

How Job Crafting Enhance Work Engagement?^{*}

- Effects of Role Ambiguity and ICT Presenteeism -

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국문초록

사회가 급속히 변화하면서 종업원들의 자발적인 업무 수행이 중요한 이슈로 대두되었다. 이에 종업원들은 Job Crafting 전략을 이용하여 그들의 업무 자체의 범위나 방법 (Task Crafting), 업무에 대한 인식 (Cognitive Crafting), 그리고 직장 동료들과의 관계 (Relational Crafting) 등을 자신의 능력과 환경에 맞도록 자발적으로 변화시켜 업무의 효율성 증진을 꾀하고 있다. 이와 같은 Job Crafting의 중요성을 강조하기 위하여 기존의 연구에서는 종업원들의 Job Crafting 행동으로부터 얻을 수 있는 성과를 발견하고 검증하는 데에 많은 노력을 기울이고 있고, 가장 널리 알려진 성과는 종업원들의 업무 몰입도일 것이다. 그러나 종업원들의 Job Crafting 활동이 어떤 과정을 거쳐서 그들의 업무 몰입도에 영향을 미치는지를 실증적으로 탐색한 논문은 매우 드물다. 이에 본 연구에서는 이 과정에서 어떤 환경 변수들이 영향을 미치는지를 탐색하여 보았다. 과거에 비하여 현재의 업무 환경의 가장 큰 변화는 업무가 매우 복잡해졌다는 점과 업무에 있어서 정보통신기술 (ICT)의 활용이 보편화되었다는 점이다. 본 연구에서는 두 가지의 현재 업무 환경의 특징들 (업무가 복잡화되면서 발생한 개인의 역할 모호성과 ICT의 활용으로 인한 지속적인 커뮤니케이션)이 Job Crafting이 업무 몰입도에 영향을 미치는 과정에서 어떤 작용을 하는지를 실증적으로 탐색하여 보았다. 연구 결과, 역할 모호성은 Cognitive Crafting과 Relational Crafting이 업무 몰입에 미치는 긍정적인 영향을 매개하는 것으로 조사되었고, ICT 활용으로 인한 지속적인 커뮤니케이션 정도는 Cognitive Crafting가 업무 모호성에 미치는 부정적인 영향을 조절하는 것으로 조사되었다.

핵심 주제어: 잡 크래프팅, 과업가공, 인지가공, 관계가공, 역할 모호성, 업무 몰입, ICT 프리젠테즘

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I . Introduction

In a rapidly changing business environment, companies are paying a great deal of attention to the implementation of organizational systems that enable employees to define and perform their jobs voluntarily without managerial supervision (Grant & Ashford, 2008). Such a trend is in line with high uncertainty of the work environment and high complexity of work tasks, calling for a new type of employee-initiated behaviors (Belschak, Den Hartog, & Fay, 2010). To this end, many companies become interested in employing job crafting, a type of proactive behavior, defined as “the physical and cognitive changes individuals make in the task or relational boundaries of their work” (Wrzesniewski & Dutton, 2001). Instead of placing employees in the relatively passive position of job design, this approach allows employees substantial freedom and independence in performing their jobs. Job crafting includes activities to initiate job improvement projects beyond routine daily tasks, or to build teamwork with colleagues through various club activities. According to Wrzesniewski and Dutton (2001), employees who perform job crafting are willing to actively adjust their work or social boundaries to their knowledge level or environment. In addition, Tims, Bakker, and Derks (2012) proposed the job demands-resources (JD-R) model that emphasizes the employee’s proactive activities to balance between resources as motivation factors

and job demands as de-motivation factors (Tim et al., 2012). Most works on job crafting have been based on the above two studies.

Many studies have explored the effect of job crafting on individual employees (Berg, Dutton, & Wrzesniewski, 2013; Chen, Yen, & Tsai, 2014; Tims, Bakker, Derks, & Van Rhenen, 2013). Work engagement is considered as a crucial outcome of job crafting (Tims et al., 2013; Siddiqui, 2015). Job crafting has been empirically proven to positively affect work engagement (임명기, 하유진, 오동준, 손영우, 2014; Bakker, Albrecht, & Leither, 2011; Schaufeli, Bakker, and Van Rhenen, 2009), which is beneficial for teams and organizations. However, very few studies have investigated how job crafting affects work engagement. Among them, Khaleel, Chelliah, Khalid, Jamil, and Manzoor (2016) showed the moderating effect of job embeddedness. Chen et al. (2014) showed the mediating effect of person-job fit in predicting work engagement.

The present study aims to explore the mediating effect of role ambiguity. Singh and Rhoads (1991) defined role ambiguity as a direct function of discrepancy between the information/knowledge necessary for performing the task and the information/knowledge currently available. With role conflict, role ambiguity is a widely used construct and is known to negatively affect job performance (Sullivan & Bhagat, 1992). Much of the research associated with role ambiguity has been focused on the consequences of role ambiguity, rather than on

the antecedents leading to role ambiguity (Johlke & Iyer, 2013). The present study investigates the effect of job crafting on role ambiguity, and further explores the role of role ambiguity in the process of job crafting affecting work engagement.

In addition, this study examines the moderating effects of ICT presenteeism. ICT presenteeism is defined as "the degree to which the technology enables users to be reachable" (Ayyagari, Grover, & Puvlis, 2011). Hendriks (1999) found that the ICT use imbues employees with a "sense of achievement" and "operational autonomy", thus motivating them to have positive attitudes toward their work. Due to intensive and seamless communication with geographically distant coworkers, ICT presenteeism becomes important in today's organizations (Ayyagari et al., 2011). Thus, the present study focuses on ICT presenteeism as a moderator that affects the relationship between job crafting and work engagement.

II. Job Crafting

Companies have established a variety of human resource management (HRM) strategies to enhance the productivity of their employees. Above all, designing jobs to enhance employee productivity has become one of the biggest challenges for the companies. Job design is defined as a set of activities that specify the content and the methodology of work performed by an individual employee (Grant, 2007). In the past, job design focused on the job

specialization strategy which designs jobs mainly from the perspective of the company without considering the needs and the abilities of individual employees (Hornung, Rousseau, Glaser, Angerer, & Weigl, 2010). Under such a circumstance, it may be a success factor to find an appropriate employee to a given job. It is more important to follow the manual rather than individual autonomy in performing jobs. In today's business environment, there are many limitations to this top-down job design strategy. As the market environment has changed rapidly, companies need to consider the needs and abilities of individual employees, as well as the company's objectives (신인용, 2015; Demerouti, 2014). This bottom-up job design method has recently been called as job crafting. Wrzesniewski and Dutton (2001) categorized job crafting into task, cognitive, and relational crafting. Task crafting alters the former job description by changing the number, scope, method, or even the nature of one's tasks, allocating differential time, energy and attention to each task. Secondly, when employees engage in cognitive crafting, they change their perceptions of the tasks and relationships which constitute their job environment. Finally, relational crafting involves changing social relationships in workplaces, altering how and with whom individuals interact. According to Wrzesniewski and Dutton (2001), through changes in the work itself, in perceptions of work, or in social networks, employees seek to design their own jobs that fit their abilities and situations (신인용, 2015).

In addition to Wrzesniewski and Dutton’s (2001) study, job crafting has been researched in accordance to JD-R theory. Job demands refer to the degree of physical and psychological effort or specific knowledge required to achieve a job, causing high job demands to engender job stress or psychological exhaustion (Lee, Shin, & Baek, 2017). On the other hand, job resources are closely associated with the work characteristics such as job autonomy, abundant information or knowledge, and immediate feedback (Lee et al., 2017). By adjusting job demands, job resources, or both aspects of works to suit the individual's ability and work environment, Tims et al. (2013) proposed the four job crafting strategies. 1) For increasing structural resources, individuals may utilize various task methods and mediums or increase knowledge to make full use of their job components such as job autonomy. 2) Increasing social resources refers to initiating or strengthening interactions with other colleagues or superiors in the workplace and/or with various stakeholders. On the other hand, individuals may deal with job demands 3) by increasing challenging demands or 4) by decreasing hindering challenging demands. Employees who create challenging demands are motivated enough to set their own goals and identify/perform new tasks by themselves (Tims et al., 2012). Employees who decrease hindering demands try to reduce their work loads and requirements to fit their abilities and environment (Tims et al., 2012).

<Table 1> illustrates the comparison between

Wrzesniewski and Dutton’s (2001) view and Tims et al.’s (2012) view on job crafting. As shown in <Table 1>, Tims et al. (2012)’s study does not include activities associated with cognitive crafting of Wrzesniewski and Dutton(2001). The present study adopts Wrzesniewski and Dutton’s(2001) model as its research framework because it offers a more comprehensive understanding of job crafting.

<Table 1> Wrzesniewski and Dutton’ s (2001) Model vs. Tims et al.’ s (2012) Model

Wrzesniewski and Dutton (2001)	Tims et al. (2012)
Task Crafting	Increasing Structural Job Resources
Relational Crafting	Increasing Social Job Resources
Task Crafting	Increasing Challenging Job Demand
Task Crafting	Decreasing Hindering Job Demand
Cognitive Crafting	X

III. Research Model

3.1 Job Crafting & Work Engagement

Work engagement can be defined as “a positive work-related state of fulfillment that is characterized by vigor, dedication, and absorption” (Schaufeli, Bakker, & Salanova, 2006, p74). Kahn (1990) identified three psychological conditions as antecedents of work engagement: meaningfulness, safety, and availability. Employees tend to feel immersed in their work when

they feel that they are worthy of what they are doing, that their work environments are trustworthy and predictable, and that they can easily obtain the resources they need (황상규, 2011). Employees, through cognitive crafting, change the perceptions of their work more positively and give greater meaning to what they do (Berg et al., 2013). By building meaningful, helpful, and energizing relationships with coworkers (relational crafting), employees can acquire necessary resources and create stable and supportive work environments, thus leading to work engagement (Rofcanin, Bakker, Berber, Golgeci, & Las Heras, 2018). Lastly, in order to perform their jobs successfully in a given environment, employees try to adjust the boundaries and the processing methods of tasks (task crafting), thus maximizing the usage of currently available resources (Berg et al., 2013).

Previous studies have examined the relationship between job crafting and work engagement, with most studies proposing that job crafting activities positively affect individual work engagement (Chen et al. 2014; Petrou, Demerouti, Peeters, Schaufeli, & Hetland, 2012; Siddiqi, 2015). Employees align their work environments to their own needs and abilities via job crafting, eventually being more committed to their work compared with those who do not engage in job crafting activities. Based on this reasoning, we hypothesize:

Hypothesis 1a: Task crafting is positively related to work engagement.

Hypothesis 1b: Cognitive crafting is positively related to work engagement.

Hypothesis 1c: Relational crafting is positively related to work engagement.

3.2 Job Crafting & Role Ambiguity

Role ambiguity occurs when employees are not certain about their accomplishments that the team or organization expects (Rizzo, House, & Lirtzman, 1970). Pearce (1981) stated that employees frequently experience role ambiguity when they collide with coworkers' work areas or face non-routine tasks, and reduce it by establishing behavior/outcome predictability for the unusual settings. Employees, through cognitive crafting, are proud of what they do and motivate themselves to be more active in their works, thereby enhancing their understanding of the works and the environments. Morris, Steers, and Koch (1979) empirically supported the negative relationship between participation and role ambiguity. As for relational crafting, Coelho, Augusto, and Lages (2011) argued that, by maintaining the supportive and constructive relationships with supervisors and coworkers, employees can reduce role ambiguity. Through those relationships, they might easily acquire additional information about unusual tasks and situations. Task crafting focuses on adjusting the task boundaries to suit employee's ability and environment or initiating new tasks, rather than merely performing additional tasks for other employees (Slemp, Kern, & Vella-Brodrick, 2015). While Kalbers and Cenker (2008) found that

job autonomy reduces role ambiguity by examining public accountants, Johlke and Iyer (2013) could not statistically validate the relationship on retail employees. Tubre and Collins (2000) found that the negative relationship is stronger for professionals, technicians, and managerial jobs. Drawing on these findings, we formulate the following hypotheses:

Hypothesis 2a: Task crafting is negatively related to role ambiguity.

Hypothesis 2b: Cognitive crafting is negatively related to role ambiguity.

Hypothesis 2c: Relational crafting is negatively related to role ambiguity.

3.3 Mediating Effect of Role Ambiguity

Previous research on job design has been conducted in various fields to examine which job characteristics cause positive outcomes such as employee satisfaction or performance (Chen & Chiu, 2009; Kelloway & Barling, 1991). Loher, Noe, Moeller, and Fitzgerald (1985) found the mediating roles of three major psychological variables (feeling of meaningfulness, feeling of responsibility, and feeling of knowing work results) between job characteristics and their positive outcomes. All three psychological variables are likely to be related to a stable, confident psychological state when employees perform their jobs. The psychological state might be experienced by employees when they have a clear understanding of their jobs and work environment.

Coelho et al. (2011), by examining frontline employees in a hospital, found a mediating effect of role ambiguity between job characteristics and creativity. Similarly, we investigate whether role ambiguity mediates the effect of job crafting on work engagement. Although job crafting will positively affect work engagement, this will most probably be attained by reducing the ambiguity of one's roles, which in turn also affects affective and cognitive components in a positive manner. Therefore, we hypothesize:

Hypothesis 3: Role ambiguity mediates the relationship between job crafting and work engagement.

3.4 Moderating Effect of ICT Presenteeism

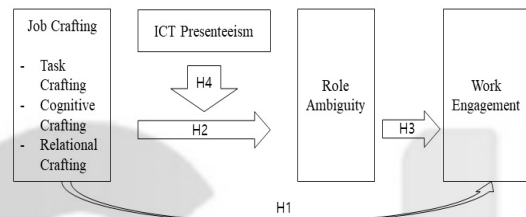
The use of ICT in work allows employees to have flexible and greater control over their work processes (Dewett & Jones, 2001) and to cooperate closely with each other by getting the necessary information anytime and anywhere from fellow employees who work in remote locations (Fujimoto, Ferdous, Sekiguchi, & Sugianto, 2016). On the other hand, ICT-based communication tools, such as e-mail, SMS, and social media, have created a demand for continuous connectivity to employees. While it is advantageous to have access to coworkers at any time and any place, it is also stressful that the responses must be immediate (Tarafdar, Tu, Ragu-Nathan, & Ragu-Nathan, 2007). Schuler (1977)

identified the interaction effect of task, organization, and technology as a way to reduce role ambiguity. In other words, he stated that the fit among task, organization structure, and technology results in lower role ambiguity. Role ambiguity might be significantly low when complex tasks are performed with technology in loose and non-hierarchical organizations, rather than without technology in tight and hierarchical organizations. This study examines the impact of ICT on lowering role ambiguity in the context of job crafting.

This study investigates the effect of connectivity through ICT, not merely on the degree of use of ICT in jobs. Prior research has focused more on negative outcomes than on positive sides of ICT presenteeism (Straub & Karahanna, 1998). Especially, Ayyagari et al. (2011) argued that, because ICT creates a constant demand for work, employees experience work-home conflict, invasion of privacy, work overload, and role ambiguity, leading to work inefficiency and stress. However, in recent years, as ICT has been widely used in work environments, it has been identified as a motivation factor, rather than a stress factor. Since job crafting emphasizes individual proactive activities, the constant connectivity using ICT is expected to have a stronger impact on the effect of job crafting. We therefore postulate that ICT presenteeism strengthens the effect of job crafting on role ambiguity.

Hypothesis 4: ICT presenteeism moderates the relationship between job crafting and role ambiguity such that relationship is stronger when ICT presenteeism is high than when it is low.

<Figure 1> shows a full research model for this study.



<Figure 1> Research Model

IV. Research Method

To test our hypotheses, a survey method was employed, targeting employees working in diverse organizations. We mailed questionnaires along with the return envelopes to the respondents. Distributed to 250 individuals working in organizations in Korea, a total of 172 samples were collected (68% response rate). After removing missing data, the final sample comprised of 161 participants (64% response rate). <Table 2> summarizes the characteristics of respondents. <Table 3> summarizes the measurement items. <Table 4> shows the factor loading scores of the measurement items.

〈Table 2〉 Sample Characteristics

		N (161)	%
Gender	Male	69	43 %
	Female	92	57 %
Education	High School	4	2 %
	2-Yr College	7	5 %
	4-Yr College	98	61 %
	Grad. School	52	32 %
Occupation	Gen. Admin.	12	7 %
	Sales	55	34 %
	Service	8	5 %
	Research	40	25 %
	Production	3	2 %
	Etc.	43	27 %
Age	<= 30	78	48 %
	<= 40	53	33 %
	<= 50	23	14 %
	<= 60	7	5 %

〈Table 3〉 Measurement Items

Constructs		Items
Role Ambiguity (Reversed) (Rizzo et al., 1970)		RA 1. I exactly know what I expect to do from my job. RA 2. I exactly know how to allocate my time appropriately on my job. RA 3. What I need to do in my job is clearly explained. RA 4. I am well aware of my responsibilities in my job. RA 5. I am well aware of my authority in my job. RA 6. There are clearly planned goals and objectives in my job.
ICT Presenteeism (Ayyagari et al., 2011)		ICT 1. The technology I use for my job is to make others accessible to me. ICT 2. The technology I use for my job makes me accessible to others. ICT 3. The technology I use for my job allows me to interact/communicate with others. ICT 4. The technology I use for my job makes me feel that I share space with others.
Job Crafting (Slemp & Vella-Brodick, 2013)	Task Crafting	TC 1. I introduce new approaches to improve my work. TC 2. I change the scope or types of tasks that I complete at work. TC 3. I introduce new work tasks that I think better suit my skills or interests. TC 4. I choose to take on additional tasks at work. TC 5. I give preference to work tasks that suit my skills or interests.
	Cognitive Crafting	CC 1. I think about how my job gives my life purpose. CC 2. I remind myself about the significance my work has for the success of the organization. CC 3. I remind myself of the importance of my work for the broader community. CC 4. I think about the ways in which my work positively impacts my life. CC 5. I reflect on the role my job has for my overall well-being.
	Relational Crafting	RC 1. I make effort to get to know people well at work. RC 2. I organize or attend work related social functions.

Constructs	Items
	RC 3. I organize special events in the workplace (e.g., celebrating a co-worker's birthday). RC 4. I choose to mentor new employees (officially or unofficially). RC 5. I make friends with people at work who have similar skills or interests.
Work Engagement (Schaufeli et al., 2006)	WE 1. At my work, I feel bursting with energy. WE 2. At my job, I feel strong and vigorous. WE 3. When I get up in the morning, I feel like going to work. WE 4. I am enthusiastic about my job. WE 5. My job inspires me. WE 6. I am proud of the work that I do. WE 7. I feel happy when I am working intensely. WE 8. I am immersed in my work. WE 9. I get carried away when I am working.

<Table 4> Exploratory Factor Analysis

Items	1	2	3	4	5	6
RA 6	.74					
RA 5	.73					
RA 3	.70					
RA 2	.70					
RA 4	.64					
RA 1	.61					
ICT 2		.93				
ICT 3		.91				
ICT 1		.90				
ICT 4		.89				
TC 1			.78			
TC 2			.77			
TC 3			.76			
TC 5			.60			
CC 4				.82		
CC 5				.80		
CC 1				.74		
CC 3				.61		
RC 2					.78	
RC 5					.70	
RC 3					.68	
RC 4					.65	
RC 1					.60	
WE 1						.77
WE 7						.76
WE 2						.75
WE 8						.71
WE 4						.71
WE 5						.69
WE 3						.66
WE 9						.60

V. Results

<Table 5> exhibits the inter-correlations of the variables. Task crafting ($r=.53$, $p<.01$), cognitive crafting ($r=.62$, $p<.01$), and relational crafting ($r=.56$, $p<.01$) were positively related to work engagement. On the other hand, the respective three dimensions, task crafting ($r=.35$, $p<.01$), cognitive crafting ($r=.40$, $p<.01$), relational crafting ($r=.38$, $p<.01$) were negatively related to role ambiguity. Role ambiguity ($r=.48$, $p<.01$) was also negatively related to work engagement, while ICT presenteeism ($r=.16$, $p<.05$) showed a similar pattern with role ambiguity.

We tested our hypotheses via multiple regression models. The results are presented in <Table 6>. To test hypothesis 1, we entered the control variables in model 1a, then entered the three job crafting dimensions in model 1b. Task job crafting ($\beta=.177$, $p<.05$), cognitive crafting ($\beta=.36$, $p<.001$), and relational crafting ($\beta=.303$, $p<.001$) were all positively associated with work engagement (Model 1b). This provides full support for hypothesis 1. In line with previous studies, this study also found that job crafting exerted a significant positive impact on work engagement (Bakker, Tims, & Derks, 2012; Tims et al., 2013). Model 2b in <Table 6> presents the results for hypothesis 2. We regressed role ambiguity on task crafting ($\beta=-.168$, $p=n.s$), cognitive crafting ($\beta=-.212$, $p<.05$), and relational crafting ($\beta=-.197$, $p<.05$). This study found that the role ambiguity can be reduced by the cognitive and

relational crafting, not task crafting. Although task crafting activity is not significantly associated with role ambiguity, the other two job crafting activities have a significant negative impact on role ambiguity. Cognitive crafting is closely related to how employees perceive meaningfulness of their jobs and has a considerable effect on positive job attitudes and behavior (Heide, 2013). Such positive attitudes might encourage employees to reduce the role ambiguity of their work. In addition, relational crafting positively changes the psych-social work environment, which leads to commitment to work (Lu, Wang, Lu, Du, and Bakker, 2014). Under such a highly motivated environment, employees might actively define their roles by themselves even if their work is uncertain. Thus, hypothesis 2 was partially supported.

To test our mediation hypothesis, we followed Baron and Kenny's (1986) three-step analysis. First, we tested whether or not the independent variable (Job Crafting) affected the dependent variable (Work Engagement) (Model 1b) and the mediator (Role Ambiguity) (Model 2b). Then, we tested the impact of independent variable (Job Crafting) and the mediator (Role Ambiguity) on the dependent variable (Work Engagement) (Model 3b). In order to verify the effect of the mediator, the results of all three tests should be significant. Based on the results of Model 1b, Model 2b, and Model 3b, we found the partial mediation effect of role ambiguity between job crafting and work engagement. The

mediating effect of role ambiguity was found to be significant for cognitive and relational crafting, not for task crafting. A possible explanation for this finding is that, if employees are freely changing the scope of the work according to the situations, their coworkers as well as themselves are likely to experience confusion about their roles.

Lastly, our moderation hypothesis was tested, such that ICT presenteeism moderated the relationship between job crafting and role ambiguity. <Table 7> shows the results of the moderation analysis. The interaction term ‘Cognitive crafting*ICT presenteeism ($\beta=-.25, p<.001$)’ exhibited a significant result, showing a negative association with role ambiguity. <Figure 2> depicts the interaction effect between cognitive crafting and ICT presenteeism on role ambiguity. As predicted, the negative relationship between cognitive crafting and role ambiguity was more pronounced when ICT presenteeism was high than when it was low. This supported our hypothesis that ICT presenteeism moderates the relationship between cognitive crafting and role ambiguity in that the negative relationship is stronger when ICT presenteeism is high. The use of

ICT in workplaces induces stress on employees. On the other hand, it enables employees to gain greater perceived job autonomy and to connect with colleagues who can call for help at any time, leading to reduce cognitive burdens on works (Fujimoto et al., 2016). Employees can reduce role ambiguity by throughout relational crafting activities, but the moderating effect of ICT presenteeism was not supported. <Table 8> summarizes the results of our research.

<Table 5> Inter-Correlations (N=161)

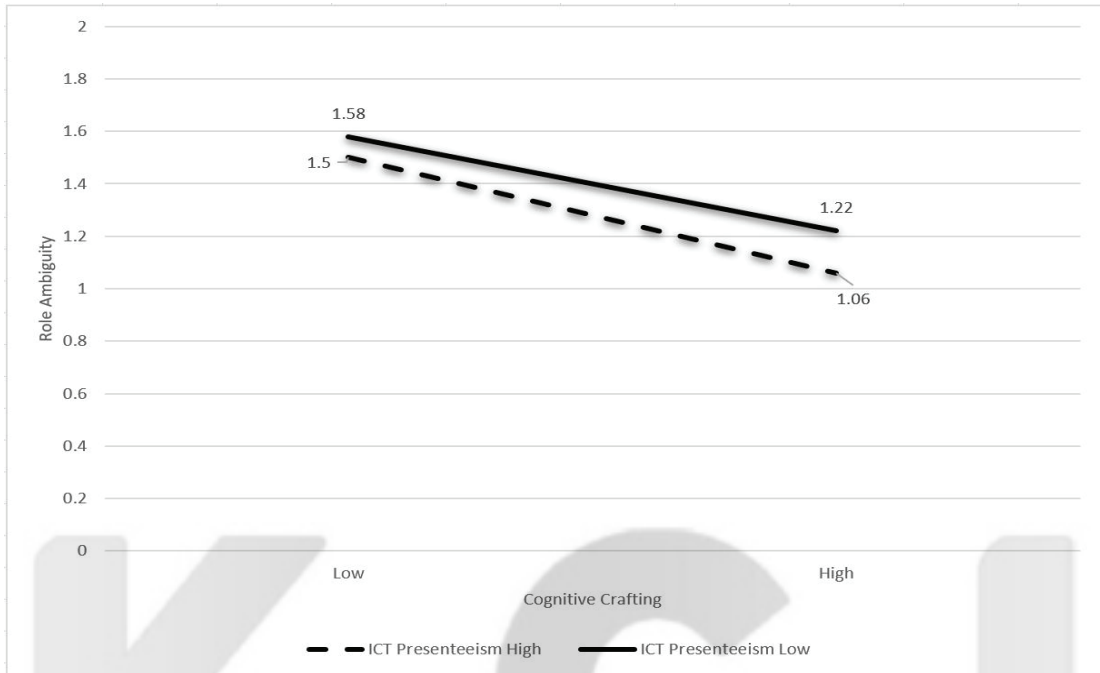
	TC	CC	RC	RA	ICT	WE
TC	-					
CC	.54**	-				
RC	.47**	.53**	-			
RA	-.35**	-.40**	-.38**	-		
ICT	-.02	.10	.14	-.16*	-	
WE	.53**	.62**	.56**	-.48**	.10	-

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

TC: Task Crafting; CC: Cognitive Crafting

RC: Relational Crafting; RA: Role Ambiguity

ICT: ICT Presenteeism; WE: Work Engagement



〈Figure 2〉 Interaction Effect

〈Table 6〉 Results of the Hierarchical Regression Analyses (Mediation Hypothesis)

Independent/Dependent	Work Engagement		Role Ambiguity		Work Engagement	
	Model 1a	Model 1b	Model 2a	Model 2b	Model 3a	Model 3b
Age	.272*	.075	-.174	-.038	.266	.071
Gender dummy	.042	-.094	-.007	.085	.033	-.079
Industry 1	-.020	.057	.007	-.051	-.029	.042
Industry 2	.103	-.023	-.039	.048	.098	-.014
Industry 3	.162	.126	.051	.073	.155	.140
Industry 4	.093	.024	.094	.141	.085	.050
Job level	-.031	.020	.058	.022	-.031	.024
Organizational tenure	.068	.002	-.122	-.075	.070	-.011
Task crafting		.177*		-.168		.144
Cognitive crafting		.360***		-.212*		.297***
Relational crafting		.303***		-.197*		.270***
Role ambiguity		-		-		-.200**
R2	.064	.473	.019	.192	.057	.477
ΔR2	-	.409	-	.173	-	.420
ΔF	2.358*	40.416***	1.394	11.865***	2.204*	31.352***

* $P < .05$, ** $P < .01$, *** $P < .001$, $N = 161$

<Table 7> Results of the Hierarchical Regression Analyses (Moderation Hypothesis)

Research variables	Dependent Variable: Role Ambiguity		
	Model 1	Model 2	Model 3
Age	-.174	-.079	-.091
Gender dummy	-.007	.086	.100
Industry 1	.007	-.040	-.059
Industry 2	-.039	.055	.029
Industry 3	.051	.057	.072
Industry 4	.094	.130	.112
Job level	.058	.032	.047
Organizational tenure	-.122	-.060	-.052
Task crafting		-.178	-.192*
Cognitive crafting		-.189*	-.199*
Relational crafting		-.180*	-.190*
ICT presenteeism		-.137	-.147
Task crafting*ICT presenteeism			.156
Cognitive crafting*ICT presenteeism			-.252*
Relational crafting*ICT presenteeism			.006
R2	0.019	0.205	0.22
ΔR2	-	0.186	0.015
ΔF	1.394	9.862***	1.976

* $p < .05$, ** $p < .01$, *** $p < .001$, N=161

<Table 8> Summary of Results

Hypotheses	Results
H1a: Task crafting is positively related to work engagement.	O
H1b: Cognitive crafting is positively related to work engagement.	O
H1c: Relational crafting is positively related to work engagement.	O
H2a: Task crafting is negatively related to role ambiguity.	X
H2b: Cognitive crafting is negatively related to role ambiguity.	O
H2c: Relational crafting is negatively related to role ambiguity.	O
H3a: Role ambiguity mediates the relationship between task crafting and work engagement.	X
H3b: Role ambiguity mediates the relationship between cognitive crafting and work engagement.	O
H3c: Role ambiguity mediates the relationship between relational crafting and work engagement.	O
H4a: ICT presenteeism moderates the relationship between task crafting and role ambiguity such that relationship is stronger when ICT presenteeism is high than when it is low.	X
H4b: ICT presenteeism moderates the relationship between cognitive crafting and role ambiguity such that relationship is stronger when ICT presenteeism is high than when it is low.	O
H4c: ICT presenteeism moderates the relationship between relational crafting and role ambiguity such that relationship is stronger when ICT presenteeism is high than when it is low.	X

VI. Conclusions

The results of the study showed that all three types of job crafting activities positively affected work engagement. Furthermore, this study, by investigating the mediating effect of role ambiguity and the moderating effect of ICT presenteeism, explored the process in which job crafting activities affect work engagement. The mediating effect of role ambiguity was observed for cognitive and relational crafting. Regarding the moderating effect of ICT presenteeism, this study found that the more employees experience ICT presenteeism, the greater the negative influence of cognitive crafting activities on role ambiguity.

6.1 Theoretical Contributions

This study has theoretical contributions from the following perspectives. Previous studies have focused on exploring the antecedents and consequences of job crafting (Bakker, Tims, & Derks, 2012; Wrzesniewski and Dutton, 2001). This study focused on understanding how job crafting affects work engagement. Employees' jobs and working environments are constantly changing. Under such a dynamic environment, it is critical to understand the process of influencing the positive impacts on the organization as well as individual employees.

The use of ICT has both positive and negative impacts on job productivity. While it is possible to accomplish tasks more efficiently through ICT, there

are some cases in which additional work need to be carried out due to ICT. Tarafdar et al. (2007) found that stress caused by ICT (technostress) has a negative effect on work productivity and a positive effect on role stress. Ayyagari et al. (2011), by analyzing characteristics of technology which causes role stress, found that ICT presenteeism causes role stress, especially role ambiguity. Besides the above studies, many studies dealing with the relationship between technology and role stress have focused more on negative factors than on positive factors (Brosnan, 1998; Tarafdar, Pullins, and Ragu-Nathan, 2014). This study examined, when job autonomy is guaranteed through job crafting, how the relationship changes.

6.2 Practical Contributions

The practical implications of this study are as follow. As employees' jobs become more complicated and knowledge-intensive than in the past, a new job design strategy becomes necessary. While many companies have considered the introduction of job crafting, they have worried about the shortcomings associated with job crafting, such as overlapping work among colleagues or ambiguity of the roles, because job crafting emphasizes autonomy of the individuals. In addition, there is also a great deal of concern about how ICT-based work environments affect job crafting. This study investigated the effects of job crafting in this current situation.

6.3. Limitations

This study has the following limitations despite the theoretical and practical implications mentioned above. Most studies associated with job crafting have been based on Wrzesniewski and Dutton's (2001) and Tims et al.'s (2012) models. This study was based on Wrzesniewski and Dutton's (2001) model. Since the two models defined job crafting from different perspectives, there is a possibility that the results may differ from this study if job crafting defined by Tims et al. (2012) is considered in this study. The second limitation is that this study needs to be performed at the day level. Since job crafting is an activity to be taken in the course of day-to-day work, it would be intriguing to investigate the effect of job crafting at the day level.

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Abstract

How Job Crafting Enhance Work Engagement?^{*}

– Effects of Role Ambiguity and ICT Presenteeism –

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Individuals' initiatives have been stressed in the workplace due to the rapid changes of the market. Job crafting refers to individuals' proactive behavior that extends and modifies their work boundaries regarding tasks, cognition, and relationships. Prior studies have explored the effects of job crafting on individual employees. Work engagement is considered as a crucial outcome of job crafting. However, very few studies have investigated how job crafting affects work engagement. A major change in the current work environment is that tasks have become very complex, and the use of ICT in their performance is common. In this study, we classified job crafting as task crafting, cognitive crafting, and relational crafting, and explored the roles of role ambiguity caused by the complexity of tasks and ICT presenteeism in the process of these three crafting behaviors affecting work engagement. Results indicate that role ambiguity acts as a mediating mechanism between two job crafting behaviors (cognitive and relational crafting) and work engagement. In addition, they show that ICT presenteeism significantly interacted with cognitive crafting, further amplifying the effect of job crafting on role ambiguity. The results of this study can help companies develop strategies that can maximize the positive impact of job crafting.

Key Words: Job crafting, Role ambiguity, Work engagement, ICT presenteeism

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