Module
PGR110, Visual Analytics

Due date for submission
Check wiseflow for exact date and time.

Module Leader and e-mail
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Learning outcomes
On successful completion of this course the candidate:
Knowledge:
- is able to explain the key theoretical principles in visual analytics.
- can describe the key technologies, tools, and platforms for visual analytics such as Excel, Tableau, Power BI, etc.
- can discuss important constraints related to the design and development of management information dashboards.

Skills:
  is able to analyze the different visual analytics principles and techniques such as chart building, overview + detail, pan and zoom, etc.
- can select and apply the appropriate principles, methods, tools, and techniques for a given dataset in order to create a meaningful and actionable information dashboard.
- is able to conduct proof-of-concept design, development and documentation of an information dashboard from a dataset.

General competence:
- can discuss research issues and practical challenges in visual analytics.
- can identify and choose the appropriate principles, methods, tools, and techniques for a given dataset to order to create a meaningful and actionable information dashboard.
- is able to communicate the role of visual analytics in data-driven decision-making.
- knows communication and working in technical (non) group setting

Grading and Exam Specification
This assignment is worth 100% of the grade of the course and is graded as Pass/Fail.
Groups of 2 to 5 students. Apply for exception to submit individually.

Please address the following in your submission.
You are given two datasets namely "Dataset-1" and "Dataset-2" in Excel (.xls) format. The Excel files hold both the data and the description. You are required to develop working dashboards using these two datasets.

Dataset -1: Dataset-1 contains sales and shipment data for company X. You can find the description of all variables in the Excel sheet as well (Description-1). You are required to use this dataset and design and develop dashboard(s) for a sales manager at Company X. Some questions to explore are: (a) assess which product segments make the most sales (revenue) and profit over time, (b) identify their best performing and worst performing customer and product segments, (c) Drill down to different regions (i.e., country, city) and delivery modes, (d) Time take to dispatch orders across products.

Dataset -2: The World Happiness Report is a publication that ranks national happiness, based on respondent ratings of their own lives. You are required to use this dataset (2015-2022) and design and develop dashboard(s) for the public. Some questions to explore are:

(a) Ranking and happiness scores of countries over time, (b) compare and classify different countries, (c) Explore the factors or variables (e.g., economy, Family, Freedom, Trust in Government, etc.) to explain the happiness of countries.

Note: Please go beyond the questions listed.

What is required from the submission?
The submission should have the following items.
1. **Dashboard:** Working Dashboard(s). It can be one or more dashboard(s) per dataset. Examiner should be able to open your Dashboard. E.g., save your dashboard as Tableau Packaged Workbook (.twbx) with the data included as extracts.
2. **Project Report:** Length of the report is approximately 8 to 10 pages (excluding title page and references) and include visualizations. It should be submitted as a PDF. Referencing is extremely important and can be Harvard style or any other, but please be consistent.
3. **Screen Recording:** Video recording (screen recording with voice) of 1 to 2 minutes to demonstrate your dashboard/visualizations i.e., how do we navigate your dashboard. Voice should be clear/audible. MP4 format is preferred.

Submit it as one zipped file or upload the dashboard(s) and screen recording as an appendix.

How could the report be structured?
The following is an example to structure your project report. Please feel free to add more sections.

Dataset Description
Describe the dataset given in your own words.
- Data Type.
- Transformations if any.

Dashboard: Design
- Rationale for selected visualizations i.e., why have you made this choice. Support your rationale with readings from the course and referencing.
- Discuss how your design has evolved from your first idea to your final design. Use sketching to showcase your ideas and iterations.

Dashboard: Development
- Short description of how it was developed. If using a tool like Tableau, briefly describe the steps, challenges faced and your reflections.

Ten meaningful insights
You are expected to list and explain ten meaningful insights (at least three per dataset)[1]. If an individual submission, list six meaningful insights (at least three per dataset). Discuss the actionable insights generated from your dashboard and visualizations in detail i.e., how can your audience benefit from your insights.

Remember:
Keep in mind that there are no perfectly "correct" (or incorrect) visualizations, but that your solution should be well-defended at every step of the process.

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[1] E.g., It could be 3 insights for dataset 1 and 7 insights for dataset 2 or it could be 5 insights for dataset 1 and 5 insights for dataset 2, etc.