# The Correlation Analysis Between Fields Of Expertise, Student's Achievement Index, Student's Favorite Subject and Student's Interests And Talents Clustering

**Ayu Ismi Hanifah, S.Pd., M.Pd. [1], Masruroh, M.Pd. [2]**

**[1] Informatics Engineering, Islamic University of Lamongan**
**Lamongan, Indonesia**
**ayuismi@unisla.ac.id**

**[2] Informatics Engineering, Islamic University of Lamongan**
**Lamongan, Indonesia**
**masruroh@unisla.ac.id**

## Abstract

*Interest is a high tendency and passion or great desire to something. In general, interest is a factor that encourage someone to achieving its objectives. Great and strong interest is a big investment to reach the interested goal. This research discuss about the relationship between fields of expertise, student's achievement index, student's favorite subject and their interests and talents. This research is aimed to describe the correlation between student's fields of expertise, student's achievement index, and student's favorite subject and student's interest and talents clustering result. Data is taken from 94 Informatics Engineering students in Islamic University of Lamongan as sample. The data of fields of expertise and student's favorite subject is obtained from questionnaire and student's achievement index is obtained from the Islamic University of Lamongan's students document. The obtained data is analyzed using Matlab and the centroid of the data is sought using fuzzy c-mean. The centroid then is used to cluster the student's interests and talents using Euclidian Distance. The fields of expertise, student's achievement index, and student's favorite subject then is correlated with the student's interests and talents clustering result. The correlation between fields of expertise and their interests and talents was 0.111, the correlation between student's achievement index and their interests and talents was -0,624, and the correlation between student's favorite subject and their interests and talents was 0.151. Generally, it can be concluded that there is correlation between between student's fields of expertise, student's achievement index, and student's favorite subject and student's interest and talents clustering result.*

**Keywords:** *Fields of expertise, student's achievement index, interests, talents.*

## Introduction

Interest is a high tendency and passion or great desire to something (Syach, 1997). Interest as it understood, can affect the quality of learning achievement in a subject. Generally, Hurlock (1992) perceive interest is one psychological factor that drive someone to reach his goal. Interest is a source of motivation that drive someone to do something they desire to. If they given a chance to choose what they want to do, they will tend to grow their interest that come with satisfaction. If their satisfaction is decreased then their interest is also decrease continuously.

Talents is a congenital characteristic that is brought by individual since he was born. This talents can develop optimally if it supported by high interest and motivation. The combination of interest and talent is a great investment for the future career.

The field of expertise will be a consideration for someone in choosing career beside his interest and talent. The field of expertise, interest and talent are related each other. For example, student whose talent in logical mind skilldan counting, he may has interest in programming. Therefore, he may choose to be a software engineer for his field of expertise.

This research is aimed to describe the correlation between student's fields of expertise, student's achievement index, and student's favorite subject and student's interest and talents clustering result.

## Research methods

This research is a descriptive quantitative research that is aimed to describe the correlation between student's fields of expertise, student's achievement index, and student's favorite subject and student's interest and talents clustering result.

Data is taken from 94 Informatics Engineering students in Islamic University of Lamongan as sample. The data of fields of expertise and student's favorite subject is obtained from questionnaire and student's achievement index is obtained from the Islamic University of Lamongan's students document. The field of expertise that can be chosen by student are database, programming, network, and design. While the student's favorite subject are the subject they have joined during 5 semesters in informatics engineering study program which are related with the field of expertise.

The obtained data is analyzed using Matlab and the centroid of the data is sought using fuzzy c-mean. The centroid then is used to cluster the student's interests and talents using Euclidian Distance. Student will be clustered into three cluster. They are programming, network, and design.

The fields of expertise, student's achievement index, and student's favorite subject then is correlated with the student's interests and talents clustering result. The correlation analysis is using the formula below:

$$r_{X,Y} = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^2 \sum_{i=1}^{n}(y_i - \bar{y})^2}}$$

or

$$r_{X,Y} = \frac{\sum_{i=1}^{n} x_i y_i - n\bar{x}\bar{y}}{\sqrt{\left[\sum_{i=1}^{n} x_i^2 - n\bar{x}^2\right]\left[\sum_{i=1}^{n} y_i^2 - n\bar{y}^2\right]}}$$

**Picture 1.** Pearson's Correlation Formula (Walpole, 1995)

The correlation result then is interpreted using the table of interpretation below:

**Table 1 Correlation Value and Interpretation**

| Correlation value (r) | Interpretation |
|---|---|
| 0,00-0,09 | Ignored correlation |
| 0,10-0,29 | Low correlation |
| 0,30-0,49 | Moderate correlation |
| 0,50-0,70 | High correlation |
| >0,70 | Very high correlationt |

## Research Results and Discussion

The analysis result showed that the correlation between fields of expertise and their interests and talents is 0.111, the correlation between student's achievement index and their interests and talents is -0,624, and the correlation between student's favorite subject and their interests and talents is 0.151.

The correlation between fields of expertise and their interests and talents is 0.111. It means that there is low correlation between fields of expertise and their interests and talents. The explanation for this is the more the student's fields of expertise, so their interests and talents they have tends to the many.

The correlation between student's achievement index and their interests and talents is -0,624. It means that there is high correlation between student's achievement index and their interests and talents, but the value is negative. It means that this is the higher the student's achievement index, so their interests and talents they have tends to the less.

The correlation between student's favorite subject and their interests and talents is 0.151. It means that there is low correlation between student's favorite subject and their interests and talents. The explanation for this is the more the student's favorite subject, so their interests and talents they have tends to the many.

## Conclusions and recommendations

Based on the data analysis and discussion above, it can be concluded that there is low correlation between the fields of expertise and their interests and talents, and between student's favorite subject and their interests and talents. There is high correlation between student's achievement index and their interests and talents, but the value

is negative. Generally, it can be concluded that there is correlation between between student's fields of expertise, student's achievement index, and student's favorite subject and student's interest and talents clustering result.

The result of this research can be consideration for further research about clustering interest and talent based on fields of expertise, student's achievement index, and student's favorite subject.

## References

Bambang, Hidayat. *Minat Bakat dan Prestasi Belajar untuk Meningkatkan Kualitas Hidup Mahasiswa* (a case study at student's Sekolah Tinggi Agama Islam Negeri Jember courses Muamalah).

Jimmy, J & Sherwin. 2007. *Segmentasi Citra Spot Dengan Menggunakan Pendekatan Fuzzy C-Means*. Skripsi not published , of informatic engineering Bina Nusantara University.

Nafi'iyah, Nur. *Clustering Keahlian Mahasiswa dengan SOM* (a case study: Informatic Engineering, UNISLA). Prosiding Snatika, November 2015.