HCIP
"Housing Construction Investment Project"

By

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1. Business questions & problem definition
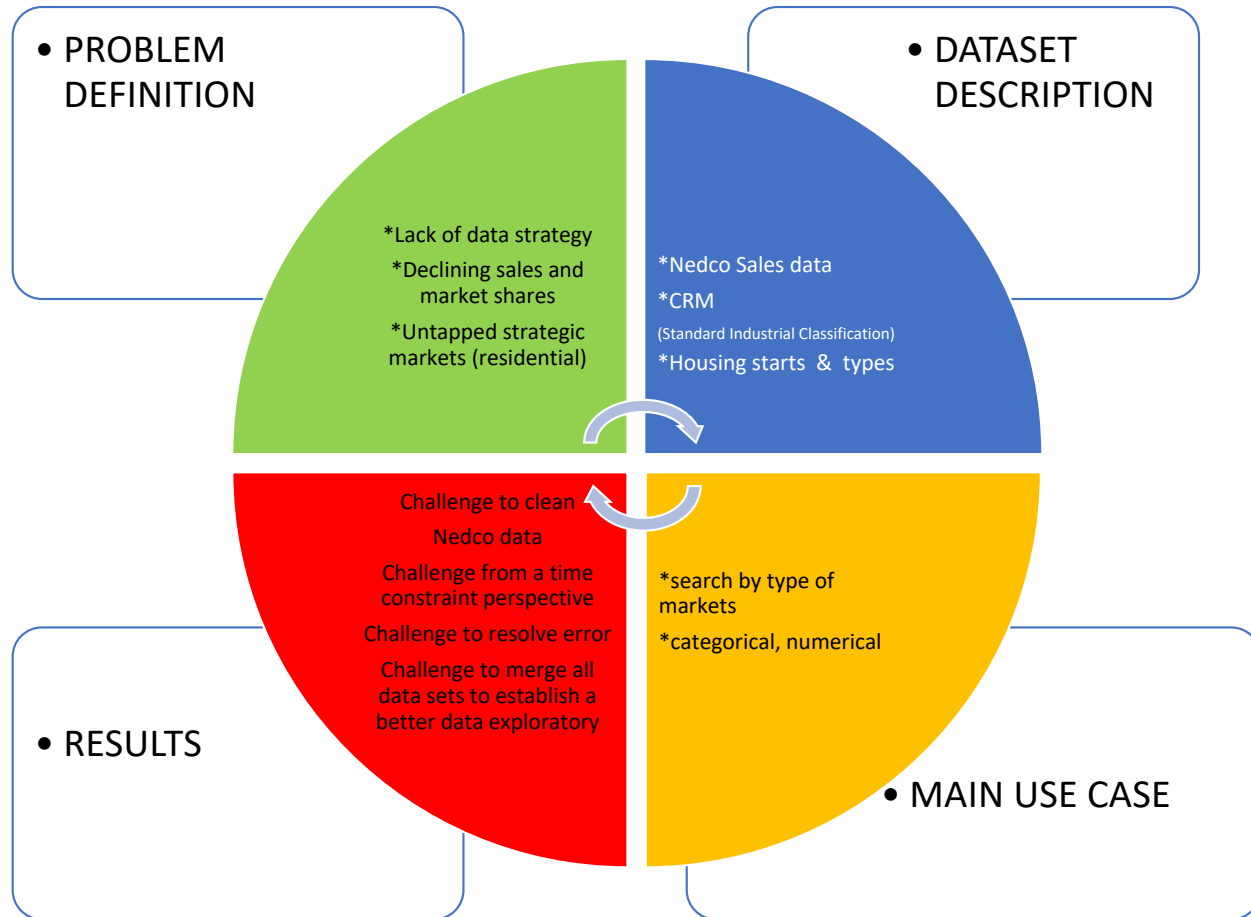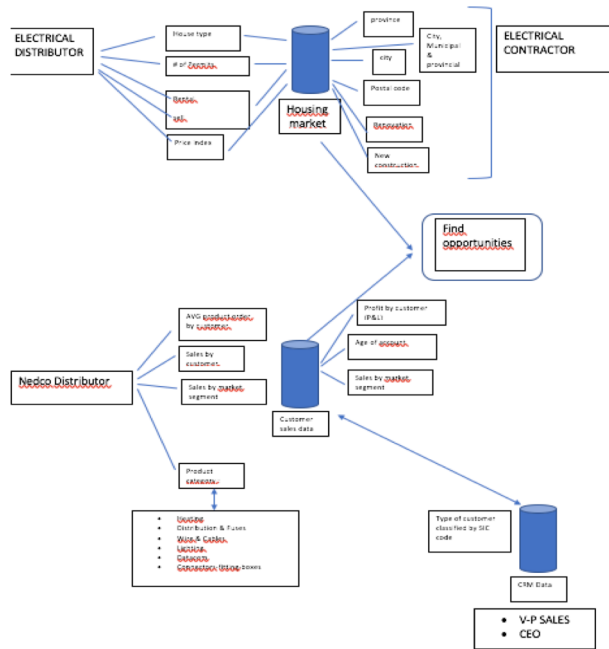
2. Dataset description

3. Main use case

4. Results

BUSINESS QUESTIONS

- What would be the projection of sales by product family & customer type for the residential segment?

- What would be the best segment to grow sales in 2018?

- What would be the best customer and product family to grow sales in 2018?

EXECUTIVE SUMMARY

- PROBLEM DEFINITION

- DATASET DESCRIPTION

*Lack of data strategy

*Declining sales and market shares

*Untapped strategic markets (residential)

*Nedco Sales data

*CRM

(Standard Industrial Classification)

*Housing starts & types

Challenge to clean Nedco data

Challenge from a time constraint perspective

Challenge to resolve error

Challenge to merge all data sets to establish a better data exploratory

*search by type of markets

*categorical, numerical

- RESULTS

- MAIN USE CASE

Customer Name (Ship to)	Product Family Desc	Ship Type	Order Type	Customer Address (Ship to)	Market Segment Desc (Ship to)	Supplier Name	2016	2017
INVENTAIRE USAGE ADMIN.	HEATING PRODUCTS	2	A	SAINT-LAURENT, H4T1X7	OTHER	CONVECTAIR	$5.60	
INVENTAIRE USAGE ADMIN.	LIGHTING	1	A	SAINT-LAURENT, H4T1X7	OTHER	OSRAM SYLVANIA	$114.83	$73.25
INVENTAIRE USAGE ADMIN.	LIGHTING	1	A	SAINT-LAURENT, H4T1X7	OTHER	STANDARD PROD. IMPORT LTD	$68.16	
INVENTAIRE USAGE ADMIN.	LIGHTING	1	C	SAINT-LAURENT, H4T1X7	OTHER	OSRAM SYLVANIA	$78.96	$14.74
INVENTAIRE USAGE ADMIN.	LIGHTING	2	A	SAINT-LAURENT, H4T1X7	OTHER	B.O.H ELECTRONIQUE	$68.75	
INVENTAIRE USAGE ADMIN.	MOTOR CONTROLS/AUTOMATION	1	A	SAINT-LAURENT, H4T1X7	OTHER	SCHNEIDER ELECTRIC CANADA IN		$69.94
INVENTAIRE USAGE ADMIN.	MOTOR CONTROLS/AUTOMATION	1	C	SAINT-LAURENT, H4T1X7	OTHER	SCHNEIDER ELECTRIC CANADA IN		$159.88
INVENTAIRE USAGE ADMIN.	OTHER PRODUCTS	1	A	SAINT-LAURENT, H4T1X7	OTHER	DURACELL CANADA INC	$85.02	
INVENTAIRE USAGE ADMIN.	OTHER PRODUCTS	2	A	SAINT-LAURENT, H4T1X7	OTHER	BRADY DIV.OF W.H.B.	$276.54	
INVENTAIRE USAGE ADMIN.	OTHER PRODUCTS	2	A	SAINT-LAURENT, H4T1X7	OTHER	FLIR SYSTEMS LTD.		$300.00
INVENTAIRE USAGE ADMIN.	OTHER PRODUCTS	2	A	SAINT-LAURENT, H4T1X7	OTHER	NEDCO DIV OF WESTBURNE IND	$0.00	
INVENTAIRE USAGE ADMIN.	OTHER PRODUCTS	2	A	SAINT-LAURENT, H4T1X7	OTHER	PAISLEY PROD. OF CANADA INC	$0.00	
INVENTAIRE USAGE ADMIN.	SECURITY PRODUCTS	1	A	SAINT-LAURENT, H4T1X7	OTHER	CDVI AMERICAS	$208.00	
INVENTAIRE USAGE ADMIN.	TOOLS	1	A	SAINT-LAURENT, H4T1X7	OTHER	GREENLEE TEXTRON INC.		-$311.24
INVENTAIRE USAGE ADMIN.	TOOLS	1	A	SAINT-LAURENT, H4T1X7	OTHER	KLEIN TOOL		$43.84
INVENTAIRE USAGE ADMIN.	TOOLS	1	A	SAINT-LAURENT, H4T1X7	OTHER	S.R. POTTEN	$100.80	
INVENTAIRE USAGE ADMIN.	TOOLS	1	C	SAINT-LAURENT, H4T1X7	OTHER	GREENLEE TEXTRON INC.		$311.24

Data exploratory :#count by categories
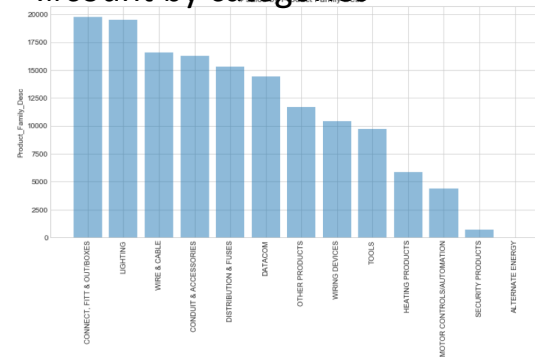
Multiple variables (numeric * Numeric)
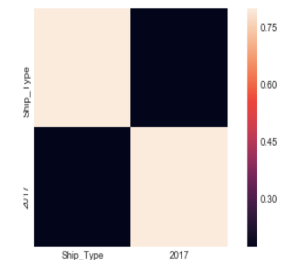
Key Questions – Use case
- What type of order a contractor orders?
- How many residential houses were built by Postal code in 2017?
- What are the sales by customers by SIC code in 2017 vs 2016?
- What are the sales by product family in 2017?
- What is the avg spend of electrical material according to a contractor?
- How many permits for new construction of residential houses were awarded in 2017 by province?
- How many permits were awarded in 2017 by province?

1.Problem Definition

- Axis #1: Data
  - Lack of sales forecast
  - Lack of predictive models
  - Lack of data strategy

- Axis #2: Sales
  - Market shares are decreasing in many product families
  - Warehouse sales (Ship type 1) are going down while our None Listed Products are going up (Ship 2)
  - Lack of define strategies and tactics with customer segment (i.e. contractor, industrial, residential)

- Axis #3: Market
  - Residential market is growing (# of new housing : condos)
  - Industrial market is growing (# of shut down)

1.Problem definition:

Use Nedco transactional data wisely to regain market shares within strategic families (distribution, heating, motor control, wire & cables and lighting), in order to penetrate residential and industrial markets.

*Note: Due to time constraints and data complexity, HCIP model will focus on residential market

2.Dataset description

- Nedco Sales data 2016 & 2017 calendar year
  - Source: ERP system, Internal transactional data
- Customer Standard Industrial Classification (SIC) 2017
  - Source: CRM, Internal customer data
- Housing starts
  - Source: Stat can, 2017 calendar year
- Housing type
  - Source: Stat can, 2017 calendar year

*Note: Due to time constraints & data complexity, only Nedco sales data will be used for HCIP model

3.Main use case

- Objective of the project:
  - Develop a business model to predict sales by product family in order to establish a correlation by housing type and market segment with Nedco sales

  - Milestones: search by type of markets
    - Use new houses dataset started to build by province
    - Use # of permits by construction type
    - Use Nedco CRM sales data to look into customer profile by SIC code
    - Evaluate the correlation among sales 2017 / Product family / market segment
    - Evaluate the correlation among sales 2017 / Market segment / ship type
    - Evaluate the correlation among sales 2017 / market segment / ship type / product family
    - Validate the model with Nedco 2016 sales

4.Results

- No significant results due to unfinished data mining process with machine learning
- Model has not been validated and/or tested using all statistical methodology
- Data exploratory was not enough significant to validate the current model

- Challenges
    - Challenge to clean Nedco data
    - Challenge to analyze all datasets from a time constraint perspective
    - Challenge to have the right coding
    - Challenge to resolve error
    - Challenge to merge all data sets to establish a better data exploratory & classification
- Feedback from a technical perspective
    - Challenge to have the right coding, resolve error within coding, find the right coding
- Feedback from a business perspective
    - Challenge to find if market segment, product family and ship type could be good indicators to establish a predictive sales model