

CAREER ADAPTABILITY AMONG WORKERS IN THE FORTH INDUSTRIAL REVOLUTION IN BINH DUONG PROVINCE

ADAPTABILIDADE DE CARREIRA ENTRE TRABALHADORES NA QUARTA REVOLUÇÃO INDUSTRIAL NA PROVÍNCIA DE BINH DUONG

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Abstract: The Fourth Industrial Revolution creates increasing demands for workers with new skill sets. Since studies on career adaptability and its antecedents among workers have received less research attention, we examined the level of career adaptability and factors on career adaptability in the Fourth Industrial Revolution. Data were collected from 612 workers in Binh Duong province in Vietnam. Findings showed that workers in Binh Duong province were highly adapted to the impact of the Fourth Industrial Revolution. Findings also indicated that a collective significant effect was found in low socioeconomic status, unhealthiest, low skill and no vocational training, and difficulty in establishing relationships with colleagues and managers. In contrast, a collective significant effect was not found in low awareness of work changes due to the Forth Industrial Revolution, low qualification and experience, and old ages. We have discussed the implications and limitations of our findings.

Keywords: Fourth Industrial Revolution. Workers. Career adaptability. Feeling afraid of difficulties.

Resumo: A Quarta Revolução Industrial cria demandas crescentes por trabalhadores com novos conjuntos de habilidades. Como os estudos sobre adaptabilidade de carreira e seus antecedentes entre os trabalhadores receberam menos atenção de pesquisa, examinamos o nível de adaptabilidade de carreira e os fatores de adaptabilidade de carreira na Quarta Revolução Industrial. Os dados foram coletados de 612 trabalhadores na província de Binh Duong, no Vietnã. Os resultados mostraram que os trabalhadores da província de Binh Duong estavam altamente adaptados ao impacto da Quarta Revolução Industrial. Os resultados também indicaram que um efeito coletivo significativo foi encontrado em baixo nível socioeconômico, insalubre, baixa qualificação e sem treinamento vocacional e dificuldade em estabelecer relacionamentos com colegas e gerentes. Em contraste, um efeito coletivo significativo não foi encontrado em baixa conscientização sobre mudanças no trabalho devido à Quarta Revolução Industrial, baixa qualificação e experiência e idade avançada. Discutimos as implicações e limitações de nossos achados.

Palavras-chave: Quarta Revolução Industrial. Trabalhadores. Adaptabilidade de carreira. Medo das dificuldades.

1. Introduction

The Fourth Industrial Revolution refers to the digital transformation (e.g., comprehensive computerization and networking) in industrial production, which influences demands for development of qualifications and experiences among workers (Schröder, 2016). In the course of implementing Industry 4.0, workers are connected with highly-skilled and interdisciplinary workforce (Hariharasudan & Kot, 2018; Schröder, 2016). Indeed, the requisite skills in the context Industry 4.0 are advanced skills (e.g., data analytics, robotics, Information Technology, and Artificial Intelligence) and many other skills (e.g., analytical thinking, logical reasoning, decision-making ability, cognitive abilities, and social intelligence) (Assante et al., 2019). Industry 4.0 also involves workers thinking more interdisciplinary (Schröder, 2016). For example, interdisciplinary workers acquire knowledge in the areas of management, production engineering, and logistics (Saniuk et al., 2021). Specially, increasing demand for such qualifications has disconnected and challenged workers due to their insufficient qualification (Mian et al., 2020; Schröder, 2016). Since few research has been conducted to examine how workers adapt to these challenges (Zhang et al., 2019), it is significant to shed light on workers' adaptation in preparation for the Fourth Industrial Revolution.

Interestingly, preliminary studies have considered employee adaptability the meta-skill of enabling workers manage the digital revolution, such as Industry 4 (Sony & Mekoth, 2022; Zhang et al., 2019). In the study of Zhang and colleagues (2019), the findings showed that career adaptability (i.e., career-related control, concern, curiosity, and confidence; Savickas & Porfeli, 2012) is a significant psychological resource to enable employees to manage challenges of the Fourth Industrial Revolution. For example, individuals with high career adaptability tended to learn new occupational skills, communicate with others (e.g., supervisors and colleagues) to seek job resources, simplify the complexity of tasks, and make their work mentally less demanding (Zhang et al., 2019). In this vein, a systematic review by Sony and Mekoth (2022) identified 52 articles on Industry 4.0 before October 2020. Their findings revealed six dimensions, including (1) interpersonal adaptability, (2) coping with unforeseen circumstances and crises adaptability, (3) managing stress, (4) continuous learning, training, and education in Industry 4.0, (5) creative problem-solving, and (6) team adaptability on which employees must adopt to adapt increasing demands in Industry 4.0. Based on career adaptability (Savickas & Porfeli, 2012) and a roadmap of six

employee adaptability skills in Industry 4.0 (Sony & Mekoth, 2022), it is urgent for workers, business organizations, and policymakers to identify and develop adaptive strategies to the impact of the Forth Industrial Revolution.

In recent years, various factors influencing individuals' career adaptability were examined (e.g., Delle & Searle, 2022; Íspir et al., 2019; Tien & Wang, 2017; Zacher, 2014). Previous studies showed that psychological factors, (e.g., search for work self-efficacy and work self-efficacy) and socio-demographic characteristics (e.g., education) act as significant predictors of career adaptability (Íspir et al., 2019). In a sample of workers in Australia ($N = 1723$), Zacher (2014) contended that there is a positive relationship of career adaptability with core self-evaluations ($r = .44, p < .01$) and personality traits, including extraversion ($r = .24, p < .01$), conscientiousness ($r = .24, p < .01$), agreeableness ($r = 0.25, p < 0.01$), and openness to experience ($r = .25, p < .01$). Specially, Delle and Searle (2022) argued that personal factors (e.g., career optimism) and contextual factors (e.g., developmental leadership) correlate positively to career adaptability among workers. Since few studies have been done on antecedents of career adaptability among workers (Delle & Searle, 2022), it is significant for scholars to conduct more studies.

The breadth and depth of the study on workers' adaptability and antecedents of career adaptability in the face with the Forth Industrial Revolution is too thin (Delle & Searle, 2022; Zhang et al., 2019). Hence, our study hypothesized that low socioeconomic status will significantly predict workers' career adaptability in the Forth Industrial Revolution in Binh Duong province(Hypothesis 1), low awareness of work changes in the Forth Industrial Revolution will significantly predict workers' career adaptability in the Forth Industrial Revolution in Binh Duong province(Hypothesis 2), low qualification and experience will significantly predict workers' career adaptability in the Forth Industrial Revolution in Binh Duong province(Hypothesis 3),unhealthiest will significantly predict workers' career adaptability in the Forth Industrial Revolution in Binh Duong province(Hypothesis 4) (5) low skill and no vocational training will significantly predict workers' career adaptability in the Forth Industrial Revolution in Binh Duong province(Hypothesis 5) , difficulty in establishing relationships with colleagues and managers will significantly predict workers' career adaptability in the Forth Industrial Revolution in Binh Duong province(Hypothesis 6) and old ages will significantly predict workers' career adaptability in the Forth Industrial Revolution in Binh Duong province(Hypothesis 7).

2. Methodology

2.1. Participant and process

This study analyzed the data of 612 participants in Binh Duong province, Vietnam. An online survey was distributed by the authors to all participants from 7 March to 31 March 2022 via email. Before administering the study, the researchers emphasized that the participation was voluntary. Their personal information would be treated confidentially, and all data would be used for research purposes only.

Participants are currently 186 workers (30.4%) working at Song Than Industrial Park I, 216 workers (35.3%) at Vietnam - Singapore Industrial Park II, and 210 workers (34.3%) at Industrial Park - Urban My Phuoc III. There are 353 women (57.8%) and 259 men (42.2%) out of 612 participants surveyed. In terms of age, 147 (24.0%) workers between 16 and 25, 399 (65.2%) between the ages of 26 and 45, and those over 45 accounted for 66 (10.8%). Regarding academic standards, the primary school obtained 40 (6.5%), the secondary school graduated with 400 (65.4%), and the high school was completed with 172 (28.1%). In terms of training qualifications, while there were 368 workers (60.1%) without an education degree, 153 (25.0%) achieved elementary school level, 67 (10.9%) achieved intermediate level, and 24 (3.9%) achieved university training or higher. In terms of seniority, 155 people under 5 years (25.3%), from 5 to 10 years accounted for 330 people (53.9%), and over 10 years included 127 (20.8%). Of the 612 participants, 30 people are managers (4.9%), the rest are employees (95.1%). Finally, income under 5 million Vietnamese dongs (VND) was 42 (6.9%), from 5 to 10 million is 433 (70.8%), from 10 to 15 million is 127 (20.8%), and above 15 million is 10 (1.6%) (see Table 1).

Table 1. Demographic characteristics of the samples (N= 612).

Variable	Category	n	%
Industrial areas	Song Than I	186	30.4
	Vietnam - Singapore II	216	35.3
	My Phuoc III	210	34.3
Gender	Male	353	57.7
	Female	259	42.2

Age	16 - 25 years old	147	24.0
	26 - 45 years old	399	65.2
	> 45 years old	66	10.8
Educational background	Primary school	40	4.5
	Secondary school	400	65.4
	High school	172	28.1
Vocational training	None	368	60.1
	Primary	153	25.0
	Secondary - College	67	10.9
	University and above	24	3.9
Working experience	< 5 years	155	25.3
	5 - 20 years	330	53.9
	>10 years	127	20.8
Working position	Managers	30	4.9
	Staff	582	95.1
Salary (VND)	< 5 millions	42	6.9
	5 - 10 millions	433	70.8
	10 - 15 millions	127	20.8
	> 15 millions	10	1.6

2.2. Measurement

A set of items were created to measure several subjective factors (e.g., *low socioeconomic status*) and workers' career adaptability in the face of the Forth Industrial Revolution in Binh Duong province (e.g., *awareness of the Forth Industrial Revolution*). In addition, according to Malhotra and colleagues (2017), certain sets of observed variables are measured on a 5-point Likert scale (1 = Strongly Disagree, 2 = Agree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree), arranged from low to high. The higher the scores, the greater the degree of agreement. Distance values are calculated using the formula: $(\text{Maximum} - \text{Minimum})/n = (5-1)/5 = 0.8$. Thus, the exact meanings of each level are scored as following criteria: 1.00–1.80 = Strongly disagree, 1.81–2.60 = Disagree, 2.61–3.40 = Neutral, 3.41–4.20 = Agreement, and 4.21–5.00 = Strongly agree (see Table 2). In this study, Cronbach's alpha was 0.84 for subjective factors and was 0.90 for workers' career adaptability, indicating a good reliability.

Table 2. The ranking criteria for all variables.

Levels	Criteria
Very low	$1 \leq M \leq 1.8$
Low	$1.81 \leq M \leq 2.60$
Average	$2.61 \leq M \leq 3.40$
High	$3.41 \leq M \leq 4.20$
Very high	$4.21 \leq M \leq 5.0$

Note. M = Mean.

2.3. Data analysis

In the present study, data was analyzed using SPSS software version 20.0. First, the means and standard deviations were calculated for sustainable Fourth Industrial Revolution creates at Binh Duong. Second, we perform descriptive statistics, including mean and proportions for the main variables. Third, we analyze the correlation between subjective

and objective factors affecting workers' career adaptability. Finally, multiple linear analysis was conducted to examine the relationships between several subjective factors and workers' career adaptability in the face of the Forth Industrial Revolution in Binh Duong province.

3. Results

3.1. Descriptive statistics

Means and standard deviations of workers' adaptability in the context of the Forth Industrial Revolution were presented in Table 3. The findings showed that there were six dimensions that workers adopted to adapt to the Forth Industrial Revolution, including (1) awareness of the Forth Industrial Revolution ($M = 3.38$, $SD = .691$), (2) continuous learning, training, and education in the Industry 4.0 ($M = 4.07$, $SD = .572$), (3) working efficacy ($M = 3.99$, $SD = 1.040$), (4) positive attitude and conformability ($M = 4.09$, $SD = .616$), (5) good communication with others (e.g., supervisors and colleagues) ($M = 4.12$, $SD = .668$), and (6) new working environment in the Forth Industrial Revolution ($M = 3.93$, $SD = .413$). In general, workers' adaptability for the Forth Industrial Revolution in Binh Duong province was high ($M = 3.98$, $SD = .413$).

Table 3. Means and standard deviations of workers' career adaptability in the face of the Forth Industrial Revolution in Binh Duong province.

Variables	Mean	SD
1. Awareness of the Forth Industrial Revolution	3.38	.691
2. Continuous learning, training, and education in Industry 4.0	4.07	.572
3. Working efficacy	3.99	1.040
4. Positive attitude and conformability	4.09	.616
5. Good communication with others (e.g., supervisors and colleagues)	4.12	.668
6. New working environment in the Forth Industrial Revolution	3.93	.413
Workers' career adaptability (Whole scale)	3.98	.413

Besides, means and standard deviations of factors influencing workers' career adaptability in the Forth Industrial Revolution were presented in Table 4. The results showed that the subjective factors with the highest mean was low socioeconomic status ($M = 3.37$, $SD = .760$) and the lowest mean was unhealthiest ($M = 1.69$, $SD = .717$).

Table 4. Means and standard deviations of several subjective factors influencing workers' career adaptability in the face of the Forth Industrial Revolution in Binh Duong province.

	Variables	Mean	SD
Subjective factors	1. Low socioeconomic status	3.37	.760
	2. Low awareness of work changes due to the Forth Industrial Revolution	2.05	.817
	3. Low qualification and experience	3.13	1.041
	4. Unhealthiest	1.69	.717
	5. Low skill and no vocational training	3.11	.952
	6. Difficulty in establishing relationships with colleagues and managers	2.78	1.254
	7. Old ages	1.70	.708

3.2. Correlation analysis

Table 5 summarizes the Pearson correlations between subjective variables and work adaptability. The results showed that career adaptability positively correlated with low socioeconomic status ($r = .188$, $p < .01$), low qualification and experience ($r = .088$, $p = .030$), low skill and no vocational training ($r = .151$, $p < .01$), and difficulty in establishing relationships with colleagues and managers ($r = .213$, $p < .01$). In contrast, career adaptability negatively correlated with unhealthiest ($r = -.166$, $p < .01$), and old ages ($r = -.146$, $p < .01$). However, there was no correlation between career adaptability and low awareness of work changes due to the Forth Industrial Revolution ($r = -.047$, $p = .249$).

Table 5. The correlations of all variables in this study (N = 612).

Variables	1	2	3	4	5	6	7
1. Low socioeconomic status	---						
2. Low awareness of work changes due to the Forth Industrial Revolution	-.181**	---					

3. Low qualification and experience	.340**	.058	---				
4. Unhealthiest	-.288**	.201**	-.073	---			
5. Low skill and no vocational training	.224**	.054	.451**	.020	---		
6. Difficulty in establishing relationships with colleagues and managers	.261**	.023	.427**	.012	.381**	---	
7. Old ages	-.162**	.141**	-.155**	.591**	-.044	-.104**	---
8. Workers' career adaptability	.188**	-.047	.088*	-.166**	.151**	.213**	-.146**

* $p < .05$, ** $p < .01$ (two-tailed).

3.3. Hypothesis testing

A multiple linear regression analysis was performed to examine whether (1) low socioeconomic status, (2) low awareness of work changes in the Forth Industrial Revolution, (3) low qualification and experience, (4) unhealthiest, (5) low skill and no vocational training, (6) difficulty in establishing relationships with colleagues and managers, and (7) old ages significantly predicted workers' career adaptability in the Forth Industrial Revolution in Binh Duong province.

The regression model indicated that a significant were found ($F = 9.167$, $p < .001$), with the predictors explained 9.6% of the variance ($R^2 = .096$). Additionally, a collective significant effect was found in low socioeconomic status ($\beta = .052$, $SE = .106$, $B = .096$, $p = .031$), unhealthiest ($\beta = -.068$, $SE = .029$, $B = -.117$, $p = .020$), low skill and no vocational training ($\beta = .044$, $SE = .019$, $B = .102$, $p = .023$), and difficulty in establishing relationships with colleagues and managers ($\beta = .060$, $SE = .015$, $B = .181$, $p < .001$). In contrast, a collective significant effect was not found in low awareness of work changes due to the Forth Industrial Revolution ($\beta = -.031$, $SE = .020$, $B = -.067$, $p = .117$), low qualification and experience ($\beta = -.028$, $SE = .019$, $B = -.071$, $p = .138$), and old ages ($\beta = -.016$, $SE = .030$, $B = -.027$, $p = .596$) (see Table 6).

Table 6. Unstandardized and standardized regression coefficient of several subjective factors predicting workers' career adaptability in the Forth Industrial Revolution in Binh Duong province.

Variables	β	<i>SE</i>	<i>B</i>
1. Low socioeconomic status	.052*	.106	.096
2. Low awareness of work changes due to the Forth Industrial Revolution	-.031	.020	-.067
3. Low qualification and experience	-.028	.019	-.071
4. Unhealthiest	-.068*	.029	-.117
5. Low skill and no vocational training	.044*	.019	.102
6. Difficulty in establishing relationships with colleagues and managers	.060***	.015	.181
7. Old ages	-.016	.030	-.027
R^2	.096		
<i>F</i>	9.167		

* $p < .05$, *** $p < .001$

4. Discussion and Conclusion

The goal of this study was to investigate the level of career adaptability, correlation between subjective factors and career adaptability, and identify any subjective factors (e.g., low socioeconomic status, low qualification, and low working experience) influencing career adaptability among workers in Binh Duong province.

The findings of this study, which are based on a sample of 612 Vietnamese workers, showed that there was the high level of career adaptability among these workers due to their continuous learning, training, and education, and good relationship with others at workplace. Consistent with expectations based on the career construction theory (Autin et al., 2017; Santilli et al., 2017), career adaptability enables an individual to cope with perceived threat emerging from the automation technology (Zhang et al., 2019). This finding is also consistent with previous studies (Sony & Mekoth, 2022; Zhang et al., 2019), suggesting that learning new occupational skills and communicating with others at work are two dimensions that workers adopted to adapt Industry 4.0.

Furthermore, as expected, we noted that there was no correlation between a significant collective effect was not found in low awareness of work changes due to the Forth Industrial Revolution, low qualification and experience, and old age. Interestingly, while a collective significant effect was found in low socioeconomic status, unhealthiest, low skill and no vocational training, and difficulty in establishing relationships with colleagues and managers. In line with these expectations, socio-demographic characteristics (e.g., education) and personality traits (e.g., extraversion and openness to experience) were positively correlated with workers' career adaptability (Íspir et al., 2019; Zacher, 2014).

Overall, our results do not only make a contribution to studies on workers' career adaptability in the Fourth Industrial Revolution, but it also has implications for workers, business organizations, and policymakers to identify and develop adaptive strategies to the impact of the Fourth Industrial Revolution. Future research is needed to explore the impacts of career adaptability and its dimensions on adapting to the Fourth Industrial Revolution over time.

This refers to an individual's belief in their ability to successfully perform a specific task or achieve a particular goal. Workers with high levels of self-efficacy tend to have higher levels of career adaptability, as they are more confident in their ability to navigate and succeed in different career situations.

This refers to an individual's ability to learn and adapt to new situations quickly. Workers with high levels of learning agility tend to have higher levels of career adaptability, as they can easily acquire new skills and knowledge that are necessary for career success. Workers with high levels of resilience tend to have higher levels of career adaptability, as they are better able to cope with the stress and uncertainty that often accompany career transitions. Workers with high levels of proactivity tend to have higher levels of career adaptability, as they are more likely to seek out new opportunities and take on new challenges.

Overall, workers who possess high levels of self-efficacy, learning agility, resilience, and proactivity tend to be more adaptable in their careers and better able to navigate changing work environments. Developing these career adaptability factors can help workers to become more successful and satisfied in their careers.

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