

What makes people share knowledge? An investigation on the roles of organizational learning culture, creative self-efficacy, and organizational identification

是什麼讓人分享知識？探究組織學習文化、創意自我效能、以及組織認同之角色

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Abstract: Drawing on social cognitive theory and social identity theory, we investigated the effects that organizational learning culture, creative self-efficacy, and organizational identification have on the knowledge-sharing behavior. Based on a multi-level research design, we surveyed 909 public-sector employees from 40 Taiwanese government agencies. We found that organizational learning culture, creative self-efficacy, and organizational identification had significant positive effects on knowledge-sharing behavior. Additionally, creative self-efficacy and organizational identification played critical roles since these two individual factors mediated the relationships between organizational learning culture and knowledge-sharing behavior. Our findings suggest that organizations should create favorable organizational contexts capable of reinforcing employee creative self-efficacy and employee organizational identification, which, in turn, promote knowledge-sharing behavior. This study also provides insights for future cross-level integration analyses concerning how relationships between organizational

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factors and individual factors can benefit organizations and employees.

Keywords: Knowledge-sharing behavior, organizational learning culture, creative self-efficacy, organizational identification, cross-level analysis.

摘要：本研究由社會認知理論及社會認同理論角度，探討組織學習文化、創意自我效能、以及組織認同對知識分享行為的影響。藉由多層次研究設計與問卷調查方式，分析來自臺灣 40 個政府機關共 909 位公務員的有效問卷。研究結果指出：組織學習文化、創意自我效能、組織認同，均對知識分享行為具有顯著正向效果。此外，創意自我效能及組織認同在組織學習文化與知識分享行為的關係間，具有部分中介效果。是以，組織應建構有益於強化員工創意自我效能及組織認同的工作情境，以利促進其知識分享行為。本研究亦提出探討組織與員工關係時，應藉由整合組織與個人因素進行跨層次分析。

關鍵詞：知識分享行為、組織學習文化、創意自我效能、組織認同、跨層次分析

1. Introduction

Knowledge has been viewed as the main source of organizational value and a major form of strategic capital (Wang and Noe, 2010), therefore, organizations should strive to foster knowledge acquisition and knowledge exchange at organizational levels to achieve sustainable competitive advantages (Naeem *et al.*, 2019). In the public sector, the management style has transformed from traditional public administration to new public management (Ciobanu *et al.*, 2019; Luu *et al.*, 2022), and are expected to effectively meet the varied demands from citizens (Audenaert *et al.*, 2019). Knowledge sharing enhances the driving force of organizational knowledge for sustainable development of public services (Tuan, 2017). However, the bureaucratic characteristics and regulatory requirements of public organizations make it challenging to share knowledge (Lazazzara and Za,

2020). Exploring how to create a suitable context and motivate employees to actively engage in knowledge sharing behavior (KSB) is crucial in the public sector (Kim, 2018). Relevant studies have pointed out that the perception to employees' working environments will motivate them to engage in pro-organizational work behavior, especially in the public sector (Al Hosani *et al.*, 2023; Tan *et al.*, 2023). An organizational culture can bond employees both to one another and to their organization through shared values and visions, therefore, organizational culture can reinforce a stronger incentive of employees to create great value for organizations through their KSB (Choi, 2016; Jo and Joo, 2011; Fibriandhini *et al.*, 2022).

Given that organizational learning culture (OLC) provides a context that motivates employees engaging in pro-organizational behaviors (Meher *et al.*, 2024; Naqshbandi *et al.*, 2023), and is capable of determining how well the members of an organization share and create knowledge (Jo and Joo, 2011; Meher *et al.*, 2024; Naqshbandi *et al.*, 2023; Watkins and Kim, 2018). The investigation of the utilization of OLC in the public sector is still rare and compelling from the researchers' perspectives (Hansen *et al.*, 2020; Nguyen *et al.*, 2019). The field of public service is a specific area in which knowledge sharing and OLC are—or at least should be—extensively employed in response to complex and rapidly changing issues (Kim *et al.*, 2020; Lin *et al.*, 2022). Take, as just one example, the Taiwanese government, which brought together the technological and administrative abilities of the public and private sectors in order to deal with the COVID-19 pandemic (Chen *et al.*, 2020). Thus, within an overarching framework, disparate elements of society participated in public service by sharing their respective professional knowledge with one another (Chen *et al.*, 2020).

According to social cognitive theory, the external environment will influence the person's behaviors (Bandura, 2001). Prior studies have demonstrated the positive influence of organizational learning mechanism and culture on knowledge sharing in business and education fields (Chen and Hsieh, 2015; Easterby-Smith and Lyles, 2012; Islam *et al.*, 2012; Jo and Joo, 2011; Naqshbandi *et al.*, 2023; Seyyed Kalan *et al.*, 2016; Sorakraikitikul and Siengthai, 2014), the present study

will extend relevant researches to investigate the relationship between OLC and KSB in public sectors. Past studies treated OLC as an individual-level construct (e.g., Jo and Joo, 2011; Lin *et al.*, 2022). However, with employees nested within organizations, the research may encounter respondents nested within various organizations to examine the effects of individual and cluster-level covariates (Krull and MacKinnon, 2001; Preacher *et al.*, 2016). Since multiple civil servants rated the same organizational culture within their sectors, and the process of KSB involves a two-way behavior of providing and receiving knowledge (i.e., knowledge donating and knowledge collecting) from each other (Van Den Hooff and De Ridder, 2004). Based on relevant viewpoints, the first goal of this study is to extend the literature by investigating the cross-level relationship between OLC and KSB, including knowledge donating and knowledge collecting, in the public sector.

Facing a rapidly changing environment, whether for the public or private sectors, creativity and effectiveness have become important factors for their survival (Sözbilir, 2018). Tierney and Farmer (2011) further pointed out that in order to maintain its continuous growth and consolidate its achievements, organizations must rely on employees' continuous creative output, which depends on employees' creative self-efficacy (CSE). Accordingly, a combination of individual factors (e.g., highly creative employees) and organizational factors (e.g., an organizational environment favorable to personal initiative) can promote employee's confidence (Song *et al.*, 2018). Creative thinking generates new ideas and initiatives to respond complex issues and improve the efficiency of public service (Awang *et al.*, 2020). As abovementioned, Taiwan government utilized creative approaches to deal with the pandemic crisis (Chen *et al.*, 2020). Civil servants need to accumulate and believe their creative knowledge and skill are useful approaches for organizations and to facilitate knowledge sharing to their colleagues (Castaneda *et al.*, 2016). An important factor in this task is CSE, which is the confidence that people have in their ability to think and to act imaginatively and resourcefully, often with the aim of solving problems (Hu *et al.*, 2018). The higher a person's CSE is, the more willing the person will be to engage in the

adoption or development of creative knowledge in the workplace (Gong *et al.*, 2020). Furthermore, previous research has suggested that we should employ an integrative framework that accounts for individual and contextual factors to analyze KSB (Chen and Hung, 2010). According to social cognitive theory, organizational factors will trigger personal perceptions and attitude, and in turn, to affect individual's behavior (Bandura, 2001; Bauer *et al.*, 2006). Therefore, the impact of organizational factors on knowledge sharing should be through indirect factors. With relevant arguments, the second goal of the study is to fill the research gap by exploring the multilevel mediating role of CSE on the relationship between OLC and KSB in the public organizations.

Nonaka and Takeuchi (1995) pointed out that the identification of organizational members can reduce negative feelings and behaviors such as distrust among members, and then share their knowledge. Past research has exhibited that the bureaucratic and hierarchical characteristics of a country's public sector can alienate public servants (Choi, 2016), however, their knowledge sharing is interactive: it depends on a sense of camaraderie among public servants (Choi, 2016). According to social identity theory, the identification is the cognitive mechanism that makes collective behavior possible, and the more a person identifies with an organization, the more the person will value the status of the organization and will engage in organization-strengthening extra-role behaviors (Riketta, 2005). Moreover, with the argument of social cognitive theory, the external environment will influence personal attitudes, and in turn, to affect one's behavior (Bandura, 2001). Jo and Joo (2011) have indicated that knowledge sharing requires an adequate norm of organizational culture and a sense of organizational identification (OI) in the business field. Therefore, the third research aim seeks an insight into the multilevel mediating effect of OI on the relationship between OLC and KSB in a public-sector setting.

2. Literature review and hypotheses' development

2.1 The relationships among OLC, CSE, and KSB

KSB refers to the exchange of work-related information among organizational members who seek to solve organizational problems and improve performance (Ahmad, 2017). The meaning of KSB is that the knowledge possessed by individuals can be shared in the organization after obtaining the knowledge, and then become organizational knowledge (Van Den Hooff and De Ridder, 2004). Therefore, KSB between colleagues is a two-way behavior involving knowledge providers (donating) and knowledge receivers (collecting) (Van Den Hooff and De Ridder, 2004). Knowledge donating refers to an individual's willingness to communicate knowledge to others, and knowledge collecting refers to one's willingness to consult and learn from others (Van Den Hooff and De Ridder, 2004). If the knowledge donator is unwilling to share knowledge, or the knowledge collector is incapable or unwilling to learn, the purpose and effect of KSB cannot be achieved (Van Den Hooff and De Ridder, 2004).

According to social cognitive theory, individual's behavior will be influenced by the contextual factors (Bandura, 2001). Chen *et al.* (2012) also indicated that the willingness of organizational members to share knowledge depends on the social relationships and structural resources of the organization. Past research has established that organizational support in the workplace motivates employees to perform extra-role behaviors, such as knowledge sharing (Han *et al.*, 2019). Sorakraikitikul and Siengthai (2014) have demonstrated that a learning culture provides a beneficial environment to support learning and knowledge sharing in the organization. An OLC provides organizational resources to help organizational members receive, create, and share knowledge through opportunities to explore ideas, participate in dialogue, engage in continuous learning, and benefit from learning leadership (Abbasi *et al.*, 2020; Watkins and Kim, 2018). All of these dimensions are important in the promotion of knowledge sharing (Haasis *et al.*, 2018; Naqshbandi *et al.*, 2023). Based on relevant arguments, OLC establishes the context that assist employees sharing knowledge reciprocally by engaging in continually interacts. Thus, OLC can enable employees to change their behavior and cognition in the process of collecting and donating relevant knowledge and

feedback (Abbasi *et al.*, 2020). Previous studies have found that OLC can greatly enhance employees' KSB (Jo and Joo, 2011; Watkins and Kim, 2018). Thus, in line with relevant researches, we propose the following set of hypotheses.

Hypothesis 1a (H1a): OLC is positively associated with knowledge donating.

Hypothesis 1b (H1b): OLC is positively associated with knowledge collecting.

Based on social cognitive theory, an individual's behavior is attributable to both internal factors and external factors (Song *et al.*, 2018). In organizational research, organizational factors shape the perceptions of members, which in turn shape the behaviors of members (Bauer *et al.*, 2006). In workplaces, the most creative employees make a personal effort to enhance their creativity-related skills and abilities (Yoon *et al.*, 2020). These personal efforts can guide other employees through acts of sharing, which stimulate creative output, including new knowledge (Yoon *et al.*, 2020). CSE is the ability which individuals feel confident in their knowledge and skills to generate creative outcomes and solve problems creatively (Tierney and Farmer, 2011). Research has also found that the higher an individual's CSE is, the more willing the individual will be to interact to others and learn new things (Tierney and Farmer, 2011).

Moreover, previous researches have demonstrated that organizational factors will influence employee's CSE (Puente-Díaz, 2016; Puente-Díaz and Cavazos-Arroyo, 2017). In an organization, collaborative learning that relies on organizational resources (e.g., leadership, learner-focused strategies) can improve cognition and performance (Song *et al.*, 2018; Watkins and Marsick, 1993). Beghetto (2006) found that a learning-oriented environment positively affects students' CSE. Likewise, Gong *et al.* (2009) noted that learning-oriented organizational environments are positively associated with employees' CSE.

According to the argument of social cognitive theory (Bandura, 2001), the external environment and internal personal cognitive factors will affect human behavior, and organizational factors will trigger personal perceptions and beliefs, and in turn, to affect individual's behavior (Bandura, 2001; Bauer *et al.*, 2006). Choi (2004) pointed out that creative self-efficacy has a mediating effect on the

relationship between contextual and personal variables. Employees align their attitudes with the value system of the employees' organizations, an alignment that goes far in promoting organizational KSB. As noted above, OLC refers to the ways in which an organization promotes—or fails to promote—its members' knowledge acquisition (Jo and Joo, 2011). Gong *et al.* (2009) further illustrated CSE's mediating effect on the relationship between learning-oriented environments and creative behavior. This mediating effect helps show that CSE reflects creativity, as well as knowledge and skills (Gong *et al.*, 2009). Taken together, these findings suggest that OLC affects an individual's CSE, which in turn affects the individual's KSB. Accordingly, we postulate the following hypotheses:

Hypothesis 2a (H2a): CSE mediates the relationship between OLC and knowledge donating.

Hypothesis 2b (H2b): CSE mediates the relationship between OLC and knowledge collecting.

2.2 The relationships among OLC, OI, and KSB

OI is a psychological state that connects employees to an organization (Bartels *et al.*, 2010). While research has established that organizational culture shapes the development of members' personal identity (Cooper and Thatcher, 2010), Hofstede *et al.* (2010) pointed out that culture proceeds from dynamic interactions between the environment and the individual. Thus, organizational culture proceeds from interactions not just between employees and their peers but also between employees and their workplace—and from these complex interactions emerges a unique shared social reality that affects the employees' beliefs, emotional regulation, and behavior (Hofstede *et al.*, 2010). According to social cognitive theory (Bandura, 2001), an individual's attitude is affected by contextual factors. Organizational culture is based on its value system (Schein, 2004), and this value system will affect members' communication within the organization and their identification with the organization (Schein, 2004). Likewise, based on the arguments of social identity theory, OI is partly attributable to the self-definition of organizational members (Ashforth and Mael, 1989).

Employees with a high level of OI are emotionally committed to their organization (Ashforth and Mael, 1989), and are willing to go the extra mile to ensure the success of the organization (Ashforth and Mael, 1989). OI can enable employees to judge whether their behavior is consistent with the organization's interests (Zhao *et al.*, 2019). And research has shown that the stronger an individual's identification with a group is, the more pronounced the individual's KSB will be within that group (Cabrera *et al.*, 2006).

Furthermore, as noted above, organizational structure strengthens guideposts for knowledge sharing and reduces structural barriers to knowledge sharing—a dual outcome that is, in part, due to the ability of organizational culture to improve mutual understanding and general reciprocity among colleagues (Van Den Hooff and Huysman, 2009; Zhang *et al.*, 2019). When organizational members have a vision of collective norms and common goals, they can effectively improve the awareness, behavior, and performance of organizational members (Chuang *et al.*, 2015). Therefore, the subjective norms, that is, culture, enable organizational members to influence personal knowledge sharing intentions and behaviors (Chuang *et al.*, 2015). OLC is an effective structure that benefits knowledge sharing, including donating and collecting, by communicating to members of an organization. Ryu *et al.* (2003) demonstrated that attitudes have a mediating effect on the relationship between the subjective norms of employees and the knowledge-sharing intentions of employees. As social cognitive theory noted (Bandura, 2001), OLC can go far in determining the extent to which members of an organization collaboratively acquire and disseminate knowledge (Jo and Joo, 2011; Meher *et al.*, 2024; Nonaka and Takeuchi, 1995). Therefore, we investigated the following possible mediating effect:

Hypothesis 3a (H3a): OI mediates the relationship between OLC and knowledge donating.

Hypothesis 3b (H3b): OI mediates the relationship between OLC and knowledge collecting.

3. Methodology and measurement

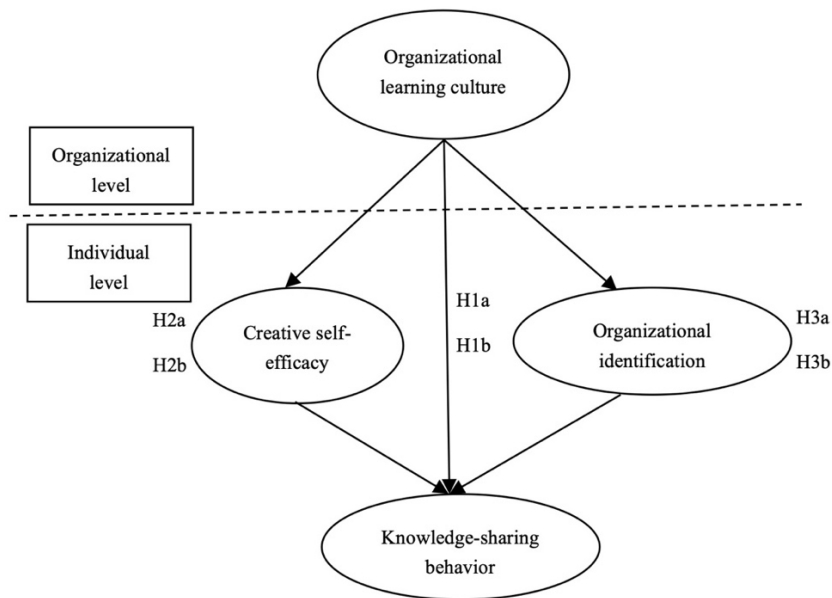


Figure 1
The conceptual framework

3.1 Research participants and procedures

Based on the known stratification of the proportion, the quota sampling is allocated according to the ratio of the current civil servants serving government administrative agencies, including General administration, Tax and Finance administration, Cultural and Education administration, Economic planning and development administration, Transportation administration, Health administration, and Social administration. Before the survey, we first distributed recruitment information to the public sectors and clearly explained the purpose of this study by email and phone. Afterwards, we delivered the questionnaires and questionnaire instruction letters to the representatives of each consented public sector.

A survey was circulated among full-time civil servants spanning 40 public sectors in northern Taiwan, as exhibited in Table 1. We collected our data in two phases from June to September 2022. We distributed questionnaires with questions

on OLC, CSE, and OI in the first phase, and after two months, we contacted the participants to rate the questions on their KSB. Incomplete surveys were deemed invalid and eliminated. Of the 1,200 surveys distributed from 40 public sectors, 909 were collected, resulting in a response rate of 75.75%. Of the 909 research participants, 61.8% were female, 37.8% were 31–40 years old, 40.8% had 3–10 years of service, 90.3% had at least a bachelor's degree, and 84.8% were non-supervisors. We used statistical software SPSS 22, AMOS 21, and HLM 6 for our data analysis.

3.2 Measures

The items of this questionnaire were originally developed in English, and we followed the standard back-translation procedure to facilitate the translation from English to Chinese (Brislin, 1980). We conducted a pre-test study of 60 Taiwanese public servants, and the results show that our survey was suitable. We employed a quantitative, cross-sectional, and self-rating research design with a 7-point Likert-type scale whose response options ranged from 1 (“totally disagree”) to 7 (“totally agree”).

Table 1
The quota of public sectors

Regimentation	Proportion of current civil servants (%)	Quota of public sectors
General administration	42.83	17
Tax and Finance administration	12.78	5
Cultural and Education administration	5.21	2
Economic planning and development administration	14.32	6
Transportation administration	8.86	4
Health administration	10.21	4
Social administration	5.79	2
Total	100	40

3.2.1 Organizational learning culture

OLC consists of the promotion of collaboration and team learning, the inculcation of a collective vision in people, and the establishment of strategic learning-oriented leadership. We adopted the shortened version of the DLOQ (only seven items) established by Yang *et al.* (2004). A sample item was “In my department, people are rewarded for learning.” The Cronbach’s α was .857. OLC has been treated as an individual-level construct in past studies (e.g., Jo and Joo, 2011; Lin *et al.*, 2022). In our study, since multiple civil servants rated the same organizational culture within their sector, we calculated the γ_{wg} and the F value for ANOVA for organizational level OLC to justify the appropriateness of the data aggregation. The results showed that the individual γ_{wg} values ranging from .854 to .980 and is thus greater than the threshold of .70 (LeBreton *et al.*, 2005). We calculated the ICCs: ICC(1)=.191 (>.12) and ICC(2)=.848; and an one-way ANOVA yielded the following results: F(39,869)=6.035, $p < .001$, $\eta^2 = .218$. Therefore, OLC is appropriate as an organization-level construct (Raudenbush and Bryk, 2002).

3.2.2 Knowledge-sharing behavior

KSB can be divided into two categories: knowledge donating and knowledge collecting (Van Den Hooff and De Ridder, 2004). This study used a 13-item scale (knowledge donating: 6 items; knowledge collecting: 7 items) developed and validated by Van Den Hooff and De Ridder (2004). A sample item was “When I have learned something new, I tell my colleagues in my department about it.” The Cronbach’s α was .917 (knowledge donating:.852; knowledge collecting:.911).

3.2.3 Creative self-efficacy

CSE is a person’s belief in his or her ability to produce creative results (Tierney and Farmer, 2002). We adopted a 4-item CSE-measurement scale established by Tierney and Farmer (2002). A sample item was “I feel that I have the ability to use creative methods to solve problems encountered at work.” The Cronbach’s α was .899.

3.2.4 Organizational identification

OI is the alignment of a person's self-definition with the organization to which he or she belongs (Mael and Ashforth, 1992). To assess OI, we adopted the 6-item measurement scale established by Mael and Ashforth (1992). A sample item was "I am very interested in what others think about my department." The Cronbach's α was .866.

3.2.5 Control Variables

Gender, age, education, tenure, and position are considered as the factors to influence employee's attitude and KSB behavior (Cardona *et al.*, 2004; Snape and Redman, 2004). Thus, these variables were used as control variables when examining the proposed hypotheses. Since gender and education were significantly related to the dependent variable in this study, we controlled these two variables in the final analysis to avoid eroding degrees of freedom (Atinc *et al.*, 2012).

4. Empirical results

4.1 Model-data fit and common method variance (CMV)

The goodness-of-fit indices for the measurement model were acceptable ($\chi^2=500.761$, $CMIN/df=1.258$, $GFI=.968$, $SRMR=.043$, $CFI=.994$, $RMSEA=.017$) (Hair *et al.*, 2010). As showed in Table 2, we examined the alternative model to justify the proposed model (4-factor) of this study is suitable for further investigation. Likewise, we implemented both ex-ante and ex-post remedies to examine CMV. We collected data at two different times to deal with potential CMV. To minimize response bias, we assured our survey respondents that there were no right or wrong answers; we also informed the respondents that all their responses were voluntary, confidential, and anonymous. We used Harman's one-factor test to examine the effects of common method variance in post-hoc testing (Podsakoff *et al.*, 2003). The first principal factor explains 35.702% of variance (<50%), which suggests that there was no serious CMV problem.

Table 2
Alternative model test results

Model	χ^2	df	GFI	CFI	RMSEA
4-factor(our proposed model)	500.761	398	.968	.994	.071
3-factor(OLC+KSB merged)	506.082	402	.742	.784	.101
2-factor(OLC+CSE+KSB merged)	509.133	404	.646	.693	.120
1-factor(all constructs merged)	511.949	405	.604	.627	.132

4.2 Reliability, validity, and correlations of variables

As exhibited in Table 3, the factor loadings of each construct are all above the recommended minimum value of .50 (Fornell and Larcker, 1981). As showed in Table 4, we used R to measure the organizational level correlations of variables, and the results exhibits that the correlation coefficients between the organizational-level variables are higher than those at the individual level. Table 5 shows the means, standard deviations, composite reliability (CR), average variance extracted (AVE), the square root of average variance extracted, and the correlations for the variables in the individual level. All of the estimated correlation coefficients between variables are moderately correlated. The composite reliability (CR) values range from .891 to .948, and they are all above the recommended minimum value of .70. The AVE of all constructs ranges from .540 to .768, exceeding the .50 threshold value, thus confirming the convergent validity of each variable (Bagozzi and Yi, 1988; Fornell and Larcker, 1981). Table 2 also exhibits that the 4-factor (proposed model) may be more fitting than treating it as a 1-, 2-, or 3-factor construct. Furthermore, the estimated correlation coefficients between the variables were less than the square root of the AVE of each variable, supporting the possession of discriminant validity (Hair *et al.*, 2010).

Table 3
Factor loadings of each construct

construct	item	λ	
Organizational Learning Culture	OLC1	.752	
	OLC2	.777***	
	OLC3	.760***	
	OLC4	.750***	
	OLC5	.723***	
	OLC6	.651***	
	OLC7	.726***	
Creative Self-Efficacy	CSE1	.784	
	CSE2	.837***	
	CSE3	.866***	
	CSE4	.834***	
Organizational Identification	OI1	.675	
	OI2	.541***	
	OI3	.556***	
	OI4	.863***	
	OI5	.880***	
Knowledge-Sharing Behavior	OI6	.731***	
	knowledge donating	KSB_D_1	.732
		KSB_D_2	.687***
		KSB_D_3	.743***
		KSB_D_4	.808***
		KSB_D_5	.849***
		KSB_D_6	.814***
	knowledge collecting	KSB_C_1	.770
		KSB_C_2	.797***
		KSB_C_3	.804***
		KSB_C_4	.842***
		KSB_C_5	.805***
		KSB_C_6	.698***
KSB_C_7		.681***	

4.3 Data analyses

We used SPSS MLmed macro to analyze the multilevel direct and indirect results of the hypotheses. As depicted in Table 6, the significant direct effects of OLC on knowledge donating and knowledge collecting were .5415([95% CI=.2668, .8162], SE=.1167, p=.0000), and .6698([95% CI=.2779, 1.0616], SE=.0333, p=.0000) with the confidence interval not embracing zero. These

Table 4
Organizational level correlations among variables

Variables	1	2	3	4	5
1. Organizational Learning Culture	-				
2. Creative Self-efficacy	.87*	-			
3. Organizational Identification	.92*	.97*	-		
4. Knowledge donating	.98*	.96*	.95*	-	
5. Knowledge collecting	.91*	.70*	.84*	.91*	-

Notes: $N=40$. * $p<.05$.

Table 5
Means, standard deviations, CR, AVE, and correlations among variables

Variables	Mean	SD	CR	AVE	1	2	3	4	5
1. Organizational Learning Culture	5.365	.658	.891	.540	.735				
2. Creative Self-efficacy	5.002	.775	.930	.768	.396**	.876			
3. Organizational Identification	5.255	.727	.900	.601	.527**	.356**	.775		
4. Knowledge donating	5.311	.659	.899	.599	.526**	.384**	.362**	.774	
5. Knowledge collecting	5.750	.688	.904	.576	.574**	.339**	.412**	.624**	.759
Gender					.071*	-.053	.035	.056	.110**
Age					.051	.108**	.162**	.003	.021
Education					.033	.097**	.112**	.066*	.076*
Tenure					.083*	.077*	.065*	-.006	-.018
Position					-.035	-.020	-.004	.043	-.025

Notes: $N=909$. ** $p<.01$. The bold diagonal value is the square root of AVE.

results provide support for hypotheses H1a and H1b. The multilevel indirect effect of OLC on knowledge donating through CSE was .2080 ([95% CI=.0683, .3694], SE=.0768, $p=.0067$) which did not contain zero, however, the multilevel indirect

effect of OLC on knowledge collecting through CSE was $-.0925$ ([95% CI= $-.3293, .1342$], SE=.1179, $p=.4325$) which contained zero. In sum, the results support CSE had a partially mediating effect in H2a but not in H2b. Continuing our cross-mediation analysis, the multilevel indirect effect of OLC on knowledge donating and knowledge collecting through OI were $.1904$ ([95% CI=.0088, .0731], SE=.1017, $p=.0142$) and $.1241$ ([95% CI=.0310, .0918], SE=.1570, $p=.0001$) which did not contain zero. In sum, OI had a partially mediating effects in H3a and H3b.

5. Discussion

According to Waldo (1980), a healthy civilized society is able to progress, and this ability is dependent on public-service systems acting as a catalyst of innovation and a disseminator of advanced knowledge. Thus, a key facet of public-service systems should be knowledge sharing, which informs daily work processes and indicates potential future paths for the development of improved knowledge, policies, and programs (Wang and Noe, 2010). Public-service systems are knowledge-oriented and thus must be able to effectively share and harness knowledge at the level of the organizational member to meet the diverse

Table 6
Multilevel direct and indirect results

Multilevel direct effect	Estimate	SE	LLCL	ULCL
OLC→knowledge donating	.5415***	.1167	.2668	.8162
OLC→knowledge collecting	.6698**	.0333	.2779	1.0616
Multilevel indirect effect	Estimate	SE	MCLL	MCUL
OLC→CSE→knowledge donating	.2080**	.0768	.0683	.3694
OLC→CSC→knowledge collecting	-.0925	.1179	-.3293	.1342
OLC→OI→knowledge donating	.1904*	.1017	.0088	.0731
OLC→OI→knowledge collecting	.1241***	.1570	.0310	.0918

Notes: OLC=organizational learning culture, CSE=creative self-efficacy, OI=organizational identification; bootstrapping: 5,000; Confidence Level: 95%; *** $p<.001$, ** $p<.01$.

requirements of the general public (Yusof *et al.*, 2012).

In addition to KSB, we found that the OLC in various segments of Taiwan's public sector directly affected members' CSE and OI, and, in turn, strengthens the KSB of organizational members. In line with previous scholars' research findings, we found that workplace environment indeed has a positive effect on the creation and sharing of knowledge insofar as organizational culture can construct the norms and thinking patterns of organizational members, and can maintain the behavioral consistency of organizational members (Robertson and Hammersley, 2000).

OLC is an important organizational structure capable of creating suitable situations that stimulate the growth of knowledge, encourage team work, strengthen the abilities of organizational members, and promote their KSB (Watkins and Marsick, 1993). In our study, the empirical findings on public-service employees in Taiwan are consistent with the empirical findings of previous studies (Jo and Joo, 2011; Watkins and Kim, 2018).

5.1 Theoretical implications

As explained in Bandura's (2001) social cognitive theory, we found that workplace environment has a positive effect on the creation and sharing of knowledge insofar as organizational culture can construct the norms and thinking patterns of organizational members, and can maintain the behavioral consistency of organizational members (Robertson and Hammersley, 2000). OLC can shape how organizational members cooperate with one another, innovate, and apply knowledge according to a system of shared values and other ideas (Abbasi *et al.*, 2020). In other words, OLC is an important organizational structure capable of creating suitable situations that stimulate the growth of knowledge, encourage team work, strengthen the abilities of organizational members, and promote their KSB (Watkins and Marsick, 1993). Employees' perception of OLC positively affected their KSB, and one can reasonably expect that both learning culture and KSB can improve the quality of public services (Yusof *et al.*, 2012). Past studies have demonstrated the positive relationship between OLC and KSB in the education and business fields (Chen and Hsieh, 2015; Easterby-Smith and Lyles,

2012; Islam *et al.*, 2012; Jo and Joo, 2011; Naqshbandi *et al.*, 2023; Seyyed Kalan *et al.*, 2016; Sorakraikitikul and Siengthai, 2014), the study extends the research field to investigate the relationship in public sectors. Moreover, the study also anchored in organizational behavior researchers to deepen our understanding of learning culture at the collective level examining the contextual effects on the employees' pro-organizational behavior (Krull and MacKinnon, 2001; Preacher *et al.*, 2016; Raudenbush and Bryk, 2002; Watkins and Kim, 2018). Furthermore, as the process of KSB involves a two-way behavior of providing and receiving knowledge (i.e., knowledge donating and knowledge collecting) from each other (Van Den Hooff and De Ridder, 2004), the study enriches the theoretical arguments to elaborate the positive relationships between OLC and knowledge donating and knowledge collecting.

Second, an organization's culture is essentially a set of guidelines that enables organizational members to make sense of their dynamic interactions with their "organization" (Hofstede *et al.*, 2010). The value system attached to a stable organizational culture can affect members' work styles, communication methods, and organizational operations (Schein, 2004). Gong *et al.* (2009) have illustrated the mediating effect of CSE on the relationship between learning-oriented environments and creative behavior, as well as knowledge and skills. Since civil servants need to accumulate and believe their creative knowledge and skill are useful to facilitate knowledge sharing, the study shed light on the multilevel mediating role of CSE on the relationship between OLC and knowledge donating in the public organizations, which is consistent with social cognitive theory and the aforementioned empirical research (Gong *et al.*, 2009; Olatokun and Nwafor, 2012; Tierney and Farmer, 2011), we also found that the more ardently an organization promotes its OLC, the more likely the organization's members will be to regard compatibility between their creative ability and their organization, and thus the more willing these members will be to engage in knowledge donating with peers.

However, our findings regarding these factors, particularly in relation to CSE, are quite interesting. After people "donate" knowledge to somebody, they may

obtain constructive feedback on the knowledge, and this feedback might convince the donators that their knowledge-donating behavior has improved the organizational performance of others and that knowledge-donating behavior is therefore advisable and worth repeating (Cabrera *et al.*, 2006; Olatokun and Nwafor, 2012). However, we did not uncover evidence that CSE mediated the relationship between OLC and knowledge collecting. In contrast, previous research found that, when a public-sector organization establishes knowledge-management routines, different units within the organization develop their routines, and this heterogeneity leads to work-culture gaps between the units, with some gaps emerging at a more micro-level (between individuals) or at a more macro-level (between organizations) (Murray, 2001). Huysman and de Wit (2002) pointed out that in public-sector organizations, professional and field barriers are a major obstacle to knowledge sharing. Sveiby and Simons (2002) also pointed out that the public sector faces two primary challenges in knowledge sharing: a culture of resistance and a culture of knowledge hoarding. The public sector clearly faces stronger challenges than the private sector in knowledge collecting (Sveiby and Simons, 2002). Therefore, even though OLC can promote dialogue and discussion among employees from distinct organizations and units and can enhance individual CSE, professional differences among individuals may prevent them from recognizing and benefiting from the useful knowledge of other individuals. These phenomena can greatly impede knowledge-collecting behavior among organizational members, including public servants.

Thirdly, according to social identity theory, the more a person identifies with an organization, the more the person will engage in organization-strengthening extra-role behaviors (Riketta, 2005). Furthermore, with the argument of social cognitive theory, the external environment and internal personal attitudes will affect the individual's behavior (Bandura, 2001). Organizational members develop a sense of belonging to their organization, and this attachment helps them absorb the norms and principles of the organization, which can, in turn, profoundly shape the members' work attitudes and behaviors (Ashforth and Mael, 1989). Previous studies have illustrated that when members strongly identify with their OLC, their

previously established sense of belonging to the organization can powerfully strengthen collaborative behaviors, such as KSB (Xiao *et al.*, 2018; Zhao *et al.*, 2019). Consistent with relevant studies, the study illustrated the insight into the multilevel mediating effect of OI on the relationship between OLC and knowledge donating and collecting in a public-sector setting. KSB is a reciprocal interaction (Choi, 2016; Van Den Hooff and De Ridder, 2004), however, the bureaucratic and hierarchical characteristics of a country's public sector can alienate public servants (Choi, 2016). The study demonstrates that the characteristics of OLC, such as the opportunities for inquiry and dialogue, the ability to empower a collective vision, and leadership of learning (Marsick and Watkins, 2003), can strengthen the identification of organizational members, and in turn to prompt their donating and collecting of knowledge.

Fourth, as there are dual mediators in the framework, the study further investigated the differences between CSE and OI as the mediating effects. The variance of the difference between two estimates was employed to examine the result (Altman and Bland, 2003), and at the 0.05 level, the value of z is -0.296, which exhibit that the mediating effects of CSE and OI on the relationship between OLC and knowledge donating are equally significant. As a dual-mediation paths: one related to individual creative self-efficacy and the other to organizational identification, the result exhibits that organization should put emphasize on enhancing and utilizing employees' creative self-efficacy as well as organizational identification while prompting the knowledge donating in the public sector.

5.2 Management implications

Recently, public organizations are facing a volatility, uncertain, complex, and ambiguous (VUCA) environment, and organizations must utilize employees' creative abilities and skills to respond (Miska *et al.*, 2020). Civil servants need resources to assist them accumulating creative knowledge and skill for addressing complex issues rigorously (Awang *et al.*, 2020). Knowledge is a vital resource with which organizations can maintain their competitive advantage in dynamic environments (Xiao *et al.*, 2018; Zhao *et al.*, 2019). The management strategy of

an organization must retain not only employees, but their knowledge, as well (Xiao *et al.*, 2018; Zhao *et al.*, 2019). Knowledge sharing requires continuous interaction between knowledge donators and knowledge collectors (Chen *et al.*, 2012), organizations must form a culture conducive to establishing the learning abilities and needs of members, so that the organizations, in the long run, can gain operation advantages (Abbasi *et al.*, 2020). It is essential to create a work environment where employees receive support from organizations and leaders, work collaboratively, and embrace and overcome challenges (Watkins and Kim, 2018). Public-service systems, in particular, must acknowledge their members' learning needs, establish multiple learning channels, create a robust OLC, and improve members' perception of their work environment. Furthermore, public-service systems must promote mutual dialogue and knowledge exploration in order to avoid or to shake free of rigidly anachronistic practices.

A second managerial implication of our findings is the light they shed on the capacity of well-crafted human-resource policies to help organizations provide employees with substantial learning and growth opportunities that foster creative ideas and knowledge-sharing behaviors (Liu *et al.*, 2020). Problematically, however, public-service systems tend to have conservatively rigid human-resource policies that can leave untapped the KSB of civil servants. Moreover, employees in contemporary society often retain the information they learn in the workplace, but they are unwilling to share and transfer knowledge, so their behavior may be detrimental to their own success (Marsick and Watkins, 2003). One way to counter this rigidity is for the public sector to cooperate with the private sector, such as public-private collaboration, whose more flexible practices can encourage civil servants to develop their creativity and their KSB skills.

A third managerial implication of our findings addresses the failure of many employees to realize that the knowledge they possess is beneficial to their colleagues (Fasbender and Gerpott, 2020). Personal motivation plays a key role in promoting knowledge sharing (Wasko and Faraj, 2005), and intrinsic motivation drives knowledge sharing better than extrinsic motivation (Nguyen *et al.*, 2019). In addition, civil servants need to generate more creative thoughts to respond

complex issues and improve the efficiency in the rapidly changing environment (Awang *et al.*, 2020). Therefore, public organizations must enhance the willing and ability of civil servants to engage in the adoption or development of creative knowledge in the workplace. Our findings suggest that the Taiwanese public-service system must strengthen its members' confidence in their ability to share knowledge creatively within the organization. One way to accomplish this goal is to create work units consisting of both high CSE and low CSE employees so that the former can encourage the latter to improve their CSE.

The fourth managerial implication of our findings is closely related to a point made by Bavik *et al.* (2018): how much an organization's members identify with it can significantly shape their work attitudes and behaviors. The identification and loyalty of organizational members can reduce negative feelings and behaviors such as distrust among members, and then share relevant information (Nonaka and Takeuchi, 1995). Thus, according to social cognitive theory and social identity theory, it is crucial to trigger civil servants' KSB through not only establishing the context but also enhancing the identification. Hence, successful KSB in an organization might promote a high level of member participation (Bavik *et al.*, 2018). Besides, the limited resources available to public-service systems, whether in Taiwan or elsewhere, complicate the use of extrinsic factors such as rewards to encourage knowledge sharing among members. Therefore, the public sector must foster in its civil servants a real sense of psychological safety within their organization so that cooperation between members grows while their personal interests increasingly align with—or even take second seat to—the interests of the organization.

Fifth, the generation of new knowledge is not only the result of actions within a single organization, but also requires the knowledge sharing process among various participants in the external system (Chuang *et al.*, 2015). From this perspective, the public service system should develop diversity and strengthen connections within and outside the organization, gain access to different information and professional knowledge resources, and enrich knowledge donating and collecting. In addition, with the development of technological tools

and multiple channels, the transmission of information and knowledge in organizations is no longer limited by different operating systems and operating models resulting in professional and cultural challenges (Liu *et al.*, 2020; Olatokun and Nwafor, 2012), public systems can expand the knowledge management from the technical aspects, such as knowledge and information management systems and e-learning systems and other technology application models to facilitate knowledge collecting.

5.3 Limitations and recommendations for future research

This study has several limitations and recommendations. For starters, learning technology can help in the transmission of information, making knowledge more boundless in terms of time, location, and theme (Liu *et al.*, 2020). Future research can expand this topic by investigating the specific influence of technology applications and knowledge-management skills to encourage employees to engage in knowledge sharing.

The survey of the present study was circulated among 40 public sectors in northern Taiwan. National culture or organizational culture factors will affect the attitudes and behaviors of organizational members (Hofstede *et al.*, 2010). East Asian cultures, such as Taiwan's, are known to be somewhat anathema to organization-based KSB because their cultures are less open, more negative, afraid of being considered a show-off, and less critical than Western cultures (Hofstede *et al.*, 2010; Yao *et al.*, 2007). Given that the public sector generally exhibits more resistance to knowledge sharing and more hoarding of knowledge than the private sector does: the result is that cultures of cooperation are difficult to establish in the public sector (Sveiby and Simons, 2002; Yao *et al.*, 2007). In addition, knowledge is the professional resource and power of individual employees to ensure their own interests and competitive advantages, which will impede organizational members to share knowledge (Davenport and Prusak, 1998). However, relevant studies have demonstrated that enhancing individual's beliefs, attitude, intention, and formal and informal network relationships can facilitate knowledge sharing among organizational members in Asian public sectors (Kim, 2018; Tangaraja *et al.*, 2015;

Tuan, 2019; Yusof *et al.*, 2012). Based on relevant arguments, future researchers can conduct cross-cultural comparative analyses.

A promising area of inquiry for future research is leadership styles, which can readily affect the attitudes and behaviors of organizational members' knowledge sharing, self-efficacy, and organizational identification (Tuan, 2017). In addition, the networks of connections and relationships compose the vital resource to enhance members' pro-organizational behaviors (Jokisaari *et al.*, 2024). Watkins and Kim (2018) have indicated that social relations among employees can mobilize knowledge-sharing behavior. Choi (2016) points out that the key challenge for knowledge-sharing in the public sector depends on the exchange of knowledge within or across government organizations. Based on relevant viewpoints, social capital can reinforce knowledge-sharing behavior. Future research would do well to explore the direct or moderating effects of leadership, such as servant leadership, and social capital on the relationships among OLC, CSE, OI, and KSB.

An important and somewhat obvious limitation of our study is our reliance on cross-sectional, questionnaire-driven data. The empirical results of this study show that personal creative self-efficacy positively affects knowledge sharing behavior. However, according to research by Kim and Park (2015) and Hu and Zhao (2016), knowledge sharing will positively affect creative self-efficacy. Therefore, future research can adopt longitudinal research to verify the causal relationship. In addition, in our study, the mediating effect of CSE on the relationship between OLC and knowledge-collecting behavior was not significant, so this issue deserves further examination. Future research can also explore in-depth contextual factors in order to better understand specifically whether or not—and if so, to what extent—CSE mediates, even partially, the relationship between OLC and KSB.

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