PRN No. IBM7-CP5-09856TU

SPSS PROJECT Using IBM SPSS MODELER and SPSS STATISTICS Food Demand Analysis

Descriptive Statistics

	Mean	Std. Deviation	N
Base Price	199.7000	33.67706	15
Week Number	3.00	1.464	15
Center ID	2.00	.845	15
Meal ID	108.00	4.472	15
Checkout Price	219.7413	37.04199	15
Number of Orders	44.13	5.502	15

Descriptive Statistics: The mean base price is 199.7 with a standard deviation of 33.68 across 15 observations. Mean values for other variables include a week number of 3.00, center ID of 2.00, meal ID of 108.00, checkout price of 219.74, and number of orders of 44.13

Correlations

		Base Price	Week Number	Center ID	Meal ID	Checkout Price	Number of Orders
Pearson Correlation	Base Price	1.000	-.172	-.011	-.171	1.000	-.905
	Week Number	-.172	1.000	.000	.982	-.175	.071
	Center ID	-.011	.000	1.000	.189	-.013	.031
	Meal ID	-.171	.982	.189	1.000	-.174	.075
	Checkout Price	1.000	-.175	-.013	-.174	1.000	-.905
	Number of Orders	-.905	.071	.031	.075	-.905	1.000
Sig. (1-tailed)	Base Price	.	.269	.485	.271	.000	.000
	Week Number	.269	.	.500	.000	.266	.401
	Center ID	.485	.500	.	.250	.482	.457
	Meal ID	.271	.000	.250	.	.267	.395
	Checkout Price	.000	.266	.482	.267	.	.000
	Number of Orders	.000	.401	.457	.395	.000	.
N	Base Price	15	15	15	15	15	15
	Week Number	15	15	15	15	15	15
	Center ID	15	15	15	15	15	15
	Meal ID	15	15	15	15	15	15
	Checkout Price	15	15	15	15	15	15
	Number of Orders	15	15	15	15	15	15

Correlations:

- Base price has a negative correlation with the number of orders (-0.905), indicating a strong inverse relationship.
- The correlation between checkout price and number of orders is -0.905, showing that as checkout price increases, the number of orders decreases.
- Other correlations (e.g., with week number, center ID, and meal ID) show weaker relationships.

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Number of Orders, Center ID, Week Number, Checkout Price[b]	.	Enter

a. Dependent Variable: Base Price

b. Tolerance = .000 limits reached.

Regression Model:

- A regression model was run with base price as the dependent variable and predictors including week number, center ID, meal ID, checkout price, and number of orders.
- The model produced an R-squared value of 1.000, indicating that 100% of the variance in base price is explained by the predictors, though this may suggest overfitting.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	1.000[a]	1.000	1.000	.23833	1.000	69880.099	4	10	.000

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15877.457	4	3969.364	69880.099	.000[b]
	Residual	.568	10	.057		
	Total	15878.025	14			

a. Dependent Variable: Base Price

b. Predictors: (Constant), Number of Orders, Center ID, Week Number, Checkout Price

ANOVA Results:

The regression model shows a significant F-value (F = 69880.099, p < 0.001) confirming that the predictors collectively explain a significant portion of the variance in base price

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-.257	2.134		-.121	.906					
	Week Number	.063	.045	.003	1.390	.195	-.172	.402	.003	.927	1.079
	Center ID	.088	.075	.002	1.161	.273	-.011	.345	.002	.998	1.002
	Checkout Price	.909	.004	1.000	217.290	.000	1.000	1.000	.411	.169	5.919
	Number of Orders	-.004	.028	-.001	-.138	.893	-.905	-.044	.000	.173	5.771

a. Dependent Variable: Base Price

Coefficients:

Checkout price has a strong positive effect (B = 0.909, p < 0.001) on the base price, suggesting that higher checkout prices are associated with higher base prices.

The number of orders has a non-significant, slightly negative coefficient (B = -0.004) suggesting minimal effect on base price.

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	Meal ID	.[b]	.	.	.	.000	.	.000

a. Dependent Variable: Base Price

b. Predictors in the Model: (Constant), Number of Orders, Center ID, Week Number, Checkout Price

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions				
				(Constant)	Week Number	Center ID	Checkout Price	Number of Orders
1	1	4.693	1.000	.00	.01	.01	.00	.00
	2	.169	5.277	.00	.70	.22	.00	.00
	3	.102	6.795	.00	.17	.76	.01	.00
	4	.036	11.389	.00	.05	.01	.06	.03
	5	.001	92.042	1.00	.08	.00	.93	.96

a. Dependent Variable: Base Price

Collinearity Diagnostics:

The Variance Inflation Factor (VIF) for checkout price is 5.919 and for number of orders is 5.771 suggesting potential multicollinearity, especially between these two predictors.

Residuals Statistics[a]

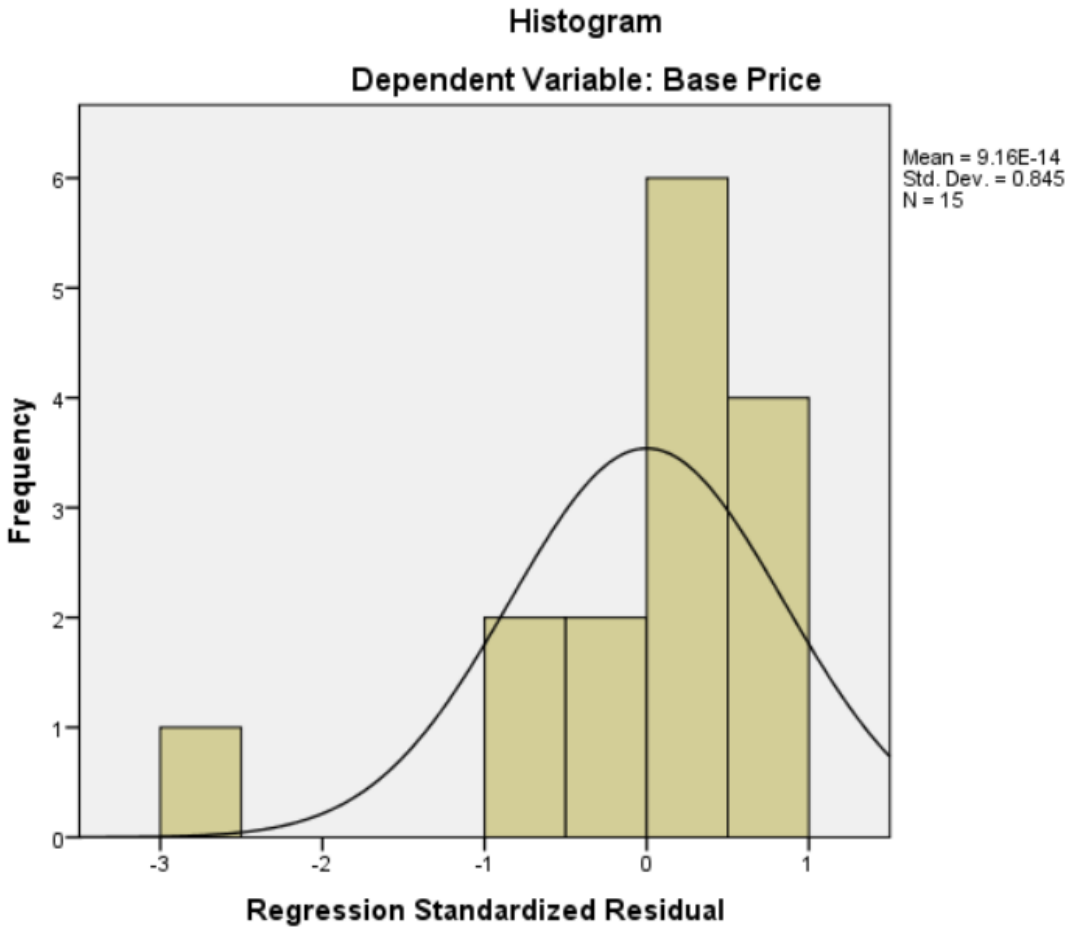
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	145.3809	267.3706	199.7000	33.67646	15
Residual	-.62774	.20332	.00000	.20143	15
Std. Predicted Value	-1.613	2.009	.000	1.000	15
Std. Residual	-2.634	.853	.000	.845	15

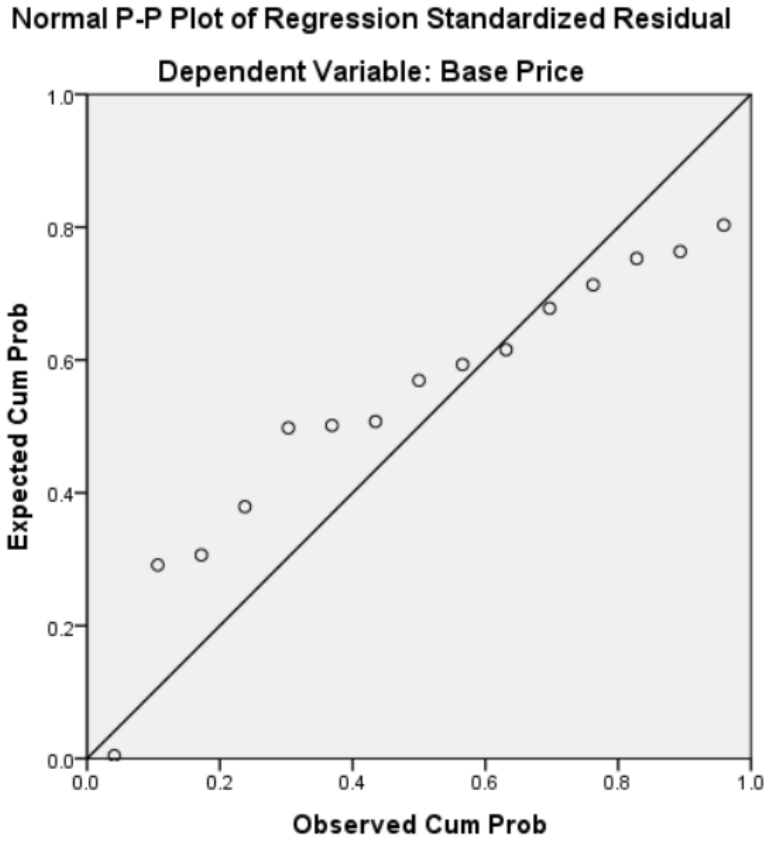
a. Dependent Variable: Base Price

Residuals:

The residuals have a mean of 0.0000, with a standard deviation of 0.20143, indicating the residual distribution aligns closely with the model's predicted values.

Charts





Mean Base Price: The average base price across 15 entries is 199.7, with a standard deviation of 33.68.

Mean Values: The dataset shows averages for week number (3.00), center ID (2.00), meal ID (108.00) checkout price (219.74), and number of orders (44.13).

Strong Negative Correlation: Base price and number of orders show a strong inverse relationship (correlation = -0.905).

Checkout Price and Number of Orders: The checkout price is strongly negatively correlated with the numbe orders (correlation = -0.905).

Regression Analysis: The regression model explains 100% of the variance in base price, as indicated by an R-squared of 1.000.

ANOVA Significance: The model's predictors are collectively significant (F = 69880.099, p < 0.001) meaning they explain a notable portion of base price variation.

Predictor Impact: Checkout price significantly influences base price positively (B = 0.909, p < 0.001).

Minimal Impact of Orders: The number of orders has a small, non-significant negative impact on base price (B = -0.004).

Multicollinearity Concern: High VIF values for checkout price (5.919) and number of orders (5.771) indicate possible multicollinearity.

Residual Consistency: Residuals have an average of zero with a standard deviation of 0.20143, showing consistency with the model's predictions

Data Set

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Visible: 6 of 6 Variables

	base_price	week	center_id	meal_id	checkout_price	num_orders	var	var	var	var	var	var	var	var	var	var	var	var	va
1	198.50	1	1	101	219.35	45													
2	245.75	1	2	102	270.33	38													
3	167.25	1	3	103	184.00	52													
4	210.50	2	1	104	231.55	41													
5	189.75	2	2	105	208.73	47													
6	234.25	2	3	106	257.68	35													
7	176.50	3	1	107	194.15	49													
8	223.75	3	2	108	246.13	43													
9	156.25	3	3	109	171.88	51													
10	201.50	4	1	110	221.65	39													
11	178.75	4	2	111	196.63	46													
12	267.25	4	3	112	293.98	36													
13	187.50	5	1	113	206.25	48													
14	212.75	5	2	114	234.03	42													
15	145.25	5	3	115	159.78	50													
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Data View | Variable View

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	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1	base_price	Numeric	8	2	Base Price	None	None	8	Right	Scale	Input
2	week	Numeric	8	0	Week Number	None	None	8	Right	Scale	Input
3	center_id	Numeric	8	0	Center ID	None	None	8	Right	Nominal	Input
4	meal_id	Numeric	8	0	Meal ID	None	None	8	Right	Nominal	Input
5	checkout_pr...	Numeric	8	2	Checkout Price	None	None	8	Right	Scale	Input
6	num_orders	Numeric	8	0	Number of Orders	None	None	8	Right	Scale	Input
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Data View | Variable View

IBM SPSS Statistics Processor is ready

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