



**INTERNATIONAL MANAGEMENT INSTITUTE  
BHUBANESWAR**

**POST-GRADUATE DIPLOMA IN MANAGEMENT (PGDM)  
MARKETING ANALYTICS (MK 603)  
CREDIT: 1.5 CREDITS  
SESSION DURATION: 60 MINUTES**

TERM: V  
ACADEMIC YEAR: 2021-2022  
BATCH: PGDM (2020-22)

**FACULTY:** Prof. Manit Mishra  
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**Office hours:** 9.30 AM – 5.30 PM

**Course Introduction:**

“In God we trust, everyone else must come with,” so says a very popular phrase among analysts. Indeed, with abundance of data flooding from every possible source and with a rapid evolution of techniques required to analyze this data, a skilled analyst is the most prized entity. If data is the new oil, analyst is the sought-after refinery. This course enables students to attain greater expertise in hands-on execution of cutting-edge analytical techniques. The ultimate goal is to prepare market-ready students who are able to understand the marketing dilemma; study the data; choose the most appropriate one from among a gamut of available analytical techniques; analyze and derive insights out of it; and finally, suggest suitable marketing decisions based on generated insights.

**Learning Outcomes:**

The following are the learning outcomes of the course:

1. To improve students' ability to view marketing function analytically (L01)
2. To familiarize students with advanced analytical techniques (L02)
3. To enhance students' efficiency in using open-source software R Studio for analytics (L03)
4. To learn to use data for creating effective business strategies (L04)

**Course Pedagogy:**

The teaching methodology will be an optimum amalgamation of class-room teaching, hands-on experiments and case discussions. A theoretical understanding of the tools will be followed by data-based application of tools and lastly, case-based application.

**Course Readings:**

**Books**

1. Shmueli, G., Bruce, P. C., Yahav, I, Patel, N. R., & Lichtendahl Jr., K. C. (2018). *Data Mining for Business Analytics: Concepts, Techniques, and Applications in R*. John Wiley and Sons. [SHMUELI]
2. Winston, W. L. (2014). *Marketing Analytics: Data-driven Techniques with Microsoft Excel*. John Wiley & Sons. [WINSTON]
3. Linoff, G. S., & Berry, M. J. (2011). *Data Mining Techniques: For Marketing, Sales, and Customer Relationship Management*. John Wiley & Sons. [LINOFF]
4. Kumar, V., & Reinartz, W. (2018). *Customer Relationship Management: Concept, Strategy, and Tools*. Springer. [KR]
5. Lander, J. P. (2014). *R for Everyone: Advanced Analytics and Graphics*. Pearson Education.

6. Venkatesan, R., Farris, P., & Wilcox, R. T. (2014). *Cutting-edge marketing analytics: Real world cases and data sets for hands on learning*. Pearson Education.
7. Sorger, S. (2013). *Marketing Analytics: Strategic Models and Metrics*. Admiral Press.

#### **Additional sources:**

1. [www.rdocumentation.org](http://www.rdocumentation.org)
2. [www.rbloggers.org](http://www.rbloggers.org)
3. [www.geeksforgeeks.org](http://www.geeksforgeeks.org)
4. [www.stackoverflow.com](http://www.stackoverflow.com)

**Analytical tool:** R-Studio

#### **Course Evaluation criteria:**

Component	Learning Outcomes	Weight
Class participation	LO-1, LO-2, LO-3, LO-4	10%
Quiz	LO-1, LO-2	20%
Project	LO-1, LO-2, LO-3, LO-4	30%
End-term	LO-1, LO-2, LO-3, LO-4	40%
<b>Total</b>		<b>100%</b>

#### **Plagiarism**

We are committed to upholding the highest standards of academic integrity and honesty. Plagiarism is the use of or presentation of ideas, works that are not one's own and which are not common knowledge, without granting credit to the originator. You may refer the already available content just for your reference and to get the basic ideas. Only 20% of such content is acceptable, above that comes under the definition of Plagiarism which is unacceptable in IMI and will be treated seriously. All such cases will be referred to the appropriate body of the Institute for suitable disciplinary action.

#### **Session Plan**

#	Topic	Learning Outcomes	Reading
1.	Introduction to R <ul style="list-style-type: none"> <li>Importing data</li> <li>Univariate and bivariate data analysis</li> </ul>	LO – 1 LO – 2 LO – 3 LO – 4	SHMUELI – Ch. 2 LANDER – Ch. 1 – 6, 8, 9, 11, 15  Reading: <a href="https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/the-age-of-analytics-competing-in-a-data-driven-world">https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/the-age-of-analytics-competing-in-a-data-driven-world</a>  <a href="https://www.r-bloggers.com/2015/12/how-to-write-the-first-for-loop-in-r/">https://www.r-bloggers.com/2015/12/how-to-write-the-first-for-loop-in-r/</a>  Data: Nike
2.	Data visualization using ggplot2 <ul style="list-style-type: none"> <li>Histogram</li> <li>Scatterplot</li> <li>Line graphs</li> <li>Facets</li> <li>Heatmaps</li> </ul>	LO – 1 LO – 2 LO – 3 LO – 4	SHMUELI – Ch. 3 LANDER – Ch. 7  Reading: <a href="https://www.reddit.com/r/dataisbeautiful/">https://www.reddit.com/r/dataisbeautiful/</a>  Data: Nike; Diamonds

3-6.	What do customers want? Customer management using Logistic Regression (LR) <ul style="list-style-type: none"> <li>▪ Dummy variable</li> <li>▪ Data partitioning</li> <li>▪ Oversampling</li> <li>▪ Running LR</li> <li>▪ Model validation</li> </ul>	LO – 1 LO – 2 LO – 3 LO – 4	LINOFF – Ch. 8 SHMUELI – Ch. 10 WINSTON – Ch. 17 LANDER – Ch. 17  Reading: <a href="https://mapr.com/blog/how-use-data-science-and-machine-learning-revolutionize-360-customer-views/">https://mapr.com/blog/how-use-data-science-and-machine-learning-revolutionize-360-customer-views/</a>  Data: Bank; RFM data
7-8.	Sales forecasting and predictive modelling using artificial neural network (ANN)	LO – 1 LO – 2 LO – 3 LO – 4	LINOFF – Ch. 8 SHMUELI – Ch. 11 WINSTON – Ch. 15  Reading: <a href="https://blog.arcbes.com/2016/12/29/a-non-technical-guide-to-understanding-machine-learning/">https://blog.arcbes.com/2016/12/29/a-non-technical-guide-to-understanding-machine-learning/</a>  Data: Housing
9-10.	Knowing when to worry: Understanding customer churn using survival analysis	LO – 1 LO – 2 LO – 3 LO – 4	LINOFF – Ch. 10 LANDER – Ch. 17  Reading:  Data: ovarian; Telco
11-14.	Listening to customers: Text mining using sentiment analysis	LO – 1 LO – 2 LO – 3 LO – 4	LINOFF – Ch. 21 SHMUELI – Ch. 20 WINSTON – Ch. 45  Reading: Alaparthi, S. & Mishra, M. (2021). BERT: a sentiment analysis odyssey. <i>Journal of Marketing Analytics</i> , <b>9</b> , 118–126 (2021). <a href="https://doi.org/10.1057/s41270-021-00109-8">https://doi.org/10.1057/s41270-021-00109-8</a>  Data: JMRTitles
15.	Combining methods: Ensembles and uplift modeling	LO – 1 LO – 2 LO – 3 LO – 4	SHMUELI – Ch. 13  Reading: <a href="https://link.springer.com/article/10.1007/s10618-014-0383-9">https://link.springer.com/article/10.1007/s10618-014-0383-9</a>