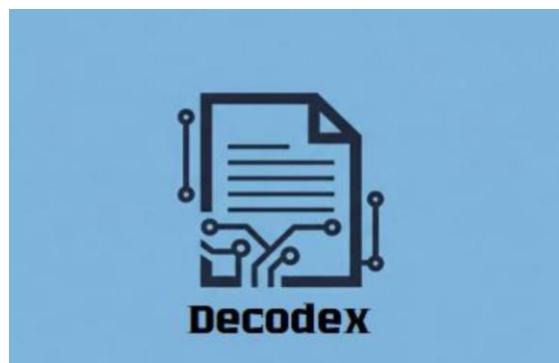


ISE 222

Data Intelligence and Decision Support Systems Project Assignment



Production Optimization Decision
Support System (DSS)

Group Members

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Production Optimization Decision Support System (DSS)

1. Abstract/Summary

This report presents the design and implementation of a Flower Sales Planning Decision Support System (DSS) developed in Microsoft Excel using VBA and interactive charts. The system is designed to assist users in forecasting and planning flower purchases by analyzing historical sales data based on color and type preferences. This helps prevent overstock, increases sales, and enhances customer satisfaction.

2. Introduction

In retail flower sales, understanding customer preferences and sales trends is critical for effective inventory planning. This project addresses the need for a user-friendly tool that can help shop owners and planners analyze past sales and plan future purchases accordingly. The system uses familiar tools like Excel and VBA, making it accessible and practical for small business use.

a. Objective

Develop a DSS in Excel where users can enter flower color, type, and quantity, and the system records the data, analyzes it, and visualizes the trends to support future purchasing decisions.

b. Problem Definition

Retail flower shops often struggle with balancing inventory and meeting customer demands. Overstocking leads to waste, while understocking results in lost sales. This DSS is designed to analyze past sales data by flower color and type to support data-driven stock planning.

c. Proposed Solution

The proposed solution is a VBA-based DSS with a graphical user form in Excel. Users input flower sales data which is stored in a worksheet. Upon clicking the Analyze button, the data is grouped and analyzed, and results are shown both in a list and on a chart. The system also identifies the most preferred flower color and type.

3. Development Process Flow

1. Data Entry: User selects flower color, type, and enters quantity.
2. Add Button: The data is saved in Sheet1.
3. Analyze Button: Aggregates sales data.
4. Chart and Listing: Displays results to the user.
5. Result: Identifies the most preferred color and type.

4.DSS Design

The DSS consists of:

- A worksheet (Sheet1) to store sales data (date, color, type, quantity).
- A VBA-powered UserForm for data input and interaction.
- Buttons to add and analyze data.
- A chart to visualize sales trends.
- Labels and list boxes to display analysis results.

a. Data

Each record includes:

- Timestamp (recorded using Now function and formatted as "dd.mm.yyyy hh:mm:ss")
- Flower Color
- Flower Type
- Quantity Sold

b. Interface (UI)

The UserForm contains the following controls:

Control Type	Name	Description
ComboBox	cmbColor	Select flower color
ComboBox	cmbType	Select flower type
TextBox	txtQuantity	Enter sales quantity
CommandButton	btnAdd	Add entry to Sheet1
CommandButton	btnAnalyze	Analyze sales data
ListBox	lstResults	Display analysis results
Label	lblTopPick	Display most preferred flower color

Final UI is seen below:

UserForm1

Renk seçin: Çiçek Türü: Adet girin:

Ekle Analiz

En çok tercih edilen renk:

c. Formulas and Models Used in the DSS

- **Total Sales Calculation:**

$\text{sales}(\text{typeIndex}, \text{colorIndex}) = \text{sales}(\text{typeIndex}, \text{colorIndex}) + \text{quantity}$

- **Finding the Most Preferred Color:**

If $\text{quantity} > \text{maxQuantity}$ Then

$\text{maxQuantity} = \text{quantity}$

$\text{maxColor} = \text{color}$

End If

- **Input Validation (Numeric Only):**

```
If Not IsNumeric(Chr(KeyAscii)) And KeyAscii <> 8 Then
```

```
    KeyAscii = 0
```

```
End If
```

- **Chart Creation:**

```
graf.Chart.ChartType = xlColumnClustered
```

```
graf.Chart.SetSourceData ...
```

- **Timestamping Sales:**

```
Sheets("Sheet1").Cells(lastRow, 1).Value = Now
```

```
Sheets("Sheet1").Cells(lastRow, 1).NumberFormat = "dd.mm.yyyy  
hh:mm:ss"
```

5. Results

Upon implementation, the DSS successfully recorded and analyzed sales data by color and type. It consistently identified the most sold flower characteristics and displayed the data on a clustered column chart. The system helped users make more informed stocking decisions.

6. Conclusion

The Flower Sales Planning DSS is a practical tool for small flower shops aiming to optimize inventory based on actual sales trends. It is simple, efficient, and enhances decision-making with visual and data-driven insights. Future improvements could include seasonal trend analysis and integration with external data sources.

7. Appendix

Responsibility Matrix The table below outlines the roles and responsibilities of each team member during the development of the DSS project:

Task	Team Member	Role	Responsibility
Problem Identification	Fevzi Samed Ünal	Analyst	
Requirement Gathering	Fevzi Samed Ünal	Coordinator	
Interface Design	Anıl Güngör	UI Designer	
VBA & Solver Integration	Anıl Güngör	Developer	
Chart& Visualization	Team	Data Visulizer	
Testing & Validation	Team	All	
Documentation	Furkan Tahir Anaç	Alayst	
Error Control	Furkan Tahir Anaç	controller	