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# Tableau applied in a blended learning style: *higher education context*

Johan Louw  
Associate professor  
Department of Logistics

Wolfgang Erb  
Postgraduate student  
Department of Logistics

*With special thanks to CRG and Tableau Software*



Department of Logistics  
•  
Faculty of Economic and Management Sciences





# Agenda



- (A) Introduction and background (~5 min)
- (B) How and where our journey started with BI & Tableau (~10 min)
- (C) A case study example (~15-20 min)

*Using Tableau within a P&SM teaching module to accelerate insight*

- (D) Q&A



# Introduction and background



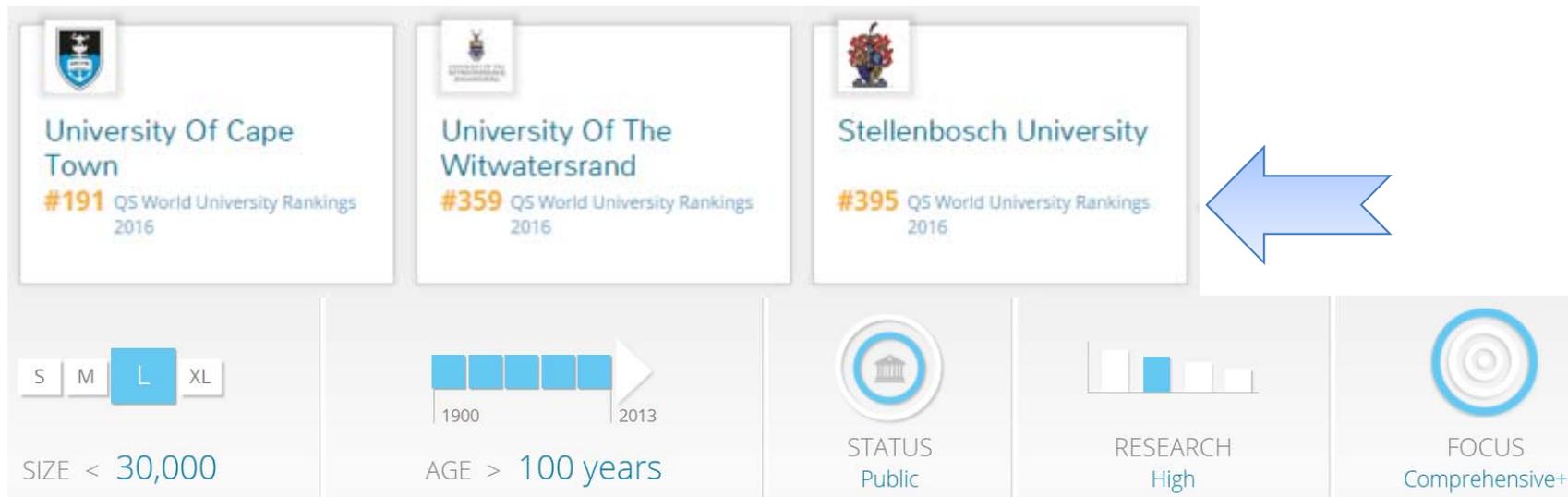
## About Stellenbosch University:

- Our roots date back to 1866
- A tradition of quality teaching and research
- Place among the finest academic institutions in Africa
- A fully accredited classic university with 10 faculties
- Research-intensive with a long history of pure and applied research across a large range of disciplines

Number of students



(TopUniversities.com: 2016)



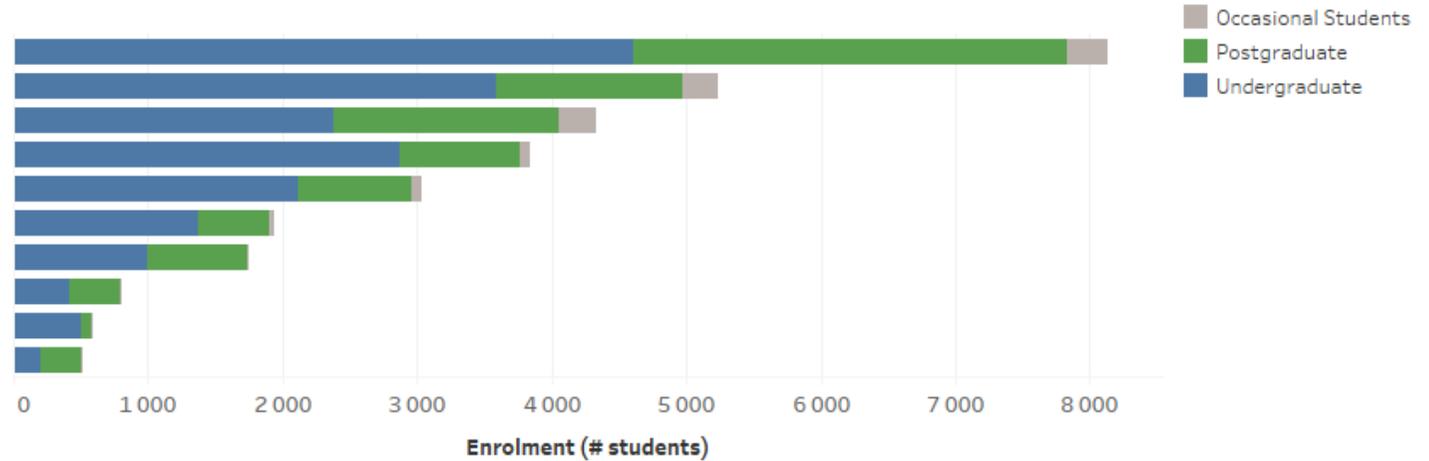


# Stellenbosch University (cont.)



## Faculty

Economic and Management Sciences  
 Arts and Social Sciences  
 Health Sciences  
 Engineering  
 Science  
 AgriSciences  
 Education  
 Law  
 Military Science  
 Theology



## >>> Our Faculty:

**Faculty of Economic and Management Sciences**  
 ... six Departments, and  
 ... three Schools

- [Accountancy](#)
- [Business Management](#)
- [Economics](#)
- [Logistics](#)**
- [Industrial Psychology](#)
- [Statistics & Actuarial Science](#)
- [School of Accountancy](#)
- [US Business School \(USB\)](#)
- [School of Public Leadership \(SPL\)](#)

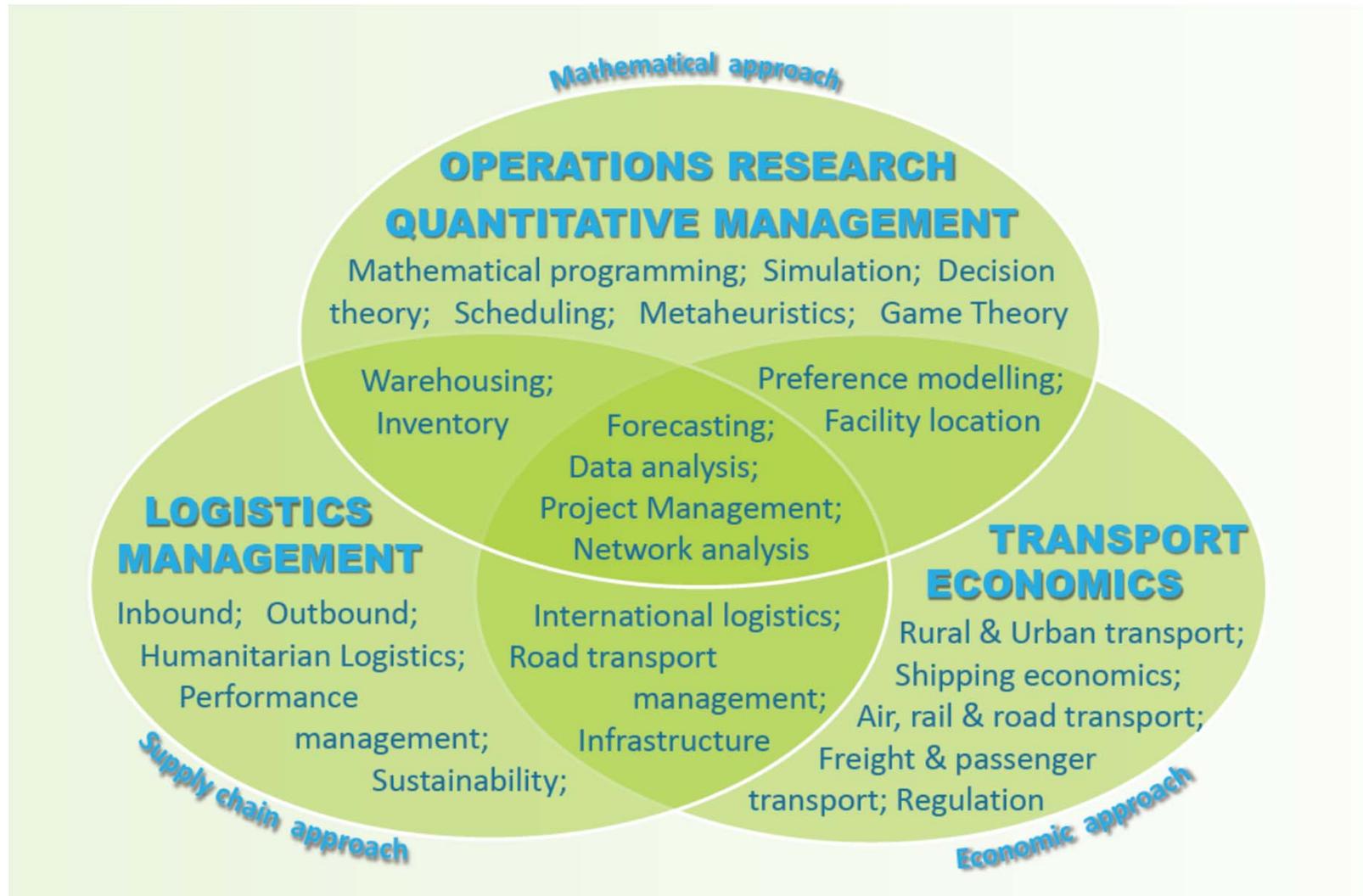


## Undergraduate & postgraduate programmes

- Logistics Management (BCom, MCom and PhD level)
- Quantitative Management (BCom and MCom level)
- Operations Research (BCom, BSc, MCom and PhD level)
- Transport Economics (BCom, BSc, MCom and PhD level)



# “Data” plays a central role in our “teaching and learning” throughout the Department’s programmes



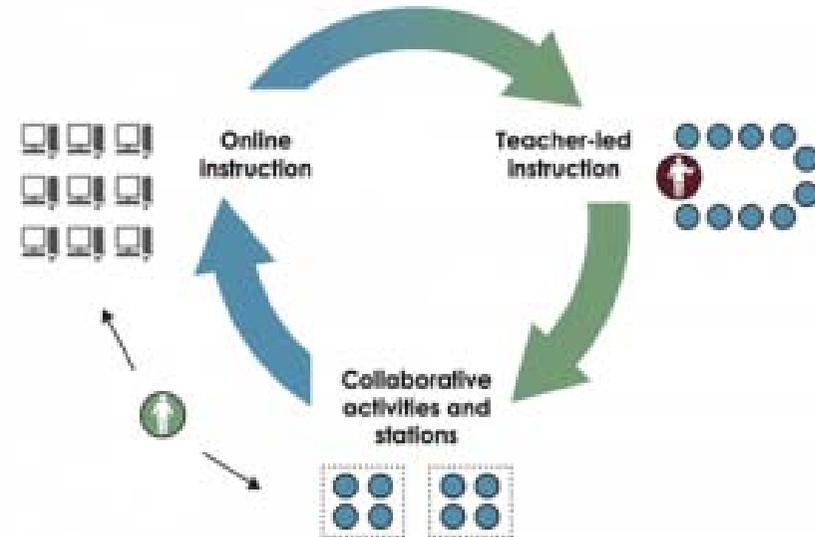


# Blended learning



**Why:** The traditional teaching and learning approach has changed

**How:** Combining classroom learning, e-learning, collaboration among students and demonstration of learning



**Tableau's role? :** Providing both a platform for “theory into practice” and developing an “on-boarding” skillset sought after by industry for “accelerate insight”





# How our journey started with BI & Tableau



- SAPICS 2010 ... Rynier Keet (CRG)  
... *Supply Chain Visibility through Data Visualisation*
- We started with Tableau Desktop ver 5.2 😊
- Introduced to “Academic Programs - Tableau for Teaching (TfT)” in 2010
- Focus in 2011; “data visualisation” generic skills development (postgraduate)
- Started a truly “collaborative relationship” between:
  - Tableau Software (TfT),
  - Stell Univ (Department of Logistics & FHARGA computer labs), and
  - Invaluable local support from CRG
- Now tackling Tableau Desktop skills development on 3 x levels:
  - Introductory,
  - Advanced, and
  - Collaboration

}	<i>Individual</i>
}	<i>Teams</i>



# What worked, what was challenging & our plans ahead



- **Worked well:**
  - Having access to Tableau Desktop via the TfT opportunity
  - Invaluable local support from CRG (*assisting with training; guiding students along*)
  - Stell Univ computer lab facilities and support team
- **Challenging:**
  - Time zone difference to the US (now made much easier through London)
  - Computer lab licence key administration & small changes causing hick-ups
  - Differences in student's background, skills and scholarly character
- **Our plans ahead from what we've learned (different perspectives):**
  - Programme/Module integration (enabling technology)
  - Student competency advancement towards the “data scientist” dream in Log & SCM
  - Resources (capitalising on Stell Univ's blended learning and “Information and Communication Technology (ICT)” drive)
- **Acknowledgements:**
  - Tableau (*Kelly Osterhout, Sophia Kan, Jason Schumacher, Liz Feller, Meagan Corbett, Thierry Driver*)
  - CRG (*Rynier Keet, Larinda Botha, Febe de Wet*)
  - Stell Univ-FHARGA-Computer lab (*Johan van Rooyen, Thurlo Muller*)



# A case study example



Using Tableau within a Procurement and Supply Management (P&SM) teaching module for accelerate insight (“Spend analysis”; related to strategic sourcing).

## Assignment:

Conduct a **spend analysis** and **data visualization** by using **Tableau Desktop**. Two industry sample data sets of a manufacturing company’s spend data for 2012 and 2013 were provided (~ 300 000 records).

**Spend by category** as a fundamental initial step in spend analysis and providing an overview to **strategic sourcing teams** in companies. Examining spend by supplier also reveals the degree of spend fragmentation by category, as well as **potential opportunities** for improving negotiation strength.

*Table 1: Typical fields of data stored per transaction in ERP systems (e.g. An invoice paid to a vendor for a specific order)*

Invoice Date	Line Item Quantity	Category	Vendor Postal Code	Vendor Name
InvoiceID	Unit Price	Item	Vendor Country/Region	LocationID
ItemID	Invoice LOC Amount	Commodity Detail	VendorID	Discount Days
CurrencyID	Commodity	Vendor City	Total Spend	Discount Percent
Line Item	Sub Category	Vendor State	Tier	Payment Terms Days



# What the assignment aimed to achieve



## What students needed to do?

- a) Answer some individual questions (via a quiz in a LMS), and
- b) Work on a group assignment for data visualization.

### **Individual assignment**

- Evaluating *skill and insight gained in exploring* the data sets provided by using Tableau software.

### **Group assignment**

- *Collaborating* as a team to *create a set of dashboards, story points and an underlying summary report* in the process of analysing the manufacturing company's spend on goods and services for a specific commodity category (also considering the various vendors involved). Nine different commodity categories were used so that each team had their own challenge to focus on.



## Evaluation of the assignment



- **Tableau presentation evaluation criteria** usage:
  - Introduction
  - Different Graphs
  - Colours Throughout
  - Basic Graphing
  - Filters
  - Parameters
  - Customization & Formatting
  - Seasonality / Forecasting
  - Highlighting / Contrasting
  - Insight
  - Recommendations
  - Hidden Worksheets / DB



# Team-member contributions and team effectiveness review



<http://info.catme.org/>

## Peer evaluation (using CATME);

*A self and peer evaluation in five dimensions / behavioural categories  
(...team-member contributions to team effectiveness...)*

1. *Contributing to the Team's Work*
2. *Interacting with Teammates*
3. *Keeping the Team on Track*
4. *Expecting Quality*
5. *Having Related Knowledge, Skills, and Abilities*

- *Anonymous peer evaluation and individual feedback*
- *Lecture insight into individual behavioral evaluation*

	Behavioural categories					
	1 - Contrib. to Team	2 - Interact w/ Team	3 - Keeping on Track	4 - Expect Quality	5 - Having KSAs	Average Ranking
1	1	1	1	1	2	1
1	1	10	1	1	1	2
1	1	2	1	7	1	3
1	7	2	1	7	4	4
1	7	2	1	7	4	4
1	7	2	1	7	4	4
1	1	6	8	2	7	7
1	1	6	8	2	7	7
1	1	6	8	2	7	7
1	23	10	21	21	14	14
1	7	22	7	21	10	10
1	18	6	21	14	11	11
1	23	10	29	21	20	20
25	7	17	12	7	12	12
18	7	10	15	15	13	13
14	18	15	8	21	15	15
18	14	17	15	15	16	16
18	14	17	15	15	16	16
30	7	22	12	15	16	16
18	14	17	15	15	16	16
25	14	22	12	15	20	20
18	26	17	21	7	22	22
18	23	28	15	7	22	22
14	18	15	21	21	22	22
14	18	22	21	21	25	25
25	18	22	21	28	26	26
18	29	22	29	27	28	28
25	33	10	15	33	27	27
14	34	30	28	2	29	29
25	29	28	21	29	30	30



# How a students tackled the assignment

## Wolfgang Erb - Postgraduate student



- How he tackled the assignment

[https://public.tableau.com/profile/wolfgang6110#!/vizhome/SpendAnalysis\\_5/Presentation](https://public.tableau.com/profile/wolfgang6110#!/vizhome/SpendAnalysis_5/Presentation)

IT - Spend Analysis

The screenshot shows a Tableau presentation slide with a navigation bar at the top containing the following tabs: Intro, Company Overview, Pareto Analysis, Top Vendors that produce 80% of the invoice amount, Sales per category in each state, Complexity Analysis, Cost analysis, A closer look at cost per category, and Are we getting benefits from discounts? The main content area includes the Tableau logo, a credit to Wolfgang Erb from Stellenbosch University for a Logistics Honours class, the University of Stellenbosch logo, the objective of the analysis, a credit to Obvience for the data source, and logos for Obvience and Corporate Renaissance Group.

Tableau

Presentation done by  
Wolfgang Erb  
Stellenbosch University  
for a Logistics Honours class

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The objective was to conduct a spend analysis (with a focus on procurement) on the IT department of Company X.

Credit goes to  
Obvience  
for making the data source  
available

obviE<sup>n</sup>ce  
The underlying data as provided by obvience©

Corporate Renaissance Group  
Providing Breakthrough Performance Solutions for Innovative and Courageous Enterprises Since 1989

➤ Wolfgang's story in getting to know Tableau Desktop and going forward



# Tableau assignment prize winners | Spend analysis and data visualization Honours in Logistics Management (Stellenbosch University) 2016



Back : Miss Jennifer Bower, Miss Leanie Bezuidenhout, Miss Eloïse van der Westhuizen, Mr Stefan van Wyk, Mr Casper Blaauw  
Front : Miss Casey Crowther, Miss Rachelle Dalais, Mr Geoffrey Whyte, Mr Wolfgang Erb



# Questions?

