

## CHAPTER 3

### RESEARCH METHODOLOGY

#### 3.1 Manufacturing server

The author uses a web application to manage questions and share information regularly. The final results obtained by students in the form of answers.

#### 3.2 Data Collection

The author used 500 students data and 100 questionnaires. Student data here includes name, cellphone number, course name & schedule.

#### 3.3 The tools device

The tools that the author has include a modem to send and receive SMS so that it can be integrated with GAMMU, GAMMU to manage command line SMS, Clients/users to receive shared information, Mobile numbers to detect who is being addressed/asked, PHP for the program language used, Auto reply to send answers automatically as desired.

#### 3.4 Cosine Similarity

D1 : ruang jaringan komputer dimana ya ?

D2 : ruang

Kata	D1	D2
ruang	1	1
jaringan	1	0
komputer	1	0
dimana	1	0
ya	1	0

**Table 3.1** Cosine Similarity

Vector :

$$D1 = [1,1,1,1,1] \quad \text{akar}(1+1+1+1+1) \quad \text{akar}(5)$$

$$D2 = [1,0,0,0,0] \quad \text{akar}(1+0+0+0+0) \quad \text{akar}(1)$$

Cosine similarity =

$$\frac{(1*1)+(1*0)+(1*0)+(1*0)+(1*0)}{1} \quad 1$$

$$\text{akar} ( D1 ) \times \text{akar} ( D2) \quad 5$$

ruang 0.2

D1 : ruang jaringan komputer dimana ya ?

D2 : hari

Kata	D1	D2
ruang	1	0
jaringan	1	0
komputer	1	0
dimana	1	0
ya	1	0

Vector :

$$D1 = [1,1,1,1,1] \quad \text{akar} (1+1+1+1+1) \quad \text{akar} (5)$$

$$D2 = [0,0,0,0,0] \quad \text{akar} (0+0+0+0+0) \quad \text{akar} (0)$$

Cosine similarity =

$$\frac{(1*0)+(1*0)+(1*0)+(1*0)+(1*0)}{0} \quad 0$$

$$\text{akar} ( D1 ) \times \text{akar} ( D2) \quad 5$$

hari 0

D1 : ruang jaringan komputer dimana ya ?

D2 : jam

Kata	D1	D2
ruang	1	0
jaringan	1	0
komputer	1	0
dimana	1	0
ya	1	0

Vector :

$$D1 = [1,1,1,1,1]$$

akar  
(1+1+1+1+1) akar (5)

$$D2 = [0,0,0,0,0]$$

akar  
(0+0+0+0+0) akar (0)

Cosine similarity =

$$\frac{(1*0)+(1*0)+(1*0)+(1*0)+(1*0)}{0}$$

$$\text{akar ( D1 ) x akar (D2)} \quad 5$$

jam

0