# Thesis Synopsis

I have been working in the area of Human Resource Management for nearly 20 years, and specifically within a multinational company for nearly half that time. I have seen how much data is collected, such as

1. employee data in databases such as SAP SuccessFactors, Workday, ADP Workforce etc.
2. time and attendance data in time management systems
3. compensation and benefit data in benefit platforms
4. employee engagement data using employee experience systems, including performance management data
5. employee expenses in financial management systems
6. talent management software that allows management of the recruitment process, onboarding of employees as well as ongoing management of talent
7. learning management systems that structure learning experiences and ensuring compliance with training requirements or continuous professional development etc.

In my experience, all these systems operate independently of each other. For example, SAP and Workday may incorporate time and attendance tracking, talent management and some payroll processing. There are some levels of integration where APIs facilitate a connection to share basic data such as employee name and work number as well as work email. Beyond this, there appears to be very little integration into the wider financial governance of expenses, benefit management platforms or indeed platforms that track and detail the employee experiences.

My idea was to use training data gathered from both local and corporate systems to see if there is any value in using this to support the succession planning process. As it currently stands, succession planning is largely a manual process, where HRBP’s speak with employees to identify areas that they would like to develop, what they feel their key skills are, identify if the employee is interested in moving within the company etc. How HRBP’s gather this information is individualized and based on their own experiences. At different times during the year, HRBP’s then share the current state of interest with HRM’s who in turn meet with functional leads and other senior managers for succession planning conversations. Currently there does not appear that training data (such as courses completed) is included as a metric in the process. I would like to explore if there is a role for training data within the process. If there is such a role, it would be good to clarify what that would look like.

During research for our Research & Ethics module, I read an article by Tambe et al called ‘Artificial Intelligence in Human Resources Management: Challenges and a Path Forward’ (Tambe, Cappelli and Yakubovich, 2019) which discussed the challenges faced using HR data for machine learning. The article outlined that as HR datasets can be small with not commonly repeating events (such as dismissals) or are influenced by external factors such as employment law (Equality Acts) or company policies (gender positive profiles) there was an opportunity to look at relationships through the lenses of causal relationships rather than prediction from correlations of observed variables as in other areas of machine learning. I had not heard about causal discovery or other types of causal algorithms in terms of machine learning, so I looked more closely at the area and could see benefits from such an approach.

Authors outlined the benefits of using Directed Acyclic Graphs (DAG’s) to graphically show dependent variables and relationships. Beyond this, Graphs could be used to display distributions and how they can be made more powerful using forks, chains and immoralities (Molak, 2023).

# Research Question

Can data analytics support a succession planning process within a multinational company?