# Oppgaver

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<td>Part I: Multiple Choice Questions</td>
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## Starttidspunkt: 02.06.2015 09:00

## Sluttidspunkt: 02.06.2015 12:00

## Opprettet av: Sara Isabelle Moen

## Antall sider: 31
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New document

Course code: ME-109
Course name: Statistics, Methods and Applied Data Analysis

Date: 2nd June, 2015

Duration: 3 hours

Resources allowed: Dictionaries (to/from/English/Norwegian) or to/from/English and the students' native language.

Notes: The exam consists of 3 sections: Part I (10 multiple choice questions, 2 points for each question), Part II (15 True-False Questions, 2 points for each question), Part III (Mixed SPSS related questions, 50 points). Please read the questions carefully before writing down the answer. There is only one correct answer for each question.

Part I: Multiple Choice Questions

1). A preliminary examination of a problem e.g. declining market share of a firm, is an example of:

Select an alternative:

- Causal research
- Descriptive research
- Exploratory research
- All of the above
Part I: Multiple Choice Questions

2). Which of the following could be a purpose of the market research?

Select an alternative:

- To gain a better understanding of a situation
- To investigate an opportunity
- To understand or address one or more problems that may be negatively impacting the firm
- All of the above

Part I: Multiple Choice Question

3). Which of the following statement is an example of the research question?

Select an alternative:

- To understand how consumers value product reviews, rating, and online searches.
- How do consumers feel about our brand, compared to our competitors?
- Customers rate our brand second only to Nikon.
- All of the above.

Part I: Multiple Choice Questions

4). Qualitative research "An Analysis of Factors that Contribute to a Parent-School Conflict in Special Education", conducted by Lake and Billingsley (2000) is an example of which of the following qualitative research types:
Part I: Multiple Choice Questions

5). Which of the following is FALSE? When you conduct research you should make sure that:

Select an alternative:

- Respondents have the right not to participate.
- Respondents have the right to stop participating in a research study at any time.
- Respondents have the right to require that their information remain confidential.
- Respondents do not have the right to require that personal information be deleted after use.

Part I: Multiple Choice Questions

6).

I. A company sends out a request for proposal (RFP) to various companies, but the decision has already been made about who will do the research.

II. A firm submits a bid with an extremely low price, but it has no intention of doing the work at the quoted price.

III. The firm submits a price that is legitimate. But, once the contract is signed, the firm identifies some means of upgrading the study.
Which of the statements above are examples of unethical behavior from research suppliers side?

Select an alternative:

Only I.
I and II.
II and III.
I and III.

Part I: Multiple Choice Questions

7). If you group the variables below based on the their similarities in the levels of measurement, which one would be left out?

Select an alternative:

IQ Scores
Gender
Annual income in NOK
Height

Part I: Multiple Choice Question

8). Which of the following is calculated by adding all the cases and dividing by the number of those cases?

Select an alternative:

Median
Mean
Mode
Standard deviation
Part I: Multiple Choice Questions

9). Which of the following statement explains Type II error?

Select an alternative:

- The error of accepting the null hypothesis when it is false.
- The error of rejecting the null hypothesis when it is true.
- The error of rejecting the null hypothesis when it is false.
- None of the above.

10). Which of the following assumptions should be fulfilled to apply Pearson correlation test?

Select an alternative:

- The relationship between the variables is linear.
- The data are drawn from normally distributed populations.
- The data collected must be interval or ratio.
- All of the above.

Part II: True-False Question

11). A company is conducting a research to select a location for their new store. This is an example of conducting research to understand the problem that may be negatively impacting the profit of the firm.
Part II: True-False Questions

12). Qualitative research involves structural data collection methods, provide results that can be converted to numbers and analyzed through statistical procedures.

Select an alternative:

True
False

Part II: True-False Questions

The figure in the attached file, indicates a strong negative correlation between the variables 'High School GPA' and 'SAT Score'.

Select an alternative:

True
False

Denne oppgaven inneholder en PDF. Se neste side.
Part II: True-False Questions

Q 13).
Part II: True-False Question

14). In order to conclude the rejection of a null hypothesis (H0), in a two-tailed test, researchers look for a level of significance (p-value) that is lower than 0.05 or 5 %.

Select an alternative:

True
False

Part II: True-False Question

15). A company, where the average yearly employee salary is 480.000NOK with a standard deviation of 15.000 NOK, offers you a job with 450.000NOK yearly salary. You can conclude that you will probably be earning less than a typical employee in the company.

Select an alternative:

True
False

Part II: True-False question

16). Two factor independent analysis of variance (Two-way ANOVA) is applied in a situation when a researcher analyzes the effect of the two independent variables on one dependent variable, and dependent variable is continuous.

Select an alternative:

True
False
Part II: True-False Question

17). A researcher was interested in the effects of hints on a person’s ability to solve anagrams. The time it took a participants to solve five eight-letter anagrams was measured. The same five anagrams were used in three conditions: first letter (where the first letter of the word was given), last letter (where the last letter was given), and no letter (where no help was given). Thirty participants were chosen and ten were randomly allocated to each condition. The number of minutes it took to solve the five anagrams was recorded. The researcher believes that One-way ANOVA is the appropriate test for this analysis.

*Select an alternative:*

True  
False

---

18). A correlation coefficient of $r = 0.95$, indicates a very strong positive correlation between two variables.

*Select an alternative:*

True  
False
Part II: True-False Question

19). The probability of an event is a numerical value that represents the proportion of times the event is expected to occur when the experiment is repeated under identical conditions.

*Select an alternative:*

True
False

20). What is the probability that a person who just turned 80 will survive beyond age 90? A researcher must apply 'conditional probability' to answer this question.

*Select an alternative:*

True
False

21). On the basis of the mean values, given in the table (See the attached file), researcher can conclude that 'Service quality' is the least important factor.

*Select an alternative:*

True
False
Denne oppgaven inneholder en PDF. Se neste side.
### Part II: True-False Questions

21).

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std. Deviation</th>
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<tbody>
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<tr>
<td>Loading discharging rate</td>
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<td>5</td>
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<td>Handling charges</td>
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<tr>
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<td>3.58</td>
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<td>5</td>
<td>4.06</td>
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<td>5</td>
<td>4.17</td>
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<td>5</td>
<td>2.82</td>
<td>0.994</td>
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</tbody>
</table>
Part II: True-False Question

22). A low standard deviation means that the data is very closely related to the average, thus very reliable.

Select an alternative:
- True
- False

Part II: True-False Question

23). The figure in the attached file shows distributions for the two data sets. A researcher concluded that both data sets follow normal distribution.

Select an alternative:
- True
- False

Denne oppgaven inneholder en PDF. Se neste side.
Part II: True-False Questions

23).
Part II: True-False Question

24). Because of time and cost constraints, researchers in most studies will select a sample, rather than the entire population being studied.

Select an alternative:

- True
- False

25). A correlation is performed to test the degree to which the scores on the two variables correlate, that is the extent to which the variation in the scores on one variable results in a corresponding variation in the scores on the second variable.

Select an alternative:

- True
- False

Part III: SPSS Questions

Tetra Laval is the Sweden-based multinational liquid food processing and packaging group with headquarters in Pully, Switzerland. The Tetra Laval Group provides packaging, processing and distribution solutions for a range of foodstuffs. The Tetra Laval Group includes Tetra Pak, DeLaval and Sidel. The company is planning to develop its own travel iPhone application. For this purpose the company wants to get an overview of their employees business trips. They have randomly
collected the data of 30 employees (15 males and 15 females) and also noted their business travel (international and local) expenditures over two years: 2010 and 2011. The variables are presented below:

X1: Gender (1=Male. 2=Female).
X2: Business trips (1=International, 2=local).
X3: Travel expenditures in 2010.
X4: Travel expenditures in 2011.

Answer the next two questions based on the information given above. Use the SPSS dialogue boxes to answer these questions (the files are attached with each question). There is only one correct analysis for each question.

Part III: SPSS Questions

26). The company is interested to see whether there is a difference in the travel expenditure (for the year 2010) among the male and female employees. Fill out the necessary SPSS analysis dialogue box, (Test A, B, or C) that will produce statistical results relevant to the research objective. See the attached file.

*Fill in your answer here*
Test A: Independent-Samples T Test
Test B: Paired-Samples T Test

Test C: One-Way ANOVA test
Part III: SPSS Question

27). On the basis of some information the company can predict that the employees on average spend more during 2010 business trip compared to 2011. You are asked to check whether there is a statistical significant difference between the means of the two years. Fill out the necessary SPSS analysis dialogue box (Test A, B, or C) that will produce statistical results relevant to the research objective. See the attached file.

Fill in your answer here

Denne oppgaven inneholder en PDF. Se neste side.
Test A: Independent-Samples T Test

A-1

A-2

A-3

A-4
Test B: Paired-Samples T Test

Test C: One-Way ANOVA test
Part III: SPSS Question

28). The company is curious to know whether the gender difference would influence the decision to select local or international business trip. To answer this question, researchers have conducted a Chi-Square test. Answer the following sub-questions based on the SPSS output (See attached file).

1. Identify dependent and independent variable (5 points).
2. What are the null hypothesis (H0) and the alternative hypothesis (HA) for this research problem? (5 points)
3. Based on the SPSS results, do you reject or fail to reject the H0? Explain why (5 points).

Fill in your answer here

Denne oppgaven inneholder en PDF. Se neste side.
Gender * Business trip Crosstabulation

<table>
<thead>
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<th>Count</th>
<th>Expected Count</th>
<th>% within Business trip</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>international</td>
<td>local</td>
</tr>
<tr>
<td>male</td>
<td>6</td>
<td>6.5</td>
<td>8.5</td>
</tr>
<tr>
<td>female</td>
<td>7</td>
<td>6.5</td>
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</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>13.0</td>
<td>17.0</td>
</tr>
</tbody>
</table>

% within Business trip:

- Male: 46.2% international, 52.9% local, 50.0% total
- Female: 53.8% international, 47.1% local, 50.0% total

Chi-Square Tests

<table>
<thead>
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<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
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<td>Pearson Chi-Square</td>
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<td>.713</td>
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<td>1.000</td>
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<td>Fisher's Exact Test</td>
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<td>N of Valid Cases</td>
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</table>
Part III: SPSS Question

29). A science teacher wanted to investigate what was the best predictor of her students’ science exam score. Data was collected for ten students; this include their study time for the exam (mean hours per week, over three weeks), intelligence (measured using a standard test), hours attended in class over the last year and their examination marks for other core subjects, maths and literacy. The variables are presented below:

X1: Study time.
X2: Science exam score.
X3: Intelligence.
X4: Maths exam score.
X5: Class attendance.
X6: Literacy exam score.

Fill out the SPSS dialogue box (29-A and 29-B) that will produce the statistical results relevant to this research objective (6 points). See the attached file.

*Fill in your answer here*
Part III: SPSS Question

30). Researchers conducted a multiple regression analysis to answer the research question presented in the previous question. The SPSS output for the multiple regression analysis is given. Based on the SPSS output, answer the next TRUE or FALSE questions (3 points per question).

a). The multiple correlation coefficient (r=0.959) shows that the independent variables together account for 95.9 per cent of the changes in the dependent variable.

Select an alternative:

True
False
## SPSS Output (Question 30)

### Model Summary

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<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
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<tr>
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### ANOVA

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### Coefficients

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<td>B</td>
<td>Std. Error</td>
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<td>.021</td>
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### Tests of Normality

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<th>Shapiro-Wilk</th>
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<tr>
<td>Intelligence Score</td>
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<td>Hours of Class Attendance</td>
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Part III: SPSS Question

b). The value of $F = 9.279$; and $p<0.05$, indicate that the independent variables explain a significant amount of the changes in the dependent variable.

Select an alternative:

True
False

New Question

c). The intercept of the regression line is negative and insignificant.

Select an alternative:

True
False

Part III: SPSS Question

d). Study time and intelligence score have a significant positive effect on dependent variable.

Select an alternative:

True
False
Part III: SPSS Question

e). Class attendance and literacy exam score have a **significant** negative effect on dependent variable.

*Select an alternative:*

True  
False

Part III: SPSS Question

f). The co-efficient of the ‘Maths exam score’ is significant (p <0.05) and indicates that when Maths exam score will increase by one unit, dependent variable will increase by 0.884.

*Select an alternative:*

True  
False

Part III: SPSS Question

g). The tests for normality indicate that all independent variables are normally distributed.

*Select an alternative:*

True  
False