

School of Business
Master of Business Administration MBA Dual Specialization
Mid Term Examination - Mar 2024

Duration : 90 Minutes
 Max Marks : 50

Sem IV - MBBA6003 - Advance Statistics and Econometrics

General Instructions
 Answer to the specific question asked
 Draw neat, labelled diagrams wherever necessary
 Approved data hand books are allowed subject to verification by the Invigilator

- 1) Evaluate the usage of ANOVA table in regression analysis. Explain it with the given table. K5 (5)
- 2) In what situations would you apply Multivariate Analysis? K3 (6)
- 3) Compare Linear Discriminant Analysis and Multiple Regression Analysis. Which is more suitable in a situation, where non-metric dependent variable is given? Give reasons. K4 (8)
- 4) How do you apply the significance tests in MANOVA? For a given result of manova test, what interpretations, a business manager will make? K3 (9)

Multivariate Tests^a

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.997	8918.337 ^b	2.000	53.000	.000
	Wilks' Lambda	.003	8918.337 ^b	2.000	53.000	.000
	Hotelling's Trace	336.541	8918.337 ^b	2.000	53.000	.000
	Roy's Largest Root	336.541	8918.337 ^b	2.000	53.000	.000
Gender	Pillai's Trace	.033	.900 ^b	2.000	53.000	.413
	Wilks' Lambda	.967	.900 ^b	2.000	53.000	.413
	Hotelling's Trace	.034	.900 ^b	2.000	53.000	.413
	Roy's Largest Root	.034	.900 ^b	2.000	53.000	.413
Intervention	Pillai's Trace	.354	5.802	4.000	108.000	.000
	Wilks' Lambda	.656	6.220 ^b	4.000	106.000	.000
	Hotelling's Trace	.510	6.626	4.000	104.000	.000
	Roy's Largest Root	.479	12.926 ^c	2.000	54.000	.000
Gender * Intervention	Pillai's Trace	.256	3.958	4.000	108.000	.005
	Wilks' Lambda	.753	4.046 ^b	4.000	106.000	.004
	Hotelling's Trace	.318	4.130	4.000	104.000	.004
	Roy's Largest Root	.278	7.504 ^c	2.000	54.000	.001

- a. Design: Intercept + Gender + Intervention + Gender * Intervention
- b. Exact statistic
- c. The statistic is an upper bound on F that yields a lower bound on the significance level.

- 5) Compare the various treatments available to reduce the effect of outliers. K5 (10)

- 6) A large e-commerce company is focused on optimizing its supply chain operations to improve customer satisfaction and reduce costs. One area of interest is the time it takes to fulfill orders from its warehouses. They collect data on various factors that might impact order fulfillment time, such as warehouse size, number of workers, transportation time, and order volume with the objective to use multiple regression analysis to develop a predictive model that can estimate the time it takes to fulfill an order based on the available data. Formulate suitable hypothesis and suggest methodology to test and build models. What interpretations a business manager can make?

K6 (12)

Snippet of dataset:

Warehouse Size (sq. ft.)	Number of Workers	Transportation Time (hours)	Order Volume	Order Fulfillment Time (hours)
5000	10	2	100	4
6000	15	3	150	5
7000	12	2.5	120	4.5
5500	8	2	90	3.5
8000	20	4	200	6