setting; Part 3 Questionnaire about employee performance and Part 4 opinion and other Suggestions.

Data analysis including descriptive statistic are frequency, percentage, mean and standard deviation to explain the preliminary data. And hypothesis testing is conducted using various statistical techniques such as t-tests, F-tests, and multiple regression analysis.

RESEARCH RESULTS

Analysis Results of Personal Factors

It was found that the majority of respondents were male, with 144 individuals (67.67%). Additionally, 125 individuals (57.87%) fell within the age range of 20 to 30 years. Furthermore, 140 respondents (64.81%) had a Bachelor's degree, and 77 individuals (35.65%) held the position of Junior Engineer. Moreover, 87 people (40.28%) reported having an income of more than 20,000 CNY, and 74 individuals (34.26%) had 4 to 6 years of work experience.

Table 1 shows the hypothesis testing of personal factors on consumers' purchasing decision

Personal factors	Statistics	Statistical value	Sig.
- Gender	t-test	-1.578	0.116
- Age	F-test	1.340	0.262
- Education	F-test	0.811	0.446
- Job position	F-test	2.358	0.073
- Incomes	F-test	3.414	0.018*
- Working experience	F-test	4.333	0.005*

* Statistically significant at the 0.05 level.

From Table 1, it was found that Personal factors, including incomes and working experience, have a statistically significant impact on R&D employee performance at Y Medical Company in China, with differences observed at the .05 significance level.

Table 2 Shows the hypothesis testing results of goal setting on employee performance

Goal setting	b	Std. Error	β	t	Sig.	Tolerance	VIF
Constant	0.946	0.222		4.265	.000*		
- Goal difficulty	0.113	0.051	0.138	2.236	.026*	0.682	1.466
- Goal specificity	0.260	0.051	0.303	5.087	.000*	0.732	1.366
- Goal proximity	0.145	0.045	0.190	3.233	.001*	0.751	1.331
- Goal source	0.192	0.051	0.219	3.776	.000*	0.773	1.294
- Goal types	0.069	0.045	0.098	1.542	.125	0.645	1.550

$R = 0.675$, $R^2 = 0.456$, Adjusted $R^2 = 0.443$, $SE_{EST} = 0.306$, $F = 35.212$, Sig. = .000*

* Statistically significant at the 0.05 level.

From Table 2, it was found that goal setting, including Goal difficulty, Goal specificity, Goal proximity, and Goal source, significantly affects R&D employee performance at Y Medical Company in China at the .05 level of significance. The predictive power of this model is 44.3% (Adjusted $R^2 = 0.443$), with a standard error of estimate (SE_{EST}) of 0.306. Furthermore, the results of the Multicollinearity test show that the Tolerance values range between 0.645 and 0.773, which are all above 0.100, and the VIF values range between 1.294 and 1.550, which are all below 10.000. Therefore, there are no issues of collinearity among the independent variables.

DISCUSSION & CONCLUSION

The study reveals that personal factors, specifically income and work experience, significantly influence R&D employee performance at Y Medical Company in China. According to Maslow's hierarchy of needs, income fulfills physiological demands, impacting motivation and performance. Higher pay acts as an incentive for better R&D performance, supported by research (Gobel & Zwick, 2017). Professional experience enhances domain-specific knowledge and problem-solving skills, contributing to innovation (Van de Ven & Angle, 1989; Wang et al., 2017). The impact of income on early-career employees may be more pronounced, while experience gains importance as careers progress (Jin & Droopad, 2015; Erdogan et al., 2006). Y Medical Company should adopt a comprehensive performance management system considering both income and experience for optimal employee motivation and performance. In terms of goal setting, goal difficulty, specificity, proximity, and source significantly influence R&D employee performance at Y Medical Company. Moderate goal difficulty, clarity in specificity, proximal timelines, and participatory goal formulation are crucial (Locke and Latham, 2019; Anderson et al., 2021; Chen & Chen, 2019; Latham & Locke, 2019; Locke et al., 2020). Overly challenging goals can hinder creativity, emphasizing the importance of moderately tough objectives. Specific goals provide clear directions, improving employee understanding of responsibilities. Short-term, proximal goals enhance focus and performance, while participatory goal formulation increases motivation and satisfaction. Y Medical Company can optimize R&D performance and foster innovation by implementing these goal-setting strategies supported by recent research in China's medical and technological sectors.

Managerial Implications

To optimize R&D performance at Y Medical, managers must set clear and challenging goals using the SMART criteria, fostering engagement through regular feedback sessions. Encouraging R&D employees to align personal development goals with company objectives promotes a culture of continuous learning and enhances overall effectiveness. Establishing a collaborative atmosphere, facilitated by clear roles and open communication channels, encourages information exchange and innovative problem-solving. Furthermore, acknowledging and rewarding employees who align personal goals with organizational missions cultivates a positive work environment, motivating individuals to strive for excellence. These managerial strategies collectively contribute to fostering innovation and excellence within Y Medical's R&D teams.

Academic Implications

This study enhances our understanding of goal-setting's link to intrinsic motivation, highlighting how challenging goals can ignite employees' internal drive, leading to heightened performance and creativity. The examination of goal-setting theory in Y Medical's R&D context provides valuable insights into mediating factors—such as feedback, task complexity, and self-efficacy—essential for crafting effective goal implementation strategies. Additionally, the research illuminates the positive impact of goal setting on collaboration within R&D teams, emphasizing its role in cultivating shared vision, teamwork, and the exchange of innovative ideas. Managers and academics can leverage these insights to optimize R&D performance, foster innovation, and create a conducive work environment at Y Medical.

Future Research

Future investigations at Y Medical should focus on factors influencing R&D employees' motivation and adoption of assigned objectives. Exploring communication, leadership, and employee participation roles in goal setting can enhance goal adoption. Assessing the alignment of current goal difficulty levels with employee expectations is essential, aiming to optimize challenge and engagement. Investigating the clarity of objectives and refining goal-setting processes based on R&D employees' perceptions can further improve performance. Research on team-based goal setting in R&D departments can uncover insights into motivation,

collaboration, and overall team performance. Additionally, qualitative interviews using purposive sampling will provide valuable context and deeper understanding of how goal-setting theory influences R&D employees at Y Medical.

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