CAP 102 Capstone Project and Research II
First Edition, 2021

Learning Module Development Team

Assigned Chapter	Title	Author/s
Chapter 1	Writing a Results and Discussion Lesson 1: Presentation of Results in Tabular Form Lesson 2: Discussion of the Results Lesson 3: Interpreting the results	*Geoffrey S. Sepillo*
Chapter 2	Writing a Recommendations Lesson 1: Formulating a recommendations	

Course Overview

Introduction

This course aims to discuss the results and discussion and formulation of the recommendations. This course contains a description about the main findings of your research, whereas the discussion section interprets the results for readers and provides the significance of the findings. This module presents also the importance of the recommendations in capstone project and how to formulate recommendations.

Course General Objectives

At the end of the course, the students are expected to:

1. Present, analyze and interpret the data;
2. Formulate recommendations
3. Write a complete capstone project.

Course Details

- *Course Code:* CAP 012
- *Course Title:* Capstone Project and Research II
- *No. of Units:* 3 units
- *Classification:* Lecture-based
- *Pre-requisite / Co-Requisite:* None
- *Semester and Academic Year:* Second Semester, School Year 2021- 2022
Schedule: Tuesday and Thursday, 7:30 AM – 9:00 AM, Monday, Wednesday & Friday, 4:00 PM- 5:00 PM, Friday, 7:30- 10:30 AM
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- *Consultation*
    Day: Friday
    Time: 1:00-4:00

Table of Contents

Page

Writing a Results and Discussion

Formulating a Recommendations

Chapter 1

Writing a Results and Discussion

Chapter 1

Writing a Results and Discussion

Introduction

The results section is one of the most critical parts of your research paper. Here you present the main results of your research to your readers. The results section presents the actual data accumulated during your experiments. In essence, the results section, presenting your results, answers the "what?" question (just as the Introduction answers the "why?" question and the Methods section answers the "how?" question). Thus, the results section plays a crucial role in highlighting the significance of the study.

Specific Objectives

At the end the chapter, the students will be able:
1. Present the significant results of the study;
2. Use tabular form in the presentation of the results of the study; and
3. Interpret the results.

Lesson 1

Presentation of results in Tabular Form

The purpose of the results section is to present the data obtained after the study in an objective, systematic and concise manner, using text supplemented with illustrations. You should show results only; interpretations or conclusions should not be part of this section. Therefore, theoretically, this is one of the shortest sections, but it can also be one of the most challenging sections since it is often difficult for researchers to limit themselves to presenting solid facts: they tend to include the explanations and conclusions they have drawn from the results. The above can make the Results section subjective, ambiguous, and confusing for readers. The lack of novelty is one of the main reasons to reject a paper. Since the Results section shows the significance or novelty of the research, it is critical that you learn how to write this section correctly.

Readers generally are first interested in new results of the paper. Writing results section contains new results from research investigation but is difficult in comparison to writing methods section as the latter section is already written at the proposal writing stage and requires only language change. Results section is heart of the paper and its completion with methods section already written; implies more than 50% of paper or thesis writing work and it became 70% paper writing work with writing of discussion section. Results writing section should be organized into different segments of text and visuals such as tables, figures, algorithms, etc. In order to start writing results section, we make a beginning with data analysis and its presentation of key findings as summarized results to yield an answer to the research question that study attempted. Answers to the questions and interpretations are presented in the discussion section. Data analysis is primarily linked with writing text part of the results and discussion of results. This is a desired sequence to work with in paper writing. The attempt of working in such a sequence provides a convenient approach to young researchers or post graduate/under graduate medical students to gain confidence in writing a research paper or thesis or a research report.

Basics of Tabular Presentation

Tabulation, i.e., tabular presentation of data is a method of presentation of data.

It is a systematic and logical arrangement of data in the form of rows and columns with respect to the characteristics of data.

It is an orderly arrangement which is compact and self-explanatory.

Its objective is to: Present the data in a simple form, economies (save) space, facilitate comparison, facilitate statistical analysis, reduce the chances of errors.

Objectives of Tabulation

Following are the objectives of tabulation:

- To simplify the complex data
- To bring out essential features of the data
- To facilitate comparison
- To facilitate statistical analysis
- Saving of space

Main Parts of a Table

Table number

Table number is the very first item mentioned on the top of each table for easy identification and further reference.

Title

Title of the table is the second item that is shown just above the table.

It narrates the contents of the table, hence it has to be very clear, brief, and carefully worded.

Captions or Column headings

At the top of each column in a table, a column designation/head is given to explain the figures of the column.

This column heading is known as 'caption'.

Stubs or Row headings

The title of the horizontal rows is known as 'stubs'.

Body of the table

It contains the numeric information and reveals the whole story of investigated facts. Columns are read vertically from top to bottom and rows are read horizontally from left to right.

Example 1:

Table 1 shows the evaluation of the respondents on the software quality of the Mobile Controlled Door Lock in terms of Functionality Suitability.

Table 1
Evaluation of the respondents on the Software Quality of the
Mobile Controlled Door Lock in terms of
Functionality Suitability

FUNCTIONAL SUITABILITY	IT Experts		Rank	Faculty		Rank
	Mean	Descriptive Rating		Mean	Descriptive Rating	
1. The application covers all the specified tasks and user objectives	4.80	Excellent	1	4.20	Excellent	1
2. The application provides the correct results with the needed degree of precision.	4.20	Excellent	2	4.00	Very Good	2.5
3. The functions facilitate the accomplishment of specified tasks and objectives.	4.00	Very Good	3	4.00	Very Good	2.5
Grand Mean	**4.33**	**Excellent**		**4.07**	**Very Good**	

Example 2:

Table 1 shows the evaluation of the respondents on the hardware characteristics of the Mobile Controlled Door Lock in terms of Functionality Suitability.

Table 2
Evaluation on the hardware characteristics of the Mobile Controlled
Security Door Lock in terms of Ergonomics

ERGONOMICS	IT Experts		Rank	Faculty		Rank
	Mean	Descriptive Rating		Mean	Descriptive Rating	
1. Ease of operation.	4.40	Excellent	1	4.23	Excellent	1
2. Provision of comfort and convenience.	3.80	Very Good	2.5	3.83	Very Good	3
3. User- friendliness.	3.80	Very Good	2.5	3.93	Very Good	2
Overall Weighted Mean	**4.00**	**Very Good**		**4.00**	**Very Good**	

References

Hayward, A. (2017). INFOGRAPHIC: 5 Differences between the results and discussion sections. https://www.editage.com/insights/5-differences-between-the-results-and-discussion-sections.

Labani, S. & Wadhwa, K. & Asthana, S. (2017). Basic Approach to Data Analysis and Writing of Results and Discussion Sections. *Journal of Medical Sciences. Volume 3.* Issue 3.pp 6-15.

Sacred Heart University (n.d). Organizing Academic Research Papers: 8. The Discussion. https://library.sacredheart.edu/c.php?g=29803&p=185933

Activity Sheet

Answer the following questions:

1. Discuss the significance of the presentation of findings/ results in tabular form.

   _____
   _____
   _____
   _____
   _____
   _____
   _____

2. The IT experts unanimously evaluated the system highly acceptable as to perceived usefulness (3.56, rank 1); perceived ease of use (3.50, rank 2); intention to use (3.44, rank 3); and actual use (3.38, rank 4). The computed overall weighted mean on the level of acceptability was 3.47 with a descriptive rating of highly acceptable.

Lesson 2

Writing a discussion

The purpose of the discussion is to interpret and describe the significance of your findings in light of what was already known about the research problem being investigated, and to explain any new understanding or fresh insights about the problem after you've taken the findings into consideration. The discussion will always connect to the introduction by way of the research questions or hypotheses you posed and the literature you reviewed, but it does not simply repeat or rearrange the introduction; the discussion should always explain how your study has moved the reader's understanding of the research problem forward from where you left them at the end of the introduction.

Papers usually end with a concluding section, often called the "Discussion." The Discussion is your opportunity to evaluate and interpret the results of your study or paper, draw inferences and conclusions from it, and communicate its contributions to science and/or society. Use the present tense when writing the Discussion section. • In the Discussion section of a research paper, you should evaluate and interpret the implications of study results with respect to your original hypotheses. It is also where you can discuss your study's importance, present its strengths and limitations, and propose new directions for future research. • In other types of papers, such as essays or reaction papers, the Discussion is where to summarize the key points or themes in your paper and reflect on previous statements and their broader connections.
Importance of a Good Discussion

Importance of discussion in research paper

The discussion section in the research section has great significance:

- It is the section in a research paper that enables you to showcase your critical thinking skills. As the discussion is the section in a research paper where you need to critically think about the problem and provide a unique solution for the same.

- Discussion enables you to explain the meaning and purpose of the investigation. It is through discussion you by providing evidence can demonstrate the signification of the problem.

- This section in the research paper further allows you to analyze the further scope of improvement in the research process.

- Through writing a discussion paper, you can easily demonstrate the way findings or conclusions drawn from the investigation which you are performing on a specific topic will help in filling the knowledge gap.

- By writing a good discussion in academic papers you can easily encourage the reader to critically think about the problem.

Basic Rules of Writing Discussion

- You should try to avoid repetition of sentences
- You need to state your opinion clearly.
- Avoid the utilization of technical words or sentences.
- First, you should provide interpretation and then have a logical about the same in a research paper.
- The subheadings which you can use for organizing the discussion in a systematic manner. In addition to this, you can use themes for presenting your findings in a systematic manner. The use of themes for presenting information will help you to make reports presentable and easily understandable by the reader.

Example 1:

Table 1 shows the evaluation of the respondents on the software quality of the Mobile Controlled Door Lock in terms of Functionality Suitability.

Table 1
Evaluation of the respondents on the Software Quality of the
Mobile Controlled Door Lock in terms of
Functionality Suitability

FUNCTIONAL SUITABILITY	IT Experts		Rank	Faculty		Rank
	Mean	**Descriptive Rating**		**Mean**	**Descriptive Rating**	
4. The application covers all the specified tasks and user objectives	4.80	Excellent	1	4.20	Excellent	1
5. The application provides the correct results with the needed degree of precision.	4.20	Excellent	2	4.00	Very Good	2.5
6. The functions facilitate the accomplishment of specified tasks and objectives.	4.00	Very Good	3	4.00	Very Good	2.5
Grand Mean	**4.33**	**Excellent**		**4.07**	**Very Good**	

The IT Experts evaluated Excellent on the application covers all the specified tasks and user objective with a mean of 4.80 (rank 1). On the other hand, they evaluated Very Good on the functions facilitate the accomplishment of specified tasks and objectives with a mean of 4.00. The computed grand mean on the evaluation of the respondents on the software quality of the Mobile Controlled Door Lock in terms of Functionality Suitability was 4.33.

The Faculty evaluated Excellent on the application covers all the specified tasks and user objective with a mean of 4.20 (rank 1). On the other hand, they evaluated Very Good on the application provides the correct results with the needed degree of precision

and functions facilitate the accomplishment of specified tasks and objectives and with a mean of 4.00 (rank 2.5).

Example 2:

Table 1 shows the evaluation of the respondents on the hardware characteristics of the Mobile Controlled Door Lock in terms of Functionality Suitability.

Table 2
Evaluation on the hardware characteristics of the Mobile Controlled
Security Door Lock in terms of Ergonomics

ERGONOMICS	Mean	Descriptive Rating	Rank
4. Ease of operation.	4.23	Excellent	1
5. Provision of comfort and convenience.	3.83	Very Good	3
6. User- friendliness.	3.93	Very Good	2
Overall Weighted Mean	**4.00**	**Very Good**	

The respondents evaluated Excellent on the ease of operation with a mean of 4.23 while they Very Good on the provision of comfort and convenience with a mean of 3.83 (rank 3). The evaluation of the respondents on the hardware characteristics of the Mobile Controlled Door Lock in terms of Functionality Suitability is 4.00, interpreted as Very Good.

References

American Psychological Association. (2020). Publication manual of the American Psychological Association (7th ed.). https://doi.org/10.1037/0000165-000.

Hayward, A. (2017). INFOGRAPHIC: 5 Differences between the results and discussion sections. https://www.editage.com/insights/5-differences-between-the-results-and-discussion-sections.

Labani, S. & Wadhwa, K. & Asthana, S. (2017). Basic Approach to Data Analysis and Writing of Results and Discussion Sections. *Journal of Medical Sciences. Volume 3.* Issue 3.pp 6-15.

Sacred Heart University (n.d). Organizing Academic Research Papers: 8. The Discussion. https://library.sacredheart.edu/c.php?g=29803&p=185933

Lesson 3

Interpreting the Results

The role of the interpretation is to provide the reader with some sort of analysis of the results of the review.

The interpretation of results should include a discussion of the evidence gathered. This includes aspects of validity, strengths and weaknesses of the evidence, possible sources of bias that may be present in the included studies, and the potential bias of the review. In addition, it should provide the reader with some understanding of the implications of the results for healthcare providers and offer suggestions for future research.

According to the Cochrane Handbook, the interpretation of results section should include:

- Information on all important outcomes, including adverse outcomes
- The quality of the evidence for each of these outcomes, as it applies to specific populations, and specific interventions.
- Clarification of the manner in which particular values and preferences may bear on the balance of benefits, harms, burden and costs of the intervention.

Example 1.

Table 1
Assessment of the Respondents on the Online Enrollment System of
Nueva Ecija University of Science and Technology
in terms of Portability

Item Statement	Weighted Mean	Verbal Description	Rank
The system can be open on different devices (e.g. laptop, desktop, tablet, smartphone)	4.11	Very Good	1
All system features are present when opened with different devices.	3.93	Very Good	2
No system faults encountered when opening with different devices.	3.63	Very Good	3
Overall Weighted Mean	**3.89**	**Very Good**	

From the above details, the results of the students' evaluation of the online enrollment system in terms of its portability can be noted. The students perceived the system as something that can be opened on different devices (e.g. laptop, desktop, tablet, smartphone) which is why they rated it very good. Fjermestad, Mahinda, and Whitworth (2011) stated that flexible access to services due to technology adoption results in happy and satisfied users. On top of that, all system features are present when opened with

different devices. This characteristic was also rated very good. It was concluded that the most appropriate procedure is to perform accessibility evaluations after browser processing because a big percentage of the content of a Web page is not visible until loaded by the Web browser (Fjermestad et al., 2011).

Example 2:

Table 2
Assessment of the Respondents on the Online Enrollment System of
Nueva Ecija University of Science and Technology in terms of
Maintainability

Item Statement	Weighted Mean	Verbal Description	Rank
The system faults can be easily diagnosed by the technical support team.	3.58	Very Good	1
The system can be easily modified by the technical support team.	3.63	Very Good	2
The system continue functioning even if changes have made by the technical support team	3.61	Very Good	3
Overall Weighted Mean	**3.61**	**Very Good**	

From the above details, the results of the students' evaluation of the online enrollment system in terms of its maintainability can be noted. The students rated it very good in terms of whether the system can be easily modified by the technical support team. If such is the case, the Management Information System department must always be at hand to help. As indicated by Zaied (2012), a good system may be rated badly due to the unavailability of system maintenance staff. Furthermore, Gebauer and Schober (2006) suggested that if possible, every Information Technology System must be evaluated and enhanced on the grounds that students might have experienced problems during registration.

References

Cochrane Handbook for Systematic Reviews of Interventions: The Cochrane Collaboration; 2008 [cited November 12, 2017].

Centre for Reviews and Dissemination. Systematic Reviews: CRD's guidance for undertaking systematic reviews [PDF file]. York, UK: Centre for Reviews and Dissemination, University of York; 2009 [cited November 12, 2017].

Fjermestad, J., Mahinda, E. and Whitworth, B. (2011). The Web of System Performance: A multi–goal model of information system performance. Retrieved on January 22, 2021 Available at: http://wenku.baidu.com/view/cd09d4f9fab069dc502201 6f.html.

Mina, J. C., Reyes, E. J. G., Campos Jr., R. B., & Garcia, M. DG. (2021). Students' Assessment of the Online Enrollment System of Nueva Ecija University of Science and Technology: An Experienced Based. *International Journal of Innovative Science and Research Technology . Volume 6,* Issue 1.

Activity Sheet

1. Table below shows the evaluation on the software quality of the Course Crediting and Academic Evaluation System using the ISO/IEC 25010:2011. Discuss the significant findings and interpret.

Table 1
Evaluation on the software quality of the Course Crediting and Academic Evaluation System using the ISO/IEC 25010:2011

ISO/ IEC 25010:2011 Metrics	Weighted Mean	Verbal Interpretation	Rank
Functional Suitability	4.31	Excellent	8
Performance Efficiency	4.32	Excellent	7
Compatibility	4.37	Excellent	5
Usability	4.44	Excellent	1.5
Reliability	4.36	Excellent	6
Security	4.40	Excellent	3.5
Maintainability	4.40	Excellent	3.5
Portability	4.44	Excellent	1.5
Overall Weighted Mean	**4.38**	**Excellent**	

Chapter 2

Formulating a Recommendations

Chapter 2

Formulating a Recommendations

Introduction

  The results section is one of the most critical parts of your research paper. Here you present the main results of your research to your readers. The results section presents the actual data accumulated during your experiments. In essence, the results section, presenting your results, answers the "what?" question (just as the Introduction answers the "why?" question and the Methods section answers the "how?" question). Thus, the results section plays a crucial role in highlighting the significance of the study.

  Specific Objectives

  At the end the chapter, the students will be able:

1. Formulate a recommendations based on the significant results of the study.

Lesson 1

Formulating Recommendations

Recommendations are the actionable insights and suggestions presented after you get your research findings.

Recommendations section in a research paper is basically critical suggestions regarding the best course of action in a certain situation. In other words, this section provides a beneficial guide that will resolve certain issues and result in a beneficial outcome. Recommendations urge specific actions to be taken with regard to policy, practice, theory, or subsequent research.

Recommendations heavily dependent on the situation; thus, they vary greatly. The researcher can make specific suggestions with regard to further research on the topic. Furthermore, he or she may also recommend studies regarding identified gaps in the literature that need to be addressed, and to which his or her study may or may not have contributed.

Recommendations urge specific actions to be taken with regard to policy, practice, theory, or subsequent research. They are specific suggestions that you make with regard to further research on the topic. For instance, you can make recommendations on subsequent research that can be conducted, especially, if there is an interest in generalizing the findings beyond the study's parameters. You may have identified gaps in the literature that should be addressed, and to which your study may or may not have contributed.

The whole idea of a recommendation is to provide a beneficial guide that will not only resolve certain issues, but result in a beneficial outcome. Recommendations can be different and are heavily dependent on the situation that arose. Thus, it is clear that example of recommendation in research paper is always based on certain data and cannot be speculated due to the fact that it is not a hypothesis.

Research recommendations suggest future actions or subsequent steps supported by your research findings. It helps to improve your field of research or cross-disciplinary fields through future research or provides frameworks for decision-makers or policymakers. Recommendations are the action plan you propose based on the outcome. our research findings. It helps to improve your field of research or cross-disciplinary fields through future research or provides frameworks for decision-makers or policymakers. Recommendations are the action plan you propose based on the outcome.

Recommendations for future research should be:

- Concrete and specific
- Supported with a clear rationale
- Directly connected to your research

Example 1:

Study Title: The effect of mobile learning applications on students' academic achievement and attitudes toward mobile learning

Authors: Demir, K. & Akpinar, E.

Recommendations

1. Suggestions are proposed in the light of the findings and results obtained through the research.
2. Researchers may provide Internet and Wi-Fi during mobile learning studies. Limited number of mobile devices were used in this research.
3. It is suggested that future research is suggested to implemented with more mobile devices with larger samples. Tablet computers with Android operating system were used in this research.
4. In order to develop positive attitude, mobile learning can be used in courses that students do not like or do not have interest.
5. Students may develop animations via mobile devices and this is suggested to be examined in future research.

Example 2:

Study Title: KaByahe: a mobile application focusing on the historical and cultural places within the city of manila

Recommendations

Based on the gathered subjective feedbacks and suggestions from the users, the following are the recommendations for KaByahe mobile:

1. Improve user experience when uploading photos in the moments tab of a specific place by letting the user upload multiple photos and customize these photos through adding stickers, texts, and effects, integrate modification, deletion, and filtering of bad words placed by a certain user, provide text-to-speech functionality similar to Google Maps for enhanced accessibility.
2. Develop KaByahe to run in the iOS platform.

References

Cabrera, G. M. Caringal, L. P., Manocan, J. P., Senga, J. G., & Estrella, N. (2021).KaByahe: a mobile application focusing on the historical and cultural places within the city of manila.IOP Conf. Series: Materials Science and Engineering.IOP Publishing doi:10.1088/1757-899X/1077/1/012051

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Hasa (2018). Difference Between Implications and Recommendations in Research. https://www.differencebetween.com/difference-between-implications-and-recommendations-in-research/#Implications%20in%20Research\

Walden University. (2019). "What Are the Steps to the Dissertation Process? Walden University." Waldenu.edu. Walden University. . https://www.waldenu.edu/online-doctoral-programs/resource/what-are-the-steps-to-the-dissertation-process.

Activity Sheets

Answer the following questions:

1. Formulate a recommendations based on the findings presented in Table 1.

   Study Title: Online Enrollment System of Nueva Ecija University of Science and Technology

Table 1
Assessment of the Respondents on the Online Enrollment System of
Nueva Ecija University of Science and Technology
in terms of Portability

Item Statement	Weighted Mean	Verbal Description	Rank
The system can be open on different devices (e.g. laptop, desktop, tablet, smartphone)	4.11	Very Good	1
All system features are present when opened with different devices.	2.74	Good	2
No system faults encountered when opening with different devices.	2.61	Good	3
Overall Weighted Mean	**3.89**	**Very Good**	

2. Formulate a recommendations based on the findings presented in Table 1.

Study Title: President Ramon Magsaysay State University Property and Supply Management System

Table 12
Assessment of the respondents on the Level of Acceptability of the
President Ramon Magsaysay State University Property
and Supply Management System in terms of
Performance

PERFORMANCE	PRMSU Office Staff		Property and Supply Office Staff	
	Weighted Mean	Descriptive Interpretation	Weighted Mean	Descriptive Interpretation
1. The system is a user – friendly.	3.94	Acceptable	4.00	Acceptable
2. The system can produce real – time information and output.	3.87	Acceptable	4.20	Highly Acceptable
3. The system gives effectiveness and efficiency to what the user's needs.	3.68	Acceptable	4.20	Highly Acceptable
Overall Weighted Mean	**3.83**	**Acceptable**	**4.13**	**Acceptable**