



01418327 : Decision Support and Business Intelligent Systems

ระบบสนับสนุนการตัดสินใจและอัจฉริยะทางธุรกิจ

Decision Support System Architecture

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What Is a Decision Support System (DSS)?

- ❖ It's a **computer solution** using **decision logic** and **statistical data**.
- ❖ To help **managers** for **planning** and find the **solution** to making the decision.

DSS is an interactive information system consisting of hardware, software, data and model

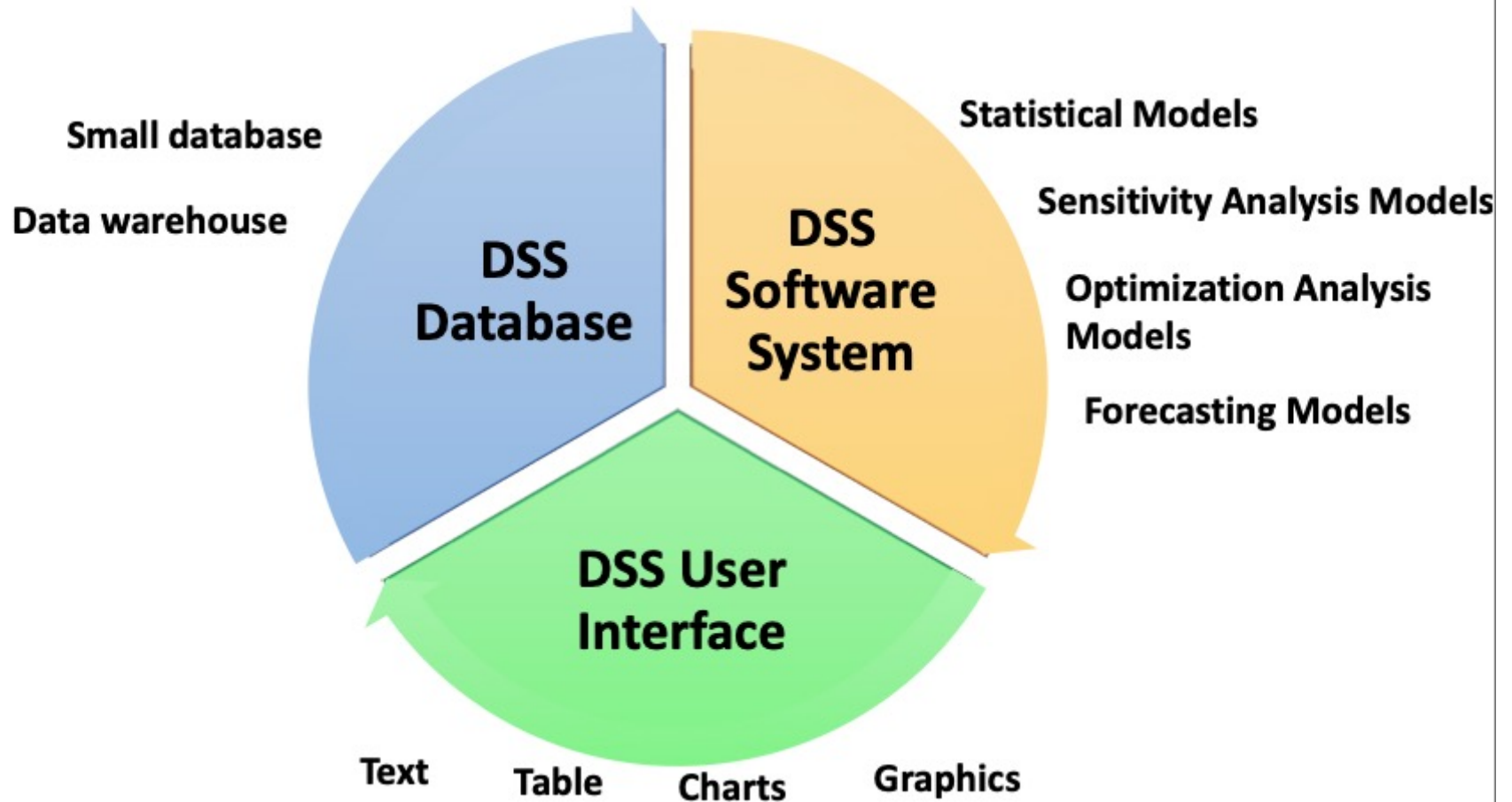
Who Uses Decision Support Systems?

- ❖ The people who are **in a position to solve structuring errors** are usually **upper managers** of some kind.

Requirements

- ❖ Be interactive
- ❖ Incorporate the human element
- ❖ Use internal and external data
- ❖ Include models
- ❖ Support decision makers

Components of Decision Support Systems



Key Elements of DSS

❖ **Organizational data:**

- Relevant information and knowledge.

❖ **Model:**

- Mathematical and statistical formulars that help to analyze data.

❖ **User interface:**

- Dashboards or other interfaces allowing users to interact with and view results

Questions

- ❖ What type of data should be collected?
- ❖ How recent should the collected data?
- ❖ How should the data be organized?
- ❖ How should the data be updated?
- ❖ How should the data be stored?
- ❖ What type of file structure should be used?
- ❖ What type of user access should be used?
- ❖ What type of response time is required?
- ❖ What type of security measures are needed?

Type of features to support decision making

❖ What-IF

- This analysis shows the effect of change in one variable

❖ Goal-Seeking

- This is the reverse of what-if analysis. It asks what has to be done to achieve a particular goal.

Type of features to support decision making

❖ Sensitivity

- This enables you to apply different variables,
 - Such as determining the maximum price you could pay for raw material and still make a profit.

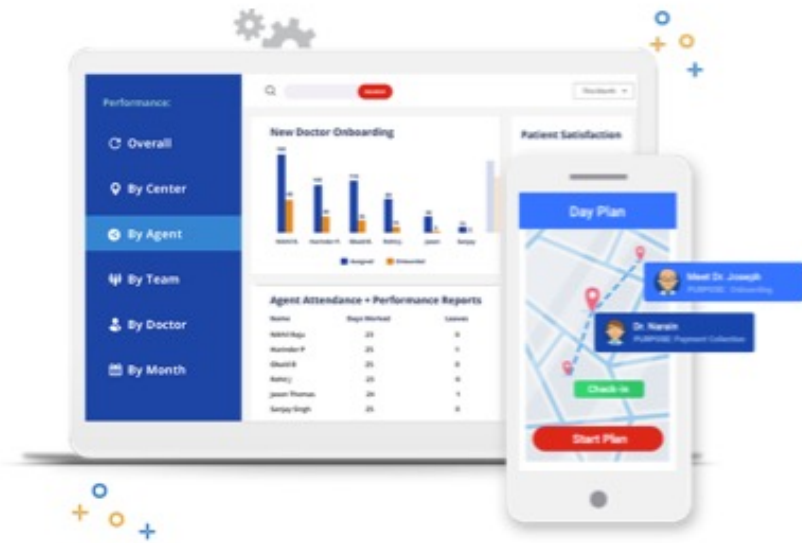
❖ Exception Reporting

- This monitors the performance of variables that are outside a defined range,
- such as pinpointing the region that generated the highest total sales or the production center that went over budget

Level of DSS System Operate

❖ Common Day-to-Day Decision Support System

- GPS route planning
- Crop-planning tools for farmers
- Medical diagnosis software



Crop Rotation Example

Year 1	 Tomato Bed 1	 Legume Bed 2	 Carrot Bed 3
Year 2	 Carrot Bed 1	 Tomato Bed 2	 Legume Bed 3
Year 3	 Legume Bed 1	 Carrot Bed 2	 Tomato Bed 3

HIGHLIGHT your Crop Plan Worksheet

	A	B	C	D	E	F	G	H
1	Crop	Harvest Date	DTM	Field Date	Harvest Needs	Yield (bunch per bedfoot)	Field SF	Bedfeet To Plant
2				A2-B2				D2*F2/E2
3	Lettuce	3-Jun	28	6-May	150	2.7	1.3	72
4	Lettuce	17-Jun	28	20-May	150	2.7	1.3	72
5	Carrots	1-Jul	56	6-May	150	1.5	1.3	130
6	Lettuce	1-Jul	28	3-Jun	150	2.7	1.3	72
7	Carrots	15-Jul	56	20-May	150	1.5	1.3	130
8	Lettuce	15-Jul	28	17-Jun	150	2.7	1.3	72

Level of DSS System Operate

❖ Decision Support System Examples That Use Historical Data

- Descriptive analytics:
 - Sales results
 - Inventory turnover
 - Revenue growth
- Diagnostic(วินิจฉัย) analytics:
 - Digs **a bit deeper** to reveal results and explains reasons.
- Business intelligence (BI):
 - Develop and run queries that are used to guide and support decision-making.
- ERP dashboards:
 - That can monitor a variety of performance indicators.

Level of DSS System Operate

❖ Manual and Hybrid Decision Support System

- SWOT analysis
- Cost benefit analyses.

<https://www.thebalancecareers.com/cost-benefit-analysis-2275277>

Benefits		Costs
• Purchase of Machine		- \$20,000
• Installation of Machine		- 3,125
• Increased Revenue		27,520
• Quality Increase Revenue		358
• Reduced material costs		1,128
• Reduced Labor Costs		18,585
• New Operator		- 8,321
• Utilities		- 250
• Insurance		- 180
• Square footage		0

Net Savings per Month
\$15,715

Chootong

SWOT ANALYSIS



<https://th.wikipedia.org/>

8

Level of DSS System Operate

❖ DSS Software That Helps Predict Future Trends

- Have to understand **what happened in the past**, and **why it happened**, to **predict the future**.
 - Data Mining
 - Statistic tools
 - Machine Learning
- Example:
 - Banks use these techniques to detect fraud(การฉ้อโกง)
 - Insurance companies use them to evaluate risk
 - Ride-hailing firms to determine ticket prices based on demand

BI and Data Science

Business Intelligence

Data Science

Focus on	<ul style="list-style-type: none">• Descriptive analytics• Diagnosis analytics	<ul style="list-style-type: none">• Predictive analytics• Data Science
Dataset	<ul style="list-style-type: none">• Limited data sets• Cleansed data• Simple models	<ul style="list-style-type: none">• Large scale data sets• More type of data• Complex data models
Support	Causation: what happen and why?	Correlation: new insight, More accurate answer

Business Intelligence



<https://www.9experttraining.com/articles/power-bi-desktop>

Data Science

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

```
diamonds= pd.read_csv("/content/drive/MyDrive/Colab Notebooks/Diamonds/data/diamonds.csv")
print(diamonds.head(5))
```

	carat	cut	color	clarity	depth	table	price	x	y	z
0	0.23	Ideal	E	SI2	61.5	55.0	326	3.95	3.98	2.43
1	0.21	Premium	E	SI1	59.8	61.0	326	3.89	3.84	2.31
2	0.23	Good	E	VS1	56.9	65.0	327	4.05	4.07	2.43
3	0.29	Premium	I	VS2	62.4	58.0	334	4.20	4.23	2.43
4	0.31	Good	J	SI2	63.3	58.0	335	4.34	4.35	2.43

```
Carat= diamonds.carat >0.8
Cut = diamonds.cut > 4.0
Color = diamonds.color > 6.0
Choose = Carat & Cut & Color
diamonds[Choose]
```

	carat	cut	color	clarity	depth	table	price
341	0.91	5.0	7.0	2.0	62.2	57.0	2803.0
624	0.92	5.0	7.0	2.0	61.9	56.0	2840.0
2291	0.81	5.0	7.0	2.0	61.9	54.0	3160.0
2548	0.83	5.0	7.0	2.0	62.1	56.0	3207.0
2690	0.84	5.0	7.0	2.0	61.8	56.0	3246.0
...
27547	1.61	5.0	7.0	4.0	62.0	55.0	18318.0
27562	2.06	5.0	7.0	2.0	60.3	56.0	18371.0



Thank You