Evaluation of Proficiency Level on Microsoft Excel Among the Bachelor of Science in Accountancy Students of Mindanao State University, General Santos

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Abstract—Computer skills are becoming increasingly important in today's global employment market, and students are expected to possess them. These abilities include basic to advanced knowledge of Microsoft Excel. The main goal of the study was to determine the proficiency level of accounting students in terms of basic, intermediate, and advanced skills in Microsoft Excel. The study used a descriptive research design with a quantitative approach. Data were gathered from the sixty-seven respondents, first-year accountancy students from Mindanao State University-General Santos. A modified and adapted four-part survey questionnaire was administered online via Google Forms. Statistical tools used to analyze and interpret data collected are frequency count and percentage, mean and weighted mean. Almost all of the respondents have undergone ICT subjects prior to college and majority have taken spreadsheet lessons. All respondents have available technological devices and most of them have access to university ICT facilities. The findings revealed that the respondents are very familiar with both the existence and features of Microsoft Excel. The respondents were completely familiar with Microsoft Excel's purpose while being very familiar with its existence and features. The findings also revealed that the respondents have advanced proficiency with regard to Microsoft Excel's sets of basic skills, competent proficiency when performing intermediate skills, and a developing proficiency level when executing the advanced skills. It can be concluded that the first-year Bachelor of Science in Accountancy students of Mindanao State University – General Santos must develop their Microsoft Excel skills to be competitive in the labor market.

Index Terms—Accountancy, Microsoft Excel, usage of Microsoft Excel, proficiency level, familiarity, existence, feature, purpose, basic skills, intermediate skills, advanced skills, weighted mean, Mindanao State University-General Santos.

1. Introduction

With the advent of new technology, small and large businesses call for a complex spreadsheet and database to strengthen the entity's information organization and accounting function. Since the mid-1990s, Microsoft Excel has gained popularity as an accounting tool for making charts, graphs, statistical data computations, and formulas. Along with its growth came a demand for employees with solid functional, and analytical skills, making Excel proficiency one of the most sought-after technological expertise among new graduates, particularly in business courses.

As technology affects how businesses perform and keep their data, the need for structured and effective accounting becomes a priority for most companies. Because of the thriving technological changes, manual accounting systems are perceived to be more primitive (Jusoh & Ahmad, 2019). The spreadsheet application is a good fit for accounting jobs because of its ability to provide calculations, store masses of data, and solve business problems. The evolution of the accountant's job from manual record-keeping to the use of spreadsheet applications leads to the conclusion that accountants must have a broad range of general and in-depth computer skills (Lee et al., 2018).

Despite the academe's effort to provide and incorporate the curricula with technological changes by teaching ICT subjects related to the field, employers, however, expressed their dissatisfaction about accounting graduates being unequipped with the ICT skills required by the profession (Johnson et al., 2006; Bui & Porter, 2010). Accounting employers, in particular, have stated that there is a misalignment between the skills required and the skills accounting graduates profess. (Deal et al., 2015).

Considering this, the study generally intended to evaluate the proficiency level of the first-year Bachelor of Science in Accountancy students of Mindanao State University — General Santos on Microsoft Excel, a type of spreadsheet application. It specifically intended to determine the percentage and frequency of their early exposure to technology, their degree of familiarity, and their level of proficiency with Microsoft Excel. Furthermore, the study would assess the students' performance and serve as a foundation for implementing measures of the university to ensure that students learn the skills they will need in the workplace.

2. Objectives of the Study

This study generally aimed to evaluate the proficiency level

of the first-year Bachelor of Science in Accountancy students of Mindanao State University – General Santos for the Academic Year 2021-2022 on the use of Microsoft Excel.

Specifically, the study sought to answer the following research problems:
1. What is the percentage and frequency distribution of the first-year Accountancy students of Mindanao State University – General Santos concerning early exposure to ICT in terms of:
   1) Availability of Technological Devices
   2) Usage of Microsoft Excel
   3) Access to the University's ICT Facility
2. What is the degree of familiarity of the first-year Accountancy students of Mindanao State University – General Santos with Microsoft Excel as to its:
   1) Existence
   2) Features
   3) Purpose
3. What is the level of proficiency of the first-year Accountancy students of Mindanao State University – General Santos on the use of Microsoft Excel concerning:
   1) Basic Skills
   2) Intermediate Skills
   3) Advanced Skills

3. Materials and Methods

A. Research Design

A research design is a blueprint that lays out how a study would progress from the research questions through the results. It is a systematic planning procedure for gathering and analyzing data to grasp a subject better (Abutabenjeh & Jaradat, 2018). This study utilized a descriptive research design with a quantitative approach to answer the research questions. Descriptive research is a type of research that focuses on describing the characteristics of the population or phenomenon being examined. This methodology emphasizes the "what" rather than the "why" of a research topic (Sahin & Mete, 2021). To measure the respondents' degree of familiarity and proficiency with Microsoft Excel, the quantitative approach was employed in this study.

B. Sampling Design

Due to geographical barriers and the researchers' financial and time constraints, the population was sampled through a simple random sampling technique. Simple random sampling (SRS) is a probability sampling technique in which researchers select population members at random. Each participant of the population has an equal chance of being selected. This strategy typically yields impartial, representative samples (Frost, 2022). The researchers utilized a lottery system to pick respondents at random. Each respondent on the datasheet was assigned a number, and a computer program was used to generate numbers randomly.

C. Respondents of the Study

Individuals who answer surveys or interviews and contribute data to be examined for the research project are referred to as respondents (Omachinski, 2017). Respondents can opt-out of research at any time and the information collected may or may not be used. In this study, the respondents were comprised of 67 first-year students taking up the bachelor's degree in Accounting for the Academic Year 2021-2022 from Mindanao State University – General Santos. The researchers used a sample size calculator to determine the sample size given the total population of 80. They set a confidence level at 95% and a margin of error of 5%.

D. Research Locale

Generally, the study took place at Mindanao State University – General Santos. According to MSU GenSan (n.d.), Mindanao State University – General Santos is a leading and internationally-recognized higher-education institution (HEI) dedicated to providing students with economical, accessible, and high-quality education clients from throughout SOCCSKSARGEN and the neighboring areas. Currently, the university is headed by Acting Chancellor JD Usman D. Aragasi, MPA. Among the accredited baccalaureate and post-baccalaureate degree programs offered by the university include Agriculture, Fisheries, Education, Engineering, Business Administration and Accountancy, Social Sciences and Humanities, Natural Sciences and Mathematics, Law, and Graduate Studies. Specifically, the conduct of the study took place at the College of Business Administration and Accountancy (CBAA), where the respondents are currently enrolled to pursue their accounting studies.

E. Research Instrument

The researchers adapted and modified a questionnaire to collect data. The test questionnaire was composed of four sections. The first section gathered the demographic profile of the respondents, such as age, gender, whether they have graduated from a public or private high school, and whether they have taken ICT subjects during their secondary education. The second section determined the percentage and frequency of the respondents regarding the availability of technological devices, usage of Microsoft Excel, and access to the university's ICT facilities. Dichotomous questions were initially used for this section, and follow-up questions were presented through checklists.

The researchers employed a unipolar Likert's scale for the third section of the test questionnaire to identify the degree of familiarity of the respondents with the existence, features, and purpose of Microsoft Excel. The unipolar scale is best-fitted for this one since there is only one attribute or quality, which in this case is familiarity, that is to be described (American Psychological Association, 2020). Declarative statements helped assess the respondents' degree of familiarity composed this section. Existence, features, and purpose were benchmarked by the respondents as completely familiar, very familiar, moderately familiar, slightly familiar, or not familiar at all.

The fourth section determined the proficiency level of the respondents concerning the basic skills, intermediate skills, and

Table 1
Label for degree of familiarity and level of proficiency

Scale	Label for Degree of Familiarity	Label for Level of Proficiency
1	Not familiar at all	Beginner
2	Slightly familiar	Developing
3	Moderately familiar	Competent
4	Very familiar	Advanced
5	Completely familiar	Expert

advanced skills in Microsoft Excel. A Likert's scale was used for the last section, where the respondents rated their level of proficiency, in terms of basic skills, intermediate skills, and advanced skills in Microsoft Excel, on a scale of one to five. The researchers used a Likert scale since it gives them the advantage of receiving degrees of opinion as answers from the respondents, which allowed them to quickly analyze the obtained quantitative data (McLeod, 2019). Moreover, the skill items under the basic, intermediate, and advanced skills category were adopted from the Microsoft Excel 2016 Core Skills Checklist created by California State University - Division of Information Technology (2015).

The values of the degree of familiarity and proficiency level as corresponding answers of the respondents to the questionnaire were presented in the scale shown in table 1.

F. Data Gathering Procedure

The researchers followed a step-by-step course of action in gathering the necessary data for the study.

Identification of the Problem. Firstly, the researchers identified the problem and created a statement. The preliminary parts of the study were also established on this part, such as the significance of the research and the scope and delimitation.

Review of Related Literature. Secondly, the researchers sought information from other literature and studies to establish a foundation and back up its forthcoming findings and results.

Construction and Validation of Questionnaire. Thirdly, the researchers prepared an adapted and modified questionnaire which was consequently validated by the research adviser and pilot tested.

Distribution of Questionnaire. Fourthly, the researchers distributed the questionnaires to the selected respondents by emailing them to their institutional email addresses.

Retrieval and Collation of Questionnaire. Fifthly, the researchers retrieved the questionnaires from the respondents and collated the gathered information.

Presentation of Data Collected. Then, the researchers presented the data collected comprehensively.

Analysis and Interpretation of Data. Lastly, the researchers analyzed the gathered data and interpreted its results.

G. Statistical Instrument and Analysis

As soon as the researchers collected the data, they compiled and organized the data subject to statistical treatments. To interpret the data effectively, the study employed the following statistical tools:

Frequency Count and Percentage. A frequency and percentage distribution show the number of observations for each data point or group of data points as a percentage of the total number of observations. It is essential that each data point or grouping of data points' percentages all add up to 100%

(Lavrakas, 2008).

For research question 1, the frequency of using Microsoft Excel was determined by the number of respondents who checked the five-point Likert Scale labeled as Always, Very Often, Sometimes, Rarely, and Never. The percentage of those who have available technological devices and access to the University's ICT facility was determined by the number of yes or no responses.

Formula:

$$P = f/N \times 100\%$$

Where,
P = percentage
f = frequency
N = number of respondents

Frequency distributions are the core components of statistical analytical methods, and they serve as the first step in analyzing survey results. Researchers use it to organize and summarize the survey data in a tabular format, analyze it, and identify outliers (extreme values) in the survey data set. (Lavrakas, 2008)

Mean. The mean is one of the measures of central tendency in statistics, along with the mode and median. Mean is the average of a given set of values and represents the equal distribution of values for a particular set of data (Aakash, 2021).

The general formula for the mean is the ratio of the total number of terms to the sum of all terms. Thus, it can be stated as,

Mean = Sum of the Given Data/Total Number of Data

To determine the arithmetic mean of a data set, the researchers must first add all of the data values (x) and then divide the sum by the total number of data values. Since $\sum$ is the symbol used to signify those values are to be summed, the researchers can obtain the mean ($\bar{x}$) using the following formula:

$$\bar{x} = \sum x/n$$

Weighted Mean. Each data point in a set is multiplied by a value based on some characteristic of whatever contributed to the data point in the weighted mean. Some data points contribute more "weight" than others to the final mean instead of each data point contributing equally (Carter, 2010).

Weighted mean was calculated using the formula:

$$w = \sum_{i=1}^{1} w_i x_i = \frac{1}{n} w_i$$

Where,
w = weighted average
n = number of terms to be averaged
w1= weights applied to x values
x1= data values to be averaged

Both statistical tools such as the mean and weighted mean were used to measure research question 2, which pertains to the degree of familiarity of the respondents with Microsoft Excel as to its existence, features, and purpose. Additionally, research question 3 aims to measure the level of proficiency of the respondents concerning basic, intermediate, and advanced skills.

The researchers interpreted the values for the degree of familiarity on Microsoft Excel using the scale below. The weighted mean ranges were adopted from Terano (2015).

Table 2
Degree of familiarity

Scale	Weighted Mean Range	Verbal Interpretation
5	4.50-5.00	Completely familiar
4	3.50-4.49	Very familiar
3	2.50-3.49	Moderately familiar
2	1.50-2.49	Slightly familiar
1	1.00-1.49	Not familiar at all

Meanwhile, the researchers interpreted the values for the level of proficiency on Microsoft Excel using the scale as follows. Similarly, the weighted mean ranges were adopted from Terano (2015).

Table 3
Level of proficiency

Scale	Weighted Mean Range	Verbal Interpretation
5	4.50-5.00	Expert
4	3.50-4.49	Advanced
3	2.50-3.49	Competent
2	1.50-2.49	Developing
1	1.00-1.49	Beginner

The weighted mean is a way of weighing the relative importance of each tally when determining an overall average. Compared to a simple average, weighted means provide more information because they do not require additional information other than the data needed to weigh each number (Robinhood, 2020).

The gathered data were evaluated through a series of procedures to arrive at the result of the study. The processes observed were as follows: a) tallying of responses or summarizing the data obtained, b) statistical interpretation, and c) verbal interpretation based on the table.

H. Ethical Consideration

Ethical considerations must be taken into account and the selection of appropriate research methods and techniques. As an 'insider researcher,' Fleming (2018), as cited by Zagwaard and Fleming (2018), faced several ethical dilemmas, including power imbalances and long-term relationships with participants. However, the principles of ethical research involving human participants must also be regarded.

Throughout the study, the researchers made sure that ethical considerations were being observed. The Department of Accountancy was notified of the researcher's intention to conduct a survey with the first-year Accountancy students through a letter. Respondents knew exactly what they were asked to do and how their answers were used. The respondents demonstrated a strong indication of consent, after which the researchers explained that they had the right to access or withdraw their information at any time. The data gathered in the survey were handled with the utmost secrecy by the researchers. Additionally, the researchers swore to keep the identities of respondents confidential or anonymous and avoid the use of self-identifying statements and information. Researchers were truthful in their interpretations, analyses, and reporting of the data they collected. Neither fabrication nor misrepresentation of information was tolerated.

4. Results and Discussion

Table 4 shows the profile of the respondents in terms of age, gender, and whether they enrolled in public or private school (senior high school education). Furthermore, it also presents the percentage and frequency distribution concerning whether the respondents have taken ICT subjects, such as Empowerment Technologies and Media and Information Literacy, and Microsoft Excel or Google Spreadsheet lessons. As shown in the table, of the total respondents (n=67), 19.4% (f=13) of them are 18 years old, 64.2% (f=43) are 19 years old, and 16.4% (f=11) of them are 20 years old.

Regarding the gender distribution, 70.1% (f=47) of the respondents are female, and 29.9% (n=20) are male. Meanwhile, 37.3% (f=25) were enrolled in a private school in senior high school, and 62.7% (f=42) came from a public school. Results also show that almost all of the respondents (97%, f=65) have taken the ICT subjects in their senior high school, while only two (3%) have not taken them. Of those who have taken the ICT subjects, 81.5% (f=53) of them have taken

Table 4
Profile of the respondents

Profile	Variable	Frequency (f)	Percentage (%)
Age	18 years old	13	19.4
	19 years old	43	64.2
	20 years old	11	16.4
Gender	Male	20	29.9
	Female	47	70.1
Has taken ICT subjects	Yes	65	97.0
	No	2	3.00
Has taken Google Spreadsheets/Microsoft Excel Lessons	Yes	53	81.5
	No	12	18.5

Google Spreadsheet/Microsoft Excel lessons, and 18.5% (f=12) of them have not.

The results presented in Table 5 depict the respondents' early exposure to Information and Communications Technology in terms of availability of technological devices, usage of Microsoft Excel, and access to the university's ICT facility. It has been found that all of the respondents, consisting of sixty-seven students, have available technological devices. Since the respondents were asked to mark all of the devices available to them, the total percentage does not add up to 100%. Results reveal that majority of the sample (95.5%, f=64) own a smartphone, 71.6% (f=48) of them possess laptops, desktop computer owners accumulate to 22.4% (f=15), while the least available device, a tablet, is used by the 6% (f=4) of the population.

A study undertaken by Essel et al., (2018) supports this result. According to the data analyzed, 84.7% of the respondents had smartphones while 15.3% owned tablets. In addition, they underlined that several respondents possessed multiple smart devices. Another study by Galanek et al., (2018) agrees with the result. While desktop computers and outdated tablets have been pushed out of the way, laptops and smartphones have taken their place as the most common digital devices used by students. According to their analysis, the percentages of students who have access to digital technology vary significantly, with smartphones (95%) and laptops (91%) leading the list and the newer, more expensive technologies like AR and VR headsets (4%) and 3D printers (3%) coming in last. Only 65 participants, which is less than one percent of the total, claimed that they did not have access to any of the four digital devices—laptops, desktops, hybrids, or smartphones—that their classmates consider to be most important to student success.

The results reveal that of those who participated in the survey, 91% (f=61) utilized Microsoft Excel, and the majority of them (39.3%, f=24) use this Microsoft software occasionally, while those who always use the software account for a total of 19.7% equivalent to 12 respondents. It is also pointed out that a total of 18 (29.5%) respondents often use the software, and the remaining percentage came from the seven respondents who use the same software rarely. This is agreed by the study of Spiech (2005) as cited by Palocsay et. al (2010) wherein he stressed the significance of being aware of Excel features and knowing when to use them, with pivot tables and query design being particularly useful. Business statistics have demonstrated, and management science professors have admitted, that Microsoft Excel is much preferred over more expensive applications for obtaining quantitative data (Fang & Tuladhar, 2006).

The findings conclude that most of the respondents (98.5%, f=66) are enrolled in a university with a presence of an ICT facility. Based on the results, however, more than half of the sample, or 53%, are not granted access to such an ICT facility. Meanwhile, among those who are allowed to use the ICT facility (47%, f=31), 29 (93.5%) of them use it for research purposes, 27 (87.1%) respondents use it for internet browsing, and 11 (35.5%) respondents use it for recreational purposes. With regard to the use of Microsoft products, 21 (67.7%) of them go to the ICT facility and engage with Microsoft Word, 16 (51.6%) with Microsoft Excel, and 15 (48.4%) with Microsoft PowerPoint.

According to Chaamwe and Shumba (2016), using ICT as an integral or mediated tool for certain teaching or learning activities to satisfy specific instructional goals can be termed as ICT integration. The digital gap still exists in classrooms despite the fact that so many children lack access. Financial constraints on school districts and states exacerbate the difficulty of integrating technology. Cost, infrastructure, and technological advancement vary across the nation's schools. The majority of technology utilized in schools consists of computer labs where classes can plan periods for kids to use computers, or other schools have three to four desktop computers for classroom and teacher access. Some school districts, however, are able to give students with 1:1 access to technology, but not all children have this opportunity. In some school districts, it will take many years until every classroom is

Table 5
Exposure of the respondents to information and communication technology (ICT)

Profile	Variable	Frequency (f)	Percentage (%)
Availability of Technological Devices	Yes	67	100.00
	No	0	0.00
Available Technological Devices	Smartphone	64	95.5
	Tablet	4	6.0
	Laptop	48	71.6
	Desktop Computer	15	22.4
Usage of Microsoft Excel	Yes	61	91.0
	No	6	9.00
Frequency of Using Microsoft Excel	Always	12	19.7
	Often	18	29.5
	Occasionally	24	39.3
	Rarely	7	11.5
Availability of University ICT Facilities	Yes	66	98.5
	No	1	1.50
Accessibility to University ICT Facilities	Yes	31	47.0
	No	35	53.0
Activities Done in University ICT Facilities	Internet browsing	27	87.1
	Research purposes	29	93.5
	Word processing (Microsoft Word)	21	67.7
	Spreadsheet applications (Microsoft Excel)	16	51.6
	Graphics presentation (Microsoft PowerPoint)	15	48.4
	Recreational purposes	11	35.5

equipped with 1:1 technology (Al-Bataineh, 2016).

Table 6 presents the degree of familiarity of first-year Accountancy students with Microsoft Excel in terms of existence, features, and purpose. The results reveal that the respondents are most familiar with the purpose of Microsoft Excel. It obtains the highest value of 4.61 weighted means, interpreted as completely familiar. The results also reveal that the degree of familiarity with existence and features has a weighted mean of 4.00 and 4.47, respectively. These indicators are interpreted as very familiar.

As to the degree of familiarity with the existence of Microsoft Excel, the respondents are both completely familiar with that Microsoft Excel is present in Microsoft Office Suite (wm = 4.54) and that it is accessible to a broad scope of users (wm = 4.66). It has been found that the respondents are very familiar that Microsoft excel has several versions (wm = 3.70) and that it has a free online version that saves spreadsheets in OneDrive (wm = 4.22). The free online Excel classes are only moderately familiar to the respondents (wm = 2.87).

In terms of the degree of familiarity with the features of Microsoft Excel, the respondents are found to be completely familiar with the basic parts of Excel Window (wm = 4.55) and the graphical features available in Excel (wm = 4.63). The database functions to perform simple operations (wm = 4.30), functions available in excel for simple and complex calculations (wm = 4.49), and the availability workbook in an Excel file (wm = 4.36) are known to be very familiar among the respondents.

Concerning the degree of familiarity relating to the purpose of Microsoft Excel, the results show that the respondents are completely familiar with the primary objective of Microsoft Excel of organizing and categorizing data (wm = 4.72), its purpose-built for office and business (wm = 4.70), and its convenience in storing various types of data (wm = 4.78). The respondents are very familiar with the increasing population of business discipline educators using spreadsheets (wm = 4.40) and accounting and finance departments using spreadsheet functions (wm = 4.48).

Microsoft Excel is a popular software used for spreadsheet applications. Microsoft estimated that 1 out of 5 adults is using Excel. Competitor programs such as Google Sheets have arisen, yet Microsoft Excel remained the leading tool for understanding simple and complex ideas. Also, employers have often included having a working knowledge of Microsoft Excel in job requirements. Knowing how to use Microsoft Excel is a must because it is one of the fundamental digital skills one must attain (FutureLearn, 2020). Skills in Microsoft Excel are considered an asset when applying for a job, most especially when the employer also uses the same spreadsheet application. Based on the study conducted by Adams et. al (2013), they have found that employers from 35 relevant job websites prefer applicants with familiarity with Excel over other statistical software. A very few job advertisements were found to be requesting familiarity with Microsoft Excel as open alternative software, which means that a significant number of employers are more likely to select people with experience in using Excel sheets.

Since Microsoft Excel is accessible on both online and offline platforms, more people became aware of its existence. It offers a wide variety of versions that fit the needs of its users, such as business people, students, educators, and others. Many students are already familiar with spreadsheets, but complex outputs still confuse them. With that, instructors are enthusiastic about establishing software training in Microsoft Excel (Warner & Meehan, 2001).

Microsoft Excel is also known to medical professionals. Clinicians and biomedical scientists considered their familiarity with Excel to use the spreadsheet application to easily create survival curves. The use of Excel lessened their need of understanding the sophisticated mathematical operations and added great lengths to the convenience of preparing survival curves within the familiar boundaries of Excel (Khan, 2006).

Table 6
Degree of familiarity with excel

Existence	Weighted Mean	Interpretation
Microsoft Office suite has a spreadsheet program called Microsoft Excel.	4.54	Completely familiar
Microsoft Excel is accessible to a broad scope of users.	4.66	Completely familiar
Microsoft Excel has several versions (Microsoft 365 ProPlus or Office Home or Student).	3.70	Very familiar
Microsoft Excel has a free online version, saving spreadsheets in OneDrive.	4.22	Very familiar
Microsoft offers free Excel classes online through edX for those interested in developing fundamental and advanced Excel skills.	2.87	Moderately familiar
Mean	**4.00**	**Very familiar**
FEATURES		
Graphical features allow users to represent data in charts, shapes, SmartArt, clip arts, and images.	4.55	Completely familiar
Database functions are intended to perform simple operations on data that are structured in an orderly manner.	4.30	Very familiar
Functions available in Microsoft Excel enable users to perform simple and complex calculations (SUM, COUNT, AVERAGE, MATCH, etc.).	4.49	Very familiar
The basic parts of the Excel Window are Cell, Sheet Tabs, Formula Bar, Toolbar, etc.	4.63	Completely familiar
There may be one or more worksheets in every Excel file known as a "workbook."	4.36	Very familiar
Mean	**4.47**	**Very familiar**
PURPOSE		
The primary objective of Microsoft Excel is to organize and categorize data logically.	4.72	Completely familiar
Microsoft Excel is one of the Microsoft Office applications purpose-built for office or business use.	4.70	Completely familiar
Business discipline educators increasingly use spreadsheets to facilitate functional understanding and modeling practice for math-intensive topics.	4.40	Very familiar
Accounting and finance use in-built spreadsheet functions, including time value of money, asset valuation and stochastic processes, min-max problems, amortization tables, and budgeting.	4.48	Very familiar
A spreadsheet is a convenient way to store various data types such as financial, customer and product data.	4.78	Completely familiar
Mean	**4.61**	**Completely familiar**

Table 7
Basic skills in Microsoft excel

Create and Save a Workbook	Weighted Mean	Interpretation
Create a new blank workbook	4.42	Advanced
Save the workbook with a file name	4.51	Expert
Save As the workbook with another format	4.07	Advanced
Mean	**4.33**	**Advanced**
Enter Cell Values and Labels		
Enter a cell value	4.54	Expert
Enter a cell value with Autofill	4.09	Advanced
Edit, Clear, Copy cell contents	4.46	Advanced
Insert and Delete cell contents	4.48	Advanced
Find and Replace cell contents	4.13	Advanced
Use Autocorrect to correct cell contents	3.57	Advanced
Mean	**4.21**	**Advanced**
Modify a Worksheet		
Move and Copy multiple cells	4.24	Advanced
Specify and Use ranges	3.73	Advanced
Mean	**3.99**	**Advanced**
Use Formulas		
Enter a formula in a cell	3.88	Advanced
Edit, move, or copy a formula	4.06	Advanced
Use an absolute cell reference	3.22	Competent
Use a mixed absolute and relative cell	3.10	Competent
Name a cell or range	3.54	Advanced
Correct a calculation or formula error	3.54	Advanced
Mean	**3.56**	**Advanced**
Use a Function		
Enter a function	3.61	Advanced
Use the AUTOSUM function	3.90	Advanced
Use the COUNT, MAX, MIN, Average function	3.42	Competent
Mean	**3.64**	**Advanced**
Modify Page Layout		
Format numbers and text	3.81	Advanced
Format rows and columns	3.84	Advanced
Use Format Painter and Auto Format	3.34	Competent
Mean	**3.66**	**Advanced**
Printing and Publishing Documents		
Prepare worksheet for printing	3.37	Competent
Preview using Page Layout view	3.63	Advanced
Print selections, multiple copies	3.36	Competent
Select printer and print options	3.76	Advanced
Publish a worksheet by email	3.43	Competent
Save a worksheet as a PDF file	4.13	Advanced
Mean	**3.61**	**Advanced**
Create a Chart		
Create a simple chart from worksheet data	3.90	Advanced
Customize the chart type	3.75	Advanced
Edit chart titles	3.81	Advanced
Mean	**3.82**	**Advanced**
Overall Weighted Mean	**3.85**	**Advanced**

Undergraduate students have an increased level of familiarity with Microsoft Excel – not only because of its extensive availability but because of its built-in features that are more user-friendly compared to other statistical software packages (Lobo et al., 2013). On top of that, the features of Microsoft Excel that make it ideal for users include its flexibility in handling data, built-in mathematical functions, and instant options for charting data (Brown, 2000).

Table 7 shows the outcome for the level of proficiency of the first-year Accountancy students in the use of Microsoft Excel in terms of basic skills. The results reveal that the respondents have advanced proficiency with regard to Microsoft Excel's sets of basic skills obtaining an overall weighted mean of 3.85. Specifically, the results indicate that the respondents possess advanced proficiency under the Create and Save a Workbook skill category with a mean of 4.33. Meanwhile, the Entering Cell Values and Labels task accumulated a mean of 4.21,

interpreted as advanced proficiency on the part of the respondents. Under the Modifying a Worksheet skill category, it has been indicated that the respondents obtained advanced proficiency as represented by the mean of 3.99.

With regard to the Usage of Formulas and Functions, the respondents showed advanced proficiency for both tasks with a mean of 3.56 and 3.64, respectively. As per the Modifying Page Layout skill category, data highlights the advanced proficiency that the respondents possessed, earning a mean of 3.66. Moreover, the respondents' proficiency in the skill category of Printing and Publishing Documents was interpreted as advanced, owning a mean of 3.61. For the last beginner skills category, which is Creating a Chart, it has been revealed that the respondents acquired an advanced proficiency flaunting a 3.82 mean.

According to the study by McCloskey and Bussom (2013), it would be impossible to utilize Excel effectively as a medium

for communicating higher-level principles if the people involved are not competent with basics such as data entry and manipulation, formula creation, and number and text formatting. The basic perceptions of many college students regarding their computer competency are influenced not only by passing a mandated test but also by their earlier computer experiences. College students who are obliged to take an introductory computer applications course often feel that the course is unnecessary because they have already completed a K-12 assessment or taken a computer course in high school (Grant et al, 2009).

On the other hand, the study by Rubin and Abrams (2015), revealed that many students that attend their first year of college without the basic computer abilities that are essential for college and the workforce. It may be argued that it would be advantageous to start teaching many of these spreadsheet and presentation skills in high school, with the aim of fostering basic computer literacy before students enroll in college. Even basic spreadsheet activities necessitate a moderate level of skill due to the tool's extensive capabilities, which need repeated practice in order for the user to retain these operations in memory. Therefore, it is not unexpected that the plurality of students could do only two of the five basic spreadsheet jobs and performed intermediate and advanced Microsoft Excel tasks poorly (Grant et al, 2009). This is contrary to the result of this set of beginner skills as it shows that the respondents acquired advanced proficiency in all of the items.

Table 8 presents the results regarding the proficiency level of

Table 8
Intermediate skills in Microsoft excel

Maintain a Large Worksheet	Weighted Mean	Interpretation
Split window horizontally/vertically	3.24	Competent
Freeze/unfreeze headings	3.19	Competent
Add, name, order worksheets	3.75	Advanced
Use date in a formula	3.19	Competent
Mean	**3.34**	**Competent**
Work with Multiple Worksheets		
Navigate among sheets in a workbook	3.42	Competent
Edit cell in two worksheets at a time	2.84	Competent
Add, name and order worksheets	3.57	Advanced
Open, arrange multiple windows in a worksheet	3.04	Competent
View two worksheets side by side	2.87	Competent
Move or copy a worksheet to another workbook	3.25	Competent
Create a link between two workbooks	2.66	Competent
Create a summary worksheet that recaps	2.57	Competent
Mean	**3.03**	**Competent**
Work with Data		
Group/ungroup data	2.91	Competent
Import data from another database to worksheet	2.93	Competent
Add hyperlink to another document in worksheet	2.96	Competent
Mean	**2.93**	**Competent**
Advanced Chart Skills		
Create a new chart (full range of chart options)	3.16	Competent
Move or resize an existing chart in a worksheet	3.09	Competent
Use Design Tab to customize type and style	3.30	Competent
Use Layout Tab to customize chart elements	3.28	Competent
Edit chart titles	3.51	Advanced
Format chart elements (titles, categories, values)	3.45	Competent
Add graphic image and textbox to a worksheet	3.39	Competent
Add clip art and WordArt to a worksheet	3.31	Competent
Add a SmartArt object to a worksheet	3.21	Competent
Use Sparkline formatting in a worksheet	2.72	Competent
Mean	**3.24**	**Competent**
Work with Data Lists		
Create a list	3.34	Competent
Add records using a data form	2.91	Competent
Edit and find records using a data form	2.91	Competent
Sort records on single and multiple fields	2.79	Competent
Use AutoFilter to hide records	2.52	Competent
Create a custom filter for a list	2.70	Competent
Delete a comment from a document	3.06	Competent
Mean	2.89	Competent
Document and Audit a Worksheet		
Add, review, edit and print comments	2.87	Competent
Use Watch Window to find errors in a worksheet	2.28	Developing
Use Auditing feature to find errors in a worksheet	2.27	Developing
Mean	2.47	Developing
Printing Options		
Specify margins, orientation, etc. on Page Setup	3.07	Competent
Preview page breaks	2.94	Competent
Print formulas only	2.43	Developing
Mean	**2.82**	**Competent**
Overall Weighted Mean	**2.96**	**Competent**

first year Accountancy students with respect to intermediate skills in Microsoft Excel. As revealed in the table, the respondents have a competent proficiency level when performing intermediate skills in the said spreadsheet application, garnering an overall weighted mean of 2.96. With respect to Maintaining a Large Worksheet, the respondents possess a competent proficiency with a weighted mean of 3.34. Meanwhile, the results show that they have a competent proficiency level with respect to Working with Multiple Worksheets (wm=3.03). When executing the skills under the Work with Data, it shows that the respondents are competent enough, having a weighted mean of 2.93.

Moreover, when performing Advanced Chart Skills, they also possess a competent proficiency (wm=3.24). Based on the

results, the respondents are competent enough in Working with Data Lists with a weighted mean of 2.89. Under the Document and Audit a Worksheet skill category, the results indicate that they have a developing proficiency level, garnering a weighted mean of 2.47. Lastly, when performing the Printing Options skills in Microsoft Excel, the respondents are competent (wm=2.96).

Many undergraduate students in public universities identify themselves to have perceived intermediate skills in spreadsheet applications as they have been enrolled in introductory business computer applications courses, but cannot completely perform moderate Microsoft Excel tasks. The perceived level of Microsoft Excel skills of students shows an observable discrepancy against their actual performance (Grant et al.,

Table 9
Advanced skills in Microsoft excel

Using Advanced Functions	Weighted Mean	Interpretation
Define a named cell or range	2.66	Competent
Use a named range in a formula	2.43	Developing
Use Insert Function to create a new function	2.61	Competent
Use Function Library to create a new function	2.31	Developing
Use a conditional (IF) function	2.52	Competent
Create a nested condition formula	2.28	Developing
Use Date and Time functions	2.67	Competent
Use Logical, Financial, Math, Statistical functions	2.61	Competent
Use Information functions	2.45	Developing
Use the HLOOKUP and VLOOKUP functions	2.07	Developing
Mean	**2.46**	**Developing**
Manage Data		
Create a drop-down list to facilitate data entry	2.39	Developing
Add data validation to a worksheet	2.30	Developing
Create a group or outline of data in a worksheet	2.40	Developing
Ungroup or clear a group	2.66	Competent
Convert text to columns in a worksheet	2.31	Developing
Add Password protection to a worksheet	2.27	Developing
Add Password protection to a workbook	2.30	Developing
Lock and unlock a worksheet cell	2.27	Developing
Mean	**2.36**	**Developing**
Conditional Formatting		
Use conditional formatting to format a cell	2.40	Developing
Create a new conditional formatting rule	2.30	Developing
Clear conditional formatting from a cell	2.37	Developing
Create Sparkline formatting	2.18	Developing
View and apply a theme to a cell	2.48	Developing
Mean	**2.35**	**Developing**
Work with Pivot Tables and Pivot Charts		
Create a Pivot Table	1.96	Developing
Modify, format or delete a Pivot Table	2.00	Developing
Create a PivotChart Report	1.97	Developing
Modify a PivotChart Report	2.01	Developing
Sort and filter PivotTable data	1.94	Developing
Create a Slicer to filter date in a PivotTable	1.88	Developing
Mean	**1.96**	**Developing**
Use Analytical Add-ins		
Install an Add-in for Excel	2.28	Developing
View and manage Add-ins for Excel	2.21	Developing
Use GoalSeek to ask "What-if" question	1.91	Developing
Use Data Analysis	2.00	Developing
Use Scenario Manager	1.79	Developing
Produce a summary report showing scenarios	1.81	Developing
Use Solver to conduct analysis	1.76	Developing
Mean	**1.97**	**Developing**
Macro and VBA Editing		
Create and modify a macro command	1.93	Developing
Assign a macro to a toolbar	1.96	Developing
Save a Workbook with macros	1.88	Developing
Debug a macro using step mode	1.85	Developing
Mean	**1.90**	**Developing**
Overall Weighted Mean	**2.17**	**Developing**

2009). Students were assessed as exceeding employers' requirements when it comes to Internet research and the use of Microsoft Word. However, the students indicate a gap in showing competency in spreadsheet knowledge such as Microsoft Excel (Marcarelli & Carter, 2009).

Microsoft Excel classes were employed in organizations using the corporate university model. It emphasizes the assessment and training of basic skills and intermediate skills, while advanced skills were incorporated minimally. High-performing employees who passed the Microsoft Excel practice exam are encouraged to join the intermediate course. The intermediate level focused on using formulas, charts, graphs, and data tables, maintaining multiple worksheets within a workbook, and importing information from external sources (Podeschi, 2016). Adults aging from 35 and older, who use a computer in their daily and professional tasks, are most ideal to have reached an intermediate skill level in Microsoft Excel. These individuals have already attained mastery of using basic functions, creating tables and graphs, referencing, and formatting cells (Newcomer, 2018).

On the other hand, Table 9 shows the results concerning the proficiency level of first-year Accountancy students with respect to advanced skills in Microsoft Excel. Results indicate that the respondents have a developing proficiency level when executing the advanced skills, showing an overall weighted mean of 2.17. Regarding the Use of Advanced Functions, the respondents are concluded to have a developing proficiency with a weighted mean of 2.46. Meanwhile, they also have a developing proficiency level (wm=2.36) in Managing Data. Similarly, the respondents possess a developing proficiency in the Conditional Formatting skills category, showing a weighted mean of 2.35.

Furthermore, the respondents have a developing proficiency level in Working with Pivot Tables and Pivot Charts skills, evidenced by a weighted mean of 1.96. When performing the Analytical Add-ins skills in Microsoft Excel, the results reveal that the respondents are also in the developing proficiency level, having a weighted mean of 1.97. Lastly, under the Macro and VBA Editing skills category, they are likewise in the developing stage with a weighted wean of 1.90.

Spreadsheet programs are more complex and sophisticated than word processing and presentation programs. In general, high school computer courses do not offer students comprehensive instruction in spreadsheet skills to answer business problems (Tesch et al., 2006). Because the tool has so much functionality, even basic spreadsheet operations require a moderate level of proficiency. Basic tasks require frequent use for the user to commit these tasks to memory. The study by Grant et al. (2009) revealed that most student-respondents could only complete two of the five basic spreadsheet skills and tasks and completed the moderate and advanced Microsoft Excel skills and tasks incorrectly.

Further findings in the study conducted by Grant et al. (2009) indicated a discrepancy between the respondents' high perceived proficiency level in spreadsheet applications and the assessment performance. Sixty-nine percent of the respondents rated their spreadsheet skills proficiency average or above.

However, based on the assessment results, seven out of nine could not perform the basic, moderate, and especially, the advanced tasks in Microsoft Excel. Meanwhile, O'Donnell (2005) reported on a distressing field trial in which students studying business intelligence were required to retrieve and evaluate data from an OLAP cube utilizing pivot tables (one of the advanced skills). The results showed that over half of the them failed two of the three simple tasks.

5. Conclusions and Recommendations

A. Conclusions

In contemporary times, employers prefer hiring employees who have prior knowledge in Microsoft Excel as a basic accounting software. This study generally aimed evaluating the proficiency level of the first-year Bachelor of Science in Accountancy students of Mindanao State University – General Santos. Many undergraduate students in public universities identify themselves to have perceived intermediate skills in spreadsheet applications as they have been enrolled in introductory business computer applications courses, but cannot completely perform moderate Microsoft Excel tasks. The perceived level of Microsoft Excel skills of students shows an observable discrepancy against their actual performance (Grant et al., 2009).

The researchers have found out that the respondents were very familiar with the existence and features of Microsoft Excel and were completely familiar with its purpose. The first-year Accountancy students are generally advanced in terms of basic skills in Microsoft Excel, have competent proficiency level concerning the intermediate skills in Microsoft Excel, and a developing proficiency level when performing advanced Microsoft Excel skills and tasks. It can be concluded that the first-year Bachelor of Science in Accountancy students of Mindanao State University – General Santos must further strengthen their foundation in Microsoft Excel to be equipped and competitive in the pursuit of professional services.

B. Recommendations

The researchers come up with the following recommendations based on the findings and conclusions of the study:

1. The researchers recommend that the Department of Accountancy should further review, improve and strengthen its curriculum to equip accounting students with in-depth knowledge and skills using Microsoft Excel. Specifically, the Department should thoroughly review the concerned subject or course syllabus (i.e., BIT101 IT Application Tools in Business), revisit the teaching methods or techniques, and encourage using necessary tools (e.g., Microsoft Excel, Google Spreadsheet). The researchers further suggest that the concerned subject should immerse more the Accountancy students in seat works and activities exploring the concepts and applying the skills in Microsoft Excel.
2. The researchers suggest that the Department of

Accountancy should emphasize teaching and equipping accounting students with intermediate and advanced Microsoft Excel skills. The current courses offered under the Accountancy program of Mindanao State University – General Santos include the IT Application Tools in Business (BIT101) and Accounting Information Systems (BIT102). These courses can be best enhanced by collaborating with the Information and Communication Technology Office of the university, conducting laboratory instruction and application, and on-the-job training to commit to honing the Microsoft Excel skills of the students.

3. The researchers recommend that future researchers should conduct a descriptive-correlational study, testing the relationship between the proficiency level in Microsoft Excel and the availability of technological devices or any possible variables. In addition, they may consider identifying and ranking the top factors influencing the proficiency level of the target respondents.

4. The researchers recommend that future researchers should consider evaluating the proficiency level and degree of familiarity of the Accountancy students with the auditing aspects and functions of Microsoft Excel.

5. The researchers suggest that future researchers should consider selecting the penultimate students or the graduating students (i.e., fourth-year) for the Accountancy program at Mindanao State University – General Santos to evaluate their proficiency level and readiness. It will assist in achieving the program's objective in producing Accountancy graduates that employ technological skills using business tools – providing financial and non-financial information, preparing reports, and making sound financial decisions (CHED Memorandum Order No. 27, Series of 2017). In addition, this will incorporate training students from the departments of Human Resources Management, Economics, and Marketing in applying technical knowledge and skills in their future professional endeavors to produce competent human resources in order to be consistent with the university's mission.

6. The researchers suggest that future researchers should opt for other sampling techniques, increase sample size, or consider using statistical treatment, such as inferential statistics.

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