

A Convergent-Parallel Analysis on the Technical Assistance Provided by Information Technology Faculty Extensionists: Basis for Training and Extension Activities Plan

Cris Norman P. Olipas¹, Ruth G. Luciano¹, Rosalie B. Sison¹, Jefrain M. Padre¹,
Marcelino C. Collado Jr.¹, Racquel L. Pula¹

¹ Nueva Ecija University of Science and Technology
Sumacab Este, Cabanatuan City, 3100, Philippines

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Corresponding Author:
Cris Norman P. Olipas
olipas.cris@gmail.com

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Abstract. The study determined the satisfaction of the technical assistance conducted by faculty extensionists from a higher learning institution in Nueva Ecija, Philippines, during the academic year 2021-2022. It employed a mixed-method convergent-parallel method of study. It sought to describe the timeliness, quality of work, professionalism, courtesy, and achievement of the objectives of the technical assistance. Furthermore, it expressed the overall satisfaction of the beneficiaries with the conduct of the technical assistance using a quantitative approach. Qualitatively, using open-ended questions, the researchers analysed the participants' responses using theme-generation techniques and identified the usefulness and impact of the technical assistance rendered to the employees and organisation. The results generally revealed that the participants were satisfied with the service they received. A significant difference was seen in the level of difficulty experienced. The technical assistance provided has been practical. These participants' responses served as the basis for designing the college's training and extension development plan.

Keywords: Capacity Building; Convergent-Parallel Method; Extension Project; Satisfaction Survey; Technical Assistance.

INTRODUCTION

One of the fourfold duties of a state university in the Philippines is to carry out extension projects and activities for the benefit of various stakeholders and communities. The Philippine Republic Act No 7722, also known as the "Higher Education Act of 1994", mandates state-supported institutions of higher learning to gear their programs to national, regional, or local development plans [1]. Thus, conducting extension programs is part of implementing these mandates given to higher learning institutions. Along with community extension programs come instruction, research, and production. These are all essential elements for implementing a university's vision and goal.

The Commission on Higher Education, through Memorandum Order No 52 Series of 2016, expressed a policy providing guidelines for higher learning institutions on the conduct of extension programs. It states, "provision of space to discover practice-, evidence-, and science-based an-

swers that can address the real-world social, economic, and environmental challenges of partner citizens and communities" [2].

Authors [3] assert that higher learning institutions, as producers of knowledge or hubs for innovations, have a strategic position to work in partnership with communities, businesses, and industries. Activities include the transfer of knowledge or technology in a particular development area. Community extensions are carried out to assist numerous stakeholders who require various forms of assistance to improve their quality of life. Extension activities are carried out through various sustainable initiatives and programs to empower different individuals. These initiatives and programs are thoughtfully designed to meet the demands of the intended stakeholders or beneficiaries.

The following sections of this paper discuss a brief review of related literature about technical assistance and impact assessment. The presentation of the research problems and hypotheses of this study then follows it. Afterwards, the meth-

odology is presented, followed by the results and discussion. Finally, the conclusion and recommendations are presented.

Technical Assistance. Different types of extension activities can be done in an extension program. One of these is the provision of technical assistance (TA). Technical assistance refers to professional help, guidance, or support for target stakeholders to be more functional and productive in their duties. Technical assistance leads to sustainable activities for an organisation that receives advice and help from technical experts. In conducting technical assistance, applying appropriate tools, techniques, and procedures is necessary to deliver and implement a project [4] successfully.

In a technical assistance activity, faculty extensionists must collaborate effectively with one another and target beneficiaries. The process of the action must also be systematic so that the targeted stakeholders may benefit from it. Furthermore, TA should be flexible in addressing problems and challenges encountered in the institution. Lastly, faculty extensionists must accomplish custom-built or uniquely designed activities for a target audience so that results can be easily observed and the goals of the action can be effectively achieved.

Impact Assessment. An impact assessment is necessary to understand the effectiveness of the technical assistance provided. In the public policy domain, impact assessments are formal, evidence-based procedures that assess a public policy's technical, social, and environmental effects [5].

In the context of community extension, "impact assessment" refers to evidence-based activities and procedures that assess the technical, social, and environmental effects of an extension activity towards sustainable development. Hence, impact assessments are necessary to evaluate if an extension activity could deliver its expected outcomes to the target beneficiaries, identify the room for additional services to be rendered, and determine future projects that may benefit different stakeholders for capacity building and community development.

Author [6] identified four significant aspects of impact assessment. This includes institutional, social, economic, and technological factors. The institutional evaluation covers the impact of a technology implemented in an organisation's

administrative and operational aspects. Meanwhile, the social element evaluates an intervention's effect on the beneficiaries' behaviour and activities. On the other hand, the economic piece investigates how an intervention has impacted the financial capacity of an organisation. Lastly, the technological aspect views how innovation has caused significant changes to the technologies utilised in an organisation.

The impact assessment of the technical assistance is conducted from a more socially inclined perspective. This enables organisational leaders to investigate how intervention activities and solutions have significantly impacted their daily operations.

In conducting an impact assessment, several variables may be considered. Timeliness, quality of work, professionalism and courtesy, and achievement of objectives are variables considered in the impact assessment of the technical assistance provided by the faculty extensionists for this study. These variables are significant elements when investigating how the overall satisfaction of beneficiaries can be determined.

Timeliness ensures that the activity is done following the identified timeframe and schedule of activities. The quality of work refers to the overall output and service performance that conform to acceptable standards. Professionalism and courtesy reflect the faculty-extensionists' comprehensive competence. Achievement of objectives is a measure to identify if the faculty-extensionists were able to achieve the goals of the technical assistance activity.

While various studies have been conducted in the past, this study aims to contribute to the growing body of literature available focusing on impact assessment. Specifically, it sought to contribute to the increasing number of papers discussing evaluating technical assistance activities as one of the endeavours of the extension programs. The study also shows how to design and develop plans for training and extension projects to make the process of research, extension, and training work together.

Statement of the Problem

In general, this study aims to evaluate the satisfaction of the technical help that information technology faculty extensionists from the College of Information and Communications Technology

have given so that a training and extension development plan can be made using that information.

Specifically, it sought to answer the following:

1. What is the assessment of the respondent-beneficiaries on the technical assistance rendered by faculty extensionists in terms of timeliness, quality of work, professionalism, courtesy, and achievement of objectives?
2. What is the overall satisfaction of the respondent-beneficiaries on the technical assistance provided by faculty extensionists?
3. What are respondents' perspectives on the usefulness of technical assistance provided by faculty extensionists?
4. What impact does the technical assistance provider to the organisation?
5. What are the needed and suggested extension projects and activities to be conducted by the faculty extensionists?
6. Is there a significant difference between the level of difficulties experienced before and after the conduct of the extension activity?

Hypothesis

H₀: There is no significant difference between the level of difficulties experienced before and after the conduct of the extension activity.

H₁ There is a significant difference in the difficulty level encountered before and after the extension activity.

METHODS

Research Design. This study applied a convergent-parallel mixed-methods research design. Mixed-method research design is a technique to collect, analyse, and "mix" quantitative and qualitative data to answer research problems [7]. Combining quantitative and qualitative approaches provides a better understanding of the research problem. Using the mixed-method process, the researchers can extrapolate better insights and answers from the collected, organised, and analysed data. In the convergent-parallel approach, the researchers simultaneously conduct the quantitative and qualitative elements in the same phase, assess the methods equally, analyse the components independently, and interpret the results together [7]. The research process can be symbolised as a qual-quan approach [8]. Follow-

ing this approach, the researchers ensured that the instrument and activities conformed to the convergent-parallel practice.

Participants in the study and the location of the study. The respondents to this study were employees from one of the extension partner agencies of the College of Information and Communications Technology in the province of Nueva Ecija, Philippines. A total of 24 participants joined this study. Based on a 95% confidence level and a 10% margin of error, the total number of participants is considered statistically significant to describe the entire population.

Research Instrument. The research instrument was based on the results of reviewing related literature and studies. It was composed of two parts. The first part covers the quantitative aspect, and the second covers the qualitative section. Since the study employed a convergent-parallel design, the researchers combined the quantitative and qualitative elements of the instrument. To ensure that the research instrument was valid and reliable, the researchers subjected the developed tool to face and content validity. Other researchers were invited to give their valuable feedback about the device. The suggestions offered were considered to improve the instrument. To ensure the instrument's reliability, the researchers performed reliability analysis using Software Packages for Social Sciences version 26. Table 1 presents the results of the reliability analysis.

Table 1 – Reliability Analysis

Scale	Cronbach's Alpha	No. of Items
Timeliness	0.882	3
Quality of Work	0.813	3
Professionalism and Courtesy	0.897	3
Achievement of Objectives	0.837	3

The computed values of Cronbach's alpha reflect the tests' results on the instrument's reliability and consistency. As can be seen in the table, the timeliness scale has a computed coefficient alpha of 0.882, the quality of work scale has a coefficient alpha of 0.813, the professionalism and courtesy scale has a coefficient alpha of 0.987, and the achievement of objective scale has a coefficient alpha of 0.837. All of the calculated alpha

coefficients are between 0.8 and 0.89. Thus, the rankings were all considered good and yielded reliable results.

Data Gathering Procedures. The researchers in the data collection activities used various procedures. A review of related literature was conducted to gain significant knowledge and information about the topic under investigation. The results of reviewing related materials were essential in crafting the research report and the data-gathering instrument used in this study. The researchers then sought approval through a written communication letter to the head of the agency to conduct the impact assessment on the technical assistance provided. After the head of the agency allowed the researchers to show the data gathering, the research instruments were handed over to the agency employees to answer. Complete instructions were given so the respondents could quickly answer the research instrument.

The researchers ensured that ethical research considerations were followed and applied correctly in administering the instrument. The researchers guaranteed the respondents that no harm was inflicted in the conduct of the study. The utmost confidentiality and anonymity of personal data were also considered. During the data collection process, proper file storage and security were also implemented.

Data Analysis. A statistical treatment was applied in the analysis of the collected data. Using SPSS version 26, the researchers calculated the weighted mean to answer the first and second research problems. Table 2 presents the response mode and scoring guide used in the quantitative section of this study.

Table 2 – Response Mode and Scoring Guide

Numerical Rating	Range	Verbal Interpretation for Level of Agreement	Verbal Interpretation for Level of Satisfaction
4	3.25-4.00	Strongly Agree	Very Satisfied
3	2.50-3.24	Agree	Satisfied
2	1.75-2.49	Disagree	Dissatisfied
1	1.00-1.74	Strongly Disagree	Very Dissatisfied

The open-ended questions for the third, fourth, and fifth research problems were analysed using a thematic analysis technique. Themes were identified based on the responses of the participants. The thematic analysis includes familiarisation, coding, generating articles, reviewing pieces, defining and naming themes, and writing up [9].

The sixth research problem was examined with a paired-sample t-test to determine the difference in the difficulty level experienced before and after the extension activity. The paired sample t-test compares the computed means of two measurements from the same individuals [10]. A pre-test and post-test were used in this study to determine the level of difficulty experienced before and after the technical assistance was provided to see if there was a significant difference.

RESULTS AND DISCUSSION

Quality of Technical Assistance. Table 3 presents the result of the assessment provided by the respondents on the timeliness of the technical assistance offered by the faculty extensionists. The ability to complete an activity within the expected time frame is timeliness. In conducting technical assistance, it is necessary to act promptly to solve issues and avoid possible problems that may occur when problems are not immediately addressed.

Table 3 – Timeliness

Item Statements	Mean	Verbal Interpretation
The request for technical assistance was finished promptly.	3.708	Strongly Agree
Questions relating to the technical assistance rendered were answered immediately.	3.875	Strongly Agree
The schedule for technical assistance was followed, and service was done promptly.	3.750	Strongly Agree
Grand Mean	3.778	
Verbal Interpretation		Very Satisfied

In table 3, the findings revealed that the respondents were very satisfied because the request for the conduct of technical assistance was completed promptly ($\mu=3.708$). The faculty extensionists answered the questions about technical assistance immediately ($\mu=3.875$). As a re-

sult, the respondents were highly pleased by being able to immediately respond to the queries and concerns relating to the technical assistance activity, and participants' confidence in the service and the team increased. This contributes to the trust being given to the group. Lastly, the schedule of the assistance provided was followed, and the service was done promptly ($\mu=3.750$). Hence, benefits can be immediately observed and achieved because of the timely manner in which problems and challenges are addressed as part of the technical assistance.

Quality of Work. In table 4, the assessment of the quality of work is presented. The quality of the work pertains to the degree to which the faculty extensionists could provide the needed assistance in consideration of the utmost conduct, practice, and procedures. Providing high-quality technical service is essential for beneficiaries to have a positive experience with technology. When a high quality of work is observed, the better output can be achieved. Further, the quality of work also reflects the individual capabilities of the faculty extensionists. Hence, high quality is equivalent to competent professional practices and abilities.

Table 4 – Quality of Work

Item Statements	Mean	Verbal Interpretation
The faculty extensionists exhibited a high quality of service in performing technical assistance.	3.916	Strongly Agree
The quality of work done was commendable and impressive.	3.750	Strongly Agree
Problems were solved, and solutions were given as part of the technical assistance.	3.916	Strongly Agree
Grand Mean	3.860	
Verbal Interpretation		Very Satisfied

As shown in Table 4, the faculty extensionists have exhibited a high quality of service in performing technical assistance ($\mu=3.916$). Beneficiaries were very satisfied with this performance. The work done by the faculty extensionists was commendable and impressive ($\mu=3.750$). Lastly, beneficiaries were very satisfied with the quality of work rendered because the problems were solved, and solutions were given by the faculty extensionists ($\mu=3.916$).

Professionalism and Courtesy. In terms of professionalism and courtesy, Table 5 presents the result of the assessment made by the respondents on this aspect. Professionalism and courtesy refer to conducting technical assistance ethically and professionally. Faculty extensionists must be courteous and act professionally because they exhibit the culture of the organisation to which they belong and present their character and attitude as individuals.

Table 5 – Professionalism and Courtesy

Item Statements	Mean	Verbal Interpretation
The faculty extensionists were courteous and ethical professionals.	3.958	Strongly Agree
The technical assistance provided was professionally conducted and administered.	3.958	Strongly Agree
The faculty extensionists presented themselves professionally.	3.916	Strongly Agree
Grand Mean	3.944	
Verbal Interpretation		Very Satisfied

In table 5, respondents were very satisfied because the faculty/extensionists were courteous and worked ethically ($\mu=3.958$). They were also delighted because the service was performed with highly professional conduct and administered with the utmost competence ($\mu=3.958$). Lastly, respondents were very satisfied that the faculty extensionists could present themselves professionally in actions, words, and quality of work ($\mu=3.916$).

Achievement of Objectives. Faculty extensionists must be able to carry out activities and procedures that are relevant to the goals. This refers to taking vital actions that lead to the realisation of targets. The faculty extensionists demonstrated skills that would lead to achieving goals while providing technical assistance.

As shown in Table 6, the beneficiaries were very satisfied with the technical assistance because the identified objectives were achieved ($\mu=3.916$), and the benefits were realised. The technical assistance dramatically contributed to the improvement and quality of service the beneficiaries provided in the office ($\mu=3.833$). Moreover, the technical assistance provided has caused a significant improvement in the overall quality of work in the organisation ($\mu=3.875$).

Table 6 – Achievement of Objectives

Item Statements	Mean	Verbal Interpretation
The identified objectives for the technical assistance were achieved.	3.916	Strongly Agree
The technical assistance provided benefits to the organisation.	3.833	Strongly Agree
The quality of work improved the overall quality of work in the organisation.	3.875	Strongly Agree
Grand Mean	3.875	
Verbal Interpretation		Very Satisfied

Summary and Overall Satisfaction. Table 7 presents the general overview and satisfaction of the technical assistance conducted.

Table 7 – Summary and Overall Satisfaction

Variables	Mean	Verbal Interpretation
Timeliness	3.778	Very Satisfied
Quality of Work	3.860	Very Satisfied
Professionalism and Courtesy	3.944	Very Satisfied
Achievement of Objectives	3.875	Very Satisfied
Overall Satisfaction	3.864	Very Satisfied

As can be seen in Table 7, timeliness has an overall computed mean of 3.777, the quality of work has a general computed standard of 3.860, professionalism and courtesy have an overall computed mean of 3.944, and the achievement of objectives has an overall computed mean of 3.874. All four of these variables got a very high rating from the beneficiaries.

When asked about the overall satisfaction of the beneficiaries of the technical assistance provided by faculty extensionists, they expressed that they were delighted, as seen in the overall computed weighted mean of 3.916. Overall, technical assistance has made a big difference in the quality of work done by the people who receive it and the organisations where they work.

The perceptions of the respondents on the usefulness of the technical assistance. Based on the respondents' answers, three themes emerged about the technical service rendered by the faculty extensionists from the College of Information and Communications Technology. This includes

improved data transfer and communication, establishing a stable internet connection, and enhancing the workplace environment.

Improved Data Transfer and Communication. Regarding the improvement in data transfer and communication, 19 respondents expressed that the technical assistance rendered was helpful for the organisation. They mentioned that the activity had caused significant changes in the way they performed their duties of transferring and receiving files and communication. The following statements were some of the information extracted from the answers of the respondents:

“The technical assistance is beneficial in the organisation in terms of receiving and transferring online data as well as communication with co-workers” (Respondent No 2).

“It [the technical assistance] was useful in enhancing communication between the client and the organisation. It also improves the performance of the employees (Respondent No 5) in a way that is effective and good.”

“The technical assistance was beneficial to the organisation. It makes the uploading and downloading of data faster through a strong and stable connection” (Respondent No 17).

Establishment of a Stable Internet Connection. The other theme identified was the establishment of a stable internet connection. The respondents stated that the activity was necessary for a better network connection, which impacts how they conduct their office activities. The following statements are some of the answers given by the respondents to establish a stable internet connection.

“Internet connectivity is essential and useful in our office. The technical assistance given by the college helped us have an internet connection without issues” (Respondent No 4).

“[Technical assistance] was beneficial because it was a practice run for giving technical assistance; there was no problem” (Respondent 2).

“The Internet connection hasn't had any problems since the faculty extensionists gave us technical help” (Respondent No 11).

Enhancement of the workplace environment. The last identified theme is related to the enhancement of the workplace environment. The faculty extensionists have contributed to the improvement of the working environment because of the technical assistance given in the organisation. The following are some of the responses from the respondents.

"The technical help was very helpful in setting up the internet line connections in a way that made the office look better, in addition to fixing the internet connections" (Respondent No 14).

"The cable wires became organised. Because there were fewer users connected to the wifi, the connection became faster" (Respondent No 22).

The Impact of Technical Assistance on the Organization. Participants in this study have expressed their views about the impact of the technical assistance provided to the organisation. Three themes were identified: improved connectivity, workplace communication tools enhancement, and employee performance. The participants' responses generally express positive views about the technical assistance provided by the faculty extensionists. They are optimistic about the effects and impacts of the service rendered.

Improved Connectivity. One of the main goals of technical assistance is to provide a means to solve connection issues and challenges experienced in the organisation. With the expertise of the faculty extensionists, they were able to solve the problems currently encountered by employees in the organisation. The following are some of the extracted statements of the participants, which reflect that the service helped improve connectivity in the office.

"The assistance helped make our internet connection more reliable. This made our virtual meetings and seminars possible; the submission of reports and communication was easy too" (Respondent No 2).

"Our internet connectivity problems were resolved by the technical assistance, including problems in submitting reports, virtual meetings, and all matters that require an internet connection" (Respondent No 9).

"The impact made to the organisation by the technical assistance is the convenience of access to the internet" (Respondent No 14).

"Connecting to online meetings has become easier, and the delay of reports online has become minimal" (Respondent No 15).

"Our office needs reliable internet connections accessible to all employees; the assistance provided by faculty extensionists resolved this" (Respondent No 18).

"Our office has no problem in terms of internet connection after the conduct of the technical assistance" (Respondent No 23).

"Our internet connection is fast now, and all our employees can access the wifi" (Respondent No 24).

Enhancement of workplace communication tools. The technical assistance helped the beneficiaries improve their installation of the hardware components. The workplace has been enhanced by making the necessary improvements in the wiring and other facilities. As a result, the workplace is better organised. The following statements were extracted from the responses made by the participants relating to the enhancement of workplace communication tools:

"The assistance made our internet connection fast; the lines were also fixed, thus making all of the users connect to the internet or wifi" (Respondent No 1).

"Ease in the movement of personnel in the workplace" (Respondent No 7).

"Faster and uninterrupted internet connection, lines, and network were fixed" (Respondent No 9)

"Reliable internet connection and network/wires were improved" (Respondent No 16).

Improvement in Quality of Performance. Improvement in quality of performance is the last theme identified in terms of the impact of technical assistance on the organisation. The participants have expressed the following statements relating to how the technical assistance has helped and improved the quality of performance they practice and showcase in the organisation.

“Ease and successful execution of the organisation’s roles and functions” (Respondent No 4).

“It has made work much easier, from client interaction to delivery of service” (Respondent No 11)

“It has made work much easier, from client interaction to delivery of service” (Respondent No 18)

“Our internet connection was consistently available, which helped us complete our work faster” (Respondent No 20).

“It provides a faster workflow within the organisation” (Respondent No 23).

The Extension Projects and Activities Needed. The conduct of the technical assistance has opened opportunities for faculty extensionists to extend other activities and services for the betterment of the institution. From the results of the analysis of the participant’s responses, they have mentioned the following activities as needed: Seminars on computer literacy; orientation to hardware and software troubleshooting; prevention of malware; seminars on Google Sheets; innovation and improvement of IT systems; and seminars on Google Meet Figure 1 presents the word cloud of the most sought-after extension projects to be conducted by the faculty extensionists in the organisation.



Figure 1 – Word cloud of the suggested extension activities

The researchers categorised the suggestions from the participants and came up with two general activities: office productivity tool training and workshops and technical support training and workshops. These proposed extension activities result from the collaboration between the faculty extensionists and the technical assistance project beneficiaries.

Before the technical assistance, the difficulty was severe, as reflected in the mean rating of 1.500. The low mean rating means serious difficulty is experienced, while the high mean rating implies a common difficulty. Using a paired sample t-test,

the results revealed a significant difference between the difficulty before and after the technical assistance.

Table 8 – Level of difficulties before and after the technical assistance

	Mean	Mean Difference	P-Value
Difficulty Before Technical Assistance	1.500	-2.125	0.000*
Difficulty After Technical Assistance	3.625		

Notes: Statistically significant at less than 5% based on two-tailed tests.

This indicates that the technical assistance provided has caused improvements in the organisation. Hence, reducing the level of difficulties and challenges experienced by their network management and communication mediums

CONCLUSIONS

Technical assistance is one of the essential activities that can be done in an extension project to provide expert service and help beneficiaries with capacity building, community development, and overall quality of life. This study sought to determine the timeliness, quality of work, professionalism, courtesy, and achievement of objectives set for a technical assistance project undertaken by faculty extensionists from a higher learning institution in Nueva Ecija, Philippines. In all of these areas, the respondent-beneficiaries were very satisfied with the technical assistance the faculty extensionists gave. They have also expressed the usefulness and impact of the activity on their organisation. Further, respondents and beneficiaries have suggested other relevant activities to be conducted as part of the more substantial community extension partnership. The analysis results were used as a basis for crafting the extension-and-training development plan for the college.

Based on the result of the analysis, the following recommendations are given:

1. The faculty extensionists must maintain a very satisfactory performance rating by continuously being committed and competent in conducting technical assistance so that the positive assessment made by the respondent-beneficiaries may

be carried out and experienced by other prospective beneficiaries.

2. The positive result of the assessment of the overall technical assistance can serve as a continuing measure to provide high-quality and excellent service to the community.

3. The identified uses of the technical assistance expressed by the respondent-beneficiaries may serve as a basis for other extension projects.

4. The positive impact of the technical assistance conducted may serve as a reminder to improve the quality of service given to the community for sustainable and stakeholder capacity development.

5. An extension-and-training interface may be conducted with the following categories: office

productivity tool training and workshops; technical support training and workshops; to extend future activities to the community and other beneficiaries; and

6. The designed extension-and-training development plan may guide the college in implementing future extension projects.

This study determined the impact of the technical assistance rendered by faculty extensionists. The results of this study imply that they: provide a basis for designing extension and training projects tailored to the needs of the beneficiaries, produce a plan that can be used as a guide for conducting extension and training activities, and devise sustainable extension projects that can benefit the community.

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