Scientific Research Publishing

Open Journal of Political Science, 2024, 14, 193-203
https://www.scirp.org/journal/ojps
ISSN Online: 2164-0513
ISSN Print: 2164-0505

Awareness and Implementation of RA 9292, DILG MC 2013-01, and Philippine Electronics Code among Local Government Units in Nueva Ecija

Leo M. Ramos, Jayson Paul V. Vicencio, Harry Bert G. Rolle, Ryan John L. De Lara, Mark Anthony M. David

College of Engineering and Computer Technology, Wesleyan University-Philippines, Cabanatuan, Philippines

Email: lmramos@wesleyan.edu.ph, jvvicencio@wesleyan.edu.ph, hgrolle@wesleyan.edu.ph, rldelara@wesleyan.edu.ph, mmdavid@wesleyan.edu.ph

How to cite this paper: Ramos, L. M., Vicencio, J. P. V., Rolle, H. B. G., De Lara, R. J. L., & David, M. A. M. (2024). Awareness and Implementation of RA 9292, DILG MC 2013-01, and Philippine Electronics Code among Local Government Units in Nueva Ecija. *Open Journal of Political Science, 14,* 193-203.
https://doi.org/10.4236/ojps.2024.142012

Received: March 8, 2024
Accepted: April 13, 2024
Published: April 16, 2024

Abstract

The Republic Act 9292 (Electronics Engineering Law of 2004), DILG Memorandum Circular 2013-01, and the Philippine Electronics Code regulate the electronics engineering profession and mandate its practice through a defined set of standards. Using the descriptive type of research with frequency methods, weighted mean, and data correlation approaches in analyzing data, the researchers performed a study on the awareness and implementation of these law and regulations on all the 32 local government units in Nueva Ecija and found out that about half of the respondents were aware, but only few have complied in implementing them. Additionally, regulation of electronics works and activities were also tested according to the standards of Philippine Electronics Code with a four-point Likert Scale which resulted to an over-all mean of 1.95 which is translated to an interpretation of "Sometimes" which means the LGU respondents abide by the standards occasionally. Moreover, the relationship of LGU classes and the number of electronic systems and establishments in their jurisdiction with their awareness on the said law and regulation were tested using Chi-square and Spearman's Rank respectively which brought no association and no correlation general results.

Keywords

RA 9292, DILG 2013-01, Philippine Electronics Code, Nueva Ecija, Electronics Engineering, Local Government Unit

1. Introduction

In the Philippines, the government creates laws that will set the standardization processes of economic and industrial development which were based on internationally known and regulated standards. These include regulation on practices of professionals in practicing their profession in building infrastructures and industrial systems.

The Republic Act 9292, known as the "Electronics Engineering Law of 2004" recognizes the importance of electronics engineering profession in nation-building and development. Its goal is to develop and nurture outstanding, high-caliber, and internationally competitive electronics engineering professionals that meet the global standards of practice and service. As stated in the Section 34, Article V of this act, electronics engineering professionals shall hold government positions that require the services of Professional Electronics Engineers, Electronics Engineers, and Electronics Technicians with scope of practice as specified in Section 5, Article I (Official Gazette of the Philippines, 2004). This provision is further reinforced by DILG Memorandum Circular 2013-01 which prompts Local Government Units to ensure that electronics engineering professionals hold positions or assignments that supervise, manage, and administer electronics services and regulate electronics works and activities in accordance with the Philippine Electronics Code particularly in the effective implementation of government e-projects and in the evaluation of electronics plans and designs (Department of Interior and Local Government, 2013).

Moreover, electronics documents and electronics permits duly signed and sealed by Professional Electronics Engineers were part of the requirements in securing building permits as stipulated in the Implementing Rules and Regulations of the Presidential Decree 1096 or the National Building Code of the Philippines. These provisions further uphold the involvement of electronics engineering professionals in the development activities in the country (Department of Public Works and Highways, 2005).

As observed by the researchers who are mostly in the electronics engineering profession, the implementation of the RA 9292 and DILG MC 2013-01 was not evident among local government units in the province of Nueva Ecija. So, the researchers conducted the study to determine the status of enactment of the laws' provisions and assess the level of implementation of the standards and regulations as mandated in the four volumes of the Philippine Electronics Code in the installation of various electronics systems within the jurisdiction of each LGU.

The data gathered and results of this research can be used by local government units to develop a defined set of procedures for a seamless and faster issuance of electronics permit and approval of electronic system designs while eliminating the unnecessary illegal transactions which will benefit the community and the different industries which are not only limited to telecommunications companies, broadcasting agencies and electronics and semiconductor companies but also to business companies, manufacturing plants among others.

This research specifically aims to answer the following questions:

- How the respondents can be classified according to:
  - The LGUs' economic classification; and
  - The number of electronic systems and establishments within the city/municipality?
- Is there an association between the awareness of the implementation of RA 9292 and DILG MC 2013-01 with the LGUs' classification and the number of electronic systems and establishments within the city/municipality?
- What is the status of enactment of RA 9292 and DILG MC 2013-01 among LGUs in Nueva Ecija, particularly the underlying reason of non-compliance?
- What is the level of implementation of the standards and regulations mandated in the Philippine Electronics Code among LGUs in Nueva Ecija?

2. Materials and Methods

2.1. Research Design

In this study, descriptive type of research was used to describe the characteristics of a population. In this method, the researchers employed frequency techniques to identify the respondent LGUs in terms of their economic classification and the number of electronics system in their respective jurisdiction, Chi-square test to validate the association of the LGUs classification and Spearman's Rank Correlation Test to affirm the correlation of the number of electronics system within the LGU's governing area with their awareness of the said laws and provisions, and lastly weighted mean method to evaluate their level of implementation of the Philippine Electronics Code.

2.2. Respondents

Total population sampling was utilized in this research with 32 respondents representing all the LGUs in Nueva Ecija (Aliaga, Bongabon, Cabanatuan, Cabiao, Carranglan, Cuyapo, Gabaldon, Gapan, Gen. M. Natividad, General Tinio, Guimba, Jaen, Laur, Licab, Llanera, Lupao, Nampicuan, Palayan, Pantabangan, Peñaranda, Quezon, Rizal, San Antionio, San Isidro, San Jose, San Leonardo, Santa Rosa, Santo Domingo, Science City of Muñoz, Talavera, Talugtug, and, Zaragoza). They were comprised of officials involved in the issuance of building permits particularly electronics permits and approval of engineering plans and designs especially electronic system designs which includes but not limited to the City/Municipal Administrators, City/Municipal Engineers, and City/Municipal Planning and Development Officers.

2.3. Data Gathering Instrument and Procedure

This research used a questionnaire as the primary tool for gathering data. This method was chosen because the objectives of the study are to determine the knowledge of LGU officials on the provisions of RA 9292 and DILG MC 2013-01 stating the assignments and positions to be held by electronics engineering pro-

fessionals, associate it with the LGU's classification, and on the standards and regulations of the Philippine Electronics Code (Institute of Electronics Engineers of the Philippines, 2014a, 2014b, 2014c, 2014d). It is composed of two parts with the first part assessing the knowledge of respondents on the enactment of RA 9292 and DILG MC 2013-01 and the second part a 4-point Likert Scale assessing the present process in the approval of electronic system designs and issuance of electronics permits.

Researchers utilized a variety of methods to gather data, including in-person distribution, email questionnaires, Facebook messaging, and Google forms. Most of the respondents agreed for in-person distribution in which the researchers arranged specific times to visit them at their offices. On the other hand, e-mail questionnaires, Facebook messaging, and Google forms were utilized for respondents who couldn't answer in person.

3. Results and Discussion

The respondents which were composed of all the LGUs within Nueva Ecija were classified as follows.

Figure 1 shows that most of the LGUs fall under the First Class Municipality classification (31.25%) followed by Fourth Class Municipality classification (18.75%) with the Fifth Class Municipality classification having the least number (3.13%) (Department of Trade and Industry, 2022).

The number of electronic systems and establishment within the jurisdiction of each LGU were all under 100 units which the researchers classified into 13 types namely: Telecommunication System, Broadcasting System, Cable Television System, Security and Alarm System, ICT System, Electronics Fire Alarm, Pabx/Telephone System, Central Clock System, Electronic control and Conveyor System, Audio-Visual System, Electronic Computerized Process Control Automation System, Building Automation Management and Control System, and Inside/Outside Plant Utilizing Fiber Optic.

Table 1 presents the awareness of the respondents on laws and regulations on electronics engineering profession. According to the data, more than half of the LGUs are aware of the Republic Act 9292 (56.25%) while only a quarter (25.00%) are aware of DILG MC 2013-01. Although almost half of the respondents (43.75%) are aware of the scope and practices of electronics engineering professionals, only 18.75% of the respondents have electronics engineering professionals on their LGUs.

Majority of the respondents (68.75%) are aware on the issuance of electronic permit but only a third (31.25%) are aware of the Philippine Electronics Code and only 37.50% of the respondents implement a defined procedure in checking and approving electronic system plans and designs.

Using the Chi-square test, it showed that there is no evident association between the LGUs' classification and their awareness on the laws and regulations regarding electronics engineering profession as presented in Table 2.

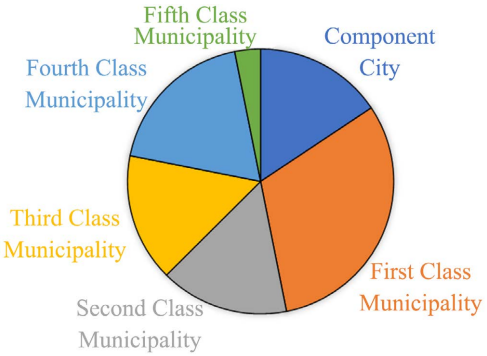

Figure 1. Classification of cities and municipalities in Nueva Ecija.

Table 1. Awareness on laws and regulations on electronics engineering profession.

Indicators	Percentage
Awareness on Republic Act 9292	56.25%
Awareness on the scope of practices of electronics engineering professionals	43.75%
Awareness on DILG MC 2013-01	25.00%
Awareness on the Philippine Electronics Code	31.25%
Awareness on the issuance of electronics permit	68.75%
Presence of electronics engineering professionals in the LGU	18.75%
Implementation of procedures in checking and approving electronic system plans and designs	37.50%

Table 2. Association between the LGUs' classification and their awareness on the laws and regulations regarding electronics engineering profession.

Indicators	*p*-value	Interpretation*
Awareness on Republic Act 9292	0.067	No association with the LGU classification
Awareness on the scope of practices of electronics engineering professionals	0.823	No association with the LGU classification
Awareness on DILG MC 2013-01	0.241	No association with the LGU classification
Awareness on the Philippine Electronics Code	0.429	No association with the LGU classification
Awareness on the issuance of electronics permit	0.385	No association with the LGU classification
Presence of electronics engineering professionals in the LGU	0.315	No association with the LGU classification
Implementation of procedures in checking and approving electronic system plans and designs	0.802	No association with the LGU classification

*Significant level: 0.05.

Using Spearman's Rank Correlation test, it showed that the respondents' awareness on the scope of practices of electronics engineering professionals and the presence of electronics engineering professionals in the LGU has significant moderate positive relationship with significant levels of 0.01 and 0.05 respectively when correlated with the number of electronics systems and establishments within the city/municipality. The rest of the indicators showed no significant relationship as presented in Table 3.

The implementation of RA 9292 and DILG MC 2013-01 was only evident on 6 respondents (18.75%) who have electronics engineering professionals in their respective LGUs. The rest of the respondents have not yet implemented the abovementioned law with the "No available position in the plantilla" and "Lack of budget" as the primary and secondary reasons for non-compliance.

According to 6 respondents (18.75%), Professional Electronics Engineers sign their electronics permit while 3 respondents (9.38%) said that Professional Electrical Engineers signs for them. The rest of the respondents answered "Others" which could be one of the following: Municipal Engineer, Municipal Building Official, Municipal and Planning Development Official, Electronics Engineer, and Civil Engineer.

In the checking and approval of electronic systems designs and plans, only 12 respondents (37.50%) have their defined procedures which they based on either from the Philippine Electronics Code or the National Building Code or from both and majority of the respondents (87.50%) want a unified procedure in conducting such.

In checking the standards and important components of the four electronics systems plans and design as mandated in the four books of the Philippine Electronics Code, the respondents have an over-all mean value of 1.95 which translates to "Sometimes". Detailed data were presented on the following tables.

Table 3. Correlation between the number of electronic systems and establishments and awareness on the laws and regulations regarding electronics engineering profession.

Indicators	*p*-value	Interpretation
Awareness on Republic Act 9292	0.532	No significant relationship
Awareness on the scope of practices of electronics engineering professionals	0.006	Significant moderate positive relationship at alpha (0.01)
Awareness on DILG MC 2013-01	0.053	No significant relationship
Awareness on the Philippine Electronics Code	0.011	Significant moderate positive relationship at alpha (0.05)
Awareness on the issuance of electronics permit	0.104	No significant relationship
Presence of electronics engineering professionals in the LGU	0.571	No significant relationship
Implementation of procedures in checking and approving electronic system plans and designs	0.778	No significant relationship

Table 4 presents the evaluation of various components related to the Telecommunications Facilities Distributed System. The components include equipment room size, grounding system, plan and layout of cables (entrance facilities, Telco enclosure, horizontal cross-connect, backbone, and horizontal cabling), location of each equipment, signal level, safety and warning signs, tower specification, materials used in the system such as cable, antenna, transceiver system, and battery and rectifier, bandwidth specification, and Fiber Optic Cable (if applicable).

According to the data, the mean values for most of the items range from 1.75 to 2.22. These mean values indicate that the respondents "Sometimes" check these aspects of the Telecommunications Facilities Distributed System components. The SD values, which represent the variability or dispersion of the responses, are in the range of 1.23 to 1.48. For the item related to signal level, the mean value is less than 2, and the verbal interpretation is "Never" suggesting that respondents do not check this aspect regularly.

The overall mean for the Telecommunications Facilities Distributed System evaluation is 1.95, which falls under the "Sometimes" verbal interpretation.

Table 4. Respondents' checking of telecommunications facilities distribution system.

Components	Mean	Interpretation
Do you check the size of the equipment room?	1.91	Sometimes
Do you check the grounding system?	1.97	Sometimes
Do you check the plan and layout of cable for the following:		
• Entrance Facilities	2.03	Sometimes
• Telco Enclosure	1.94	Sometimes
• Horizontal Cross Connect (Floor Distribution)	1.91	Sometimes
• Backbone (Riser)	2.00	Sometimes
• Horizontal Cabling (Distribution)	1.97	Sometimes
Do you check the location of each of the equipment?	1.88	Sometimes
Do you check the signal level?	1.75	Never
Do you check the safety and warning signs on the facility?	2.22	Sometimes
Do you check the tower specification?	2.16	Sometimes
Do you check the materials used in the system such as:		
• Cable	1.91	Sometimes
• Antenna	1.94	Sometimes
• Transceiver System	1.88	Sometimes
• Battery and Rectifier	1.88	Sometimes
Do you check bandwidth specification of the system?	1.81	Sometimes
Do you check the Fiber Optic Cable? (If applicable)	1.94	Sometimes
Overall Mean	1.94	Sometimes

Table 5 presents the evaluation of various components related to the Fire Detection and Alarm System. The components include equipment room size, grounding system, cable plan and layout of the semi-addressable system, location of each equipment (fire alarm control panel, fire detector, heat/gas detector), records log of the system, number of heat/gas and fire detectors per location, as-built plan of the system, and materials used in the system such as cable, fire detector, heat/gas detector, and battery and rectifier.

According to the data, the mean values for most of the items range from 1.84 to 2.31. These mean values indicate that the respondents "Sometimes" check these aspects of the Fire and Alarm System components. The SD values, which represent the variability or dispersion of the responses, are in the range of 1.29 to 1.56. The overall mean for the Fire and Alarm System evaluation is 2.02, which falls under the "Sometimes" verbal interpretation.

Table 6 presents the evaluation of various components related to the Cable Television System. The components include equipment room size, grounding system, cable plan and layout (inside plant and outside plant), equipment location, RF signal level (main amplifier, distribution amplifier, and modulator), safety and warning signs on the facility, tower specification (if applicable), and materials used in the system such as cable, antenna, and transceiver system.

Table 5. Respondents' checking of fire detection and alarm system.

Components	Mean	Interpretation
Do you check the size of the equipment room?	2.12	Sometimes
Do you check the grounding system?	2.06	Sometimes
Do you check the cable plan and layout of the semi addressable system?	2.06	Sometimes
Do you check the location of each of the equipment of the following:		
• Fire Alarm Control Panel	2.12	Sometimes
• Fire Detector	2.09	Sometimes
• Heat/Gas Detector	2.03	Sometimes
Do you check the records log of the system?	1.88	Sometimes
Do you the number of heat/gas and fire detector per location?	1.84	Sometimes
Do you check the as-built plan of the system?	2.31	Sometimes
Do you check the materials used in the system such as:		
• Cable	2.03	Sometimes
• Fire Detector	1.97	Sometimes
• Heat/Gas Detector	1.91	Sometimes
• Battery and Rectifier	1.91	Sometimes
Overall Mean	2.02	Sometimes

Table 6. Respondents' checking of cable television system.

Components	Mean	Interpretation
Do you check the size of the equipment room?	1.94	Sometimes
Do you check the grounding system?	2.03	Sometimes
Do you check the cable plan and layout of the system for the following:		
• Inside Plant	2.31	Sometimes
• Outside Plant	2.03	Sometimes
Do you check the location of each of the equipment?	2.06	Sometimes
Do you check the RF signal level on the following:		
• Main Amplifier	1.50	Never
• Distribution Amplifier	1.53	Never
• Modulator	1.56	Never
Do you check the safety and warning signs on the facility?	2.06	Sometimes
Do you check the tower specification? (if applicable)	2.19	Sometimes
Do you check the materials used in the system such as:		
• Cable	1.88	Sometimes
• Antenna	1.81	Sometimes
• Transceiver System	1.75	Never
Overall Mean	1.90	Sometimes

According to the data, the mean values for most of the items range from 1.50 to 2.31. These mean values indicate that the respondents "Sometimes" check these aspects of the Cable Television System components. The SD values, which represent the variability or dispersion of the responses, are in the range of 1.16 to 1.40. For items related to RF signal level and transceiver system, the mean values are less than 2, and the verbal interpretation is "Never" suggesting that respondents do not check these aspects regularly. The overall mean for the Cable Television System evaluation is 1.90, which falls under the "Sometimes" verbal interpretation.

Table 7 presents the evaluation of various components related to the Distributed Antenna System. The components include equipment room size, grounding system, cable plan and layout, equipment location, RF signal level, safety and warning signs, tower specification, and materials used in the system such as cable, antenna, transceiver system, and battery and rectifier.

According to the data, the mean values for most of the items range from 1.59 to 2.19. These mean values indicate that the respondents "Sometimes" check these aspects of the Distributed Antenna System components. The SD values, which represent the variability or dispersion of the responses, are in the range of 1.22 to 1.45. The overall mean for the DAS evaluation is 1.94, which also falls under the "Sometimes" verbal interpretation.

Table 7. Respondents' checking of distributed antenna system.

Components	Mean	Interpretation
Do you check the size of the equipment room?	1.88	Sometimes
Do you check the grounding system?	2.03	Sometimes
Do you check the cable plan and layout of the system?	2.16	Sometimes
Do you check the location of each of the equipment?	2.00	Sometimes
Do you check the RF signal level?	1.59	Sometimes
Do you check the safety and warning signs on the facility?	2.03	Sometimes
Do you check the tower specification?	2.19	Sometimes
Do you check the materials used in the system such as:		
• Cable	1.88	Sometimes
• Antenna	1.91	Sometimes
• Transceiver System	1.84	Sometimes
• Battery and Rectifier	1.88	Sometimes
Overall Mean	1.94	Sometimes

4. Conclusion and Recommendations

This research determined the association and correlation of awareness and implementation of electronics engineering laws and regulations to the economic classification of the local government units in Nueva Ecija and the number of electronic systems and establishments in their jurisdiction. Association with the classification showed no significant relationship while the number of electronic systems and establishments showed moderate positive correlation with the awareness on the scope of practice and presence of electronics engineering professionals while the other indicators showed no significant correlation.

From the data and results of this research, the researchers conclude that there is not sufficient awareness and implementation of the laws and regulations concerning the electronics engineering profession in the province of Nueva Ecija. Results also showed that regulations of electronics works and activities within the jurisdiction of the respondent LGUs were occasionally performed.

Coinciding with the visions of the Institute of Electronics Engineers of the Philippines (IECEP), the duly-accredited professional organization for electronics engineering profession in the Philippines to acknowledge the role of electronics engineering professionals in nation-building, the research results can be their basis for constructing a comprehensive program on the dissemination of information about the mandates of RA 9292, DILG MC 2013-01, and Philippine Electronics Code not only in different LGUs in Nueva Ecija but also nationwide. Since the Philippine government system has a similar structure in terms of law implementation from national down to provincial and local levels, the results of this study are also applicable to other local government units.

Finally, the researchers recommend that the findings of this study can be used by the different stakeholders which include the IECEP, the concerned national agencies such as Department of Interior and Local Government (DILG), Department of Public Works and Highways (DPWH), Department of Information and Communications Technology (DICT), and local government units as a guide in formulating a unified and defined set of procedures in the releasing electronics permit and in the checking and approval of electronics system plans and designs for all government unit in the Philippines.

Acknowledgements

The researchers would like to acknowledge the help and support of College of Engineering and Computer Technology at Wesleyan University-Philippines, the Institute of Electronics Engineers of the Philippines Nueva Ecija Chapter, and especially the respondents LGUs in the completion of this research. To God be the Glory!

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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