

# Digital Job Crafting: Scale Development and Validation

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## Abstract

With the booming development of digital economy and digital technology, digital transformation has become a must for enterprises to achieve high-quality development. The extensive introduction of digital technology into the work field has led to significant changes in the requirements of work tasks, work styles and work scenarios, etc. However, the misfit between the digital level of employees, digital technologies and the requirements of digital work tasks has made it difficult for employees to be competent in digital work and adapt to the digital changes. Digital job crafting considers digital technology as a new element of the work environment. From the perspective of employees' proactive adaptation and self-management, making positive adjustments to the characteristics of digital work tasks and the application of digital technology to realise the matching of employees-tasks-technology. In view of this, this study strictly follows the scale development paradigm, constructs the employee digital Job crafting scale. It contains 21 measurement items in four dimensions: digital work task crafting, relationship crafting, cognitive crafting and digital technology use crafting. And through SPSS26.0 and Amos28.0 software to conduct empirical research on the sample data of the formal research. In this way, the stability of the scale was further verified, and a scientific measurement tool was provided for the subsequent in-depth research.

## Keywords

Digital Work Contexts, Digital Job Crafting, Digital Work Task Crafting, Digital Technology Use Crafting, Scale Development

## 1. Introduction

The report of the 20th CPC National Congress clearly pointed out that it is necessary to speed up the development of digital economy, promote the deep integration

of digital economy and real economy, and build digital industry clusters with international competitiveness. The development of digital economy has become an important economic strategy of Chinese-style modernization. The vigorous development of digital economy and digital technology has intensified the market uncertainty and fierce competition. In order to gain advantages in the global market, digital transformation has become a necessary option for the high-quality development of enterprises. More and more enterprises begin to adopt and implement digital technologies based on Internet, big data, cloud computing and artificial intelligence to provide stronger support for their strategies and operations. However, the widespread introduction of digital technology has led to significant changes in work content, work style and workflow (Ernst et al., 2019). Man-machine cooperation has become a new way of work; work tasks show new features of visualization, data and intelligence; remote collaborative work will become a normal working mechanism. And the digital transformation is a major transformational change based on “people” and based on digital technology. Therefore, the key for enterprises to successfully achieve digital transformation lies in whether employees are competent for digital work and adapt to the digital work situation.

Employees are not only the “receivers” of the working environment, but also the active “shapers” of the working environment (Shi et al., 2023). Therefore, it is very important for employees to actively adapt to work tasks and environmental changes in the digital age (Zhang et al., 2021). In the digital work situation, employees can actively learn and master the skills and related knowledge of digital tools to adapt to the changes and challenges brought about by digitization (Ouyang et al., 2023). Previous studies have focused on the impact of organizational level such as digital technology, dynamic capabilities and transformation strategies on digital transformation, but relatively ignored the individual level, such as employees’ cognition and behavior of the introduction of digital technology. To a large extent, employees’ attitude towards digital transformation determines the introduction of new technologies and the landing of reform measures. More importantly, in the process of digital transformation, there are still many questions, such as the improvement speed of employees’ digital ability is out of step with the development and changes of digital technology, and employees’ digital ability does not match the requirements of job skills (Xie et al., 2021). However, the incompatibility among employee digital skills, digital technology and digital work requirements makes it impossible for many enterprises to achieve stable performance growth and continuous digital change. Therefore, employees should actively update digital technology knowledge and skills, make good use of digital technology tools to actively participate in digital practice, promoting the high-quality and sustainable development of enterprises.

Digital technology gives employees work vitality, when employees actively embrace digitalization with a highly open mind, making digitalization become an organic part of their work style and work results, it is more likely to adapt to the

enterprise digital change. For this reason, Shi et al. (2023) put forward the concept of “digital job crafting” for the first time based on the theoretical framework of human-task-technology matching. Digital job crafting is defined as employees’ initiative and bottom-up behavior to change the characteristics of digital work, so as to help employees adapt to the work situation in the new situation as soon as possible, so as to grasp digital opportunities and meet digital challenges. However, it does not define the specific dimensional content of digital job crafting. In the context of digital work, what is the specific content of employees’ digital job crafting? How does digital job crafting play a role in reconstructing employees’ job identity, improving job performance and job meaning? To answer the above questions, it is necessary to deeply discuss the connotation and structural dimension of digital job crafting. In view of this, this study mainly focuses on two issues: one is to use the rooted theory to initially construct the theoretical framework of digital job crafting, and to explore the connotation dimension of digital job crafting. The second is to follow the standard development steps of the scale to develop the digital job crafting scale, and use exploratory factor analysis and confirmatory factor analysis to modify and test the initial scale to ensure that the scale has high reliability, validity and applicability. It can accurately reflect the connotation and structure of digital job crafting, to provide theoretical reference for employees to adapt to the new work situation with the help of digital work crafting behavior.

## 2. Literature Review

### 2.1. Job Crafting

The traditional job design takes managers as the main body, and arranges work tasks, responsibilities, decision-making scope and working relationships in the organization for employees from a bottom-up perspective. Employees are the receivers and executors of superior instructions. Job crafting is the expansion and extension of the traditional job design theory, which is different from the job design practice carried out by managers, which emphasizes the bottom-up active behavior taken by employees in order to seek the meaning of work. The concept of job crafting can be traced back to the last century, Kulik pointed out that individual employees will actively and spontaneously redesign their jobs. Since then, the formal definition of the term “job crafting” was first defined by American scholars Wrzesniewski and Dutton (2001). They believe that job crafting is a series of behaviors that self-implement to make substantive or cognitive changes to the task boundary and relationship boundary of work in order to get a good sense of experience and meaning at work. At the same time, according to the content of job crafting conceptual framework, it is divided into three dimensions: task crafting, cognitive crafting and relational crafting. In addition, it is also pointed out that employees’ motivation for job crafting is based on the following three needs: enhancing the sense of control of work to avoid alienation, maintaining a positive personal image and establishing good interpersonal relationships. Driven by these

three needs, employees change their work design and work style from the bottom up, reconstruct their identity, regain their sense of work meaning, and realize person-to-post matching. Tims and Bakker (2010) define job crafting based on the job requirement-resource model: job crafting is a behavior that employees actively change according to individual abilities and needs in order to better balance job requirements and resources. It also points out that job crafting is essentially an active behavior of seeking human-environment matching.

At the level of outcome variables, most of the existing studies on job crafting focus on the perspective of individual employees, that is, how job crafting has a positive impact on individual cognition or state, behavior and work achievement. Individual cognition or attitude. On the one hand, job crafting helps to shape employees' positive emotional cognition, such as improving employees' sense of work meaning (Niessen et al., 2016), subjective career achievement (Akkermans & Tims, 2017), career well-being (Hou et al., 2021), job satisfaction (Lv & Bai, 2017) and work commitment (Yan, 2016). On the other hand, job crafting helps to reduce employees' negative emotional experience (Slemp & Vella-Brodrick, 2013), work separation (Tims et al., 2015) and psychological stress (Sakuraya et al., 2017), thus reducing turnover intention (Llorente-Alonso & Topa, 2019). Individual behavior: Through job crafting, employees can often experience higher work significance, and then do more civic moral behavior and organizational citizenship behavior to help others (such as Lin et al., 2017; Geng & Wei, 2016). Through job crafting, it can enhance employees' psychological ownership and then enhance their creativity (Liu et al., 2019b). Employees rely on work to reshape and increase social resources to create information and resources for innovative activities and promote employees' innovative behavior (Liu et al., 2019a; Qin et al., 2020). The result of work: Employees adopting job crafting can generate more positive emotions and benefit from acquiring creative performance (Xin & Miao, 2018). The behaviour of job crafting has a positive impact on job performance by enhancing employees' sense of control and job competence (Shin et al., 2020; Song et al., 2021).

To sum up, although scholars at home and abroad have carried out diversified research on the variable of job crafting, there is not enough exploration on employees' job crafting behavior in the new digital situation. It is worth noting that digital technology not only creates an effective connection between employees and organizations, but also profoundly changes employees' task requirements, workflow and working environment (Ernst et al., 2019). These changes require employees to actively participate in enterprise digital practice with the help of digital tools, so as to efficiently complete digital tasks and keep up with the development process of enterprise digitization (Wang and Du, 2021). However, most of the existing studies focus on how job remodeling works in traditional work situations, and there is not enough attention to the impact of digital technology on employees' job crafting behavior. It is unable to effectively guide individual employees to meet the digital skill requirements of their positions and adapt to the digital

transformation of enterprises. In the digital work environment, job crafting may have an impact through new mechanisms. For example, employees can reshape the digital work in the new work situation, so as to meet the digital skills requirements of the position, and then promote the improvement of personal and organizational performance. Given the significance of employees' spontaneous adaptation to the requirements of digital work tasks and styles, it is important to explore effective strategies for employees to adopt job crafting behaviours towards work in the new digital context. Provide theoretical guidance in improving employee performance and adapting to the digital changes in enterprises, so as to promote the study of work crafting.

## 2.2. Digital Work Situation

With the vigorous development of digital economy, the necessity and urgency of digital transformation of enterprises have become increasingly prominent. Driven by policy support and technology, a large number of enterprises have begun to implement digital transformation. The digital transformation of enterprises puts employees in a digital work situation, employees need to have strong digital power to better devote themselves to digital work practice (Jones, 1995). Shi et al. (2023) defined digital work as “work made up of new working properties, working methods, working relationships and other elements spawned by digital technology”. For example, employees need to be proficient in using digital technologies or systems such as big data analytics, cloud computing, artificial intelligence and social media to integrate and reorganize internal and external data resources. In order to improve the service capabilities of product research and development, manufacturing and marketing management, enabling enterprises in digital transformation. Generally speaking, digital work covers a variety of digital technology-centered work practices, therefore, employees need to correctly understand and use digital technology to deal with digital work, in order to adapt to the new work content, work methods and business processes spawned by digital technology.

Combing the relevant research, we can see that the impact of the widespread use of digital technology on employees can be divided into positive and negative aspects. The positive impact on employees. Chan et al. (2021) believe that in digital work situations, employees can get rid of repetitive daily work and may have more opportunities to participate in the need for creativity. Furthermore, Wisskirchen et al. (2017) suggest that the introduction of digital tools has made it easier for employees to access information at work, reducing costs and time, increasing productivity and creating more value. For example, the use of corporate social media can drive efficient collaboration between departments and employees, knowledge management and shared growth among employees (Leonardi, 2014; Leonardi, 2015). The introduction of AI technologies and devices in enterprises has led to a subsequent increase in the digital skill requirements of jobs and an increase in the need for employee competence. It's important for stimulating

employees' sense of work exuberance (Zhu et al., 2021), increasing intrinsic motivation to work (Liang et al., 2022), innovative behaviours (Ding, 2022), and career exploration behaviours (Presbitero & Teng-Calleja, 2022). The negative impact on employees. Stone et al. (2015) believe that digital technology leads to digital distance between organizations and employees, which hinders employees' direct feedback to leaders. In addition, digital regulation and digital management implemented by organizations using digital technology bring privacy violations to employees (Leonardi & Vaast, 2017), which negatively affect employees' work well-being (Xu et al., 2023). Ayyagari et al. (2011) proposed that the work environment of telecommuting blurs the boundary between work and family and increases employees' psychological stress. Individuals perceive that the penetration of human engineering intelligence into work will lead to job disruption (Lingmont & Alexiou, 2020) and reduce employees' sense of organizational support (Mirbaiae et al., 2022), increasing job burnout and uncivilized behavior (Yam et al., 2022). By combing the existing research, it can be found that most of the existing digital studies focus on the one-way impact of technology on employees, while relatively ignore the reaction of employees to digital technology and the relationship between employees and digital technology. However, in the digital work situation, the continuous integration of digital tools not only changes the work flow and content of employees, but also brings opportunities for employees to improve work efficiency and work quality. Therefore, as the key users of digital technology, employees should maintain a positive attitude to accept and adapt to digital technology, flexibly use digital tools and effectively deal with digital tasks, so as to serve their own needs and achieve the long-term development of individuals and organizations. Therefore, this study focuses on the relationship between digital technology and people, discusses employees' job crafting behavior in the digital work situation. Using qualitative and quantitative methods to discuss the structural dimensions and measurement scale of digital work crafting, to answer the research question of "what is the content of employee job crafting in the digital work situation".

### 3. Research Methods

Referring to the scale development process proposed by Hinkin (1998), this study strictly follows the following steps: 1) Using the rooted theory method, based on the semi-structured original interview content of enterprise employees and the literature related to job crafting, the open coding and spindle coding are carried out to construct the initial scale of digital job crafting. 2) The initial questionnaire was developed on the basis of the initial measurement scale, and the collected sample data were pre-tested. Item analysis, exploratory factor analysis, reliability and validity analysis were carried out to purify the digital job crafting scale. Then, according to the revised items of the scale, we recompile the formal questionnaire and conduct confirmatory factor analysis, and then develop a digital chemical job crafting scale with good reliability and validity.

### 3.1. The Generation of Initial Item of the Scale

In this study, literature review and semi-structured interviews are used to collect the items of the initial scale. As the direct research on employee job crafting in the digital situation at home and abroad is very rare, this study focuses on the digital work situation and employee job crafting related literature to sort out and analyze. This study focuses on the three-dimensional scale of employee job crafting developed by Wrzesniewski and Dutton, and extracts work remodeling items with high coincidence from the scale. Such as “I will change the scope and type of tasks I need to complete at work”, “I will make friends with people with the same skills or interests at work”, “I will think about the meaning of my work to my life goals” and so on. In order to further enrich the topics of employees’ digital job crafting, this study takes employees in the Internet industry, financial industry and IT industry as semi-structured interviews, the interview lasts for 30 to 50 minutes. The interview mainly focuses on the following issues: 1) Please give a general description of your company and personal situation. 2) What kind of digital work do you usually do? What do you think will be the impact on your work after the introduction of digital technology? What difficulties have you encountered in your work? Will you ask your colleagues for support? 3) Have you taken the initiative to make adjustments to your work since your work? If so, what is the origin of the change? Can you cite practical examples to explain in detail? 4) What are the positive effects of the changes you have made at work? What factors do you think contributed to the success of these changes? What problems did you encounter in the process of change? 5) Does your company provide adequate support for employees’ use of digital technology? For example, provide corresponding resources and digital technology training. 6) Will you selectively use different digital technologies to complete digital tasks? What is the basis of selection? At the end of the interview, the researchers will also return visits to some unclear or controversial parts by phone, Wechat and other means to ensure the accuracy of the interview results.

First of all, the data obtained from literature review and interviews are sorted, coded and classified, and then summarized into descriptive sentences with clear semantics; through multiple rounds of comparison, coding and backtracking tests, 69 effective declarative sentences are finally selected. Then, this study organized one expert in the field of human resource management and five postgraduates engaged in related research to sort out and classify effective declarative sentences for many times, and finally got 22 items that met the standards. It is divided into four dimensions: digital task crafting, relationship crafting, cognitive crafting and digital technology use crafting. 22 items that meet the standard are compiled into an initial scale of employees’ digital job crafting behavior according to four first-order dimensions. And measured by Likert 5-point scale, “1” means very inconsistent, “2” means relatively inconsistent, “3” means uncertain, “4” means more consistent, “5” means very consistent. Finally, the initial scale of digital job crafting is established, which contains 22 items, of which 13 items are compiled

on the basis of rooted theory, and 9 items are compiled with reference to the existing scale. The items of the initial scale are shown in **Table 1**.

**Table 1.** Initial measurement scale.

Dimension	Serial number	Item	1	2	3	4	5
Digital work task crafting	AA01	I will introduce digital technology to improve my productivity.					
	AA02	I will change the scope and types of tasks I need to accomplish in my work.					
	AA03	I will introduce new tasks that better match my skills and interests.					
	AA04	I will choose to undertake additional tasks in my work.					
	AA05	In my work, I give priority to jobs that match my hobbies and abilities.					
Relationship crafting	AB06	I will actively understand the work of my colleagues in the digital work environment.					
	AB07	I will organize or participate in work-related social activities.					
	AB08	I will organize special events in the workplace.					
	AB09	I will help new colleagues.					
	AB10	I will make friends with people with the same skills or interests at work.					
	AB11	I will ask my colleagues who are proficient in digital technology for experience or provide digital technical support.					
Cognitive remodeling	AC12	I think about the significance of my work to my life goals.					
	AC13	I think the application of digital technology in work can promote the achievement of corporate goals.					
	AC14	I think the application of digital technology in work has a positive impact on social development.					
	AC15	I think the application of digital technology in work has a positive impact on my life satisfaction.					
	AC16	I think the application of digital technology in work has a positive impact on my personal well-being.					
Digital technology use crafting	AD17	I will actively master the knowledge and skills related to digital technology.					

**Continued**

AD18	I will actively seek digital technology training to improve digital skills.
AD19	In my work, I will apply the digital technology implemented by the enterprise to support my work.
AD20	In my work, I will choose the matching digital technology according to the work characteristics to complete the digital work efficiently.
AD21	In my work, I will optimize the use of digital technology to better meet the requirements of digital work.
AD22	In my work, I will solve the problems in my work through the innovation of digital technology.

### 3.2. Data Collection of Initial Measurement Scale

This study uses the way of questionnaire survey to distribute and collect predictive test data, and the research samples are mainly employees who are engaged in digital transformation, in order to ensure that the subjects are highly matched and familiar with the items of the questionnaire. A total of 278 questionnaires were collected and 220 valid questionnaires were collected with an effective recovery rate of 79.14%. Among them, 118 were male, accounting for 53.64%, and 102 female, accounting for 46.36%, accounting for 46.36%, accounting for 51.82% and 37.73%, respectively, and 10.46%, 62.27% and 27.27% respectively. The industries engaged in manufacturing, finance, Internet and other industries accounted for 19.09%, 34.55%, 36.82% and 9.54% respectively; positions for business sales personnel, administrative personnel, product/technology research and development personnel and other types of personnel accounted for 20.91%, 25.45%, 36.82% and 16.82% respectively. The positions of front-line employees, grass-roots managers, middle managers and senior managers accounted for 57.73%, 26.36%, 11.82% and 4.09% respectively; the working years were 1 year or less, 2 - 5 years, 6 - 9 years and 10 years, and 26.82%, 27.73%, 36.36% and 9.09%, respectively.

## 4. Empirical Analysis and Results

### 4.1. Quantitative Test and Correction of Initial Scale

#### 4.1.1. Project Analysis

1) Critical test. Import sample data into SPSS26.0 software. Calculate the total score of each subject in the crafting of digital work, and then rank it from high to low. The last 27% of the score is classified as a high score and the first 27% as a low score. Secondly, the independent sample T-test method is used to calculate

the average score of each item between the high score group and the low score group. The results show that there is a significant difference in the average score between the high score group and the low score group ( $p < 0.05$ ). It shows that the score of each item is higher in the high score group and the low score group, that is to say, the item of the scale developed in this research has a higher discrimination degree and does not need to be excluded.

2) Homogeneity test. In this study, the homogeneity test was carried out by calculating the correlation coefficient between each item and the total score. The homogeneity of each item and the whole questionnaire was determined by the correlation number between them. The higher the correlation coefficient, the higher the homogeneity, and vice versa. And the poor homogeneity of the test items whose correlation coefficient is less than 0.3 should be deleted. According to the test results, all the items were significantly correlated with the total score of the scale ( $p < 0.001$ ), and the correlation coefficients were more than 0.3, between 0.340 and 0.668, so it was not necessary to delete the items.

#### 4.1.2. Exploratory Factor Test

1) The first exploratory factor analysis. First of all, whether it satisfies the strip for factor analysis is judged according to the KMO and Bartlett's sphericity test. Results as shown in **Table 2**, the KMO value is 0.919 and the Bartlett spherical test value is significant at the 0.000 level, so the sample data are suitable for factor analysis.

**Table 2.** KMO test and Bartlett sphericity test 1.

KMO value	Bartlett sphericity test		
	Chi-square value	Degree of freedom	Significance
0.919	3309.539	231	0.000

Secondly, it makes an exploratory factor analysis of the items under the four dimensions of digital job crafting. In this study, the principal component analysis and the maximum difference method of orthogonal rotation are adopted to analyze the rotation. According to the principle put forward by Churchill (1979), the items with factor load less than 0.5 or cross factor load greater than 0.4 are excluded. At the same time, four research factors whose eigenvalues are greater than 1 are extracted (eigenvalues are 8.171, 2.852, 2.606 and 2.159, respectively). After rotation processing, it is found that the factor load of the item AD22 (in my work, I will solve the difficult problems in my work through the innovation of digital technology) is less than 0.5. the item is removed.

2) The second exploratory factor analysis. Factor analysis was carried out on the remaining 21 items again, and the test results were shown in **Table 3**. The KMO value of the Bartlett spherical test was 0.921, and the Bartlett spherical test value was 3261.527, indicating that the sample data were still in line with the conditions for factor analysis.

**Table 3.** KMO test and Bartlett sphericity test 2.

KMO value	Bartlett sphericity test		
	Chi-square value	Degree of freedom	Significance
0.921	3261.527	210	0.000

Principal component analysis is still used to extract 4 research factors whose characteristic values are greater than 1 from 21 items reshaped in digital work. The results of exploratory factor analysis were shown in **Table 4**: The cumulative variance explanation rate of the four factors is 74.298%. The corresponding factor load values of each item are between 0.800 and 0.839, which is in line with the standard.

**Table 4.** Results of exploratory factor analysis.

Item	Factor structure			
	F1	F2	F3	F4
AA01	0.824			
AA02	0.828			
AA03	0.819			
AA04	0.822			
AA05	0.839			
AB06		0.823		
AB07		0.820		
AB08		0.832		
AB09		0.826		
AB10		0.827		
AB11		0.842		
AC12			0.839	
AC13			0.800	
AC14			0.822	
AC15			0.834	
AC16			0.838	
AD17				0.818
AD18				0.804
AD19				0.823
AD20				0.812
AD21				0.832
Eigenvalue	8.098	2.841	2.536	2.128
Variance interpretation quantity (%)	38.561	13.529	12.075	10.134
Cumulative variance explanation (%)	38.561	52.089	64.164	74.298

### 4.1.3. Reliability Analysis

In order to ensure the credibility of the questionnaire data, this study tests the homogeneity reliability of the questionnaire, which is expressed by the internal consistency coefficient (Cronbach's consistency coefficient). According to the coefficient results of SPSS26.0 for the total scale and each factor component table (Table 5), the Cronbach coefficient of the positive scale is 0.920, the overall reliability of the questionnaire is good. Besides, the subdivision Cronbach coefficient of each dimension is more than 0.8, indicating that the overall reliability of the scale and the reliability of each dimension meet the statistical requirements, the scale has a good internal consistency.

**Table 5.** Internal consistency coefficient.

	Internal consistency coefficient
Digital work task crafting	0.918
Relationship crafting	0.928
Cognitive remodeling	0.910
Digital technology use crafting	0.908
scale	0.920

### 4.1.4. Validity Analysis

The validity test mainly tests the convergence validity and discriminant validity. The convergence validity is tested by mean variance extraction (AVE) and combinatorial reliability (CR). The AVE value can reflect the correlation between the explained latent variable and the question. The CR value can reflect the consistent process of the question in the latent variable. Good convergent validity of the scale under test presupposes that the AVE for each factor is greater than 0.5 and the CR is greater than 0.7. The premise of good discriminant validity is that the square root of AVE of each factor is greater than the correlation coefficient between sub-dimensions. The calculation results of correlation coefficient, AVE value and CR value of each factor are shown in Table 6. The results show that the AVE values are between 0.664 and 0.692, and the CR values are all greater than 0.5. It shows that the convergence validity of the scale is high. Secondly, there is a significant correlation among the four factors, and the square root of the average variance extraction of the four factors AVE is larger than the correlation coefficient of the four factors, indicating that the discriminant validity of the scale is high.

## 4.2. Verification of Formal Scale

### 4.2.1. Formal Questionnaire Data Collection

In order to further test the initial measurement items retained in the predictive test, this study uses different samples for questionnaire survey. The formal questionnaire data collection still adopts the method of pre-survey. In the formal questionnaire data collection stage, a total of 385 questionnaires were collected.

**Table 6.** Correlation coefficient, CR value and AVE value of each factor.

Dimension factor	F1	F2	F3	F4
F1: Digital work task crafting	0.832			
F2: Relationship crafting	0.373***	0.826		
F3: Cognitive crafting	0.425***	0.369***	0.820	
F4: Digital technology using crafting	0.460***	0.402***	0.347***	0.815
AVE	0.692	0.683	0.673	0.664
CR	0.918	0.928	0.911	0.908

Notice: \*\*\*represents  $p < 0.001$ ; diagonals represent the arithmetic square root of the AVE factor.

After excluding the samples with obvious regularity, missing values and contradictory options, a total of 278 valid questionnaires were collected, with an effective recovery rate of 72.21%. Among the valid samples, 166 were male (59.71%), 112 were female (40.29%), 20.86% were under 25 years old, 39.58% were 36 - 35 years old, 39.58% were 36 - 45 years old, 33.81% were 46 years old and above, 5.75% were college degree and below, and 82.01% were undergraduate and above. In terms of industry, the manufacturing industry accounted for 26.26%, the financial industry accounted for 24.46%, the Internet industry accounted for 41.37%, and other industries accounted for 7.91%. In terms of posts, business sales personnel accounted for 12.59%, administrative personnel accounted for 24.10%, product/technical personnel accounted for 40.29%, and other types of personnel accounted for 23.02%. In terms of working positions, front-line employees accounted for 59.71%, grass-roots managers accounted for 24.46%, middle managers accounted for 12.95%, and senior managers accounted for 2.88%. In terms of length of service, the length of service of 1 year or less accounted for 8.39%, 2 - 5 years accounted for 32.86%, 6 - 9 years accounted for 43.88%, and more than 10 years accounted for 11.87%.

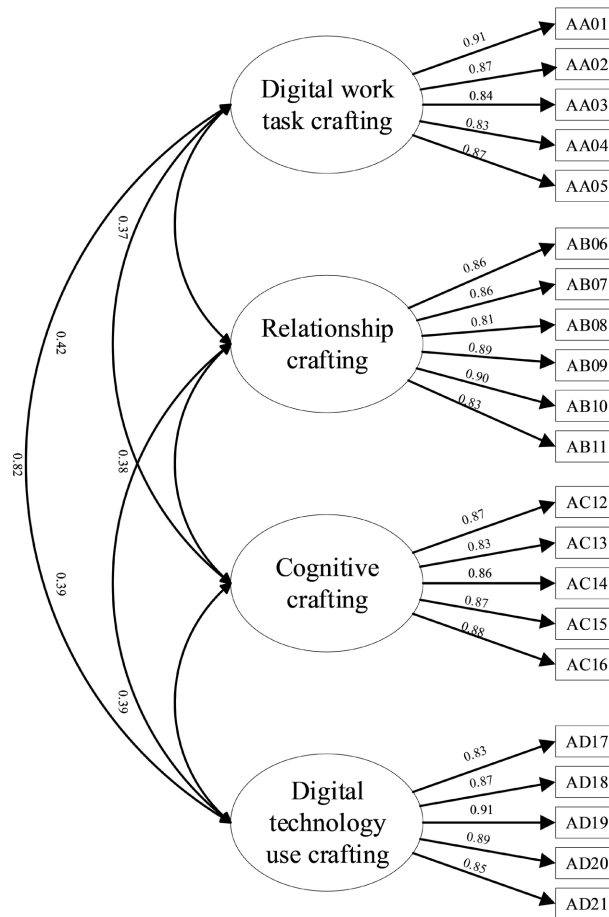
#### 4.2.2. Confirmatory Factor Analysis

This part uses Amos 28.0 for confirmatory factor analysis to further determine the stability of each dimension of measurement variables. The data of fitting index show that  $\chi^2/df$  (chi square degree of freedom ratio) is 2.273 (benign fitting index) is 0.879, which is close to 0.9. RMSEA (root mean square of approximate error) is 0.068 (root mean square of residual) less than 0.08 (comparative fit index), NFI (standard fit index) and TLI (opposite model fitting index) are all greater than 0.90. PNFI (canonical fitting index) and PGFI (parsimonious fitting index) are both greater than 0.5. Combining the above indexes, the overall fitting effect of the digital job crafting structure model is better (see [Figure 1](#)).

## 5. Conclusion

### 5.1. Research Conclusion

This study adopts a rooted theory qualitative research methodology and follows a



**Figure 1.** Crafting structure model of employees' digital work.

scale development paradigm to dissect the conceptual and dimensional structure of digital work crafting through semi-structured interviews and literature combing. After a series of data analyses to revise and validate the scale, we finally develop the digital job crafting scale with good reliability and validity, which contains 4 dimensions and 21 items. It provides a reference for employees to realize digital ability, digital technology and digital workplace matching in the digital work situation. The employee job crafting scale in the digital work situation can be divided into four dimensions: digital task crafting, relationship crafting, cognitive remodeling and digital technology use remodeling. Among them, the contents of the four dimensions are as follows:

1) Digital task crafting. It means that employees spontaneously adjust and change the scope, types and completion methods of digital tasks. With the increasing popularity of digital technology in work, work processes, work methods and work properties may change (Trenerry et al., 2021). In order to adapt to the development of digital technology and changing work requirements, employees need to optimize work processes and improve work methods to adapt to digital work and digital work situations.

2) Relationship crafting. It refers to individuals changing the quantity and

quality of interpersonal interactions at work in order to gain support or reduce interference from others in the use of digital technology. In the digital work environment, employees can improve the working atmosphere by establishing high-quality contacts with others. Good interpersonal relationships and internal learning atmosphere can promote the exchange of experience and knowledge sharing about the use of digital technology among employees, and then help each other to better complete digital chemical work.

3) Cognitive remodeling. It refers to employees' views and attitudes towards digital technology and the application of digital technology at work. Through cognitive remodeling to cultivate employees' positive cognition of digital technology, let employees feel the practicality and necessity of digital technology, enhance their motivation to use digital technology at work, and create competitive advantage for the organization. Employees can actively accept digital technology and recognize the practical value of digital technology to improve work efficiency, which is important to help employees realize the dynamic matching of knowledge and skills with the requirements of new posts.

4) Digital technology use crafting. It means that employees choose appropriate digital technology, optimize the use of digital technology, improve their digital ability and digital literacy to meet the requirements of digital tasks, and efficiently complete digital work (Shi et al., 2023). In the scenario where digital technology is widely used, employees need to meet the requirements of higher job skills, to be able to find, use and optimize digital technology skillfully, and to make full use of new digital technologies to help work be done efficiently (Khin & Ho, 2020).

## 5.2. Theoretical Contribution and Practical Enlightenment

The theoretical contribution of this study is mainly reflected in two aspects: Firstly, to expand the research on employee digitization from the perspective of employees' independent adaptation to digital technology. Previous studies have focused on the one-way impact of digital technology on employees, while relatively ignored the positive behavior of employees to actively adapt to digitalization by introducing digital technology into their work. This study focuses on the perspective of employees' self-management and active adaptation. Emphasizing employees as key users of digital technology, need to give full play to their personal initiative and pay attention to the cultivation of their own digital ability in the process of digitalization. Providing valuable guidance and reference for employees to actively adapt to the digital transformation of enterprises. Secondly, to open up new research themes for job crafting. Previous studies focus on the relationship between their own preferences and traditional work tasks, without taking into account the digital technology, which can not effectively guide employees to adapt to the digital change of the enterprise industry. In this study, digital technology factors are included in job crafting, and a scale of employee job crafting in digital work context is successfully developed by using standardized scale process. Further deepen and promote the research on job crafting, which lays a theoretical

foundation for the follow-up research on digital work crafting behavior.

The management implications of this study are as follows: First of all, employees should actively understand, learn and use digital tools, integrate them into their work, and actively seek to meet the needs of the development of the digital age. Secondly, as the “receiver” and “shaper” of the working environment, when they are in the new situation of digital work, employees should take bottom-up active behavior and actively change themselves and the digital working environment. Improving their digital literacy and digital learning ability to actively adapt to the digital transformation. Finally, in the process of promoting digital change, enterprises should actively guide employees to accept and use digital technology. On the one hand, we should pay attention to guiding employees’ positive understanding of digital technology. Encouraging employees to understand and use new technologies with a positive attitude, make employees become the main participants and builders of digitalization. On the other hand, employees should be trained in work-related digital technology knowledge and skills. Letting employees can have the ability to complete high-complexity and high-value work, adapt to the requirements of digital work as soon as possible to promote the process of digital change in enterprises.

### **5.3. Research Limitations and Future Prospects**

This study also has the following shortcomings: first, the limitations of sample data. In this study, the source of the sample data is single, and all are filled in by the employees themselves, so it is inevitable that there is a common method deviation. In future related research, the selection of samples can use a combination of employee mutual evaluation and self-assessment as well as paired research between employees and leaders. This can reduce the subjective cognitive differences brought about by filling out the questionnaire independently, collect more reliable data and make the research conclusions more scientific. The second is the limitation of research depth. In the future research on the digital job crafting, we can consider adding more variables to make an in-depth discussion on the relationship between the antecedent and outcome variables of employee job crafting in the digital work situation. While testing the scientific validity of the structural dimensions and scales of digital job crafting, we can make a more rich and in-depth interpretation of digital job crafting.

### **Conflicts of Interest**

The authors declare no conflicts of interest regarding the publication of this paper.

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