

UNIVERSITI SAINS MALAYSIA
Master of Business Administration

First Semester Examination
Academic Session 1995/96

October/November 1995

AGW602 - RESEARCH METHODOLOGY

Time : [2 hours]

INSTRUCTIONS:

Please make sure that this examination paper consists of **NINE (9)** printed pages before you begin.

There are three sections to this examination paper. Answer **ONE (1)** question from **EACH** section.

SECTION A

1. Suppose you wish to compile a list of "500 best companies to work for in Malaysia" using some form of rating system.
 - a. What five dimensions can you use?
 - b. Develop elements for each dimension and find observable indicators that you might use to measure them.
 - c. How would you compile all these indicators into a single index?
 - d. How would you judge reliability and validity of your measurement?

[30 marks]

- 2a. Comment on the following sampling design.
 - i. A department store that wishes to examine whether it is losing or gaining customers draws a sample from its list of credit card holders by selecting every 10th name.
 - ii. A car manufacturer decided to research consumer characteristics by sending 100 questionnaires to each of its dealer. The dealers would then use their sales records to trace down buyers of their car and distribute the questionnaire.

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b. Mega Cable TV operates in the Klang valley, receives signals via satellite from subscription STV and transmits a UHF signal over the air from a local facility. It broadcasts feature movies through a scrambled TV signal. It begins broadcast at 7 p.m. on weekdays and 1 p.m. on weekends and ends transmission at 4 a.m. daily. It has a customer base of approximately 8000 homes. It plans to conduct a survey to identify the demographics of its subscribers and to determine their satisfaction with its program selections.

i. What survey design (data collection method) should Mega use? Why?

ii. What sample design should it use? Why?

[30 marks]

SECTION B.

3. A researcher for an airline magazine wishes to find how three airlines rates against each other. Three airlines were chosen and 20 passengers, 10 each from 1st class and economy class, were randomly selected for each airline. Rating by passengers were made on a scale of 1 to 100 with 100 being the best. Results from a two-way ANOVA and Means are as follows.

Summary table for a 2-way ANOVA

Source	d.f.	Sum of squares	Mean square	F-value	p-value
Airline	2	11644.033	5822.017	39.178	.0001
Class	1	3182.817	3182.817	21.418	.0001
Airline * Class	2	517.033	258.517	1.740	.1853
Residual	54	8024.700	148.606		

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*Means Table Effect: Airline * Class*

	Count	Mean	Std. Dev.	Std. Error
SMA Economy	10	35.60	12.140	3.839
SMA First Class	10	42.30	15.550	4.917
Caty Economy	10	48.50	12.501	3.953
Caty First Class	10	69.30	9.166	2.898
AIS Economy	10	64.80	13.037	4.123
AIS First Class	10	81.00	9.603	3.037

- a. What conclusions can you draw from the above results?
- b. If you are to do a separate one-way ANOVA for ratings across airlines and another across Class you may get the same conclusions. What is the advantage of using a two-way ANOVA as above instead of doing two separate 1-way ANOVA?
- c. Supposing you take a second rating from the same set of passengers a few weeks later, what test should you use to compare whether or not the second ratings differ significantly from the first ratings?

[20 marks]

4. The director of an MBA program has been reviewing grades of the students and is struck by the pattern in the data. His hunch is that certain types of people are involved in the study of management, and he decides to gather evidence for this idea. A random sample of 21 grade reports were chosen for students in the middle of the GPA range. Three steps were followed.
 - (i) A correlation matrix between grades for all pairs of the 10 courses for which data exist. A portion of it is shown in *Table 4.1* below.
 - (ii) Factor analysis was done using principal components analysis. The results are given in *Table 4.2*.
 - (iii) A varimax rotation was done on the factors to aid interpretation. Results are given in *Table 4.3*.

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Table 4.1: Correlation Coefficients

Variable	Course	V1	V2	V3	V10
V1	Financial accounting	1.00	.56	.17	-.01
V2	Managerial accounting	.56	1.00	-.22	.06
V3	Finance	.17	-.22	1.00	.42
V4	Marketing	-.14	.05	-.48	-.10
V5	Human behaviour	-.19	-.26	-.05	-.23
V6	Organisational design	-.21	-.00	-.56	-.05
V7	Production	-.44	-.11	-.04	-.08
V8	Probability	.30	.06	.07	-.10
V9	Statistical inference	-.05	.06	-.32	.06
V10	Quantitative analysis	-.01	.06	.42	1.00

Table 4.2: Factor matrix using Principal Component

Variable	Course	V1	V2	V3	Communality
V1	Financial accounting	.41	.71	.23	.73
V2	Managerial	.01	.53	-.16	.31
V3	accounting	.89	-.17	.37	.95
V4	Finance	-.60	.21	.30	.49
V5	Marketing	.02	-.24	-.22	.11
V6	Human behaviour	-.43	-.09	-.36	.32
V7	Organisational design	-.11	-.58	-.03	.35
V8	Production	.25	.25	-.31	.22
V9	Probability	-.43	.43	.50	.62
V10	Statistical inference	.25	.04	.35	.19
	Quantitative analysis				
		1.83	1.52	.95	
	Eigenvalue	18.30	15.20	9.50	
	Percent of Variance	18.30	33.50	43.0	
	Cumulative percent				

Table 4.3: Varimax Rotated Factor Matrix

Variable	Course	Factor 1	Factor 2	Factor 3
V1	Financial accounting	.84	.16	-.06
V2	Managerial	.53	-.10	.14
V3	accounting	-.01	.90	-.37
V4	Finance	-.11	-.24	.65
V5	Marketing	-.13	-.14	-.27
V6	Human behaviour	-.08	-.56	-.02
V7	Organisational design	-.54	-.11	-.22
V8	Production	.41	-.02	-.24
V9	Probability	.07	.02	.79
V10	Statistical inference Quantitative analysis	-.02	.42	.09

- a. How are the factor loadings interpreted?
- b. What is the meaning of a communality of 0.31 found in Table 4.2?
- c. How can you interpret the three factors obtained in Table 4.3?

[20 marks]

SECTION C

5. For the case given in the appendix, answer the following.
- a. Evaluate the research design.
 - b. Suggest improvements that could be made in the questionnaire.
 - c. Identify the dependent and independent variables. Explain.
 - d. Suggest two hypotheses that can be tested.
 - e. What statistical techniques would be appropriate to test your two hypotheses?

[50 marks]

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CASE

OMAR'S FAST
FREIGHT

Omar's Fast Freight, a regional truck transportation company, had eight offices and accompanying truck docks located in a four-state area. Trucks arrived daily with inbound freight that had to be unloaded onto the truck dock and then reloaded onto smaller trucks for city delivery. The process for outbound freight was similar: The city trucks picked up the local freight that had to be unloaded onto the truck dock and then loaded onto outbound trucks going to the other cities serviced by Omar's Fast Freight.

The nature of the transportation business required Omar's Fast Freight to operate its truck docks on a round-the-clock basis. Dock workers worked on a rotating shift basis. There were three shifts:

- Day (8:00 a.m. to 3:30 p.m.)
- Evening (3:30 p.m. to midnight)
- Night (midnight to 8:00 a.m.)

Mr. Weslow, the personnel manager, had heard of some grumblings about shift work from the dock workers. He wanted to learn what the workers thought about working the rotating shift, so he decided to conduct a survey. The questionnaire used in his survey appears in Case Exhibit 1.

Mr. Weslow personally designed the questionnaire items concerning the rotating shift. He also

thought it would be a good idea to ask some questions concerning job satisfaction. He went to the library to learn about this subject.

During his library research he found an apparently valid and reliable eight-question scale on identification with the work organization.¹ Because he didn't want to make the questionnaire too long, he selected only three of the best questions for inclusion in his survey.

Because Mr. Weslow also thought that some of the workers might be drinking on the job, he decided that some questions concerning the consumption of alcohol would be of value. He suspected that asking directly if workers drank on the job wouldn't get truthful answers. He disguised the questions by asking if individuals knew someone else who frequently consumes alcohol on the job.

Mr. Weslow wanted to impress the workers that it was important to complete the questionnaire. Therefore he personally handed out the questionnaires at the end of the evening and night shifts, asking the workers to return them the following day.

EXHIBIT 1

QUESTIONNAIRE

1. What part of your rotating shift are you working this week? Please check below.

Day _____
Evening _____
Night _____

2. Compared to working steady days, do you feel that shift work is in conflict with your activities and responsibilities as a husband (accompanying wife in her activities, protecting her at home, etc.) such that you decide not to go on job that day?

Evening: Very often Often Occasionally Rarely Never
Night: Very often Often Occasionally Rarely Never

3. Compared to working steady days, do you feel that shift work is in conflict with your activities as a friend (enjoying the company of your friends, attending weddings, reunions of family and/or friends, and other get-togethers) such that you decide not to go on job that day?

Evening: Very often Often Occasionally Rarely Never
Night: Very often Often Occasionally Rarely Never

4. Compared to working steady days, do you feel that shift work is in conflict with your activities and responsibilities as a father (teaching your children, spending time with them, taking them to children's programs, etc.) such that you decide not to go on job that day?

Evening: Very often Often Occasionally Rarely Never
Night: Very often Often Occasionally Rarely Never

5. Compared to working steady days, do you feel that shift work is in conflict with your activities as a member of social organizations (attending meetings, sports events, etc.) such that you decide not to go on job that day?

Evening: Very often Often Occasionally Rarely Never
Night: Very often Often Occasionally Rarely Never

Now we would like to ask some questions about the psychological and physical effects of shift work.

Psychological: related to your esteem, status ego, anxiety over shift work, etc.

Physical: related to your health and bodily functions.

In Questions 6 and 7 two shift workers are expressing their views about shift work. Read both views, evaluate your position regarding them, and then check the appropriate box.

6.

Tom

Dick

Shift workers are not only out of sight but also out of mind of management. In shifts we lose our visibility to management and thus chances of growth. Working in shifts makes me feel that I am a part of a rotating machine and completely divorced of my status as a social being. One way to show my dissatisfaction with shifts is to be more and more absent.

Our work is always visible to our assessors and being constantly evaluated. Good performance and regularity improve our chances of growth. Shift staff is very important to the plant and as such enjoys a special status. I try to be regular in my job for my good and for the good of the company.

Check one box:

I am like Tom.	I am more like Tom than Dick.	I am halfway between Tom and Dick.	I am more like Dick than Tom.	I am like Dick.
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(continued)

7. **Bob**

Shift work offers more problems than it solves. It is damaging rather than adding to our social status. On occasions (for example, at a party) I do not like people to know that I have an abnormal life routine. On such occasions I prefer skipping the job to show that shifts are no limitations on my social life.

Pat

I like shift work. It facilitates me more than it hinders my activities. Although it makes life routine somewhat abnormal, people have a clear recognition and appreciation of the contribution we are making to national growth. As such I am not facing any psychological problems in shift work.

Check one box:

I am like Bob.	I am more like Bob than Pat.	I am halfway between Bob and Pat.	I am more like Pat than Bob.	I am like Pat.
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8. Compared to working steady days, how often does getting proper sleep or rest become so difficult that you decide not to go on job that day?

Evening:	Very often	Often	Occasionally	Rarely	Never
Night:	Very often	Often	Occasionally	Rarely	Never

9. Compared to working steady days, while working in shifts, how often do you not feel sufficiently well physically (stomach upsets, bowel problems, loss of appetite) and physical disturbance is so severe that you decide not to go on job that day?

Evening:	Very often	Often	Occasionally	Rarely	Never
Night:	Very often	Often	Occasionally	Rarely	Never

10. How much satisfied are you with your work schedule, that is, with the present arrangement of your hours for work? Check one.

- Completely satisfied with my schedule.
- Very well satisfied.
- I do not care what my working hours are.
- Dissatisfied a little.
- Very dissatisfied with my schedule.

11. If you could begin working over again in the same occupation that you are in now, how likely would you be to choose Omar's as a place to work? Check one.

- (1) Definitely would choose another place over Omar's.
- (2) Probably would choose another place over Omar's.
- (3) Wouldn't care much whether it was Omar's or some other place.
- (4) Probably would choose Omar's over another place.
- (5) Definitely would choose Omar's over another place.

12. How do you feel when you hear (or read about) someone criticizing Omar's or comparing Omar's unfavorably to other trucking companies? Check one.

- (1) It doesn't really bother me; I don't care much what other people think of Omar's.
- (2) It bothers me a little.
- (3) It bothers me quite a bit; I'm anxious to have people think well of Omar's.
- (4) I never hear or read such criticism.

13. How often do you leave the truck dock during lunch break?

Always _____ Very often _____ Occasionally _____ Never _____

14. Have you worked around someone who frequently consumed alcohol on the job?
Yes _____ No _____

15. If yes, do you ever worry about your safety?
Always _____ Sometimes _____ Never _____

16. How would you try to deal with employees drinking on the job?

17. In your opinion, which one of these suggestions would be most appropriate for dealing with the situation?
_____ Employees should not be permitted to leave the plant during lunch break unless authorized.
_____ More employee awareness through educational programs.
_____ Adoption of stricter rules in dealing with the problem.

18. How satisfied are you with your earnings?

19. What is your age? _____

20. What is your marital status? _____

21. Name of respondent _____

22. Job position _____