ICT COMPETENCY OF ST. PAUL COLLEGE OF ILOCOS SUR HIGH SCHOOL TEACHERS

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ABSTRACT

This study aimed to assess the Information and Communications Technology (ICT) competency of 44 high school teachers from St. Paul College of Ilocos Sur (SPCIS) along the different instructional domains. A training program was created to address deficiency while improving what was already proven to be competent. The data were gathered using questionnaire checklist through google forms, which was adopted, from Molhotra (2020), and documented analysis were tabulated and analyzed using: frequency count, percentage, and weighted mean. The level of ICT competency of the participants is assessed to be proficient; however, their level of competency in the professional domain is still approaching proficiency. A training program in ICT is proposed, particularly on the use of online resources at a professional level – sharing experiences and expertise, collaborate with peers and stakeholders in advancing the use of technology in education and beyond.

Keywords*: information communication technology, ICT competency, online learning resources*

INTRODUCTION

ICT is rapidly altering and transforming how people live nowadays. Technological changes are disrupting the industries. At the same time, it is already changing the health status and leading to a "quantified" self. Sooner or later, it may lead to human augmentation. These technological changes are characterized by automation and artificial intelligence introduced in the Fourth Industrial Revolution (4IR).

In the school setting, ICT is recognized with its important need to shape the knowledge, skills, and values of a global and mobile workforce. The Philippines must upskill its educated workforce to be competitive in this era. Information and communication technologies have been integrated with Philippine education since the implementation of the K-12 or The Basic Enhanced Basic Education Act of 2013 to ensure that every graduate will be equipped with information, media, and technology skills, learning and innovation skills, effective communication skills, and life and career skills.

With this, St. Paul College of Ilocos Sur is committed to the integration of ICT in its programs, especially in this time of pandemic which changed the country's educational system. The integration of technology in the education system such as virtual classrooms, sophisticated AV systems that allow face-to-face communication even for remote teams, and/or apps developed is now a major consideration. As teachers move towards student-centered learning, the faculty must become facilitators and collaborators, and instruction must shift from memorization to problem-solving. Therefore, to effectively teach with technology, teachers must modify their instructional practices from a teacher-centered approach to a more student-centered learning or constructivist approach (Keengwe, 2008).

A technology-driven learning and teaching environment such as Learning Management System is necessary. To integrate technology in education, its implications on the learner and the teachers must be taken into consideration. Before a technology-driven instruction is properly implemented, it is proper to assess the competency of teachers in using

online resources/learning management systems, hence the study. The results will serve as a basis in the creation of a suitable training plan to address deficiencies and to further improve the teachers' competency.

Statement of the Problem

This study sought to measure the level of ICT competency of the High School Teachers of SPCIS in four different domains namely: Technology Operations and Concepts, Social and Ethical, Pedagogical, and Professional.

More specifically, the study aimed to answer the following sub-problems:

1. What is the profile of the participants in terms of gender, educational attainment, and subjects taught?
2. What are the teachers' levels of ICT Competency in terms of the following aspects:
   2.1 technological operations and concepts;
   2.2 social and ethical;
   2.3 pedagogical; and
   2.4 professional?
3. What training plan can be implemented to enhance the ICT skills of the faculty?

METHODOLOGY

Research Design

The research study utilized descriptive-purposive method in assessing the profile of the participants as well as the level of ICT competency of the High School Teachers of St. Paul College of Ilocos Sur for the Academic Year 2020-2021. Levels of competence were determined through a validated questionnaire checklist.

Participants of the Study

The participants of the study were 44 high school teachers of St. Paul College of Ilocos Sur. They were selected through total enumeration.

Instrumentation

A content validated questionnaire adopted from the study of Malhotra was used to gather data for the study.

The questionnaire consisted of three parts. First part pertains to the profile of the participants in terms of gender, educational attainment, subject/s taught, and online learning resource/s (LMS); second part is all about the different variables along four domains namely: Technology Operations and Concepts, Social and Ethical, Pedagogical and Professional; and the third part contains the level of ICT competency of High School Teachers of St. Paul College of Ilocos Sur for the academic year 2020-2021.

Data Analysis

The data gathered were recorded, tabulated, and interpreted using the following statistical tools:

Frequency Count and Percentage. This was used to determine the socio-demographic factors.

Mean. This was used to describe the ICT competency of the participants along the four areas. Competencies were measured with the Likert scale using the following norms:

Mean Range	Descriptive Interpretation
3.25 - 4.00	Advanced (AD)
2.50 – 3.24	Proficient (PR)
1.75 – 2.49	Approaching Proficiency (AP)
1.00 – 1.74	Beginning (BE)

The ethical aspect is considered important to protect the participants. This has been guided by the ethical principles of autonomy, right to know and to withdraw, beneficence, privacy, and confidentiality. Firstly, autonomy, right to know, and to withdraw were respected by providing the participants with all information pertinent to the present study through emailed letters of consent and informant consent forms, and by making them understand that their participation is voluntary which allows them to freely withdraw from the study anytime. Secondly, beneficence was observed by informing participants about the objectives of the study for their further information and proper guidance. Finally, privacy and confidentiality were secured by the proper handling and storage of data gathered from the participants. In addition, full access to communicate with the researcher was provided through phone calls, text messages, and electronic mail notifications concerning the participants' clarifications and requests.

RESULTS AND DISCUSSION

I. Profile of the Participants

Table 1

Profile of the Participants

Profile Variables	Frequency (n=44)	Percentage (%)
Gender		
Male	15	34.09
Female	29	65.91
Educational Attainment		
Doctoral Units	3	6.82
Completed Academic Requirements in Doctoral Degree	1	2.27
Master's Degree	3	6.82
Completed Academic Requirements in Master's Degree	1	2.27
Master's Units	20	45.45
Bachelor's Degree	16	36.36

Profile Variables	Frequency (n=44)	Percentage (%)
Subjects Taught *(Multiple Answers)*		
Araling Panlipunan (AP)	5	10.87
Mathematics	5	10.87
English	7	15.22
Filipino	6	13.04
Science and Technology	9	19.57
Technological and Livelihood Education (TLE)	4	8.70
Music, Arts and Physical Education (MAPEH)	5	10.87
Religious and Values Education (RVE)/Christian Living (CLE)	5	10.87
On-line Technology Resources Used (LMS) *(Multiple Answers)*		
None	10	16.95
Google Classroom	26	44.07
Schoology	6	10.17
Edmodo	9	15.25
Ted. Ed.	4	6.78
Zoom	2	3.39
Google Meet	2	3.39

Table 1 shows the profile of the participants who were teachers of the High School Department of St. Paul College of Ilocos Sur for the academic year 2020-2021.

*Gender***.** The table shows that of the 44 (100%) participants, there are 15 (34.09%) male and 29 (65.91%) female. Majority of the participants comprise the female population.

*Educational Level Attained***.** It can be seen that a great number and percentage of the participants (20 or 45.45%) have Master's Units while the least number of participants (one or 2.27%) have completed their academic requirements in their Doctorate and Master's degree, respectively. Having the second-highest number of participants (16 or 36.36%) are those who have bachelor's degree. Moreover, there are

three (6.82%) participants who have attained Units in Doctorate Degree as well as those who have master's degree.

*Subject Taught***.** There are nine (19.57%) participants who teach Science and Technology while the least taught subject is TLE with four (8.705%) participants. English and Filipino having the second and third highest number of subjects being taught by the participants with seven (15.22%) and six (13.04%), respectively. Moreover, there are five (10.87%) participants who teach Araling Panlipunan, Mathematics, Religious and Values Education/CLE, and Music, Arts, and Physical Education. Most of the participants teach Science and Technology subjects.

On-line Technology Resources (LMS) Used. Most participants, 26 (44.07%), know how to use Google Classroom while ten (16.95%) participants do not have any form of online technology resources used. Zoom and Google Meet are the lowest online resources (LMS) used by two (3.39%) participants. Other online technology resources used are Edmodo, Schoology, and Ted. Ed. with nine (15.25%), six (10.17%), and four (6.78%) participants, respectively.

II. Level of ICT Competence

2.1 Technology Operations and Concepts

Table 2

Level of ICT Competence of the High School Teachers of St. Paul College of Ilocos Sur in Terms of Technology Operations and Concepts

Technology Operations and Concepts	Mean	DI
1. I can identify and define the functions of the main components of the computer (i.e., monitor, CPU, keyboard, mouse) of the computer.	2.98	PR
2. I can identify and define the functions of computer peripherals (i.e. printer, scanner, modem, digital camera, speaker, etc.).	2.95	PR
3. I can properly connect main components, configure peripherals and install drivers when required.	2.52	PR

Technology Operations and Concepts	Mean	DI
4. I can configure computer settings of various software and hardware.	2.20	AP
5. I understand the basic functions of the operating system.	2.77	PR
6. I can organize and manage computer files, folders, and directories.	2.80	PR
7. I can use storage devices (i.e. CD, Flash drive, Hard Drive) for storing and sharing computer files. Create back-ups of important files.	3.20	PR
8. I can protect the computer from viruses, spyware, adware, malware, hackers, etc.	2.20	AP
9. I use online and offline help facilities for troubleshooting, maintenance, and update of applications.	2.23	AP
10. I use a word processor to enter and edit text and images.	2.82	PR
11. I format text, control margins, and layout tables.	3.05	PR
12. I can print, store and retrieve text documents from a word processor.	2.93	PR
13. I use a calculation spreadsheet to enter data, sort data, and format cells into tables.	2.82	PR
14. I can make computations, use formulas, and create graphs using spreadsheets.	2.84	PR
15. I can print and store data tables using a spreadsheet application.	2.89	PR
16. I use a presentation package to add text and sequence a presentation.	2.89	PR
17. I can enhance slide presentations by adding sound, customizing animation, and inserting images.	2.84	PR
18. I can print presentation handouts and store slide presentations.	2.95	PR
19. I can make effective class presentations using slides and LCD projector.	2.86	PR
20. I can acquire digital images and other media from websites, CDs, flash drives, etc.	2.82	PR

Technology Operations and Concepts	Mean	DI
21. I can crop, scale, color correct and enhance digital images.	2.68	PR
22. I can play various media files using appropriate media players.	2.73	PR
23. I can stitch together video footage and soundtracks and add simple enhancements, transitions, titles, etc.	1.55	BE
24. I can attach and configure scanners, cameras, cell phones, to acquire digital images.	2.45	AP
25. I can store digital images using optical media (CD, DVD, flash disk) and online repositories.	2.43	AP
26. I can connect to the internet via dial-up or LAN.	2.57	PR
27. I can configure and use Web browsers and Help applications.	2.52	PR
28. I can send and receive emails with attachments, manage emails and use LAN and Web-based mail services.	2.89	PR
29. I can effectively use synchronous and asynchronous web-based communication tools like instant messenger, voice, and teleconferencing.	2.48	AP
30. I can connect and use shared printers, shared folders, and other devices within a network	2.32	AP
31. I can effectively use search engines, web directories, and bookmarks.	2.59	PR
32. I can download and install relevant applications including freeware, shareware, updates, patches, viewers, and support applications.	2.45	AP
33. Effectively use search engines, directories, crawlers, and e-agents to locate information sources.	2.36	AP
34. Efficiently store and organize collected information using directories, drivers, or databases.	2.27	AP
35. Distribute, share, publish and print information via print or web.	2.52	PR
Over-All Rating	**2.64**	**PR**

Table 2 shows the level of competency of the High School teachers of St. Paul College of Ilocos Sur in terms of Technology Operations and Concepts. The level of competency along Technology Operations and Concepts was assessed to be "proficient" with an overall mean rating of 2.64. The item "I can use storage devices (i.e., CD, Flash drive, Hard Drive) for storing and sharing computer files. Create back-ups of important files" garnered the highest mean rating of 3.20 described to be proficient. This is closely followed by the items "I format text, control margins, and layout tables," and "I can identify and define the functions of the main components of the computer (i.e., monitor, CPU, keyboard, mouse) of the computer" with mean ratings of 3.05 and 2.98, respectively. Noteworthy is an item "I can stitch together video footages and soundtracks and add simple enhancements, transitions, titles, etc.," which had the lowest mean rating of 1.55 described as within the "beginning" level.

It implies that while the participants are assessed to be proficient, their level of competency in video editing is still "beginning."

2.2 Social and Ethical Aspects

Table 3

Level of ICT Competence of the High School Teachers of St. Paul College of Ilocos Sur in Terms of Social and Ethical Aspects

Social and Ethical	Mean	DI
1. I understand the legal implications of Software Licenses and fair use.	2.64	PR
2. I understand and explain the basic concepts of Intellectual Property Rights.	2.80	PR
3. I can differentiate and identify the Copyright, Trademark, Patent of various products.	2.75	PR
4. I can detect plagiarism in student work.	2.64	PR
5. I properly acknowledge sources used in my work.	2.91	PR
6. I am an Anti-Privacy advocate for all products with IPR like music, data video, and software.	2.82	PR
7. I advocate the responsible use of various technologies like computers, cell phones, etc.	3.20	PR

Social and Ethical	Mean	DI
8. I show respect for privacy and cyber etiquette, phone etiquette, and similar use of technology.	3.16	PR
9. I can demonstrate proper handling of computer devices and the use of applications.	2.86	PR
10. I can monitor how students use the computer specifically on software, hardware, computer games, and internet activities.	2.39	AP
11. I can maintain a clean and orderly learning environment for students.	2.89	PR
12. I promote and implement rules and regulations on properly using computers.	3.55	AD
13. I accurately report malfunctions and problems with computer software and hardware.	2.68	PR
14. I can design class activities to minimize the effect on students being disadvantaged or left out.	2.68	PR
15. I can help minimize the effects of the digital divide by providing access to digital materials for all students.	2.43	AP
16. I prepare lessons and activities appropriate to the level of learning and cultural background of the students.	2.75	PR
17. I adapt activities using specialized hardware and software for physically disadvantaged students.	2.48	AP
Over-All Rating	**2.80**	**PR**

Table 3 presents the level of competency of the High School teachers of St. Paul College of Ilocos Sur in terms of Social and Ethical considerations. The level of competence of the participants is "proficient" as seen by the overall mean rating of 2.80.

The highest mean rating of 3.55 which is described as "advanced" was garnered by item "I promote and implement rules and regulations on properly using computers, while the lowest mean rating of 2.39 (AP) is presented by item "I can monitor how students use the computer specifically on software, hardware, computer games, and internet activities." Following the highest mean is item "I advocate the responsible use of various technologies like computers, cell phones, etc.," and item "I

show respect for privacy and cyber etiquette, phone etiquette and similar use of technology.," with mean ratings of 3.20 and 3.16, respectively, both described to be proficient.

The result implies that the participants' level of competency in terms of the social and ethical aspects of ICT is "proficient" and that they are advanced in following the rules and regulations on the proper use of the computers. However, they still need to improve on monitoring students' activities in using the computer, especially on internet surfing.

2.3 Pedagogical Aspect

Table 4

Level of ICT Competence of the High School Teachers of St. Paul College of Ilocos Sur in Terms of Pedagogical Aspects

Pedagogical	Mean	DI
1. I make students use the database, spreadsheets, concept mapping tools, and communication tools.	2.57	PR
2. I encourage students to do data analysis, problem-solving, decision making, and exchange of ideas.	2.73	PR
3. I use appropriate slide presentations, videos, audio, and other media in the discussion of the lesson.	2.39	AP
4. I teach students to use various multimedia materials for the reports and class presentations.	2.68	PR
5. I use various synchronous and asynchronous communication tools (email, chat, whiteboards, fora, blogs).	2.52	PR
6. I can facilitate cooperative learning and the exchange of ideas and information.	2.80	PR
7. I design rubrics for assessing student performance in the use of various technologies.	2.73	PR
8. I use electronic means of administering quizzes and examinations.	2.48	AP
9. I analyze assessment data using spreadsheets and statistical applications.	2.52	PR

Pedagogical	Mean	DI
10. I use emails, group sites, blogs, etc. for disseminating information directly to students, colleagues, and parents.	2.82	PR
11. I use emails, group sites, blogs, etc. to collect information and feedback directly from students, colleagues, and parents.	2.66	PR
12. I can explore the use of electronic assessment tools like online testing, submission of projects, via email, or online facilities such as Learning Management Systems.	2.39	AP
13. I can set up online databases or repositories of student works.	2.18	AP
Over-All Rating	**2.57**	**PR**

Table 4 shows the level of competency of the High School teachers of St. Paul College of Ilocos Sur in terms of Pedagogical aspects. The level of competence of the participants is proficient as seen by the overall mean rating of 2.57.

The highest mean rating of 2.82 is obtained by item "I use emails, group sites, blogs, etc. for disseminating information directly to students, colleagues, and parents.," which is described as proficient while the lowest mean rating of 2.18 described as approaching proficiency is the item "I can set up online databases or repositories of student works." Following the highest mean, is seen by item "I can facilitate cooperative learning and exchange of ideas and information," (2.80). Items "I encourage students to do data analysis, problem-solving, decision making, and exchange of ideas," and "I design rubrics for assessing student performance in the use of various technologies," with mean rating of 2.73, both described to be proficient.

The result implies that the participants' level of competency in terms of pedagogical is "proficient" and that they are still "approaching proficiency" in using different learning management systems and setting up databases and repositories of student work.

2.4 Professional Aspect

Table 5

Level of ICT Competency of the High School Teachers of St. Paul College of Ilocos Sur in terms of Professional Aspects

Professional	Mean	DI
1. I can identify educational sites and portals suitable to their subject area.	2.59	PR
2. I join online communities, subscribe to relevant mailing lists and online journals.	2.57	PR
3. I review new and existing software for education.	2.34	AP
4. I can recommend useful and credible websites to colleagues.	2.55	PR
5. I can research the use of technology in the classroom.	1.95	AP
6. I follow online tutorials or online degree programs.	2.36	AP
7. I actively participate in online forums and discussions.	2.34	AP
8. I can publish (formal/informal) research on the use of ICT in education.	1.80	AP
9. I can share lesson plans, worksheets, templates, and teaching materials through correct websites.	2.48	AP
Over-All Rating	**2.33**	**AP**

Table 5 presents the level of competency of the High School teachers of St. Paul College of Ilocos Sur in terms of Professional aspects. The level of competence of the participants is approaching proficiency as seen by the overall mean rating of 2.33.

The highest mean rating of 2.59 is obtained by Item "I can identify educational sites and portals suitable to their subject area," which is described as "proficient" while the lowest mean rating of 1.80, described as approaching proficient, is the Item "I can publish (formal/informal) research on the use of ICT in education." Following the highest mean, is seen by Item "I join online communities, subscribe to relevant mailing lists and online journals," and Item "I can recommend useful and credible websites to colleagues," with mean ratings of 2.57 and 2.55, respectively, both described as proficient.

This implies that the participants' level of competency in professional is approaching proficiency. Furthermore, the participants need to improve their level of ICT competency in their area of profession.

Table 6

Summary of Mean Rating Showing the Level of ICT Competency of the High School Teachers of St. Paul College of Ilocos Sur

ICT Competency	Mean	DI
1. Technology Operations and Concepts	2.64	PR
2. Social and Ethical	2.80	PR
3. Pedagogical	2.57	PR
4. Professional	2.33	AP
Mean Rating	**2.585**	**PR**

Table 6 presents the summary of the mean rating showing the level of ICT competency of the participants. Overall, the mean rating obtained is 2.585 which is described as proficient.

The level of competency of the participants in terms of Social and Ethical garnered the highest mean rating of 2.80 which is assessed to be "proficient," while the lowest showed the lowest mean rating of 2.33 which is described as approaching proficiency. Following the highest mean rating is the level of competency of the participants in terms of technology operations and concepts and Pedagogical with mean ratings of 2.64 and 2.57, respectively, which are both described as proficient.

This implies that while the level of ICT competency of the participants is assessed to be proficient, their level of competency in the professional domain must still be improved.

III. Training Program for Faculty

Given the present situation caused by the COVID-19 pandemic, the administration is even more driven and determined to develop its teachers and personnel to become holistic formators who are relevant and bearers of CHRIST to the learners in the face of the NEW NORMAL in Education. In compliance with the orders and guidelines of the

Department of Education and National Inter-Agency Task Force for COVID-19, SPCIS Basic Education will adopt new learning modalities, namely: Blended Learning (Online Learning and Self-directed Learning) and Home-based Learning. To ensure the readiness of the teachers in using the said modalities, the Planning and Quality Assurance Office and Human Resource Development Office, with the approval and support of the Administration, developed a Faculty Training Program on ICT based on the results on The ICT Competency of SPCIS HS Teachers Survey Research. In this way, the learners and parents are assured of quality service for quality learning amidst the pandemic.

The HS Faculty Training Program on ICT will be delivered in three phases, namely: (1) Knowledge Acquisition, (2) Skills acquisition, and (3) Immersion/Application. After the completion of the Training Program, a thorough evaluation and feedbacking will be conducted.

3.1 Training Activities

*Knowledge Acquisition***.** This phase will establish full awareness and understanding of the teachers on the concept and purpose of the Training Program on ICT.

Date	Activity/Time	Mode of Delivery /Venue	Person/s Responsible	Resources Needed
June 15, 2020	Orientation on the Concept of and Purpose of the High School Faculty Training Program on ICT/9AM-11AM	Face-to-face with Social Distancing & Face Mask	Planning & Quality Assurance Director	Multi-Media Equipment, Attendance Sheet
June 16, 2020	Curriculum Review on the Integration of ICT/9AM-12NOON	Face-to-face with Social Distancing &Face Mask/Grade 7 Classrooms	Principal & Academic Coordinator	DepEd MELCS, Attendance Sheet, Copy of Syllabi
June 22, 2020	Review and Re-Orientation on School's Policy and	Face-to-face with Social Distancing & Face	Planning & Quality	Copy of School Policies

	Guidelines on the Responsible use of Social media platforms and confidentiality/ 9AM-11AM	Mask/Institutional AVR	Assurance Director	

3.2 Skills Acquisition

This phase will provide opportunities for teachers to acquire the necessary skills in ICT through hands-on training.

Date	Activity/Time	Mode of Delivery /Venue	Person/s Responsible	Budget/ Logistics
July 1-10, 2020	• Basic Computer Troubleshooting Training • Hands-on Exploration & trial of Google Suite and its apps/Every 8:30AM-10AM	Online & Face-to-Face/ Computer Laboratories	HS Academic Coordinator/ICT Coordinator	Resource speaker/s, Attendance sheet, computer laboratories
July 15-22, 2020	Virtual/Online Class Demonstration & Critiquing/Every 9AM-12NOON	Online/Computer Laboratories/Faculty room/Classrooms/ Teleconferencing Rooms	Academic Coordinator & Subject Team Leaders/ICT Coordinator	Computer units, Teleconferencing Rooms, headsets, microphones, multimedia equipment, video camera recorder
July 30, 2020	Simultaneous Online Demonstration Teaching/ 9AM-3PM	Online/Computer Laboratories/Faculty room/Classrooms/ Teleconferencing Rooms	Academic Coordinator & Subject Team Leaders/ICT Coordinator	Computer units, Teleconferencing Rooms, headsets, microphones, multimedia equipment, video camera recorder

3.3 Immersion/Application

This phase will allow the teachers to apply the skills they acquired through simulation demonstrations with co-teachers, students, and parents.

Date	Activity/ Time	Mode of Delivery /Venue	Person/s Responsible	Budget/ Logistics
August 3-7, 2020	Pre-recording of Instructional Videos/ 8AM-4PM	Face-to-Face/ Teleconferencing	Academic Coordinator & Subject Team Leaders/ICT Coordinator	Computer units, Teleconferencing Rooms, headsets, microphones, multimedia equipment, video camera recorder
August 10-15, 2020	Virtual/Online Class Pilot Testing with Parents and Students/ 8AM-12Noon	Online/ Teleconferencing Rooms/ Computer Laboratories	Academic Coordinator & Subject Team Leaders/ICT Coordinator	
August 24, 2020-April 30, 2021	Virtual/Online Classes	Online/School & Home	Academic Coordinator & Subject Team Leaders/ICT Coordinator	

CONCLUSION

Based on the findings, the following conclusion was drawn:

Google classroom is commonly used by the teachers in the school due to its easy accessibility and ease of use. The participants' proficiency in the different aspects of ICT particularly on the technological operations and concepts, social and ethical, pedagogical, and professional aspects is an indicator of competence in using IT in teaching.

RECOMMENDATIONS

Based on the findings of the study, the following are hereby recommended:

1. The administrators may consider providing support to faculty in the integration of ICT in teaching by providing them with the needed IT infrastructure.
2. The faculty may consider upgrading themselves on the use of ICT with consideration of the gradual changes in the IT field.
3. The human resource officer may consider the integration of the conduct of training on ICT in its faculty development plan for regular upgrading of faculty skills on the use of ICT.
4. Future researchers may consider expanding the research to include a wider scope and other related variables.

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