SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN Established in collaboration with MIT	**Project description form**	*ESD – 40.000* *Fall 2015*

Project Title	Formulating a Regression Model for Energy Usage (Commercial Buildings)
Industrial partner[1]	Accenture

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Brief Summary *(150 words max, please no more than 2 ideas)*

Through this project, the group intends to come up with a regression model that reflects the monthly energy usage (kwh) of a commercial/mixed development building. This regression model will take into consideration the different factors that contribute to energy usage such as the weather temperature, operating hours, nature of the day, etc. It will be used to show the clients of the company that the analytics done by the Accenture team will bring value to their business by reducing energy consumption. Application of the regression model will allow the clients to forecast the energy savings. The model will also allow the clients to predict the energy consumption of their business for the next 1-2 years based on their past energy consumption data.

Data availability *(Brief description of the data and its availability)*

Historical data on client energy usage will be provided by Accenture. Public data will be consulted to determine potential significant variables that affect energy usage:

- Gross Floor Area
- Time of the day
- Tenant Category
- Weather (Cooling Degree Day)
- Nature of the day
- Nature of Building

Method and tools *(How ESD tools will be applied in this project)*

The goal is to develop a forecast model by choosing a linear model that is based on several independent variables, where a commercial building's energy usage is the dependent variable. Data analysis through linear regression will be conducted on the historical energy usage to determine if the forecast model is accurate and reliable. Subsequently, the model will be optimized by adjusting the coefficients or the independent variables if necessary. Potential savings in energy usage can then be estimated and provide insight for the client to decide if the solution is viable.

Expected outcomes and relevance

[1] *Please mention any potential partner even if it's not yet confirmed. Otherwise write N/A*

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Our linear model will hopefully be able to accurately predict the standard energy usage of a commercial building/mixed development building and validate Accenture's solution for the client. We will also be able to predict the potential savings for the client. We will be employing various tools we learn during the course for data analysis, such as linear regression and determining which independent variable is significant. We will also gain some insight on how the skills we learn are applicable to solving real world challenges.