

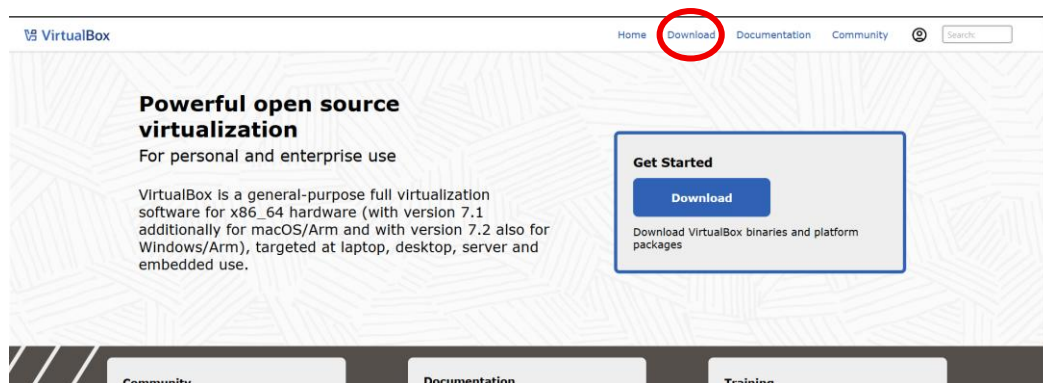
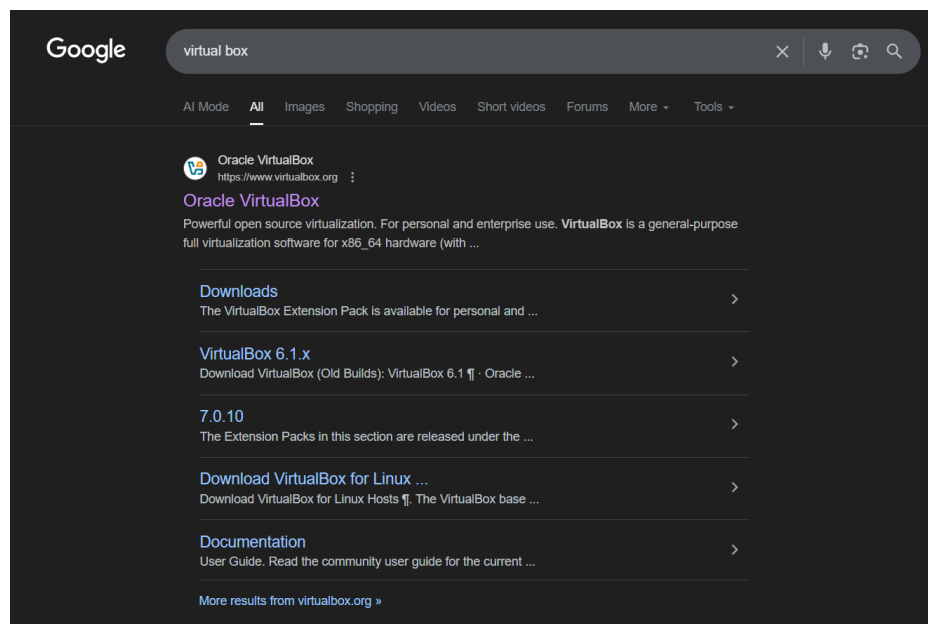
Buku Manual: Modul Tickets & Analisis Klastering Pelanggan



Instalasi & Setup Lingkungan Odoo 16

Bagian ini merinci langkah-langkah teknis untuk mempersiapkan lingkungan pengembangan di Ubuntu, yang diperlukan sebelum menginstal modul tickets.

1.1. Persiapan Sistem Operasi & Virtualisasi

1. Instal Oracle VirtualBox di komputer host.
2. Buat Virtual Machine (VM) baru dan instal Ubuntu Desktop (misal: 22.04 LTS).









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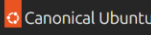

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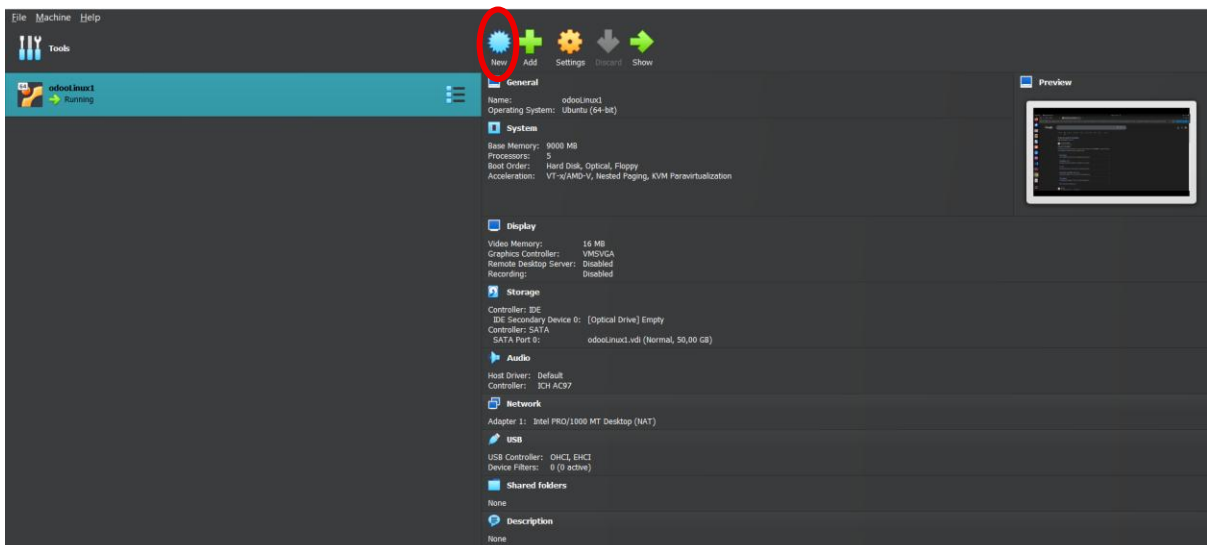
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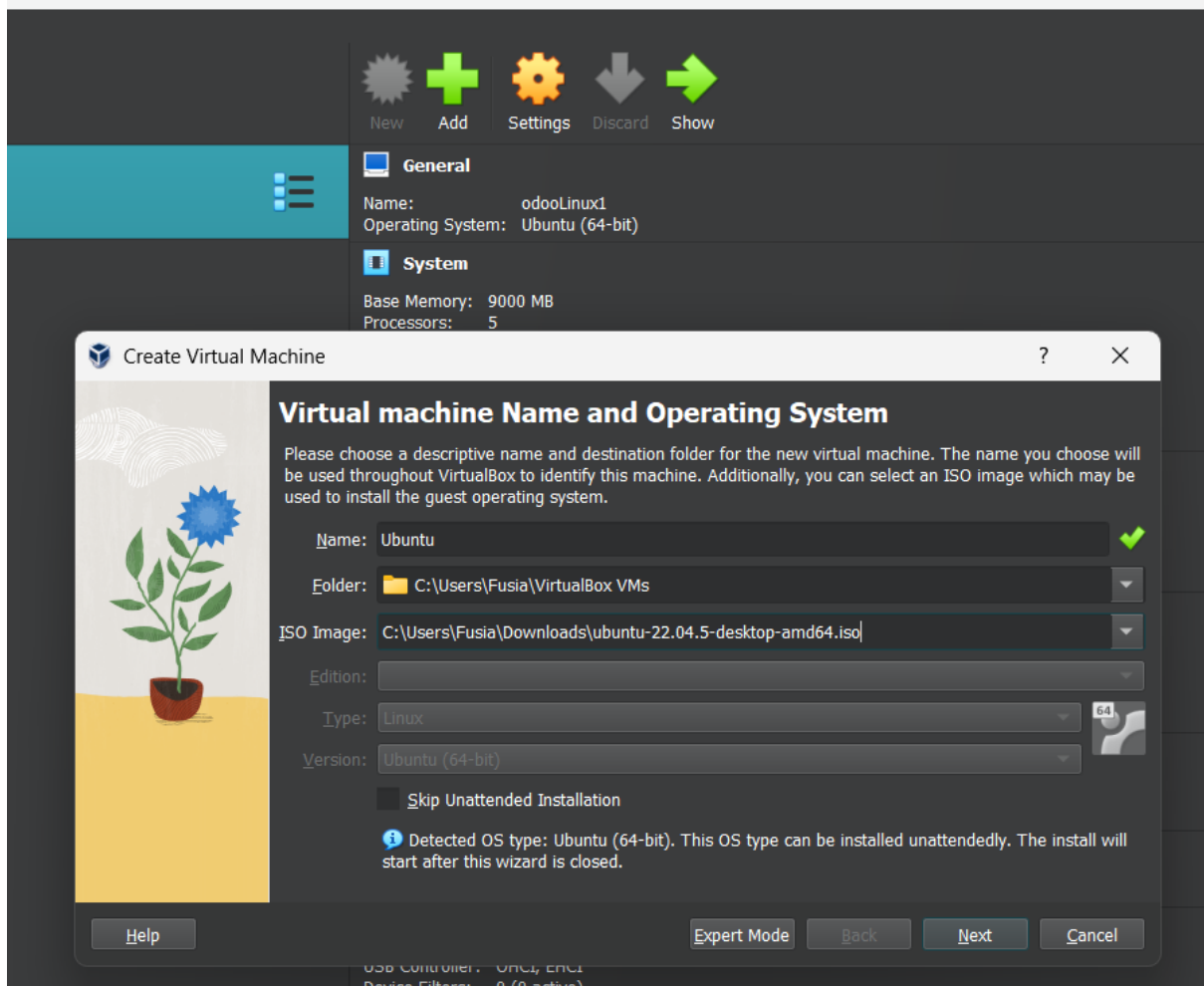
☒ New Desktop installer with support for autoinstall

1.2. Instalasi Perangkat Lunak Pendukung

Setelah Ubuntu terinstal di VM, instal aplikasi berikut:

1. Visual Studio Code (VSCode): Unduh file .deb dan instal.
2. Google Chrome: Unduh file .deb dan instal.
3. Ekstensi VSCode: Buka VSCode dan instal ekstensi Python, Pylance, dan Odoo Snippets.

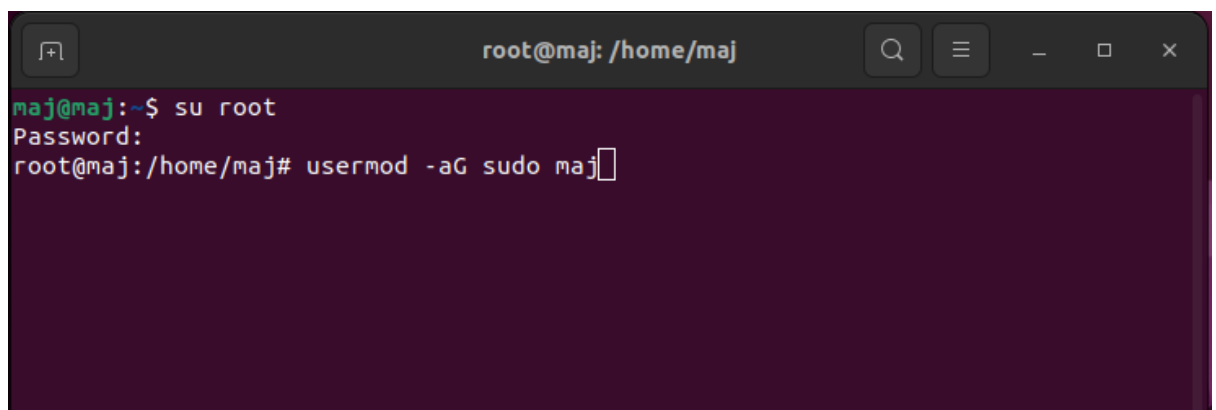




1.3. Konfigurasi User Ubuntu (Fix Sudoers)

Jika Anda menemui error "user not found in sudoers" saat menggunakan sudo:

1. Buka Terminal.
2. Ketik su root dan masukkan password root.
3. Ketik usermod -aG sudo <username> (ganti <username> dengan nama user Anda).
4. Restart Ubuntu VM.



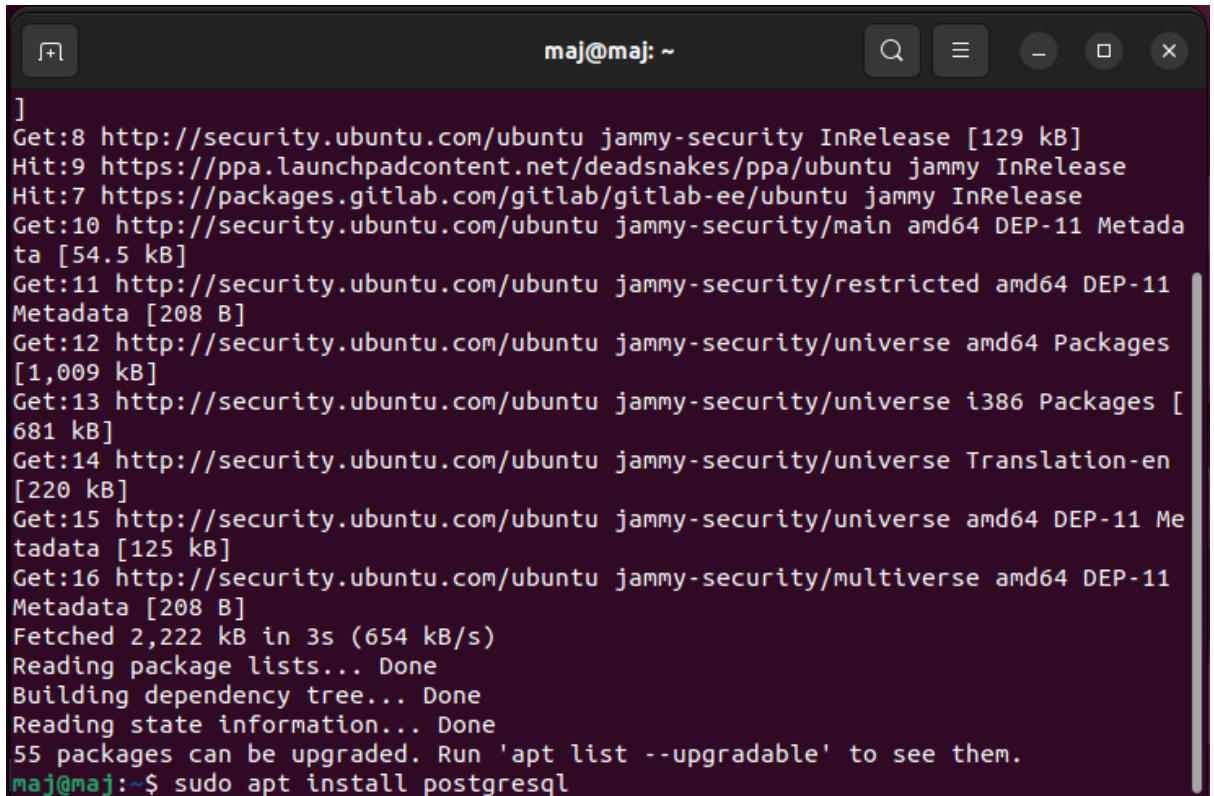
1.4. Instalasi PostgreSQL

Odoo membutuhkan database PostgreSQL.

1. Buka Terminal: `sudo apt update`
2. Instal PostgreSQL: `sudo apt install postgresql`
3. Buat user database Odoo (misal: `odoo_admin`):

Bash

```
sudo -u postgres createuser --createdb --username=odoo_admin --no-password
```

A screenshot of a terminal window with a dark background. The window title is 'maj@maj: ~'. The terminal shows the output of the command 'sudo apt update'. It lists various package sources and their updates, including 'jammy-security', 'jammy', 'gitlab-ee', and 'multiverse'. It shows that 55 packages can be upgraded. The prompt 'maj@maj:~\$' is visible at the bottom, followed by the command 'sudo apt install postgresql' which has been entered but not yet executed.

```
maj@maj: ~  
]  
Get:8 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]  
Hit:9 https://ppa.launchpadcontent.net/deadsnakes/ppa/ubuntu jammy InRelease  
Hit:7 https://packages.gitlab.com/gitlab/gitlab-ee/ubuntu jammy InRelease  
Get:10 http://security.ubuntu.com/ubuntu jammy-security/main amd64 DEP-11 Meta  
data [54.5 kB]  
Get:11 http://security.ubuntu.com/ubuntu jammy-security/restricted amd64 DEP-11  
Metadata [208 B]  
Get:12 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 Packages  
[1,009 kB]  
Get:13 http://security.ubuntu.com/ubuntu jammy-security/universe i386 Packages [681 kB]  
Get:14 http://security.ubuntu.com/ubuntu jammy-security/universe Translation-en  
[220 kB]  
Get:15 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 DEP-11 Me  
tadata [125 kB]  
Get:16 http://security.ubuntu.com/ubuntu jammy-security/multiverse amd64 DEP-11  
Metadata [208 B]  
Fetched 2,222 kB in 3s (654 kB/s)  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
55 packages can be upgraded. Run 'apt list --upgradable' to see them.  
maj@maj:~$ sudo apt install postgresql
```

1.5. Instalasi Odoo 16

1. Buka Terminal, pindah ke Documents: `cd ~/Documents`
2. Instal git dan python3-venv: `sudo apt install git python3-venv`
3. Clone repositori Odoo 16:

Bash

```
git clone https://www.github.com/odoo/odoo --depth 1 --branch 16.0
```

4. Buat Python Virtual Environment (venv):

Bash

```
python3 -m venv venv_odoo
```

5. Aktifkan venv: `source venv_odoo/bin/activate`

6. Upgrade pip: `pip install --upgrade pip wheel`
7. Pindah ke direktori Odoo: `cd odoo`
8. Instal semua dependensi Python: `pip install -r requirements.txt`
9. Setelah selesai, nonaktifkan venv: `deactivate`

1.6. Konfigurasi & Menjalankan Server Odoo

1. Pindah ke `~/Documents`.
2. Buat file `odoo.conf`: `nano odoo.conf`
3. Isi file `odoo.conf` dengan konfigurasi Anda. PENTING: Sesuaikan `addons_path` agar menyertakan folder Odoo dan folder modul kustom Anda (ticketing).

[options]

`admin_passwd = superadmin`

`db_host = False`

`db_port = False`

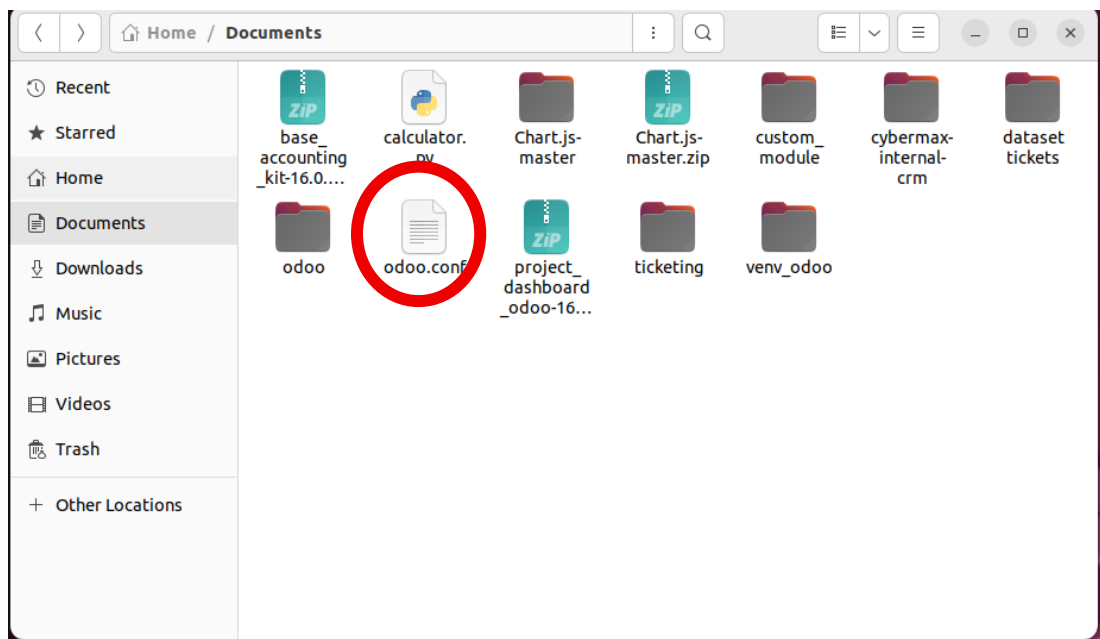
`db_user = odoo_admin`

`db_password = False`

Ganti `/home/user/Documents/odoo/odoo/addons` dan `/home/user/Documents/ticketing` dengan path yang benar di mesin Anda

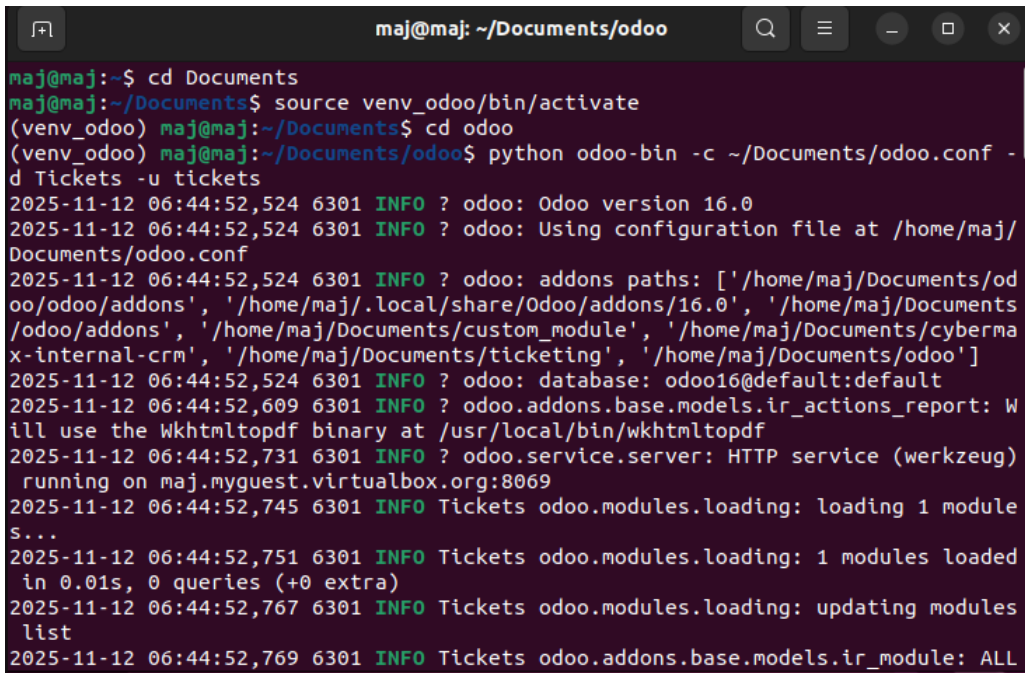
`addons_path = /home/user/Documents/odoo/odoo/addons,`

`/home/user/Documents/ticketing`



4. Menjalankan Server:

1. `cd ~/Documents`
2. `source venv_odoo/bin/activate`
3. `cd odoo`
4. `python odoo-bin -c /home/maj/Documents/odoo.conf`
5. Buka Chrome dan akses <http://localhost:8069>.

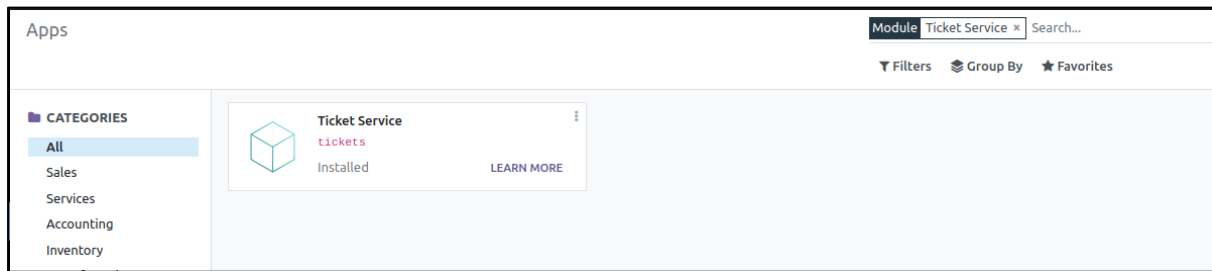


```
maj@maj:~$ cd Documents
maj@maj:~/Documents$ source venv_odoo/bin/activate
(venv_odoo) maj@maj:~/Documents$ cd odoo
(venv_odoo) maj@maj:~/Documents/odoo$ python odoo-bin -c ~/Documents/odoo.conf -d Tickets -u tickets
2025-11-12 06:44:52,524 6301 INFO ? odoo: Odoo version 16.0
2025-11-12 06:44:52,524 6301 INFO ? odoo: Using configuration file at /home/maj/Documents/odoo.conf
2025-11-12 06:44:52,524 6301 INFO ? odoo: addons paths: ['/home/maj/Documents/odoo/odoo/addons', '/home/maj/.local/share/Odoo/addons/16.0', '/home/maj/Documents/odoo/addons', '/home/maj/Documents/custom_module', '/home/maj/Documents/cybermax-internal-crm', '/home/maj/Documents/ticketing', '/home/maj/Documents/odoo']
2025-11-12 06:44:52,524 6301 INFO ? odoo: database: odoo16@default:default
2025-11-12 06:44:52,609 6301 INFO ? odoo.addons.base.models.ir_actions_report: Will use the Wkhtmltopdf binary at /usr/local/bin/wkhtmltopdf
2025-11-12 06:44:52,731 6301 INFO ? odoo.service.server: HTTP service (werkzeug) running on maj.myguest.virtualbox.org:8069
2025-11-12 06:44:52,745 6301 INFO Tickets odoo.modules.loading: loading 1 module s...
2025-11-12 06:44:52,751 6301 INFO Tickets odoo.modules.loading: 1 modules loaded in 0.01s, 0 queries (+0 extra)
2025-11-12 06:44:52,767 6301 INFO Tickets odoo.modules.loading: updating modules list
2025-11-12 06:44:52,769 6301 INFO Tickets odoo.addons.base.models.ir_module: ALL
```

1.7. Instalasi Modul tickets

1. Instal Library Python: Modul tickets memerlukan library eksternal. Aktifkan venv Anda (`source venv_odoo/bin/activate`) dan jalankan:
Bash
`pip install scikit-learn numpy matplotlib`
2. Restart Server: Hentikan server Odoo (Ctrl+C) dan jalankan lagi (langkah 1.6.4).
3. Update App List:
 1. Buka Odoo di browser (<http://localhost:8069>) dan login sebagai Admin.
 2. Aktifkan Developer Mode (Settings -> Activate the developer mode).
 3. Pergi ke menu Apps.
 4. Klik Update Apps List.
4. Instal Modul:
 1. Cari Tickets Service di search bar (hapus filter "Apps").

2. Klik tombol Install.



1.8. Troubleshooting Instalasi

1. Instalasi Paket .deb:
 1. `cd ~/Downloads`
 2. `sudo dpkg -i nama_paket.deb`
 3. Jika error: `sudo apt-get install -f` (memperbaiki dependensi).
2. Port 8069 Terpakai:
 1. Cek port: `sudo lsof -i :8069`
 2. Matikan proses (PID): `sudo kill <PID>`
 3. Alternatif: Ubah port di `odoo.conf` (misal: `xmlrpc_port = 8070`).
3. Edit File (Terminal): `nano /path/to/file`

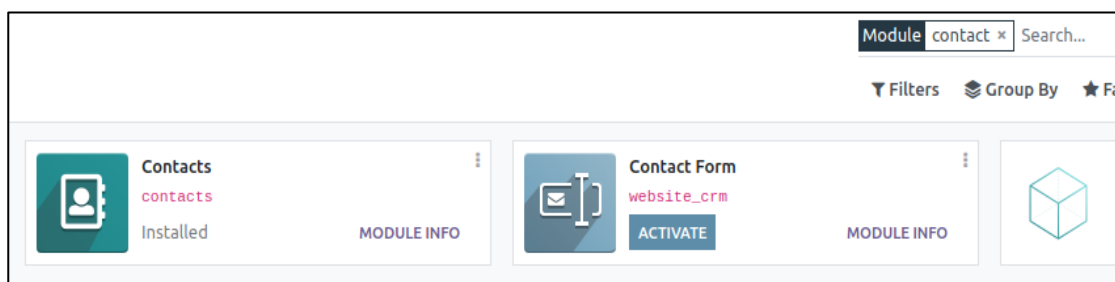
1.9. Konfigurasi Modul Contacts (Wajib)

Modul Contacts (`res.partner`) berfungsi sebagai sumber utama data pelanggan, sales, teknisi, dan admin di dalam sistem tiket.

Namun, field “Role” baru akan muncul setelah modul tickets berhasil diinstal.

Urutan Instalasi yang Benar:

1. Pastikan Odoo sudah berjalan (`localhost:8069`).
2. Instal modul bawaan Contacts terlebih dahulu melalui menu Apps (biasanya sudah terinstal secara default).
3. Baru setelah itu instal modul tickets.
 1. Setelah instalasi selesai, buka kembali menu Contacts.
 2. Field baru bernama “Role” akan muncul otomatis pada form kontak.



Langkah Konfigurasi Kontak:

1. Buka menu Contacts di Odoo.
2. Pilih atau buat partner baru.
3. Isi field Role dengan salah satu dari:
 1. Customer - Pelanggan yang akan membuat tiket.
 2. Sales - Sales yang akan menangani pelanggan.
 3. Technician - Teknisi yang menangani tiket.
 4. Admin - Pengelola sistem (full access).
4. Jika Role = Customer, pastikan juga field Salesperson (user_id) diisi.
Ini penting agar sistem otomatis mengisi field Sales Person ketika Customer membuat tiket baru.

Contacts / mic

Action 4 / 4 New

0 Meetings

Individual Company

mic

Company Name...

Contact Street... Street 2... City State ZIP Country

Tax ID ? e.g. BE0477472701

Job Position ? e.g. Sales Director

Phone ?

Mobile ?

Email ? mic@gmail.com

Website ? e.g. https://www.odoo.com

Title ? e.g. Mister

Tags ? e.g. "B2B", "VIP", "Consulting", ...

Role ? technician

admin sales technician

Contacts & Addresses Sales & Purchase Internal Notes

ADD

Fungsi Otomatisasi:

1. Saat Customer login dan membuat tiket baru, field Sales Person akan otomatis terisi berdasarkan relasi dengan Salesperson yang sudah diatur di modul Contacts.
2. Ini memastikan sistem tahu siapa Sales yang bertanggung jawab untuk setiap pelanggan.

Panduan Penggunaan Modul Tickets

Bagian ini menjelaskan alur kerja dan fungsionalitas modul Tickets yang sudah terinstal.

2.1. Peran Pengguna (User Roles)

Modul ini memiliki 4 peran utama dengan hak akses yang berbeda:

1. Customer (Pelanggan)

1. Grup: Customer (Read Own Tickets)
2. Hak Akses: Hanya bisa melihat dan membuat tiket milik mereka sendiri (di mana customer_name_id = partner mereka). Tidak bisa mengedit tiket setelah dibuat (kecuali membatalkan).
3. Tugas: Membuat tiket, memberi rating.

Ticket				
NEW				
Search...				
Filters Group By Favorites				
Submit	Progress	Finish	Cancel	
REF0001 John Miller Sales: Wendi Baltz Tech: Wendi Baltz Submit Point Cost: 25.78 Medium	REF0002 John Miller Sales: Thomas Passot Tech: Thomas Passot Progress Point Cost: 27.55 Bad	REF0003 John Miller Sales: Carrie Helle Tech: John Miller Finish Point Cost: 17.75 No	REF0004 Wendi Baltz Sales: Wendi Baltz Tech: John Miller Cancel Point Cost: 32.46 Good	
REF0005 Henry Campbell Sales: Thomas Passot Tech: Henry Campbell Submit Point Cost: 48.04 Bad	REF0006 Carrie Helle Sales: Carrie Helle Tech: Henry Campbell Progress Point Cost: 31.85 Good	Create new document		
REF0009 Thomas Passot Sales: Henry Campbell Tech: Wendi Baltz Submit Point Cost: 50.89 No	REF0010 Henry Campbell Sales: Thomas Passot Tech: Thomas Passot Progress Point Cost: 53.80 Medium	REF0011 Wendi Baltz Sales: John Miller Tech: John Miller Finish Point Cost: 17.75 No	REF0012 Carrie Helle Sales: Wendi Baltz Tech: Carrie Helle Cancel Point Cost: 32.46 Good	
REF0013 John Miller Sales: Carrie Helle	REF0014 Henry Campbell Sales: Carrie Helle	REF0015 Thomas Passot Sales: Carrie Helle	REF0016 Wendi Baltz Sales: Wendi Baltz	

gram

Create

SUBMIT

PROGRESS

FINISH

CANCEL

No Ticket ?

Client ? client

Sales Person ? sales

Submit Date ? 12/02/2025 10:48:12

Finished Date ?

Technician ?

Technician Note ?

Kategori ?

Ticket Available ? 0.00

Expired Ticket ?

Ticket Usage ? 0.00

Customer Rating ? ★★★★★

Customer Rating: Excellent


Problem Description

Problem Definition ?

Remarks ? None

Problem Description ?

Photo Prove Attachment ?



SAVE & CLOSE

DISCARD

2. Sales (Penjualan)

1. Grup: Sales (Ticket Own Only)
2. Hak Akses: Hanya bisa melihat/mengedit tiket di mana mereka terdaftar sebagai sales_person_id.
3. Tugas: Membuat tiket untuk pelanggan, menugaskan Teknisi, memindahkan status tiket dari "Submit" ke "Progress", mengkalkulasi poin.

g (EDA) About Program

Create

PROGRESS CANCEL

SUBMIT PROGRESS FINISH CANCEL

Button : progress

- Object: ticket.name
- Modifiers: [{"invisible": [{"states", "!="}, 1]]}
- Button Type: object
- Method: state_progress

Priority ? ☆☆☆

Complexity ? ☆☆☆

Sales Person ?

Submit Date ? 12/02/2025 10:48:51

On Progress Date ?

Finished Date ?

Work Days ? 0

Technician ?

Technician Note ?

Kategori ?

Ticket Available ? 0.00

Expired Ticket ?

Ticket Usage ? 0.00

Customer Rating ? ☆☆☆☆☆

Problem Description

Problem Definition ?

Remarks ? None

Problem Description ?

Photo Prove Attachment ?

SAVE & CLOSE DISCARD

3. Technician (Teknisi)

1. Grup: Technician (Ticket Assigned Only)
2. Hak Akses: Hanya bisa melihat/mengedit tiket di mana mereka terdaftar sebagai technician (berdasarkan user.partner_id mereka).
3. Tugas: Mengerjakan tiket, mengisi tech_note, memindahkan status tiket dari "Progress" ke "Finish".

Tickets Ticket / New

Discuss

CALCULATE COST CANCEL

SUBMIT PROGRESS FINISH CANCEL

Action 1 / 80 New Send

Button : Calculate Cost

- Object: ticket.name
- Modifiers: [{"invisible": [{"I", [{"states", "in"}, [1, 2, 4]]}, {"calculate_bool", "=", true}]]}
- Button Type: object
- Method: action_calculate_cost

Priority ? ★★☆☆

Complexity ? ★★☆☆

Sales Person ? Marlinda

Submit Date ? 11/05/2024 07:12:44

On Progress Date ? 11/05/2024 07:27:45

Finished Date ? 11/06/2024 07:09:08

Work Days ? 0

Technician ? Anam

Technician Note ?

Kategori ? Odoo

Ticket Available ? 0.00

Expired Ticket ?

Ticket Usage ? 2.50

Customer Rating ? ★★★★★

Problem Description

Problem Definition ? Acces right & Permission Issue

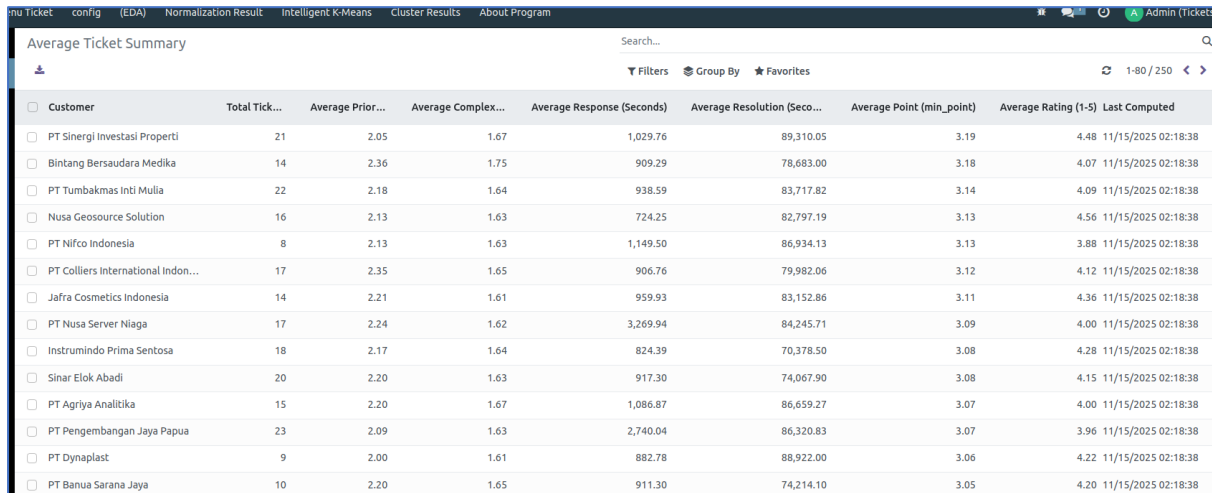
Remarks ? User tidak bisa melihat atau acces pada menu-menu Odoo

Problem Description ?

Photo Prove Attachment ?

4. Admin (Administrator)

1. Grup: Admin (Ticket Full Access + Analysis)
2. Hak Akses: Akses penuh ke semua tiket dan satu-satunya yang bisa mengakses semua menu analisis.
3. Tugas: Mengelola semua tiket, menjalankan analisis, mengonfigurasi modul.



The screenshot displays a web application interface with a top navigation bar containing links: 'nu Ticket', 'config', '(EDA)', 'Normalization Result', 'Intelligent K-Means', 'Cluster Results', and 'About Program'. The main content area is titled 'Average Ticket Summary' and includes a search bar, filters, and a table of customer ticket data. The table has columns for Customer, Total Tick..., Average Prior..., Average Complex..., Average Response (Seconds), Average Resolution (Seco..., Average Point (min_point), Average Rating (1-5), and Last Computed. The data is sorted by Average Rating (1-5) in descending order.

Customer	Total Tick...	Average Prior...	Average Complex...	Average Response (Seconds)	Average Resolution (Seco...	Average Point (min_point)	Average Rating (1-5)	Last Computed
<input type="checkbox"/> PT Sinergi Investasi Properti	21	2.05	1.67	1,029.76	89,310.05	3.19	4.48	11/15/2025 02:18:38
<input type="checkbox"/> Bintang Bersaudara Medika	14	2.36	1.75	909.29	78,683.00	3.18	4.07	11/15/2025 02:18:38
<input type="checkbox"/> PT Tumbakmas Inti Mulia	22	2.18	1.64	938.59	83,717.82	3.14	4.09	11/15/2025 02:18:38
<input type="checkbox"/> Nusa Geosource Solution	16	2.13	1.63	724.25	82,797.19	3.13	4.56	11/15/2025 02:18:38
<input type="checkbox"/> PT Nifco Indonesia	8	2.13	1.63	1,149.50	86,934.13	3.13	3.88	11/15/2025 02:18:38
<input type="checkbox"/> PT Colliers International Indon...	17	2.35	1.65	906.76	79,982.06	3.12	4.12	11/15/2025 02:18:38
<input type="checkbox"/> Jafra Cosmetics Indonesia	14	2.21	1.61	959.93	83,152.86	3.11	4.36	11/15/2025 02:18:38
<input type="checkbox"/> PT Nusa Server Niaga	17	2.24	1.62	3,269.94	84,245.71	3.09	4.00	11/15/2025 02:18:38
<input type="checkbox"/> Instrumindo Prima Sentosa	18	2.17	1.64	824.39	70,378.50	3.08	4.28	11/15/2025 02:18:38
<input type="checkbox"/> Sinar Elok Abadi	20	2.20	1.63	917.30	74,067.90	3.08	4.15	11/15/2025 02:18:38
<input type="checkbox"/> PT Agriya Analitika	15	2.20	1.67	1,086.87	86,659.27	3.07	4.00	11/15/2025 02:18:38
<input type="checkbox"/> PT Pengembangan Jaya Papua	23	2.09	1.63	2,740.04	86,320.83	3.07	3.96	11/15/2025 02:18:38
<input type="checkbox"/> PT Dynaplast	9	2.00	1.61	882.78	88,922.00	3.06	4.22	11/15/2025 02:18:38
<input type="checkbox"/> PT Banua Sarana Jaya	10	2.20	1.65	911.30	74,214.10	3.05	4.20	11/15/2025 02:18:38

2.2. Alur Kerja Operasional (Manajemen Tiket)

1. Pembuatan Tiket (Sales / Customer)

1. Buka Tickets - Menu Ticket - Ticket dan klik New.
2. Jika login sebagai Customer: Field "Customer" (customer_name_id) akan otomatis terisi dengan nama Anda dan tidak bisa diubah (readonly).
3. Jika login sebagai Sales/Admin: Pilih Customer (customer_name_id). Field sales_person_id akan terisi otomatis.
4. Isi Kategori dan Problem Definition.
5. Assign Teknisi: (Hanya Sales/Admin) Pilih partner teknisi di field Technician (technician).
6. Simpan. Tiket dibuat dalam status "Submit".

gram

Create

SUBMIT

PROGRESS

FINISH

CANCEL

No Ticket ?

Client ? client

Sales Person ? sales

Submit Date ? 12/02/2025 10:48:12

Finished Date ?

Technician ?

Technician Note ?

Kategori ?

Ticket Available ? 0.00

Expired Ticket ?

Ticket Usage ? 0.00

Customer Rating ? ★★★★★

Customer Rating: Excellent

Problem Description

Problem Definition ?

Remarks ? None

Problem Description ?

Photo Prove Attachment ?

SAVE & CLOSE

DISCARD

2. Proses Tiket (Sales & Teknisi)

1. Sales: Membuka tiket "Submit". Setelah diverifikasi, Sales mengklik tombol "Progress". Status tiket berubah ke "Progress" dan progress_date tercatat.
2. Teknisi: Teknisi akan melihat tiket yang di-assign padanya (yang berstatus "Progress"). Setelah masalah selesai, Teknisi mengisi tech_note dan mengklik tombol "Finish". Status berubah ke "Finish" dan finish_date tercatat.

gram

Create

SUBMIT

PROGRESS

FINISH

CANCEL

No Ticket ?

Client ? client

Sales Person ? sales

Submit Date ? 12/02/2025 10:48:12

Finished Date ?

Technician ?

Technician Note ?

Kategori ?

Ticket Available ? 0.00

Expired Ticket ?

Ticket Usage ? 0.00

Customer Rating ? ★★★★★

Customer Rating: Excellent

Problem Description

Problem Definition ?

Remarks ? None

Problem Description ?

Photo Prove Attachment ?

SAVE & CLOSE

DISCARD

3. Kalkulasi Poin & Rating (Sales / Customer)

1. Sales/Admin: Setelah tiket "Finish", klik tombol "Calculate Cost" untuk mengurangi poin pelanggan (point_value).
2. Customer: Memberikan Customer Rating (Worst, Bad, Good, Excellent).

Tickets

Ticket / New

Action

1 / 80

New

Send

DISCUSS

CALCULATE COST

CANCEL

SUBMIT

PROGRESS

FINISH

CANCEL

Button : Calculate Cost

Object: ticket.name

Modifiers: [{"invisible": true}, {"states": "in", [1, 2, 4]}, {"calculate_bool": true}]

Button Type: object

Method: action_calculate_cost

Priority ? ★★☆☆

Complexity ? ★★☆☆

Sales Person ? Marlinda

Submit Date ? 11/05/2024 07:12:44

On Progress Date ? 11/05/2024 07:27:45

Finished Date ? 11/06/2024 07:09:08

Work Days ? 0

Technician ? Anam

Technician Note ?

Kategori ? Odoo

Ticket Available ? 0.00

Expired Ticket ?

Ticket Usage ? 2.50

Customer Rating ? ★★★★★

Problem Description

Problem Definition ? Acces right & Permission Issue

Remarks ? User tidak bisa melihat atau acces pada menu-menu Odoo

Problem Description ?

Photo Prove Attachment ?

SAVE & CLOSE

DISCARD

2.3. Alur Kerja Analisis (Hanya Admin)

Ini adalah proses inti untuk menganalisis data yang sudah terkumpul.

Langkah 1: Persiapan Data (Wajib) Data mentah tiket diubah menjadi data rata-rata pelanggan.

1. avg.ticket (Otomatis): Terupdate otomatis saat tiket diubah.

Average Ticket Summary							
Search...							
▼ Filters 📊 Group By ★ Favorites							
1-80 / 250 ⏪ ⏩							
<input type="checkbox"/> Customer	Total Tick...	Average Prior...	Average Complex...	Average Response (Seconds)	Average Resolution (Seco...	Average Point (min_point)	Average Rating (1-5) Last Computed
<input type="checkbox"/> PT Sinergi Investasi Properti	21	2.05	1.67	1,029.76	89,310.05	3.19	4.48 11/15/2025 02:18:38
<input type="checkbox"/> Bintang Bersaudara Medika	14	2.36	1.75	909.29	78,683.00	3.18	4.07 11/15/2025 02:18:38
<input type="checkbox"/> PT Tumbakmas Inti Mulla	22	2.18	1.64	938.59	83,717.82	3.14	4.09 11/15/2025 02:18:38
<input type="checkbox"/> Nusa Geosource Solution	16	2.13	1.63	724.25	82,797.19	3.13	4.56 11/15/2025 02:18:38
<input type="checkbox"/> PT Nifco Indonesia	8	2.13	1.63	1,149.50	86,934.13	3.13	3.88 11/15/2025 02:18:38
<input type="checkbox"/> PT Colliers International Indon...	17	2.35	1.65	906.76	79,982.06	3.12	4.12 11/15/2025 02:18:38
<input type="checkbox"/> Jafra Cosmetics Indonesia	14	2.21	1.61	959.93	83,152.86	3.11	4.36 11/15/2025 02:18:38
<input type="checkbox"/> PT Nusa Server Niaga	17	2.24	1.62	3,269.94	84,245.71	3.09	4.00 11/15/2025 02:18:38
<input type="checkbox"/> Instrumindo Prima Sentosa	18	2.17	1.64	824.39	70,378.50	3.08	4.28 11/15/2025 02:18:38
<input type="checkbox"/> Sinar Elok Abadi	20	2.20	1.63	917.30	74,067.90	3.08	4.15 11/15/2025 02:18:38
<input type="checkbox"/> PT Agriya Analitika	15	2.20	1.67	1,086.87	86,659.27	3.07	4.00 11/15/2025 02:18:38
<input type="checkbox"/> PT Pengembangan Jaya Papua	23	2.09	1.63	2,740.04	86,320.83	3.07	3.96 11/15/2025 02:18:38
<input type="checkbox"/> PT Dynaplast	9	2.00	1.61	882.78	88,922.00	3.06	4.22 11/15/2025 02:18:38
<input type="checkbox"/> PT Banua Sarana Jaya	10	2.20	1.65	911.30	74,214.10	3.05	4.20 11/15/2025 02:18:38
<input type="checkbox"/> PT Rajawali Properti investama	20	2.00	1.65	998.70	82,578.25	3.05	4.15 11/15/2025 02:18:38
<input type="checkbox"/> Supra Boga Lestari	15	2.07	1.50	3,820.07	65,748.00	3.03	4.07 11/15/2025 02:18:38

2. eda.std (Manual):

1. Buka Tickets -> [Menu EDA Anda] -> Global STD History.
2. Klik RECALCULATE STD untuk menghitung ulang standar deviasi global dari semua data tiket.

Global STD History / 2025-01-01 07:00:00		Action	🔄
RECALCULATE STD			
Calculation Date ? 01/01/2025 07:00:00			
STANDARD DEVIATION (Σ) RESULTS			
STD Priority Score (1-3) ?	0.00	STD Ticket Point Usage ?	0.00
STD Response Time (Hours) ?	0.00	STD Complexity Score (0-2) ?	0.00
STD Resolution Time (Hours) ?	0.00	STD Rating Score (1-5) ?	0.00

3. normalization.name (Manual/Terjadwal):

1. WAJIB: Sebelum menjalankan K-Means, data Z-Score harus diperbarui.
2. Jalankan recompute_all() pada model normalization.name melalui Odoo Shell, atau pastikan Scheduled Action sudah diatur untuk berjalan otomatis setiap hari.

2025-12-02 00:46:49 Action 1/1

CALCULATE CORRELATION

Calculation Date [?] 12/02/2025 00:46:49

CORRELATION BETWEEN TICKET COUNT AND OTHERS

Corr(Ticket Count vs Avg Priority) [?]	0.070	Corr(Ticket Count vs Avg Point) [?]	0.029
Corr(Ticket Count vs Avg Complexity) [?]	0.059	Corr(Ticket Count vs Avg Rating) [?]	-0.015
Corr(Ticket Count vs Avg Response Time) [?]	-0.006		
Corr(Ticket Count vs Avg Resolution Time) [?]	0.084		

CORRELATION AMONG OTHER VARIABLES

Corr(Avg Priority vs Avg Complexity) [?]	0.699	Corr(Avg Complexity vs Avg Response Time) [?]	0.047
Corr(Avg Priority vs Avg Response Time) [?]	0.146	Corr(Avg Complexity vs Avg Resolution Time) [?]	0.741
Corr(Avg Priority vs Avg Resolution Time) [?]	0.482	Corr(Avg Complexity vs Avg Point) [?]	0.834
Corr(Avg Priority vs Avg Point) [?]	0.599	Corr(Avg Complexity vs Avg Rating) [?]	-0.172
Corr(Avg Priority vs Avg Rating) [?]	-0.091		
Corr(Avg Response Time	-0.005	Corr(Avg Resolution	0.852

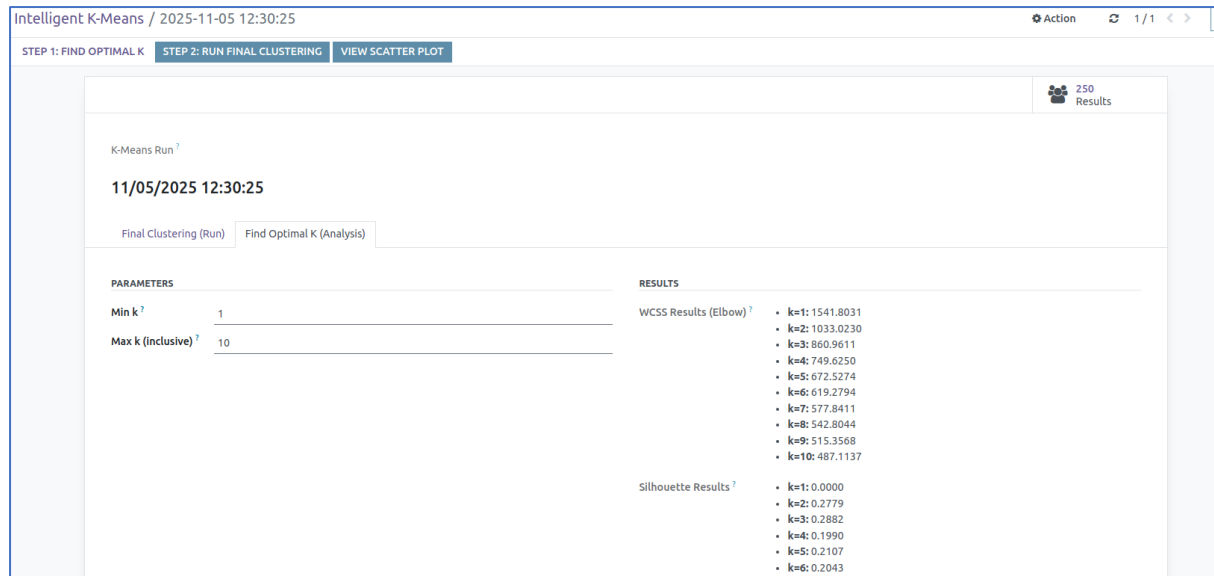
Langkah 2: Analisis Korelasi (EDA)

1. Buka Tickets -> [Menu EDA Anda] -> Correlation Analysis.
2. Lihat Heatmap untuk memahami hubungan antar fitur (misal: Ticket Count vs Point AVG).



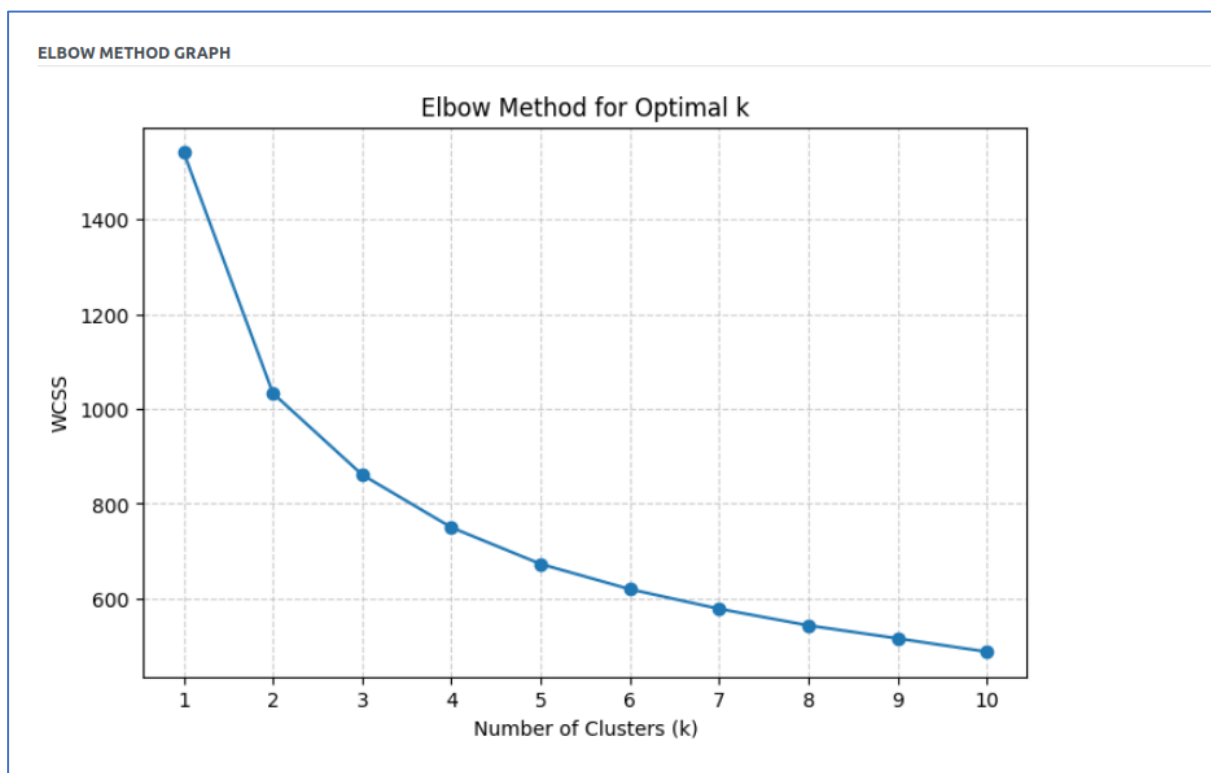
Langkah 3: Menentukan Klaster Optimal (k)

1. Buka Tickets Intelligent K-Means.
2. Klik New untuk membuat Run analisis baru.
3. Buka tab Find Optimal K (Analysis).
4. Atur Min k (misal: 2) dan Max k (misal: 10).
5. Klik tombol STEP 1: FIND OPTIMAL K.



6. Analisis Hasil:

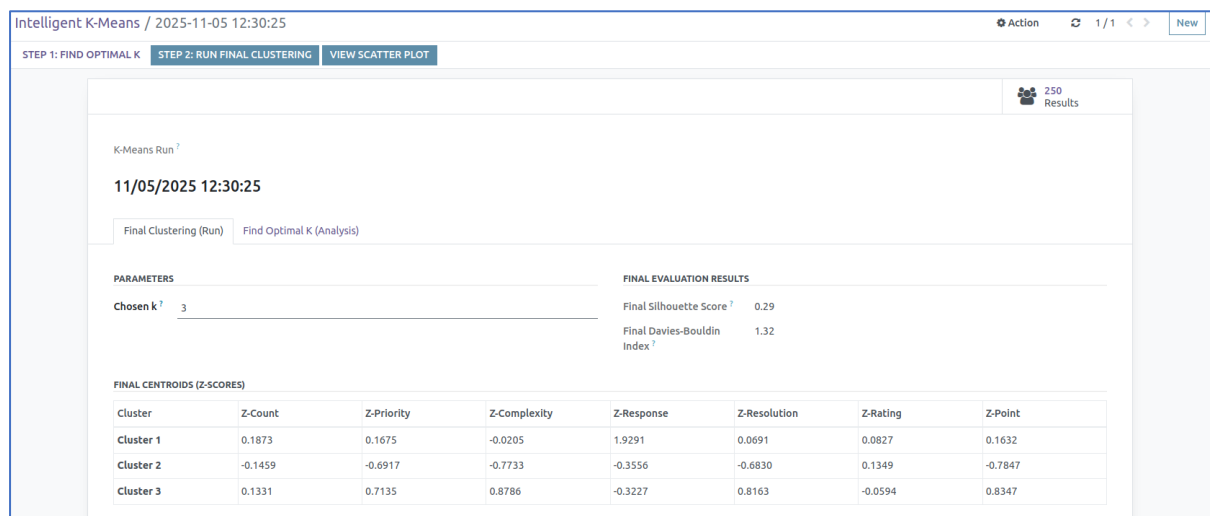
1. Elbow Method Graph: Cari "siku" (titik di mana grafik melandai).
2. Silhouette Results: Cari skor tertinggi. misal: 0.2900).
3. Kesimpulan: Pilih k terbaik.



Langkah 4: Menjalankan Klastering Final

1. Pindah ke tab Final Clustering (Run).
2. Masukkan k pilihan Anda di field Chosen k (misal: 3).
3. Klik tombol STEP 2: RUN FINAL CLUSTERING.

4. Sistem akan menjalankan K-Means dan menyimpan hasilnya ke kmeans.result.



Langkah 5: Menganalisis Hasil Klustering

1. Ringkasan (di Form K-Means):

1. Lihat skor Final Silhouette Score dan Final Davies-Bouldin Index.
2. Lihat tabel Final Centroids (Z-Scores) untuk memahami "profil" rata-rata tiap klaster.

2. Detail Anggota (di Cluster Results):

1. Klik tombol pintar "Results" di form K-Means, atau buka menu Cluster Results.
2. Lihat daftar semua pelanggan, dikelompokkan berdasarkan Cluster (misal: Cluster 1: 39, Cluster 2: 114, dst.).
3. Buka grup untuk melihat anggota dan nilai Z-Score individual mereka.

Intelligent K-Means / 2025-11-05 12:30:25 / Cluster Results

Cluster * Search...

Filters Group By Favorites

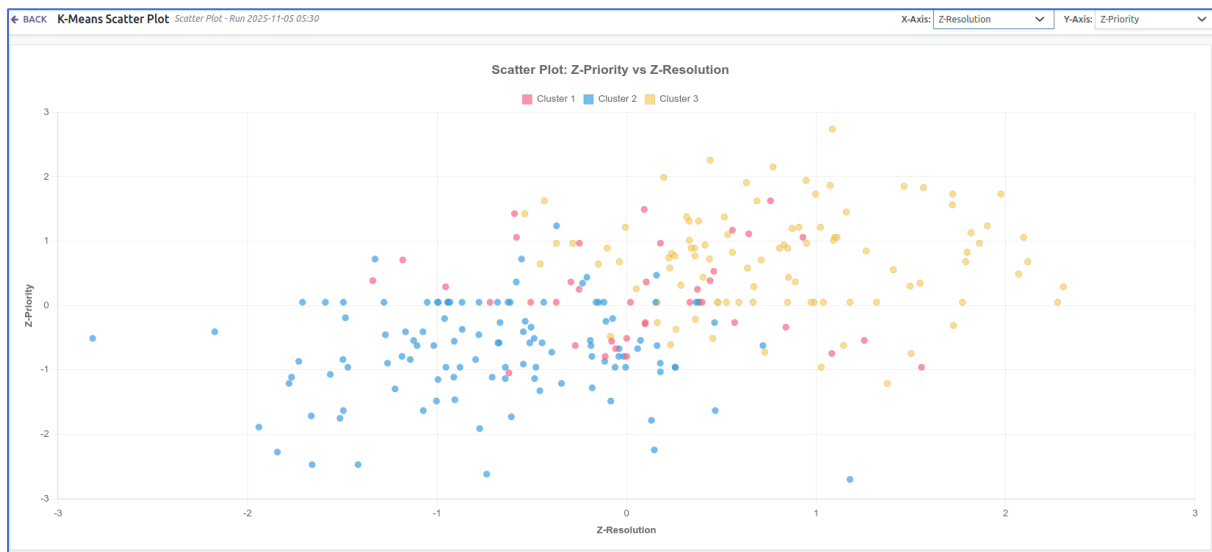
1-3 / 3

K-Means Run	Cluster	Customer	Z-Count	Z-Priority	Z-Comp...	Z-Respo...	Z-Resol...	Z-Rating	Z-Point
1 (38)			7.12	6.36	-0.78	73.31	2.62	3.14	6.20
2 (114)			-16.63	-78.86	-88.15	-40.53	-77.86	15.37	-89.46
3 (98)			13.04	69.92	86.11	-31.62	80.00	-5.82	81.80

3. Visualisasi (Scatter Plot):

1. Di form Intelligent K-Means, klik tombol View Scatter Plot.
2. Layar baru akan muncul. Gunakan dropdown X-Axis dan Y-Axis di kanan atas untuk memilih dua fitur Z-Score yang ingin Anda bandingkan.
3. Hover: Arahkan mouse ke titik untuk melihat Nama Customer dan nilai Z-Score-nya.
4. Klik: Klik pada sebuah titik untuk membuka daftar (Tree View) yang sudah difilter, berisi semua anggota klaster dari titik yang Anda klik tersebut.

5. Gunakan tombol Back untuk kembali ke form K-Means.



2.4. Troubleshooting

1. Error Library (ImportError, NameError): Pastikan library Python (scikit-learn, numpy, matplotlib) terinstal & Odoo di-restart.
2. Tombol JS Tidak Berfungsi (Scatter Plot/Heatmap): Lakukan Hard Refresh (Ctrl+Shift+R) pada browser Anda.
3. Error "Missing Run ID" (Scatter Plot): Pastikan record K-Means Run sudah disimpan sebelum mengklik tombol "View Scatter Plot". Periksa Developer Console (F12) untuk console.log.
4. Data Analisis Tidak Berubah: Pastikan Anda telah menjalankan ulang proses yang relevan (misal: "RECALCULATE STD" atau `recompute_all()` untuk `normalization.name`) setelah data tiket baru ditambahkan.
5. Technician/Sales Tidak Bisa Lihat Tiket (Tampilan Kosong): Ini PASTI karena Record Rule. Masalahnya ada di DATA. Pastikan ID partner yang terhubung ke User (di Settings Users) adalah ID partner YANG SAMA PERSIS dengan yang dipilih di field technician atau sales_person_id pada tiket.
6. Access Error saat Mengedit Tiket: Ini juga karena Record Rule. Anda (sebagai Teknisi/Sales) mencoba mengedit tiket yang tidak di-assign ke Anda.
7. Data Klastering Aneh (misal: 1 data di 1 klaster): Ini wajar. K-Means telah mengidentifikasi data tersebut sebagai outlier (pencilan) yang sangat berbeda dari data lainnya.

Modul Ticket Service sebuah sistem manajemen tiket berbasis Odoo 16 yang terintegrasi dengan analisis data menggunakan metode Intelligent K-Means dan EDA, di mana sistem ini tidak hanya mengelola tiket pelanggan secara otomatis, tetapi juga mampu melakukan analisis klaster pelanggan secara cerdas, menampilkan visualisasi interaktif, dan membantu pengambilan keputusan bisnis berbasis data.