The Information and Communication Technology Capabilities of Local Government Units of the Second District of Ilocos Sur

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Abstract

This research work ascertained the capability or readiness of some local government units of the second district of !locos Sur along Computer and Information Technology in terms of computer equipments and facilities and manpower resources during the year 2007.

This study made use of the descriptive comparative methods of research with the questionnaire as a means of gathering data from 66 department heads and 146 personnel as respondents from the J0 sample local government units broken down into five lowland municipalities, four interior or upland municipalities, and one city.

There were more female than male personnel and department heads; most of them were college graduate. Majority of the department heads were 36 years old and above while most of the personnel belonged to the 26-35 years old bracket.

The sample municipalities had computer units, most of which are Pentium I to JV, and had a computer printer, most of which are dot matrix although there were some desk jet or inkjet. Some offices in the municipalities were not provided with printers. One lowland municipality and a city had other computer peripherals like scanner, digital camera, modem and CD writer.

The personnel and department heads in both lowland and interior municipalities considered themselves "Good" on knowledge of computer, while the personnel and department heads in the city had "Very Good" level on knowledge of computer.

The personnel and department heads in the lowland and department heads in interior municipalities were "Good" while the personnel in interior municipalities were "Poor" in using Microsoft Word application software. On

the other hand, the personnel and department heads in the city were "Very Good" in using the same application software.

The personnel and department heads of both lowland and interior municipalities and the department heads of the city government had "Good" level, while the personnel in the city were "Very Good" in using the MS Excel application software.

The personnel and department heads in both lowland and interior municipalities were "Poor" while the personnel and department heads in the city were "Good" in using internet.

The level of knowledge of computer and level of internet usage of both personnel and department heads in the lowland and interior municipalities differ significantly from those in the city. City group had the highest mean rating and interior group had the lowest mean rating.

With regards to the level of using the Microsoft Word and Microsoft Excel, the three pairs of personnel: Interior and Lowland; Interior and City; and Lowland and City differ significantly, with city personnel having the highest mean and personnel from the interior municipalities having the lowest mean. In the case of the department heads, the level of using the Microsoft Word of those from the interior and lowland municipalities differ significantly from those in the City.

Based on the findings and conclusions, the following are recommended: I) Everytime the Local Government Units prepare their budget, the budget officer should allocate amount for purchase of computer units or the employees may look for generous donors in case the budget of the local government is not suffered; 2) The personnel and department heads should practice using the application software and try exploring while using the software; 3)   The personnel especially in the lowlan, and interior municipalities need to undergo training along Microsoft Excel and use of Internet, and the department heads should find time to attend training on advanced I.T. like Microsoft PowerPoint; and   4) The Local Government Units should include in their Municipal Development Plans how they can improve and advance along Information and Communication Technology, particularly their connection to the World Wide Web.

Introduction

Background of the Study

People, in particular, especially those in offices and in the academe, have recognized the importance of computers especially in the performance of their work.

It was stated in a position paper for a National Information Technology Plan submitted to Pres. Cory Aquino in May 1988 that "In management, both government and the private sector, could make better use of computers other than in mere record keeping and transaction processing application such as payroll and accounting. And for the government to make effective use of computers, there is a need for creating an awareness of the opportunities for the effective use of information systems at all levels of government". This means that government employees must be aware of all the uses and capabilities of computers so that they can utilize this equipment to the fullest thus, facilitating their work.

However, a shortage of qualified Information Technology (IT) professionals exists. In addition, there are still some parts or areas of the country wherein most of the people are still computer illiterate and some government agencies still lack this horrible monster, the computer unit, that would do the work for those office workers who are reluctant for a change.

One of the thrusts of President Gloria Macapagal Arroyo is the e-Governance or the creation of Information Technology Education and Communication Committee. The projection is that someday State Universities and Colleges are connected with each other through internet, Local Government Unit are connected together through the web, and farmers and other local product producers are linked together to to sell their products through internet.

The province of Ilocos Sur, which is composed of low-land and interior municipalities especially in the second district, is beset with the problem of the computer literacy. While it is true that there are already educational institutions in the area that provide or offer computer training to help in the development of knowledge, information and skills along computer and information technology, the computer illiteracy rate is still a problem. The Information System Strategic Planning Seminar for Local Government Units which was considered as one of the tools in the implementation of the e-Governance program of the government was given priority by the National Computer Center is still a problem.

It is for this reason that the researcher is very interested to conduct this research. Result of this research will provide information on the actual status and needs of the local

government units in the second district of Ilocos Sur along computer and information technology which may be used as a basis of development or preparation of training design.

Objectives of the Study

This study ascertained the capability or readiness of some local government units in the second district of Ilocos Sur along Computer and Information Technology in tenns of computer equipments and facilities and manpower resources during the year 2007.

Specifically, it sought to answer the following:

1. What are the existing hardware and software that the local government units have?

2. What is the level of Computer literacy of the manpower of the local government units of the second district of Ilocos Sur as perceived by the personnel themselves along:
    a. knowledge of computers,
    b. word processing,
    c. electronic spreadsheet, and
    d. internet knowledge?

3. Are there significant differences in the level of computer literacy of the department heads and personnel between and among the different local government units classified according to location?

Review of Related Literature and Studies

This section presents the related literature and studies gathered by the researchers that gave insights on how to go about this research which helped much in the attainment of its objectives.

Shelly, et. al (2007) stated that "as technology continues to advance, computer is becoming more a part of everyday life; thus, many people believe that computer literacy is vital to success in today's world."

It is noted that many people has gradually changed theirs views or attitudes towards the computers as they observed the importance of computers. Shelly et.al (2007:32) said that computer has changed society today as much as the industrial revolution changed society in the 18" and 19" centuries. People interact directly with computers in the fields such as education, finance, government, health care, science, publishing, travel and manufacturing.

In the study of Lumibao (2004), she found out that Vigan City is ready along Computer and Information Technology in terms of computer equipments, facilities and manpower resources as evidenced by the bigger member of available hardware and software facilities compared to the other municipalities of the first district of Ilocos Sur and also the self evaluation of the department heads and personnel on their knowledge of computer, knowledge and skills of Microsoft Word and Microsoft Excel as "Above Average" and "Average" respectively.

On the other hand, Benzon (2006) found out that the personnel were more skillful in using Microsoft Word than Microsoft Excel. Furthermore there was a significant difference in the level of computer literacy of personnel between and among the different departments of the city government of Vigan particularly the personnel in the Mayor's Office and the City Health Office.

Conceptual Paradigm

This research work evolved in the research paradigm presented below:

Figure 1. The Research Paradigm
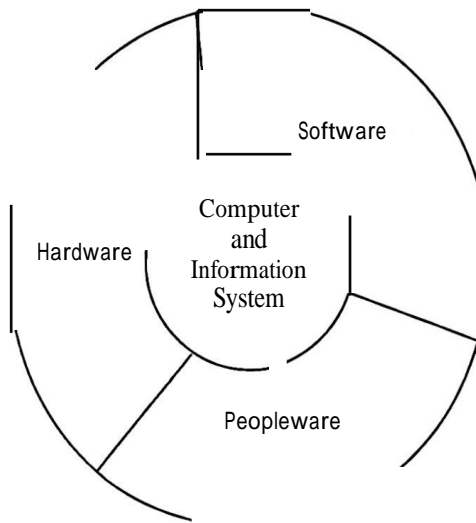
The computer and information system is composed or made up of three components namely: hardware, software, and peopleware.

Methodology

This study made use of the descriptive comparative method of research. Relevant data were gathered through questionnaire composed of five parts. Parts II to V were adopted from the questionnaire used by Lumibao (2004) and Benzon (2006) in their theses. Parts II to V is a five-point Likert scale questionnaire with the following equivalent:

Descriptive Equivalent

5	Outstanding / Excellent
4	Very Good
3	Good
2	Poor
1	Needs Improvement/ Very Poor

Sample Municipalities. The sample municipalities are shown in Table 1. The municipalities are grouped by location as to lowland, interior/upland and city with the corresponding number of personnel and department heads who responded. The sample municipalities were selected considering the class and location. All the personnel and department heads were given questionnaire but some did not return; hence, very few respondents were obtained in some municipalities.

Table 1. **The Sample Local Government Units/Municipalities With Personnel and Department Heads**

LGUs/Municipalities	Class	Personnel	Dept. Heads
I. Low land			
Santa	Fourth	21	11
Santa Maria	Third	11	7
San Esteban	Fifth	9	3
Santiago	Fourth	9	9
Sta. Lucia	Third	12	7
Sub-Total		**62**	37
II. Interior/Upland			
Nagbukel	Fifth	16	7
Banayoyo	Fourth	14	3
San Emilio	Fourth	15	4
Salcedo	Fourth	18	8
Sub-Total		63	22
III. City			
Candon		21	7
Grand Total		**146**	66

Data Gathering. To gather relevant data needed in this research work, the researcher requested permission from the municipal Mayors to float the questionnaire to the personnel and department heads.

Statistical Treatment of the Data. To attain the objectives of this research or to answer the specific questions raised, the following statistical tools were used/applied:

Frequency count was used to determine the profile of the respondents and the existing software and hardware.

Mean was used to determine the level of computer literacy of the respondents along the four areas included as perceived by themselves. To describe the level, the following range and descriptive rating were used:

Range	Descriptive Rating
4.26−5.0	Excellent/Outstanding
3.46−4.25	Very Good
2.56−3.45	Good
1.76−2.55	Poor
1.0 −1.75	Needs Improvement/ Very Good

One-way analysis of variance (ANOVA) was used to determine the significant differences in the level of computer literacy of the department heads and personnel between and among the different local government units classified according to location.

Bonferroni was used in the multiple-comparison of means to determine which pair of the local government units contributed to the significant differences.

Results and Discussion

Profile of the Respondents

On Sex. As seen in Table 2, generally, there were more female personnel respondents as well as department heads both in the low-land and interior municipalities and also in Candon City. This is supported by the figures that in the lowland, there were 38 (61.29%) female while only 21 (33.87%) male personnel respondents and in the interior municipalities, there were 43 (68.36%) female personnel respondents and only 17 (26.98%) male while in the City, nine (9) 42.66% were female, 6 (28.57%) were male and 6

(28.57%) no response. On the other hand, there were 16 (43.24%) female department heads and 17 (45.95%) male department heads in the low-land municipalities. In the interior municipalities, out of 22 respondents 15 (68.18%) were female only 5(22.73%) were male. In the City, 5 (71.43%) were female and only 2 (28.57%) were male.

Considering all groups of municipalities, out of 146 personnel respondents 90 (61.64%) were female and 44 (30.14%) were male. For the department heads, 36 or 54.55% were female and only 24 or 36.36% were male.

Generally, there were more female personnel 90 (61.64%) as well as department heads 36 (54.55%) than male.

On Educational Attainment. Out of the 146 personnel respondents, one (.68%) is a high school graduate, 5 (3.42%) reached college level and 112 (76.71%) were college graduates. On the part of the department heads, 64 (96.97%) of the 66 respondents were college graduates, and the rest did not respond.

On Age. Both in low-land and interior municipalities and also in the city, most of the personnel respondents belong to ages ranging from 26-30 and 31-35 as supported by the total 30 (20.55%) and 25 (17.12%) respectively. There was 1 personnel or 0.69% who belong to the oldest among the group, that is within age range 56-60 and this came from the low-land municipalities while in the interior municipalities and in the city, the oldest group belong to age range 51-55 with 3% and 1% personnel, respectively. The youngest group in all categories of municipalities belong to age range 21-25 with 6 personnel (9.68%) in the lowland 2 (3.17%) in the interior municipalities and 1 (4.67%) in the city. A total of 25 (17.12%) did not place their age.

On the department heads group, the largest number 11 (16.67%) each belong to age ranges 41-45 and 46-50, considering the three categories as a whole. However, the oldest among the department heads belong to age range 56-60 (I or 1.52%) in the low-land municipalities. In the city, out of seven department heads, 5 (71.44%) belong to age range 41-45 and the other two, (28.57%) belong to age range 26-30.

It is worth noting that, excluding those who did not indicate their age, the bulk of personnel respondents belong to age range 21-35. However, in the case of the department heads, the bulk belongs to age range 36 and above. This may be due to the number of years of experience which is one of the factors considered in assigning or designating department heads.

Table 3. Number of Hardware Units and Peripherals and Software in Selected Local Government Units in the Second District of Ilocos Sur

I. Hardware and Peripherals	Low-land	Interior	City	Total
A. Computer Units	37	22		
Pentium IV	4	2	2	8
Pentium III	12	5	2	19
Pentium III	4	4	2	10
Pentium I	3	2	2	7
Lower than Pentium	2	2	-	4
Others: (AMD, Cyrix, Celeron, etc.	3	2	-	5
Total	28	17	8	
B. Printers				
Dot Matrix:				
LX 300	4	2	-	6
FX 1170	1	-	1	2
Inkjet/Deskjet	2	-	2	4
Laser Jet	1	-	1	2
C. Accessories				
Flatbed Scanner	I	-	I	2
Handheld Scanner	-			
Digital Camera	I	I	I	3
CD Writer	I			I
Uninterruptable Power Supply (UPS)	4	I	3	8
Automatic Voltage Regulator (AVR)	24	15	3	42
External Modem	I		I	2
II. Software				
Windows Operating System	5	4	I	10
Microsoft Word	5	4	I	10
Microsoft Excel	5	4	I	10

On Hardware. Based on the responses of the department heads of the sample local government units, the lowland and interior municipalities have computer units most of which are Pentium I to Pentium IV although there are still lowland and interior municipalities with computer lower than Pentium I. There were some offices/departments in the sample municipalities that were not provided with computer units yet. Maybe the offices/departments with computer units shared with those who didn't have yet. In the case of the city government, the existing computer units were Pentium I to Pentium IV.

This is supported by the figures shown in Table 3, that the total number of computer units is less than the total number of department heads who responded and provided the information regarding the hardware and software.

On Hardware Peripherals and Software. It is worth noting that the sample local government units had computer units and printers but all offices or departments were provided. Candon City and one lowland municipality had other computer peripherals like scanner, digital camera, modem, etc.

The Level of Computer Literacy of the LGU Personnel and Department Heads

On Knowledge of Computer. It is seen in Table 4 that based on the self assessment of the respondents, the personnel in the lowland municipalities generally have "Good" level of Knowledge of computer, with the means ranging from 2.69 to 3.40 in three items: *Skills in operating the computer machine; Skills in identifying an input device like the keyboard, scanner, and mouse;* and *Skill in identifying an output device like the printer, and a hard disk,* as supported by the mean ranging from 3.47 to 3.52.

In the interior municipalities, the personnel assessed themselves as "Good" in all items with the mean ranging from 2.98 to 3.82 except in item: *Skill/Knowledge on basic trouble shooting* with mean 2.27 which falls under "Poor" level. In Candon City, the personnel assessed themselves as "Very Good" in almost all items (means from 3.86 to 4.10 but they were "Good" (mean = 3.14) in *Skills/knowledge in basic trouble shooting.*

In the case of the department heads in the lowland and interior municipalities they have almost the same assessment of themselves that is generally they were "Good" means ranging from 3.18 to 3.41). However, they assessed themselves "Poor" in *Skills/Knowledge in basic trouble shooting.* In Candon City, the department heads had "Very Good" knowledge of computer, mean ranging from 3.71 to 4.43, in all items except in *Skills/knowledge in basic trouble shooting* where in they assessed themselves "Good" only (mean= 3.00)

	Low-Land		Interior			
	Mean	DR	Mean	DR		
Skills in Operating the computer machine	3.47	VG		Do		
Skills in identifying an input device like the keyboard, scanner, and mouse		DO		D		
Skill in identifying the central processing unit (CPU).	3.40	O		D		
Skill in identifying an output device like the printer and a hard disk.	3.50	DO		D		
Skills in identifying storage devices such as a floppy diskette and a hard disk.		DO		DO		
Knowledge on the proper care of a storage device such as the diskette.		D		D		
Skill/s/knowledge in basic trouble shooting.		D		O.		
Knowledge on the proper care of a computer unit.		O		D		

Considering the mean as a whole of all the items on knowledge of computer, both personnel and department heads in Candon City had "Very Good" level, with means 3.93 and 3.87 respectively, which are higher than personnel and department heads in the lowland and interior municipalities, means ranging from 3.01 to 3.35 which fall within the "Good" level.

On Word Processing. It is seen in Table 5 that generally, personnel in the lowland municipalities had "Good" level in using the application software on word processing as supported by the means of almost all the items ranging from 2.84 to 3.42 and the mean as a whole 3.26. In the interior municipalities the personnel assessed themselves as "Poor" as evidenced by the means ranging from 2.03 to 2.60 and the mean as whole 2.36. However, they were "Good" in the *Skill in saving a document* (mean= 2.83). In the city, the personnel had "Very Good" level with means ranging from 3.71 to 4.33 in almost all the items except in the *Skill in saving a document* where they assessed themselves "Outstanding" (mean = 4.33).

On the other hand, the department heads in both lowland and interior municipalities had "Good" level of using the word processing application software, as supported by the mean as a whole 3.19 and 3.29 respectively. The department heads in the city had a "Very Good" level based on the mean as a whole which is 3.72, and majority of the items with means ranging from 3.57 to **4.**14. However they assessed themselves "Outstanding" in the *Skill in saving a document* (mean = 4.57) and "Good" only in the following items: *Skill in using the different too/bars like Standard, Formatting and Drawing toolbars; Skill in inserting a bullet to a bulleted list; Skill in inserting tables into a document; Skill in inserting numbers in a numbered list; Skill in inserting picture/graphics; and Skill in formatting picture/graphics.*

On Microsoft Excel. It is noted in Table 6 that in the *"Skill in changing font, font style and font size,* the department heads and personnel in Candon City and in the interior municipalities assessed themselves "Very Good" as supported by the mean 3.59 and 4.05 respectively; and putting together the three groups of respondents, both personnel and department heads obtained "Very Good" assessment with means 3.53 and 3.47 respectively. The rest of the group had "Good" level (mean ranges from 3.19 to 3.38). In all the other skills, the respondents from both categories (lowland and interior) groups assessed themselves "Good", mean ranges from 2.48 to 3.38, except in four items where they had "Poor" level mean ranges from 2.46 to 2.65. These are: *Skill in using function wizard; Skill in working with Excel database (sort, filter, extract); Skill in inserting picture/graphics; and Skill in formatting picture/graphics.*

Table 5

Level of Computer Literacy of the Manpower along Word Processing of the Local Government Units in the Second District of Ilocos Sur by Categories and by Group of Respondents

Items	Personnel					Dept. Head					
	Lowland Mean	DR	City Mean	DR	Personnel Mean	DR	City Mean	DR	Lowland Mean	DR	Dept. Head Mean
1. Skill in identifying the different parts of a word processing screen like the Microsoft Word	3.25 / G		3.76	G	2.78	G			3.38	G	3.41
2. Skill in encoding a one-page document/report using a word processing software	3.82 / VG		4.1	G	2.66	VG			3.6	G	3.50
3. Skill in encoding a multi-page document/report using a word processing software	3.55 / G		3.95	G	2.65	VG			3.32	G	3.4
4. Skill in using the different buttons like Standard, Formatting and Drawing toolbars		G	3.88	G	2.30	G			3.08	G	3.14
5. Skill in using the Menu Bar	3.21 / G		4	G	2.37	G			3.16	G	3.29
6. Skill in setting the margin, papers size and orientation of paper		G	4.1	VG	2.52	G	3.88	G	3.27	G	3.45
7. Skill in setting the line spacing of a document		G	4	VG	2.51	G	4.30	VG	3.27	G	3.18
8. Skill in changing text, font style and font size		VG	4.24	VG	2.60	VG	4.14	VG	3.43	G	3.27
9. Skill in applying effect to a text or word		G	3.35	VG	2.53	G			3.11	G	
Skill in setting the alignment of the docume		G	4.14	VG	2.51	G			3.14	G	3.45
Skill in sorting a list		G		VG	2.30	G			3.00	G	3.18
Skill in creating a column		G		VG	2.38	G			3.97	VG	3.27
Skill in inserting a bullet to a bulleted lis		G		VG	2.11	G	2		2.84	G	3.09
Skill in inserting tables into a document		G		VG	2.34	G			2.83	G	3.14
Skill in inserting numbers on a numbered list		G		VG	2.17	G	3.M		2.76	G	3.18
Skill in inserting picture/graphics		G		VG	2.08	G			2.70	G	2.86
Skill in formatting picture/graphics		G		VG	2.10	G			2.49	P	2.86
Skill in saving a document		VG		VG	2.63	G		VG	3.88	VG	3.88
Skill in generating a printed output/hardcopy		G		VG	2.41	G			3.62	VG	3.41
Skill in retrieving a document		G		O	2.25	G			3.43	G	3.33
As a whole		G		O	2.36	G			3.19	G	3.29

Table 6

Computer Literacy of the Manpower along Microsoft Excel of the Local Government Units in the Second District by Categories and by Group of Respondents

Item		Personnel										
		Low Land		Interior		City		DF		Low	Mean	
		Mean	DF	Mean	DR	Mean	DR			Mean		
1	Skill in identifying the different parts of the window/components/tool screen like the Microsoft Excel	3.16	G	2.89	G	3.71	VG					
2	Skill in setting the margin, papers size and orientation of paper	3.24	G	3.09	G	3.95	VG					
3	Skill in data entry (text, number and formula)	3.26	G	3.05	G	3.9	VG					
4	Skill in editing entries in a cell	3.21	G	2.95	G	3.9	G					
5	Skill in using the different features like Standard, Formatting and Drawing toolbars	3.11	G	2.83	G	3.62	VG					
6	Skill in changing column, widths and row heights	3.21	G	2.95	G	3.81	VG					
7	Skill in using the function wizard	2.77	G	2.46	P	3.92	VG					
8	Skill in applying format to a cell (or $, %, comma, etc.)	3.02	G	2.97	G	3.95	VG					
9	Skill in performing in computation	2.89	G	2.75	G	3.81	VG					
10	Skill in changing font, font style and font size	3.25	G	3.05	G	4.05	VG					
11	Skill in creating a chart	2.97	G	2.67	G	3.71	VG					
12	Skill in deleting a cell in/performing undeleted numbers	3.15	G	3.11	G	3.81	VG					
13	Skill in formatting a chart	2.86	G	2.76	G	3.52	VG					
14	Skill in applying numbers	2.85	G	3.03	G	3.81	VG					
15	Skill in working with Excel database (sort, filter, etc.)	2.74	G	2.48	P	3.47	VG					
16	Skill in using pictured graphics	2.69	G	2.60	P	3.52	VG					
	Average for item/category	2.63	G	2.41	P	3.40	VG					

In Candon City, the personnel assessed themselves "Very Good" in all items and as supported by the means ranging 3.52 to 4.05. On the other hand, the department heads assessed themselves "Good" (mean ranges from 3.00 to 3.43) except in eight items where they assessed themselves "Very Good" (mean ranges from 3.57 to 3.86).

As a whole, the respondents from both categories and group, the lowland and interior, and department heads of Candon City assessed themselves as "Good" in using the Microsoft Excel. This is supported by the means as a whole ranging from 2.84 to 3.44 and the personnel in the City claimed that they were "Very Good" with mean equals 3.74.

On Internet. It is seen in Table 7 that the respondents from both categories and group, lowland and interior municipalities, assessed themselves "Poor" in the twenty items on the skills in using the internet, mean ranging from 1.98 to 2.65, except in five items/skills wherein the personnel in the lowland municipalities claimed that they are "Good" as supported by the means ranging from 2.66 to 2.76. These are the: *Skill in accessing information in the internet; Skill in using an Internet search engine to find a specific information; Skill in creating a new e-mail address; Skill in composing an e-mail message; and Skill in reading an e-mail message.*

In Candon City, generally, the personnel have higher assessment of themselves on the use of internet than the department heads as supported by the mean ratings ranging from 3.10 to 3.62 with descriptive rating of "Good" to "Very Good" while the department heads assessed themselves "Poor" to "Good" with means ranging from 2.29 to 3.29

However, considering all the items as a whole and looking into the numerical values, generally, the personnel and department heads in both low-land and interior municipalities assessed themselves "Poor" in internet usage with means ranging from 2.24 to 2.49 while the personnel and department heads in the City claimed that they were "Good" in internet usage, means are 3.74 and 3.44 respectively.

The results show that the manpower in the City is better in the internet usage than those in the lowland and interior municipalities. This conforms to the result of the study of Lunubao (2004) who found out that Vigan City was ready in information and communication technology along manpower resources.

Table 7

Level of Computer Literacy of the Manpower along Internet of the Local Government Units in the Second District of Ilocos Sur by Categories and by Group of Respondents

Row labels (readable):

- Skill in accessing information in the internet
- Skill in using an Internet search engine (e.g. Yahoo, Altra Vista, Info Seek) to find a specific information.
- Skill in saving the URL of a web site so you can return to the page at a later time.
- Skill in going to a specific site in the World Wide Web(WWW) given a Universal Resources Locator
- Skill in downloading files from the World Wide Web.
- Skill in Using a web browser to browse a web site (e.g. follow link, move, forward and backward).
- Skill in creating a new e-mail address.
- Skill in composing an e-mail message.
- Skill in attaching files and opening attachments.
- Skill in sending e-mail attachment through e-mail messages.
- Skill in forwarding e-mail messages
- Skill in reading e-mail messages.
- Skill in file management of e-mail, including creation of folders, moving and deleting e-mail.
- Skill in replying e-mail messages (send to an individual and send to many recipients).
- Skill in using address book.
- Skill in printing attachment and saving attachment in an appropriate place.
- Skill in following hyperlinks in accessing other pages and sites.
- Skill in copying text and graphics from the web.
- Skill in performing an advanced searching using AND/OR operators and advanced search engine.
- Skill in saving pages from the internet.
- As a whole

Personnel (Mean) column readable values: 2.96, 2.83, 2.61, 2.66, 2.62, 2.67, 2.90, 2.90, 2.49, 2.73, 2.58, 2.95, 2.73, 2.83, 2.74, 2.69, 2.55, 2.65, 2.46, 2.65, 2.71

It is seen in Table 8 that the personnel and department heads in lowland and interior municipalities assessed themselves "Good" (mea3n ranging from 3.01 to 3.35), while in the city, both the personnel and department heads considered themselves "Very Good" on knowledge of computer with means of 3.93 and 3.87 respectively.

The personnel and department heads in the lowland and the department heads in lowland and interior municipalities considered themselves as "Good" (total mean ranges from 3.19 to 3.29) in using the application software (Microsoft Word), while the personnel in interior municipalities assessed themselves as "Poor" (total mean of 2.36). However, putting the two groups of municipalities, both the personnel and the department heads assessed themselves as "Good", (total means of 2.81 and 3.24 respectively). On the other hand, the personnel (mean= 4.0) and department heads   (mean=3.72)   in   the   city considered themselves "Very Good" in using Microsoft Word.

The personnel and department heads, both lowland and interior municipalities assessed themselves as "Good" in using the application software (Microsoft Excel), the total mean ranges from 2.84 to 3.17. However, in the city, the personnel claimed that they were "Very Good" (mean= 3.74) in using the Microsoft Excel while the department heads were only "Good' (mean= 3.44).

The personnel and department heads in both lowland and interior municipalities assessed themselves as "Poor" in using the internet, (total mean ranges from 2.28 to 2.49), while the personnel and department heads in the city assessed themselves as "Good" with mean ratings of 3.40 and 2.74 respectively.

Result show that both the respondents (personnel and department heads) had already equipped themselves with the knowledge, information and skills on the use of modern technology at "Good" level. On the use of internet, the "Poor" result is due to the fact that most local government units, especially in the lowland and interior municipalities, have no connection yet to the World Wide Web. This maybe due to the limited number of computer units in the municipalities and the high cost of connection to the World Wide Web.

Table 9.   Summary of the Analysis of Variance on the Significant Differences of the Level of the Computer Literacy Along Computer Knowledge Between and Among the Three Categories of Personnel

Source of Variation	df	Sum of Squares	Mean Square	F-value	
				Computed	*Tabular (.05)*
Between	2	3.4994	1.7497	18.2832	3.47
Within	21	2.0102	.0957		
Total	23	5.5096			

It is seen in the table that the computed F-"alue of 18.2832 is much greater than the tabular F-va\ue of 3.47 at .05 probability level. This result provides the researcher enough basis to reject the null hypothesis of no significant difference. This means that the personnel respondents from the three groups of municipalities: low-land, interior and city have different levels of computer literacy along computer knowledge.

Table 10.   Summary of the Analysis of Variance on the Significant Differences of the Level of the computer Literacy Along Knowledge of Computer Betweer and Among the Group of Department Heads by Three Categories

Source of Variation	df	Sum of Squares	Mean square	F-value	
				Computed	Tabular (.05)
Between	2	1.8544	0.9272	5.9819	3.47
Within	21	3.2545	0.1550		
Total	23	5.1089			

It can be seen in the table that the computed F-value 0f 5.9819 is greater than the tabular value of 3.47 at .05 probability level. This condition led .he researcher to reject the null hypothesis of no significant difference, which can be concluded that there are significant differences on the level of knowledge of computer of the department heads of the three groups of municipalities.

Table 11.   Summary of the Multiple Comparisons of Means on the Level of Computer Literacy along Knowledge of Computer of Personnel and Department Heads

| | Absolute Value of Means Difference | | | |
| | Personnel | | Department Heads | |
	Interior	City	Interior	City
Lowland	0.31	0.61	0.12	0.64
Interior		0.92		0.52
Critical Point	0.32		0.22	

It can be gleaned in Table 11 that on the part of personnel, the pairs Lowland and City, and Interior and City yielded mean differences greater than the critical point which is 0.32. These are 0.61 and 0.92 respectively. This means that the level of knowledge of computer of the personnel in the lowland municipalities differ significantly from those in the city, as well as those from the interior municipalities compared to those from the city. It was noted that the personnel from the city had the highest mean among the three. This result may be due to the fact that city government is expected to be more advanced than those other municipalities especially those from the interior municipalities.

Table 12.   Summary of the Analysis of Variance on the Significant Differences of the Level of Computer Literacy along MS Word Between and Among the Group of Personnel by Categories

| Source of Variation | df | Sum of Squares | Mean square | F-value | |
				Computer	Tabular (.05)
Between	2	23.9517	13.4759	388.3545	3.162
Within	57	1.9749	0.0342		
Total	59	28.9266			

The computed F value of 388.3545 is much greater than the tabular value of 3.162 at .05 probability level so the null hypothesis of no significant differences is rejected, hence it can be concluded that there are significant differences on the level of computer literacy of the personnel along word processing. This means that the level of computer literacy along word processing of the personnel from the three groups of municipalities differ significantly. Personnel from the interior municipalities had the lowest mean.

Table 13 presents the summary of the analysis of variance if significant differences exist in the level of computer literacy along word processing of the Department Heads. The computed F-value of 14.4943 is much greater than the tabular value of 3.162 at .05 probability level. This condition provides enough basis for the researcher to reject the null hypothesis of no significant differences; thus, it can be concluded that the level of computer

Table 13. Summary of the Analysis of Variance on the Significant Differences of the Level of Computer Literacy along MS Word Between and Among the Group of Department Head by Categories

Source of Variation	df	Sum of square	Mean square	F-value	
				Computer	Tabular (.05)
Between	2	3.1570	1.5785	14.4943	3.162
Within	57	6.0297	0.1089		
Total	59	9.3667			

literacy of the department heads from the three groups of municipalities differ significantly. Department heads in the lowland municipalities had the lowest mean among the three.

Table 14. Summary of the Multiple Comparisons of Means on the Level of Computer Literacy along Microsoft Word of Personnel and Department Heads

	Absolute Value of Means Difference			
	Personnel		Department Heads	
	Interior	City	Interior	City
Lowland	0.90	0.74	0.10	0.53
Interior		1.64		0.43
Critical Point	0.12		0.21	

It can be seen in the table that for the personnel, the mean differences of the three pairs: Lowland and Interior is 0.90; Lowland and City is 0.74; and Interior and City is 1.64 all of which exceeded the critical point value of 0.12. This means that all the three pairs differ significantly. It is worth noting that the pair Interior and City had the largest mean difference in favor of City having the highest mean among the three.

In the case of the department heads, only two mean differences exceeded the critical point of 0.12. These are the mean differences of Lowland and City (0.53) and Interior and City (0.43)

Table 15. Summary of the Analysis of Variance on the Significant Differences of the Level of the Computer Literacy along MS Excel Between and Among the Group of Personnel by Categories

Source of Variation	df	Sum of squares	Mean square	F-value	
				Computed	Tabular (.05)
Between	2	14.8055	7.4028	282.5996	3.162
Within	57	1.4945	.0262		
Total	59				

It is seen in Table 15 that the computed F-value of 282.5996 is much greater than the tabular value of 3.612 at .05 probability level, so the null hypothesis of no significant differences is rejected. Hence it is concluded that significant differences exist on the level of computer literacy along Microsoft Excel of the personnel of the three groups of municipalities. Personnel from the interior municipalities had the lowest mean.

Table 16. Summary of the Analysis of Variance on the Significant Differences of the Level of the Computer Literacy along MS Excel Between and Among the Group of Department Heads by Categories

Source of Variation	df	Sum of square	Mean square	F-value	
				Computed	Tabular (.05)
Between	2	2.6598	1.3299	28.7083	3.162
Within	57	2.6405	.0403		
Total	59				

The computed F-value of 28.7083 is greater than the tabular value of 3.162 at .05 probability level, so significant differences exist. Therefore it can be said that the department heads of the three groups of municipalities had different level of computer literacy along Microsoft excel. Department heads in the lowland had the lowest mean and City group with the highest mean.

Table 17. Summary of the Multiple Comparison Tests of Means on the Level of Computer Literacy along Microsoft Excel of Personnel and Department Heads

	Absolute Value of Means Difference			
	Personnel		Department Heads	
	Interior	City	Interior	City
Lowland	0.20	0.70	0.24	0.51
Interior		0.90		0.27
Critical Point	0.10		0.40	

It is seen in Table 17 that in the case of the personnel, mean difference of two pairs exceeded the critical value of 0.10. These are Lowland and City (0.70) and Interior and City (0.90). On the other hand, in the case of department heads, only one pair exceeded the critical point of 0.40. This is Lowland and City with 0.51 as the mean difference.

Table 18. Summary of the Analysis of Variance on the Significant Differences of the Level of the computer Literacy Along Internet Between and Among the Group of Personnel by Categories

Source of Variation	df	Sum of Square	Mean Square	F-value	
				Computed	Tabular (.05)
Between	2	8.7919	4.3960	11 1.0101	3.162
Within	57	2.2579	.0396		
Total	59	12.0498			

It was found out that significant difference exists as supported by the computed **F-**value of 11 1.0101 which is much greater than the tabular value of 3.162 at .05 probability level. This shows that the personnel from the three groups of municipalities have different level of knowledge and skills in internet usage.

Table 19. Summary of the Analysis of Variance on the Significant Differences of the Level of the computer Literacy Along Internet Between and Among the Group of Department Heads by Categories

Source of variation	df	Sum of square	Mean square	F-value	
				Commuted	*Tabular (.05)*
Between	2	2.5174	1.2587	16.8501	3.162
Within	57	4.2559	.0747		
Total	59	6.7731			

Analysis of Variance was also applied in determining the significant differences on the level of knowledge and skills in internet usage of the groups of department heads. Significant differences exist as supported by the computed F-value of 16.8501 which is greater than the tabular value of 3.162 at 0.05 probability level.

Table 20. Summary of the Multiple Comparison Test of Means on the Level of Computer Literacy along Internet of Personnel and Department Heads

	Absolute Value of Means Difference			
	Personnel		Department Heads	
	Interior	City	Interior	City
Lowland	0.25	0.91	0.09	0.39
Interior		1.16		0.48
Critical Point	0.40		0.17	

It is noted in the table that the mean difference of 0.91 between lowland and city personnel and 1.16 between interior and city personnel exceeded the critical point/value 0.40. Likewise in the case of department heads the mean differences 0.39 between lowland and city and 0.48 between interior and city are greater than 0.17 the critical point at .05 probability level.

It is worth noting that in the multiple comparison tests of means along the computer literacy, the trend is almost the same both for personnel and department heads, that is, there is no significant difference between lowland and interior but significant differences exist between lowland and city as well as between interior and city. City group had the highest mean in each of the four areas both for personnel and department heads. These results are attributed to the fact that city government is expected to have better facilities and equipment, thus, providing the personnel better chances to use the modern technology.

Conclusions

Based on the findings, the following conclusions were drawn:

1. There were more female personnel as well as department heads than male. Most of the personnel and department heads in the sample municipalities were college graduates. In the case of personnel respondents, 37.67% belong to ages 26-35; on the part of department heads, most of them were 36 years old and above.

2. The sample municipalities had computer units, most of which are Pentium I and above, and had computer printers most of which are dot matrix although there are some desk jet or inkjet. Some offices in the municipalities were not provided with printers.

One lowland municipality and city had other computer peripherals like, scanner, digital camera, and modem and CD writer.

3. The personnel and department heads in lowland and interior municipalities considered themselves "Good" on knowledge of computer while the personnel and department heads in the city had "Very Good" level on knowledge of computer.

The Personnel and the Department heads in the lowland and department heads in interior municipalities were "Good" while the personnel in interior municipalities were "Poor" in using Microsoft Word application software. On the other hand, the personnel and department heads in the city were "Very Good" in using the same application software.

The personnel and department heads of both lowland and interior municipalities and the department heads of the city government had "Good" level, while the personnel in the city were "Very Good" in using the MS Excel application software.

The personnel and department heads in both lowland and interior municipalities were "Poor" while the personnel and department heads in the city were "Good" in using internet.

4. The level of knowledge of computer and level of internet usage of both personnel and department heads in Interior municipalities differ significantly from those in the City group. City group had the highest mean rating and interior group with the lowest mean rating

With regards to the level of the Microsoft Word and Microsoft Excel, the three pairs of personnel: Interior and Lowland, Interior and City, Lowland and City differ significantly, with city personnel having the highest mean and personnel from Interior municipalities had the lowest mean. In the case of the department heads, the level of using the Microsoft Word of those from the Interior and Lowland municipalities differ significantly from those in the city.

Recommendations

Based on the findings and conclusions, the following are recommended

1. Every time the Local Government Units prepare their budget, the budget officer should allocate amount for purchase of computer units or the employees may look for generous donors in case the budget of the local government is not suffered.

2.   The personnel and department heads should practice using the application software and try exploring while using the software.

3.   The personnel especially in the lowland and interior municipalities need to undergo training along Microsoft Excel and use of Internet; and the department heads should find time to attend training on advanced I.T. like Microsoft PowerPoint.

4. The Local Government Units should include in their Municipal Development Plans how they can improve and advance along Information and Communication Technology, particularly their connection to the World Wide Web.

References

A. Book

Milton, Susan J. and Jesse C. Arnold. 2004. *Introduction to Probability and Statistics: Principles and Applications For Engineering and The Computing Sciences.* New Yor; Mc Graw Hill.

B. Theses

Benzon, Paraluman Ma. Fatima C. 2006. "Computer Literacy of Local Government Unit Personnel of Vigan City', Unpublished Master's Thesis, University of Northern Philippines, Vigan City.

Lumibao, Donna Marie C. 2004. "Computer and Information Technology in the local Government Units of the First District of Ilocos Sur", Unpublished Master Thesis, University of Northern Philippines, Vigan City.

C. Magazine

National Information Technology Plan. Info Trends, 1988