

Exploring the Effect of College Students' Civic Engagement on Transferable Capabilities during the COVID-19 Pandemic

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Abstract: Civic engagement refers to the ways in which citizens participate in the life of a community to help shape its future or improve conditions for others. While it might have been shaped by the COVID-19 pandemic recovery, this study explored how college students perceive civic engagement on selected campuses that were partially locked down. We sampled 1036 student volunteers from six universities in Taiwan by using a self-designed module of civic engagement and transferable capabilities. The Student's t-test, ANOVA, regression, factor analysis, and structural equation modeling (SEM) were used to interpret the differences and relationships among these variables. This study provides a more detailed example of the current status of civic engagement and its relative to transferable capabilities in a higher education setting. The related programs and institutes should take responsibility for enhancing students' civic engagement and transferable capabilities during the pandemic. How to ameliorate the situation? The findings suggest that it should consider a student's academic major, learning experiences in the department, and time spent on related activities during the pandemic recovery. The findings might prove useful to various campus for enhancing ongoing practices.

Keywords: civic engagement; COVID 19; change in higher education; educational systems; effects; SEM; transferable capabilities

1. Introduction

During the COVID-19 pandemic, lockdowns severely affected educational institutions and regular campus activities. Various studies focused on the issues related to education, for example, the impact on general education [1,2], international student mobility [3,4], and innovative learning technology issues [5-7]. In this study, we are concerned with civic engagement on campus and if it has been seriously impeded during pandemic. Since civic engagement has been viewed as one of crucial activities on campus for sustainable higher education purposes, it is an emerging issue for keeping students active during lockdown. To that end, we designed a framework to determine how influential factors might shape a student's civic engagement.

Civic engagement combines the concepts of community engagement and global citizenship and involves various activities, for example: learning from others, realizing diversity, developing empathy and social responsibility, working through controversy, developing informed perspectives on social issues, taking an active role in politics, and participating actively in public life and problem solving [8]. Individuals might be mediators who can transform the society, but during the pandemic this aspect of civic engagement has been challenged, particularly concerning service learning programs in higher education, which are meant to benefit students, colleges and society as a whole. College students

are expected to do social service to improve their civil responsibility, enhance their interpersonal skills, and practice life-long learning. Since the pandemic, various civic engagement and service learning activities on campus have been blocked, but the effects are still unknown.

Although information on civic engagement in higher education is quite comprehensive, assessment using structural modeling is still limited. Under the circumstances, this study aims to find out current civic engagement as perceived by students in higher education; specifically, by exploring which factors might prompt students to become involved and how civic engagement might influence students' abilities. With these purposes in mind, this study addressed the following research questions:

- a. What constitutes students' civic engagement on campus during the COVID-19 pandemic?
- b. Do they have any group differences in gender or major?
- c. Which factors might impact civic engagement in current situation?
- d. What kind of structural model can interpret the relationship between civic engagement and transferable capabilities?

The rest of this study is presented as follows. First, we review the literature, which includes previous studies on civic engagement and transferable capabilities. Second, the method section discusses the research framework, assumptions, instruments, sampling, and statistical analysis. Third, the results—consisting of factor analysis, comparison of group differences, regression analysis, and structural equation modeling (SEM)—are presented. Fourth, the results of the study are discussed. Finally, conclusions and future suggestions for enhancing student civic engagement are presented.

2. Literature Review

2.1 Concept of Civic Engagement

Civic engagement has various meanings: community service, regional engagement, public service, public engagement, triple-helix and social innovation [9]. For example, McIlrath argued that there are abundant studies in the literature, but it is infrequently qualified with definitions [10]; Berger indicated that civic engagement does not specifically refer to political participation, social connectedness, associational membership, volunteerism, community spirit, or cooperative and tolerant moral norms but is rather an umbrella term that encompasses all of these topics while clarifying none [11]. In general, civic engagement acts on a heightened sense of responsibility to one's community, and this may cover a wide range of activities, including developing civic sensitivity, participating in building a civil society, and benefiting the common good. It can also include the ideas related to reciprocity, partnership, inclusion, and social justice [9]. Hence, the Carnegie Foundation's Community Engagement uses campuses to choose a classification of civic engagement as a way to appeal to an institutional identity and a commitment to community engagement [12,13]. In higher education, it is understood that civic or community engagement is how a university's knowledge and resources enrich scholarship, research, and creative activity. Moreover, they are expected to prepare educated, engaged citizens to address critical societal issues and contribute to the public good.

Moreover, civic engagement refers to interest and participation in civic, political, or social activities, such as voting, volunteering, or joining a civic group. When youth participate they empower themselves [14] by acquiring the knowledge, skills and attitudes to make them successful reformers and formers of networks and coalitions [15-17]. In this sense, civic engagement has been viewed as knowledge combined with the use and acquisition of skills. We assumed that on campus it might enhance students' capabilities.

Higher education has become one of the few public spaces where students can learn to questioning authority, apply the ideals of engaged citizenship, restate the importance of the public good, and expand their ability to make a difference [8]. Civic engagement has been viewed as values, knowledge, skills, efficacy, and commitment that can be assessed. In 2016, 49 institutions in United States elected to append civic engagement items

to the core survey of NSSE to assess students' conflict resolution skills and examine how often they engage with local, state, national, and global issues [18]. Related theories and practices developed the notion of civic engagement in different settings. Based on previous discussion, this phenomenon indicated that undergraduate experiences and current curricula should reflect the progress made in incorporating the civic engagement provision.

2.2 Transferable Capabilities

Transferable capabilities refer to skills, knowledge, and abilities that can be transferred. It is often assumed that transferable skills can be reused after transition to a new situation. For example, transferable skills are skills that are relevant and helpful across different situations and areas of life. Such skills are often seen as a crucial factor adding to the employability of individuals [19]. The transfer of skills and knowledge, however, is a complex area of learning theory which is often assumed and lacks empirical analysis [20]. Stephenson and Yorke argued improving skills, lifelong learning and welfare-to-work within the setting of institute can develop the individual's capability [21]. Previous studies indicated how life-skills can be developed in a range of higher education subject areas, and at the change which can be made to the curriculum to facilitated this sort of learning [22]. Previous studies indicated that civic participation leads to transferable capabilities. Facer and Enright suggested the reason that we should promote engaged learning is often answered by reference to the broader civic mission of the university [23]. This idea has played a significant role in the expansion of transferable capabilities; however, the nature of workplace learning is both different from, and similar to, that found in higher education. Life-long learning in the workplace can be described at different levels, ranging from the individual to the network and region.

Facilitating transfer is critical for preparing students for effective transition to the workplace. Jackson et al. indicated that work integrated learning can provide an opportunity for tertiary education students to practice transfer across classroom and work settings [20]. Their findings highlighted the important role of paid work and volunteering and emphasize the importance of educators taking a holistic approach to developing students' transfer ability. Ng and Harrison reflected on the experience of redesigning a course for online delivery, in response to the COVID-19 pandemic, while preserving its focus on transferable skills [24]. They provided lessons for developing transferable skills when pivoting to digital learning under extreme conditions.

2.3 Studies on Civic Engagement and Transferable

From reviewing previous studies, we found that most of the literature on civic engagement and transferable capabilities came from the United States. For example, Putnam addressed the collapse and revival of American community and how it played a critical role in increased calls for civic engagement in the undergraduate curriculum [25]. Since then, the American Association of Colleges and Universities (AAC&U) delivered a definitive call for "personal and social responsibility," "civic knowledge and engagement," and "community-based learning" among other related outcomes and practices [26]. Many others, including academics, led the charge or echoed the appeals for increased civic engagement in the college experience [8,27-31]. Furthermore, the AAC&U [32], the American Democracy Project [33], the National Conference on Citizenship [34] as well as individual scholars [35,36] identified key practices for engaging students effectively and productively in communities. Lately, studies have addressed this issue from different viewpoints. For instance, Richard, et al. suggested that the Adult Civic Engagement model can be used to examine service learning in higher education [37]; Law indicated that higher education institutions realized they could provide undergraduates students with opportunities through service learning and community service programs [38]; Walker promoted the case for such an approach in higher education practice, policy and evaluation [39]. Some studies concerned the means of assessing civic engagement and related capabilities.

For example, Brammer and Morton demonstrated that students identified five factors: research, collaboration, effort, passion, and responsibility [40]. Berger indicated that civic engagement, as it is currently used, includes political, social, and moral components, or all public and private goods [11]. This concept shows how education is fundamental to resolving conflicts that involve bias and prejudice, thereby contributing to the well-being of their community. Behind the participation, student affairs professionals, administrators, and faculty defined how students participate to shape civic education experiences on their campus and help students learn how to find and use their voices [41]. This argument seemed to suggest that capabilities might come before civic engagement. In research practice, Mezirow argued that transformative learning challenges students to assess their value system and worldview and to be potentially changed by the experience [42,43]. Moreover, civic engagement is embedded in the history of minority student groups on campuses with their influence on increased access and capacity to inform themselves or others about an issue [44].

A new large scale survey was initiated to study civic engagement and its related practices. NSSE adapted it from a pilot survey developed by the American Association of State Colleges and Universities. The module asks students to assess their conflict resolution skills and examines how often they engage with local or campus issues on issues on a state, national or global scale [18]. Henceforth, differences in civic engagement across institutions of higher education have emerged [45-49]. For further studies, we may inquire: What kind of function does civic engagement plays on campus? Can a student's civic engagement enrich their transferable capabilities? This study assumed that such a latent relationship might exist.

3. Method

3.1 Research Framework and Hypotheses

In this study, we assumed civic engagement would influence college students' transferable capabilities. Figure 1 displays our research framework to be tested in an SEM model. Civic engagement based on a factor analysis might contain various dimensions. Nine indicators representing transferable capabilities will be estimated in the model. They are (1) oral presentation (TC1), (2) critical thinking (TC2), (3) data analysis (TC3), (4) job-related skills (TC4), (5) cooperation (TC5), (6) personal values (TC6), (7) realizing (TC7), (8) problem solving (TC8), and (9) active citizenship (TC9).

We developed seven hypotheses regarding students' perceptions of civic engagement and transferable capabilities. The null hypotheses for testing were as follows:

H1: There is no relationship between civic engagement and transferable capabilities;

H2: There is no relationship between civic engagement and students engaged in local activities (CE_local);

H3: There is no relationship between civic engagement and students engaged in global activities (CE_global);

H4: There is no relationship between civic engagement and students engaged in workable activities (CE_working);

H5: Students engaged in local activities (CE_local) will not, through civic engagement, acquire transferable capabilities;

H6: Students engaged in global activities (CE_global) will not, through civic engagement, acquire transferable capabilities;

H7: Students engaged in workable activities (CE_working) will not, through civic engagement, acquire transferable capabilities.

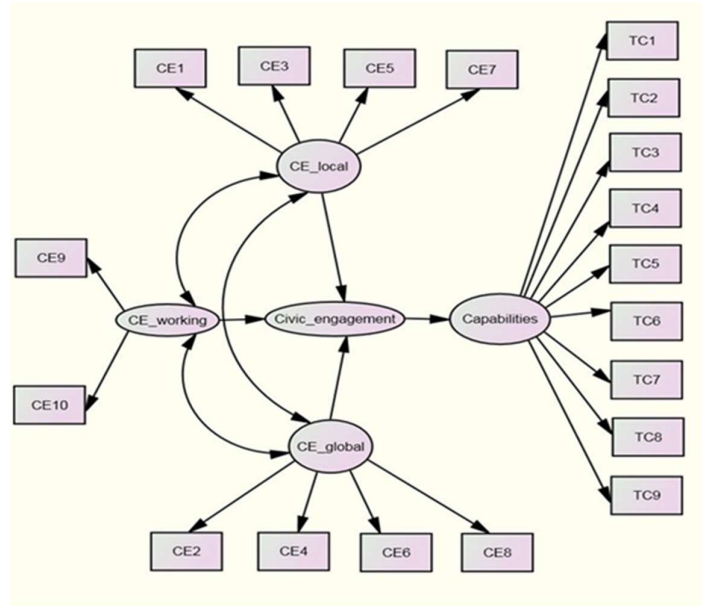


Figure 1. A framework of research.

3.2 Instrument

The questionnaire consisted of demographic variables (gender, college, and family income), time usage (academic activities, extra-curriculum activities, leisure, and service activities), learning experiences in one's major, academic performance, civic engagement, and transferable capabilities. The civic engagement indicators were extracted from NSSE (National Survey of Student Engagement), which provides instruments for educators with an estimate of how undergraduates spend their time and what they gain from attending college [50]. We assumed such an engagement might enhance a student's transferable capabilities. The indicators are listed as follows:

- Informed yourself about local or campus issues (CE1);
- Informed yourself about state, national, or global issues (CE2);
- Discussed local or campus issues with others (CE3);
- Discussed state, national, or global issues with others (CE4);
- Raised awareness about local or campus issues (CE5);
- Raised awareness about state, national, or global issues (CE6);
- Asked others to address local or campus issues (CE7);
- Asked others to address state, national, or global issues (CE8);
- Organized others to work on local or campus issues (CE9);
- Organized others to work on state, national, or global issues (CE10).

The scale of civic engagement was presented using a 5-point Likert scale, ranging from 1 (never) to 5 (always). Transferable capabilities were presented using a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The reliability analysis revealed the Cronbach's alpha to be .927 in civic engagement and .874 in transferable capabilities.

3.3 Samples

The samples were selected from college students and set with a 95% confident level and possible error control under .03. According to the sampling formula proposed by Dillman [51], the fittest samples for this study can be estimated as follows:

$$n = Z^2 / 4 * \alpha^2 = 1,067$$

$\alpha = .03$ (max acceptable error in sampling)

$Z = 1.96$ (at $\alpha = .05$ significant level)

The suggested samples in this study were 1067. During the pandemic, the university system in Taiwan was partially locked down. Most campuses were opened conditionally or sometimes courses were offered by the online system (MS Teams). In this study, we expected an 80% return rate of 1333 copies of the questionnaire. Finally, this study successfully sampled students from public and private universities in Taiwan based on voluntary participation. After deleting incomplete questionnaires, we received 1036 valid responses. The distributions of the samples were 44.5% male and 55.5% female. A total of 20.5% were freshman, 29.8% were sophomore, 33.1% were junior, and 14% were senior. Most were taking STEM and business programs. The sample distribution with basic demographic information is displayed in Table 1.

Table 1. The distribution of the participating students.

Classified		Frequency	Percent	Valid percent
Gender	Male	461	44.5	44.5
	Female	575	55.5	55.5
	Total	1036	100.0	100.0
Grade	Freshman	212	20.5	20.5
	Sophomore	309	29.8	29.8
	Junior	343	33.1	33.1
	Senior	145	14.0	14.0
	Extended	27	2.6	2.6
	Total	1036	100	100
Majors	Humanities	227	21.9	22.4
	STEM	218	21.0	21.5
	Business	226	21.8	22.3
	Education	91	8.8	9.0
	Social Science	63	6.1	6.2
	Medicine & Bio.	104	10.0	10.2
	Others	86	8.3	8.5
	Total	1015	98.0	100.0
Missing	System	21	2.0	
Total		1036	100.0	

3.4 Statistical Analysis

We used IBM SPSS software (Statistical Product and Service Solutions) and AMOS (Analysis of Moment Structure) to analyze the data. The level of significant difference was set at $\alpha = .05$. First, the reliability and validity of the instrument was verified. We carried out factor analysis to estimate the internal constructs of the instrument. Concerning the factor analysis, we set the criteria for the candidate indicators, and factor loadings of less than .50 were omitted [52,53]. Second, both the Student's t-test and ANOVA were used to compare the group differences of civic engagement according to gender and major. In this study, the Shapiro–Wilk statistic was used to determine the samples drawn from the general population. The Levene statistic was used to check the homogeneity of variance in the target groups. An accepted null hypothesis implied that the different samples were drawn from populations having equal variance [54]. If the null hypothesis of homogeneity of variance were accepted ($p > .05$), we conducted an ANOVA with the function “equal variance is assumed” in SPSS. The multiple comparison tests were conducted by Turkey's honestly significant difference (Turkey's HSD). If the null hypotheses of homogeneity of variance were rejected ($p < .05$), we conducted an ANOVA with the function “equal variance is not assumed” in SPSS. The multiple comparison tests were conducted by Dunnett's T3. Third, the regression model was used to determine the factors of time usage, learning experiences, and academic achievement that might impact civic engagement. Finally, AMOS 26 was used to conduct SEM analysis. We assessed the structural relationships among various civic engagement and transferable capabilities. The overall

model fit in SEM was assessed using common goodness-of-fit indices, including Chi-square minimum (CMIN), the ratio of Chi-square to degrees of freedom ($\chi^2/df < 3.0$), number of distinct parameters (NPAR), goodness-of-fit index (GFI $> .90$), adjusted goodness-of-fit index (AGFI $> .90$), Parsimonious goodness-of-fit index (PGFI $> .50$), and root-mean-square residual (RMR tends to be relatively smaller) [55,56].

4. Results

4.1 Verifying the Dimensions of Civic Engagement

Factor analysis indicated civic engagement with three factors, namely, engaged in local or campus (CE_local), engaged in national or global issues (CE_global), and engaged in workable activities (CE_working). The result revealed Kaiser–Meyer–Olkin measure of sampling adequacy was .887, Bartlett’s test of sphericity showed that the Chi-square was approximately 9078.099 ($p = .000$). Both indices suggest that the targeted 1036 sample was fitted to conduct factor analysis. Table 2 shows the result of factor analysis based on the principal component analysis. The three factors can explain 80.49% variances, it is a good measure with well factorial structures.

Table 2. Component matrix of civic engagement with principal component analysis.

Indicators	Definitions	Factor 1	Factor 2	Factor 3
CE2	Informed yourself about state, national, or global issues;	.850		
CE4	Discussed state, national, or global issues with others;	.821		
CE6	Raised awareness about state, national, or global issue;	.786		
CE8	Asked others to address state, national, or global issues;	.671		
CE1	Informed yourself about local or campus issues;		.823	
CE3	Discussed local or campus issues with other;		.806	
CE5	Raised awareness about local or campus issues;		.716	
CE7	Asked others to address local or campus issues;		.618	
CE10	Organized others to work on state, national, or global issues.			.886
CE9	Organized others to work on local or campus issues;			.875

Note. Extraction Method: Principal Component Analysis.; Rotation Method: Varimax with Kaiser Normalization.

4.2 Comparing Group Differences of Civic Engagement

The results revealed the mean of the students’ civic engagement to be 3.116, at a middling level (on 5-point Likert scale); CE_local was 3.121; CE_global was 3.344; and CE_working was 2.650. The CE_working has shown below the average. Comparing the gender differences in civic engagement, the Levene F value was 4.759 with the mean for testing homogeneity of variance $p = .029$. It implied that equal variances were not assumed. The result revealed no significant difference between males and females ($t = 1.041$; $p = .298$). Determining the differences according to students’ majors, the result revealed Levene F values of these groups to be 3.18 based on the mean ($p = .928$). The result indicated the group sample data fit the homogeneity of variance. The ANOVA test revealed $F = 2.864$; and $p = .009$. In this case, we conducted Turkey’s HSD for a group difference comparison. The result showed that students in Social Science programs (I) showed stronger civic engagement than those in a business major (J) ($I-J = 3.382$; $p = .027$). Students majoring in the humanities (I) performed better than those in Business (J). The mean difference ($I-J = 2.066$; $p = .053$), was marginal. The other programs did not show any difference in student civic engagement (Table 3). In this study, we also found there is no grade difference ($F_{(4, 1031)} = 1.782$, $p = .130$, with equal variances assumed).

4.3 Factors Impacting Civic Engagement

Regression analysis was used to verify the impact of independent variables on civic engagement. These included the time spent doing coursework, engaging in extra-curriculum activities, participating in social service, caring for family, commuting,

leisure/social networking, learning experiences and academic performance in the regression model. The result revealed that learning experiences, participating in social service, engaging in extra-curriculum activities, and leisure/social networking showed a good relation to civic engagement ($R^2 = .125$). In this model, the value of Durbin-Watson was 1.879, implying the residual tends to zero.

Table 3. Multiple comparisons of civic engagement with students' majors.

(I) majors or colleges	(J) majors or colleges	Mean Difference (I-J)	Std. Error	Sig. <i>p</i>
Humanities	STEM	1.417	.712	.421
	Business	2.066	.705	.053
	Education	.270	.931	1.000
	Social Science	-1.316	1.069	.882
	Medicine & Bio.	1.441	.888	.668
	Others	.192	.950	1.000
STEM	Business	.650	.712	.971
	Education	-1.146	.936	.885
	Social Science	-2.732	1.073	.144
	Medicine & Bio.	.0240	.894	1.000
	Others	-1.225	.955	.860
	Business	-1.796	.932	.462
Business	Social Science	-3.382*	1.069	.027
	Medicine & Bio.	-.626	.889	.992
	Others	-1.874	.951	.434
	Education	-1.58608	1.230	.857
Education	Social Science	1.17033	1.077	.932
	Medicine & Bio.	-.07833	1.128	1.000
	Others	2.75641	1.198	.244
Social Science	Medicine & Bio.	1.50775	1.244	.890
	Others	-1.24866	1.094	.915
Medicine and Bio	Others			

Note. Method: Turkey's HSD; * $p < .05$; 1 = Humanities, 2 = STEM; 3 = Business, 4 = Education; 5 = Social science; 6 = Medicine and Bio. 7 = Others.

4.4 Relationships between Civic Engagement and Transferable Capabilities

We found the CMIN was 711.221 in the default model. In this study, the χ^2/df index value was 5.08 ($\chi^2 = 711.221$; $\text{df} = 140$). In this case, we were not sure that the model was a good fit. A previous study argued that it is often easier for χ^2 to reach statistical significance with large samples [57,58]. In this study, we assumed our measurement model (the default model in AMOS) to be "not independent" from the data of the observations. After recalculating with the scaled non-centrality parameter (SNCP) for large samples, we found $\text{SNCP} = (\chi^2 - \text{df})/n = (711.221 - 140)/1036 = 0.551$, indicating a good fit ($0.551 < 3.00$). The SEM revealed the NPAR (the number of parameters) to be 50, implying that the model was defined as complex. The results revealed that the model-fit indices exceeded acceptance levels ($\text{GFI} = .982 > .90$, $\text{AGFI} = .975 > .90$, $\text{PGFI} = .735 > .50$, $\text{RMR} = .058$). The results of the SEM demonstrated the recommended values for the model fit. Table 4 and Figure 2 displayed the estimated and standardized coefficients in the paths and p-values. The results displayed most of the relationships except H4 and H7. The results of the null hypothesis tests are listed as follows.

H1: There is no relationship between civic engagement and transferable capabilities (Rejected);

H2: There is no relationship between students engaged in local activities (CE_local) and civic engagement (Rejected);

H3: There is no relationship between students engaged in global activities (CE_global) and civic engagement (Rejected);

- H4: There is no relationship between students engaged in workable activities (CE_working) and civic engagement (Accepted);
- H5: Students engaged in local activities (CE_local) will not, through civic engagement, acquire transferable capabilities (Rejected);
- H6: Students engaged in global activities (CE_global) will not, through civic engagement, acquire transferable capabilities (Rejected);
- H7: Students engaged in workable activities (CE_working) will not, through civic engagement, acquire transferable capabilities (Accepted).

Table 4. The estimated and standardized coefficients and significance of p-values.

Hypotheses		Estimate	Standardized	p
H1: Transferable capabilities	← Civic engagement	.479	.705	*
H2: Civic engagement	← Engaged in local activities (CE_local)	.532	.446	*
H3: Civic engagement	← Engaged in global activities (CE_global)	.271	.225	*
H4: Civic engagement	← Engaged in working activities (CE_working)	.088	.067	-
H5: Capabilities / Civic engagement	← Engaged in local activities (CE_local)	.255/.531	.446/.315	*
H6: Capabilities / Civic engagement	← Engaged in local activities (CE_global)	.130/.271	.225/.158	*
H7: Capabilities / Civic engagement	← Engaged in local activities (CE_working)	.042/.088	.067/.047	-

Note. * $p < .05$

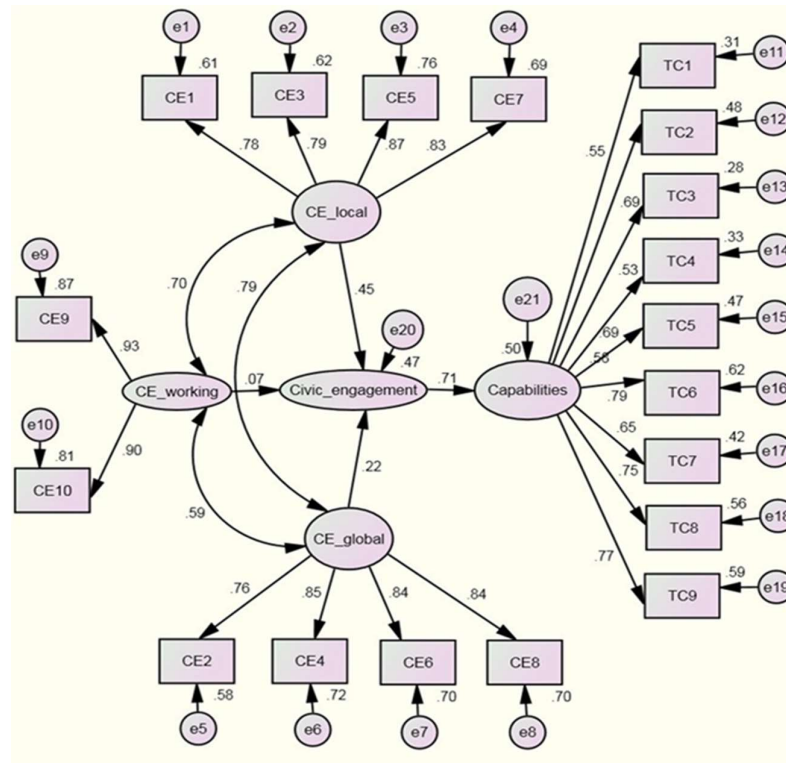


Figure 2. The result of SEM.

5. Discussion

Previous studies provided various perspectives and practices for tackling civic engagement issues in diverse settings [17,31,37]. Considering the impact of the COVID-19 pandemic, this study intended to investigate students' civic engagement and its linkage

in a specific higher education system. Even though NSSE modules provided various functions for realizing the progress of students' campus life [50], they could not detect the linkage among major factors. This study proposed a new framework to test the structural relationship between civic engagement and transferable capabilities. It is important to appreciate the new situation and how civic engagement can be enhanced to prompt students to acquire transferable capabilities. Based on the findings, activities on campus have obviously been impeded by the pandemic. At the average level, it is similar to local and global civic engagement in this study. Facing an uncertain environment, the dimension of working on related activities (CE_working dimension) perceived by students was relatively low. We found that the designed instrument with factorial dimensions could be used to explore civic engagement more accurately, and this survey could be extended to different colleges. For example, it found that students in business programs showed low civic engagement, while students in the social science programs showed high civic engagement. The factorial structure provides a precisely measurement to test students' progress of civic engagement in various programs.

COVID-19 caused widespread university system lockdowns, and the findings suggested that related factors impacted civic engagement. Since the R^2 in the regression model was slim, those factors were transformed temporarily, which are different from those of previous studies [14,15,40]. In addition, this study found a causal relationship between civic engagement and transferable capabilities in the structural equation modeling. Previous studies argued that students participating in learning activities for competencies on campus will continue community or global engagement after they graduate [23,37,38,41]. This study focused on students' campus life and found that civic engagement was connected with their capabilities. In this case, local and global engagement were the major contributors. Moreover, the findings may suggest that grouping people and work with civic engagement activities is a weak link, but the result might be affected by the COVID-19 pandemic. In view of the lockdowns and the fact that not all citizens had been vaccinated, encouraging students to organize others to work on local or global issues was very tough. This suggests that university management need to review current measures in departments to ameliorate ineffective student practices.

6. Conclusions

Civic engagement has become a crucial component of student learning. This study provided a practical example to detect civic engagement in higher education. The findings suggested that enhancing civic engagement must consider students' majors, learning experiences in departments, and time spent on related activities: social service, extra-curricular activities, and leisure/social networking. Exploring various dimensions of civic engagement can provide useful information for enhancing the ongoing practices of higher education. Based on these findings, we found students' civic engagement needs enhancement, especially for those studying business.

Hopefully, the pandemic might only exist for a short time more, but we suggest improving provisions for civic engagement in courses of study along three dimensions: engagement in campus or local issues, national or global issues, and work issues. This study extended the causal relationship in SEM and provided an example of a testing model to evaluate student civic engagement and transferable capabilities. This instrument can be used to evaluate progress on campus even after the pandemic.

Finally, based on these findings, we suggest enhancing students' civic engagement through campus activities. During the pandemic, departments or campuses initiated online networks or related social media to encourage students to participate in group discussions. We found the actual implementation became unworkable during this period. For departments, we suggest open, virtual or simulated situations to widen student participation through virtual meeting tools, such as MS Teams, Cisco WebEx, Google Meet, or TeamViewer. Moreover, the proposed research framework can be broadened to explore similar issues in higher education.

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