```
EXAMINE VARIABLES=sales BY online_store gender
 /PLOT BOXPLOT HISTOGRAM NPPLOT
 /COMPARE GROUPS
 /STATISTICS DESCRIPTIVES
 /CINTERVAL 95
 /MISSING LISTWISE
 /NOTOTAL.
```

Explore

Notes

Output Created		09-JUN-2021 14:29:18
Comments		
Input	Data	C:\Users\Toshiba\Documents\OVGU\SS2021\Marketing Methods & Analysis\Exercise\EX4-ANOVA\Case Study\Dataset\Case Study ANOVA.sav
	Active Dataset	DataSet4
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	30
Missing Value Handling	Definition of Missing	User-defined missing values for dependent variables are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any dependent variable or factor used.
Syntax		EXAMINE VARIABLES=sales BY online_store gender /PLOT BOXPLOT HISTOGRAM NPPLOT /COMPARE GROUPS /STATISTICS DESCRIPTIVES /CINTERVAL 95 /MISSING LISTWISE /NOTOTAL.
Resources	Processor Time	00:00:08.19
	Elapsed Time	00:00:08.51

Online store ease-of-use

Case Processing Summary

		Cases				
		Valid		Missing		Total
	Online store ease-of-use	N	Percent	N	Percent	N
Sales in GBP	easy	10	100.0%	0	0.0%	10
	neutral	10	100.0%	0	0.0%	10
	difficult	10	100.0%	0	0.0%	10

Case Processing Summary

		Cases
		Total
	Online store ease-of-use	Percent
Sales in GBP	easy	100.0%
	neutral	100.0%
	difficult	100.0%

Descriptives

	Online store ease-of-use			Statistic	Std. Error
Sales in GBP	easy	Mean		318.90	15.704
		95% Confidence Interval for Mean	Lower Bound	283.38	
			Upper Bound	354.42	
		5% Trimmed Mean		317.17	
		Median		313.50	
		Variance		2466.100	
		Std. Deviation		49.660	
		Minimum		256	
		Maximum		413	
		Range		157	
		Interquartile Range		80	
		Skewness		.505	.687
		Kurtosis		-.215	1.334
	neutral	Mean		291.80	13.112
		95% Confidence Interval for Mean	Lower Bound	262.14	
			Upper Bound	321.46	
		5% Trimmed Mean		292.11	
		Median		289.00	
		Variance		1719.289	
		Std. Deviation		41.464	
		Minimum		230	

Descriptives

Online store ease-of-use			Statistic	Std. Error
		Maximum	348	
		Range	118	
		Interquartile Range	74	
		Skewness	-.056	.687
		Kurtosis	-1.407	1.334
	difficult	Mean	259.30	18.509
		95% Confidence Interval for Mean — Lower Bound	217.43	
		95% Confidence Interval for Mean — Upper Bound	301.17	
		5% Trimmed Mean	259.89	
		Median	262.00	
		Variance	3426.011	
		Std. Deviation	58.532	
		Minimum	178	
		Maximum	330	
		Range	152	
		Interquartile Range	121	
		Skewness	-.125	.687
		Kurtosis	-1.655	1.334

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk	
	Online store ease-of-use	Statistic	df	Sig.	Statistic	df
Sales in GBP	easy	.126	10	.200*	.961	10
	neutral	.175	10	.200*	.939	10
	difficult	.140	10	.200*	.913	10

Tests of Normality

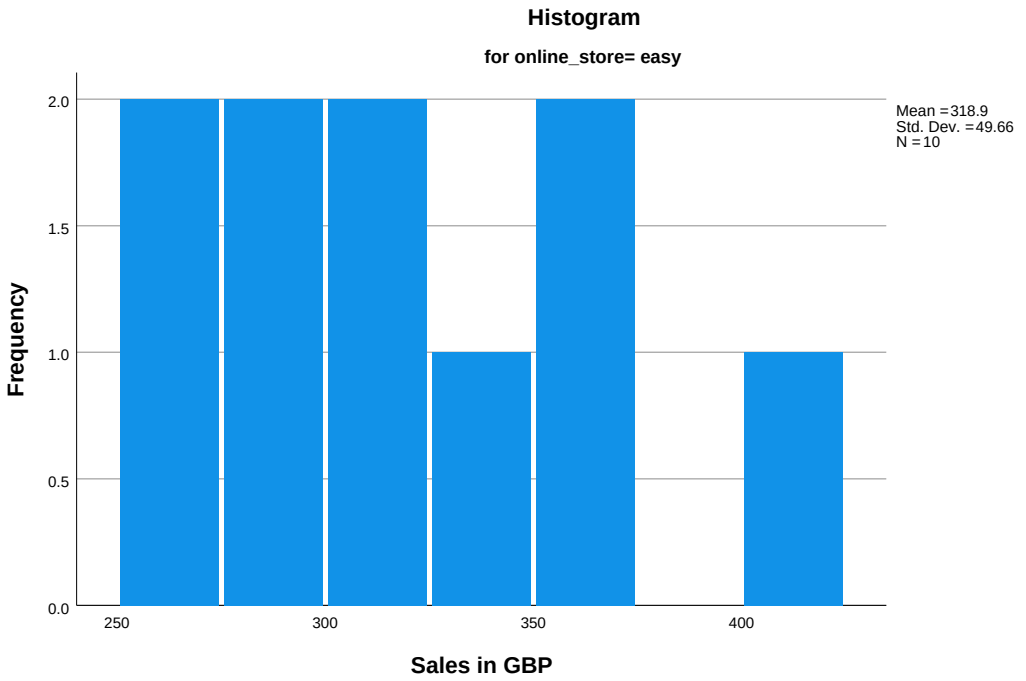
		Shapiro-...
	Online store ease-of-use	Sig.
Sales in GBP	easy	.797
	neutral	.539
	difficult	.299

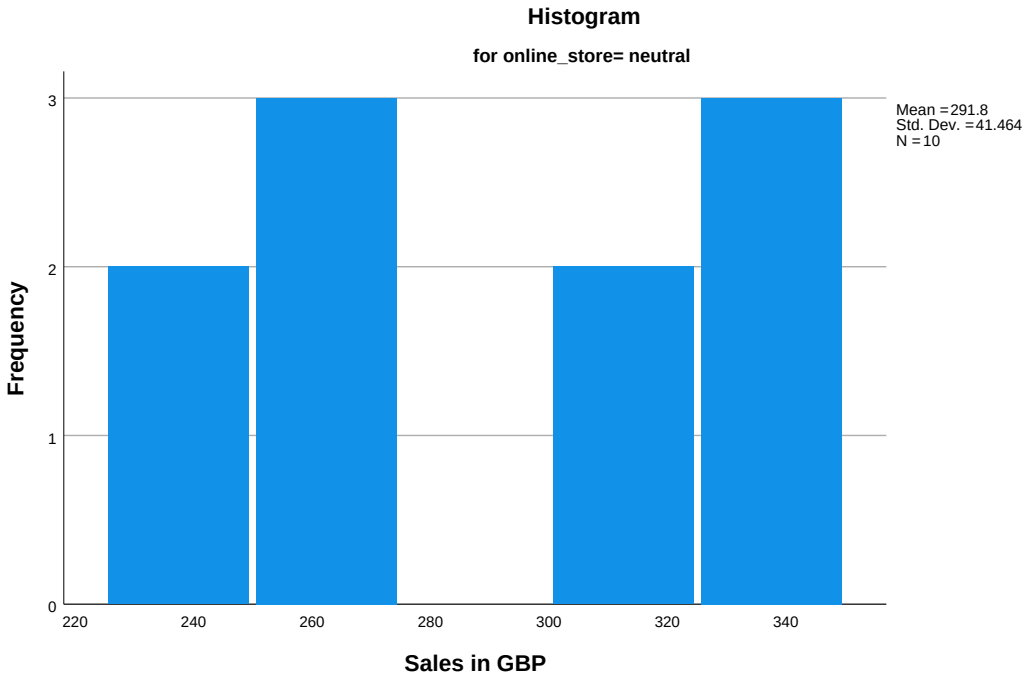
*. This is a lower bound of the true significance.

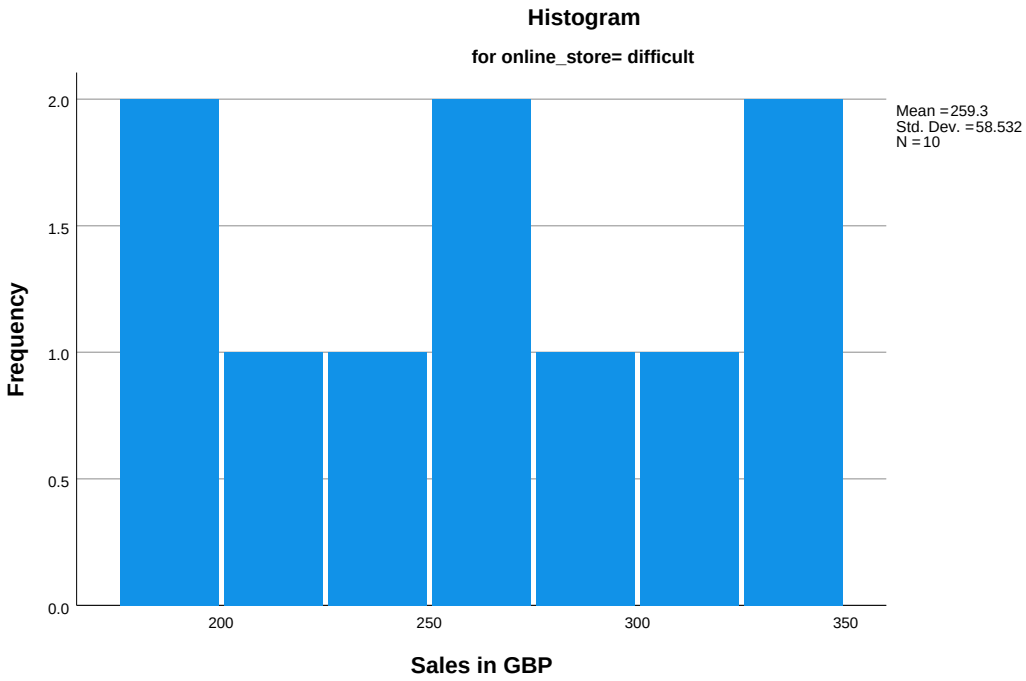
a. Lilliefors Significance Correction

Sales in GBP

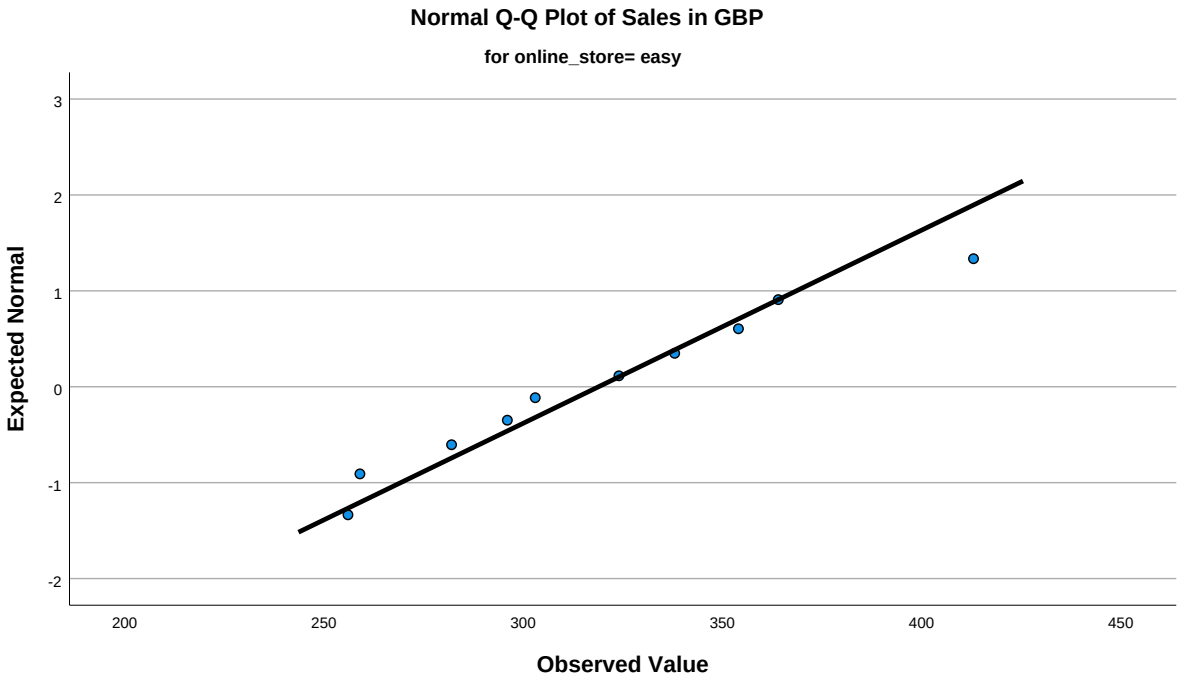
Histograms

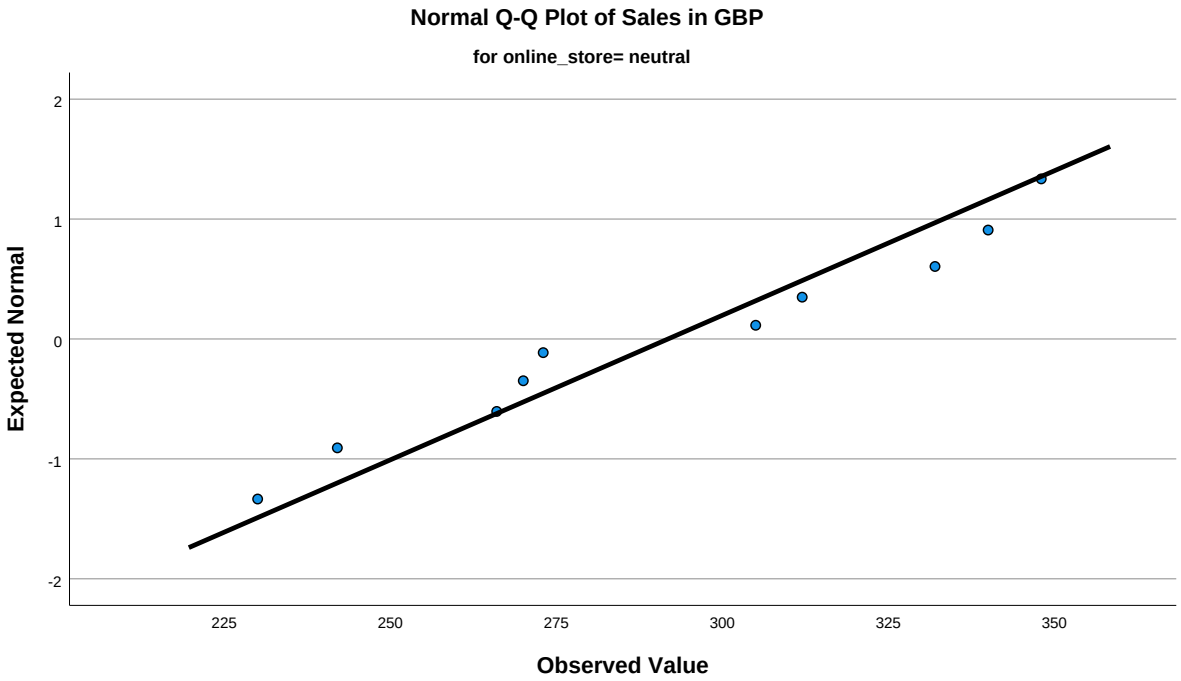

Histogram
for online_store= easy
Mean =318.9
Std. Dev. =49.66
N =10
Frequency
2.0
1.5
1.0
0.5
0.0
250
300
350
400
Sales in GBP

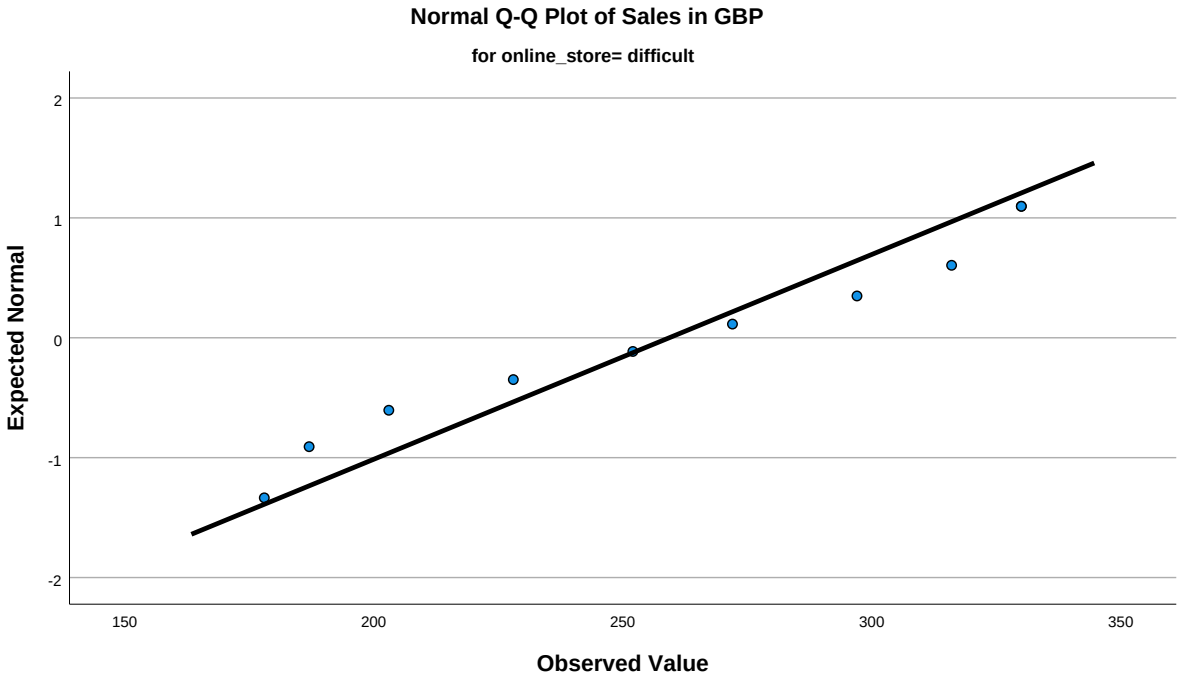

Histogram
for online_store= neutral
Mean =291.8
Std. Dev. =41.464
N =10
Frequency
3
2
1
0
220
240
260
280
300
320
340
Sales in GBP



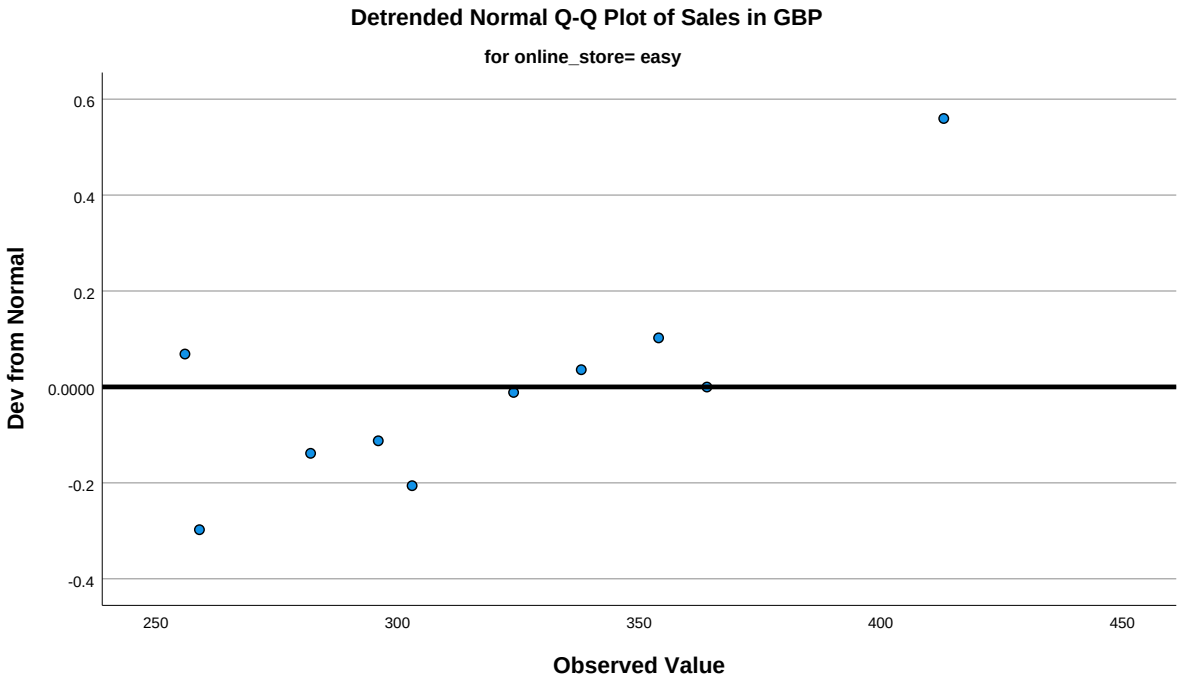
Normal Q-Q Plots

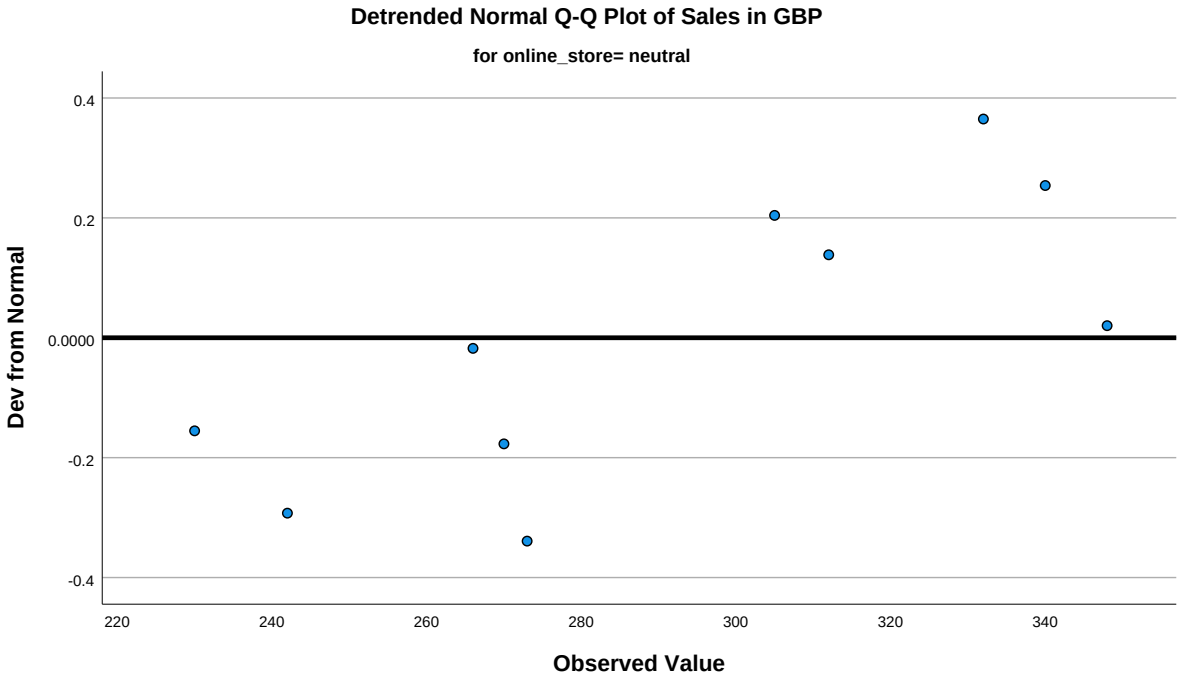


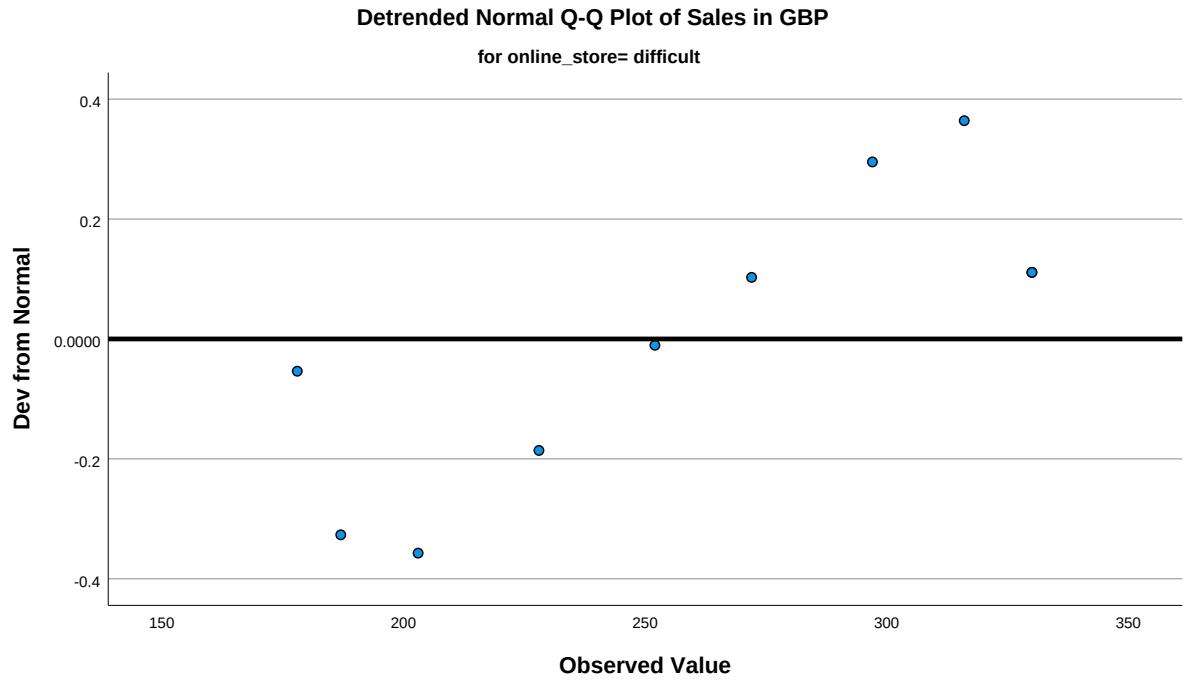


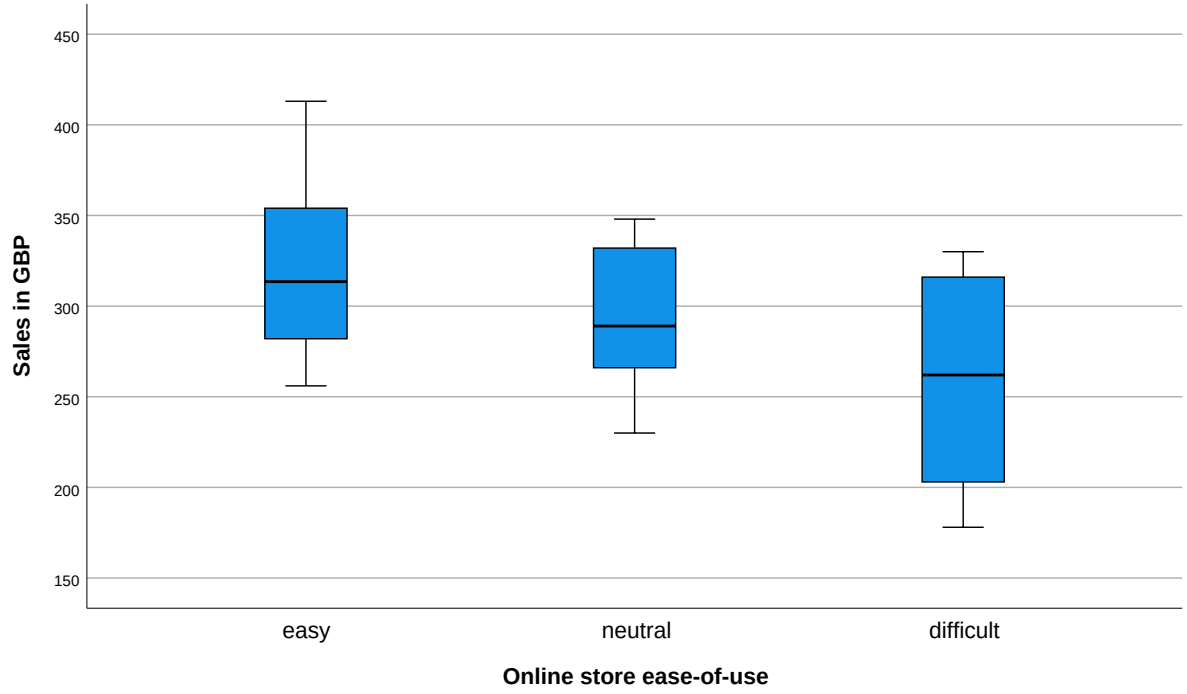


Detrended Normal Q-Q Plots


Detrended Normal Q-Q Plot of Sales in GBP
for online_store= easy
Dev from Normal
0.6
0.4
0.2
0.0000
-0.2
-0.4
250
300
350
400
450
Observed Value


Detrended Normal Q-Q Plot of Sales in GBP
for online_store= neutral
Dev from Normal
0.4
0.2
0.0000
-0.2
-0.4
220
240
260
280
300
320
340
Observed Value


Detrended Normal Q-Q Plot of Sales in GBP
for online_store= difficult
Dev from Normal
0.4
0.2
0.0000
-0.2
-0.4
150
200
250
300
350
Observed Value


Sales in GBP
450
400
350
300
250
200
150
easy
neutral
difficult
Online store ease-of-use

Gender

Case Processing Summary

		Cases					
		Valid		Missing		Total	
	Gender	N	Percent	N	Percent	N	Percent
Sales in GBP	male	15	100.0%	0	0.0%	15	100.0%
	female	15	100.0%	0	0.0%	15	100.0%

Descriptives

	Gender			Statistic	Std. Error
Sales in GBP	male	Mean		270.00	13.097
		95% Confidence Interval for Mean	Lower Bound	241.91	
			Upper Bound	298.09	
		5% Trimmed Mean		270.44	
		Median		266.00	
		Variance		2572.857	
		Std. Deviation		50.723	
		Minimum		178	
		Maximum		354	
		Range		176	
		Interquartile Range		63	
		Skewness		-.149	.580
		Kurtosis		-.276	1.121
	female	Mean		310.00	13.503
		95% Confidence Interval for Mean	Lower Bound	281.04	
			Upper Bound	338.96	
		5% Trimmed Mean		310.22	
		Median		316.00	
		Variance		2735.143	
		Std. Deviation		52.299	
		Minimum		203	
		Maximum		413	
		Range		210	
		Interquartile Range		67	
		Skewness		-.313	.580
		Kurtosis		.712	1.121

Tests of Normality

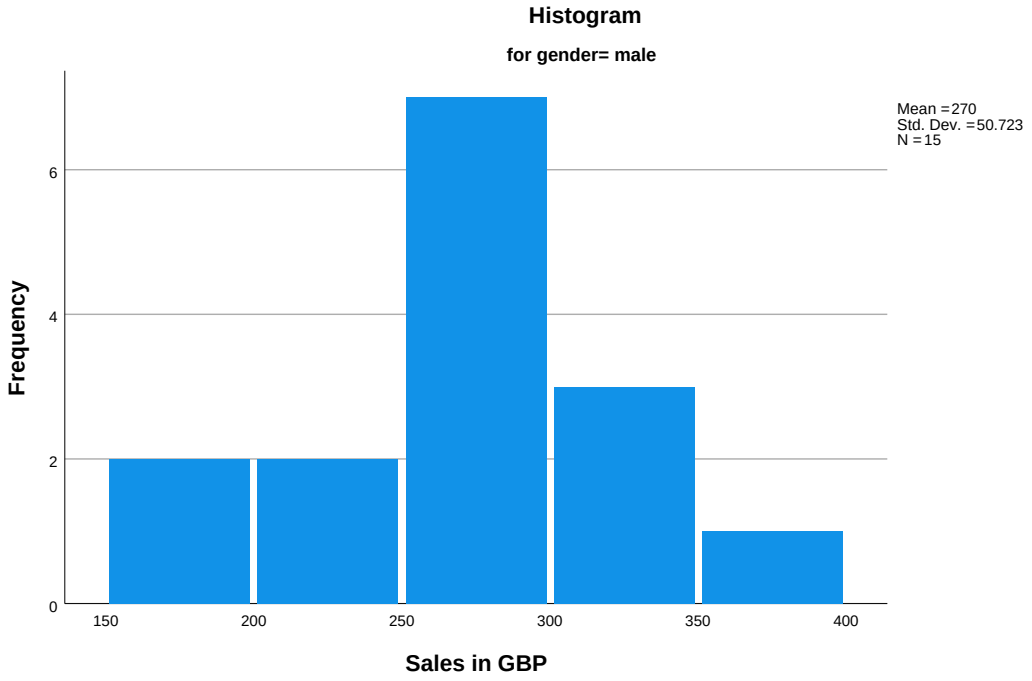
	Gender	Kolmogorov-Smirnov[a] Statistic	df	Sig.	Shapiro-Wilk Statistic	df	Sig.
Sales in GBP	male	.095	15	.200*	.969	15	.837
	female	.128	15	.200*	.969	15	.849

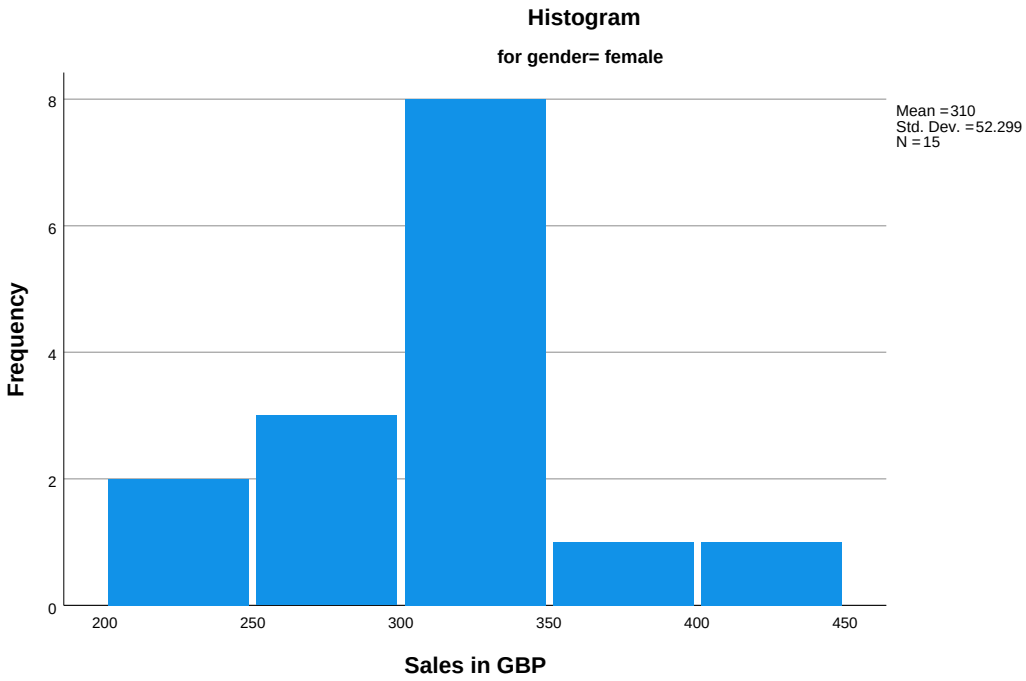
*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

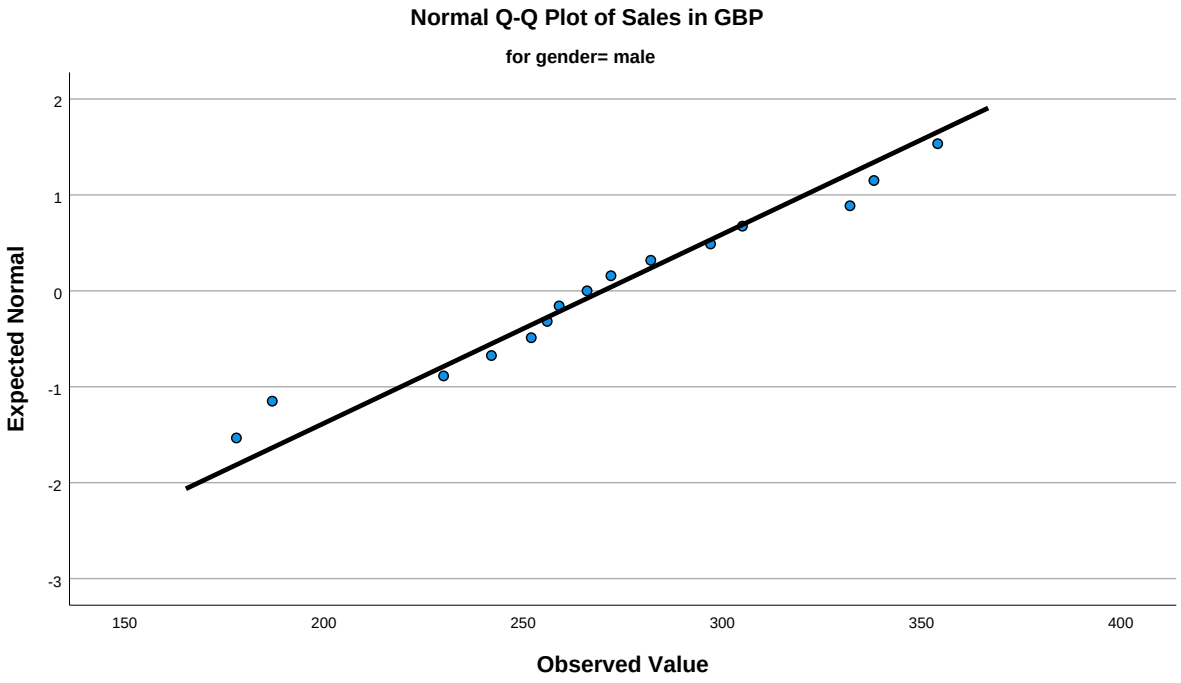
Sales in GBP

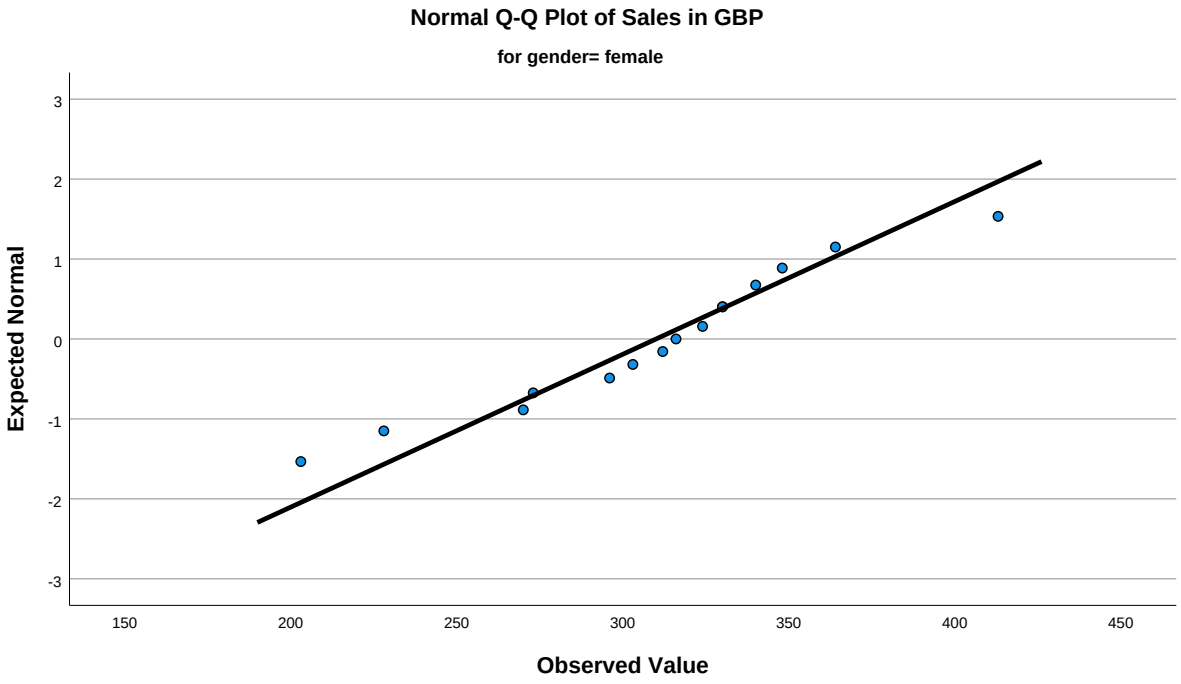
Histograms



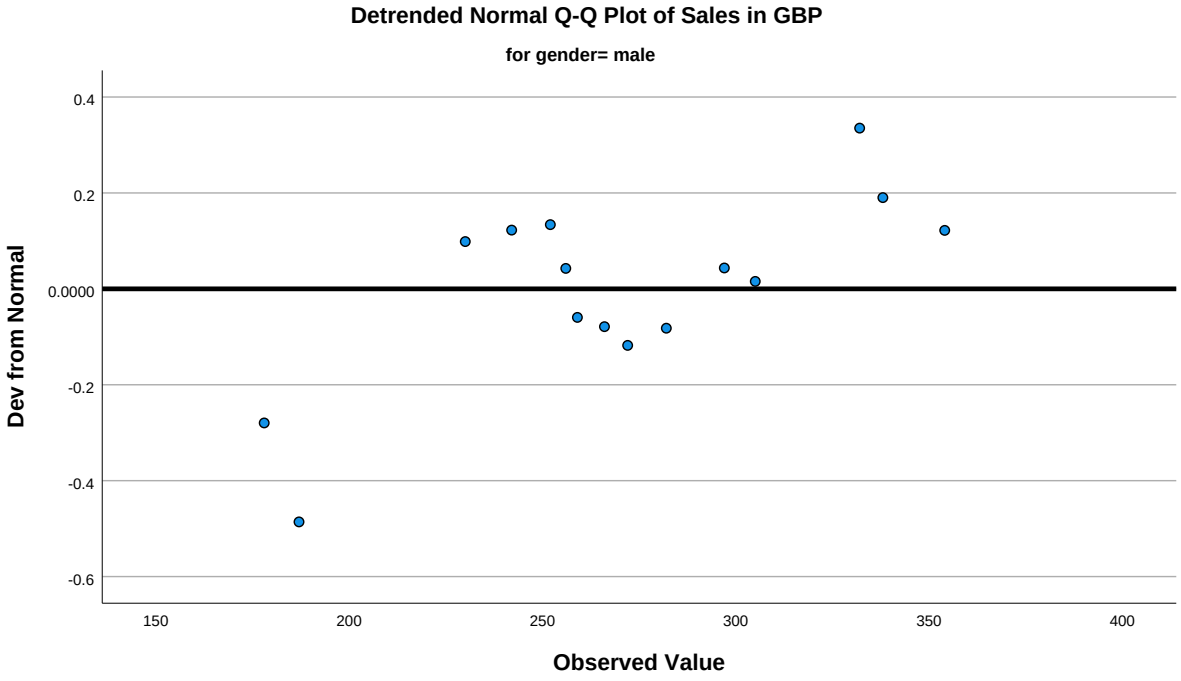


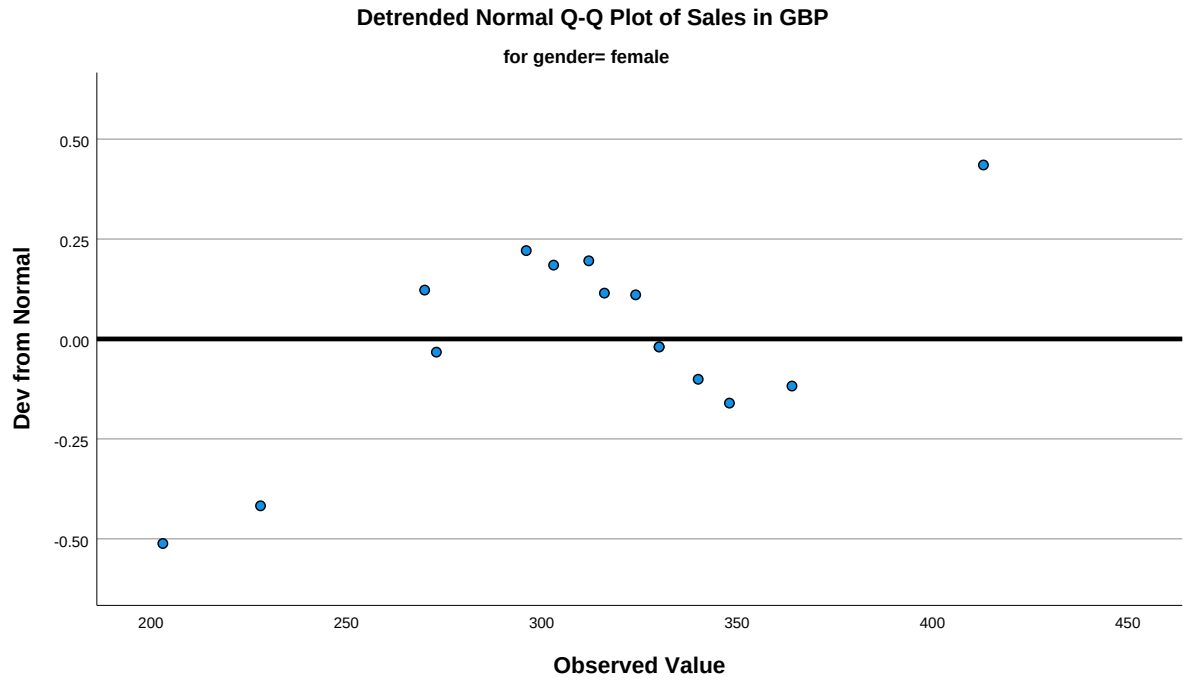
Normal Q-Q Plots



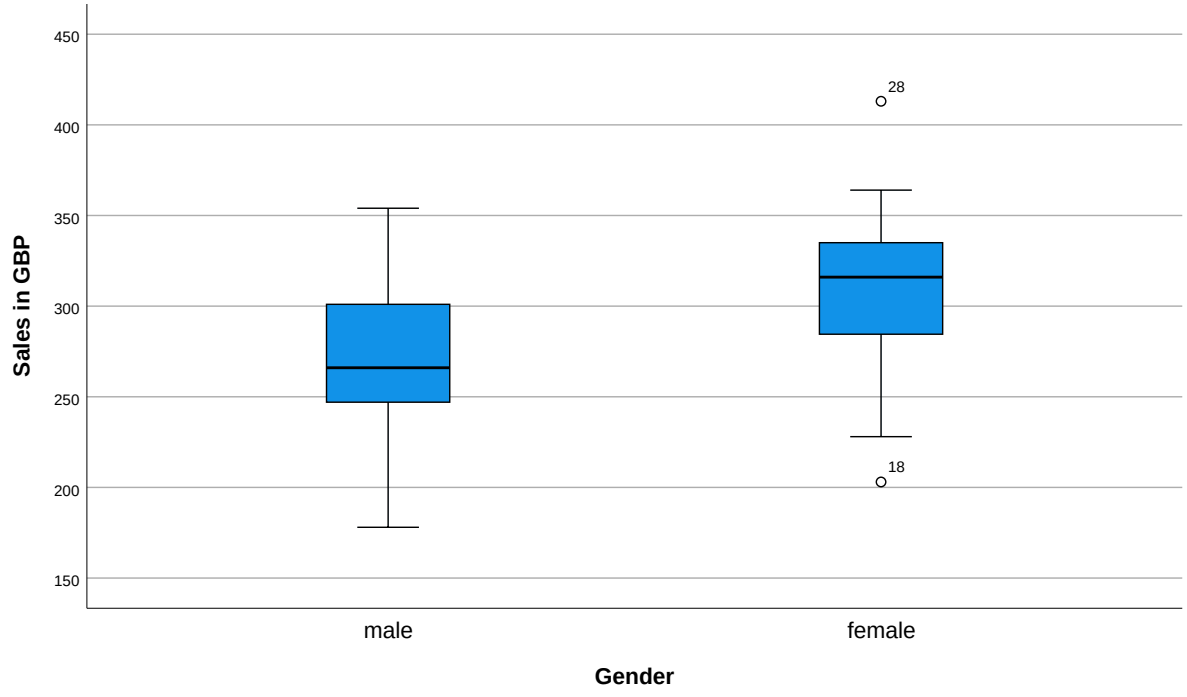


Detrended Normal Q-Q Plots





Boxplots




```
 SORT CASES  BY gender.
SPLIT FILE SEPARATE BY gender.
EXAMINE VARIABLES=sales BY online_store
  /PLOT BOXPLOT HISTOGRAM NPPLOT
  /COMPARE GROUPS
  /STATISTICS DESCRIPTIVES
```

```
/CINTERVAL 95
/MISSING LISTWISE
/NOTOTAL.
```

Explore

Notes

Output Created		09-JUN-2021 14:38:22
Comments		
Input	Data	C:\Users\Toshiba\Documents\OVGU\SS2021\Marketing Methods & Analysis\Exercise\EX4-ANOVA\Case Study\Dataset\Case Study ANOVA.sav
	Active Dataset	DataSet4
	Filter	<none>
	Weight	<none>
	Split File	Gender
	N of Rows in Working Data File	30
Missing Value Handling	Definition of Missing	User-defined missing values for dependent variables are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any dependent variable or factor used.
Syntax		EXAMINE VARIABLES=sales BY online_store /PLOT BOXPLOT HISTOGRAM NPPLOT /COMPARE GROUPS /STATISTICS DESCRIPTIVES /CINTERVAL 95 /MISSING LISTWISE /NOTOTAL.
Resources	Processor Time	00:00:09.67
	Elapsed Time	00:00:10.18

Gender = male

Online store ease-of-use

Case Processing Summary[a]

		Cases				
		Valid		Missing		Total
	Online store ease-of-use	N	Percent	N	Percent	N
Sales in GBP	easy	5	100.0%	0	0.0%	5
	neutral	5	100.0%	0	0.0%	5
	difficult	5	100.0%	0	0.0%	5

Case Processing Summary[a]

		Cases
		Total
	Online store ease-of-use	Percent
Sales in GBP	easy	100.0%
	neutral	100.0%
	difficult	100.0%

a. Gender = male

Descriptives[a]

	Online store ease-of-use			Statistic	Std. Error
Sales in GBP	easy	Mean		297.80	20.343
		95% Confidence Interval for Mean	Lower Bound	241.32	
			Upper Bound	354.28	
		5% Trimmed Mean		297.00	
		Median		282.00	
		Variance		2069.200	
		Std. Deviation		45.488	
		Minimum		256	
		Maximum		354	
		Range		98	
		Interquartile Range		89	
		Skewness		.474	.913
		Kurtosis		-2.754	2.000
	neutral	Mean		275.00	19.162
		95% Confidence Interval for Mean	Lower Bound	221.80	
			Upper Bound	328.20	
		5% Trimmed Mean		274.33	
		Median		266.00	
		Variance		1836.000	
		Std. Deviation		42.849	
		Minimum		230	

Descriptives[a]

Online store ease-of-use			Statistic	Std. Error
	Maximum		332	
	Range		102	
	Interquartile Range		83	
	Skewness		.447	.913
	Kurtosis		-1.822	2.000
difficult	Mean		237.20	23.485
	95% Confidence Interval for Mean	Lower Bound	172.00	
		Upper Bound	302.40	
	5% Trimmed Mean		237.17	
	Median		252.00	
	Variance		2757.700	
	Std. Deviation		52.514	
	Minimum		178	
	Maximum		297	
	Range		119	
	Interquartile Range		102	
	Skewness		-.215	.913
	Kurtosis		-2.586	2.000

a. Gender = male

Tests of Normality[a]

		Kolmogorov-Smirnov[b]			Shapiro-Wilk	
	Online store ease-of-use	Statistic	df	Sig.	Statistic	df
Sales in GBP	easy	.236	5	.200*	.857	5
	neutral	.183	5	.200*	.938	5
	difficult	.230	5	.200*	.899	5

Tests of Normality[a]

		Shapiro-...
	Online store ease-of-use	Sig.
Sales in GBP	easy	.216
	neutral	.652
	difficult	.407

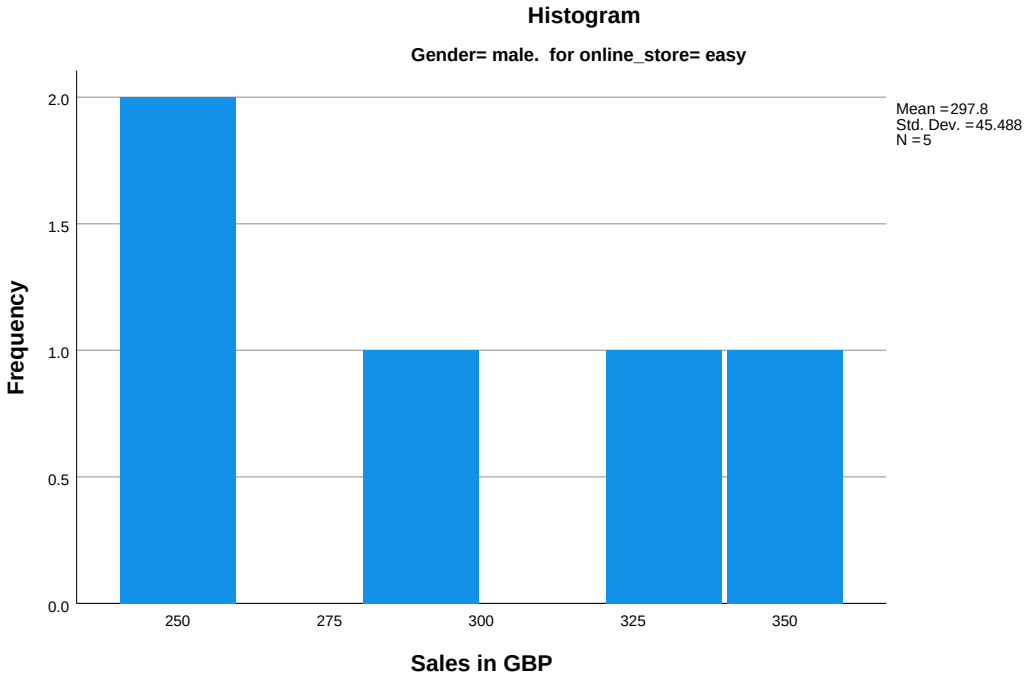
*. This is a lower bound of the true significance.

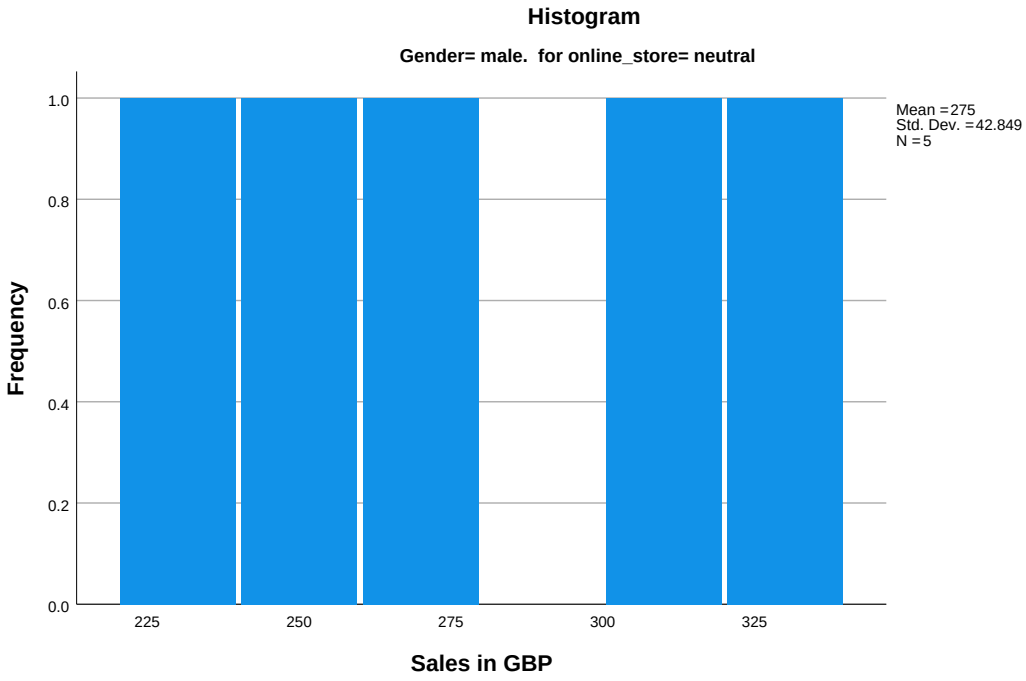
a. Gender = male

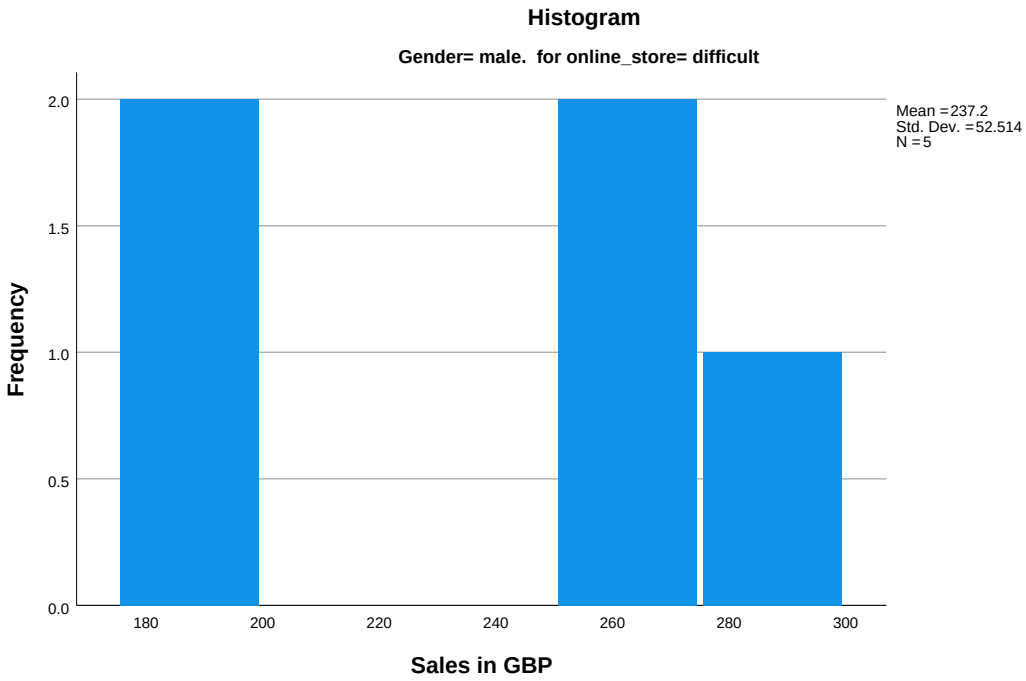
b. Lilliefors Significance Correction

Sales in GBP

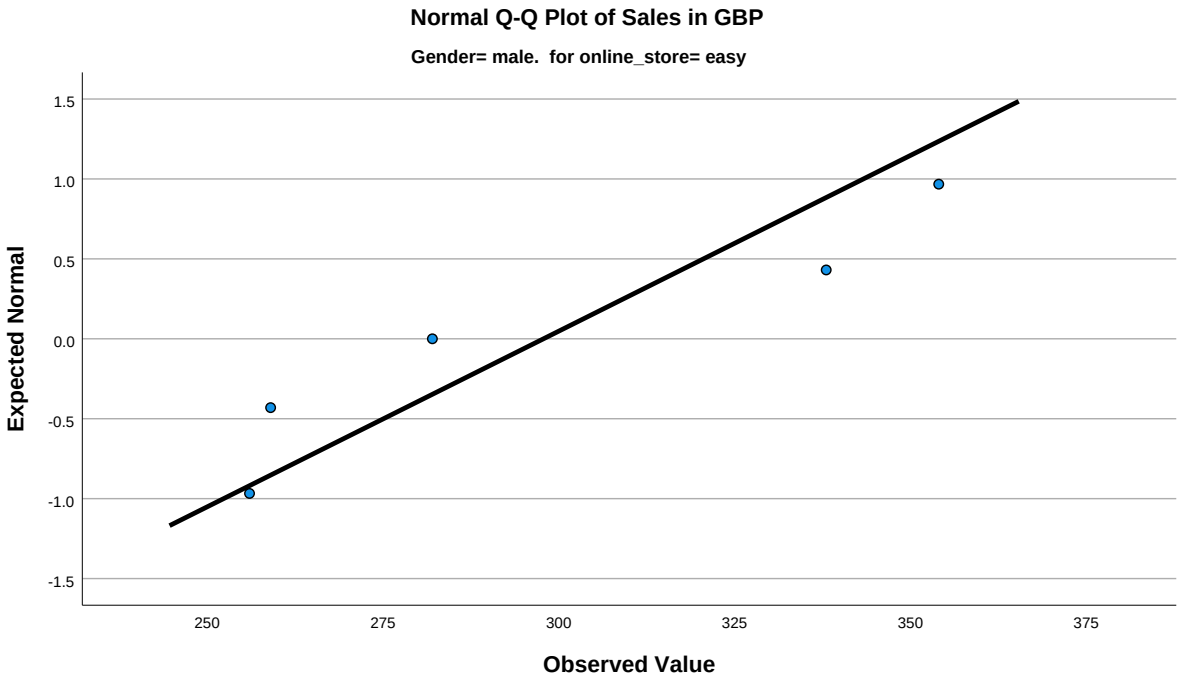
Histograms

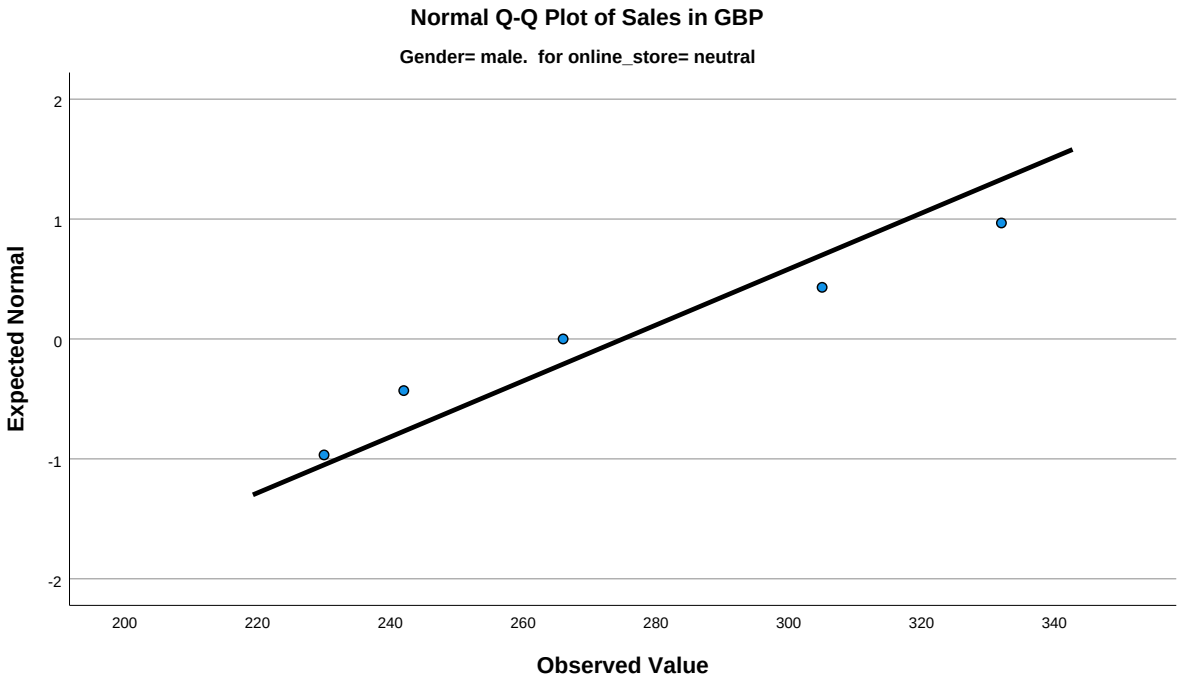




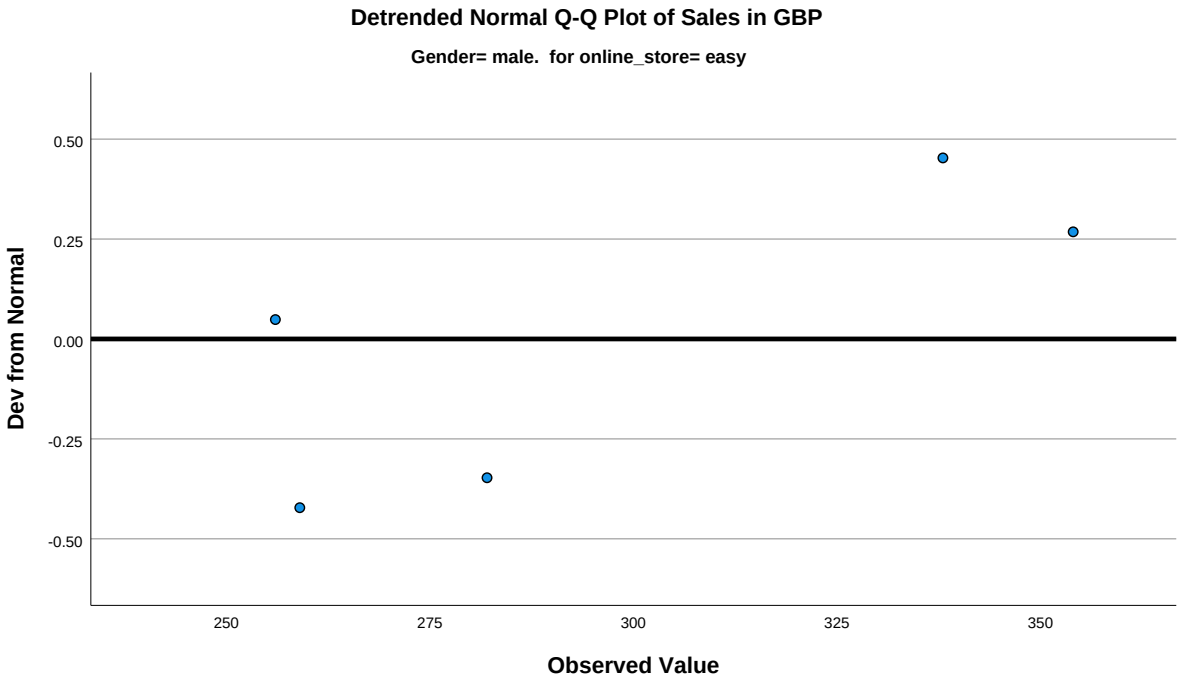


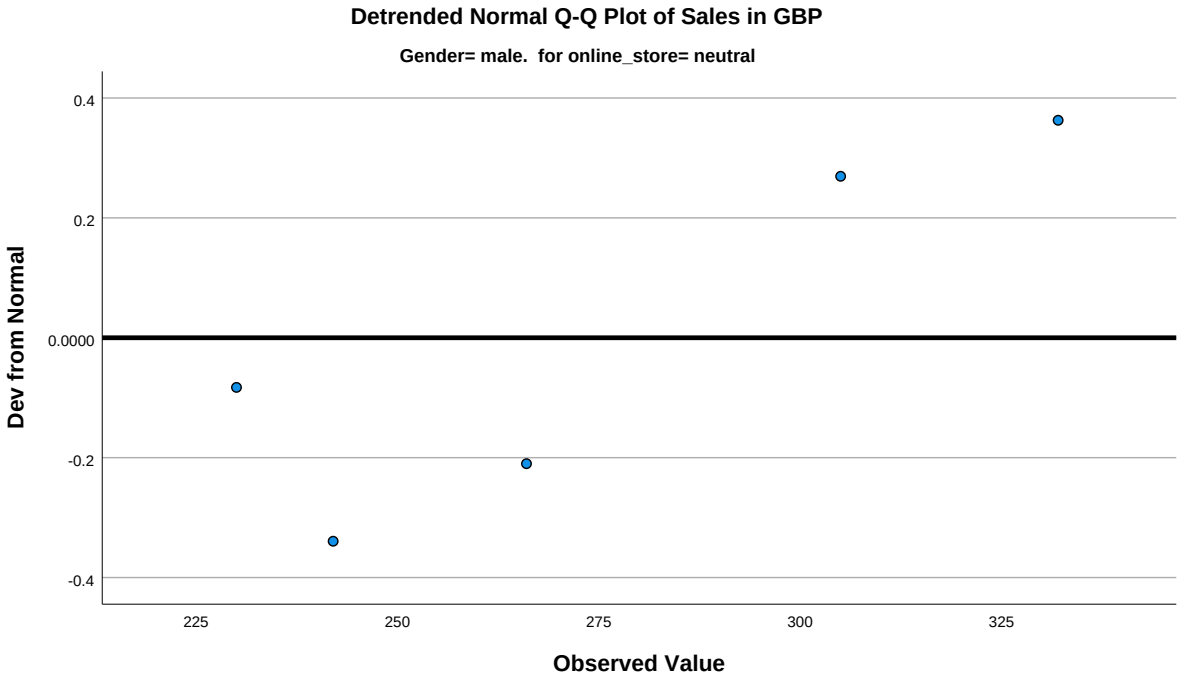
Normal Q-Q Plots

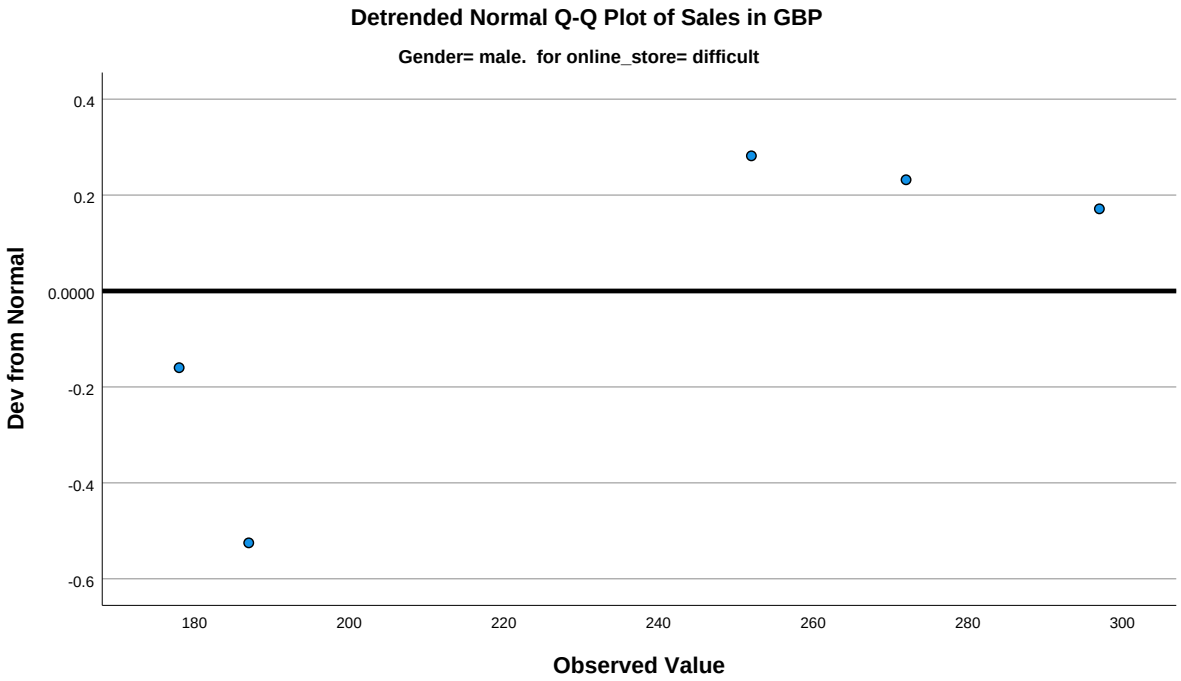


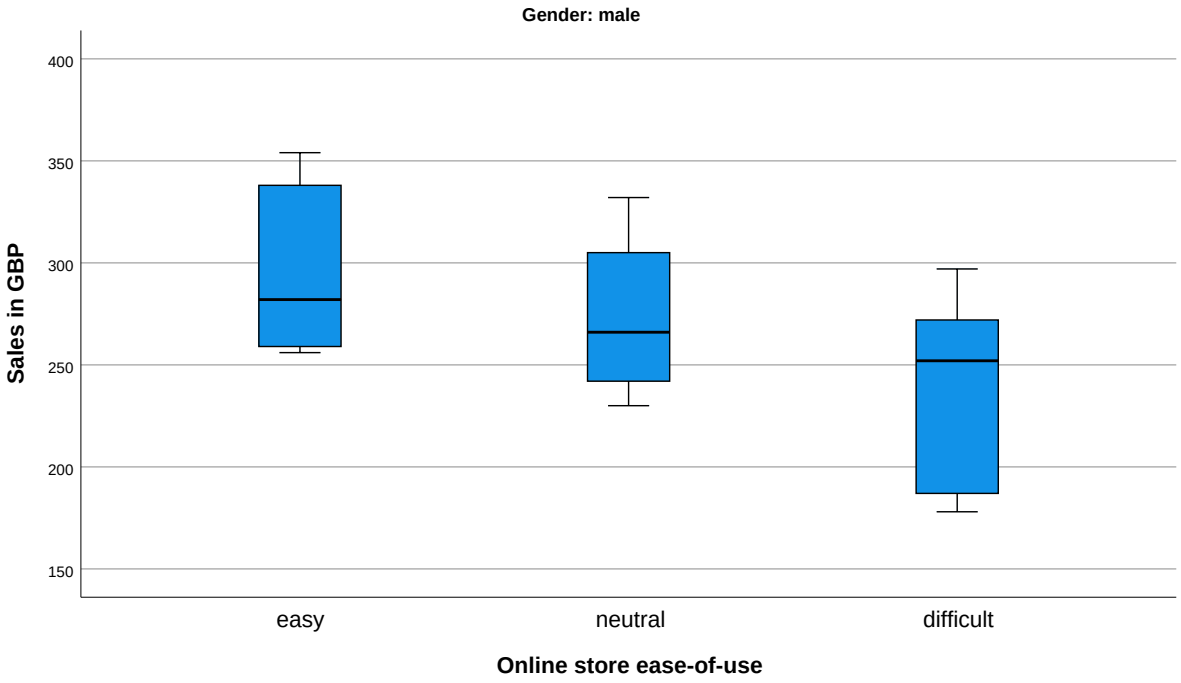


Detrended Normal Q-Q Plots


Detrended Normal Q-Q Plot of Sales in GBP
Gender= male. for online_store= easy
Dev from Normal
0.50
0.25
0.00
-0.25
-0.50
250
275
300
325
350
Observed Value


Detrended Normal Q-Q Plot of Sales in GBP
Gender= male. for online_store= neutral
Dev from Normal
0.4
0.2
0.0000
-0.2
-0.4
225
250
275
300
325
Observed Value





Gender = female

Online store ease-of-use

Case Processing Summary[a]

		Cases				
		Valid		Missing		Total
	Online store ease-of-use	N	Percent	N	Percent	N
Sales in GBP	easy	5	100.0%	0	0.0%	5
	neutral	5	100.0%	0	0.0%	5
	difficult	5	100.0%	0	0.0%	5

Case Processing Summary[a]

		Cases
		Total
	Online store ease-of-use	Percent
Sales in GBP	easy	100.0%
	neutral	100.0%
	difficult	100.0%

a. Gender = female

Descriptives[a]

	Online store ease-of-use			Statistic	Std. Error
Sales in GBP	easy	Mean		340.00	21.755
		95% Confidence Interval for Mean	Lower Bound	279.60	
			Upper Bound	400.40	
		5% Trimmed Mean		338.39	
		Median		324.00	
		Variance		2366.500	
		Std. Deviation		48.647	
		Minimum		296	
		Maximum		413	
		Range		117	
		Interquartile Range		89	
		Skewness		.952	.913
		Kurtosis		-.318	2.000
	neutral	Mean		308.60	16.290
		95% Confidence Interval for Mean	Lower Bound	263.37	
			Upper Bound	353.83	
		5% Trimmed Mean		308.56	
		Median		312.00	
		Variance		1326.800	
		Std. Deviation		36.425	
		Minimum		270	

Descriptives[a]

Online store ease-of-use			Statistic	Std. Error
	Maximum		348	
	Range		78	
	Interquartile Range		73	
	Skewness		-.090	.913
	Kurtosis		-2.882	2.000
difficult	Mean		281.40	27.312
	95% Confidence Interval for Mean	Lower Bound	205.57	
		Upper Bound	357.23	
	5% Trimmed Mean		283.06	
	Median		316.00	
	Variance		3729.800	
	Std. Deviation		61.072	
	Minimum		203	
	Maximum		330	
	Range		127	
	Interquartile Range		115	
	Skewness		-.664	.913
	Kurtosis		-2.743	2.000

a. Gender = female

Tests of Normality[a]

		Kolmogorov-Smirnov[b]			Shapiro-Wilk	
	Online store ease-of-use	Statistic	df	Sig.	Statistic	df
Sales in GBP	easy	.229	5	.200*	.904	5
	neutral	.236	5	.200*	.872	5
	difficult	.314	5	.119	.797	5

Tests of Normality[a]

		Shapiro-...
	Online store ease-of-use	Sig.
Sales in GBP	easy	.430
	neutral	.273
	difficult	.076

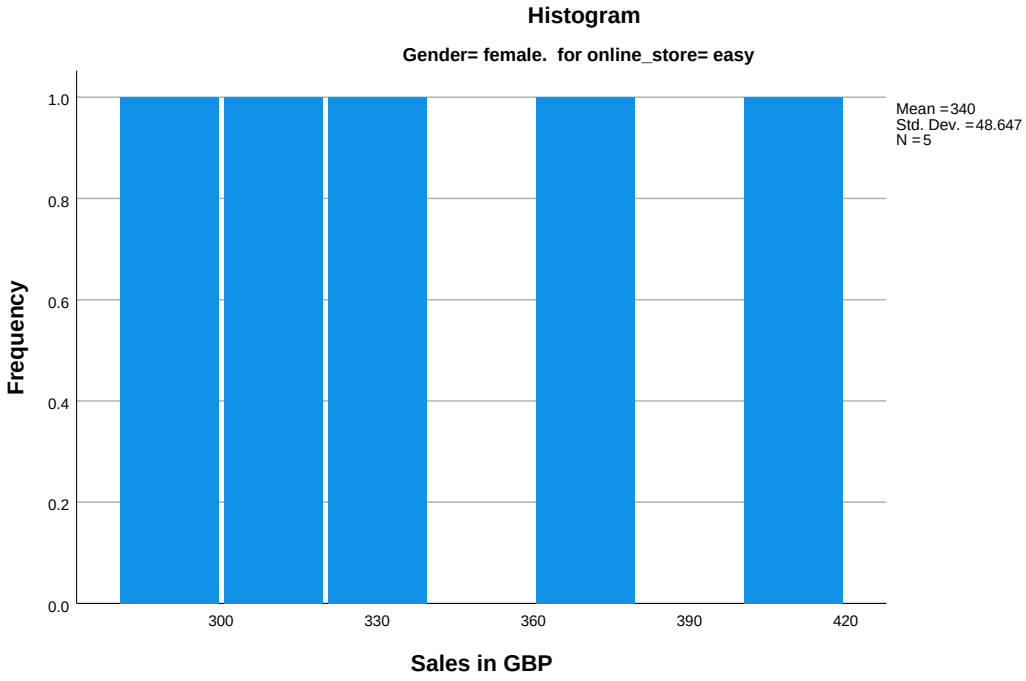
*. This is a lower bound of the true significance.

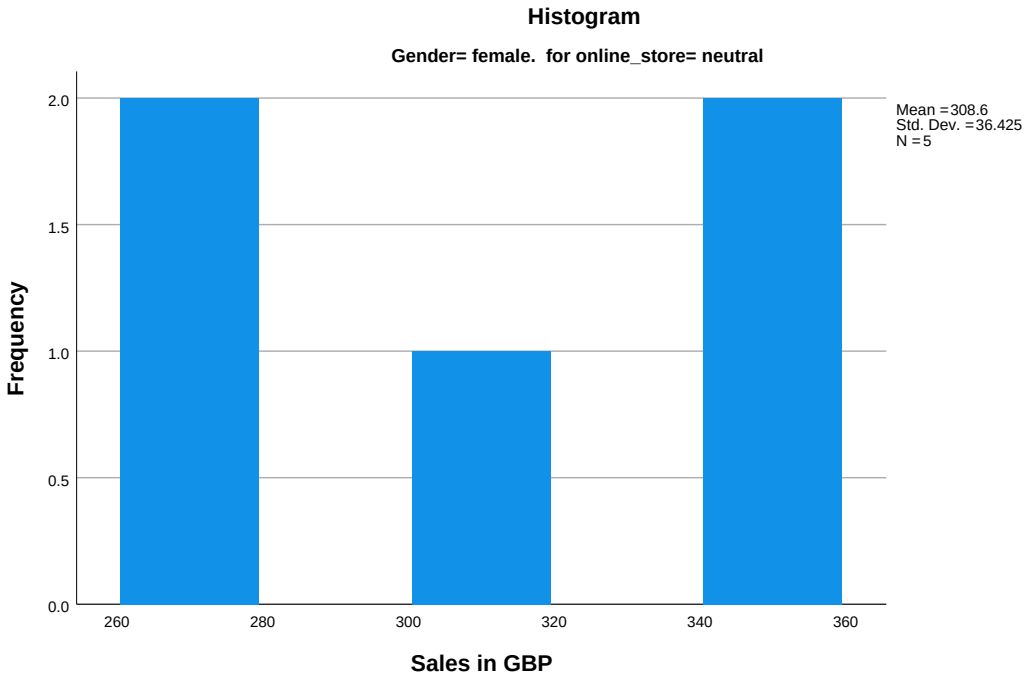
a. Gender = female

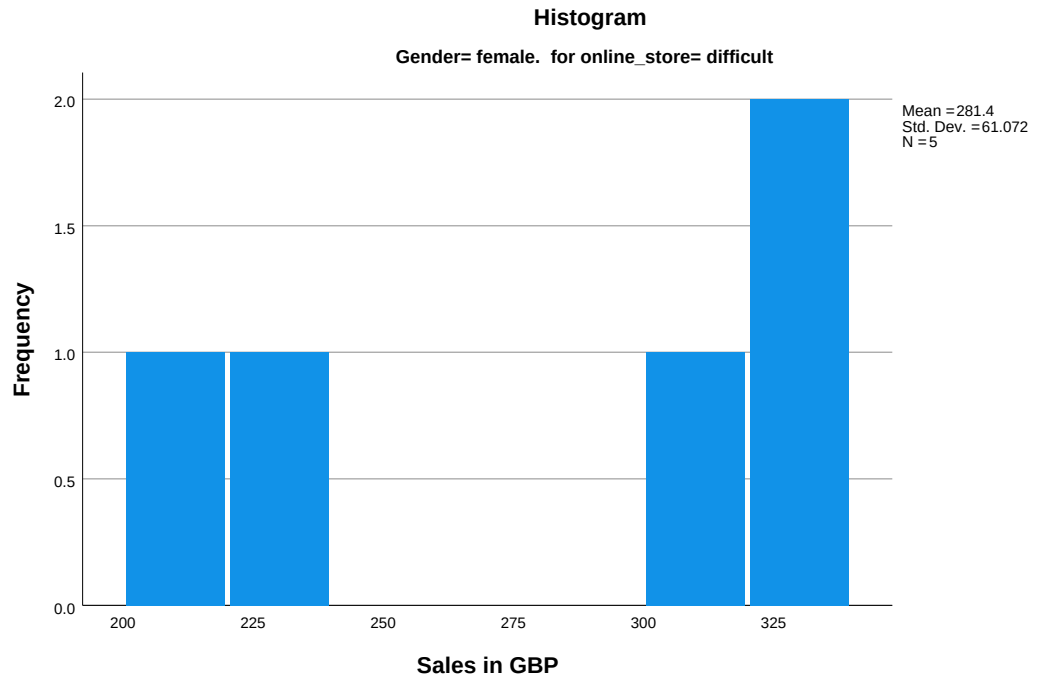
b. Lilliefors Significance Correction

Sales in GBP

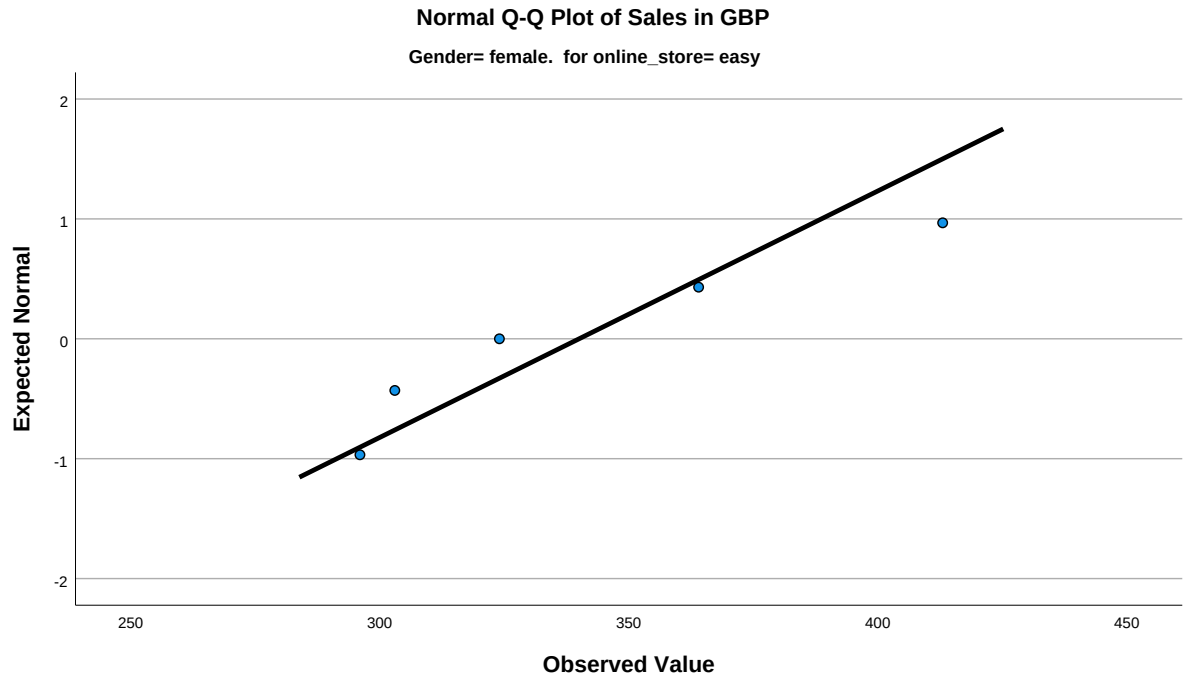
Histograms

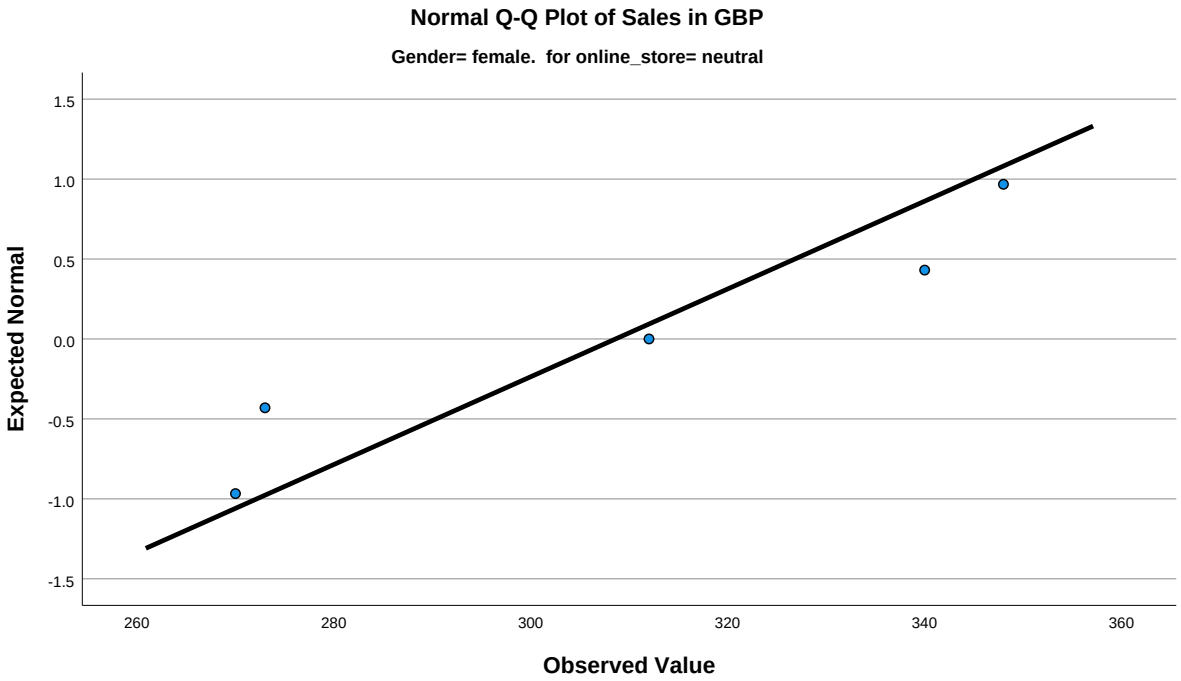


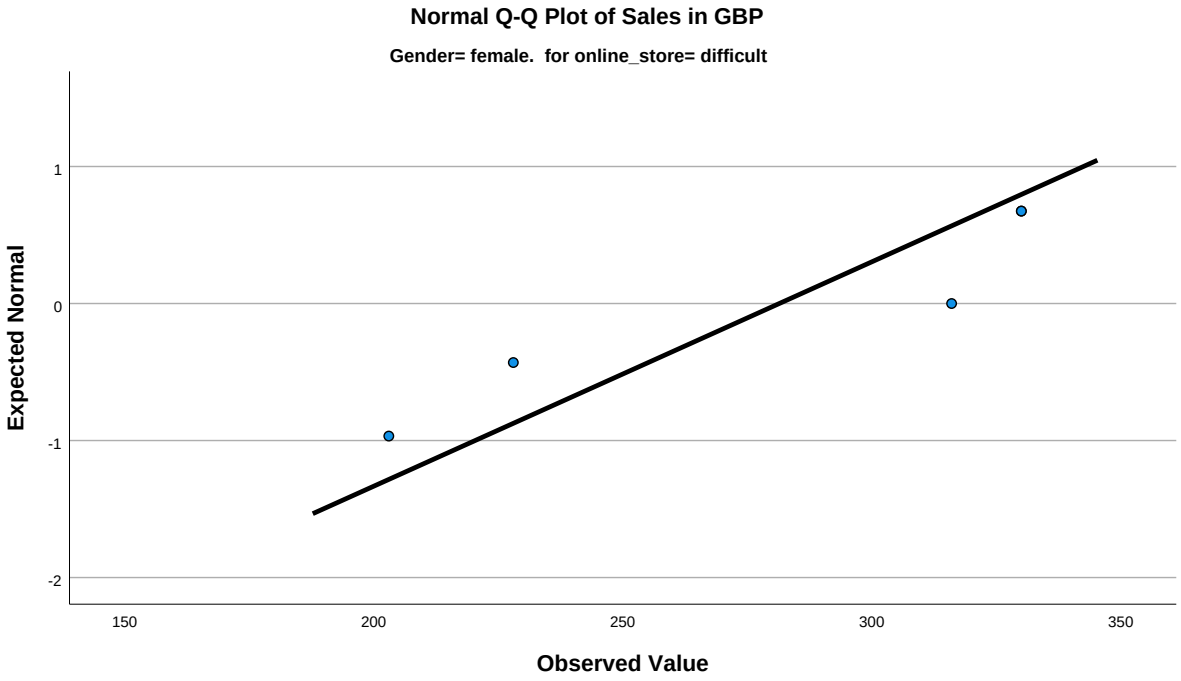




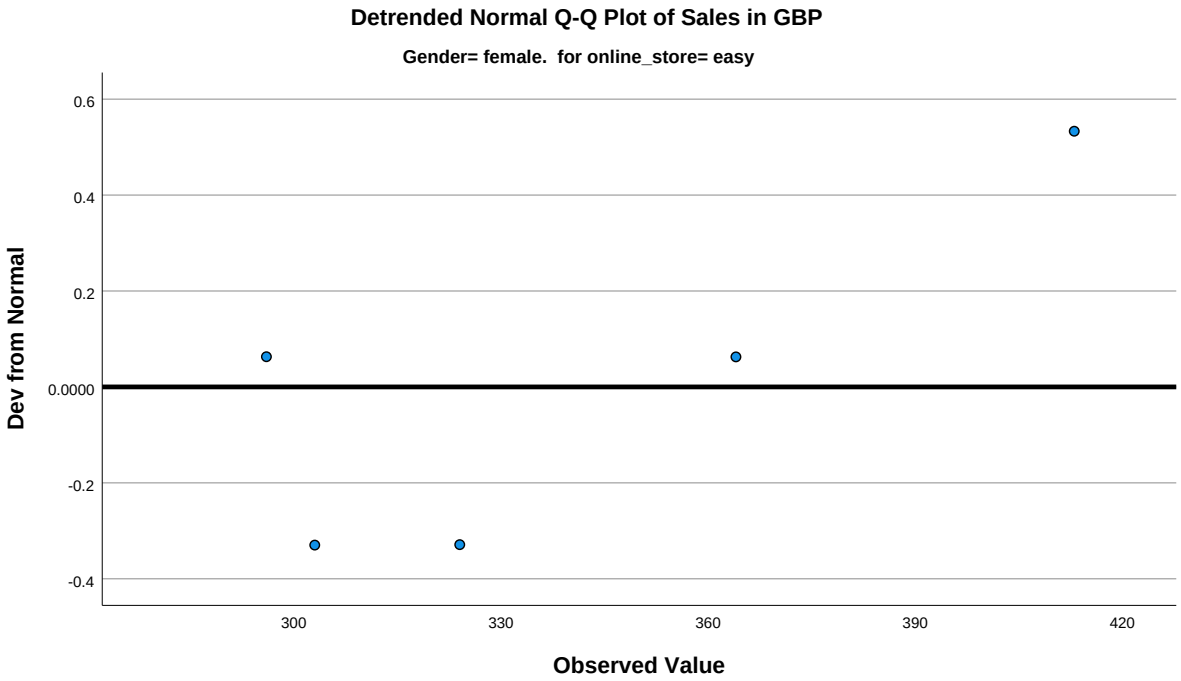
Normal Q-Q Plots

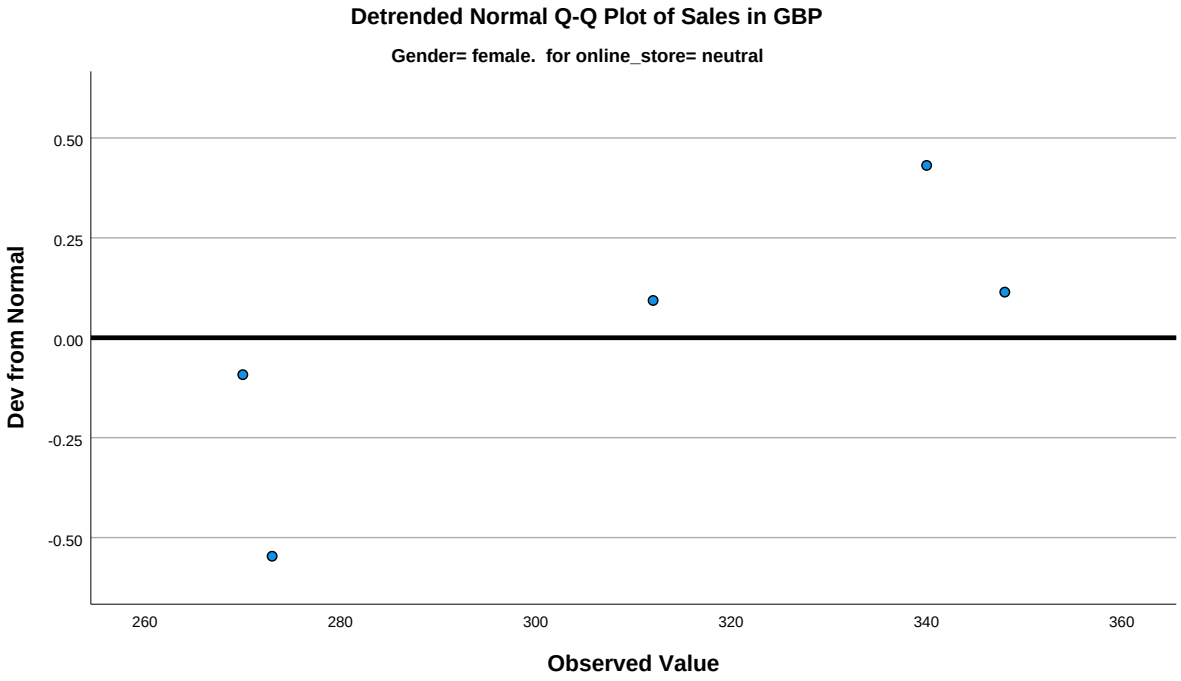


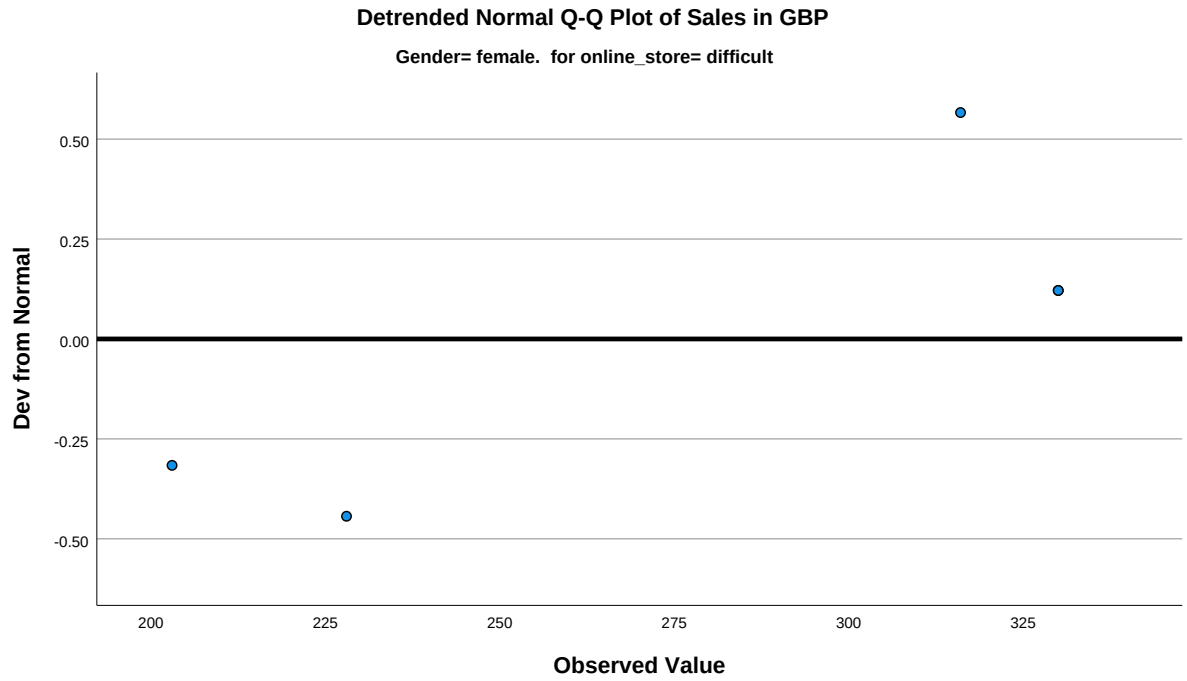


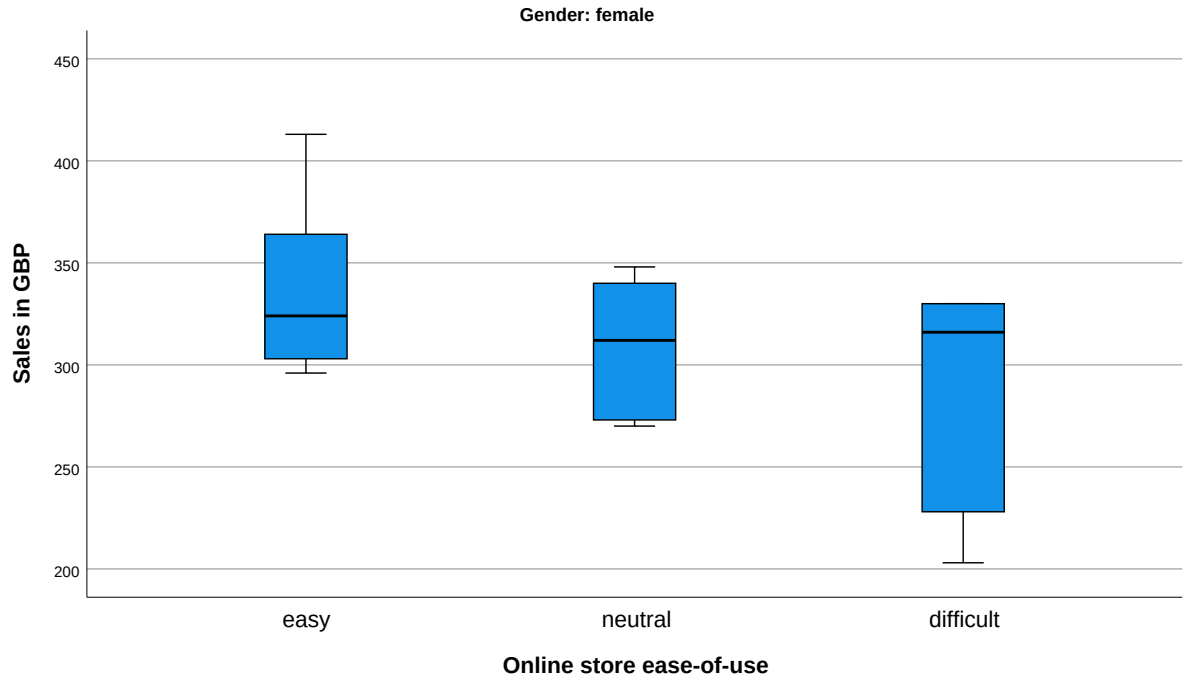


Detrended Normal Q-Q Plots


Detrended Normal Q-Q Plot of Sales in GBP
Gender= female. for online_store= easy
Dev from Normal
0.6
0.4
0.2
0.0000
-0.2
-0.4
300
330
360
390
420
Observed Value


Detrended Normal Q-Q Plot of Sales in GBP
Gender= female. for online_store= neutral
Dev from Normal
0.50
0.25
0.00
-0.25
-0.50
260
280
300
320
340
360
Observed Value






```
 SPLIT FILE OFF.
UNIANOVA sales BY online_store gender
  /METHOD=SSTYPE(3)
  /INTERCEPT=INCLUDE
  /POSTHOC=online_store(QREGW)
  /PLOT=PROFILE(online_store*gender) TYPE=LINE ERRORBAR=CI MEANREFERENCE=NO YAXIS=AUTO
  /PRINT ETASQ DESCRIPTIVE PARAMETER HOMOGENEITY OPOWER
  /CRITERIA=ALPHA(.05)
```

```
/DESIGN=online_store gender online_store*gender.
```

Univariate Analysis of Variance

Notes

Output Created		09-JUN-2021 15:15:13
Comments		
Input	Data	C:\Users\Toshiba\Documents\OVGU\SS2021\Marketing Methods & Analysis\Exercise\EX4-ANOVA\Case Study\Dataset\Case Study ANOVA.sav
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	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	30
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the model.
Syntax		UNIANOVA sales BY online_store gender /METHOD=SSTYPE(3) /INTERCEPT=INCLUDE /POSTHOC=online_store (QREGW) /PLOT=PROFILE (online_store*gender) TYPE=LINE ERRORBAR=CI MEANREFERENCE=NO YAXIS=AUTO /PRINT ETASQ DESCRIPTIVE PARAMETER HOMOGENEITY OPOWER /CRITERIA=ALPHA(.05) /DESIGN=online_store gender online_store*gender.
Resources	Processor Time	00:00:00.64
	Elapsed Time	00:00:00.70

Between-Subjects Factors

		Value Label	N
Online store ease-of-use	1	easy	10
	2	neutral	10
	3	difficult	10
Gender	1	male	15
	2	female	15

Descriptive Statistics

Dependent Variable: Sales in GBP

Online store ease-of-use	Gender	Mean	Std. Deviation	N
easy	male	297.80	45.488	5
	female	340.00	48.647	5
	Total	318.90	49.660	10
neutral	male	275.00	42.849	5
	female	308.60	36.425	5
	Total	291.80	41.464	10
difficult	male	237.20	52.514	5
	female	281.40	61.072	5
	Total	259.30	58.532	10
Total	male	270.00	50.723	15
	female	310.00	52.299	15
	Total	290.00	54.555	30

Levene's Test of Equality of Error Variances[a,b]

		Levene Statistic	df1	df2	Sig.
Sales in GBP	Based on Mean	1.007	5	24	.435
	Based on Median	.166	5	24	.973
	Based on Median and with adjusted df	.166	5	16.099	.971
	Based on trimmed mean	.932	5	24	.478

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Dependent variable: Sales in GBP

b. Design: Intercept + online_store + gender + online_store * gender

Tests of Between-Subjects Effects

Dependent Variable: Sales in GBP

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	29968.000[a]	5	5993.600	2.553	.055
Intercept	2523000.000	1	2523000.000	1074.684	.000
online_store	17809.400	2	8904.700	3.793	.037
gender	12000.000	1	12000.000	5.111	.033
online_store * gender	158.600	2	79.300	.034	.967
Error	56344.000	24	2347.667		
Total	2609312.000	30			
Corrected Total	86312.000	29			

Tests of Between-Subjects Effects

Dependent Variable: Sales in GBP

Source	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	.347	12.765	.688
Intercept	.978	1074.684	1.000
online_store	.240	7.586	.634
gender	.176	5.111	.583
online_store * gender	.003	.068	.055
Error			
Total			
Corrected Total			

a. R Squared = .347 (Adjusted R Squared = .211)

b. Computed using alpha = .05

Parameter Estimates

Dependent Variable: Sales in GBP

Parameter	B	Std. Error	t	Sig.	95% ... Lower Bound
Intercept	281.400	21.669	12.986	.000	236.678
[online_store=1]	58.600	30.644	1.912	.068	-4.647
[online_store=2]	27.200	30.644	.888	.384	-36.047
[online_store=3]	0[a]	.	.	.	.
[gender=1]	-44.200	30.644	-1.442	.162	-107.447
[gender=2]	0[a]	.	.	.	.
[online_store=1] * [gender=1]	2.000	43.337	.046	.964	-87.444
[online_store=1] * [gender=2]	0[a]	.	.	.	.
[online_store=2] * [gender=1]	10.600	43.337	.245	.809	-78.844
[online_store=2] * [gender=2]	0[a]	.	.	.	.
[online_store=3] * [gender=1]	0[a]	.	.	.	.
[online_store=3] * [gender=2]	0[a]	.	.	.	.

Parameter Estimates

Dependent Variable: Sales in GBP

Parameter	95% Confidence ... Upper Bound	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Intercept	326.122	.875	12.986	1.000
[online_store=1]	121.847	.132	1.912	.451
[online_store=2]	90.447	.032	.888	.137
[online_store=3]	.	.	.	.
[gender=1]	19.047	.080	1.442	.283
[gender=2]	.	.	.	.
[online_store=1] * [gender=1]	91.444	.000	.046	.050
[online_store=1] * [gender=2]	.	.	.	.
[online_store=2] * [gender=1]	100.044	.002	.245	.056
[online_store=2] * [gender=2]	.	.	.	.
[online_store=3] * [gender=1]	.	.	.	.
[online_store=3] * [gender=2]	.	.	.	.

a. This parameter is set to zero because it is redundant.

b. Computed using alpha = .05

Post Hoc Tests

Online store ease-of-use

Homogeneous Subsets

Sales in GBP

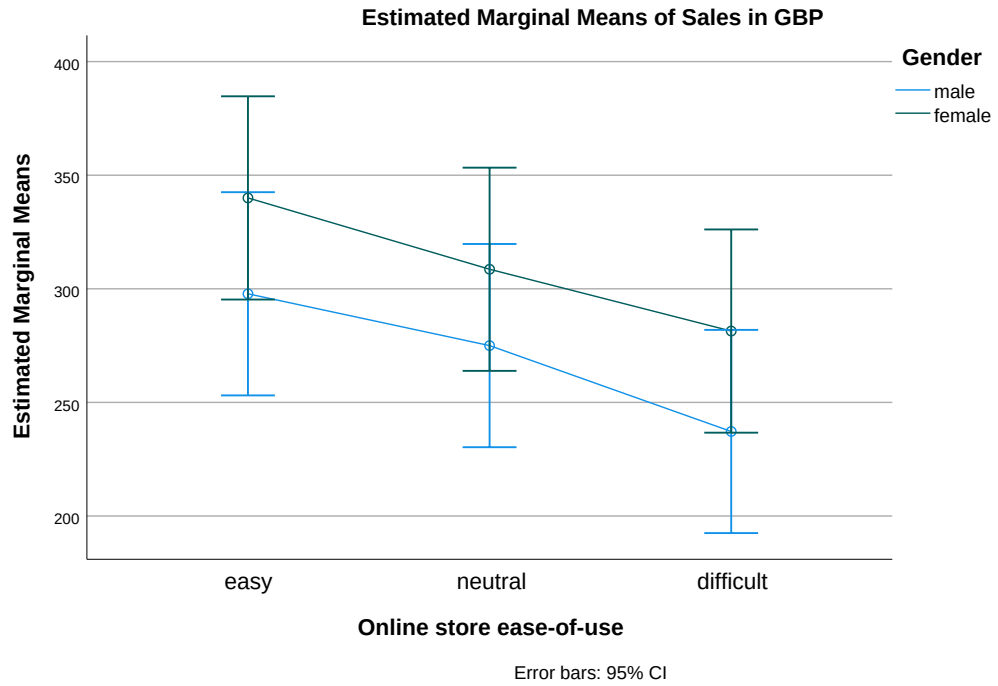
Ryan-Einot-Gabriel-Welsch Range[a]

Online store ease-of-use	N	Subset 1	Subset 2
difficult	10	259.30	
neutral	10	291.80	291.80
easy	10		318.90
Sig.		.147	.223

Means for groups in homogeneous subsets are displayed.
Based on observed means.
The error term is Mean Square(Error) = 2347.667.

a. Alpha = .05.

Profile Plots



Error bars: 95% CI