

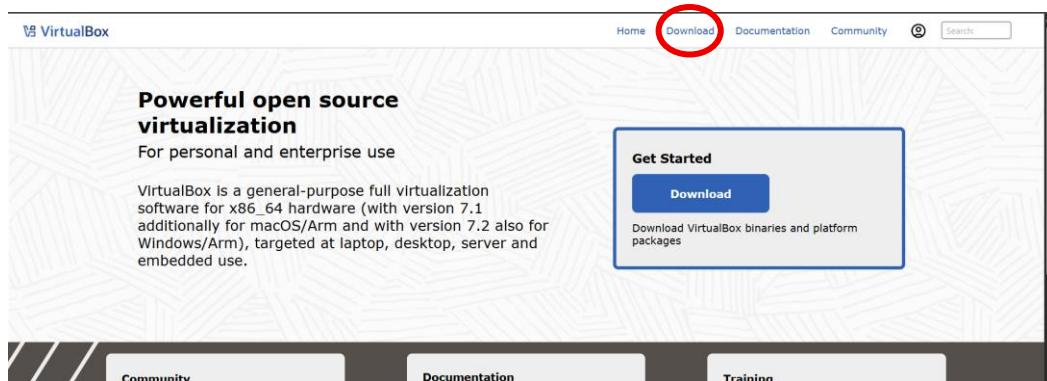
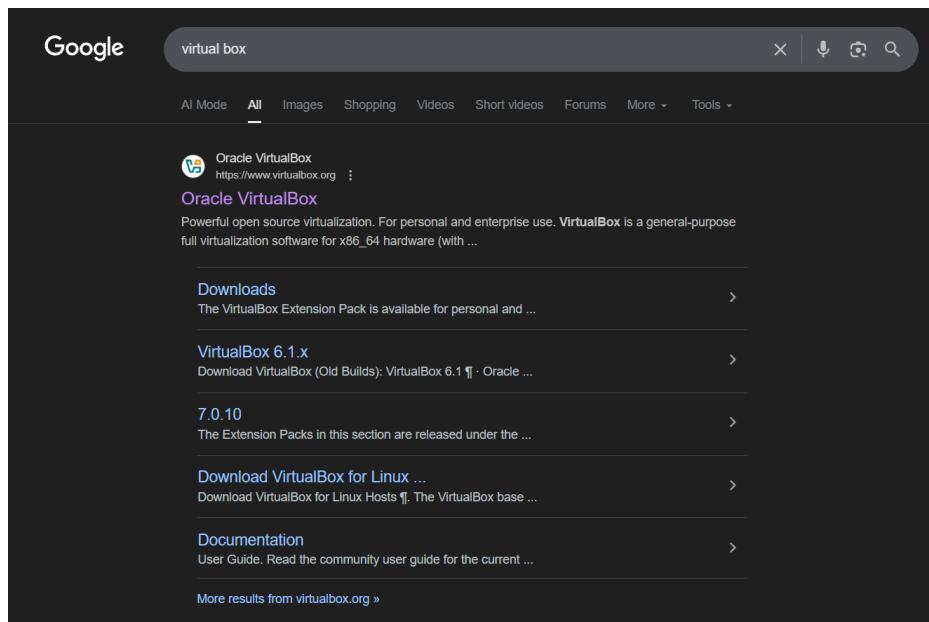
Buku Manual: Modul Tickets & Analisis Klastering Pelanggan

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).



[VirtualBox](#)

Home Download Documentation Community Search

Download VirtualBox

The VirtualBox Extension Pack is available for personal and educational use on this page under the PUEL license. The VirtualBox Extension Pack is also available under commercial or enterprise terms. By downloading, you agree to the terms and conditions of the respective license.

VirtualBox Platform Packages

VirtualBox 7.2.4 platform packages

- Windows hosts
- macOS / Intel hosts
- macOS / Apple Silicon hosts
- Linux distributions
- Solaris hosts
- Solaris 11 IPS hosts

Platform packages are released under the terms of the [GPL version 3](#).

VirtualBox Extension Pack
VirtualBox 7.2.4 Extension Pack

This VirtualBox Extension Pack Personal Use and Educational License governs your access to and use of the VirtualBox Extension Pack. It does not apply to the VirtualBox base package and/or its source code, which are licensed under version 3 of the GNU General Public License ("GPL").

See our [FAQ](#) for answers to common questions.

VirtualBox Extension Pack Personal Use and Educational License (PUEL)

[PUEL License FAQ](#) [PUEL License Text](#) [Accept and download](#)

Google

ubuntu

All Mode All Images News Videos Shopping Short videos More Tools

Ubuntu <https://ubuntu.com> :

Ubuntu: Enterprise Open Source and Linux
Ubuntu is the modern, open source operating system on Linux for the enterprise server, desktop, cloud, and IoT.

Download
Download Ubuntu. Ubuntu is the world's favourite Linux ...

Download Ubuntu Desktop
Ubuntu Pro Desktop is a comprehensive subscription ...

Get Ubuntu Server
Get Ubuntu Server · Ubuntu 24.04.3 LTS · Ubuntu 25.10 · Get ...

Canonical Ubuntu Products Use cases Support Community Download Ubuntu All Canonical Sign in

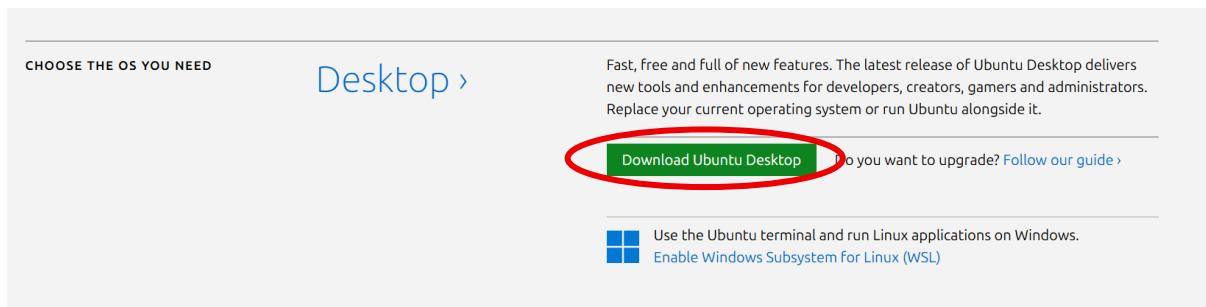
Ubuntu 24.04 LTS Noble Numbat is available for download

Discover the latest and greatest features in our most recent long term supported release.



[Download for free](#) [Read the deep dive](#)

 The Standard Support period for Ubuntu 20.04 LTS has ended. Discover your options.
[Take action today](#)



Download Ubuntu Desktop

The open source desktop operating system that powers millions of PCs and laptops around the world. Find out more about Ubuntu's features and how we support developers and organisations below.

[Discover Ubuntu Desktop](#) [Check out the blog >](#)

Ubuntu 24.04.3 LTS

The latest LTS version of Ubuntu, for desktop PCs and laptops. LTS stands for long-term support — which means five years of free security and maintenance updates, extended up to 12 years with [Ubuntu Pro](#).

[Intel or AMD 64-bit architecture](#) [Download](#) 5.9GB

For other versions of Ubuntu Desktop including torrents, the network installer, a list of local mirrors and past releases [check out our alternative downloads](#).

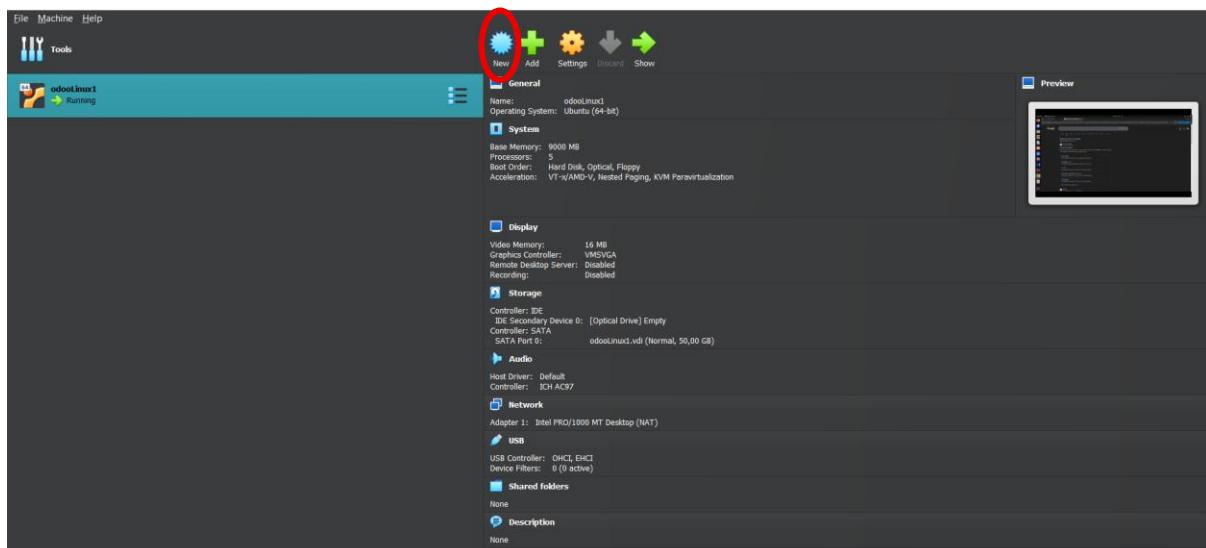
[What's new](#) [System requirements](#) [How to install](#)

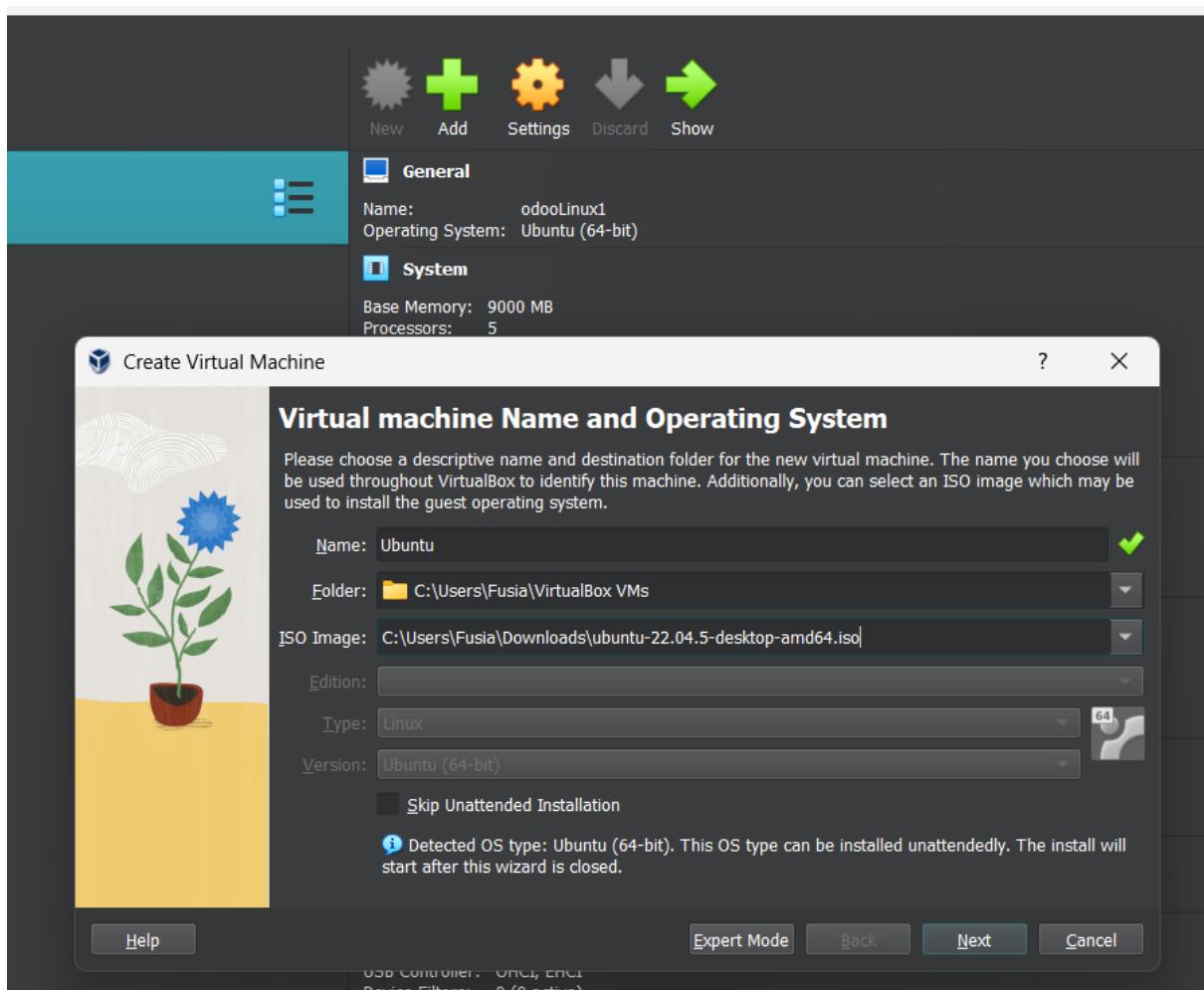
New Desktop installer with support for autoinstall

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.

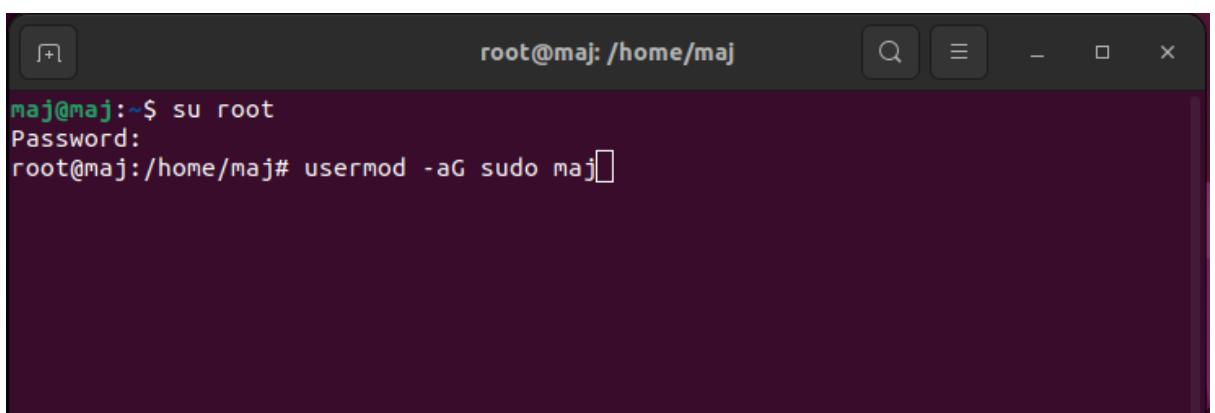




1.3. Konfigurasi User Ubuntu (Fix Sudoers)

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.



```
root@maj: /home/maj
maj@maj:~$ su root
Password:
root@maj:/home/maj# usermod -aG sudo maj
```

A screenshot of a terminal window with a dark theme. The title bar shows 'root@maj: /home/maj'. The terminal prompt is 'maj@maj:~\$'. The user types 'su root' followed by their password. After becoming root, they run the command 'usermod -aG sudo maj'. The terminal has standard window controls (minimize, maximize, close) at the top right.

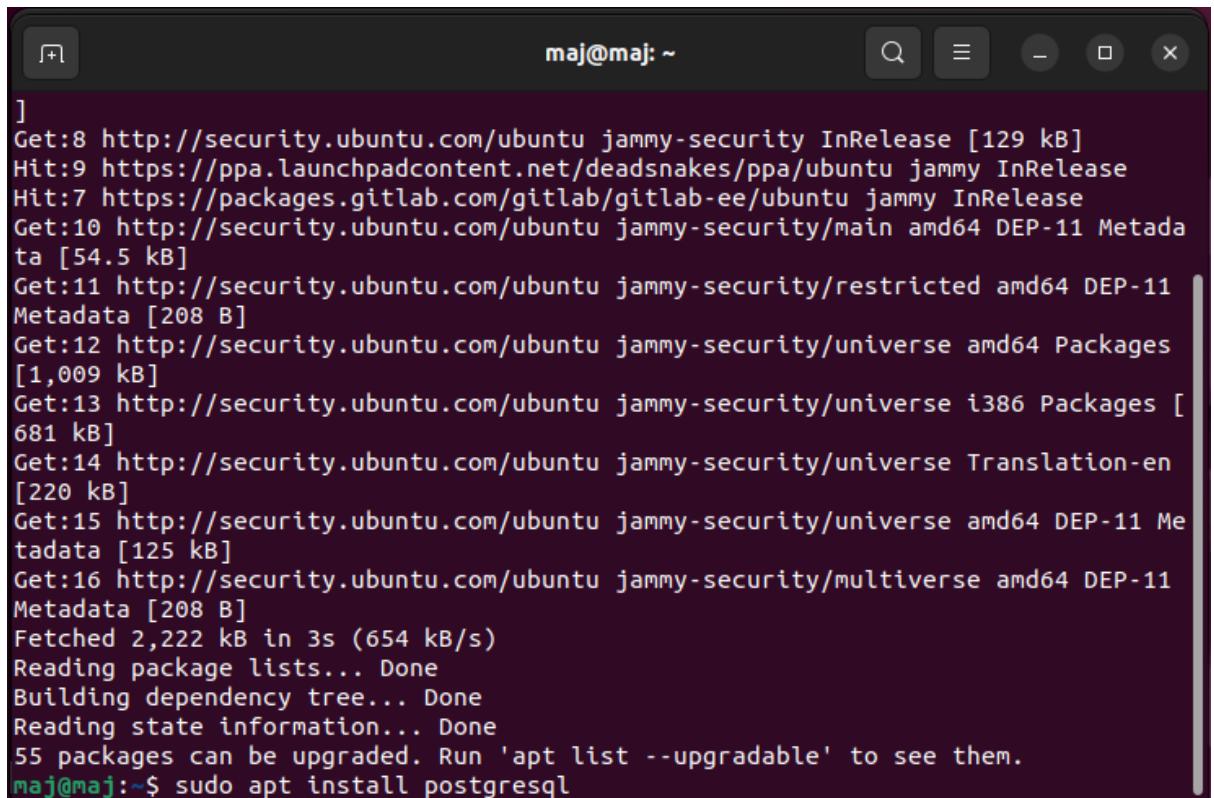
1.4. Instalasi PostgreSQL

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
```



The screenshot shows a terminal window titled 'maj@maj: ~'. The terminal displays the output of an 'apt update' command. The output includes several 'Get:' commands for security and universe packages from various repositories like security.ubuntu.com, ppa.launchpadcontent.net, and packages.gitlab.com. It shows the download of files such as 'jammy-security InRelease', 'jammy InRelease', and 'jammy-security/main amd64 DEP-11 Metadata [54.5 kB]'. The process continues with 'Get:11', 'Get:12', 'Get:13', 'Get:14', 'Get:15', 'Get:16', and finally 'Fetched 2,222 kB in 3s (654 kB/s)'. It then moves on to 'Reading package lists...', 'Building dependency tree...', 'Reading state information...', and concludes with '55 packages can be upgraded. Run 'apt list --upgradable' to see them.' The command 'maj@maj:~\$ sudo apt install postgresql' is shown at the bottom.

```
[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 Metadata [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 Metadata [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

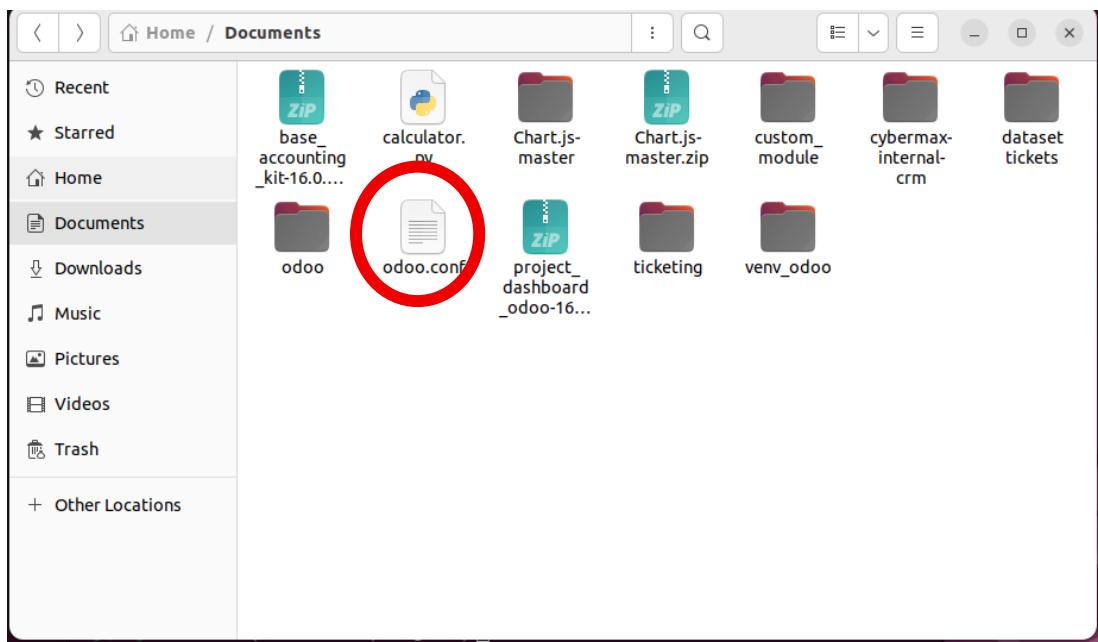
1. Pindah ke ~/Documents.
2. Buat file odoo.conf: nano odoo.conf
3. Isi file odoo.conf dengan konfigurasi Anda. PENTING: Sesuaikan addons_path agar menyertakan folder Odoo dan folder modul kustom Anda (ticketing).

[options]

```
admin_passwd = superadmin
db_host = False
db_port = False
db_user = odoo_admin
db_password = False
```

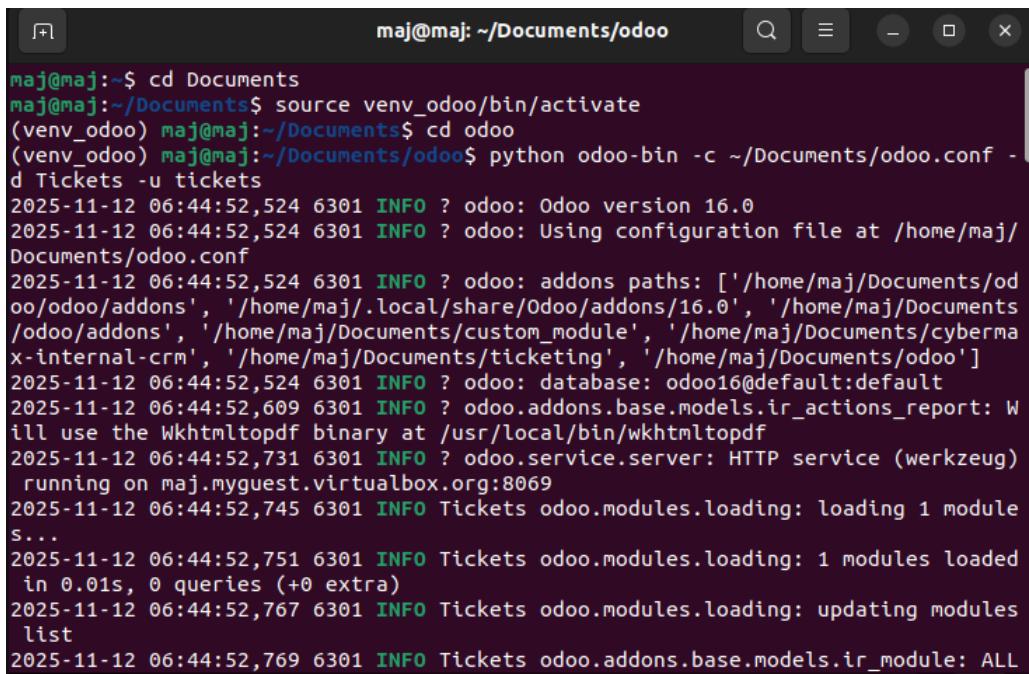
Ganti /home/user/Documents/odoo/odoo/addons dan /home/user/Documents/ticketing dengan path yang benar di mesin Anda

```
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.



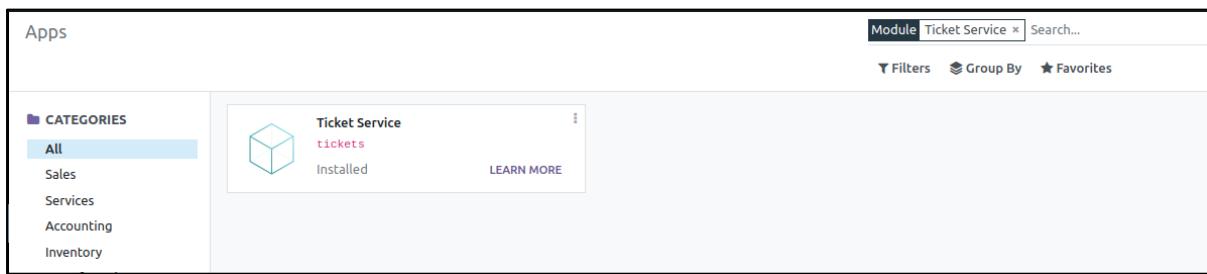
A screenshot of a terminal window titled "maj@maj: ~/Documents/odoo". The window shows a command-line session where the user runs the Odoo server. The logs output by the server include information about the Odoo version (16.0), configuration file location, addons paths, database connection, and the start of the HTTP service on port 8069. The logs also mention the loading and updating of modules, specifically the 'Tickets' module.

```
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 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 modules...
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").

- Klik tombol Install.



1.8. Troubleshooting Instalasi

- Instalasi Paket .deb:

- cd ~/Downloads
- sudo dpkg -i nama_paket.deb
- Jika error: sudo apt-get install -f (memperbaiki dependensi).

- Port 8069 Terpakai:

- Cek port: sudo lsof -i :8069
- Matikan proses (PID): sudo kill <PID>
- Alternatif: Ubah port di odoo.conf (misal: xmlrpc_port = 8070).

- Edit File (Terminal): nano /path/to/file

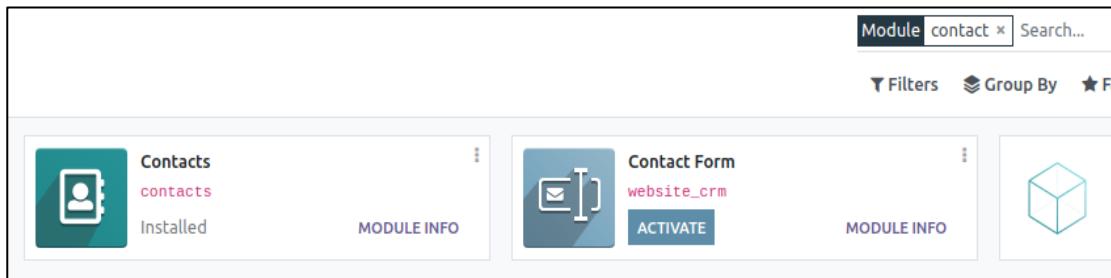
1.9. Konfigurasi Modul Contacts (Wajib)

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:

- Pastikan Odoo sudah berjalan (localhost:8069).
- Instal modul bawaan Contacts terlebih dahulu melalui menu Apps (biasanya sudah terinstal secara default).
- Baru setelah itu instal modul tickets.
 - Setelah instalasi selesai, buka kembali menu Contacts.
 - 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.

The screenshot shows the Odoo Contacts module interface. At the top, it says 'Contacts / mic'. Below that, there's a section for 'Individual' or 'Company' (set to Individual). The contact name 'mic' is entered. There are fields for Company Name, Street, Street 2, City, State, ZIP, Job Position (e.g. Sales Director), Phone, Mobile, Email (mic@gmail.com), Website, Title (e.g. Mister), Tags (e.g. "B2B", "VIP", "Consulting", ...), and Role. The 'Role' dropdown menu is open, showing 'admin', 'sales', and 'technician', with 'technician' selected. At the bottom, there are tabs for 'Contacts & Addresses', 'Sales & Purchase', and 'Internal Notes', with 'Contacts & Addresses' selected. There's also an 'ADD' button.

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 (dimana customer_name_id = partner mereka). Tidak bisa mengedit tiket setelah dibuat (kecuali membatalkan).
3. Tugas: Membuat tiket, memberi rating.

The screenshot shows a web-based application interface for managing tickets. At the top, there's a navigation bar with a 'Ticket' tab, a 'NEW' button, and search/filter options. Below the header, the main area displays a grid of ticket entries. Each entry includes a small profile picture, the ticket ID, assignee, and some basic details like sales and tech names, progress, point cost, and a rating (Good, Bad, No). The interface uses a clean, modern design with a light blue background and white cards for each ticket. In the center of the screen, there's a prominent 'Create new document' button with a paper icon. The overall layout is organized and user-friendly, designed for efficient ticket management.

gram

Create

X

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 ?

Attachment

SAVE & CLOSE DISCARD

The screenshot shows a 'Create' dialog box for a ticket. At the top right are buttons for 'SUBMIT', 'PROGRESS', 'FINISH', and 'CANCEL'. Below these are several input fields: 'No Ticket?' (with a question mark), 'Client?' (set to 'client'), 'Sales Person?' (set to 'sales'), and 'Submit Date?' (set to '12/02/2025 10:48:12'). To the right of these are fields for 'Finished Date?' (empty), 'Technician?' (empty), 'Technician Note?' (empty), 'Kategori?' (empty), 'Ticket Available?' (set to '0.00'), 'Expired Ticket?' (empty), and 'Ticket Usage?' (set to '0.00'). A 'Customer Rating?' field shows '★★★★☆' with a tooltip 'Customer Rating: Excellent'. There are also sections for 'Problem Description', 'Problem Definition?', 'Remarks?' (set to 'None'), and 'Photo Prove Attachment?' with a camera icon. At the bottom are 'SAVE & CLOSE' and 'DISCARD' buttons.

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", "in", [1, 2, 4]], ["calculate_bool", "=", true])
- Button Type: object
- Method: state_progress

Priority? ★ ★ ★

Complexity? ★ ★ ★

Sales Person? Marlinda

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

On Progress Date?

Finished Date?

Work Days? 0

Technician? Anam

Technician Note?

Kategori? Odoo

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

CALCULATE COST CANCEL Action 1 / 80 < > New Send

Button : Calculate Cost

- Object: ticket.name
- Modifiers: ("invisible": ["/"], ["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 shows a data table titled "Average Ticket Summary". The columns include Customer, Total Tickets, Average Priority, Average Complexity, Average Response (Seconds), Average Resolution (Seconds), Average Point (min_point), Average Rating (1-5), and Last Computed. The data is sorted by Last Computed in descending order. The table lists 18 different companies with their respective ticket counts, priority averages, response times, resolution times, average points, average ratings, and the last time the data was computed.

Customer	Total Tickets	Average Priority	Average Complexity	Average Response (Seconds)	Average Resolution (Seconds)	Average Point (min_point)	Average Rating (1-5)	Last Computed
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
Bintang Bersaudara Medika	14	2.36	1.75	909.29	79,683.00	3.18	4.07	11/15/2025 02:18:38
PT Tumbakmas Inti Mulia	22	2.18	1.64	938.59	83,717.82	3.14	4.09	11/15/2025 02:18:38
Nusa Geosource Solution	16	2.13	1.63	724.25	82,797.19	3.13	4.56	11/15/2025 02:18:38
PT Nifco Indonesia	8	2.13	1.63	1,149.50	86,934.13	3.13	3.88	11/15/2025 02:18:38
PT Colliers International Indon...	17	2.35	1.65	906.76	79,982.06	3.12	4.12	11/15/2025 02:18:38
Jafra Cosmetics Indonesia	14	2.21	1.61	959.93	83,152.86	3.11	4.36	11/15/2025 02:18:38
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
Instrumindo Prima Sentosa	18	2.17	1.64	824.39	70,378.50	3.08	4.28	11/15/2025 02:18:38
Sinar Elok Abadi	20	2.20	1.63	917.30	74,067.90	3.08	4.15	11/15/2025 02:18:38
PT Agriya Analitika	15	2.20	1.67	1,086.87	86,659.27	3.07	4.00	11/15/2025 02:18:38
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
PT Dynaplast	9	2.00	1.61	882.78	88,922.00	3.06	4.22	11/15/2025 02:18:38
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

X

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

The screenshot shows a ticket creation interface. At the top right are buttons for SUBMIT, PROGRESS, FINISH, and CANCEL. Below these are several input fields: 'No Ticket?' (with a question mark icon), 'Client?' (set to 'client'), 'Sales Person?' (set to 'sales'), and 'Submit Date?' (set to '12/02/2025 10:48:12'). To the right of these are 'Finished Date?' (empty), 'Technician?' (empty), 'Technician Note?' (empty), and 'Kategori?' (empty). Below these are numerical fields for 'Ticket Available?' (0.00) and 'Ticket Usage?' (0.00). A 'Customer Rating?' section shows five yellow stars followed by a tooltip 'Customer Rating: Excellent'. There are also sections for 'Problem Description', 'Problem Definition?', 'Remarks?' (set to 'None'), and 'Photo Prove Attachment?' (represented by a camera icon with a plus sign). At the bottom are 'SAVE & CLOSE' and 'DISCARD' buttons.

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.

Create

SUBMIT PROGRESS FINISH CANCEL

No Ticket ?	Finished Date ?
Client ?	Technician ?
Sales Person ?	Technician Note ?
Submit Date ?	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** **New** **Send**

Action 1 / 80 < > FINISH CANCEL

Button : Calculate Cost <ul style="list-style-type: none"> o Object: ticket.name o Modifiers: ("invisible": [""], ["states", "in", [1, 2, 4]], ["calculate_bool", "=", true]) o Button Type: object o 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
Problem Description	
Problem Definition ? Accees right & Permission Issue	
Remarks ? User tidak bisa melihat atau accses pada menu-menu Odoo	
Problem Description ?	
Photo Prove Attachment ?	
	
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 ? ★★★★★	

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.

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

Average Ticket Summary							
Customer	Total Tick...	Average Prior...	Average Complex...	Average Response (Seconds)	Average Resolution (Seco...	Average Point (min_point)	Average Rating (1-5) Last Computed
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
Bintang Bersaudara Medika	14	2.36	1.75	909.29	78,683.00	3.18	4.07 11/15/2025 02:18:38
PT Tumbakmas Inti Mulia	22	2.18	1.64	938.59	83,717.82	3.14	4.09 11/15/2025 02:18:38
Nusa Geosource Solution	16	2.13	1.63	724.25	82,797.19	3.13	4.56 11/15/2025 02:18:38
PT Nifco Indonesia	8	2.13	1.63	1,149.50	86,934.13	3.13	3.88 11/15/2025 02:18:38
PT Colliers International Indon...	17	2.35	1.65	906.76	79,982.06	3.12	4.12 11/15/2025 02:18:38
Jafra Cosmetics Indonesia	14	2.21	1.61	959.93	83,152.86	3.11	4.36 11/15/2025 02:18:38
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
Instrumindo Prima Sentosa	18	2.17	1.64	824.39	70,378.50	3.08	4.28 11/15/2025 02:18:38
Sinar Ellok Abadi	20	2.20	1.63	917.30	74,067.90	3.08	4.15 11/15/2025 02:18:38
PT Agriya Analitika	15	2.20	1.67	1,086.87	86,659.27	3.07	4.00 11/15/2025 02:18:38
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
PT Dynaplast	9	2.00	1.61	882.78	88,922.00	3.06	4.22 11/15/2025 02:18:38
PT Banua Sarana Jaya	10	2.20	1.65	911.30	74,214.10	3.05	4.20 11/15/2025 02:18:38
PT Rajawali Properti Investama	20	2.00	1.65	998.70	82,578.25	3.05	4.15 11/15/2025 02:18:38
Supra Boga Lestari	15	2.07	1.50	3,820.07	65,748.00	3.03	4.07 11/15/2025 02:18:38

- eda.std (Manual):

- Buka Tickets -> [Menu EDA Anda] -> Global STD History.
- 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 Response Time (Hours) [?] 0.00 STD Resolution Time (Hours) [?] 0.00		
STD Ticket Point Usage [?] 0.00 STD Complexity Score (0–2) [?] 0.00 STD Rating Score (1–5) [?] 0.00		

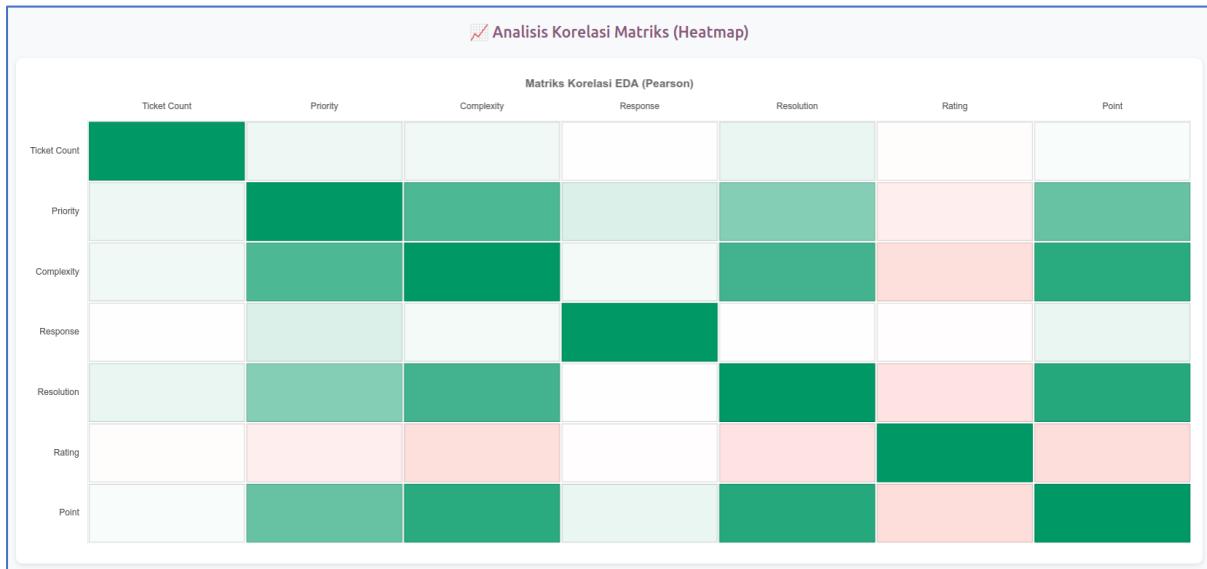
- normalization.name (Manual/Terjadwal):

- WAJIB: Sebelum menjalankan K-Means, data Z-Score harus diperbarui.
- 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 Response Time) [?] -0.006	Corr(Ticket Count vs Avg Rating) [?] -0.015	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 Priority vs Avg Resolution Time) [?] 0.482	Corr(Avg Complexity vs Avg Resolution Time) [?] 0.741	Corr(Avg Priority vs Avg Resolution Time) [?] 0.482
Corr(Avg Priority vs Avg Point) [?] 0.599	Corr(Avg Complexity vs Avg Point) [?] 0.834	Corr(Avg Priority vs Avg Rating) [?] -0.091
Corr(Avg Priority vs Avg Rating) [?] -0.091	Corr(Avg Complexity vs Avg Rating) [?] -0.172	Corr(Avg Response Time vs 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.

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

STEP 1: FIND OPTIMAL K STEP 2: RUN FINAL CLUSTERING VIEW SCATTER PLOT

K-Means Run ?

11/05/2025 12:30:25

Final Clustering (Run) Find Optimal K (Analysis)

PARAMETERS

Min k [?] 1
Max k (inclusive) [?] 10

RESULTS

WCSS Results (Elbow) [?]

- k=1: 1541.8031
- k=2: 1033.0230
- k=3: 860.9611
- k=4: 749.6250
- k=5: 672.5274
- k=6: 619.2794
- k=7: 577.8411
- k=8: 542.8044
- k=9: 515.3568
- k=10: 487.1137

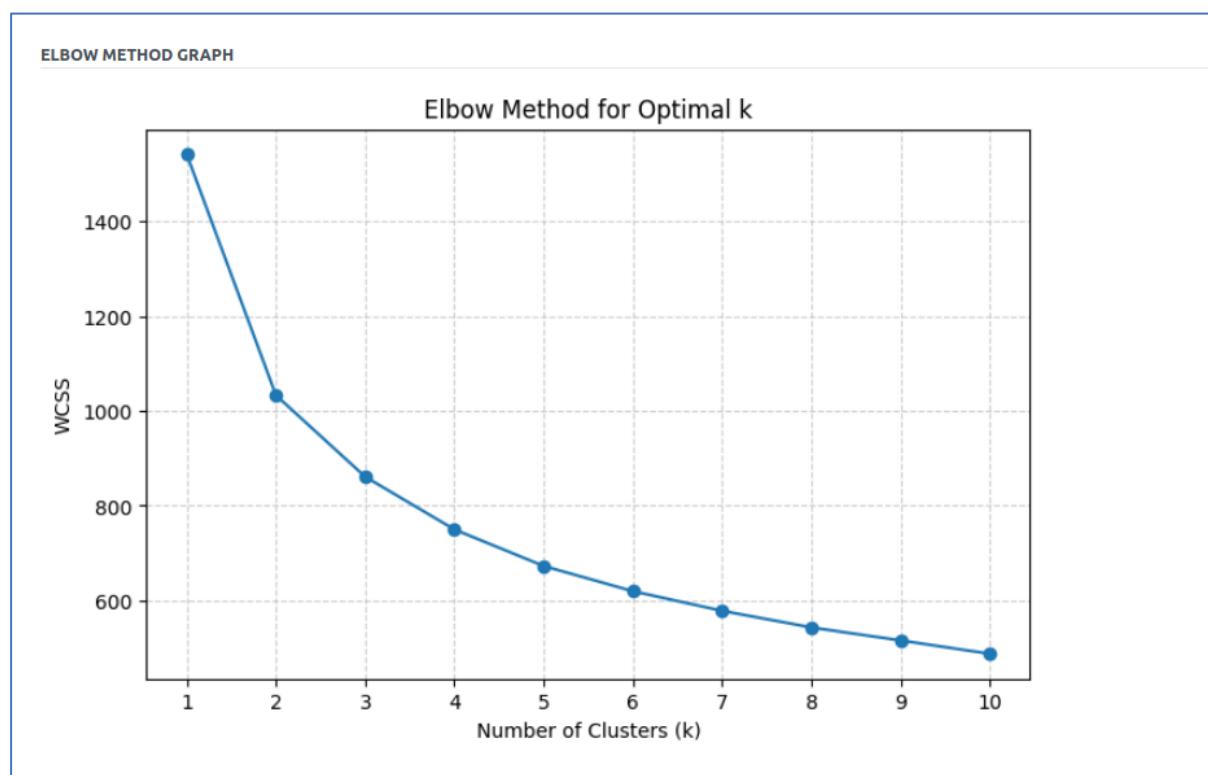
Silhouette Results [?]

- k=1: 0.0000
- k=2: 0.2779
- k=3: 0.2882
- k=4: 0.1990
- k=5: 0.2107
- k=6: 0.2043

250 Results

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.

K-Means Run ?
11/05/2025 12:30:25
Final Clustering (Run) Find Optimal K (Analysis)

PARAMETERS		FINAL EVALUATION RESULTS					
Chosen k ?	3			Final Silhouette Score ?	0.29		
				Final Davies-Bouldin Index ?	1.32		
FINAL CENTROIDS (Z-SCORES)							
Cluster	Z-Count	Z-Priority	Z-Complexity	Z-Response	Z-Resolution	Z-Rating	Z-Point
Cluster 1	0.1873	0.1675	-0.0205	1.9291	0.0691	0.0827	0.1632
Cluster 2	-0.1459	-0.6917	-0.7733	-0.3556	-0.6830	0.1349	-0.7847
Cluster 3	0.1331	0.7135	0.8786	-0.3227	0.8163	-0.0594	0.8347

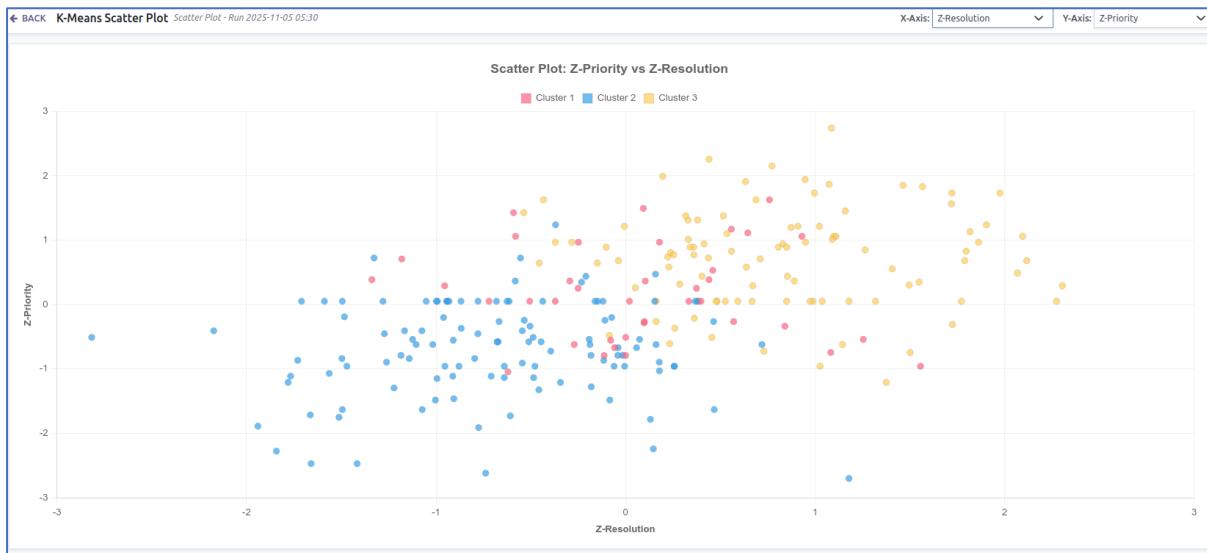
Langkah 5: Menganalisis Hasil Klastering

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.

Cluster	Customer	Z-Count	Z-Priority	Z-Comp...	Z-Resol...	Z-Rating	Z-Point	
1 (39)		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 (penculan) 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.