ISSN: 2961-1989
Academia Research Journal
Volume: 3 Issue: 1, Year 2024
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The Impact of Demographic Factors on Information Communication Technology Use: A Case of Mathematics Teachers in Kathmandu District

Ganesh Prasad Adhikari[1]
https://orcid.org/0000-0001-7906-1911

[1]Assistant Professor, Central Department of Education, T.U.
[1]Corresponding Author: ganesh.adhikari@cded.tu.edu.np
DOI: https://doi.org/10.3126/academia.v3i1.61262
Article History: Received: Aug. 25, 2023 Revised: Oct. 11, 2023 Received: Dec 17, 2023

Abstract

The use of information and communication technology (ICT) is an important issue for teaching learning activities due to global changes; however, the success of this use depends on the readiness of the teachers. This study investigated the effect of demographic variables on the use of ICT among secondary-level mathematics teachers in the Kathmandu district. This study describes a research hypothesis testing the absence of statistically significant differences in ICT use based on demographic variables such as gender, age, marital status, teaching experience, educational level, job position, and school location. For quantitative research, an online survey design was used. The data were collected through a validated online survey questionnaire, which consisted of seven demographic variables and seven items on the use of ICT. The online survey questionnaire was administered to 287 subjects. The response of mathematics teachers was only 59.23%. The response data was downloaded into Excel and cleaned. Frequency, percentage, independent sample t-tests, and one-way ANOVA were used to analyze the cleaned data using the JAMOVI software. The results revealed no statistically significant differences in ICT use across demographic variables. Specifically, gender, marital status, age groups, teaching experience, educational level, job positions, and school locations did not significantly affect the use of ICT among secondary-level mathematics teachers. The small effect sizes limited practical significance, despite the absence of statistical significance. The findings provide valuable insights into the relationship between demographic factors and ICT integration in education. Further research should validate these results in diverse educational contexts in Nepal.

Keywords: use of ICT, online survey, demographic variables, mathematics teachers, Nepal

Introduction

At the school level, Information and Communication Technology (ICT) has been identified as a technical tool for enhancing mathematics teaching and learning. The use of ICT in the classroom has increased significantly in recent years as teachers have realized how much technology can do to enhance student engagement, learning outcomes, and teacher effectiveness. Research has also shown that using ICT in the teaching of mathematics allows students to explore mathematical concepts in novel and interesting manners, which promotes greater levels of cognitive development and enhancing student learning (Herath, 2015; Perron et al., 2010). Its' use in the education system can have an impact on the speed of information transmission, the range of knowledge sources, the preservation of knowledge, and the quality of the learning process (Lubis et al., 2020). Aslan and Zhu (2015) have pointed out that teachers' use of ICT in their teaching and learning activities is a complex and challenging issue. Therefore, it is

necessary to investigate the factors that enable or disable teachers from using ICT for the teaching and learning process.

Numerous studies have looked various factors affect the use of ICT in mathematics teaching and learning activities at the school level. Among them, demographic factors have been described as major factors that may affect or predict the use of ICT resources by individuals. It is usual practice to employ demographic factors to learn more about the characteristics of the groups of people who need to be recognized. Although additional demographic factors are also utilized, gender, age, ethnicity, race, and socioeconomic position are the most often used characteristics to categorize individuals (Little, 2013). In research, demographic factors are the variables that help provide a good representation of the data results (Creswell & Creswell, 2018). Additionally, demographic factors are utilized to ascertain how one independent variable and one dependent variable are related (Creswell & Creswell, 2018). Several researchers have examined demographic factors to determine the level of ICT usage.

The use of ICT in the teaching and learning process may be affected by the gender differences of the teachers (Serin, 2015). This is consistent with a study (Wilson et al., 2015) that found both male and female teachers have different uses of ICT for teaching in the classroom. Subsequently, the researcher (Tarawneh & Allahawiah, 2015) contended that the factor influencing teachers' use of ICT is gender. Furthermore, a study by Nikolopoulou and Gialamas (2016) revealed that male and female teachers' use of ICT varies. Similarly, researchers Aslan and Zhu (2017) concurred that gender makes a significant difference in how teachers use ICT in their classroom instruction.

The use of ICT is being impacted by the age range of teachers (Tarawneh & Allahawiah, 2015). Researchers Hammond and Gamlo (2015) presented findings from a study that suggested teachers' use of ICT is influenced by their age. Moreover, studies on the use of ICT in schools and the factors influencing teachers' ICT use are crucial, according to scholars (Wong et al., 2012). Research on the impact of gender roles on ICT usage found conflicting results. While, there is no significant differences in the use of ICT in teaching between genders (Aslan & Zhu, 2017; Fomsi & Emeka, 2017), other scholars Mustafa (2014) and Manyilizu & Gilbert (2015) found gender differences in the use of ICT in teaching and learning activities.

According to researchers Koh et al. (2014), the effectiveness of using ICT for teaching activities is influenced by teaching experiences. According to a study by a researcher Szeto (2015), teachers' experiences may influence how they use ICT. Additionally, Nikolopoulou and Gialamas (2016) noted that teachers with more expertise are more comfortable using ICT in the classroom. As a result, it seems that the teachers' previous teaching experiences have an impact on how ICT is used in the classroom. Then, based on their previous teaching experience, a teacher's ICT proficiency is determined (Røkenes & Krumsvik, 2016). In addition, Khan and Markauskaite (2017) made the case that instructors' ICT-related experiences affect their teaching and learning processes. Although, there is no significant between teaching experience of teachers and their use of ICT in classroom (Mueller et al., 2008). Education qualifications are important for acquiring necessary skills and motivating individuals to use ICT effectively. High use of ICT is dependent on several factors, including level of education (Pick et al., 2015). Furthermore,

teachers' educational background influences how they use ICT. Similarly, Ladipo (2015) claimed that there are notable differences in the ICT use and educational backgrounds of teachers.

In view of the background information mentioned above, demographic variables (e.g., gender, age, teaching experience) are employed to predict the level of usage of ICT, with varying results. However, no study has investigated the effect of demographic variables such as gender, age, marital status, teaching experience, education level, job position, and location of schools on the use of ICT in teaching and learning activities in mathematics classrooms by collecting precise and reliable data on public secondary-level mathematics teachers in the Kathmandu district. Considering this, the researcher had a question in mind about what is the effect of demographic factors (i.e., gender, age, marital status, teaching experience, education level, job position, and location of schools) on the use of ICT among public secondary-level mathematics teachers. Therefore, this study aimed to determine the effect of demographic factors on the use of ICT by public secondary-level mathematics teachers in the Kathmandu district.

Research Hypothesis

This study was conducted to investigate the effect of demographic variables on the use of ICT among secondary-level mathematics teachers. Therefore, the following research hypothesis was developed for this study:

1. H_0: There is no statistically significant difference in the use of ICT based on demographic variables (gender, age, marital status, teaching experience, educational level, job position, and location of school) of secondary-level mathematics teachers in the Kathmandu district.

Methodology

The design used for this study was an online survey design for quantitative research. This design was the most effective because it was practical, affordable, fast to run, enhanced response rate, low cost, real-time access, accessibility from numerous devices, time savings, efficient in gathering large amounts of data from the entire population, and speedy analysis to examine the effect of demographic variables on the use of ICT (Salvatori, H. 2023). The targeted population of the study comprised all mathematics teachers who had been teaching compulsory and optional mathematics at the secondary level in public schools in Kathmandu district in the academic year 2023–2024. In this study, seven demographic variables (i.e., gender, age, marital status, teaching experiences, educational level, job position, and location of schools) were independent variables, and use of ICT was a dependent variable. According to the Education Development and Coordinate Unit of the Kathmandu district, there are 312 secondary schools in the district. These schools were divided into 11 strata (Kathmandu Metro City, Kageshwari, Dachhinkali, Kirtipur, Chandragiri, Nagarjun, Tarkeshwar, Tokha, Budhanilkantha, Gokarneshwar, and Shankharapur Municipalities). In the first stage, the researcher identified and listed all government schools in each stratum of the Kathmandu district. Subsequently, the researcher called the head teachers of those schools and asked for the phone number of the teachers who teach compulsory and optional mathematics in classes 9 and 10 at that school. Additionally, the researcher called the teachers again, explained the purpose of the research, and obtained permission for data collection. After permission was obtained, a link to the online survey questionnaire was sent to

287 mathematics teachers by phone, email, or Viber. A total of 170 respondents responded to the online survey questionnaire with a 59.23% response rate. The response data were downloaded into an Excel file and cleaned. Then, the outlier was checked. In the data, respondents 4, 15, 20, 45, 39, 70, 106, and 127 were outliers and were deleted. Therefore, a total sample size of n = 162 for this study is appropriate using an online sample size calculator. The online survey questionnaire was the primary tool for data collection. It had two sections: Section A and Section B. Section A contained item that sourced information on the demographic data of the teachers. Section B consists of seven closed-ended items with a five-point Likert scale that were used to measure the use of ICT. The answers given by the teachers in this section are in the form of a Likert scale (1 to 5) with answer choices: strongly disagree, disagree, neutral, agree, and strongly agree. The list of items is given in Appendix VI. The most popular method for assessing internal consistency in behavioral science is Cronbach's alpha (L. Cohen et al., 2007). The normality of the dependent variable was examined by a Q-Q plot (Appendix-I), and its reliability coefficient was 0.93. The impact of demographic variables on the usage of ICT by secondary-level mathematics teachers in the Kathmandu district was determined using the independent sample t-test and one-way ANOVA. In this study, an independent sample t-test was used for gender and marital status; moreover, a one-way ANOVA was used for age, teaching experience, education level, job positions, and location of school at the α=0.05% level of significance. In addition, percentage and frequency analyses were used for descriptive statistics to interpret and analyze the data using the free, open-source JAMOVI software.

Results and Discussion

The demographic data examined for this study include teacher gender, age, marital status, teaching experience, educational level, and job positions, as presented in the following discussion. The demographic variables of the total number of mathematics teachers in the sample were analyzed in terms of frequency and percentage. The sample has more male mathematics teachers, with 75.90% (which constitutes 123 teachers) male mathematics teachers and 24.10% (which constitutes 39 teachers) female mathematics teachers. Concerning age, a higher percentage of teachers, who constitute 65 teachers, fall under the age group between 30 and 40 years, followed by 29.4%, who constitute 52 teachers, who fall under the age group 40–50 years, followed by 30.10%, who constitute 25 teachers, who fall under the age group below 30 years, and 15.40%, who constitute 20 teachers, who fall under the age group above 50 years, followed by 12.30%. With regard to married status, 82.10% with133 mathematics teachers were married, and 17.90% with 29 teachers were single.

Table 1

Demographic Variables of Secondary Level Mathematics Teachers in the Kathmandu

Demographic Variables	Categories	Frequency	Percentage (%)
Gender	Male	123	75.90
	Female	39	24.10
Age	Below 30 years	25	15.40
	30-40 years	65	40.10
	40-50 years	52	32.10
	Above 50 years	20	12.30
Marital Status	Single	29	17.90
	Married	133	82.10
Teaching Experiences	0-5 years	28	17.30
	5-10 years	27	16.70
	10-15 years	29	17.90
	15-20 years	34	21.00
	20 and above 20 years	44	27.20
Educational Level	Bachelor	33	20.40
	Master	127	78.40
	Other	2	1.20
Job Positions	First class	3	1.90
	Second class	12	7.40
	Third class	113	69.80
	Temporary	34	21.00
Total		162	

Source: Field survey, 2023

Also, most mathematics teachers had teaching experience 20 and above 20 years; there were 44 teachers, accounting for 27.20% of the total. The second-highest respondents were between 15 and 20 years; there were 34 teachers, which was 21% of the total. The third-highest respondents were between 10 and 15 years; there were 29 teachers, which was 17.9% of the total. The fourth highest respondents were between 0 and 5 years; there were 28 teachers, which was 17.30% of the total, and the fifth highest respondents were between 5 and 10 years; there were 27 teachers, which was 16.70% of the total. This implies that the mathematics teachers have average teaching experience. Additionally, the majority of those teachers had a master's degree, accounting for 127 teachers, which was 78.40% of the total. The second-highest academic qualification was the bachelor level; there were 33 teachers, which was 20.40% of the total. There were only two mathematics teachers with academic qualifications at other levels, which made up 1.20% of the total. This implies that the teachers are academically qualified, skilled, and capable at the school level. Moreover, most teachers in the third grade were 113, which was 69.80% of the total. The second-highest was at the temporary level of 34, which was 21% of the total. The third-highest was 12 teachers in the second class, which accounted for

7.40% of the total, and the fourth-highest was three teachers in the first level, accounting for 1.90% of the total. It is conventional to find that the school has a lower level of teacher job positions.

The Effect of Demographic Factors on ICT Use

H_0: There is no statistically significant difference between the male and female mean scores of secondary-level mathematics teachers in the use of ICT.

Table 2
Independent Sample t-test Results for Use of ICT within Gender

					Homogeneity of Variances (Levene's)				
	Groups	**N**	**Mean**	**SD**	**F**	**Sig.**	**t**	**Sig. (2 tailed**	**Effect Size**
Use of ICT	Male	123	3.68	0.561	0.0798	0.778	-0.136	0.892	0.892
	Female	39	3.69	0.562					

The analysis of the information mentioned in Table 2 represents the mean scores of males (n = 123) and female (n = 39) teachers to determine whether any significant differences existed between the mean scores of gender teachers in use of ICT. There was homogeneity of variances (p = 0.778), as assumed by Levene's test of homogeneity of variances and normality was not broken by using Q-Q plot (Appendix-I). Therefore, an independent sample t-test was used to compare the mean score of males and females. The results indicate that there was no statistically significant difference the mean male score (*M=3.68, SD=0.561*) compared to female (*M=3.69, SD=0.562; t (160) =-0.136, p=0.892 > 0.05*). The difference between the mean is -0.01. The effect size is approximately 0.025, which is considered to be very small effect size (Choen,1988). This finding showed that the use of ICT of male and female teachers have no significant differences. This finding is congruent with the findings of the studies conducted by (Agbatogun, 2010; Aslan & Zhu, 2017; Narasuman, 2014; Olafare et al., 2017). Whereas, it is contradictory to the findings of the studies conducted by (Kabakçi et al., 2009; Mahmud & Ismail, 2010; Mustafa, 2014; Nikolopoulou & Gialamas, 2016; Serin, 2015; Wilson et al., 2015).
H_0: There is no statistically significant difference between the single and married secondary-level mathematics teachers' mean scores in the use of ICT.

The analysis of the information mentioned in Table 3 represents the mean score of single (n = 29) and married (n = 133) teachers to determine whether any significant differences existed between the mean scores of marital status in use of ICT. There was homogeneity of variances (p = 0.624), as assumed by Levene's test of homogeneity of variances and normality was not broken by using Q-Q plot (Appendix-I). Therefore, an independent sample t-test was used to compare the mean score of single and married teachers.

Table 3

Independent Sample t-test Results for Use of ICT within Marital Status

					Homogeneity of Variances (Levene's)				
	Groups	**N**	**Mean**	**SD**	**F**	**Sig.**	**t**	**Sig. (2 tailed)**	**Effect Size**
Use of ICT	Single	29	3.76	0.609	0.241	0.624	0.869	0.386	0.178
	Married	133	3.66	0.549					

The results indicate that there was no statistically significant difference the mean score of single (*M=3.76, SD=0.609*) compared to married (*M=3.66, SD=0.549; t (160) =0.869, p=0.386 > 0.05*). The difference between the mean is 0.10. The effect size is approximately 0.178, which is considered to be small effect size (Cohen, 1988)(J. Cohen, 1988). This finding showed that the use of ICT of single and married secondary level mathematics teachers have no significant differences. This finding is congruent with the finding of the study conducted by (Mungania, 2003). Whereas, it is contradictory to the findings of the studies conducted by (Adetimirin, 2008; Eunice, 2017; Olafare et al., 2017).

H_0: There is no statistically significant difference between the groups of age mean scores in the use of ICT by the secondary level mathematics teachers.

The hypothesis tests whether the use of ICT by secondary-level mathematics teachers differs across different age groups. The age groups of the teachers were divided into four groups. Group first was below 30 years (n = 25), group second was 30–40 years (n = 65), group third was 40–50 years (n = 52), and group fourth was above 50 years (n = 20). By visually examining the Q-Q plot (Appendix II), it was determined that the mean scores of the teachers in each age group were nearly normally distributed, with no outliers. Levene's test indicated that there was homogeneity of variances (p = 159).

Table 4

One-Way ANOVA Results for Use of ICT within Age Groups

					Homogeneity of Variances (Levene's)		ANOVA		
	Groups	**N**	**Mean**	**SD**	**F**	**Sig.**	**F**	**Sig. (2 tailed)**	**Effect Size**
Use of ICT	Below 30 years	25	3.77	0.589	1.57	0.159	2.20	0.090	0.04
	30-40 years	65	3.78	0.617					
	40-50 years	52	3.54	0.500					
	Above 50 years	20	3.61	0.396					

The results indicate that there was no statistically significant difference between the mean scores of the different age groups, F-value = 2.20, df (3, 158), *p = 0.090 > 0.05* (Table 4). The effect size is approximately 0.04, which is considered to be a small effect size (Choen, 1988). This finding showed that the use of ICT by different age groups of secondary-level mathematics teachers had no significant differences. This finding is congruent with the findings of the studies

conducted by (Agbatogun, 2010; Nikolopoulou & Gialamas, 2016; Serin, 2015; Teo, 2008; Wilson et al., 2015). Whereas, it is contradictory to the findings of the studies conducted by (Aribamikan et al., 2014; Mahmud & Ismail, 2010; Reddick et al., 2000).

H_0: There is no statistically significant difference between the groups of teaching experience mean scores in the use of ICT by the secondary-level mathematics teachers.

The hypothesis tests whether the use of ICT by secondary-level mathematics teachers differs across different teaching experience groups. The teaching experience groups of the teachers were divided into five groups. Group first was 0-5 years (*n = 28*), group second was 5–10 years (*n = 27*), group third was 10–15 years (*n = 29*), group fourth was 15-20 years (*n = 34*), and group fifth was above 20 years (*n = 44*). By visually examining the Q-Q plot (Appendix III), it was determined that the mean scores of the teachers in each teaching experience group were approximately normally distributed, with no outliers. Levene's test indicated that there was homogeneity of variances (p = 0.703).

Table 5

One-Way ANOVA Results for Use of ICT within Teaching Experience

					Homogeneity of Variances (Levene's)		ANOVA		
	Group	**N**	**Mean**	**SD**	**F**	**Sig.**	**F**	**Sig. (2 tailed)**	**Effect Size**
Use of ICT	0-5 years	28	3.76	0.602	0.55	0.703	1.32	0.264	0.03
	5-10 years	27	3.77	0.593					
	10-15 years	29	3.77	0.518					
	15-20 years	34	3.67	0.563					
	Above 20 years	44	3.53	0.524					

The results indicate that there was no statistically significant difference between the mean scores of the different teaching experience groups, *F*-value = *1.32*, df (*4, 157*), *p = 0.264 > 0.05* (Table 5). The effect size is approximately 0.03, which is considered to be a small effect size (Choen, 1988). This finding showed that the use of ICT by different teaching experience groups of secondary-level mathematics teachers had no significant differences. This finding is congruent with the findings of the studies conducted by (Mueller et al., 2008; Narasuman, 2014). Whereas, it is contradictory to the findings of the studies conducted by (Koh et al., 2014; Mahmud & Ismail, 2010; Olafare et al., 2017; Viswanath et al., 2003)

H_0: There is no statistically significant difference between the groups of educational level mean scores in the use of ICT by the secondary level mathematics teachers.

The hypothesis tests whether the use of ICT by secondary-level mathematics teachers differs across different educational level groups. The educational level groups of the teachers were divided into three groups. Group first was bachelor (*n = 33*), group second was master (*n = 123*), and group third was other (*n=2*). By visually examining the Q-Q plot (Appendix IV), it was determined that the mean scores of the teachers in each educational level group were approximately normally distributed, with no outliers. Levene's test indicated that there was homogeneity of variances (*p = 0.183*).

Table 6
One-Way ANOVA Results for Use of ICT within Educational Level

					Homogeneity of Variances (Levene's)		ANOVA		
	Groups	**N**	**Mean**	**SD**	**F**	**Sig.**	**F**	**Sig. (2 tailed)**	**Effect Size**
Use of ICT	Bachelor	33	3.70	0.461					
	Master	123	3.67	0.581	1.72	0.183	1.52	0.221	0.02
	Other	2	4.36	0.303					

The results indicate that there was no statistically significant difference between the mean scores of the different educational level groups, *F*-value = *1.52*, df (*2, 159*), *p = 0.221 > 0.05* (Table 6). The effect size is approximately 0.03, which is considered to be a small effect size (Choen, 1988). This finding showed that the use of ICT by different educational level groups of secondary-level mathematics teachers had no significant differences. This finding is congruent with the findings of the studies conducted by (Learum et al., 2001; Narasuman, 2014). Whereas, it is contradictory to the findings of the studies conducted by (Ladipo, 2015; Olafare et al., 2017; Pick et al., 2015).

H_0: There is no statistically significant difference between the groups of job position mean scores in the use of ICT by the secondary level mathematics teachers.

Table 7
One-Way ANOVA Results for Use of ICT within Job Position

					Homogeneity of Variances (Levene's)		ANOVA		
	Group	**N**	**Mean**	**SD**	**F**	**Sig.**	**F**	**Sig. (2 tailed)**	**Effect Size**
Use of ICT	First class	3	3.52	0.412	1.34	0.263	0.72	0.54	0.013
	Second class	12	3.48	0.585					
	Third class	113	3.71	0.542					
	Temporary	34	3.67	0.622					

The hypothesis tests whether the use of ICT by secondary-level mathematics teachers differs across different job position groups. The job position groups of the teachers were divided into four groups. Group first was first class (*n = 3*), group second was second class (*n = 12*), group third was third class (*n=113*), and group fourth was temporary (*n=34*). By visually examining the Q-Q plot (Appendix -V), it was determined that the mean scores of the teachers in each job position group were approximately normally distributed, with no outliers. Levene's test indicated that there was homogeneity of variances (*p = 0.263*). The results indicate that there was no statistically significant difference between the mean scores of the different educational level groups, *F*-value = *0.718*, df (*3, 158*), *p = 0.542 > 0.05* (Table 7). The effect size is

approximately 0.013, which is considered to be a small effect size (Choen, 1988). This finding showed that the use of ICT by different job position groups of secondary-level mathematics teachers had no significant differences. This finding is contradictory to the findings of the studies conducted by (Gyanti, 2015; Oyedipe & Popoola, 2019).

H_0: There is no statistically significant difference between the groups of location of schools mean scores in the use of ICT by the secondary level mathematics teachers.

The hypothesis tests whether the use of ICT by secondary-level mathematics teachers differs across different location of school groups. The location of schools' groups of the teachers were divided into eleven groups. Group first was Kathmandu Metropolitan City (*n = 63*), group second was Kageshwari Municipality (*n = 8*), group third was Dachhinkali Municipality (*n=8*), group fourth was Kirtipur Municipality (*n=10*), group fifth was Chandragiri Municipality (*n=13*), group sixth was Nagarjun Municipality (*n=12*), group seventh was Tarkeshwar Municipality (*n=12*), group eighth was Tokha Municipality (*n=7*), group night was Bhudhanilkantha Municipality (*n=10*), group tenth was Gokarneshwar Municipality (*n=9*), and group eleventh was Shankharapur Municipality (*n=34*). By visually examining the Q-Q plot (Appendix -VI), it was determined that the mean scores of the teachers in each location of school group were approximately normally distributed, with no outliers. Levene's test indicated that there was homogeneity of variances (*p = 0.08*).

Table 8
One-Way ANOVA Results for Use of ICT within Location of Schools

					Homogeneity of Variances (Levene's)		ANOVA		
	Groups	**N**	**Mean**	**SD**	**F**	**Sig.**	**F**	**Sig. (2 tailed)**	**Effect Size**
Use of ICT	Kathmandu	63	3.72	0.452	1.74	0.08	0.43	0.930	0.03
	Kageshwari	8	3.79	0.571					
	Dachhinkali	8	3.73	0.838					
	Kirtipur	10	3.67	0.302					
	Chandragiri	13	3.68	0.655					
	Nagarjun	12	3.56	0.663					
	Tarkeshwar	12	3.44	0.570					
	Tokha	7	3.76	0.669					
	Bhudhanilkantha	10	3.60	0.594					
	Gokarneshwar	9	3.63	0.619					
	Shankharapur	10	3.81	0.805					

The results indicate that there was no statistically significant difference between the mean scores of the different location of school groups, *F*-value = *0.43*, df (*3*, *158*), *p = 0.930 > 0.05* (Table 8). The effect size is approximately 0.03, which is considered to be a small effect size (Choen, 1988). This finding showed that the use of ICT by different location of school groups of

secondary-level mathematics teachers had no significant differences. This finding is contradictory to the findings of the study conducted by (Reddick et al., 2000).

Conclusion

In conclusion, this study examined demographic factors among secondary-level mathematics teachers, including gender, age, marital status, teaching experience, educational level, and job positions. It found interesting patterns, such as a higher percentage of male teachers, a higher prevalence of married teachers, and the majority holding a master's degree. The study then investigated the impact of these demographic factors on the use of information and communication technology (ICT) by teachers. The hypotheses tested whether there were significant differences in ICT use based on gender, marital status, age groups, teaching experience, educational level, job positions, and school location. The results showed no statistically significant differences in ICT use between male and female teachers, single and married teachers, across different age groups, teaching experience groups, educational level groups, job positions, and school location. The effect sizes were generally small, suggesting that although the differences were not statistically significant, there might be some practical significance. The findings contribute to a broader understanding of the relationship between demographic factors and ICT integration in mathematics classroom. Further research and exploration may be needed to validate these findings in different educational contexts with large sample.

Acknowledgement

The author gratefully acknowledges to the Research Directorate, Rector's Office, Tribhuvan University, Kirtipur, Kathmandu, Nepal for providing the financial support for this research. The researcher also wishes to thank all teachers for providing valid information for this study.

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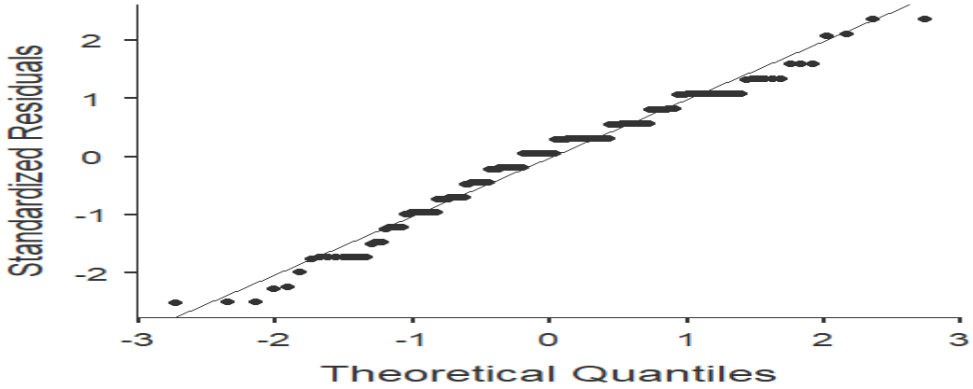
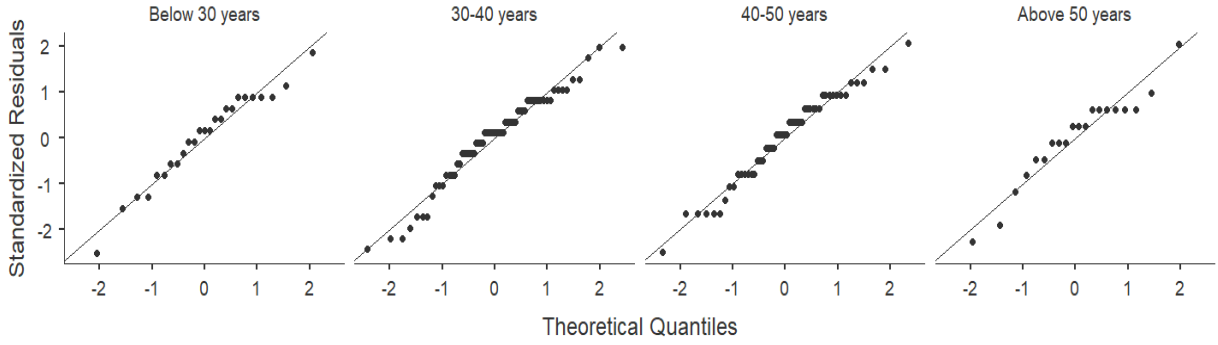
Appendix-I
Normality test of the use of ICT by Q-Q plot



Appendix-II
Normality test of Age groups by Q-Q plot



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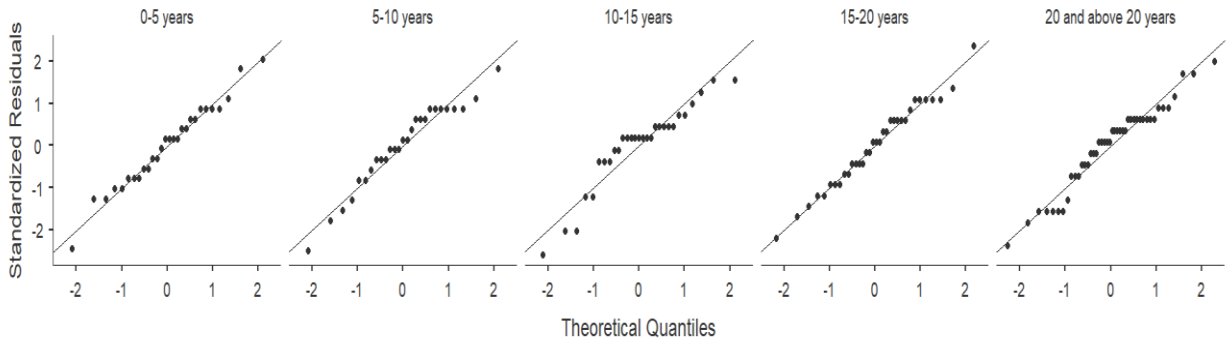
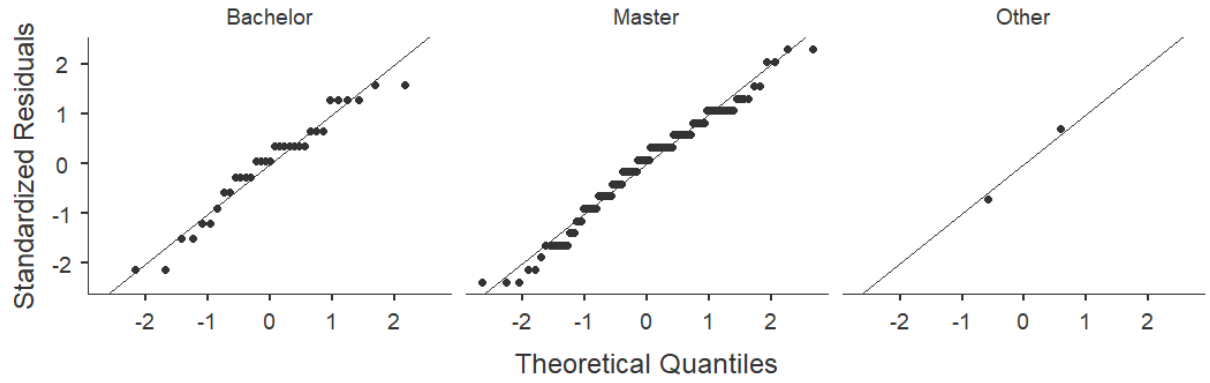
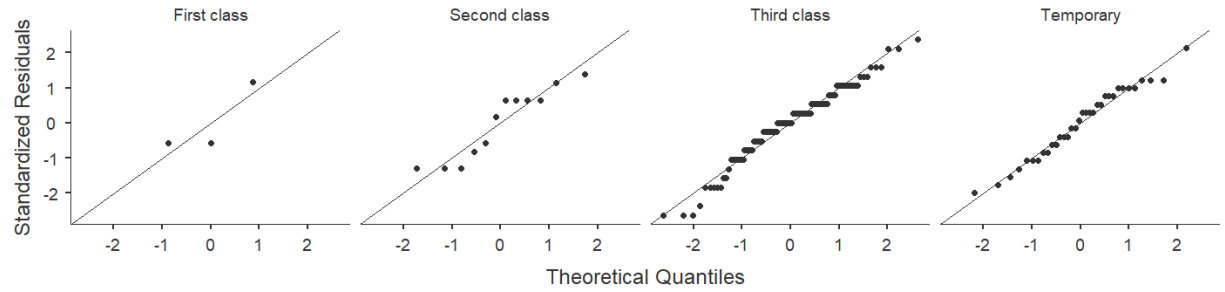
Appendix-III
Normality test of teaching experience groups by Q-Q plot



Appendix-IV
Normality test of educational level groups by Q-Q plot



Appendix-V
Normality test of job position groups by Q-Q plot



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Volume: 3 Issue: 1, Year 2024
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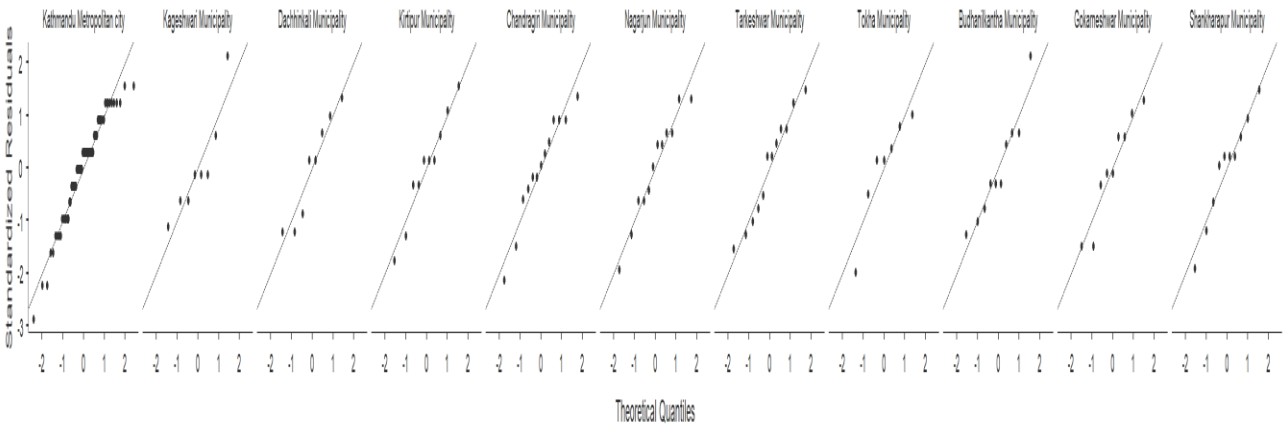
Appendix-VI
Normality test of school location groups by Q-Q plot



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