

Managing Safety in Higher Education Institutions: A Case in the Philippines

Philip Ermita, Noel Florencondia

Abstract— Higher Education Institutions (HEI's) are often regarded as sanctuaries, protected environments where young people explore great ideas in a collegial atmosphere and make lifelong friendships and learnings. The change in mind-set necessary to achieve the mission-vision of any academic institution is a sustained, long-term effort to transform education at all levels. The higher education institution in the Region IVA is composed of two type; the private and public institution. Majority of higher education in Region IVA are private proprietary educational institutions operating from 11-20 years of service with 11-20 academic programs with below 200 employees and students' population ranging from 1,000 - 8,000. Safety Management Plans are currently used by higher education institution in Region IVA. Among the 18 identified safety management plans, safety training for employees and students are most frequently used. The safety management practices identified and applicable to higher education institution were academic laboratory activities, physical plant, disaster preparedness, and environmental hazards. Based on the findings, all areas were classified with a verbal description of good. This means that higher education institutions in Region IVA are 60-80 percent compliant to safety standards.

This research also reveals that using T-Test that there are significant differences between private and public higher education institutions Region IVA in their current safety management practices in terms of academic laboratory activities, physical plant and disaster preparedness, and environmental hazards. Moreover, among the identified profile of higher education institution, using spearman's rank-order correlation, the type of institution, number of programs, and number employees are the identified variables with significant relationship with the safety management practices. The proposed academic safety standards will address and bridge the gap of higher education institution in aligning the requirements and support the continuous development in sustaining a safety environment in achieving the mission-vision of higher education institution towards quality education.

Index Terms - Higher Education Institutions, Safety Management Practices, Laboratory, Physical Plant, Disaster Preparedness, Environmental Hazards

I. INTRODUCTION

Higher Education Institutions (HEI's) are often regarded as sanctuaries, protected environments where young people explore great ideas and make lifelong friendships and learnings. A student friendly school takes the lead in shaping a learning environment that enables students to learn as much as their intellectual faculties could take [1]. It is the kind of environment that allows them to grow healthy and equips

them with knowledge and skills that they can use throughout life, and enables them to become responsible and productive members of their community and society.

In the research conducted by [5] wherein the number of safety accidents at school has consistently increased as years pass by from 69,487 accidents in 2009 to 77,496 accidents in 2010, 86,468 accidents in 2011, 100,365 accidents in 2012, 105,088 accidents in 2013, 116,527 accidents in 2014, and 116,527 accident in 2015.

In the Philippines, the occupational safety and health standards was formulated in 1978 in compliance with the constitutional mandate to safeguard the worker's social and economic well-being as well as his physical safety and health. Adopted through the tested democratic machinery of tripartism, the 1978 Standard is considered as a landmark in Philippine labor and social legislation (OSH Standards, 1989). Recently, president of the philippines, Rodrigo Duterte has signed into law the measure which ensures a safe and healthful workplace for workers by affording full protection against all hazards in a workplace. Republic Act (RA) 11058 ensures that the provisions of the labor code, domestic laws and internationally recognized standards on occupational safety and health (OSH) are being fully enforced and complied with by employers. Under the said law, any person who manages, controls, or supervises the work is compelled to ensure that the place of employment is safe for workers. The place should be free from hazardous conditions likely to cause death, illness or physical harm to employees.

On the other hand, the Commission off Higher Education (CHED) CHED abd its regional commissioners, trustees of state colleges and universities, and heads of private schools around the country have been advised to see to it that "preventive and protective" measures are carried out to ensure safety of students and teachers. Moreover, it was also indicated Republic Act (RA) No. 7722 otherwise known as Higher Education Act of 1994, Batas Pambansa 232, and Resolution No. 321-2013 that CHED has the utmost commitment to promote quality and relevant and efficient higher education in the Philippines. However, in the policies, standards, and guidelines of CHED under memorandum orders specifically on engineering programs, there were limited emphasis on the standard safety practices. On the other hand, the Manual of Operations for Private Higher Education (MORPHE) under CHED Memorandum Order No. 40, Series 2008 which was registered at the Office of the National Administrative Registrar (ONAR) on October 17,

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Dr. Philip Ermita, University of Perpetual Help Sytem Dalta, University in Las Piñas, Philippines (Email: ermita.philip@gmail.com)

Dr. Noel Florencondia, Nueva Ecija University of Science and Technology, University in Cabanatuan, Philippines (Email: florencondia61@gmail.com)

2008 and published in the Official Gazette on November 24, 2008 emphasized safety related standards that mandates private higher education institutions.

This research was conducted to determine the current safety management plans and practices of public and private Higher Education Institution considering the national provision on occupational safety and health standards in the Philippines. This study addressed the needs and bridged the gap of higher education institution in aligning the requirements and support the continuous development in sustaining a safety environment in achieving the mission-vision of higher education institution towards quality education.

A. Statement of the Problem

The general statement of this study was to develop a safety management standards for higher education institutions in Region IVA (CALABARZON) in terms of the different assessment indicators identified by the researcher.

Specifically, it aimed to answer the following specific statements:

1. Determine the profile of the HEI's in terms of:
 - 1.1 type of educational institution
 - 1.2 number of years as institution
 - 1.3 number of programs offered
 - 1.4 number of employees
 - 1.5 number of enrolled students
2. Identify the safety management plans being implemented in selected Higher Education Institutions in Region IVA (CALABARZON)
3. Describe the safety management practices in Higher Education Institutions in Region IVA (CALABARZON) in terms of:
 - 3.1 Academic laboratory activities and facilities
 - 3.1.1 Facility
 - 3.1.2 Equipment and supply
 - 3.1.3 Maintenance
 - 3.1.4 Special provision
 - 3.2 Physical plant
 - 3.2.1 Site
 - 3.2.2 Campus
 - 3.2.3 Buildings
 - 3.2.4 Classrooms
 - 3.2.5 Offices and staff rooms
 - 3.2.6 Assembly and athletic facilities
 - 3.2.7 Building services
 - 3.2.8 Water and sanitary facilities
 - 3.3 Disaster Preparedness
 - 3.3.1 Disaster assesment and planning
 - 3.3.2 Physical and environmental protection
 - 3.3.3 Response capacity development
 - 3.3.4 Safety practicing, monitoring and improving
 - 3.4 Environmental Hazards
 - 3.4.1 Air pollutants and indoor air quality
 - 3.4.2 Toxic hazards
 - 3.4.3 Outdoor pollutants
4. Compare the safety management practices between private and public HEI's in Region IVA (CALABARZON) based on:
 - 4.1 Academic laboratory activities and facilities
 - 4.2 Physical plant

- 4.3 Disaster preparedness
- 4.4 Environmental hazards
5. Determine the relationship between the profile and safety management practices of HEI's in Region IVA (CALABARZON) based on:
 - 5.1 Academic laboratory activities and facilities
 - 5.2 Physical plant
 - 5.3 Disaster preparedness
 - 5.4 Environmental hazards

II. METHODOLOGY

A. Research Design

This study used the descriptive method of research to determine the current safety management plans and practices of Higher Education Institution in Region IVA (CALABARZON). This research method was used in describing the safety management plans and practices in higher education institution in Region IVA. A cross-sectional survey approach was chosen as the research approach where the primary data were collected by asking the respondents, HEI's representatives to fill up the survey questionnaires. Furthermore, the descriptive research method was also used to explain and compare the safety management plans and practices of the different type of Higher Education Institution in Region IVA CALABARZON.

B. Locale of the Study

Since the main purpose of the study was to propose a safety management standards for Higher Education Institution, as shown in Figure 1, the selected private and public HEI's in Region IVA CALABARZON region were the primary respondents of this research which composed of five (5) provinces: Cavite, Laguna, Batangas, Rizal, and Quezon as the population or area of the study.



Fig. 1. The Locale of the Study

C. Respondents of the Study

Since the main purpose of the study is to propose a safety management standards in Higher Education Institution, selected private and public HEI's in Region IVA CALABARZON region were the primary respondents of this research which comprises of five (5) provinces: Cavite, Laguna, Batangas, Rizal, and Quezon as the population or area of the study. According to the CHED, there are 277



HEI's in the whole CALABARZON, 258 (93%) are private HEI and 19 (7%) are public HEI's. The researcher considered those HEI's with 500 or more students and offers engineering programs such as computer, electronic, civil, electrical, mechanical, and industrial programs. As shown in Table 1, the researcher considered those HEI's with 500 or more students and offers engineering programs. With this, the researcher considered a total of 38 Higher Education Institutions in Region IVA.

Table 1.
List of Target HEI Respondents in Region IVA

Province	Private	Public	Private and Public
Cavite	10	2	12
Laguna	8	3	11
Batangas	5	3	8
Rizal	1	2	3
Quezon	1	3	4
Total	25	13	38

III. RESULTS

1. Profile of Higher Education Institutions in the Region

The profile of the higher education institution in Region IVA was described in terms of type of educational institution, number of years as institution, number of undergraduate programs offered, number of employees, and number of undergraduate students.

1.1 Type of Educational Institution

When HEI respondents were grouped according to the type of educational institution, majority of the respondents were from private institutions (proprietary educational institution) and the least number were from government educational institutions specifically the local universities and colleges. As shown in Table 2, proprietary educational institution had 50 percent while local universities and colleges had 8 percent participation. This shows that majority of the higher education institution in Region IVA were dominated by private schools compared with government education institutions. This result also explains that in the list of recognized HEIs by Commission of Higher Education (CHED), Region IVA has 72 percent HEIs from private institution, while 28 percent from public institution.

Table 2.
Type of Educational Institution in Region IVA

Type of Educational Institution	Frequency	Percent
Private Institution (Proprietary Educational Institution)	19	50
Private Institution (Non-stock and Non Profit Education Institution)	6	16
Government Education Institution (State Universities and Colleges)	10	26
Government Education Institution (Local Universities and Colleges)	3	8
Total	38	100

1.2 Number of Years as Institution

In this research, a total of 38 higher education institutions were selected with 131 respondents composing of school administrators. When the respondents were grouped according to the number of years as institution, higher education institutions with 11-15 and above 50 years had the highest frequency while below 5 years, 5-10 years, 41-45 years where the least institutions participated in this research. This results explains that HEIs with 11-15 and above 50 years were those institutions with engineering programs offered. As shown in Table 3, the highest frequency had 24 percent while the least number had 3 percent. Moreover, the data shows that the HEI participation in terms of the number of years as institution were well represented.

Table 3.
Number of Years as Institution in Region IVA

No of Years as Institution	Frequency	Percent
Below 5 years	1	3
5 - 10 years	1	3
11-15 Years	9	24
16 - 20 years	6	16
21 - 25 years	5	13
26 - 30 years	4	11
31 - 35 years	0	0
36 - 40 years	2	5
41 - 45 years	1	3
46 - 50 years	0	0
Above 50 years	9	24
Total	38	100%

1.3 Number of Undergraduate Programs Offered

When the HEI respondents were grouped according to the number undergraduate programs offered, schools with 11-15 programs had the most number of participation while the least number were from below 5 programs. As shown in Table 4, schools with 11-15 programs had the highest number of frequency with 32 percent that offer between 3 to 6 engineering programs while HEI's with the least number with below 5 programs had 3 percent that offer 1 engineering program. The results explain that most of the HEI participants in this research had other program offerings aside from engineering programs. Moreover, the data also reveals that HEIs in Region IVA that offer engineering programs also had other academic programs such as allied health, business, arts and sciences programs.



Table 4.
Number of Undergraduate Programs Offered

No of Undergraduate Programs Offered	Engineering Programs		Frequency	%
	Max	Min		
Below 5 programs	1	0	1	3
6 - 10 programs	3	1	4	11
11 - 15 programs	6	3	12	32
16 - 20 programs	6	3	6	16
21 - 25 programs	7	4	4	11
26-30 program	6	4	2	5
31 - 35 programs	6	3	2	5
36 - 40 programs	7	5	4	11
Others	6	4	3	8
Total			38	100%

Table 5.
Number of Employees

Number of Employees	Frequency	Percent
Below 200	16	42
201 - 300	10	26
301 - 400	4	11
401 - 500	5	13
501 - 600	0	0
601 - 700	0	0
701 - 800	2	5
801 - 900	1	3
901 - 1000	0	0
1001 - 1100	0	0
1101 - 1200	0	0
Total	38	100

1.4 Number of Employees

When the HEI respondents were grouped according to the number of employees which include teaching and non-teaching, HEIs with below 200 employees had the most number of participation while the least number were from 801-900 employees. As shown in Table 5, schools with below 200 employees had the highest number of frequency with 42 percent while HEI's with the least number with 801-900 employees had 3 percent. Furthermore, the results also explain that majority of the HEI participants in this research that offer engineering programs had below 200 employees.

1.5 Number of Undergraduate Students

When the HEI respondents were grouped according to the number of undergraduate students, schools with 3001-4000 and 4001-5000 students had the most number of frequency while the least number were from 13001-14000 and above 14000 students. As shown in Table 7 and Figure 8, schools with 3001-4000 and 4001-5000 students had the highest number of frequency with 13 percent while HEI's with the least number 13001-14000 and above 14000 students had 3 percent. The results also reveals that the HEI participants in this research covers more than 1,000 students in the campus excluding the employees. As indicated in the Occupational Safety and Health Standards in the Philippines, non-hazardous workplace that occupies more than 1,000 people requires 1 full time safety officer.

Table 6.
Number of Undergraduate Students

Number of Enrolled Undergraduate Students	Frequency	Percent
Below 1,000	3	8
1,001 - 2,000	3	8
2,001 - 3,000	3	8
3,001 - 4,000	5	13
4,001 - 5,000	5	13
5,001 - 6,000	3	8
6,001 - 7,000	3	8
7,001 - 8,000	4	11
8,001 - 9,000	3	8
9,001 - 10,000	2	5
10,001 - 11,000	2	5
11,001 - 12,000	0	0
12,001 - 13,000	0	0
13,001 - 14,000	1	3
Above 14,000	1	3
Total	38	100

2. Safety Management Plans

The researchers of this study identified eighteen (18) safety management plans commonly used by local and international higher education institutions. Based on the conducted interviews to local government agencies such as CHED and DOLE, the identified safety management plans were also the recommended action safety plans in sustaining academic operations among higher education institutions. Among the thirty eight (38) higher education institutions in Region IVA CALABARZON with a total of 113 respondents, the top 3 safety management plans that were currently used are the Safety Training Plan for Faculty, Staff and other Personnel; Emergency Operations Plan; and Emergency Response and Evacuation Plan. As shown in



Table 8 and Figure 9, the top 3 safety management plans comprises of 88.50 percent, 87.61 percent and 86.71 percent respectively. Moreover, the safety management plans apply to all private and public higher education institution in Region IVA CALABARZON. The results support the research conducted by Choi (2005) wherein safety plans arised due to school awareness of safety related accidents among students and employees. However, the least 3 safety management plans were the Environmental and Safety Management Plan; Business Continuity Plan; and Health and Safety Strategy Plan. These findings supplement the conclusion by Dolan (2006) wherein there was a lack of crisis management planning and coordination for effective crisis response on many college and university campuses. Furthermore, the data shows that schools had different safety management plans implemented both for private and public HEI's.



Fig. 2 Safety Management Plans Implemented in Selected Higher Education Institution in Region IVA (CALABARZON)

3. Safety Management Practices in HEIs in Region IVA

As shown in Table 7,8,9 and 10, these findings implies that both private and public higher education institution still have areas for improvement in compliance to safety standards under academic laboratory activities, physical plant, disaster preparedness and environmental hazards. In the Philippines, some laws and regulations concerning chemical safety and security do exist. However, in general, an effective system of enforcement was still lacking (Uy, 2011). Based from the recommendation of Uy (2011), higher education institutions were still needed to improve the existing policies, standards and guidelines as a means of improving the level of safety and culture.

Table 7. Safety Management Practice of Academic Laboratory and Facilities

Legend: 0-Missing; 1.00 to 1.79-Very Poor; 1.80 to

Academic Laboratory Facility	Weighted Mean	Verbal Description
Academic Laboratory Facility	3.83	Good
Equipment and Supply	3.70	Good
Maintenance	3.80	Good
Special Provision	3.60	Good
Overall Weighted Mean	3.73	Good

2.59-Poor; 2.60 to 3.39-Fair; 3.40 to 4.19-Good; 4.20 to 5.00-Very Good

Table 8. Safety Management Practice of Physical Plant

Physical Plant	Weighted Mean	Verbal Description
Site	4.17	Good
Campus Buildings	4.06	Good
Classrooms	3.66	Good
Offices and Staff Rooms	3.7	Good
Assembly and Athletic Facilities	3.82	Good
Building Services	3.78	Good
Water and Sanitary Facilities	3.94	Good
Overall Weighted Mean	3.73	Good

Legend: 0-Missing; 1.00 to 1.79-Very Poor; 1.80 to 2.59-Poor; 2.60 to 3.39-Fair; 3.40 to 4.19-Good; 4.20 to 5.00-Very Good

Table 9. Safety Management Practice of Disaster Preparedness

Disaster Preparedness	Weighted Mean	Verbal Description
Disaster Assessment and Planning	3.7	Good
Physical and Environmental Protection	3.59	Good
Response Capacity Development	3.71	Good
Safety Practicing, Monitoring, and Improving	3.7	Good
Overall Weighted Mean	3.68	Good

Legend: 0-Missing; 1.00 to 1.79-Very Poor; 1.80 to 2.59-Poor; 2.60 to 3.39-Fair; 3.40 to 4.19-Good; 4.20 to 5.00-Very Good

Table 10. Safety Management Practice of Environmental Hazards

Environmental Hazards	Weighted Mean	Verbal Description
Air Pollutants and Indoor Air Quality	4.01	Good
Toxic Hazards	3.68	Good
Outdoor Pollutants	3.56	Good
Overall Weighted Mean	3.75	Good

Legend: 0-Missing; 1.00 to 1.79-Very Poor; 1.80 to 2.59-Poor; 2.60 to 3.39-Fair; 3.40 to 4.19-Good; 4.20 to 5.00-Very Good

IV. COMPARISON OF THE SAFETY MANAGEMENT PRACTICES BETWEEN PRIVATE AND PUBLIC HIGHER EDUCATION INSTITUTIONS IN REGION IVA (CALABARZON)

4.1 Academic Laboratory Activities and Facilities

The difference on safety management practice of private and public higher education institution was determined using the t-test. As shown in Table 11 and 12, there was a significant difference between the safety management practice of private and public higher education institution based on academic laboratory activities since the computed t value (5.63) was higher than the critical value of t (1.98) at 0.01 level of significance. This implies that private and public higher education institution had different safety management practices based on academic laboratory activities.

Table 11.
Safety Management Practices of Private and Public Higher Education Institution Based on Academic Laboratory Activities

Academic Laboratory Activities	PRIVATE (weighted mean)	PUBLIC (weighted mean)
1. Facility	3.86	3.67
2. Equipment and Supply	4.12	3.20
3. Maintenance	3.90	3.25
4. Special Provision	4.08	3.21
Overall Weighted Mean	3.99	3.33

Table 12.
Difference Between Safety Management Practices of Private and Public Higher Education Institution Based on Academic Laboratory Activities

Academic Laboratory Activities	Private	Public
Mean	3.99	3.33
Variance	0.3892	0.3041
t Stat	5.63**	
t Critical two-tail	1.98	

**difference is significant @ 0.01 level

4.2 Physical Plant

As shown in Table 13 and 14, there was a significant difference between the safety management practice of private and public higher education institution based on physical plant since the computed t value (8.83) was higher than the critical value of t (1.98) at 0.01 level of significance. This implies that private and public higher education institution had different safety management practice based on physical plant. according to the Data Collection Survey for Higher Education Sector in the Philippines Final Report (2015), facilities and equipment in SUCs and LUCs were still

generally insufficient and lacking the basics needed for instructions and research specifically for sciences and engineering programs. Thus, this implies that safety management practice of public HEIs relative to academic laboratory activities and facilities were limited compared with private HEIs.

Table 13.
Safety Management Practices of Private and Public Higher Education Institution Based on Physical Plant

Physical Plant	PRIVATE (weighted mean)	PUBLIC (weighted mean)
1. Site	4.17	3.01
2. Campus	4.06	3.05
3. Buildings	3.66	3.20
4. Classrooms	3.90	3.60
5. Offices and Staff Rooms	4.32	3.11
6. Assembly and Athletic Facilities	3.98	3.01
7. Building Services	4.20	3.12
8. Water and Sanitary Services	4.07	3.08
Overall Weighted Mean	4.05	3.15

Table 14.
Difference Between Safety Management Practices of Private and Public Higher Education Institution Based on Physical Plant

Physical Plant	Private	Public
Mean	4.05	3.15
Variance	0.3284	0.1509
t Stat	8.83**	
t Critical two-tail	1.98	

**difference is significant @ 0.01 level

4.3 Disaster Preparedness

As shown in Table 15 and 16, there was a significant difference between the safety management practice of private and public higher education institution based on disaster preparedness since the computed t value (8.84) was higher than the critical value of t (1.98) at 0.01 level of significance. This implies that private and public higher education institution had different safety management practice based on disaster preparedness. Under Section 14 of the Republic Act 10121 or the Philippine Disaster Risk Reduction and Management Act of 2010) which mandates the Department of Education, Commission of Higher Education, and Technical Education and Skills Development Authority to integrate disaster risk education in school curricula. Based on



the interview with academic administrators both for private and public institutions, disaster preparedness plans were already prepared however implementation and safety practices varies on the priorities and initiatives of the school officials. Moreover, safety management standards for higher education institution may support for strong implementation and compliance.

Table 15.
Safety Management Practices of Private and Public Higher Education Institution Based on Disaster Preparedness

		PRIVATE (weighted mean)	PUBLIC (weighted mean)
Disaster Preparedness			
1. Disaster Assessment and Planning	and	3.97	3.02
2. Physical Environmental Protection	and	4.02	3.16
3. Response Capacity Development	and	4.04	3.12
4. Safety Practicing, Monitoring, and Improving	and	4.03	2.85
Overall Weighted Mean		4.02	3.04

Table 16.
Difference Between Safety Management Practices of Private and Public Higher Education Institution Based on Disaster Preparedness

Physical Plant	Private	Public
Mean	4.02	3.04
Variance	0.3823	0.2042
t Stat	8.84**	
t Critical two-tail	1.98	

**difference is significant @ 0.01 level

4.4 Environmental Hazards

As shown in Table 17 and 18, there was a significant difference between the safety management practice of private and public higher education institution based on environmental hazards since the computed t value (7.06) was higher than the critical value of t (1.98) at 0.01 level of significance. This implies that private and public higher education institution had different safety management practice based on disaster preparedness. The previous researches of Dolan (2006), Mitroff et al. (2006) and Zdziarski (2007) emphasized that there was a lack of safety management planning for higher education institution, however, some evidences of safety plans and practices were already being used both for private and public institution. However, majority of the higher education institutions were

already considering in their long terms plans to green building and eco-friendly environment as a measure in maintaining healthy level of environment within their campuses.

Table 17.
Difference Between Safety Management Practices of Private and Public Higher Education Institution Based on Environmental Hazards

Environmental Hazards	PRIVATE (weighted mean)	PUBLIC (weighted mean)
1. Air Pollutants and Indoor air quality	4.01	3.04
2. Toxic Hazards	4.11	3.21
3. Outdoor Pollutants	4.03	3.48
Overall Weighted Mean	4.05	3.24

Table 18.
Difference Between Safety Management Practices of Private and Public Higher Education Institution Based on Environmental Hazards

Physical Plant	Private	Public
Mean	4.05	3.24
Variance	0.3823	0.2042
t Stat	7.06**	
t Critical two-tail	1.98	

**difference is significant @ 0.01 level

V. RELATIONSHIP BETWEEN THE PROFILE AND SAFETY MANAGEMENT PRACTICES OF HEI'S IN REGION IVA

5.1 Academic Laboratory Activities

In determining the relationship between the profile and safety management practices of higher education institution, the researcher used the Spearman's rank order correlation. As shown in Table 36, the significant variables of the profile were the type of HEI ($r_s = -.433, p = .000$), number of employees ($r_s = .247, p = .008$) at 0.01 level of significance and the number of programs ($r_s = .944, p = .040$) at 0.05 level and significance. This explains that change in the identified profile of the HEI affects the level of safety management practice on academic laboratory activities. For the type of HEI, as shown in Table 19, there was a significant relationship between private and public institution in terms of safety management practice on academic laboratory activities.

Table 19.

Relationship Between Profile and Safety Management Practices of Private and Public Higher Education Institution Based on Academic Laboratory Activities

Profile	Academic Laboratory Activities		
	r-value	p-value	Interpretation
Type of HEI	-.433**	.000	Significant relationship
Number of Years	.076	.423	No significant relationship
Number of Programs	.194*	.040	Significant relationship
Number of Employees	.247*	.008	Significant relationship
Number of Students	-.071	.457	No significant relationship

*correlation is significant @ 0.05 level; **correlation is significant @ 0.01 level

5.2 Physical Plant

As shown in Table 20, the significant variables of the profile were the type of HEI ($rs = -.515, p = .000$), number of programs ($rs = .249, p = .008$) and the number of employees ($rs = .331, p = .000$) at 0.01 level of significance. This explains that change in the identified profile of the HEI affects the level of safety management practice on physical plant. These findings related to physical plant also agree on the study by Coombs (2008) and Mastrodicasa (2008) wherein campus environment, safety and risk changes due to the sheer size of the campus community, changes in technology and communications, as well as an increase in litigation concerning higher education.

Table 20.

Relationship Between Profile and Safety Management Practices of Private and Public Higher Education Institution Based on Physical Plant

Profile	Physical Plant		
	r-value	p-value	Interpretation
Type of HEI	-.515**	.000	Significant relationship
Number of Years	.172	.068	No significant relationship
Number of Programs	.249**	.008	Significant relationship
Number of Employees	.331**	.000	Significant relationship
No of Students	-.005	.959	No significant relationship

*correlation is significant @ 0.05 level; **correlation is significant @ 0.01level

5.3 Disaster Preparedness

According to Dolan (2006), there was a lack of crisis management planning and coordination for effective crisis response on many college and university campuses. As shown in Table 21, the significant variables of the profile were the type of HEI ($rs = -.490, p = .020$) at 0.01 level of

significance and number of years ($rs = .196, p = .037$) and number of employees ($rs = .218, p = .020$) at 0.05 level of significance. These findings revealed that either private or public higher educations the type of HEI and its number years and employees had a significant relationship in terms of safety management practice in the area of disaster preparedness.

Table 21.

Relationship Between Profile and Safety Management Practices of Private and Public Higher Education Institution Based on Disaster Preparedness

Profile	Disaster Preparedness		
	r-value	p-value	Interpretation
Type of HEI	-.490**	.000	Significant relationship
Number of Years	.196*	.037	Significant relationship
Number of Programs	.127	.181	No significant relationship
Number of Employees	.218*	.020	Significant relationship
No of Students	-.062	.515	No significant relationship

*correlation is significant @ 0.05 level; **correlation is significant @ 0.01level

5.4 Environmental Hazards

As shown in Table 22, the significant variables of the profile were the type of HEI ($rs = -.453, p = .000$), number of programs ($rs = .273, p = .003$) and the number of employees ($rs = .360, p = .000$) at 0.01 level of significance. This explains that change in the identified profile of the HEI affects the level of safety management practices on environmental hazards. There was still a significant difference between private and public higher education in terms of safety management practice in the area of environmental hazards. In the conclusion made by Lunenburg (2010), school administrators were needed to be sensitive to environmental hazards that can threaten the health and safety of students and employees. The study discussed the following environmental hazards such as asbestos, radon gas, school lead, indoor air quality, and electromagnetic fields that were commonly used in academic institution. Furthermore, these finding also reiterated by environmental lawyers (2018), that some environmental hazards resulted from improper retrofitting of school buildings, and could potentially give rise to environmental litigation if students develop health problems as a result of exposure to contaminants.



Table 22.
Relationship Between Profile and Safety Management Practices of Private and Public Higher Education Institution Based on Environmental Hazards

Profile	Environmental Hazards		
	r-value	p-value	Interpretation
Type of HEI	-.453*	.000	Significant relationship
Number of Years	.162	.086	No significant relationship
Number of Programs	.273**	.003	Significant relationship
Number of Employees	.360**	.000	Significant relationship
No of Students	.008	.937	No significant relationship

*correlation is significant @ 0.05 level; **correlation is significant @ 0.01level

VI. CONCLUSION

The higher education institution in the Region IVA is composed of two type; the private and public institution. Majority of higher education in Region IVA are private proprietary educational institutions operating from 11-20 years of service with 11-20 academic programs with below 200 employees and students' population ranging from 1,000 - 8,000. Safety Management Plans were currently used by higher education institution in Region IVA. Among the 18 identified safety management plans, safety training for employees and students are most frequently used. The safety management practices identified and applicable to higher education institution were academic laboratory activities, physical plant, disaster preparedness, and environmental hazards. Based on the findings, all areas were classified with a verbal description of good. This means that higher education institutions in Region IVA are 60-80 percent compliant to safety standards.

This research also reveals that there were significant differences between private and public higher education institutions Region IVA in their current safety management practices in terms of academic laboratory activities, physical plant and disaster preparedness, and environmental hazards. Moreover, among the identified profile of higher education institution, the type of institution, number of programs, and number employees are the identified variables with significant relationship with the safety management practices.

VII. RECOMMENDATION

This research was conducted to determine the current safety management plans and practices of public and private Higher Education Institution considering the national provision on occupational safety and health standards in the Philippines. The higher education institution in Region IVA should specifically the top management and higher official both for private and public should give priorities on safety practices in the campus specifically on the areas under

disaster preparedness and environmental hazards. Moreover, despite of having safety plans, higher education institutions in Region IVA should take into consider strong implementation and monitoring of all the preventive action plans. Thus, budget provision should also be emphasize in the organizational planning and budgeting specifically on public higher education institutions.

The proposed safety management standards should be reviewed by Commission of Higher Education in consultation with higher education institution in the Philippines. Furthermore, to ensure its implementation, it also recommended to be used as a standards by Federation of Accrediting Agencies of the Philippines (FAAP), authorized by the Philippine Commission on Higher Education (CHED) for private insitutions and National Network of Quality Assurance Agencies (NNQAA) as the certifying agency for government-sponsored institutions as part of the requirement and certification for quality levels of accredited programs at the tertiary level for the purpose of granting progressive deregulation and other benefits.

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