

THE *IKIGAI* SCALE ON NGUYEN TAT THANH UNIVERSITY STUDENTS: VALIDITY ASSESSMENT

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Abstract – *Originating from Japan, the concept of ‘ikigai’ refers to a ‘reason for living’, a ‘reason for being’ or a ‘reason for waking up in the morning’. Ikigai is a combination of four elements: what you love, what you are good at, what the world needs, and what you can be paid for. Even though Ikigai has made its first steps into the Vietnamese culture through written media, the concept and its associations with mental health aspects in Vietnamese society have not yet been studied. Therefore, this study aimed to assess the validity of the Ikigai-9 scale and its relationships the with mental health aspects of students at a private university in Ho Chi Minh City. A total of 2933 students participated in the research survey to self-report levels of Ikigai, well-being, self-efficacy, stress, depression, and anxiety. The findings indicated that Ikigai has a positive association with well-being and self-efficacy, and a negative association with depression, anxiety, and stress. Therefore, the study is of significance to higher education authorities to introduce new policies to improve students’ mental health.*

Keywords: *anxiety, depression, ikigai, self-efficacy, stress, well-being.*

I. INTRODUCTION

The mental health issue of university students is a considerable concern in recent years [1]. University students are also believed to suffer more serious mental health problems than the general population [2, 3]. The study by Vidourek et al. [4] indicated that most students need mental services to improve mental health, reduce stress, resolve

problem(s), grow personal/self-awareness, find happiness and improve self-satisfaction.

Studies on the relationship between *ikigai* and mental health aspects of students have been studied closely, especially in Japan [5–7]. The results of these studies illustrate the association of *ikigai* with mental health aspects in students’ life. In the study of Kono et al. [7], *ikigai* is proved to have an association with students’ leisure activities; therefore, have an influence on their happiness and joyfulness index [7]. Kono et al. have indicated that *ikigai* has a positive association with life satisfaction and the meaning of life in a group of Japanese students. *Ikigai* is believed to have a great impact on the Japanese education system as it helps students to find their purposes in life [5].

In Vietnam, studies on the prevalence of students’ mental health issues have been conducted [8, 9]. The self-reported rate of anxiety and depression among students was 15.0% – 55.0% [10, 11]. Despite the increase in studies on mental health aspects of students in Vietnam, research has yet to investigate the relationship between *ikigai* and mental health. Our objective is to validate the *Ikigai-9* scale in the sample of students at Nguyen Tat Thanh University and to delineate baseline associations between *ikigai* and aspects of mental health: well-being, self-efficacy, depression, anxiety, and stress.

II. LITERATURE REVIEW

A. Definition of *ikigai*

Ikigai is a Japanese concept that combined the word *iki* – live and *gai* – worth or benefit. *Ikigai* is a combination of four factors: *what you love, what you are good at, what the world needs, and what you can be paid for*. The term *ikigai* refers to having a ‘*reason for living*’, ‘*reason for being*’ or ‘*reason for waking up in the morning*’ [12–14]. In a Japanese dictionary, *ikigai* is defined as the happiness and joy of being or realizing the

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values of living [15]. Kamiya [16] considered *ikigai* as the way to maintain optimism and faith in adversity in life. According to Kamiya, instead of running away from life's challenges, the *ikigai* way is for people to instead find the meaning within the challenge [19]. It's the *ikigai* way. Also, the author pointed out that *ikigai* has various connotations, for instance, *ikigai-kan* and *ikigai-taish* [16]. *Ikigai-kan* means feelings of well-being, satisfaction, or a life worth living whilst *ikigai-taish* means activities or experiences which lead to such feelings [17]. Hence, *ikigai-kan* is feelings and *ikigai-taish* is the process leading to such feelings. The term *ikigai* is also used to describe happiness about life experience and life awareness [12, 16]. Other translations of *ikigai* are 'self-awareness' [18] or 'happiness in daily life'. Mitsuhashi [19] also believed that the *ikigai* is unique to everyone, as we have our own ways of pursuing happiness.

B. Research on *ikigai*

Ikigai was first studied in the book *Ikigai-nitsuite* [16]. Recently, studies on *ikigai* in areas such as psychology or prevention medicine have been on an increase [20]. *Ikigai* is believed to have an influence on mental health, and be able to help humans overcome stress, depression, anxiety, and other mental health issues [7]. In Japan, studies indicated that *ikigai* has associated with health benefits, such as better physical health [21] or reduced psychological burden on caregivers [22]. Sone et al. [23] indicated the association between *ikigai* and mortality in Japanese society. In recent years, there has been an increase in studies on *ikigai* and its association with aspects of mental health. Fido et al. [24] translated the *Ikigai-9* questionnaire into English and validated it within a population in a part of the UK [25]. The results indicate that *ikigai* is positively associated with well-being, and has negative associations with depression, anxiety, and stress. The study could be perceived as the first study to test the validity of the *ikigai* scale in the UK. Most studies on *Ikigai* have taken place within Japan [6, 7, 26–28]. These studies, however, have some limitations. First, most of the research is carried out in Japan – the birthplace of *ikigai*,

and some Western countries. Second, studies have to encounter a limited scope of research. In addition, it is hard to maintain the cross-sectional applicability of the results over time or limited demographic research samples (i.e. students, the old, patients, etc.)

C. The novel of study

Studies on mental health are crucial. Poor mental health can have a negative impact on individuals, their beloveds, and the global financial cost. Every year, the world needs to spend 2.5 trillion dollars on mental health treatment [29]. World Health Organization [30] indicated that depression impacts the lives of more than 300 million people in the world, and also contributes to a higher incidence of suicide. It also requires huge financial resources for healthcare services. In Vietnam, studies on mental health have been conducted in recent years. Usually, psychological factors taken into the study are stress [31, 32]; anxiety [9, 33]; depression [31, 34]. However, although these studies are on various aspects of mental health (stress, anxiety, depression) and different research subjects (health workers, students...), there are few meta-analyses on these topics and the relationships between mental health and *ikigai* in Vietnam. In addition, even though *ikigai* and its association with mental health have been studied, not much research study *ikigai* and its influence on Vietnamese society.

When it comes to the study of the cultural aspects, Hofstede [35] indicated that Asian countries have more similarities in cultures than Western countries. Vietnam and Japan are two Asian countries that are strongly influenced by Chinese culture, so similarities in their cultures are inevitable due to cultural diffusion [36]. In the past, both countries were influenced by the Confucian and Buddhist philosophies of the Chinese [37]. Similarities in culture have made *ikigai* penetrate Vietnamese society through books such as '*Ikigai - The Japanese secret to a long and happy life*' [38]; '*Ikigai philosophy*' [39] and written media. However, there have not been many studies to explore the validity of the *ikigai* scale in Vietnam society and its associations with aspects of mental health. Therefore, based on the work of Fido

and colleagues [24] in 2020, this research aims to translate the *Ikigai-9* into Vietnamese and subsequently test the validity of the *Ikigai-9* scale on students at Nguyen Tat Thanh University [25]. In addition, the study also aims to delineate associations between *ikigai* and other aspects of mental health including well-being, self-efficacy, stress, anxiety, and depression. The study also proposes more educational management implications for the higher education authority in improving the mental health quality of students. For this novelty and originality, it is hoped that the results can be used for larger studies on the same topic in the coming time, perhaps extending to all universities to contribute to the improvement of education quality and student mental health in Vietnam.

III. METHODOLOGY

A. Developing a quantitative questionnaire

The data used is from an online survey conducted at Nguyen Tat Thanh University. Students, regardless of gender, major, or academic year can take the survey. The questionnaire is sent to respondents via Google Forms. The standard sampling technique is also used. The questionnaire is designed based on the Likert 5 levels (from 1: strongly disagree to 5: strongly agree). The questionnaire consists of two groups: the validation of the *ikigai* scale and the aspects of mental health: stress, depression, anxiety, well-being, and self-efficacy. Questions used in the questionnaire are to (1) assess the validity of *ikigai* and (2) evaluate the associations between *ikigai* and aspects of the mental health of students at Nguyen Tat Thanh University.

B. Data collection

The study was carried out at Nguyen Tat Thanh University – Ho Chi Minh City to test the validity of the *ikigai* scale and its association with mental health aspects of students through a quantitative questionnaire conducted with Google Forms. The study recorded 3000 answers from students at Nguyen Tat Thanh University. After the data was synthesized and cleaned, the number of respondents was 2933. The results are presented in Table 1.

The survey recorded data from 2933 students, including 1,019 males and 1,914 females. The study divided survey respondents by academic years ranging from first-year freshmen to fourth-year seniors to present the most objective results in the survey (Freshman = 76.1%; Sophomore = 16.7%; Junior = 6.8%; Senior = 0.4%). Table 1 illustrates a significant difference in participant genders, academic years and majors. Considering gender, most of the respondents were female (1914/2933 students), which accounted for 65.3% of total respondents and was 1.9 times higher than male students. In addition, 76.1% of those who participated in the survey were freshmen. In particular, the respondents were from five different majors at Nguyen Tat Thanh University, of which nearly half (44.5%) were from Business, while Social Sciences students had the lowest proportion with 1.1%.

C. Data processing

The data were gathered and then analyzed using Statistical Package for Social Science (SPSS version 23) software. Using analytical techniques such as descriptive statistics, verification of the reliability of the scale thanks to the analysis of Cronbach's alpha coefficient, exploratory factor analysis (EFA), and multivariate linear regression equation, the data needed for this statistical analysis was sufficient to explore associations between *ikigai* and aspects of student mental health.

D. Proposed research model

Based on studies by Imai et al. [24], Fido et al. [25], and Yoshida et al. [27], the research aimed to test the validity of the *ikigai* scale on Nguyen Tat Thanh University students by estimating the influence of the *ikigai* scale on well-being, self-efficacy, stress, depression, and anxiety. The influence of the *ikigai* scale on these aspects is shown in the theoretical model in Figure 1.

In the questionnaire, the *ikigai* is measured with 9 items of questions [24, 25], and 18 items of questions [6]; well-being is measured with a list of 14 items [40]; stress, depression, and anxiety are measured with 21 items of questions [41], and self-efficacy is measured with 10 items of questions [42]. To test if the *ikigai* scale is a

Table 1: Descriptive respondents

Characteristic	Total (N = 2933)		Male (n = 1019, 34.7%)		Female (n = 1914, 65.3 %)	
	n	%	n	%	n	%
Academic Year						
Freshman	2233	76.1	809	36.2	1424	63.8
Sophomore	490	16.7	142	29.0	348	71.0
Junior	198	6.8	65	32.8	133	67.2
Senior	12	0.4	3	25.0	9	75.0
Discipline						
Health	302	10.3	237	78.5	65	21.5
Business	819	27.9	268	32.7	551	67.3
Engineering	1305	44.5	375	28.7	930	71.3
Arts	476	16.2	121	25.4	355	74.6
Social Sciences	31	1.1	18	58.1	13	41.9

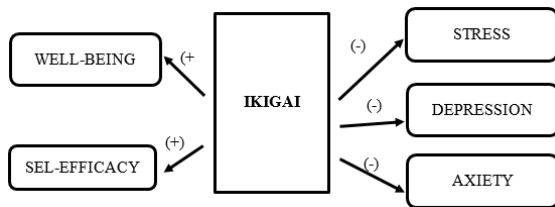


Fig. 1: Proposed research model

valid tool for measuring aspects of student mental health at Nguyen Tat Thanh University, the study proposed the following research hypotheses:

- H1: Ikigai has a positive association with well-being
- H2: Ikigai has a positive association with self-efficacy
- H3: Ikigai has a negative association with stress
- H4: Ikigai has a negative association with anxiety
- H5: Ikigai has a negative association with depression

IV. RESULTS

A. Check the reliability of the scale

The study *ikigai* scale was designed with five dependent variables, including Well-being (WEL), Stress (STR), Depression (DEP), Anxiety (ANX) and Self-efficacy (SEL), as well as the independent variable *Ikigai-9*. The study performed Cronbach's alpha coefficient analysis to evaluate the reliability of the observed variables.

Table 2 shows that the coefficient of Cronbach's alpha of the variables are all larger than

0.6 (ranging from 0.860 to 0.937) and the item-total correlation coefficients of the questionnaire are all greater than 0.3. The results indicate that the scale is reliable and no observed variables are excluded from the scale.

B. Exploratory factor analysis

The study continued to perform Exploratory Factor Analysis (EFA) to examine the relationship between variables in all groups to detect unsatisfactory variables on convergent and discriminant values. The results of the analysis of EFA and the rotation matrix are presented in Table 3.

The results of EFA for the independent variable *Ikigai-9* find that KMO value = 0.920 (larger than 0.5) and the Sig. Bartlett's Test value = 0.000 (smaller than 0.05), Eigenvalue value = 5.565 (greater than 1), data extracted 1 factor with the total extracted factor is 61.8% (larger than 50%). Next, the study carried out EFA for the IKI-dependent factors such as 'Well-being' (WEL), 'Stress' (STR), 'Depression' (DEP), and 'Anxiety' (ANX) and 'Self-efficacy' (SEL). The results indicate that there are five dependent factors extracted with the smallest loading factor being 0.761 and no observed variables are excluded from the dependent factor as all variables satisfy the conditions of convergence and discriminant values. All dependent variables' KMO values are greater than 0.5, Sig. Bartlett's Test = 0.000 (smaller than 0.05) and Eigenvalue value is greater than 1. Based on this analysis, the study extracted the independent factor IKI corresponding to *Ikigai-9* and the five dependent factors of WEL, STR, DEP, ANX, and SEL.

Table 2: Cronbach's Alpha coefficient analysis results

Variables	Number of Items (40)	Overall Cronbach's Alpha	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Well-being (WEL)	9	0.937	0.703 – 0.804	0.927 – 0.933
Stress (STR)	4	0.840	0.606 – 0.724	0.774 – 0.826
Depression (DEP)	6	0.926	0.671 – 0.844	0.904 – 0.928
Anxiety (ANX)	5	0.891	0.650 – 0.814	0.861 – 0.885
Self-efficacy (SEL)	7	0.936	0.735 – 0.827	0.922 – 0.931
Ikigai 9 (IKI)	9	0.922	0.646 – 0.797	0.908 – 0.918

Table 3: Exploratory factor analysis results

Analytical parameter EFA	Independent Variable	Dependent Variable				
	IKI	WEL	STR	DEP	ANX	SEL
KMO value	0.920	0.938	0.799	0.917	0.853	0.932
Barlett value	0.000	0.000	0.000	0.000	0.000	0.000
Eigenvalue value	5.565	5.998	2.707	4.404	3.491	5.057
Total extracted variance	0.618	0.666	0.676	0.734	0.698	0.722
Smallest loading factor	0.718	0.764	0.772	0.761	0.771	0.803
Number of the extracted factor	1	1	1	1	1	1
Excluded variable	0	0	0	0	0	0

C. Regression results

Before performing the regression analysis, the study carried out the Pearson correlation test to examine the linear relationship between dependent and independent variables. The results are presented in Table 4.

The Pearson correlation analysis results shown in Table 4 indicate that the correlation coefficients between variables are different. Specifically, the independent variable IKI has a positive relation coefficient with two dependent variables WEL and SEL with the highest overall value $r = 0.685$ at 1% significance level. In particular, the correlation coefficient between *ikigai* and *well-being* of female students is higher than overall with $r = 0.694$ at 1% significance level. Besides, the r value of the two variables WEL and SEL ranges from 0.614 to 0.694, indicating that the positive correlation between WEL and SEL for the independent variable IKI is strong ($|r| \geq 0.5$).

Similarly, the results of the correlation matrix analysis in Table 4 present a negative linear correlation between IKI with dependent variables STR, DEP, and AXI with the highest negative correlation value $r = -0.256$ at 1% significance level. There is an obvious comparison between male and female students when comparing the correlation coefficient between IKI and mental health aspects '*Depression*', '*Stress*' and '*Anx-*

xiety'. Specifically, male students have a lower level of stress than female students. Besides, the negative correlation value between the IKI variable and the variables STR, DEP, and ANX ranges from -0.041 to -0.256, which means the negative correlation between the mentioned-above variables is quite weak ($|r| < 0.3$).

Before performing the regression, the study tested the assumptions to find out whether the model used is suitable for this analysis method. The hypothesis H_0 for the testing purpose is H_0 : the covariance matrix of the dependent variables is equal among groups. The test results show that Sig Box's Test = 0.005 > 0.001; therefore, the hypothesis is more specific. It indicates that the covariances of the dependent variables are identical. The results of the suitability of the model test of remaining values are illustrated in Table 5.

Results shown in Table 5 present that Wilk's Sig value $\Delta = 0.000 < 0.05$ in both IKI and Gender, meaning that there is a difference between dependent factors variables WEL, SEL, STR, DEP, and AXI of students with different genders. The difference is shown in the independent variable IKI. In other words, male and female students have distinct differences in mental health aspects for the independent factor *ikigai*. Therefore, the model used is suitable for multiple regression analysis.

Table 4: Correlation matrix results

Variables	N = 2933	IKI	WEL	STR	DEP	AXI	SEL		
IKI	Total	1.000							
	Male	1.000							
	Female	1.000							
WEL	Total	0.685	***	1.000					
	Male	0.671	***	1.000					
	Female	0.694	***	1.000					
SEL	Total	0.617	***	0.593 ***	1.000				
	Male	0.614	***	0.586 ***	1.000				
	Female	0.620	***	0.597 ***	1.000				
STR	Total	-0.050	***	-0.099 ***	-0.009	1.000			
	Male	-0.041	***	-0.100 ***	-0.015	1.000			
	Female	-0.055	**	-0.095 ***	0.006	1.000			
DEP	Total	-0.226	***	-0.269 ***	-0.090	***	0.563 ***	1.000	
	Male	-0.173	***	-0.233 ***	-0.078	**	0.606 ***	1.000	
	Female	-0.256	***	-0.288 ***	-0.093	***	0.539 ***	1.000	
AXI	Total	-0.090	***	-0.178 ***	-0.061	***	0.601 ***	0.670 ***	1.000
	Male	-0.082	***	-0.171 ***	-0.052		0.602 ***	0.697 ***	1.000
	Female	-0.096	***	-0.180 ***	-0.059	***	0.592 ***	0.654 ***	1.000

Note: *** level of significance 1%; ** level of significance 5%; * level of significance 10%

Table 5: Multivariate test results

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	0.501	587.688 ^b	5.000	2926.000	0.000	0.501
	Wilks' Lambda	0.499	587.688 ^b	5.000	2926.000	0.000	0.501
	Hotelling's Trace	1.004	587.688 ^b	5.000	2926.000	0.000	0.501
	Roy's Largest Root	1.004	587.688 ^b	5.000	2926.000	0.000	0.501
IKI	Pillai's Trace	0.550	714.675 ^b	5.000	2926.000	0.000	0.550
	Wilks' Lambda	0.450	714.675 ^b	5.000	2926.000	0.000	0.550
	Hotelling's Trace	1.221	714.675 ^b	5.000	2926.000	0.000	0.550
	Roy's Largest Root	1.221	714.675 ^b	5.000	2926.000	0.000	0.550
Gender	Pillai's Trace	0.026	15.655 ^b	5.000	2926.000	0.000	0.026
	Wilks' Lambda	0.974	15.655 ^b	5.000	2926.000	0.000	0.026
	Hotelling's Trace	0.027	15.655 ^b	5.000	2926.000	0.000	0.026
	Roy's Largest Root	0.027	15.655 ^b	5.000	2926.000	0.000	0.026

Note: a. Design: Intercept + IKI + Gender; b. Exact statistic

Table 6: Multivariable linear regression results

Parameter	Dependent Variable									
	WEL		SEL		STR		DEP		AXI	
	B	t. stat.	B	t. stat.	B	t. stat.	B	t. stat.	B	t. stat.
Intercept	1.261	25.494	0.964	17.668	2.734	35.581	2.940	39.198	2.768	35.943
IKI	0.695	50.956	0.639	42.488	0.058	-2.717	-0.261	-12.591	0.105	-4.927
Gender	0.033	1.348	0.093	3.435	0.282	-7.427	-0.098	-2.636	0.212	-5.571
Adjusted R ² n	47.0%		38.3%		2.1%		5.4%		1.9%	
	2933									

The results from using multiple linear regression are presented in Table 6. The results show that dependent variables WEL and SEL have a positive relationship with the independent variable IKI. Specifically, the value of the coefficient B of the two variables is 0.695 and 0.639, respectively. Thus, hypotheses H1 and H2 of the study have been accepted. In addition, the adjusted R2 value of the variable WEL = 0.470, which means that the included independent variable has an influence on 47% of the variation of the independent variable. The remaining 53% is explained by the residual with other variables and random error. Similarly, the adjusted R2 of the variable SEL = 0.383, corresponding to a 38.3% influence on the variation of the dependent variable. Also, when comparing the factor Gender of respondents, male students have higher happiness index and confidence levels than female students, with B of 0.033 and 0.093, respectively.

In contrast, the results of multiple linear regression analysis for the variables STR, DEP, and AXI have negative relationships with the independent variable IKI. The values of coefficients B of the variables are - 0.058, - 0.261, and - 0.105. The adjusted R2 values of the three variables STR, DEP, and AXI also fluctuated at a low level of 0.021, 0.054, and 0.190, respectively. As the adjusted R2 value is close to 0, the study finds that the independent variable IKI can hardly explain the dependent variables STR, DEP, and AXI. Even so, hypotheses H3, H4 and H5 have been accepted as there is a negative relationship with the *Ikigai* scale. In terms of Gender, the results shown in Table 6 indicate that female students have a higher level of stress, depression, and anxiety than male students, with coefficient B in the Gender section being negative numbers: 0.282, 0.098 and 0.212. This shows that investigating the components of *ikigai* can help the study find out the visible difference in the quality of mental health between male and female students at Nguyen Tat Thanh University.

The analysis results shown in Table 7 indicate that variables appearing in the model are evaluated according to the value of the variable *ikigai*. The P-value of WEL = 0.178 > 0.025, meaning that there is no significant difference in

well-being between male and female students. On the other hand, the P-values of variables SEL, STR, DEP, and AXI are all smaller than 0.025. This indicates that male and female students have differences in mental health aspects such as self-efficacy, stress, depression, and anxiety. Specifically, the Mean value of SEL = 3.274 and mostly is in male students, which means male students have a higher level of self-efficacy than female students whose Mean Difference value = 0.093 at the 5% level of significance. In contrast, for the variables STR, DEP, and AXI, the study found that Mean values are higher in female students than in male students (2.534, 2.036, and 2.4). These results reflect that female student has a higher level of stress, depression, and anxiety than male students. The Mean Difference value of these variables is negative numbers, in particular STR = - 0.282; DEP = - 0.098 and AXI = - 0.212.

Therefore, the study on the validity of the *ikigai* scale on Nguyen Tat Thanh University students has presented a positive impact on students' well-being and self-efficacy. At the same time, *ikigai* has a negative relationship with other mental aspects: stress, depression, and anxiety. The results show that the model proposed by the study is appropriate for a higher education institution like Nguyen Tat Thanh University.

V. DISCUSSION

The notion of *ikigai* and its relationship with aspects of mental health have been studied in recent years [5–7]. However, previous studies are often carried out in Japan and some Western countries. Therefore, it is difficult to examine the validity of *ikigai* in non-Japanese-speaking or non-English-speaking countries. The research aimed to translate and assess the validity of *ikigai* and its associations with aspects of mental health in a sample derived from a private university in Vietnam.

The results indicated that *ikigai* can help to examine the state of mental health of university students. The quantitative analysis results present the positive associations between *ikigai* and well-being, and self-efficacy; as well as the negative associations between *ikigai* and stress, depression, and anxiety. Kono et al. [7] studied *ikigai*

Table 7: Differences in mental health components of students

Dependent Variable	Estimates			Pairwise Comparisons	
	Gender (I)	Mean	P-value	Gender (J)	Mean Difference (I-J)
WEL	Male	3.706 ^a	0.178	Female	0.033
	Female	3.673 ^a		Male	- 0.033
SEL	Male	3.274 ^a	0.001	Female	0.093 ^{***}
	Female	3.182 ^a		Male	- 0.093 ^{***}
STR	Male	2.252 ^a	0.000	Female	- 0.282 ^{***}
	Female	2.534 ^a		Male	0.282 ^{***}
DEP	Male	1.938 ^a	0.008	Female	- 0.098 ^{***}
	Female	2.036 ^a		Male	0.098 ^{***}
AXI	Male	2.192 ^a	0.000	Female	- 0.212 ^{***}
	Female	2.405 ^a		Male	0.212 ^{***}

Note: a. Covariates appearing in the model are evaluated at the following values: IKI = 3.4687
 *** level of significance 5%

and proved that *ikigai* is one of the crucial factors helping humans to overcome stress, depression, anxiety, and other mental health problems. *Ikigai* has been pointed out to have a positive relationship with well-being and negative relationships with stress, depression, and anxiety [25]. Kumano [26] also presented that *ikigai* has a relationship with contentment and satisfaction, which include life purpose recognition, the meaning of existence, future orientation, and goal-seeking.

Compared to other studies on *ikigai* of students across the world, this study's results illustrated that there is almost no significant difference in well-being levels of male and female students while Fiorenzato et al. [43] indicated that female students have lower level of well-being than male students. Also, Kono et al. [7] presented that female students have a higher level of well-being than their male counterparts. This study's result also showed that female students have a higher level of stress, depression and anxiety than males.

In addition, in a study carried out at a university in Japan, Kono et al. [7] indicated that female students are more likely to perceive their daily lives as being more significant than male students whilst female students in Vietnam have higher levels of anxiety, depression, and stress than male counterparts. This study is carried out in the context of the post-COVID-19 pandemics in Ho Chi Minh City when the restrictions and COVID-19 prevention regulations had been lifted for a few months. Ho Chi Minh City residents had experienced months of strict lockdown and social distancing in the second half of 2021. The

COVID-19 pandemic has been proven to change mental health [43–45]. Therefore, it might help to explain the high levels of stress, depression and anxiety of female students pre- and post-COVID.

Fiorenzato et al. [43] indicated that together with the underemployed, women are a vulnerable group in COVID-19, and show more possibility to suffer depression than men. Besides, women also reported higher anxiety levels pre-lockdown. Under the lockdown, women are more vulnerable and likely to experience depression and anxiety disorders than men [42, 44]. These studies share some similarities with this research, as the results pointed out differences in the levels of *ikigai* and mental health aspects between the genders. In terms of well-being, male students have a higher level than their female counterparts, while the levels of anxiety, depression and stress of female students are reported to be higher than those of male students.

The study has some limitations. First, it is one of the very first studies on *ikigai* in Vietnam. Therefore, it is necessary for further research to be conducted to validate our results. Besides, the study is unable to make any comparison to other experiences of *Ikigain* across the country or infer any causations from the correlations mentioned as the study is cross-sectional. Third, participants were derived from a private university in Ho Chi Minh City, so further research is vital to assess whether the results of the study can be generalized to students at other university contexts. In addition, the study was conducted at a single time-point, so the levels of *ikigai*, well-being,

self-efficacy, anxiety, stress and depression can differ if the study is repeated at a different time in the future. For instance, during COVID-19, anxiety levels were higher [46]. Hence, further study should be able to measure the levels across time. However, notwithstanding the limitations, the results of the study contribute to the understanding of the validity of *ikigai* and its associations with aspects of mental health.

VI. CONCLUSION

Based on analytical techniques, the study explores the associations between *ikigai* and mental health aspects. Specifically, *ikigai* has a positive association with well-being and self-efficacy, and a negative association with depression, anxiety, and stress. The results of the study indicate that even though there is no significant difference between male and female students in well-being, the levels of stress, depression, and anxiety of female students are higher than male students. The male students also have a higher level of self-efficacy than female students.

Taken together, the results suggest a role for private universities in Ho Chi Minh City in general and Nguyen Tat Thanh University authority, in particular, to pay more attention to students' mental health by coming up with appropriate policies to improve students' mental health such as providing mental health consultant and treatment services to increase students' well-being and self-efficacy levels as well as decrease levels of stress, anxiety, and depression. Due to the importance of mental health, it is crucial to create an environment in which students can be taken care of mentally.

In conclusion, the study has taken the initial step to assess the validity of the *Ikigai-9* scale and its associations with aspects of mental health in Vietnam in general, and at Nguyen Tat Thanh University in particular. To further explore the validity and usefulness of *ikigai* in measuring and supporting the mental health of Vietnamese university students, the study can be carried out at other private universities or educational institutes across the country in the future.

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