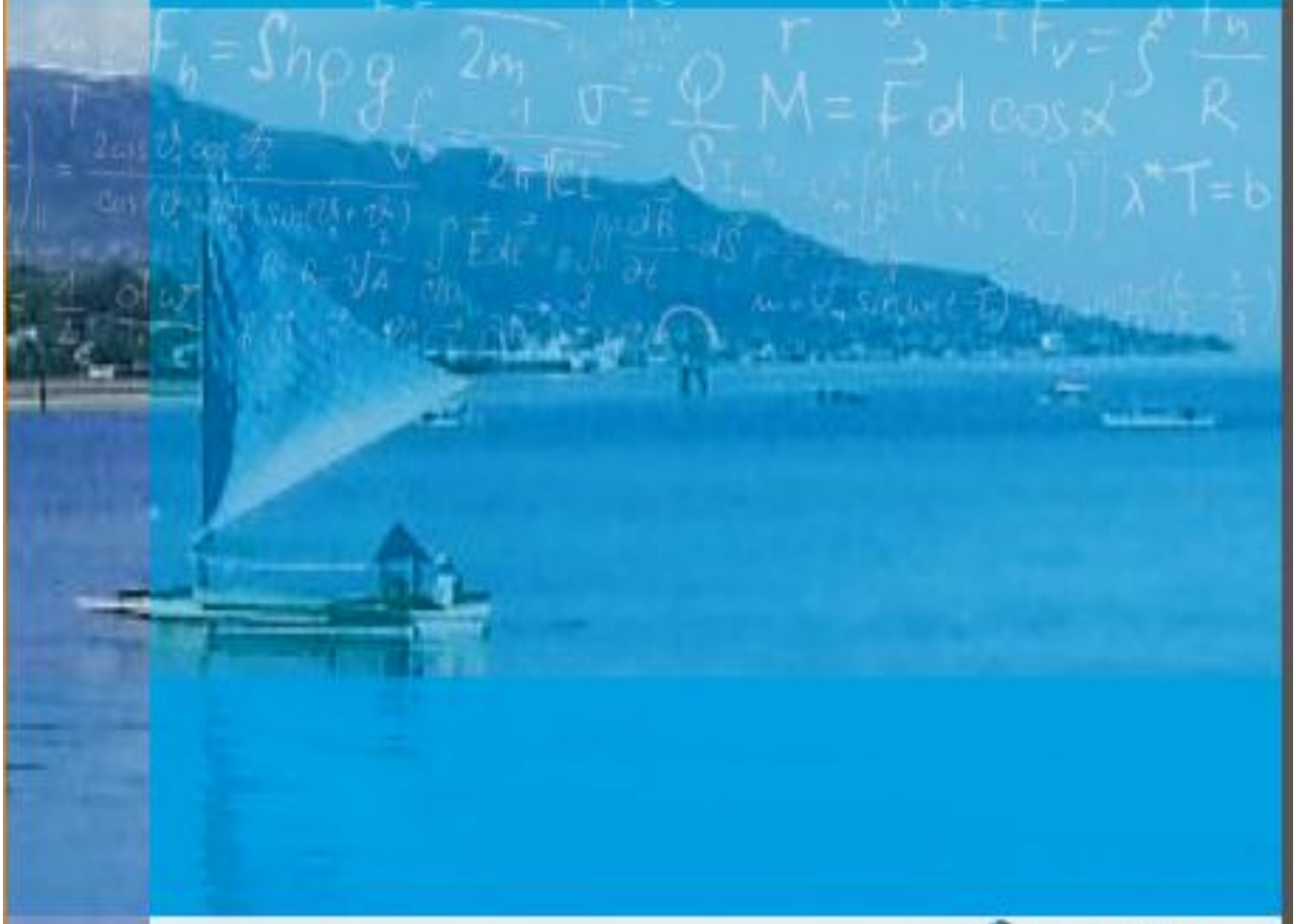
Basic Science
for Sustainable Marine Development

PROCEEDING
INTERNATIONAL SEMINAR 2015

Ambon, 3-4 June 2015



Organized by
Faculty of Mathematics and Natural Sciences
Pattimura University

PROCEEDINGS

1st International Seminar of Basic Science, FMIPA Unpatti - Ambon
June, 3rd – 4th 2015

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Welcoming Address by The Organizing Committee

The honorable, the rector of Pattimura University

The honorable, the vice rector of academic affair, Pattimura University

The honorable, the vice rector of administration and financial affair, Pattimura University

The honorable, the vice rector of planning, cooperation and information affair, Pattimura University

The honorable, all the deans in Pattimura University

The honorable, the key note speakers and other guests.

We have to thank The Almighty God for the blessings that allow this International seminar can be held today. This is the first seminar about MIPA Science in which the Faculty of MIPA Pattimura University becomes the host. The seminar under the title Basic Science for Sustainable Marine Development will be carried out on 3 June 2015 at Rectorate Building, the second floor. There are 250 participants from lecturers, research institute, students, and also there are 34 papers will be presented.

This International seminar is supported by the amazing people who always give financial as well as moral supports. My special thanks refer to the rector of Pattimura University, Prof. Dr. Thomas Pentury, M.Si, and the Dean of MIPA Faculty, Prof. Dr. Pieter Kakissina, M. Si. I also would like to express my deepest gratitude to Dr. Kotaro Ichikawa, the director of CSEAS Kyoto University, Prof. Bohari M. Yamin, University of Kebangsaan Malaysia, Prof. Dr. Budi Nurani Ruchjana (Prisident of Indonesian Mathematical Society/Indo-MS), Dr. Ir. A. Syailatua, M.Sc (Director of LIPI Ambon), and Hendry Ishak Elim, PhD as the key note speakers. We expect that this international seminar can give valuable information and contribution especially in developing basic science for sustainable marine development in the future.

Last but not least, we realize that as human we have weaknesses in holding this seminar, but personally I believe that there are pearls behind this seminar. Thank you very much.

Chairman

Dr. Netty Siahaya, M.Si.

Opening Remarks
By Dean of Mathematic and Natural Science Faculty

I express my deepest gratitude to The Almighty God for every single blessing He provides us especially in the process of holding the seminar until publishing the proceeding of International Seminar in celebrating the 17th anniversary of MIPA Faculty, Pattimura University. The theme of the anniversary is under the title Basic Science for Sustainable Marine Development. The reason of choosing this theme is that Maluku is one of five areas in Techno Park Marine in Indonesia. Furthermore, it is expected that this development can be means where the process of innovation, it is the conversion of science and technology into economic value can be worthwhile for public welfare especially coastal communities.

Having the second big variety of biological resources in the world, Indonesia is rich of its marine flora and fauna. These potential resources can be treated as high value products that demand by international market. Basic science of MIPA plays important role in developing the management of sustainable marine biological resources.

The scientific articles in this proceeding are the results of research and they are analyzed scientifically. It is expected that this proceeding can be valuable information in terms of developing science and technology for public welfare, especially people in Maluku.

My special thanks refer to all researchers and reviewers for your brilliant ideas in completing and publishing this proceeding. I also would like to express my gratefulness to the dies committee-anniversary of MIPA Faculty for your creativity and hard working in finishing this proceeding, God Bless you all.

Dean of Mathematic and Natural Science Faculty

Prof. Dr. Pieter Kakisina, M.Si.

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Analysis Correspondence of Data Crime in Polres Pulau Ambon dan Pulau-Pulau Lease

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ABSTRACT

Police crime on the island of Ambon and the islands of the Lease. This study uses correspondence analysis, to describe the relationship of a data on a low dimensional graphical procedure to describe a relationship in the frequency table. Based on chi-square test results obtained that there is entanglement between the types of cases and the time of the incident, crime scene of the crime and the type of case. From the analysis of the correspondence between the types of cases and the time of the incident, cases tend to occur in the morning is theft, and at night there is motor vehicle theft. The tendency of the crime scene and the time of the incident showed that the city of Ambon in the morning, daytime and nighttime crime cases. While at the crime scene and the types of cases showed the type of case (gambling, assault, theft, motor vehicle theft, embezzlement, and deception) tend to occur in areas Sirimau districts, districts Baguala, Nusaniwe districts, sub-districts and districts Leitimur Ambon bay south.

***Keywords*:** Correspondence Analysis, Contingency Tables, Types of Cases, Time of Occurrence and the Time Scene

INTRODUCTION

Security is the condition or state of being free from danger. This term is used to describe a condition related to the crime, all forms of accidents and others. Security is a very broad topic such as national security against terrorist attacks, computer security against hackers, security use public transport to the pickpocket, home security against thieves and other intruders, security of road users against road users are inconsiderate and many related situations other. Small problems are accompanied by emotions can be a crime in the form of persecution mild, moderate and even also can be a criminal act murder. This phenomenon does not only happen in big cities like Jakarta, but also can occur in the Maluku islands in particular areas of the city of Ambon *(Data source: Redaksi Siwalima Ambon)*.

Based on the problem required a statistical method like Correspondence Analysis to identify trends between types of cases, time of incident and the crime scene. So that the tendency of the relationship between these three variables above can be described with more detail and complete with domination column profiles and lines profile and then can be visualized in order to be analyzed adjacent dots. This research is also expected to provide input or suggestions for the government or the authorities to take decisions and precaution to prevent criminal matters in the jurisdiction of Polres Pulau Ambon dan Pulau-pulau Lease.

METHODS

The method in this study is a literature review that comes from the book, junal or other online sources, about the correspondence analysis using primary data related to the crime that occurred in Polres Pulau Ambon dan PP lease. Research stages include primary data collection by taking the data of crime at the police station PP. Ambon and PP. Lease. Data processing using software Minitab® 16.2.1 using correspondence analysis and interpreted the results of the processing to obtain the CONCLUSIONSs of the study results.

RESULTS AND DISCUSSION

In this section will discuss the correspondence analysis on the relationship between the types of cases the time of the incident, the crime scene with the time of the incident, and crime scene with this type of case.

The Relationship between Types of Cases and Time of Incident

Below is the crime that occurred within the scope or area of Polres Pulau Ambon dan Pulau-pulau Lease based on the types of cases against the time of the incident, as follows :

Table 1. Data about type of cases against time of incident

Types of cases	Time of incident		
	Morning	Daylight	Night
Gambling	8	15	25
Persecution	100	80	150
Theft	144	17	60
Motor vehicle theft	102	28	55
Embezzlement	13	39	16
Deception	34	10	64

From the data can be categorized into two types of variables in Table 2 below:

Table 2. Category variable types of cases and the time of occurrence

No.	Name of Variable	Categories
1.	x_1 = Types of cases	Gambling
		Persecution
		Theft
		Motor Vehicle Theft
		Embezzlement
		Deception
2.	x_2 = Time of incident	Morning
		Daylight
		Night

The results of the test by using Minitab 16.2.1

From the data processing values obtained Chi - Square as the following:

Chi-Square Distances

	Morning	Daylight	Night	Total
Gambling	7.242	3.260	2.284	12.785
Persecution	10.390	3.478	4.092	17.959
Theft	28.939	16.152	7.442	52.533
Motor Vehicle Left	7.910	1.947	3.727	13.585
Embezzlement	8.354	49.001	3.976	61.331
Deception	2.737	5.966	12.027	20.730
Total	65.573	79.803	33.548	178.924

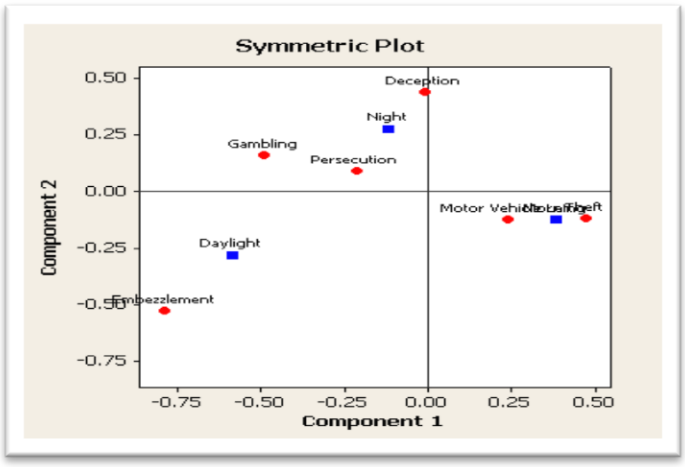
From the data above obtained $\chi^2_{\text{hitung}} > \chi^2_{(0,05;10)}$ yaitu $178{,}924 > 18{,}307$. Therefore, reject H_0 or accept H_1 , that's means there is relationship between type of cases and Time of Incident.

The following show about Inertias Value, profiles column and profiles row:

Relative Inertias

	Morning	Daylight	Night	Total
Gambling	0.040	0.018	0.013	0.071
Persecution	0.058	0.019	0.023	0.100
Theft	0.162	0.090	0.042	0.294
Motor Vehicle Left	0.044	0.011	0.021	0.076
Embezzlement	0.047	0.274	0.022	0.343
Deception	0.015	0.033	0.067	0.116
Total	0.366	0.446	0.188	1.000

Symmetric Plot column and row as the following :



Picture 1. Symmetric Plot column and row

The Relationship between Crime Scene and Time of incident

Below is the crime that occurred within the scope of Polres Pulau Ambon dan PP Lease based on crime scene and time of incident:

Table 3. Data about crime scene against time of incident

Crime Scene	Time of incident		
	Morning	Daylight	Night
Sirimau district	100	91	150
Baguala district	58	70	88
Nusaniwe district	145	50	177
Teluk Ambon district	15	3	10
Leitimur Selatan district	1	1	1

From the data can be categorized into two types of variables in Table 4 below:

Table 4. Category variable of Crime Scene and Time of incident

No.	Name of Variable	Categories
1	Y_1 = Crime Scene	Sirimau district
		Baguala district
		Nusaniwe district
		Teluk Ambon district
		Leitimur Selatan district
2	Y_2 = Time of incident	Morning
		Daylight
		Night

The results of the test by using Minitab 16.2.1

From the data processing values obtained *Chi - Square* as the following:

Chi-Square Distances

	Morning	Daylight	Night	Total
Sirimau	1.564	2.803	0.011	4.378
Baguala	2.644	9.667	0.643	12.954
Nusaniwe	3.700	13.320	0.861	17.882
Teluk Ambon	3.487	1.706	0.473	5.666
Leitimur Selatan	0.000	0.160	0.082	0.243
Total	11.395	27.656	2.072	41.122

From the data above obtained $\chi^2_{\text{hitung}} > \chi^2_{(0,05;8)}$ yaitu $41{,}122 > 12{,}507$. Therefore, reject H_0 or accept H_1 , that's means there is relationship between Crime Scene and Time of Incident.

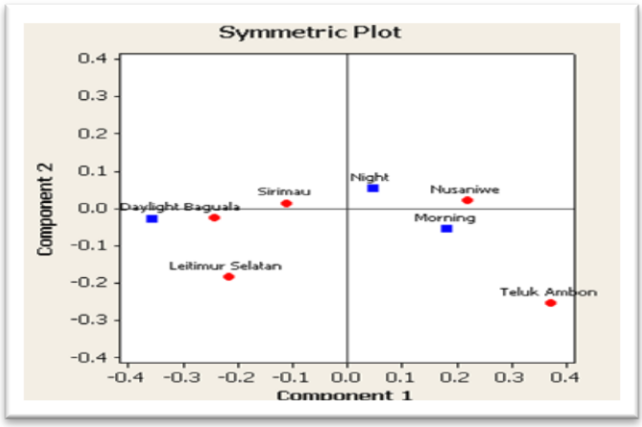
The following show about Inertias Value, profiles column and profiles row:

So, we can continue to find the relationship between these variable by using Minitab Software 16.2.1, The following show about Inertias Value, profiles column and profiles row:

Relative Inertias

	Morning	Daylight	Night	Total
Sirimau	0.038	0.068	0.000	0.106
Baguala	0.064	0.235	0.016	0.315
Nusaniwe	0.090	0.324	0.021	0.435
Teluk Ambon	0.085	0.041	0.012	0.138
Leitimur Selatan	0.000	0.004	0.002	0.006
Total	0.277	0.673	0.050	1.000

Finally, we can obtained the visual graph of crime scene and time of incident:



The Relationship between Crime Scene and Types of Cases

Below is the data crime that occurred in the area of Polres Pulau Ambon dan Pulau-pulau Lease based on the Crime Scene against types of cases, as follows :

Table 5. Data crime about crime scene against types of cases

Crime Scene	Types of Cases					
	A	B	C	D	E	F
Sirimau district	14	132	131	98	13	37
Baguala district	7	21	18	21	5	10
Nusaniwe district	16	178	130	44	11	35
Teluk Ambon district	2	8	2	12	1	3
Leitimur Selatan district	2	2	3	1	1	2

From the data above can be categorized into two types of variables in Table 6 below:

Table 6. Category variable of Crime Scene against types of cases

No.	Variabel Name	Categories
1	$z_1 = Crime\ Scene$	Sirimau district
		Baguala district
		Nusaniwe district
		Teluk Ambon district
		Leitimur Selatan district
2	$z_2 = Types\ of\ Cases$	Gambling
		Persecution
		Theft
		Motor vehicle theft
		Embezzlement
		Deception

By using Minitab Software 16.2.1, we can obtained the Chi-Square value test as following:

Table 7. Chi – Square value

Chi-Square Distances

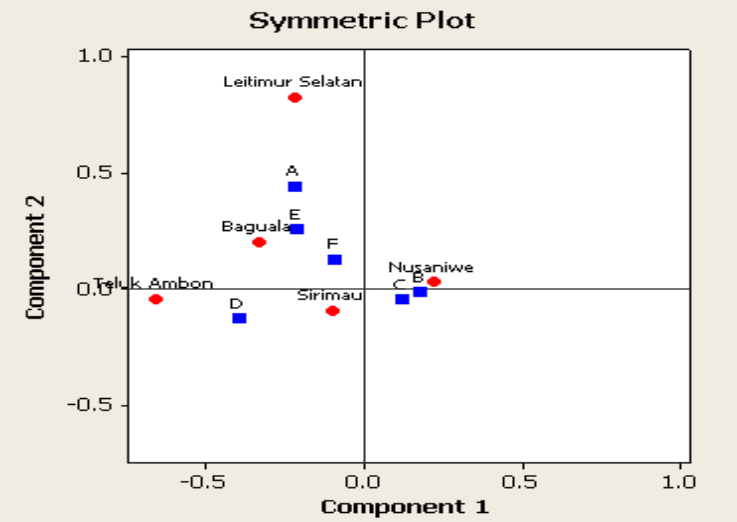
	A	B	C	D	E	F	Total
Sirimau	0.949	2.382	0.221	5.177	0.038	0.060	8.827
Baguala	3.494	2.268	1.615	2.368	2.089	0.888	12.721
Nusaniwe	0.160	6.511	0.462	13.407	0.420	0.169	21.129
Teluk Ambon	0.541	0.381	4.766	9.185	0.010	0.084	14.967
Leitimur Selatan	4.984	0.931	0.020	0.513	1.170	1.009	8.627
Total	10.128	12.473	7.084	30.650	3.728	2.210	66.273

The table above show about the value of *Chi-Square*: $\chi^2_{\text{hitung}} > \chi^2_{(0,05;20)}$ that is $66{,}273 > 31{,}41$. So, we can reject H_0 or accept H_1. It is means that is a relationship between Crime scene with types of cases. So we can continue to analysis the value of inertias, profiles of column and profiles of row, as follows:

Relative Inertias

	A	B	C	D	E	F	Total
Sirimau	0.014	0.036	0.003	0.078	0.001	0.001	0.133
Baguala	0.053	0.034	0.024	0.036	0.032	0.013	0.192
Nusaniwe	0.002	0.098	0.007	0.202	0.006	0.003	0.319
Teluk Ambon	0.008	0.006	0.072	0.139	0.000	0.001	0.226
Leitimur Selatan	0.075	0.014	0.000	0.008	0.018	0.015	0.130
Total	0.153	0.188	0.107	0.462	0.056	0.033	1.000

Finally, we can obtained the visual graph of crime scene and time of incident:



Picture 3. Symmetry Plot of column and row

CONCLUSIONS

From the results and discussion can obtained the CONCLUSIONS as following:

1. The relationship between types of cases and time of incident, such as : cases of theft and motor vehicle theft tend to occur in the morning., while gambling, persecution,and deception tend to occur in the night and the last cases is embezzlement tend to occur in the daylight.
2. The relationship between crime scene and time of incident , such as Baguala district and Sirimau district tend to occur crime in daylight, while in Nusaniwe district tend to occur crime in the morning and in the night.
3. The relationship between types of cases and crime scene, such as:
   - In Baguala district tend to occur embezzlement crime
   - In Nusaniwe district tend to occur persecution crime
   - In Sirimau district tend to occur theft crime
   - and the last Teluk Ambon district have less crime

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