**Week 8: Association Detection and Cluster Analysis**

**Intended Learning Outcomes**

ILO2: Explain the impact of Association Detection and Cluster Analysis.

ILO4: Use SAS Enterprise Miner to analyze and present designated data and information.

**Activity 1. Tutorial Discussion**

Log on to Canvas and complete Tutorial 8 Discussion. It carries a bonus participation of 0.5% for correct answer.

Topic for Discussion:

“Social commerce: a fad or a trend? Will social commerce become a money generating machine?”

Suggested Readings:

1. Bertram, A. (30th July 2015), The Guardian, “The Imminent Invasion of Social Commerce”, <http://www.theguardian.com/small-business-network/2015/jul/30/invasion-social-commerce-amazon-facebook-twitter>
2. Everett, E. (11th August 2015), Business 2 Community, “The Rise of Social Commerce in 2015: The Year of Shopping Socially” <http://www.business2community.com/brandviews/omi/the-rise-of-social-commerce-in-2015-the-year-of-shopping-socially-01299080>

**Activity 2. Association Detection [15 mins]**

You now run a supermarket and wonder what products customers are likely to purchase together. Download a file called “[retail.csv](https://canvas.cityu.edu.hk/files/7997934/download?download_frd=1)” from Canvas. Use SAS Enterprise Miner to perform association detection and find the answers. Create suitable path diagram and run the analysis. (Hint: Please make sure that set the role of “Score” to “transaction” and edit variables to make sure that you input correct role to the transaction data. You need to have three roles, namely, “Target”, “ID” and “Time ID” for the analysis.)

1. If a customer purchases ham and bread, what else is he/she likely to purchase?
2. If a customer buys bread and jam, what else is he/she likely to buy?
3. What managerial implications do you derive from the analysis results? Why?

**Activity 3. Cluster Analysis**

Suppose that you are hired by a newly established soccer team as a hiring manager. Your team is interested to hire a new soccer player at whatever cost. You have all soccer players’ performance data in English Premier League from 2017-2018. Download the file called “[SoccerData.xlsx](https://canvas.cityu.edu.hk/files/7997935/download?download_frd=1)” from Canvas. Use SAS Enterprise Miner to perform cluster analysis. You should remove text variables such as Club, Name, Weekly Wage, and Position, in the data file.

1. How many clusters do you identify?
2. Which cluster represents the best scorers? (Hint: the group with highest mean in Goals).
3. Which cluster represents the best defensive players? (Hint: the group with highest mean in Inter. Inter means interceptions).
4. If your team wants to hire a good scorer, which player would you like to recruit and why? (Hint: Go back to the path model in SAS Enterprise Miner. Click “Cluster” and on the left panel, click “…” next to “Exported Data” under “General”. Click the row of “Train” in the pop-up menu. You may click “browse” to view the data.

You may right click the result table and choose “Export to Excel”. Then you may copy and paste the last column (i.e., Segment Description) to your original file of SoccerData.xlsx. Which player will you hire? You may pay attention to the “Weekly Wage” apart from “Segment Description”. Use Data Filter to consider only Cluster 4 players. Then locate the player with lowest weekly wage.

**Activity 4. Preview of Next Tutorial Readings**

Topic for next tutorial discussion:

“How do digital analytics help in marketing?”

Suggested Readings:

1. Sharma, K. (10th August 2018), Forbes, “How Digital Marketing Can Take Your Startup to a Higher Level” <https://www.forbes.com/sites/forbesagencycouncil/2018/08/10/how-digital-marketing-can-take-your-startup-to-a-higher-level/#47318eaa6789>
2. Dickey, M. (10th October 2017), Kuno Creative, “5 Digital Marketing Analytics That Actually Matter” <https://www.kunocreative.com/blog/digital-marketing-analytics>