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CUSTOMS ADMINISTRATION STUDENTS' USAGE OF METACOGNITIVE KNOWLEDGE IN THEIR INTERNSHIPS

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ABSTRACT

Educators have the responsibility of assessing their students' metacognitive knowledge and identifying students who may need support in developing effective metacognitive skills and providing them with necessary learning intervention. This study assessed the customs administration students' metacognitive knowledge and its usage in their internships. The dimensions, declarative knowledge, procedural knowledge and conditional knowledge were correlated to academic performance. Differences in metacognitive knowledge and its dimensions and their usage were also ascertained. The study used the descriptive-survey method, using a questionnaire for data gathering. The respondents were 99 randomly selected final year BS in Customs Administration students. The results showed that the majority of students were female, had a capital city based internship and had an average academic performance. The majority of high performers had an internship in a capital city while the majority of low performers had an internship in their home city. Male and female students had similar performance while capital city internship students had better performance than home city internship students. The declarative, procedural and total metacognitive knowledge and their usage were high while conditional knowledge and its usage were very high. The dimensions of metacognitive knowledge and usage, except procedural knowledge had significant relationships with academic performance. Statistical differences in the responses of students when they were grouped according to sex were found only with procedural knowledge and its usage but when they were grouped by internship location – on declarative, procedural and total metacognitive knowledge usage; and when grouped by academic performance – on declarative knowledge, total metacognitive knowledge, conditional knowledge usage and total metacognitive knowledge usage.

Contribution/Originality: This study is one of very few studies which have investigated metacognitive knowledge as used in internship programs and thereby provides a unique contribution to the existing literature on metacognition.

1. INTRODUCTION

Students have varying levels of knowledge, not just of cognitive knowledge, but of metacognitive knowledge as well. Some students, who are often called active or self-regulated learners, know how they learn and how to regulate their own learning. Other students are passive learners who do not know how to regulate their learning

and may not be even aware of how they learn. Many are average students, who may be fully aware of their learning capabilities but do not know enough on how to facilitate or regulate their learning. Educators have, therefore, the responsibility to assess the level of their students' metacognitive knowledge and identify students who may need support in developing effective metacognitive skills and provide them with necessary learning intervention.

Metacognitive knowledge is one of the two broad components of metacognition and the other one is metacognitive regulation. Metacognition has been studied by scholars for four decades. It is widely believed that metacognition can be enhanced using various strategies. It is also commonly thought that cognition and metacognition differ in such a way that the first is necessary to perform a task while the second is necessary to understand how the task was performed.

Understanding the distinction between cognition and metacognition is a must for students to become self-regulated learners (Schraw, 1998). Metacognition is generally defined as the activity of monitoring and controlling one's cognition (Young and Fry, 2008) or simply, the process of thinking about one's thinking (Gutierrez de Blume *et al*., 2017). The term was attributed to Flavell (1979) who said that metacognition plays an important role in various types of self-control and self-instruction. Metacognition that will make one monitor and regulate own learning is also believed to be an important aspect of the lifelong learning process (Abu-Ameerh, 2014). Learners who are metacognitively strong are best prepared to learn throughout their lives (Gonullu and Artar, 2014). The ability to regulate the learning process relates to the interplay between metacognitive knowledge and metacognitive skills (Cao and Nietfeld, 2007).

Monitoring how students learn occurs through the interactions between metacognitive knowledge, metacognitive experiences, goals or tasks, and actions or strategies (Flavell, 1979). Metacognitive knowledge may also refer to the knowledge or beliefs about factors that act and interact to bring effects on learning outcomes. According to Flavell, the three major categories of these factors are person, task and strategy.

For Pintrich (2002) metacognitive knowledge involved knowledge about cognition in general and about one's own cognition, and particularly referring to knowledge of general strategies that may be used for different tasks, knowledge of conditions on the use of these strategies, knowledge on the effectiveness of these strategies, and knowledge of self. Pintrich further stated that metacognitive knowledge accuracy is crucial in learning and teachers need to help students make accurate assessments of their self-knowledge and not inflating their self-esteem. In other words, teachers should not boost students' self-esteem by providing them with positive but inaccurate and misleading feedback about their learning abilities or inabilities. If students do not realize that they do not know a particular aspect of knowledge, they will not be able or will not make any effort to acquire or learn the aspect.

Metacognitive knowledge can be stored to contain knowledge of metacognitive strategies as well as cognitive ones (Flavell, 1979). Scott and Levy (2013) added that metacognitive knowledge is not removed from the general information processing model or is stored just as any other type of knowledge. The stored metacognitive knowledge will enable students to perform better and learn more. It is also important to integrate or embed metacognitive knowledge within the usual content-driven lessons in different subject areas (Pintrich, 2002).

To assess the metacognitive knowledge of students, Young and Fry (2008) suggested that it should be done in a less intrusive manner, such as using a questionnaire, to allow instructors to quickly identify students needing immediate assistance. Earlier, Schraw and Dennison (1994) constructed a self-report questionnaire called Metacognitive Awareness Inventory (MAI) consisting of 52 items which were classified into eight components under two broad categories, knowledge of cognition (metacognitive knowledge) and regulation of cognition (metacognitive regulation). They defined metacognition as the ability to reflect upon, understand and control learning, with knowledge of cognition and regulation of cognition facilitating the reflective aspect and the control aspect of learning, respectively. More particularly, the knowledge of cognition corresponds to what individuals know about themselves, about strategies, and the condition under which strategies are most useful while the

regulation of cognition corresponds to the knowledge about the ways individuals plan, implement strategies, monitor, correct comprehension errors, and evaluate their learning.

The knowledge of cognition or metacognitive knowledge consists of three dimensions, declarative knowledge, procedural knowledge and conditional knowledge. Schraw and Dennison (1994) defined declarative knowledge as knowledge about self and strategies, procedural knowledge as knowledge about how to use strategies, and conditional knowledge as knowledge about when and why to use strategies. Gutierrez de Blume *et al.* (2017) classified declarative knowledge as the repository of available metacognitive strategies, procedural knowledge as the steps needed to apply the strategies, and conditional knowledge as the where, when and why to apply the strategies for the given task demands. Young and Fry (2008) added that declarative knowledge involves what we know about how we learn and what influences how we learn; procedural knowledge is our knowledge about different learning and memory strategies or procedures that work best for us; and conditional knowledge is the knowledge we have about the conditions under which we can implement various cognitive strategies.

As to whether metacognition is domain-general or domain-specific is still contentious and subject to further studies. For Batteson *et al.* (2014) metacognition is content-general and can be generalized across learning situations. In other words, improvement in metacognition could enhance learning in all domains. On the other hand, Fung and Leung (2017) believed that metacognition is at least partially domain specific since variations in metacognition can be found across different domains between subjects or learning areas such as mathematics and English reading comprehension and that some of the metacognitive skills may be more useful in some particular subjects but not in others.

Metacognitive knowledge also seems to be related to the transfer of learning and students need to know about different general strategies for learning and thinking that may be used later for new and challenging tasks (Pintrich, 2002). Learning and transfer are critical outcomes for any training program and individuals must acquire knowledge, skills and attitudes and then apply these capabilities to other contexts (Ford *et al.*, 1998).

There is a need for students not only to learn theory and understand why theories are important but also to learn how to apply knowledge in practice or be able to put into practice what they have learned in school (Wrenn and Wrenn, 2009). With this, work-based learning, either in the form of internships or apprenticeships, has become one of the most influential concepts in higher education since hands-on experience is authentic and real-world contexts are important complement to academic programs and classroom teaching (Hora *et al.*, 2017). The provision of authentic experiences in the form of internships can allow students the ability and context to make the connections between their knowledge and how they will be expected to translate that knowledge for usability (Minnes *et al.*, 2017). It is anticipated that students will benefit from enhanced connectivity between their classroom subjects and industry application, which may result in greater levels of motivation toward their studies and improved academic performance (Stansbie *et al.*, 2016).

Internships are increasingly becoming an integral part of the school-to-work transition (O'Higgins and Pinedo, 2018). In order to satisfy the employment market, the graduates should be able to combine knowledge and practice (Yong, 2012). But entering the employment market is now becoming a big challenge for graduates and a transition from the university to the work environment can be very stressful for new graduates who are not well prepared (Valdez *et al.*, 2015).

Internships provide rich environments where students can learn about their future careers by way of occupational socialization and is a key transition phase in the school-to-work process (McManus and Feinstein, 2008). It is intended to provide students with an opportunity to complement their formal learning with practical knowledge, skills and desirable attitudes and to gain hands-on experience in the industry (Commission on Higher Education (CHED) Philippines, 2017). In the process of exposing students to the real world of work, internship may provide feedback to institutions on the relevance of curriculum (Adebakin, 2015).

Internships are regarded as being a win-win situation since students get real-world job experience and can establish professional networks; educators get their students opportunities to translate theory into practice; and employers get inexpensive and educated workers that may turn into new hires (Hora *et al.*, 2017). Although there is no agreed international definition of what constitutes an internship, a reasonable working description is that internships involve a limited period of work experience with an employer usually lasting between a few weeks to one year but which is neither part of a regular employment relationship nor a formal apprenticeship (O'Higgins and Pinedo, 2018). In the Philippines, internship (which is similar to practicum, field practice or on-the-job training but different from apprenticeship) refers to the application of classroom learning to a regular work environment in commercial and industrial establishments, government agencies and non-government institutions (CHED, 2017).

An internship is now considered a major requirement for all students taking any undergraduate degree program in the Philippines. The Bachelor of Science in Customs Administration is an emerging four-year degree program in Philippine colleges and universities, both public and private. Being a Customs Broker is an important profession in the Philippines and given such, customs administration colleges must produce qualified candidates for the profession (Castillo, 2018). The customs broker profession in the Philippines involves services consisting of consultation; preparation of customs requisite document for imports and exports; declaration of customs duties and taxes; preparation, signing, filing, lodging and processing of import and export entries; representing importers and exporters before any government agency and private entities in cases related to valuation and classification of imported articles; and rendering of other professional services in matters relating to customs and tariff laws and its procedures and practices (Republic Act No. 9280, 2004).

It is assumed that the enhancement of metacognitive knowledge and its usability to the work of customs professionals will be an important aspect of the students' preparation for the profession. Hence, this study was conducted with the following objectives:

1. To describe the profile of customs administration students in terms of sex, internship location and academic performance.
2. To determine the differences on academic performance when grouped according to sex and according to internship location.
3. To assess the students' levels of metacognitive knowledge and metacognitive knowledge usage in internship.
4. To determine relationships and differences between the corresponding dimensions of metacognitive knowledge and metacognitive knowledge usage.
5. To determine relationships among the dimensions of metacognitive knowledge and metacognitive knowledge usage.
6. To determine relationships between metacognitive knowledge, as well as metacognitive knowledge usage, and academic performance.
7. To determine differences on metacognitive knowledge, as well as metacognitive knowledge usage, when grouped according to each of the following: sex, internship location and academic performance.

2. METHODS

This study is a descriptive research using survey approach and with 99 students who are in their final year in the Bachelor of Science in Customs Administration program in one state university in the Philippines as survey respondents. The respondents were simple-randomly selected from a list of 132 students who had already undertaken internships or on-the-job training for one semester with 300 hours in a government agency and another 300 hours in a private company. The sample size was determined using Cochran's formula for calculating a sample for proportions, with 95% confidence level, 5% precision, and an assumption that 50% will have a favorable response.

The collection of data in March 2018 was conducted in the classrooms during the vacant periods of the students or during classes upon the permission of the instructor that was present. The respondents were well-informed about the objectives of the study and they were assured that the information gathered from the survey would be treated with utmost confidentiality and would be used for research purposes only. Having done so, a 100% participation target of the respondents was achieved and all of the retrieved questionnaires were found to be usable.

The first part of the survey questionnaire consisted of items regarding the profile or characteristics of students such as sex, location of internship, and academic performance in terms of average grade in major subjects. The items for the second part of the questionnaire that measured the level of metacognitive knowledge and its usage in internship were adapted from Schraw and Dennison (1994) with slight modifications to suit both the level of knowledge and level of knowledge usage. For example, the statement "I understand my intellectual strengths and weaknesses" was changed into "Understanding my intellectual strengths and weakness". A four-point Likert-type scale was used in the questionnaire and mean scores were computed to interpret the responses of students for each item. The guide for interpretation is shown in Table 1.

Table-1. Scoring and interpretation.

Response	Mean	Level of knowledge / Usage
4	3.50 – 4.00	Very high
3	2.50 – 3.49	High
2	1.50 – 2.49	Low
1	1.00 – 1.49	Very low

The three dimensions – declarative, procedural and conditional – measured for both knowledge and usage levels were subjected to reliability analyses and resulted to good internal consistency for all dimensions with Cronbach's alphas ranging from .79 to .87. The overall metacognitive knowledge and metacognitive knowledge usage scales were also found to be reliable with alpha of .90 and .93, respectively. Further details are shown in Table 2.

Table-2. Reliability coefficients.

Dimensions	Number of items	Cronbach's alpha	
		Level of knowledge	Level of usage
Declarative knowledge	8	.84	.87
Procedural knowledge	4	.79	.81
Conditional knowledge	5	.84	.83
Total metacognitive knowledge	17	.90	.93

Source: Results of reliability tests conducted by the authors using the data gathered through survey (2018).

Tests of normality were also conducted to ascertain whether parametric or non-parametric tests were appropriate for use. The results show that the data in all dimensions and in academic performance, as well as in at least one group of each grouping variable (except total metacognitive knowledge when grouped according to internship location), were not normally distributed. These were shown in Tables A1 to A4 included the Appendix.

Hence, non-parametric tests were used for the following null hypotheses:

H_{o1}: There is no significant difference on academic performance when grouped according to sex and according to internship location.

H_{o2}: There is no significant relationship between the corresponding dimensions of metacognitive knowledge and metacognitive knowledge usage.

H_{o3}: There is no significant difference between the corresponding dimensions of metacognitive knowledge and metacognitive knowledge usage.

H_{o4}: There is no significant relationship between any two dimensions of metacognitive knowledge and metacognitive knowledge usage.

Ho_5: There is no significant relationship between metacognitive knowledge and academic performance.

Ho_6: There is no significant relationship between metacognitive knowledge usage and academic performance.

Ho_7: There is no significant difference on metacognitive knowledge when grouped according to each of the following: sex, internship location, and academic performance.

Ho_8: There is no significant difference on metacognitive knowledge usage when grouped according to each of the following: sex, internship location, and academic performance.

The Mann-Whitney U-test was used for Ho_1; the Spearman correlation for Ho_2, Ho_4, Ho_5, and Ho_6; and the Wilcoxon signed ranks test for Ho_3. The Mann-Whitney U-test was also used for Ho_7 and Ho_8, particularly when grouped according to sex and internship location, while the Kruskal-Wallis H-test was used for Ho_7 and Ho_8 also, but particularly when grouped according to academic performance. Since the data for total metacognitive knowledge as grouped to internship location met the normality condition, the independent samples t-test was further conducted to test differences.

Descriptive statistics such as frequency, percentage, crosstabulation of frequencies, mean and standard deviation were used to describe the profile of the students. The mean was used to assess the students' level of metacognitive knowledge and its usage in internship and for comparison of group responses.

3. RESULTS AND DISCUSSION

Table 3 presents the profile of the customs administration students of one state university in the Philippines in terms of sex, location of their internship and academic performance. The students had 300 hours of internship in a government agency and another 300 hours in a private company. The response "home city" means that both their internships (government and private) were within the city where their university was located, while the response "capital city" means that they had one or both internships in Metro Manila, the capital region of the Philippines. The academic performance was in terms of the average grade in major subjects. An average grade of 1.75 or higher may place students on the honor list while a grade of at least 2.50 may qualify them for some scholarship grants.

Table-3. Students' profile.

Profile variable	Category	Frequency	Percent
Sex	Male	24	24.2
	Female	75	75.8
Internship location	Home City	39	39.4
	Capital City	60	60.6
Average grade / Academic performance	1.00 – 1.75 (High)	15	15.2
	1.76 – 2.50 (Average)	66	66.7
	2.51 – 3.00 (Low)	18	18.2
		Mean	SD
	Male	2.17	.458
	Female	2.16	.339
	Home City	2.30	.336
	Capital City	2.08	.366
	All	2.17	.369

Source: Results of authors' computations using the data gathered through survey (2018).

The results showed that majority of the students are female which implied that the customs administration job in the Philippines is more female friendly and that male students are more attracted to technical programs like engineering and industrial technology programs. The majority of the students had their internship in the capital city which implied that students see more opportunities for personal and professional development and linkage in the capital city than in the home city. In terms of academic performance, the majority of the respondents had an average performance but there were also a handful of high achievers which implied that upon graduation it is expected that there will be students who will graduate with honors. From the group means presented for the

average grade, it also seemed that male and female students had the same level of performance and students who had their internship in the capital city had a higher performance than those in the home city. , which also meant that high performers tended to have their internship in the capital city while low performers tended to have theirs in the home city.

Table 4 presents the crosstabulations of frequencies necessary for further descriptions of the customs administration students. The results show that although the majority of both male and female students had an internship in the capital city, 75% of male students (18 out 24) and only 56% of female students (42 out of 75) had internship in the capital city. One reason may be the Filipino parents' culture of being more protective of their daughters. Although they may not be seeing any particular risk or danger, some parents disallow their daughters to have internships away from home. Male students had a higher proportion of high performers (5 out of 24 or 21%) than female students (10 out of 75 or 13%) but they had also a higher proportion of low performers (6 out of 24 or 25%) than female students (12 out of 75 or 16%). Although Filipinos generally believed that gender equality is practiced in all levels of the Philippines' education system, it seems that further researches are necessary to confirm this. The majority (13 out of 15 or 87%) of high performers had an internship in the capital city while the majority (13 out of 18 or 72%) of the low performers had an internship in the home city, which confirmed the earlier assumption.

Table-4. Crosstabulations.

Variable		Internship location		
		Home City	**Capital City**	**Total**
Sex	Male	6	18	24
	Female	33	42	75
	Total	39	60	99
Variable		Sex		
		Male	Female	Total
Academic performance	High	5	10	15
	Average	13	53	66
	Low	6	12	18
	Total	24	75	99
Variable		Internship Location		
		Home City	Capital City	Total
Academic performance	High	2	13	15
	Average	24	42	66
	Low	13	5	18
	Total	39	60	99

Source: Data gathered by the authors through survey (2018).

To further confirm the similarity in the academic performance of male and female students, as well as the differences in the performance of home city and capital city internship students, the Mann-Whitney tests were conducted and the results are presented in Table 5. As indicated by the p-value of .637 there was no significant difference in the performance of male and female students at the .05 level of significance. However, at the significance level of .05, there was a significant difference in the performance of students when grouped according to internship location as indicated by the p-value of .005, where as shown earlier, the capital city internship students had a better performance than the home city internship students.

Table-5. Differences on academic performance.

Test statistics	Grouping variable: Sex	Grouping variable: Internship location
Mann-Whitney U	843.5	786.5
Wilcoxon W	3693.5	2616.5
Z	-.472	-2.809
Asymp. Sig. (2-tailed)	.637	.005

Source: Results of statistical tests conducted by the authors using the data gathered through survey (2018).

Table 6 presents the level of declarative knowledge and the level of usage of such knowledge in the internship of customs administration students. The results showed that the students had a generally high level of declarative knowledge as well as on its usage in internships, on which the highest level is for "learning more in interesting topic" while the lowest is for "judging how well I understand". This implied that interest really plays an important part in everyone's learning whether at university or on the job. On the other hand, improvement on how students may correctly assess their own understanding should be given emphasis by university instructors and internship mentors or supervisors.

Table-6. Level of declarative knowledge and usage in internship.

Items	Level of knowledge		Level of usage	
	Mean	Interpretation	Mean	Interpretation
1. Understanding my intellectual strengths and weaknesses	3.43	High	3.44	High
2. Identifying the kind of information that is important to learn	3.51	Very High	3.45	High
3. Organizing relevant information	3.47	High	3.45	High
4. Knowing the expectation of instructor in learning	3.43	High	3.34	High
5. Remembering important information	3.44	High	3.49	High
6. Controlling ways to learn	3.38	High	3.37	High
7. Judging how well I understand	3.18	High	3.24	High
8. Learning more in interesting topic	3.56	Very High	3.60	Very High
Declarative knowledge	3.43	High	3.43	High

Source: Authors' computations and interpretations using the data gathered through survey (2018).

Table 7 presents the level of procedural knowledge and the level of usage of such knowledge in the internship of customs administration students. The results also showed that the students had a generally high level of procedural knowledge as well as its usage in internships, for which the highest level was "using helpful learning strategies" while the lowest was "specifying purpose for each strategy use". This implied that the usage of necessary learning strategies had been well-developed already for customs administration students. However, students should still be guided by educators and internship trainers as to the purpose of a particular strategy being used.

Table-7. Level of procedural knowledge and usage in internship.

Items	Level of knowledge		Level of usage	
	Mean	Interpretation	Mean	Interpretation
1. Using strategies that have worked in the past	3.37	High	3.36	High
2. Specifying purpose for each strategy use	3.26	High	3.23	High
3. Being aware of strategies to use	3.40	High	3.33	High
4. Using helpful learning strategies	3.51	Very High	3.47	High
Procedural knowledge	3.39	High	3.35	High

Source: Authors' computations and interpretations using the data gathered through survey (2018).

Table 8 presents the level of conditional knowledge and the level of usage of such knowledge in the internship of customs administration students. The results showed that the students had a generally very high level of conditional knowledge and its usage in internships. The highest was for "motivating self to learn when needed" while the lowest was for "utilizing different learning strategies depending on the situation" and on "knowing when each strategy to use will be the most effective". On usage, the highest was for "learning best when familiar with topic" while the lowest was for "using intellectual strengths to compensate for weaknesses". There seemed to be no problem on the conditional knowledge and its usage in the internship of customs administration students. But it may still be necessary to help students on how to employ their intellectual strengths to improve some of their weaknesses.

Table 9 summarizes the level of metacognitive knowledge and the level of its usage in internship. Generally, the students had a high level of total metacognitive knowledge and its usage in internships, and the highest level

was for conditional knowledge and the lowest was for procedural knowledge. Hence, further improvement of students' metacognitive knowledge should give more weight to procedural knowledge.

Table-8. Level of conditional knowledge and usage in internship.

Items	Level of knowledge		Level of usage	
	Mean	Interpretation	Mean	Interpretation
1. Learning best when familiar with topic	3.58	Very high	3.54	Very high
2. Utilizing different learning strategies depending on the situation	3.44	High	3.53	Very high
3. Motivating self to learn when needed	3.64	Very high	3.52	Very high
4. Using intellectual strengths to compensate for weaknesses	3.47	High	3.42	High
5. Knowing when each strategy to use will be the most effective	3.44	High	3.51	Very high
Conditional knowledge	3.52	Very high	3.50	Very high

Source: Authors' computations and interpretations using the data gathered through survey (2018).

The findings of this study were somewhat different from the results of previous studies. For instance, Sabna and Hameed (2016) found that most students have an average level of metacognitive awareness; (Panda, 2017) observed that the developments of metacognitive knowledge for both males and females were low; and Al Awdah *et al.* (2017) showed that students had only a substantial awareness of metacognition.

Relatively similar results can also be drawn from Ford *et al.* (1998) and Minnes *et al.* (2017). Ford and colleagues found that metacognitive activity was significantly related to knowledge acquisition, skilled performance at the end of training and self-efficacy, and that engaging in greater metacognitive activity was related to greater self-confidence in the learners' capability to succeed at a task. In addition, when a highly metacognitive environment is created, learners are more likely to be able to reflect upon their thoughts, analyze, and detect if and how well they can apply and synthesize conceptual frameworks (Minnes *et al.*, 2017).

Stansbie *et al.* (2016) found that students felt that the education they had received prior to their internship had prepared them for the experience and that theories discussed in class were important to them and examples of these theoretical approaches were evident during their practical experiences. However, they also found that students did not necessarily see their classroom education as complementing their internship but rather underpinning the additional learning of new skills and competencies that occurred.

Table-9. Level of metacognitive knowledge and usage in internship.

Dimensions	Level of knowledge		Level of usage	
	Mean	Interpretation	Mean	Interpretation
Declarative knowledge	3.43	High	3.43	High
Procedural knowledge	3.39	High	3.35	High
Conditional knowledge	3.52	Very high	3.50	Very high
Total metacognitive knowledge	3.44	High	3.43	High

Source: Authors' computations and interpretations using the data gathered through survey (2018).

Table 10 presents the results of Spearman correlation test to determine relationships between corresponding knowledge dimension and usage as well as the results of Wilcoxon signed ranks test to determine differences on the responses of students on corresponding levels of knowledge and usage. The results showed that there was strong positive significant correlation on each pair of variables as indicated by the rho coefficients ranging from .701 to .830 and all $p<.0005$. There was no significant difference on the levels of corresponding knowledge and usage as indicated by p-values that were all greater than .05. These implied that the corresponding variables may be measuring the same thing, although it was initially assumed that the level of knowledge was different from the level of knowledge usage. The results may be due to the circumstance that the levels of knowledge and usage were measured at the same time using the same instrument.

Table-10. Spearman correlation and wilcoxon signed ranks test.

Paired variables	Rho	Sig.	Z	Asymp. Sig.
DKU – DK	.812	.000	-.807(a)	.419
PKU – PK	.701	.000	-1.190(b)	.234
CKU – CK	.778	.000	-.591(b)	.555
MKU – MK	.830	.000	-.145(b)	.885

(a) - based on negative ranks; (b) - based on positive ranks; DK, PK, CK and MK are respectively declarative, procedural, conditional and metacognitive knowledge; DKU, PKU, CKU and MKU are respectively declarative, procedural, conditional and metacognitive knowledge usage.
Source: Results of statistical tests conducted by the authors using the data gathered through survey (2018).

The Spearman correlation test was also conducted to determine the relationships among the dimensions of metacognitive knowledge and usage. The results in Table 11 showed significant relationships among the dimensions as indicated by p<.0005. The correlations were also positive but only moderate with rho ranging from .553 to .667, implying that the dimensions were measuring related but different things.

Table-11. Correlations on the dimensions of metacognitive knowledge and usage.

Dimensions	PK		CK	
	rho	Sig.	Rho	Sig.
DK	.568	.000	.573	.000
PK			.553	.000
Dimensions	PKU		CKU	
	rho	**Sig.**	**Rho**	**Sig.**
DKU	.668	.000	.667	.000
PKU			.677	.000

Source: Results of statistical tests conducted by the authors using the data gathered through survey (2018).

Table 12 shows the correlation between each of the metacognitive knowledge dimensions and the academic performance of customs administration students. The results indicated that all dimensions of metacognitive knowledge and usage, except procedural knowledge, were significantly and positively related to academic performance with p-values less than .05 and rho ranging from .198 to .317. Although the correlations could be considered weak, these still implied that as metacognitive knowledge level increases, academic performance becomes better and as academic performance becomes better, metacognitive knowledge usage also increases. These were again with the exclusion of procedural knowledge as it was found that there was no significant relationship between this and academic performance at the significance level of .05 with p=.103.

Table-12. Correlation between metacognitive knowledge and academic performance.

Dimensions	Academic performance	
	rho	Sig.
DK	.317	.001
PK	.165	.103
CK	.198	.049
Total MK	.290	.004
DKU	.258	.010
PKU	.234	.019
CKU	.259	.010
Total MKU	.278	.005

Source: Results of statistical tests conducted by the authors using the data gathered through survey (2018).

The results were similar to the findings of Coutinho (2007) that metacognition had significant but weak correlation with grade point average. In addition, Young and Fry (2008) also found that there was a correlation between course grades and knowledge of cognition, as well as between grade point average and knowledge of cognition. The findings of Al Awdah *et al.* (2017) also stated that the students' substantial awareness of metacognition is correlated positively and significantly with their academic performance.

However, the findings of Amzil and Stine-Marrow (2013) indicated that metacognitive knowledge is not a predictor of academic performance even though metacognitive monitoring and control are good predictors. Poh *et al.* (2016) also found no relation between metacognitive awareness and the overall academic achievement of students.

In somewhat related findings of Kesici *et al.* (2011) although focusing on mathematics, the results showed that declarative knowledge is a significant predictor of mathematics course achievement (which is relatively similar to the results of this study) and procedural knowledge is a significant course predictor of geometry course achievement (which is relatively different from the findings of this study). Tian *et al.* (2018) found that mathematics performance could be predicted by metacognitive knowledge, self-efficacy and intrinsic motivation and the association between metacognitive knowledge and mathematics performance was mediated by self-efficacy and intrinsic motivation.

Table 13 presents the comparison of mean responses of the different groups of students for all dimensions of metacognitive knowledge and usage. The results showed that the male students had a slightly higher level of metacognitive knowledge and usage than the female students. The capital city internship students have also higher level of metacognitive knowledge and usage than the home city internship students. High academic performers had the highest level of metacognitive knowledge and usage, followed by average performers, and then by low performers.

Table-13. Comparison of means.

Profile	Category	DK	PK	CK	MK	DKU	PKU	CKU	MKU
Sex	Male	3.47	3.54	3.64	3.54	3.52	3.57	3.58	3.55
	Female	3.41	3.34	3.47	3.41	3.40	3.28	3.47	3.39
Internship location	Home City	3.34	3.30	3.47	3.37	3.29	3.20	3.38	3.29
	Capital City	3.49	3.44	3.55	3.49	3.52	3.45	3.58	3.52
Academic performance	High	3.61	3.58	3.73	3.64	3.65	3.57	3.71	3.65
	Average	3.43	3.37	3.50	3.44	3.40	3.34	3.51	3.42
	Low	3.25	3.28	3.40	3.30	3.32	3.19	3.31	3.29

Source: Authors' computations and interpretations using the data gathered through survey (2018).

Table 14 presents the differences on the levels of metacognitive knowledge and its usage of the different groups of students based on their profile categories using the Mann-Whitney U-test and the Kruskal-Wallis H-test. The results showed that male and female students significantly differed only on the level of procedural knowledge and procedural knowledge usage as indicated by p-values less than .05. The male students had a higher level of procedural knowledge and its usage than the female students.

These results were partly similar to the findings of Limueco and Prudente (2018) that there is no significant difference between males and females in terms of metacognitive awareness in all components. However, Panda (2017) found that females are significantly better than males in metacognitive knowledge while males are better in metacognitive regulation. Sabna and Hameed (2016) also confirmed that mean differences are significant and that females have higher metacognition awareness than males. Tian *et al.* (2018) also found that there was sex differences in metacognitive knowledge but that male students scored higher than female students in metacognitive knowledge of self, and of strategies while female students scored higher in metacognitive knowledge of tasks.

The results further showed that the significant differences between the home city and capital city internship students were only in the declarative, procedural and total metacognitive knowledge usage as indicated by p-values less than .05. The capital city internship students had higher levels of knowledge usage than the home city internship students. In the study of Sabna and Hameed (2016) it was also found that urban students had a higher metacognitive awareness than rural students.

The results showed that at the significance level of .05, there were also significant differences in the levels of declarative knowledge and total metacognitive knowledge, as well as in conditional knowledge usage and total metacognitive knowledge usage, when the students were grouped according to their academic performance. To be

more specific, high performers had higher levels of knowledge and usage in the said dimensions than the average and low performers. This further established the earlier results on correlations between metacognitive knowledge and academic performance, which were supported by previous studies.

Table-14. Differences on Metacognitive Knowledge and Usage.

Grouping variable	Sex		Internship location		Academic performance	
Dimensions	Mann-Whitney U	Sig.	Mann-Whitney U	Sig.	Chi-square (Kruskal Wallis)	Sig.
DK	834.0	.587	902.0	.053	7.910	.019
PK	660.5	.045	961.5	.126	4.496	.106
CK	704.0	.103	1065.0	.444	5.834	.054
Total MK	729.0	.162	904.0	.056	8.554	.014
DKU	774.5	.302	865.5	.028	5.716	.057
PKU	579.5	.008	854.5	.021	5.314	.070
CKU	800.0	.407	942.5	.098	6.059	.048
Total MKU	712.5	.125	845.0	.020	6.818	.033

Source: Results of statistical tests conducted by the authors using the data gathered through survey (2018).

In addition, an independent samples t-test was also conducted to determine if there was significant difference in the total metacognitive knowledge when the students were grouped according to internship location since the data on these were approximately normally distributed. The result was presented in Table 15, where it is clear that at the significance level of .05, there was no significant difference in the responses of the two groups of students. This also means that the capital city and home city internship students have statistically equal levels of total metacognitive knowledge.

Table-15. Differences on Metacognitive Knowledge as Grouped to Internship Location.

Test variable	Internship location	Mean	t-statistic	p-value
Total MK	Home City	3.37	-1.871	.064
	Capital City	3.49		

Source: Results of statistical tests conducted by the authors using the data gathered through survey (2018).

4. CONCLUSIONS

This study assessed the level of metacognitive knowledge and its usage in the internships of customs administration students of one state university in the Philippines. This involved the dimensions of metacognitive knowledge such as declarative, procedural and cognitive and its totality, as well as how these were utilized in the internship of students. The results showed that students had high to very high levels of metacognitive knowledge and metacognitive knowledge usage.

The study also aimed to determine the profile characteristics of the students in terms of sex, internship location and academic performance and the differences on their academic performance. The results showed that the majority of students were female, had internships in the capital city and had an average academic performance. The majority of the high performers had an internship in the capital city while the majority of the low performers had an internship in the home city. Males and females had similar performance while the capital city internship students had better performance than the home city internship students.

The corresponding dimensions of metacognitive knowledge and metacognitive knowledge usage were also pairwise compared and correlated but had insignificant differences between the paired variables but were significantly correlated with strong positive relationships. The three dimensions were also significantly correlated to each other but with moderate positive relationships. All dimensions of metacognitive knowledge and usage, except procedural knowledge, had significant positive correlations with academic performance.

Testing the differences on metacognitive knowledge and metacognitive knowledge usage, when grouped according to sex, internship location and academic performance was also part of the study. The results showed that

there were significant differences in procedural knowledge and its usage when grouped according to sex; in declarative, procedural and total metacognitive knowledge usage when grouped according to internship location; and in declarative knowledge, total metacognitive knowledge, conditional knowledge usage and total metacognitive knowledge usage when grouped according to academic performance.

Since this study focuses only on one program of one state university, further studies on metacognitive knowledge of students and its usage in internships, as well as in actual employment, are deemed necessary. In future similar studies, it may also be more appropriate to gather data on metacognitive knowledge before internships and the data on metacognitive knowledge usage during or after the internships from the same set of respondents. Qualitative studies on the same topic may likewise be considered by future researchers.

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APPENDIX

The results of Kolmogorov-Smirnov and Shapiro-Wilk tests of normality for each scale of metacognitive knowledge and metacognitive knowledge usage, as well as, for the total metacognitive knowledge, total metacognitive knowledge usage and academic performance are shown in Table-A1. In addition, the results of similar tests for the assessment of each particular group of respondents as grouped according to sex, internship location and academic performance are presented, respectively, in Table-A2, Table-A3 and Table-A4. At significance level of .05, the p-value (Sig.) that is greater than .05 implies that the data are approximately normally distributed. Otherwise, the data are not normally distributed.

Table-A1. Tests of normality per scale.

Dimensions	Kolmogorov-Smirnov		Shapiro-Wilk	
	Statistic	Sig.	Statistic	Sig.
Declarative knowledge	.130	.000	.945	.000
Declarative knowledge usage	.115	.002	.939	.000
Procedural knowledge	.167	.000	.903	.000
Procedural knowledge usage	.132	.000	.924	.000
Conditional knowledge	.152	.000	.899	.000
Conditional knowledge usage	.164	.000	.897	.000
Total metacognitive knowledge	.083	.088	.968	.016
Total metacognitive knowledge usage	.097	.024	.948	.001
Academic performance	.152	.000	.952	.001

Table-A2. Normality tests per sex group.

Dimensions	Sex	Kolmogorov-Smirnov		Shapiro-Wilk	
		Statistic	Sig.	Statistic	Sig.
Declarative knowledge	Male	.148	.187	.877	.007
	Female	.146	.000	.945	.003
Declarative knowledge usage	Male	.148	.190	.898	.020
	Female	.126	.005	.937	.001
Procedural knowledge	Male	.191	.023	.861	.004
	Female	.172	.000	.906	.000
Procedural knowledge usage	Male	.207	.009	.865	.004
	Female	.162	.000	.931	.001
Conditional knowledge	Male	.202	.012	.850	.002
	Female	.143	.001	.906	.000
Conditional knowledge usage	Male	.163	.099	.905	.027
	Female	.180	.000	.894	.000
Total metacognitive knowledge	Male	.108	.200	.954	.328
	Female	.105	.041	.962	.023
Total metacognitive knowledge usage	Male	.129	.200	.927	.085
	Female	.114	.017	.945	.003
Academic performance	Male	.172	.064	.951	.282
	Female	.175	.000	.932	.001

Table-A3. Normality tests per internship location group.

Dimensions	Internship location	Kolmogorov-Smirnov		Shapiro-Wilk	
		Statistic	Sig.	Statistic	Sig.
Declarative knowledge	Home City	.173	.005	.921	.009
	Capital City	.121	.028	.945	.010
Declarative knowledge usage	Home City	.105	.200	.955	.118
	Capital City	.142	.004	.940	.006
Procedural knowledge	Home City	.206	.000	.869	.000
	Capital City	.173	.000	.906	.000
Procedural knowledge usage	Home City	.194	.001	.934	.023
	Capital City	.153	.001	.900	.000
Conditional knowledge	Home City	.176	.004	.898	.002
	Capital City	.153	.001	.896	.000
Conditional knowledge usage	Home City	.138	.059	.908	.004
	Capital City	.189	.000	.885	.000
Total metacognitive knowledge	Home City	.128	.108	.957	.147
	Capital City	.100	.200	.965	.083
Total metacognitive knowledge usage	Home City	.112	.200	.954	.111
	Capital City	.088	.200	.957	.033
Academic performance	Home City	.203	.000	.926	.013
	Capital City	.159	.001	.947	.011

Table-A4. Normality tests per academic performance group.

Dimensions	Academic performance	Kolmogorov-Smirnov		Shapiro-Wilk	
		Statistic	Sig.	Statistic	Sig.
Declarative knowledge	Low	.290	.000	.768	.001
	Average	.113	.037	.967	.075
	High	.183	.189	.861	.025
Declarative knowledge usage	Low	.144	.200	.930	.194
	Average	.146	.001	.946	.006
	High	.209	.076	.860	.024
Procedural knowledge	Low	.188	.091	.891	.040
	Average	.194	.000	.894	.000
	High	.223	.043	.899	.093
Procedural knowledge usage	Low	.143	.200	.950	.421
	Average	.144	.002	.922	.001
	High	.162	.200	.898	.088
Conditional knowledge	Low	.197	.064	.901	.061
	Average	.143	.002	.917	.000
	High	.299	.001	.746	.001
Conditional knowledge usage	Low	.124	.200	.930	.192
	Average	.148	.001	.901	.000
	High	.239	.021	.791	.003
Total metacognitive knowledge	Low	.167	.197	.941	.305
	Average	.105	.069	.974	.170
	High	.176	.200	.849	.017
Total metacognitive knowledge usage	Low	.161	.200	.932	.210
	Average	.102	.085	.961	.037
	High	.161	.200	.883	.053