

L'ICT che dà più *valore* alla tua *azienda!*

Our ICT gives more!



About Me



Born: **April 1977**



University: **of Naples Federico II**



SMS Engineering: **> 20 years**



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Company Fact Sheet



Founded: **July 1998**



Employees: **50**



Turnover: **> € 5 Mil**



Head Quarter: **Napoli (IT)**



Branch Offices: **Milano, Firenze, Roma, London**



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Company Profile



NAPOLI | MILANO | ROMA | FIRENZE | LONDON
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SMS Engineering

IT Applications

Business Intelligence & Analytics/ Business Process Management/ Business Integration/ Software Factory (Java, .NET)/ Gestione Non Conformità (Non Conformity Management System)/ Portal & Collaboration/ Document Management/ Cloud services and applications (Saas)/

ICT Infrastructures

Data Center architectural design and implementation solutions/ Data Center Facilities and relocation/ Data Center infrastructure Management/ Server, desktop and helpdesk management/ Server Virtualization-Desktop Virtualization/ Proactive Monitoring for Data Center/ Unified Storage/ Backup and deduplication/ Business Continuity e Disaster Recovery/ Advanced Sensors Systems and IoT/ Unified Communication and Collaboration/ Network Management/ Switching and routing/ Video Surveillance Infrastructure Design and Implementation/ Enterprise Indoor & Outdoor Wireless Network/ Video and Telepresence solutions/ Wan Optimization, Acceleration & Bandwidth Management/ Log Management/ Architectural design and implementation LAN and Campus solutions/Asset and Connectivity Management/ Network Access and Edge Security/ Cabling Infrastructure Design and Implementation/ Security assessment and audit/ Data Loss Prevention - DLP/ Enterprise Antivirus and AntiSpam/ Cyber Security - MyCyb / SD WAN Solutions/ Private Cloud, Hybrid Cloud and Public Cloud/ Multi-Cloud/ Edge Computing

Extended ERP

Soluzioni ERP Zucchetti/ Warehouse Management/ Controllo di Gestione/ CRM Solutions - Sales Force Automation/ Order Management System/ Gestione nota spese/ Fatturazione elettronica/ Rilevazione presenze e controllo accessi/ Data collection/ Traceability Solutions/ Gestione ticketing/ DMS – Document Management System

LTS

Soluzioni Verticali/ Disruptive Innovation/ Corporate Entrepreneurship/ Spin-off/ Sviluppo Organizzativo/ SOA & Open Source/ Consulenza in ambito Privacy & GDPR/ Progettazione e realizzazione di app native IOS e Android

SMS Engineering

- To propose increasingly innovative and high-performance ICT solutions
- It has been investing in R&D for over 10 years and since 2018 investments have converged on Artificial Intelligence to provide highly innovative and competitive solutions



Agenda

1. Introduction

- Artificial intelligence integrated into BI

2. Case study

- Gathering the data
- Data Cleaning
- Data Preparation and Feature Engine
- Application of the Clustering algorithms
- Visualization of the results
- Interpretation of the results

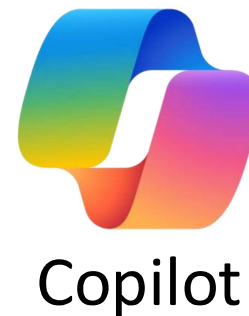
3. Introduction to Power BI

- Overview of Power BI
- Benefits of using Power BI for data visualization

4. Using Copilot in Power BI

- How Copilot can assist in creating dashboards and reports
- Examples of dashboards and reports created with Copilot

5. Conclusions and Recap



Introduction | Artificial intelligence (AI) integrated into BI

A business intelligence (BI) project can usually be divided into two main phases:

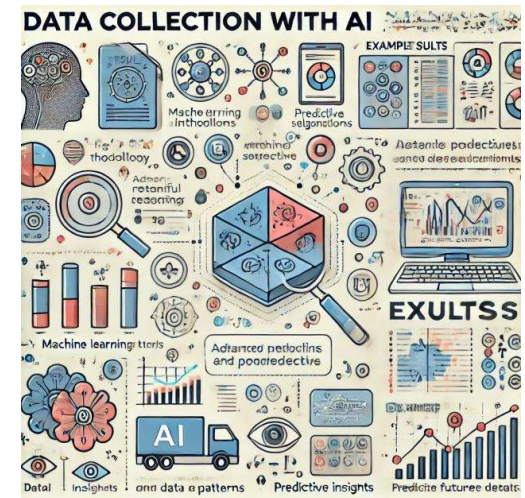
1. Data Collection and Preparation
2. Reporting and Data Presentation

Data Collection Without AI

- **Methodology:** The analysis mostly involves basic techniques like sorting, filtering, and summarizing data. This approach may use simple calculations, averages, or trends to find insights.
- **Results:** The results are Easy-to-interpret but limited results. Without AI, data remains “raw” and requires manual analysis, which slows down the process and limits the depth of insights.

Data Collection With AI

- **Methodology:** This approach uses advanced techniques, including machine learning models and segmentation algorithms.
- **Results:** The results are more detailed and powerful. AI algorithms, especially those using machine learning, can find patterns and connections in data that would be difficult or even impossible to detect with the naked eye.
- **Example:**
 - An AI system can pick up unusual changes in movements or communications from potential threats.
 - Predicting future events based on both historical and real-time data.

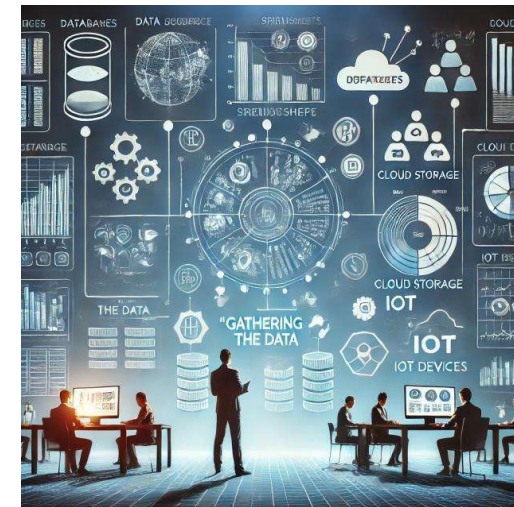


Case study | Gathering the data

Gathering the data: The data gathering phase in a business intelligence project is when we collect all the information we need to better analyze and understand our context.

Imagine we want to answer questions like "What are our best-selling products?" or "Where can we improve our sales?" To do this, we first need to have all the relevant data to help us find the answers.

CustomerKey	Date	PDV	Company	Group	Product	Sub Category	Total Price	Qty
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ARSSFN63R71F205R	09/11/2023 00:00	Zilena	ZNGELINI (Z.C.R.Z.F.) Spz;	XIXTEZA NERVOXO	TACHIPIRINA*GRAT ZFF20B5 500XG	SNSLGESICI	6,82	1
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SCCPLA79D41C034A	10/11/2023 00:00	Ceprieti	EUROSPTLZ Spz;	XANGUE ED ORGANI EZOPOXITICI	SODIO CLORURO ZUROS*0,9% 500XL	SUCCEDSNEI DEL SSGNGUE E SOLUZIONI PERDUSIONSLI	1,99	1
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SZSNNA74A44Z127F	13/11/2023 00:00	Ceprieti	RECKITT BENCKISER H.(IT.) Spz;	XIXTEZA ZUXCOLO-XCHELETRICO	NUROFZN*12CPR RIV 400XG PVC/AL	DSRMSCI SNTIINDISMSTORI ED SNTIREUMSTICI	9,35	1
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PSCSNT82A43G596U	13/11/2023 00:00	Ceprieti	EURITZLIZ PHZRMZ (div.COSWELL);	ARTICOLI XANITARI E DIXPOXITIVI ZEDICI	ISOXAR BABY SPRAY NO GAS 30XL	PRODOTTI PER LS PROTEZIONE DEGLI SPPSRSTI	8,01	1
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Case study | Data Cleaning

Data cleaning is an important step in a business intelligence project that focuses on preparing the data for analysis. It involves identifying and fixing errors, inconsistencies, and missing information in the data to ensure that the final analysis is accurate and reliable.

During data cleaning, several tasks are performed:

1. **Removing Duplicate Data**
2. **Fixing Errors**
3. **Handling Missing Data**
4. **Standardizing Data**



Case study | Data Preparation and Feature Engine

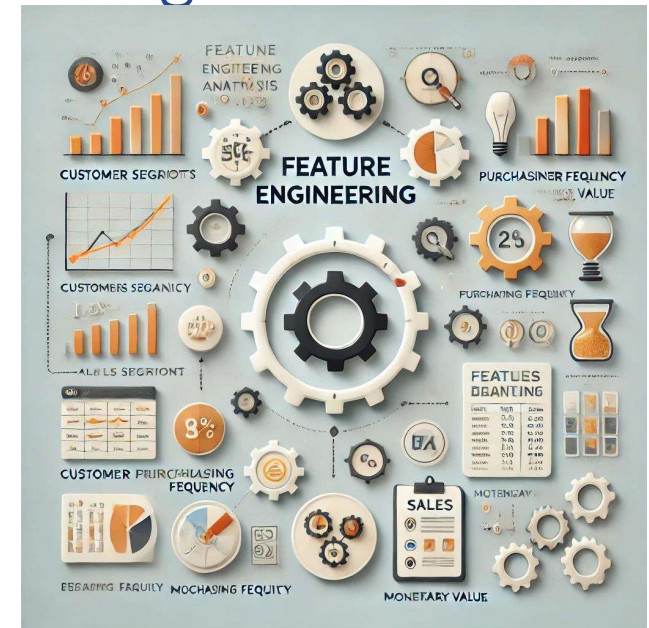
This phase is crucial, this is where raw data is transformed into a format that's easier to analyze and provides deeper insights.

One common approach for the case study is to use the RFM model, which stands for Recency, Frequency, and Monetary value. Here's a breakdown:

1. **Recency:** This measures how recently a customer has made a purchase.
2. **Frequency:** This looks at how often a customer makes purchases.
3. **Monetary Value:** This indicates how much a customer has spent.

In military context we could use a model similar to RFM with adapted metrics:

1. **Recency:** Measures how recently a unit or individual engaged in specific communication or operational activities.
2. **Frequency:** Tracks how often these communications or activities occur over a certain period.
3. **Activity Value:** Reflects the significance or impact of these communications or operations (e.g., high-priority movements or strategic communications).



Case study | Application of Clustering algorithms

Clustering algorithms automatically group data into segments, identifying similarities among observations.

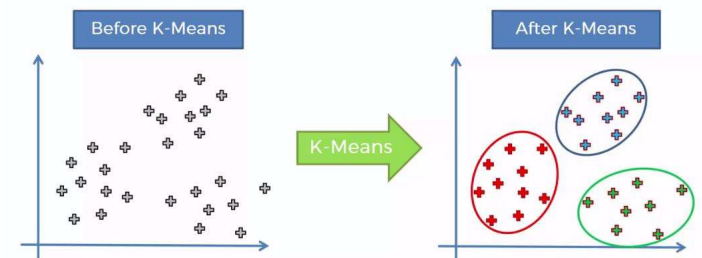
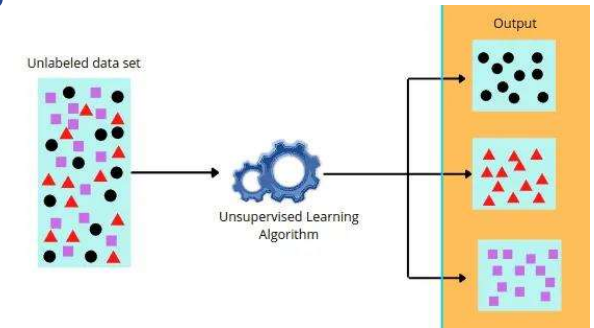
In marketing, these segments enable the identification of customer groups with similar behaviors.

Main Objectives:

- Recognize and analyze customer behavioral patterns
- Enable personalized marketing strategies
- Improve customer experience and retention

K-Means Clustering is applied to group customers based on their RFM characteristics.

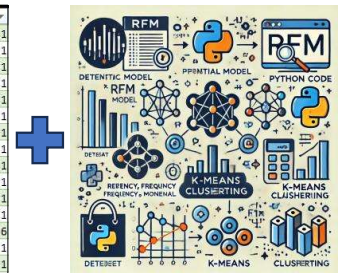
These clusters can then be used to tailor marketing strategies, enabling Contoso to target different customer segments with personalized offerings and improve engagement.



Clustering Results | Interpretation of the results

Data without AI

CustomerKey	Date	PDV	Company	Group	Product	Sub Category	Total Price	Qty
ARSSFN63R71F205R	29/06/2022 00:00	Zilena	ZNGELINI (Z.C.R.Z.F.) SpZ;	XIXTEZA ZUXCOLO-XCHELETRICO	XOXZNT*GRAT 12BUST 200XG	DSRMSCI SNTIINDISMSTORI ED SNTIREUMSTICI	7,43	1
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SCCPLA79D41C034A	10/11/2023 00:00	Ceprieti	EUROSPITZL SpZ;	XANGUE ED ORGANI EZOPOIETICI	SODIO CLORURO ZUROS*0,9% 500XL	SUCCESSNEI DEL SNGUE E SOLUZIONI PERDUSIONSLI	1,99	1
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Data with AI

CustomerKey	Date	PDV	Company	Group	Product	Sub Category	Total Price	Qty	Recency	Frequency	Monetary	Cluster Customer
ARSSFN63R71F205R	29/06/2022 00:00	Zilena	ZNGELINI (Z.C.R.Z.F.) SpZ;	XIXTEZA ZUXCOLO-XCHELETRICO	XOXZNT*GRAT 12BUST 200XG	DSRMSCI SNTIINDISMSTORI ED SNTIREUMSTICI	7,43	1	355	12	14074	Potential Regular
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ARSSFN63R71F205R	09/11/2023 00:00	Zilena	ZNGELINI (Z.C.R.Z.F.) SpZ;	XIXTEZA NERVOXO	TACHIPIRINA*GRAT ZFFZ0BS 500XG	SNSLGSICI	6,82	1	355	12	14074	Potential Regular
ARSSFN63R71F205R	10/11/2023 00:00	Zilena	ERREKZPPZ EUROTERZPICI SpZ;	ALIMENTAZIONE E DIETETICA	FISIORAX 30BUST	SLIMENTI DESTINATI SD UN'SLIMENTAZIONE PSRTICOLSRE	38,5	1	355	12	14074	Potential Regular
SCCPLA79D41C034A	10/11/2023 00:00	Ceprieti	SIT LZBORZTORIO FZRMZC. Srl;	XIXTEZA REXPIRATORIO	RINOCALYPTOL*SPRAY NAS FL 15XL	PREPSRSTI RINOLOGICI	8,51	1	362	5	3938	Potential Regular
SCCPLA79D41C034A	10/11/2023 00:00	Ceprieti	ZBOCZ SpZ SOCIETZ' ZGRICOLZ;	ARTICOLI XANITARI E DIXPOXITIVI ZEDICI	GRINTUSS PZDIATRIC SCIR 180G	PRODOTTI PER LS PROTEZIONE DEGLI SPPSRSTI	16,06	1	362	5	3938	Potential Regular
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PRTVCN88564Z114U	14/11/2023 00:00	Ceprieti	NZMEX Srl;	ALIMENTAZIONE E DIETETICA	SANAGOL GOLA TUSS J FRAG 24CAR	SLIMENTI (SLTRI)	7,94	1	345	82	75233	Occasionale Customer
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ARCNMA48S42H501	11/11/2023 00:00	Rame via Chiene	XOC GENERICI Srl;	ARTICOLI XANITARI E DIXPOXITIVI ZEDICI	RZNVYA TRZ COLL PPIO 10XL	PRODOTTI PER LS PROTEZIONE DEGLI SPPSRSTI	25,01	1	361	51	93938	Occasionale Customer
PSLGLC68T06H501#	13/11/2023 00:00	Rame via Chiene	ZBZFDQXS Srl;	ALIMENTAZIONE E DIETETICA	ISOLA BIO SORGO DRINK 1000XL	SLIMENTI DESTINATI SD UN'SLIMENTAZIONE PSRTICOLSRE	7,2	2	335	134	178415	Regular Customers
PSLGLC68T06H501#	13/11/2023 00:00	Rame via Chiene	BIOTOBIO Srl;	ALIMENTAZIONE E DIETETICA	XIGLIODRINK BRICK IL	SLIMENTI (SLTRI)	7,2	2	335	134	178415	Regular Customers

Introduction to Power BI | Overview of Power BI

Features of Microsoft Power BI:

1. **Data Visualization:** Create interactive and visually appealing charts, graphs, and dashboards.
2. **Data Integration:** Connect to a wide range of data sources, including databases, Excel files, cloud services, and on-premises systems.
3. **Real-Time Analytics:** Analyze data in real-time, allowing for up-to-date insights and decision-making.
4. **Customizable Dashboards:** Build personalized dashboards that display the most relevant information at a glance.
5. **Natural Language Queries:** Use natural language to ask questions about your data and get answers in the form of visuals.
6. **AI and Machine Learning Integration:** Leverage AI features, such as Microsoft Copilot, to gain deeper insights and create predictive models.
7. **Mobile Access:** View and interact with reports and dashboards from mobile devices, ensuring accessibility on the go.
8. **Collaboration and Sharing:** Share reports and collaborate with team members, enhancing teamwork and data-driven decision-making.
9. **Security and Data Governance:** Ensure data security with role-based access, data encryption, and compliance with various regulatory standards.
10. **Scalability:** Scale from small business use to enterprise-wide deployments with Power BI's robust infrastructure.



Using Copilot in Power BI | Create a report page.

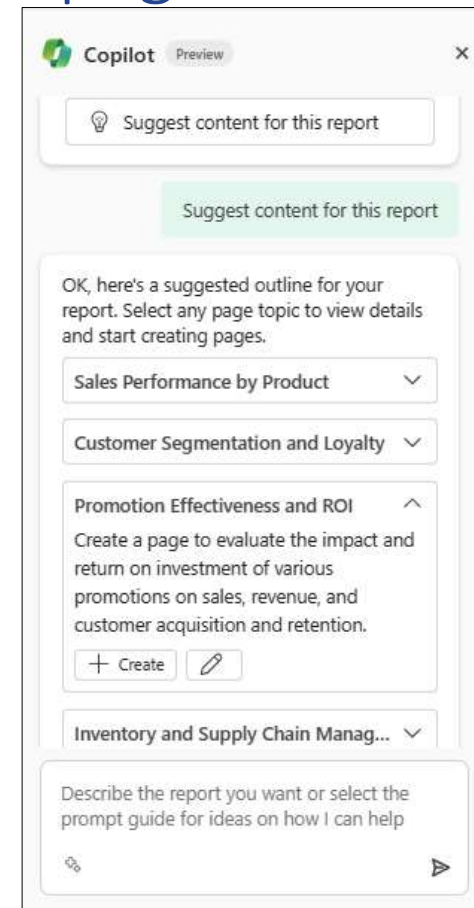
For example Copilot can help you create a report page by identifying the tables, fields, measures, and charts for your data.

If you give Copilot a high-level prompt that's specific to your data, it can generate a report page that you can then customize and modify, using the existing editing tools.

Copilot can help you get started on your report page quickly and save you a lot of time and effort in the process.

Here are some examples of high-level prompts to get you started:

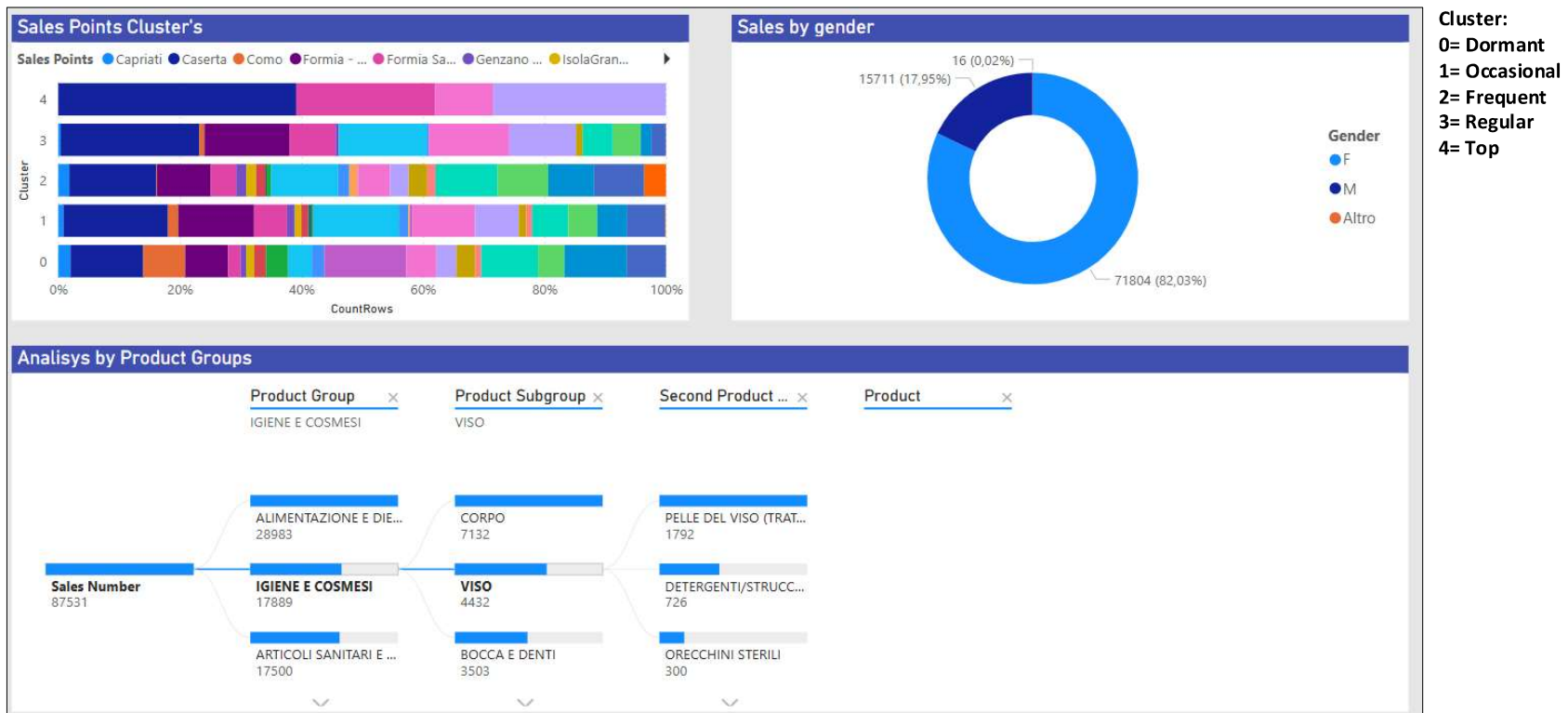
- Sales performance by product
- Customer segmentation and loyalty
- Promotion effectiveness and ROI
- Inventory and supply chain management
- Much more...



Conclusions | Dashboard with Power BI & Copilot

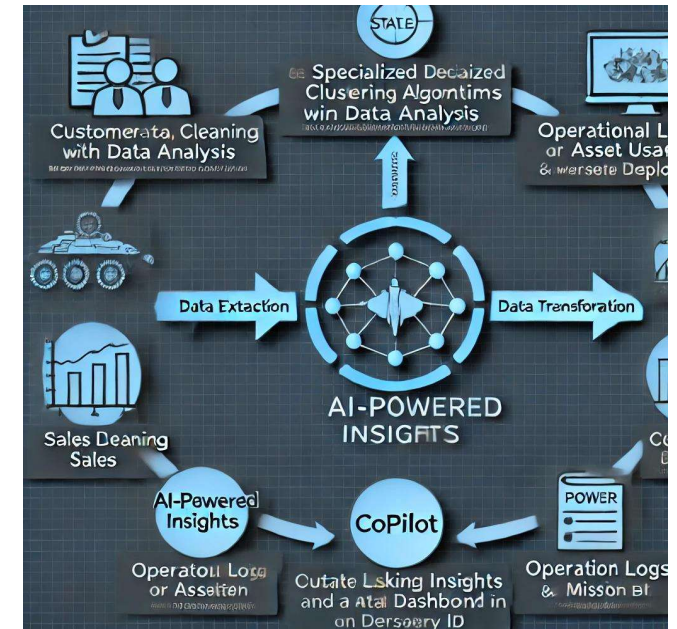
The result obtained using Power BI and Copilot with our previously clustered dataset can be seen in the figure.

The end user is able to obtain cluster graphs preprocessed and previously visible only in the programming environment.



Conclusions and Recap

- 1. Application of Clustering Algorithms:** Specialized clustering algorithms are used for data analysis in both marketing and military fields by selecting models tailored to each field.
- 2. Data Preparation:** The process includes extracting relevant historical data (e.g., customer and sales data for marketing, operational logs and mission data for military), cleaning, and transforming it for clustering.
- 3. Linking Processed Data:** The cleaned data is connected to the original dataset using unique identifiers for more detailed analysis.
- 4. Report Creation with Power BI:** The dataset is loaded into a Power BI workspace to create reports and dashboards, providing insights into resource utilization and mission outcomes in the military context.
- 5. AI Assistance with Copilot:** Copilot aids users in analyzing the dataset and generating reports, making AI-driven insights accessible in critical environments.
- 6. Support with AI and PyTorch:** AI, along with PyTorch, supports both data preparation and presentation (through Power BI and Copilot), enabling quick, data-driven decisions for military strategy and tactics..



Grazie

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