

## Examples for questions QM

*The answers provided here are only examples – not to be learned by heart!*

### 1. What is business research? Why should there be any question about the definition of research?

*Business research, as it is used in this text, is a systematic inquiry that provides information to guide managerial decisions. More specifically, it is a process of planning, acquiring, analyzing, and disseminating relevant data, information, and insights to decision makers in ways that mobilize the organization to take actions that maximize business performance.*

*Questions arise when people begin to provide their own definitions of research, which in some way restrict the meaning of “research” to specific approaches, topics, or procedures.*

### 2. A sales force manager needs to have information in order to decide whether to create a custom motivation program or purchase one offered by a consulting firm. What are the dilemmas the manager faces in selecting either of these alternatives?

*To choose either option, the sales manager must first determine the goals of the motivation program, in terms of desired attitudes and behavior. He/she needs to know the current motivation level of the employees, and the incentives or penalties that would motivate them to adopt desired attitudes and behavior.*

*If the existing program can achieve the desired results, it would be the right choice. However, if it only meets some of the requirements, the manager would have to weigh such things as total benefits, cost, ease of administering the training, implementation time, cost and development time of a custom program, and so on.*

### 3. Distinguish among the following sets of items, and suggest the significance of each in a research context.

#### a Deduction and induction

*Both deduction and induction are basic forms of reasoning. While we may emphasize one over the other from time to time, both are necessary for research thinking. Deduction is reasoning from generalizations to specifics that flow logically from the generalizations. If the generalizations are true and the deductive form valid, the conclusions must also be true. Induction is reasoning from specific instances or observations to some generalization that is purported to explain the instances. The specific instances are evidence and the conclusion is an inference that may be true.*

#### b Operational definition and dictionary definition

*Dictionary definitions are those used in most general discourse to describe the nature of concepts through word reference to other familiar concepts, preferably at a lower abstraction level. Operational definitions are established for the purposes of precision in measurement. With them we attempt to classify concepts or conditions unambiguously and use them in measurement. Operational definitions are essential for effective research, while dictionary definitions are more useful for general discourse purposes.*

#### c Hypothesis and proposition

*A proposition is a statement about concepts that can be evaluated as true or false when compared to observable phenomena. A hypothesis is a proposition made as a tentative statement configured*

*for empirical testing. This further distinction permits the classification of hypotheses for different purposes, e.g., descriptive, relational, correlational, causal, etc.*

#### d Scientific method and spontaneous approach

*The characteristics of the scientific method are confused in the literature primarily because of the numerous philosophical perspectives one may take when “doing” science. A second problem stems from the fact that the emotional characteristics of scientists do not easily lend themselves to generalization. For our purposes, however, the scientific method is a systematic approach involving hypothesizing, observing, testing, and reasoning processes for the purpose of problem solving or amelioration. The scientific method may be summarized with a set of steps or stages but these only hold for the simplest problems.*

### 4. Describe the characteristics of the scientific method.

*The scientific method emphasizes (1) direct observation of phenomena, (2) clearly defined variables, methods, and procedures, (3) empirically testable hypotheses, (4) the ability to rule out rival hypotheses, (4) statistical rather than linguistic justification of conclusions, and (6) the self-correcting process.*

### 5. In your company’s management development program, there was a heated discussion between some people who claimed, “Theory is impractical and thus no good,” and others who claimed, “Good theory is the most practical approach to problems.” What position would you take and why?

*Answers can vary. Sample answer:*

*The statement that “theory is impractical and thus no good” illustrates a misconception of the true meaning of theory. The second quotation is more to the point: there is nothing so practical as a good theory (Kurt Lewin) because of the power it gives us to explain and predict the target phenomenon.*

*We use theory constantly as we explain why certain events occur or why one procedure succeeds and another does not. Theory represents an identification of key causal relationships, which explain outcomes in a variety of situations. It is an effort to extract the essence of relationships, ignoring less important contextual factors. The adequacy of a theory comes from its capacity to explain phenomenon in a variety of contexts and situations and this is referred to as its capacity to “travel.” Often, theories are too simplistic, and therefore lack explanatory power across situations. The solution lies in improving the theory, possibly introducing more variables, rather than rejecting the central concept.*

## Chapter 3

### 6. Some questions are answerable by research, and others are not. Using some management problems of your choosing, distinguish between them. (3)

*Answers can vary. Sample answer:*

*When we consider whether a topic is researchable it is wise to note that the answer is one of degree. Research can shed some light on most topics, but there are two situations where research can not provide much help. In the first case there are questions relating to “value” where fact gathering can not contribute much. For example, we may consider making a merger offer to company X and ask the question, “Do we really want to grow in this way?” Or, “Will we be happier making this offer rather than an offer to company Y?”*

*A second situation where research is limited concerns those questions where data gathering could be helpful, but our techniques or procedures are inadequate. In the merger case, for example, we*

might ask the question, “Will the stockholders of Company X welcome our merger offer?” This type of question is answered if there is a way to get the data before making the offer. However, there may be no method to enable us to make this assessment short of making the offer. Or again, the question, “Will the U.S. Department of Justice fight our merger plan?” While there are no legitimate techniques to gain certainty about such information, research may provide probable or at least possible clues as to reactions from stockholders, government agencies and other stakeholders.

**7. Confronted by low productivity, the president of Oaks International, Inc. asks a research company to study job satisfaction in the corporation. What are some of the important reasons that this research project may fail to make an adequate contribution to the solution of management problems?**

The President of Oaks International Inc. faces a management dilemma: the company is plagued by low productivity. The management question should seek to identify the factors that lead to low productivity and identify the strategies that can lead to increases in productivity. In this case the President is assuming that (1) the cause of low productivity in the organization is job satisfaction (2) there is a relationship between job satisfaction and productivity. The latter relationship, even if partially valid, may be largely influenced by moderating and intervening variables. For instance, performance or productivity is an outcome of “work input” or effort, and this becomes a key intervening variable; a similar variable may be absenteeism. Focusing on these variables may be important, as their salience may be as high as that of job satisfaction. Finally, the cause of low productivity may not lie in personnel issues, but in other matters such as the plant, equipment, materials availability, or technology. The President’s approach biases the results and an exploratory exercise to determine possible causes of low productivity is necessary. This may be followed up by a pilot study to narrow key research questions to factors that have greater importance with respect to productivity.

**8. Develop the management-research question hierarchy (Exhibits 3-2 and 3-3), citing management dilemma, management question, and research question(s) for each of the following:**

- a. The production manager of a shoe factory.
- b. The president of a home health care services firm.
- c. The vice president of labor relations for an auto manufacturer.
- d. The retail advertising manager of a major metropolitan newspaper.
- e. The chief of police in a major city.

**a. The production manager of a shoe factory**

*Management Dilemma: There is a decline in plant productivity.*

*Management Question: How do we increase plant productivity, to bring it back to its former level?*

*Research Questions: (1) What are the factors impacting productivity and how important is each factor? (2) Which are the factors to be focused on to increase productivity? (3) How does productivity in this factory compare to industry norms, considering labor and capital productivity?*

**b. The president of a home healthcare services firm**

*Management Dilemma: The firm is experiencing an increasing number of complaints regarding health care service quality.*

*Management Problem: What can be done to improve service quality?*

*Research Questions: (1) Is there a real problem in the quality of service or is the ‘perceived’ quality of the service poor? (2) Which categories of health care services are generating the major portion of complaints? (3) What specific improvements can improve these services? (4) What may be expected as an outcome of the improvements?*

**c. The vice president of labor relations for an auto manufacturer**

*Management Dilemma: Low productivity and high absenteeism at the manufacturing plant.*

*Management Question: What are the causes for low productivity and high absenteeism?*

*Research Questions: (1) What are the causes of low productivity that relate to personnel issues? (2) What are the causes of low productivity that relate to technology, or the manufacturing plant? (3) What are the causes of absenteeism? (4) Is there an employee morale problem in the plant, and if so, what are its major dimensions?*

**d. The retail advertising manager of a major metropolitan newspaper**

*Management Dilemma: Should advertising rates be revised?*

*Management Question: Should the advertising rates be revised, by how much, and what gains are expected from the revision?*

*Research Questions: (1) What are the rates of competing publications? (2) What should the differentials between rates for different ‘positions’ be? (3) What impact will a rate increase have on the demand for advertising? (4) What should the revised advertising tariff structure be?*

**e. The chief of police in a major city**

*Management Dilemma: A need for more efficient dispatching of police officers?*

*Management Question: Which are the systems that have a more efficient dispatch of officers, and what are the associated implementation costs?*

*Research Questions: (1) Which dispatch systems are in use in other places, what are their costs, and how is their efficiency? (2) What are the steps and costs associated with the introduction of the three most efficient alternatives?*

Exhibit 3-2 Management-Research Question Hierarchy

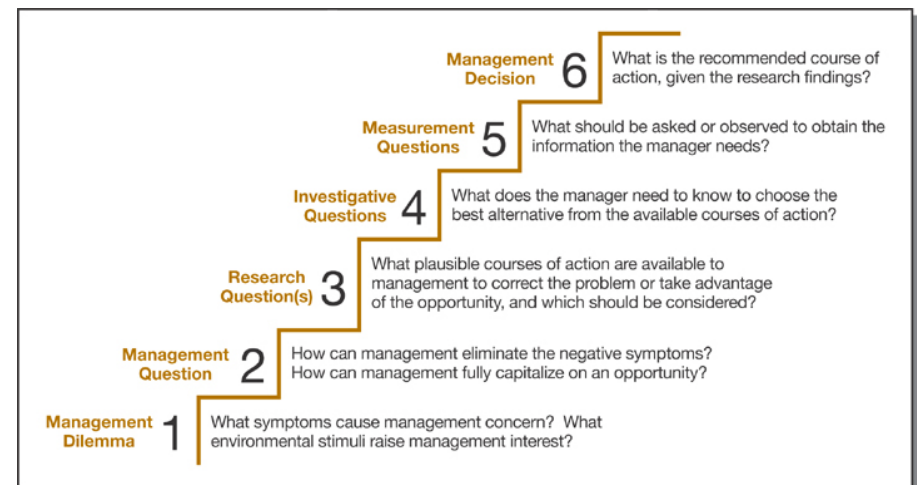
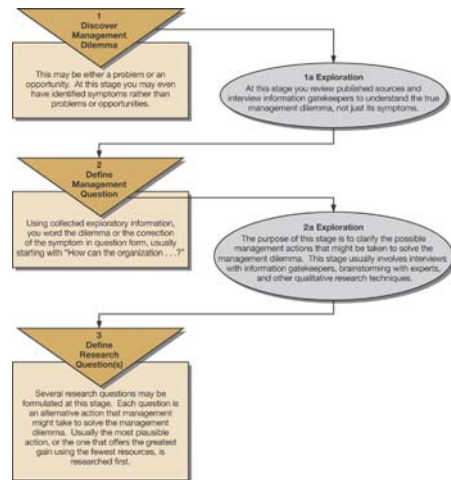


Exhibit 3-3 Formulating the Research Question



Describe the following terms:

- Likert-Scale
- Semantic Differential

(Chapter 13, slides 41, 42)

Chapter 15

Distinguish between

a) A statistic and parameter

A parameter is a value of a population, while a statistic is a similar value based on sample data. For example, the population mean is a parameter, while a sample mean is a statistic.

b) Sample frame and population

A population is the total collection of people, cases, or other elements which we define and about which we wish to make inferences. The sample frame is the actual pool from which we draw our sample. Ideally it is the same as the population but it often differs due to practical considerations of information availability.

c) Restricted and unrestricted sampling

Unrestricted sampling occurs when sample elements are selected individually and directly from the population at large. Restricted sampling occurs when additional controls are placed on the process of element selection.

Describe the following terms:

- Sampling
- Population Element
- Population
- Census
- Sampling frame

The basic idea of sampling is that by selecting some of the elements in a population, we may draw conclusions about the entire population.

A population element is the individual participant or object on which the measurement is taken. It is the unit of study. It may be a person but it could also be any object of interest.

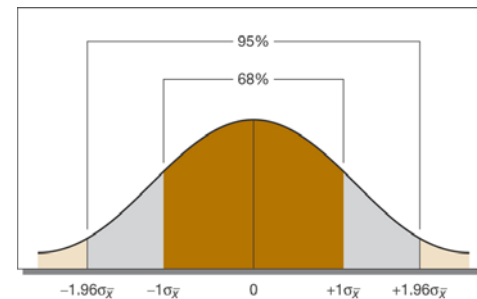
A population is the total collection of elements about which we wish to make some inferences.

A census is a count of all the elements in a population.

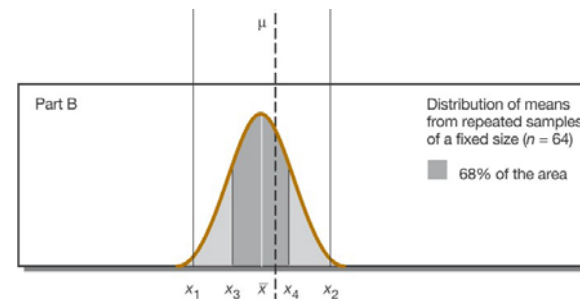
A sample frame is the listing of all population elements from which the sample will be drawn.

Describe in your own words:

Confidence Levels & the Normal Curve



The Central Limit Theorem





**Economic Growth** (20 points in total)

**Task 1.1** Economists are interested in figuring out why some countries grow faster than others. To investigate this issue we have collected cross-sectional data for n=100 countries on:

- Y = average annual growth in GDP per capita from 1960-1990 measured as a percentage (e.g. 1.5 means GDP per capita has been growing by 1.5% per year on average).
- X<sub>1</sub> = the number of years schooling of the average worker.
- X<sub>2</sub> = the proportion of the population which stays in school until age 14.
- X<sub>3</sub> = investment measured in hundreds of dollars per worker.
- X<sub>4</sub> = GDP per capita in 1960 (measured in dollars).

Below is the Excel output of a correlation matrix involving all these variables and of a regression of Y on X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub> and X<sub>4</sub>. Use this output when answering the following questions.

**Task 1.2** What is the OLS estimate of the coefficient on X<sub>3</sub>? State verbally how you would interpret this number. [2]

-- Answer: 1.097278. "An increase of investment of \$100 per worker tends to be associated with an increase in average growth of GDP per capita of 1.097278%, ceteris paribus." --

**Task 1.3** What is a 95% confidence interval for the coefficient on X<sub>3</sub>? What is the 99% confidence interval? Why do they differ? Briefly explain a confidence interval? [3]

Answer: [0.175417, 2.019138] and [-0.123319, 2.317875]. Confidence levels differ. If you want to be more sure that the coefficient lies in a confidence interval, a wider interval obtains. In other words, 99% confidence intervals are always wider than 95% ones.

**Task 1.4** Which variables are statistically significant (at the 5% level)? Explain. [4]

Answer: X<sub>1</sub> and X<sub>3</sub> are significant (others are not). P-values are less than .05.

**Task 1.5** How good does this regression fit the data? Why? [2]

Relatively well as the adjusted R<sup>2</sup> is around 86% .

**Task 1.6** Describe your results as you would explain them **briefly** to an economist (not a statistician). Do the results match with your economic intuition? Are there any puzzling features of the results? [9]

Answer: Note that we emphasize the word "brief" here. High grades will be given for being succinct and focusing on the most important aspects (maybe one hand-written page at most). The following issues might be highlighted:

Investment and years of schooling are positively associated with growth and both of these variables are significant. Countries which invest more and have more highly-schooled workers tend to grow faster, all else being equal. This is what we would expect. (You might mention the magnitude of the effects and interpret them.)

However, the effect of GDP per capita in 1960 is negligible. GDP per capita measures whether a country was initially poor or rich. So there is no evidence that poor countries tend to grow faster than rich, or vice versa (ceteris paribus).

One education variable, X<sub>2</sub>, is not significant, but another X<sub>1</sub> is significant. This seems to be the only puzzling result. It is probably due to multicollinearity (take a look at the correlation matrix).

EXCEL OUTPUT FOR QUESTION and CORRELATION MATRIX

	Y	X1	X2	X3	X4
Y	1				
X1	0.926876	1			
X2	0.921851	0.993121	1		
X3	0.047899	-0.041256	-0.033344	1	
X4	-0.000714	0.020552	0.036132	0.107342	1

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.931388
R Square	0.867484
Adjusted R	0.861904
Standard E	0.539964
Observatio	100

ANOVA

	df	SS	MS	F	ignificance F
Regressor	4	181.3198	45.32996	155.4731	8.57E-41
Residual	95	27.69833	0.291561		
Total	99	209.0182			

	Coefficient	standard Error	t Stat	P-value	Lower 95%	Upper 95%	ower 99.0%	pper 99.0%
Intercept	2.325524	1.212276	1.918313	0.058074	-0.081146	4.732194	-0.861046	5.512095
X1	0.292653	0.111279	2.629895	0.009964	0.071736	0.51357	0.000146	0.58516
X2	0.42817	1.63712	0.261539	0.794243	-2.821921	3.678262	-3.875139	4.73148
X3	1.097278	0.464355	2.363015	0.020165	0.175417	2.019138	-0.123319	2.317875
X4	-0.000987	0.001217	-0.810962	0.419415	-0.003402	0.001429	-0.004185	0.002212