

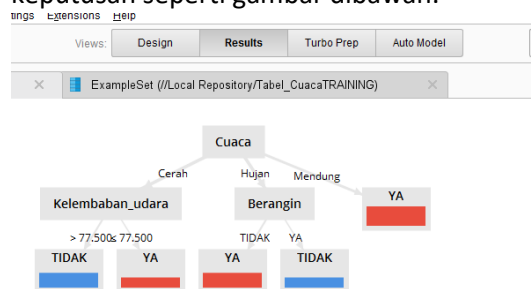
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NIM : L200170088 / B

A. Kegiatan praktikum

1. Induksi Aturan Data Cuaca

- a. Menggunakan proses dari praktikum modul 9 dan menghasilkan sebuah pohon keputusan seperti gambar dibawah.



- b. Mengubah parameter sehingga menghasilkan sebuah induksi aturan dari data training yang disebut sebagai Rule Model

RuleModel

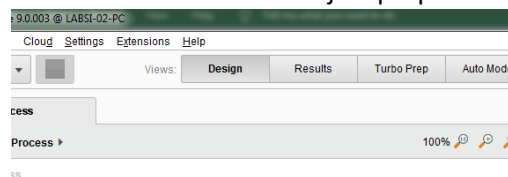
Description

```
if Kelembaban_udara ≤ 82.500 then YA (1 / 6)
if Cuaca = Cerah then TIDAK (3 / 0)
if Cuaca = Mendung then YA (0 / 2)
if Suhu ≤ 70.500 then YA (0 / 1)
else TIDAK (0 / 0)
```

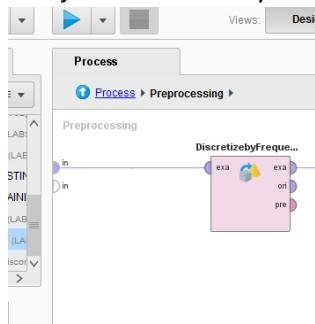
correct: 12 out of 13 training examples.

2. Aturan Asosiasi Data Cuaca

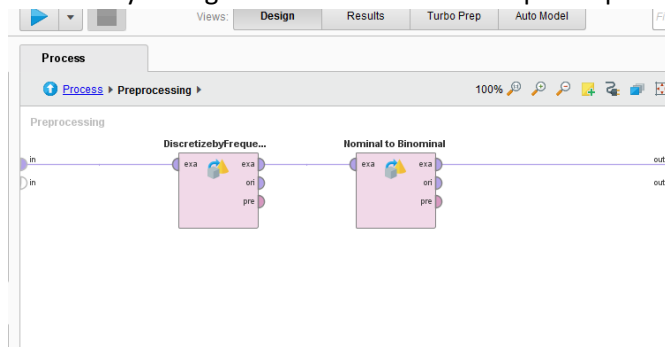
- a. Menggunakan DataCuaca_Training dan menggunakan parameter subprocess ke dalam area. Lalu ubah nama menjadi preprocessing.



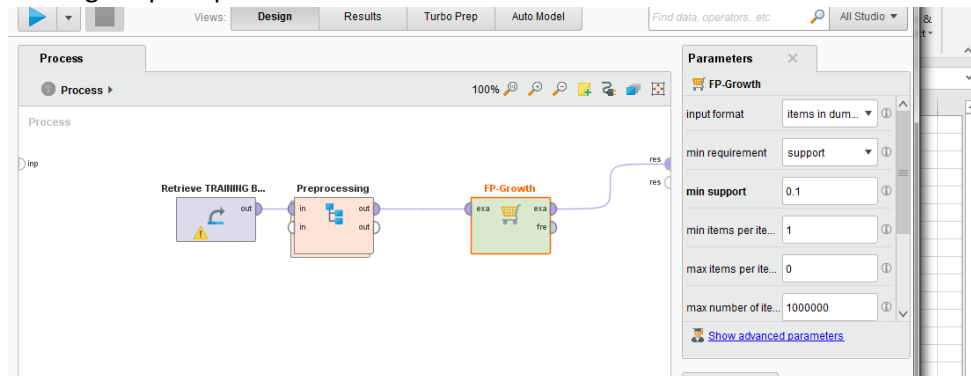
- b. Klik ganda pada operator preprocessing sehingga masuk pada nested chain. Lalu rename menjadi “DiscretizebyFrequency” dan biarkan nilai parameter number of bins = 2.



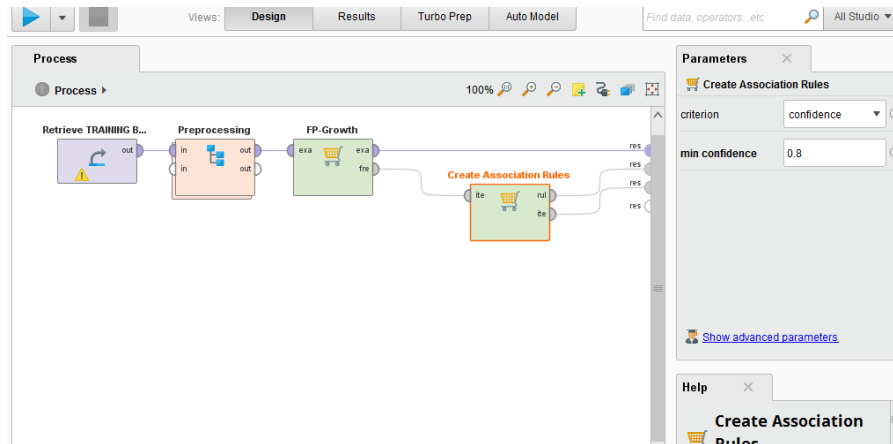
- c. Mengubah nama operator menjadi “Nominal2Binomial” dan menghubungkan operator sebelumnya dengan masukan examination pada operator ini dengan panel out.



- d. Tambahkan parameter Fp-Growth dan ubah parameter pada min support = 0,1 dan hubungkan pada port.



- e. Tambahkan parameter Create Association Rules dan menghubungkan operator-operator tersebut.



f. Dapat dilihat hasil-hasil aturan asosiasi sebagai berikut.

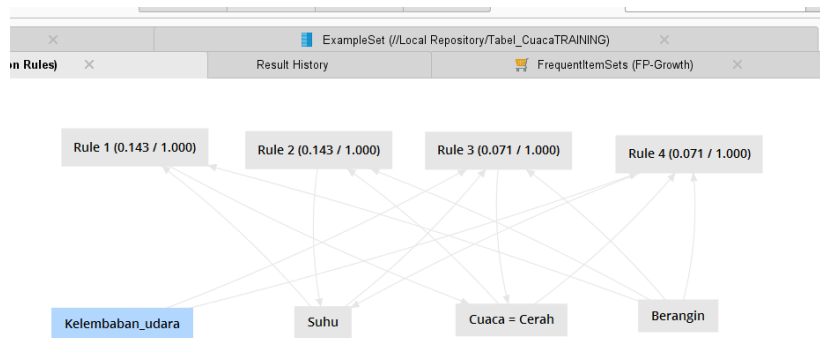
| No. of Sets: 26 | Total Max. Size: 4 | Size | Support | Item 1 | Item 2 | Item 3 | Item 4 |
|-----------------|--------------------|------|---------|------------------|------------------|--------|--------|
| 1 | 0.500 | 1 | 0.500 | Kelembaban_u... | | | |
| 1 | 0.429 | 1 | 0.429 | Berangin | | | |
| 1 | 0.429 | 1 | 0.429 | Suhu | | | |
| 1 | 0.357 | 1 | 0.357 | Cuaca = Cerah | | | |
| 1 | 0.357 | 1 | 0.357 | Cuaca = Hujan | | | |
| 1 | 0.286 | 1 | 0.286 | Cuaca = Mendu... | | | |
| 2 | 0.214 | 2 | 0.214 | Kelembaban_u... | Berangin | | |
| 2 | 0.214 | 2 | 0.214 | Kelembaban_u... | Suhu | | |
| 2 | 0.214 | 2 | 0.214 | Kelembaban_u... | Cuaca = Cerah | | |
| 2 | 0.143 | 2 | 0.143 | Kelembaban_u... | Cuaca = Hujan | | |
| 2 | 0.143 | 2 | 0.143 | Kelembaban_u... | Cuaca = Mendu... | | |
| 2 | 0.143 | 2 | 0.143 | Berangin | Suhu | | |
| 2 | 0.143 | 2 | 0.143 | Berangin | Cuaca = Cerah | | |
| 2 | 0.143 | 2 | 0.143 | Berangin | Cuaca = Hujan | | |

Dapat dilihat bahwa jumlah aturan asosiasi yang terbentuk adalah 23 set dan jumlah total maximal size = 4 yang terdiri dari 4 buah itemset.

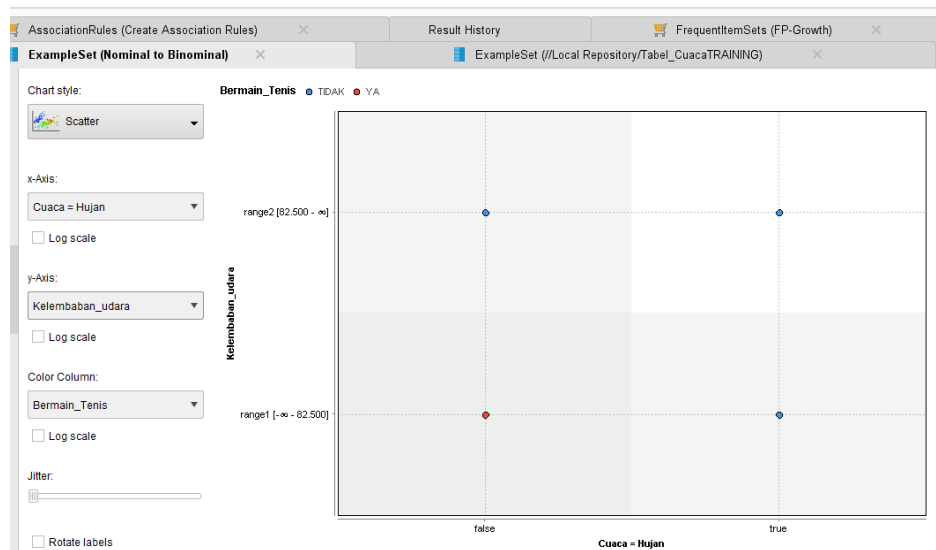
- Table views

| No. | Premises | Conclusion | Support | Confidence | LaPlace | Gain |
|-----|---|---------------|---------|------------|---------|--------|
| 1 | Berangin, Suhu | Cuaca = Cerah | 0.143 | 1 | 1 | -0.143 |
| 2 | Berangin, Cuaca = Cerah | Suhu | 0.143 | 1 | 1 | -0.143 |
| 3 | Kelembaban_udara, Berangin, Suhu | Cuaca = Cerah | 0.071 | 1 | 1 | -0.071 |
| 4 | Kelembaban_udara, Berangin, Cuaca = Cerah | Suhu | 0.071 | 1 | 1 | -0.071 |

- Graph views



- ExampleSet



B. Tugas Praktikum

a. Membuat operator dengan menggunakan decision tree.

The screenshot shows the RapidMiner Studio interface. The 'Repository' pane on the left lists data sources under 'data (LABSI-02)' and 'processes (LABSI-02)'. The 'Process' pane in the center shows a workflow starting with 'Retrieve Mahasiswa...' (a purple operator) connected to 'Cross Validation' (a yellow operator). The 'Parameters' pane on the right shows settings for the 'Process' operator, including 'logverbosity' set to 'init' and a 'logfile' field. The 'Help' pane on the right provides information about the 'Process' operator. The bottom status bar indicates 'No results were found' and 'Activate Wisdom of Crowds'.

b. Lalu klik ganda pada decision tree dan klik ganda pada operator tersebut.

The screenshot shows the RapidMiner Studio interface after clicking on the 'Decision Tree' operator. The 'Process' pane now shows a workflow with 'Decision Tree' (a green operator) connected to 'Apply Model' (a green operator) and 'Performance' (a yellow operator). The 'Parameters' pane on the right shows settings for the 'Cross Validation' operator, including 'leave one out' checked, 'number of folds' set to '10', and 'sampling type' set to 'automatic'. The 'Help' pane on the right provides information about the 'Cross Validation' operator. The bottom status bar indicates 'No results were found' and 'Activate Wisdom of Crowds'.

<new process> - RapidMiner Studio Free 9.0.003 @ LABSI-02-PC

File Edit Process View Connections Cloud Settings Extensions Help

Views: Design Results Turbo Prep Auto Model

Find data, operators, etc. All Studio

Repository

- data (LABSI-02)
 - Cuaca_Testing (LABSI-02)
 - Cuaca_Training (LABSI-02)
 - MahasiswaTraining (LABSI-02)
 - Tabel_CuacaTESTING (LABSI-02)
 - Tabel_CuacaTRAINING (LABSI-02)
 - TESTING BARU (LABSI-02)

Operators

perform

- Performance (17)
 - Predictive (7)
 - Performance (Classification)
 - Performance (Binary)
 - Performance (Regression)
 - Performance (Cost)
 - Performance (Ranking)

No results were found.

Process

Process: Cross Validation

100%

Training: tra → Rule Induction → mod → thr

Testing: mod → tes → Apply Model → lab → per → tes → per

Parameters

Cross Validation

- ☐ leave one out
- number of folds: 10
- sampling type: automatic

[Show advanced parameters](#)

[Change compatibility \(9.0.003\)](#)

Help

Cross Validation

Concurrency

Tags: Cross-Validations, Cross-validations, Folds, K-Folds, K-folds, Validations, Estimations, Evaluations, Performances, Splitting, X-Validation, X-Prediction, Validation

Synopsis

Leverage the Wisdom of Crowds to get operator recommendations based on your process design!

Activate Wisdom of Crowds

<new process> - RapidMiner Studio Free 9.0.003 @ LABSI-02-PC

File Edit Process View Connections Cloud Settings Extensions Help

Views: Design Results Turbo Prep Auto Model

Find data, operators, etc. All Studio

Result History

ExampleSet (//Local Repository/MahasiswaTraining)

PerformanceVector (Performance)

RuleModel (Rule Induction)

Performance

Criterion: accuracy

Table View Plot View

accuracy: 65.00% +/- 32.02% (micro average: 65.00%)

| | true TERLAMBAT | true TEPAT | class precision |
|-----------------|----------------|------------|-----------------|
| pred. TERLAMBAT | 4 | 4 | 50.00% |
| pred. TEPAT | 3 | 9 | 75.00% |
| class recall | 57.14% | 69.23% | |

Repository

- Training Resources (connected)
 - Samples
 - Community Samples (connected)
 - DB
- Local Repository (LABSI-02)
 - Connections (LABSI-02)
 - data (LABSI-02)
 - processes (LABSI-02)
 - Cuaca_Testing (LABSI-02)
 - Cuaca_Training (LABSI-02)
 - MahasiswaTraining (LABSI-02)
 - Tabel_CuacaTESTING (LABSI-02)
 - Tabel_CuacaTRAINING (LABSI-02)
 - TESTING BARU (LABSI-02)
 - TRAINING BARU (LABSI-02)
- Cloud Repository (disconnected)

- Rule Model

The image displays two screenshots of the RapidMiner Studio 9.0.003 interface, showing the workflow for creating a Rule Model.

Top Screenshot: RuleModel

The main window shows the **RuleModel (Rule Induction)** process. The **Description** tab is active, displaying the following rules:

```
if Rerata_SKS > 18.500 then TEPAT (2 / 10)
if Gender = PRIA then TERLAMBAT (4 / 0)
if Jurusan_SMA = IPA then TEPAT (0 / 2)
if Jurusan_SMA = IPS then TERLAMBAT (1 / 0)
else TEPAT (0 / 0)
```

The **Annotations** tab shows the result: **correct: 17 out of 19 training examples.**

The **Repository** panel on the right shows the data sources, including **Local Repository (LABSI-02)** and **Cloud Repository (disconnected)**.

Bottom Screenshot: Preprocessing

The main window shows the **Preprocessing** process. The **Process** tab is active, displaying a workflow diagram with two operators: **Discretize** and **Nominal to Binominal**.

The **Repository** panel on the left shows the data sources, including **data (LABSI-02)** and **processes (LABSI-02)**.

The **Operators** panel on the left shows the **Subprocess** operator selected.

The **Parameters** panel on the right shows the **Preprocessing (Subprocess)** operator with no parameters to display.

The **Help** panel on the right shows the **Subprocess** operator documentation, including the synopsis: "This operator introduces a process within a process. Whenever a Subprocess operator".

<new process> - RapidMiner Studio Free 9.0.003 @ LABSI-02-PC

File Edit Process View Connections Cloud Settings Extensions Help

Views: Design Results Turbo Prep Auto Model

Find data, operators, etc. All Studio

Repository

Import Data

- data (LABSI-02)
 - Cuaca_Testing (LABSI-02)
 - Cuaca_Training (LABSI-02)
 - MahasiswaTraining (LABSI-02)
 - Tabel_CuacaTESTING (LABSI-02)
 - Tabel_CuacaTRAINING (LABSI-02)
 - TESTING BARU (LABSI-02)

Operators

subpro

- Utility (2)
 - Process Control (1)
 - Branches (1)
 - Select Subprocess
 - Subprocess

No results were found.

Process

Process

Retrieve Mahasiswa... Preprocessing FP-Growth Create Association Rules

100%

Parameters

Create Association Rules

criterion confidence

min confidence 0.8

Show advanced parameters

Help

Create Association Rules

RapidMiner Studio Core

Tags: Associations, Market Basket, Upselling, Up-selling, Crossselling, Cross-selling, Itemset, Item-set, Item set, Mining, Frequent Patterns

Synopsis

Leverage the Wisdom of Crowds to get operator recommendations based on your process design!

Activate Wisdom of Crowds

11:51 21/11/2019

- Table Views

<new process> - RapidMiner Studio Free 9.0.003 @ LABSI-02-PC

File Edit Process View Connections Cloud Settings Extensions Help

Views: Design Results Turbo Prep Auto Model

Find data, operators, etc. All Studio

Result History

FrequentItemSets (FP-Growth) AssociationRules (Create Association Rules) ExampleSet (Nominal to Binomial)

Data

No. of Sets: 55
Total Max. Size: 5

Min. Size: 1
Max. Size: 5

Contains Item:

Update View

| Size | Support | Item 1 | Item 2 | Item 3 | Item 4 | Item 5 |
|------|---------|--------------------|---------------------|--------|--------|--------|
| 1 | 0.750 | Gender | | | | |
| 1 | 0.500 | Jurusan_SMA = IPA | | | | |
| 1 | 0.300 | Asal_Sekolah | | | | |
| 1 | 0.300 | Jurusan_SMA = IPS | | | | |
| 1 | 0.250 | Asisten | | | | |
| 1 | 0.250 | Rerata_SKS | | | | |
| 1 | 0.200 | Jurusan_SMA = L... | | | | |
| 2 | 0.350 | Gender | Jurusan_SMA = IPA | | | |
| 2 | 0.250 | Gender | Asal_Sekolah | | | |
| 2 | 0.250 | Gender | Jurusan_SMA = IPS | | | |
| 2 | 0.200 | Gender | Asisten | | | |
| 2 | 0.250 | Gender | Rerata_SKS | | | |
| 2 | 0.150 | Gender | Jurusan_SMA = LA... | | | |
| 2 | 0.150 | Jurusan_SMA = IPA | Asal_Sekolah | | | |
| 2 | 0.200 | Jurusan_SMA = IPA | Asisten | | | |
| 2 | 0.100 | Jurusan_SMA = IPA | Rerata_SKS | | | |

Repository

Import Data

- Training Resources (conn)
 - Samples
 - Community Samples (conn)
 - DB
- Local Repository (LABSI-02)
 - Connections (LABSI-02)
 - data (LABSI-02)
 - processes (LABSI-02)
 - Cuaca_Testing (LABSI-02)
 - Cuaca_Training (LABSI-02)
 - MahasiswaTraining (LABSI-02)
 - Tabel_CuacaTESTING (LABSI-02)
 - Tabel_CuacaTRAINING (LABSI-02)
 - TESTING BARU (LABSI-02)
 - TRAINING BARU (LABSI-02)
- Cloud Repository (disconn)

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<new process> - RapidMiner Studio Free 9.0.003 @ LABSI-02-PC

File Edit Process View Connections Cloud Settings Extensions Help

Views: Design Results Turbo Prep Auto Model

Find data, operators, etc. All Studio

Result History

FrequentItemSets (FP-Growth) AssociationRules (Create Association Rules) ExampleSet (Nominal to Binominal)

Show rules matching
all of these conclusions:

Gender
Jurusan_SMA = IPA
Asal_Sekolah
Asisten
Rerata_SKS

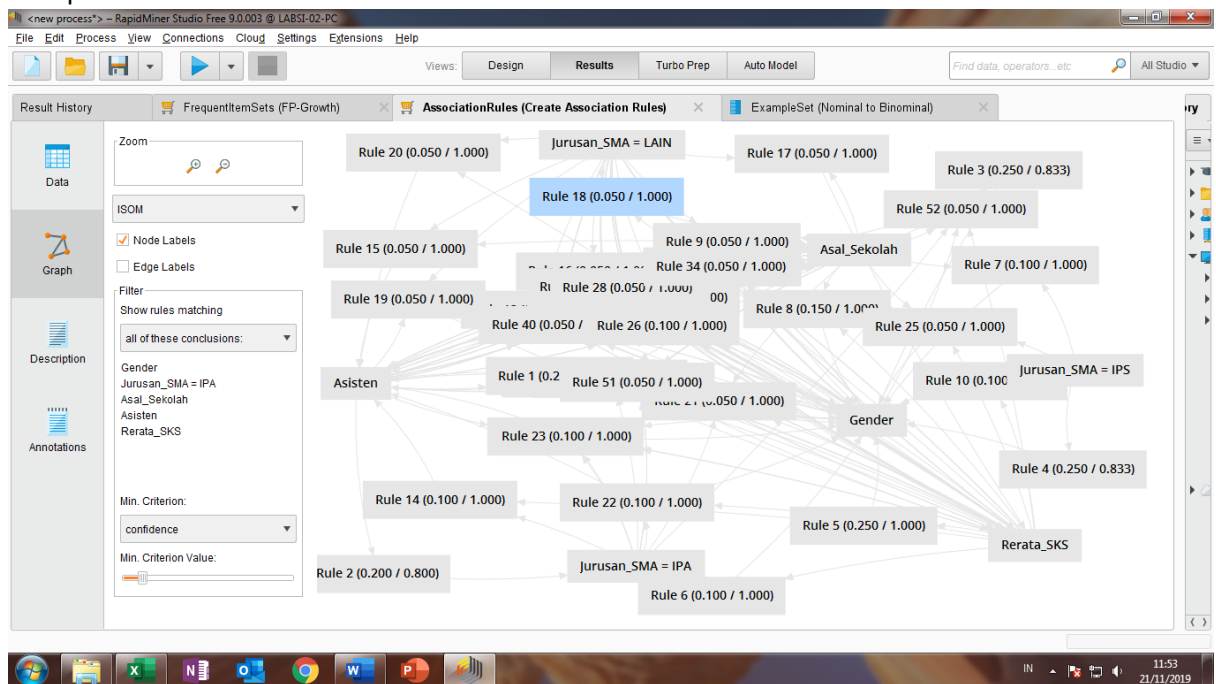
Min. Criterion:
confidence

Min. Criterion Value:

| No. | Premises | Conclusion | Support | Confidence | LaPlace | Gain |
|-----|----------------------------------|--------------|---------|------------|---------|--------|
| 3 | Asal_Sekolah | Gender | 0.250 | 0.833 | 0.962 | -0.350 |
| 4 | Jurusan_SMA = IPS | Gender | 0.250 | 0.833 | 0.962 | -0.350 |
| 5 | Rerata_SKS | Gender | 0.250 | 1 | 1 | -0.250 |
| 6 | Jurusan_SMA = IPA, Rerata_SKS | Gender | 0.100 | 1 | 1 | -0.100 |
| 7 | Asal_Sekolah, Jurusan_SMA = IPS | Gender | 0.100 | 1 | 1 | -0.100 |
| 8 | Asal_Sekolah, Rerata_SKS | Gender | 0.150 | 1 | 1 | -0.150 |
| 9 | Asal_Sekolah, Jurusan_SMA = LAIN | Gender | 0.050 | 1 | 1 | -0.050 |
| 10 | Jurusan_SMA = IPS, Rerata_SKS | Gender | 0.100 | 1 | 1 | -0.100 |
| 11 | Asisten, Rerata_SKS | Gender | 0.150 | 1 | 1 | -0.150 |
| 12 | Asisten, Jurusan_SMA = LAIN | Gender | 0.050 | 1 | 1 | -0.050 |
| 13 | Rerata_SKS, Jurusan_SMA = LAIN | Gender | 0.050 | 1 | 1 | -0.050 |
| 14 | Jurusan_SMA = IPA, Rerata_SKS | Asisten | 0.100 | 1 | 1 | -0.100 |
| 15 | Asal_Sekolah, Jurusan_SMA = LAIN | Asisten | 0.050 | 1 | 1 | -0.050 |
| 16 | Asisten, Jurusan_SMA = LAIN | Asal_Sekolah | 0.050 | 1 | 1 | -0.050 |
| 17 | Asal_Sekolah, Jurusan_SMA = LAIN | Rerata_SKS | 0.050 | 1 | 1 | -0.050 |
| 18 | Rerata_SKS, Jurusan_SMA = LAIN | Asal_Sekolah | 0.050 | 1 | 1 | -0.050 |

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- Graph View



- Example Set

