**————— 02.07.2016 11:03:47 ————————————————————**

Welcome to Minitab, press F1 for help.

Retrieving project from file: ‘C:\Users\ostnin\Desktop\Minitab.MPJ’

**Results for: Worksheet 11**

**General Linear Model: Gelfasthet versus Blokk; Homogeniseringsmetode; Kultur**

Method

Factor coding (-1; 0; +1)

Factor Information

Factor Type Levels Values

Blokk Random 2 1; 2

Homogeniseringsmetode Fixed 2 1; 2

Kultur(Homogeniseringsmetode) Fixed 4 1(1); 2(1); 1(2); 2(2)

Analysis of Variance

Source DF Adj SS Adj MS F-Value P-Value

 Blokk 1 0,02 0,02 0,00 0,967

 Homogeniseringsmetode 1 1309,63 1309,63 119,43 0,000

 Kultur(Homogeniseringsmetode) 2 12,02 6,01 0,55 0,593

Error 11 120,63 10,97

 Lack-of-Fit 3 14,15 4,72 0,35 0,788

 Pure Error 8 106,48 13,31

Total 15 1442,29

Model Summary

 S R-sq R-sq(adj) R-sq(pred)

3,31149 91,64% 88,60% 82,31%

Coefficients

Term Coef SE Coef T-Value P-Value VIF

Constant 39,096 0,828 47,23 0,000

Blokk

 1 -0,035 0,828 -0,04 0,967 \*

 2 0,035 0,828 0,04 0,967 \*

Homogeniseringsmetode

 1 9,047 0,828 10,93 0,000 1,00

 2 -9,047 0,828 -10,93 0,000 \*

Kultur(Homogeniseringsmetode)

 1(1) 0,01 1,17 0,01 0,992 1,00

 2(1) -0,01 1,17 -0,01 0,992 \*

 1(2) 1,23 1,17 1,05 0,318 1,00

 2(2) -1,23 1,17 -1,05 0,318 \*

Fits and Diagnostics for Unusual Observations

 Std

Obs Gelfasthet Fit Resid Resid

 16 36,32 28,86 7,46 2,72 R

R Large residual

Expected Mean Squares, using Adjusted SS

 Expected Mean Square

 Source for Each Term

1 Blokk (4) + 8,0000 (1)

2 Homogeniseringsmetode (4) + Q[2; 3]

3 Kultur(Homogeniseringsmetode) (4) + Q[3]

4 Error (4)

Error Terms for Tests, using Adjusted SS

 Synthesis

 Source Error DF Error MS of Error MS

1 Blokk 11,00 10,9660 (4)

2 Homogeniseringsmetode 11,00 10,9660 (4)

3 Kultur(Homogeniseringsmetode) 11,00 10,9660 (4)

Variance Components, using Adjusted SS

Source Variance % of Total StDev % of Total

Blokk -1,36832\* 0,00% 0,00000 0,00%

Error 10,966 100,00% 3,31149 100,00%

Total 10,966 3,31149

\* Value is negative, and is estimated by zero.

**Normplot of Residuals for Gelfasthet**

**General Linear Model: Viskositet (reologi) versus Blokk; Homogeniseringsmetode; Kultur**

Method

Factor coding (-1; 0; +1)

Factor Information

Factor Type Levels Values

Blokk Random 2 1; 2

Homogeniseringsmetode Fixed 2 1; 2

Kultur(Homogeniseringsmetode) Fixed 4 1(1); 2(1); 1(2); 2(2)

Analysis of Variance

Source DF Adj SS Adj MS F-Value P-Value

 Blokk 1 0,3040 0,30401 3,80 0,077

 Homogeniseringsmetode 1 4,0005 4,00050 50,00 0,000

 Kultur(Homogeniseringsmetode) 2 1,0003 0,50014 6,25 0,015

Error 11 0,8802 0,08002

 Lack-of-Fit 3 0,2483 0,08276 1,05 0,423

 Pure Error 8 0,6319 0,07899

Total 15 6,1850

Model Summary

 S R-sq R-sq(adj) R-sq(pred)

0,282872 85,77% 80,59% 69,89%

Coefficients

Term Coef SE Coef T-Value P-Value VIF

Constant 1,5356 0,0707 21,71 0,000

Blokk

 1 -0,1378 0,0707 -1,95 0,077 \*

 2 0,1378 0,0707 1,95 0,077 \*

Homogeniseringsmetode

 1 0,5000 0,0707 7,07 0,000 1,00

 2 -0,5000 0,0707 -7,07 0,000 \*

Kultur(Homogeniseringsmetode)

 1(1) 0,336 0,100 3,36 0,006 1,00

 2(1) -0,336 0,100 -3,36 0,006 \*

 1(2) 0,111 0,100 1,11 0,289 1,00

 2(2) -0,111 0,100 -1,11 0,289 \*

Fits and Diagnostics for Unusual Observations

 Viskositet Std

Obs (reologi) Fit Resid Resid

 13 3,080 2,509 0,571 2,43 R

R Large residual

Expected Mean Squares, using Adjusted SS

 Expected Mean Square

 Source for Each Term

1 Blokk (4) + 8,0000 (1)

2 Homogeniseringsmetode (4) + Q[2; 3]

3 Kultur(Homogeniseringsmetode) (4) + Q[3]

4 Error (4)

Error Terms for Tests, using Adjusted SS

 Synthesis

 Source Error DF Error MS of Error MS

1 Blokk 11,00 0,0800 (4)

2 Homogeniseringsmetode 11,00 0,0800 (4)

3 Kultur(Homogeniseringsmetode) 11,00 0,0800 (4)

Variance Components, using Adjusted SS

Source Variance % of Total StDev % of Total

Blokk 0,0279997 25,92% 0,167331 50,91%

Error 0,0800168 74,08% 0,282872 86,07%

Total 0,108016 0,328659

**Normplot of Residuals for Viskositet (reologi)**

**General Linear Model: Viskositet (sensorikk) versus Blokk; Homogeniseringsmetode; Kultur**

Method

Factor coding (-1; 0; +1)

Factor Information

Factor Type Levels Values

Blokk Random 2 1; 2

Homogeniseringsmetode Fixed 2 1; 2

Kultur(Homogeniseringsmetode) Fixed 4 1(1); 2(1); 1(2); 2(2)

Analysis of Variance

Source DF Adj SS Adj MS F-Value P-Value

 Blokk 1 0,4784 0,4784 2,96 0,113

 Homogeniseringsmetode 1 20,3251 20,3251 125,67 0,000

 Kultur(Homogeniseringsmetode) 2 0,7140 0,3570 2,21 0,156

Error 11 1,7791 0,1617

 Lack-of-Fit 3 0,3608 0,1203 0,68 0,589

 Pure Error 8 1,4183 0,1773

Total 15 23,2966

Model Summary

 S R-sq R-sq(adj) R-sq(pred)

0,402164 92,36% 89,59% 83,84%

Coefficients

Term Coef SE Coef T-Value P-Value VIF

Constant 5,098 0,101 50,70 0,000

Blokk

 1 -0,173 0,101 -1,72 0,113 \*

 2 0,173 0,101 1,72 0,113 \*

Homogeniseringsmetode

 1 1,127 0,101 11,21 0,000 1,00

 2 -1,127 0,101 -11,21 0,000 \*

Kultur(Homogeniseringsmetode)

 1(1) 0,192 0,142 1,35 0,205 1,00

 2(1) -0,192 0,142 -1,35 0,205 \*

 1(2) -0,229 0,142 -1,61 0,135 1,00

 2(2) 0,229 0,142 1,61 0,135 \*

Expected Mean Squares, using Adjusted SS

 Expected Mean Square

 Source for Each Term

1 Blokk (4) + 8,0000 (1)

2 Homogeniseringsmetode (4) + Q[2; 3]

3 Kultur(Homogeniseringsmetode) (4) + Q[3]

4 Error (4)

Error Terms for Tests, using Adjusted SS

 Synthesis

 Source Error DF Error MS of Error MS

1 Blokk 11,00 0,1617 (4)

2 Homogeniseringsmetode 11,00 0,1617 (4)

3 Kultur(Homogeniseringsmetode) 11,00 0,1617 (4)

Variance Components, using Adjusted SS

Source Variance % of Total StDev % of Total

Blokk 0,0395833 19,66% 0,198956 44,34%

Error 0,161736 80,34% 0,402164 89,63%

Total 0,201319 0,448686

**Normplot of Residuals for Viskositet (sensorikk)**

**General Linear Model: Trådtrekkende versus Blokk; Homogeniseringsmetode; Kultur**

Method

Factor coding (-1; 0; +1)

Factor Information

Factor Type Levels Values

Blokk Random 2 1; 2

Homogeniseringsmetode Fixed 2 1; 2

Kultur(Homogeniseringsmetode) Fixed 4 1(1); 2(1); 1(2); 2(2)

Analysis of Variance

Source DF Adj SS Adj MS F-Value P-Value

 Blokk 1 0,04000 0,04000 0,25 0,627

 Homogeniseringsmetode 1 0,81000 0,81000 5,06 0,046

 Kultur(Homogeniseringsmetode) 2 0,58000 0,29000 1,81 0,209

Error 11 1,76000 0,16000

 Lack-of-Fit 3 0,52000 0,17333 1,12 0,397

 Pure Error 8 1,24000 0,15500

Total 15 3,19000

Model Summary

 S R-sq R-sq(adj) R-sq(pred)

0,4 44,83% 24,76% 0,00%

Coefficients

Term Coef SE Coef T-Value P-Value VIF

Constant 4,625 0,100 46,25 0,000

Blokk

 1 0,050 0,100 0,50 0,627 \*

 2 -0,050 0,100 -0,50 0,627 \*

Homogeniseringsmetode

 1 -0,225 0,100 -2,25 0,046 1,00

 2 0,225 0,100 2,25 0,046 \*

Kultur(Homogeniseringsmetode)

 1(1) -0,100 0,141 -0,71 0,494 1,00

 2(1) 0,100 0,141 0,71 0,494 \*

 1(2) -0,250 0,141 -1,77 0,105 1,00

 2(2) 0,250 0,141 1,77 0,105 \*

Expected Mean Squares, using Adjusted SS

 Expected Mean Square

 Source for Each Term

1 Blokk (4) + 8,0000 (1)

2 Homogeniseringsmetode (4) + Q[2; 3]

3 Kultur(Homogeniseringsmetode) (4) + Q[3]

4 Error (4)

Error Terms for Tests, using Adjusted SS

 Synthesis

 Source Error DF Error MS of Error MS

1 Blokk 11,00 0,1600 (4)

2 Homogeniseringsmetode 11,00 0,1600 (4)

3 Kultur(Homogeniseringsmetode) 11,00 0,1600 (4)

Variance Components, using Adjusted SS

Source Variance % of Total StDev % of Total

Blokk -0,015\* 0,00% 0,0 0,00%

Error 0,16 100,00% 0,4 100,00%

Total 0,16 0,4

\* Value is negative, and is estimated by zero.

**Normplot of Residuals for Trådtrekkende**

**General Linear Model: Fnokker versus Blokk; Homogeniseringsmetode; Kultur**

Method

Factor coding (-1; 0; +1)

Factor Information

Factor Type Levels Values

Blokk Random 2 1; 2

Homogeniseringsmetode Fixed 2 1; 2

Kultur(Homogeniseringsmetode) Fixed 4 1(1); 2(1); 1(2); 2(2)

Analysis of Variance

Source DF Adj SS Adj MS F-Value P-Value

 Blokk 1 0,075625 0,075625 3,75 0,079

 Homogeniseringsmetode 1 0,000625 0,000625 0,03 0,863

 Kultur(Homogeniseringsmetode) 2 0,006250 0,003125 0,15 0,858

Error 11 0,221875 0,020170

 Lack-of-Fit 3 0,016875 0,005625 0,22 0,880

 Pure Error 8 0,205000 0,025625

Total 15 0,304375

Model Summary

 S R-sq R-sq(adj) R-sq(pred)

0,142023 27,10% 0,60% 0,00%

Coefficients

Term Coef SE Coef T-Value P-Value VIF

Constant 1,0812 0,0355 30,45 0,000

Blokk

 1 -0,0687 0,0355 -1,94 0,079 \*

 2 0,0687 0,0355 1,94 0,079 \*

Homogeniseringsmetode

 1 0,0063 0,0355 0,18 0,863 1,00

 2 -0,0063 0,0355 -0,18 0,863 \*

Kultur(Homogeniseringsmetode)

 1(1) 0,0125 0,0502 0,25 0,808 1,00

 2(1) -0,0125 0,0502 -0,25 0,808 \*

 1(2) -0,0250 0,0502 -0,50 0,628 1,00

 2(2) 0,0250 0,0502 0,50 0,628 \*

Expected Mean Squares, using Adjusted SS

 Expected Mean Square

 Source for Each Term

1 Blokk (4) + 8,0000 (1)

2 Homogeniseringsmetode (4) + Q[2; 3]

3 Kultur(Homogeniseringsmetode) (4) + Q[3]

4 Error (4)

Error Terms for Tests, using Adjusted SS

 Synthesis

 Source Error DF Error MS of Error MS

1 Blokk 11,00 0,0202 (4)

2 Homogeniseringsmetode 11,00 0,0202 (4)

3 Kultur(Homogeniseringsmetode) 11,00 0,0202 (4)

Variance Components, using Adjusted SS

Source Variance % of Total StDev % of Total

Blokk 0,0069318 25,58% 0,083258 50,57%

Error 0,0201705 74,42% 0,142023 86,27%

Total 0,0271023 0,164628

**Normplot of Residuals for Fnokker**

**General Linear Model: Smørsmak versus Blokk; Homogeniseringsmetode; Kultur**

Method

Factor coding (-1; 0; +1)

Factor Information

Factor Type Levels Values

Blokk Random 2 1; 2

Homogeniseringsmetode Fixed 2 1; 2

Kultur(Homogeniseringsmetode) Fixed 4 1(1); 2(1); 1(2); 2(2)

Analysis of Variance

Source DF Adj SS Adj MS F-Value P-Value

 Blokk 1 0,25000 0,250000 2,67 0,131

 Homogeniseringsmetode 1 0,00000 0,000000 0,00 1,000

 Kultur(Homogeniseringsmetode) 2 0,16000 0,080000 0,85 0,452

Error 11 1,03000 0,093636

 Lack-of-Fit 3 0,75000 0,250000 7,14 0,012

 Pure Error 8 0,28000 0,035000

Total 15 1,44000

Model Summary

 S R-sq R-sq(adj) R-sq(pred)

0,306001 28,47% 2,46% 0,00%

Coefficients

Term Coef SE Coef T-Value P-Value VIF

Constant 4,1000 0,0765 53,59 0,000

Blokk

 1 -0,1250 0,0765 -1,63 0,131 \*

 2 0,1250 0,0765 1,63 0,131 \*

Homogeniseringsmetode

 1 -0,0000 0,0765 -0,00 1,000 1,00

 2 0,0000 0,0765 0,00 1,000 \*

Kultur(Homogeniseringsmetode)

 1(1) 0,100 0,108 0,92 0,375 1,00

 2(1) -0,100 0,108 -0,92 0,375 \*

 1(2) 0,100 0,108 0,92 0,375 1,00

 2(2) -0,100 0,108 -0,92 0,375 \*

Fits and Diagnostics for Unusual Observations

Obs Smørsmak Fit Resid Std Resid

 11 3,800 4,325 -0,525 -2,07 R

R Large residual

Expected Mean Squares, using Adjusted SS

 Expected Mean Square

 Source for Each Term

1 Blokk (4) + 8,0000 (1)

2 Homogeniseringsmetode (4) + Q[2; 3]

3 Kultur(Homogeniseringsmetode) (4) + Q[3]

4 Error (4)

Error Terms for Tests, using Adjusted SS

 Synthesis

 Source Error DF Error MS of Error MS

1 Blokk 11,00 0,0936 (4)

2 Homogeniseringsmetode 11,00 0,0936 (4)

3 Kultur(Homogeniseringsmetode) 11,00 0,0936 (4)

Variance Components, using Adjusted SS

Source Variance % of Total StDev % of Total

Blokk 0,0195455 17,27% 0,139805 41,56%

Error 0,0936364 82,73% 0,306001 90,96%

Total 0,113182 0,336425

**Normplot of Residuals for Smørsmak**

**General Linear Model: Sur smak versus Blokk; Homogeniseringsmetode; Kultur**

Method

Factor coding (-1; 0; +1)

Factor Information

Factor Type Levels Values

Blokk Random 2 1; 2

Homogeniseringsmetode Fixed 2 1; 2

Kultur(Homogeniseringsmetode) Fixed 4 1(1); 2(1); 1(2); 2(2)

Analysis of Variance

Source DF Adj SS Adj MS F-Value P-Value

 Blokk 1 0,42250 0,42250 2,52 0,141

 Homogeniseringsmetode 1 0,02250 0,02250 0,13 0,721

 Kultur(Homogeniseringsmetode) 2 0,30500 0,15250 0,91 0,432

Error 11 1,84750 0,16795

 Lack-of-Fit 3 0,18750 0,06250 0,30 0,824

 Pure Error 8 1,66000 0,20750

Total 15 2,59750

Model Summary

 S R-sq R-sq(adj) R-sq(pred)

0,409823 28,87% 3,01% 0,00%

Coefficients

Term Coef SE Coef T-Value P-Value VIF

Constant 3,587 0,102 35,02 0,000

Blokk

 1 -0,163 0,102 -1,59 0,141 \*

 2 0,163 0,102 1,59 0,141 \*

Homogeniseringsmetode

 1 0,037 0,102 0,37 0,721 1,00

 2 -0,037 0,102 -0,37 0,721 \*

Kultur(Homogeniseringsmetode)

 1(1) 0,125 0,145 0,86 0,407 1,00

 2(1) -0,125 0,145 -0,86 0,407 \*

 1(2) 0,150 0,145 1,04 0,323 1,00

 2(2) -0,150 0,145 -1,04 0,323 \*

Fits and Diagnostics for Unusual Observations

Obs Sur smak Fit Resid Std Resid

 6 2,400 3,337 -0,937 -2,76 R

R Large residual

Expected Mean Squares, using Adjusted SS

 Expected Mean Square

 Source for Each Term

1 Blokk (4) + 8,0000 (1)

2 Homogeniseringsmetode (4) + Q[2; 3]

3 Kultur(Homogeniseringsmetode) (4) + Q[3]

4 Error (4)

Error Terms for Tests, using Adjusted SS

 Synthesis

 Source Error DF Error MS of Error MS

1 Blokk 11,00 0,1680 (4)

2 Homogeniseringsmetode 11,00 0,1680 (4)

3 Kultur(Homogeniseringsmetode) 11,00 0,1680 (4)

Variance Components, using Adjusted SS

Source Variance % of Total StDev % of Total

Blokk 0,0318182 15,93% 0,178377 39,91%

Error 0,167955 84,07% 0,409823 91,69%

Total 0,199773 0,446959

**Normplot of Residuals for Sur smak**

**General Linear Model: Helhetsinntrykk versus Blokk; Homogeniseringsmetode; Kultur**

Method

Factor coding (-1; 0; +1)

Factor Information

Factor Type Levels Values

Blokk Random 2 1; 2

Homogeniseringsmetode Fixed 2 1; 2

Kultur(Homogeniseringsmetode) Fixed 4 1(1); 2(1); 1(2); 2(2)

Analysis of Variance

Source DF Adj SS Adj MS F-Value P-Value

 Blokk 1 0,02250 0,02250 0,08 0,780

 Homogeniseringsmetode 1 1,10250 1,10250 4,03 0,070

 Kultur(Homogeniseringsmetode) 2 0,12500 0,06250 0,23 0,799

Error 11 3,00750 0,27341

 Lack-of-Fit 3 0,78750 0,26250 0,95 0,463

 Pure Error 8 2,22000 0,27750

Total 15 4,25750

Model Summary

 S R-sq R-sq(adj) R-sq(pred)

0,522885 29,36% 3,67% 0,00%

Coefficients

Term Coef SE Coef T-Value P-Value VIF

Constant 4,038 0,131 30,89 0,000

Blokk

 1 -0,038 0,131 -0,29 0,780 \*

 2 0,038 0,131 0,29 0,780 \*

Homogeniseringsmetode

 1 0,262 0,131 2,01 0,070 1,00

 2 -0,262 0,131 -2,01 0,070 \*

Kultur(Homogeniseringsmetode)

 1(1) 0,000 0,185 0,00 1,000 1,00

 2(1) -0,000 0,185 -0,00 1,000 \*

 1(2) 0,125 0,185 0,68 0,513 1,00

 2(2) -0,125 0,185 -0,68 0,513 \*

Expected Mean Squares, using Adjusted SS

 Expected Mean Square

 Source for Each Term

1 Blokk (4) + 8,0000 (1)

2 Homogeniseringsmetode (4) + Q[2; 3]

3 Kultur(Homogeniseringsmetode) (4) + Q[3]

4 Error (4)

Error Terms for Tests, using Adjusted SS

 Synthesis

 Source Error DF Error MS of Error MS

1 Blokk 11,00 0,2734 (4)

2 Homogeniseringsmetode 11,00 0,2734 (4)

3 Kultur(Homogeniseringsmetode) 11,00 0,2734 (4)

Variance Components, using Adjusted SS

Source Variance % of Total StDev % of Total

Blokk -0,0313636\* 0,00% 0,000000 0,00%

Error 0,273409 100,00% 0,522885 100,00%

Total 0,273409 0,522885

\* Value is negative, and is estimated by zero.

**Normplot of Residuals for Helhetsinntrykk**