

# Closed-Door Discussion on The Digital Economy and Challenges in the Process of Transformation

Thursday, 20 July 2017

Conference Room, Level 1, Oei Tiong Ham Building

# CHALLENGES OF SMES IN APPLYING AI TO DATA ANALYTICS

Presentation By

**Ms Irene Boey**

**Consulting Director**

**Integral Solutions (Asia) Pte Ltd  
and**

**Vice President**

**Strategies & Development  
Association of Small and Medium Enterprises**

# Challenges of SMEs in applying AI to data analytics

Irene Boey

VP (Strategies & Development) & Chairman, SME Centre@ASME

Consulting Director, Integral Solutions (Asia) Pte Ltd

# About Integral Solutions (Asia) Pte Ltd

- ▶ Integral Solutions (Asia) Pte. Ltd is founded on the expertise of a highly creative team and the evolution of technology. A convergence of forward-thinking entrepreneurs on 30th September **1992 in data mining applications and experts in artificial intelligence** sparked the **formation of the data mining company**. Integral Solutions (Asia) Pte Ltd grew steadily with deep experience and expertise by enabling companies to derive meaningful insights and benefit from data.
- ▶ **Integral Solutions** has successfully implemented data mining solutions with **Artificial Intelligence and data mining technologies** for **25 years**. Their solutions have won the Microsoft Solution Builder Award and SITF Cloud Solution Awards
- ▶ (Website : [www.datamining.com.sg](http://www.datamining.com.sg))



# Current Situation

- ▶ Singapore is trying to transform into a Smart Nation
- ▶ Some Government's programs :
  - ▶ AI.SG boosting Singapore's artificial intelligence (AI) capabilities over the next five years. S\$150m focusing on Finance, city management solutions and healthcare.
  - ▶ Singapore Data Science Consortium involves three universities and the Agency for Science, Technology and Research (A\*Star) in the training of businesses to use data science and analytics in their operations.
  - ▶ Sginnovate for startup and investor connections
  - ▶ SMEs Go Digital with pre-approved digital tech solutions (no AI yet) that SMEs could tap on to digitalise
- ▶ **Question : With the current emphasis on increasing automation, will companies be able to leverage on Artificial Intelligence (AI) and big data to transform their business models in Singapore?**

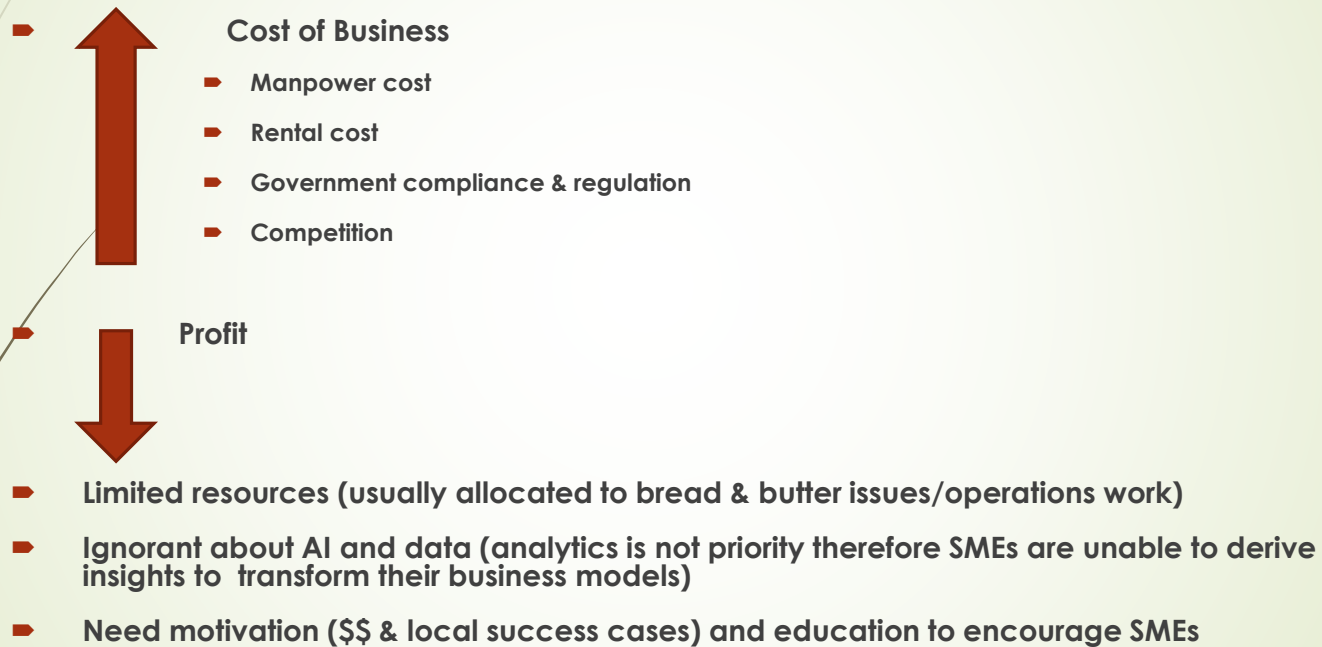


# SMEs in Singapore

- ▶ Company with minimum 30% local shareholding
- ▶ Annual Sales Turnover of not more than S\$100 million
  - ▶ OR
- ▶ Employment size not more than 200 workers
  
- ▶ The Government is committed to supporting our SMEs even as we press on with economic restructuring (Budget 2017)
  
- ▶ SMEs >85% of our enterprises, employ two-thirds of our workforce, and account for about half of Singapore's GDP



# Challenges for SMEs in Singapore





# Perspective from SMEs

- ▶ High Cost of Business leading to tight budget : usually allocated to run operations (bread & butter) rather than planning for the future
- ▶ No knowledge of how to leverage on data
- ▶ No knowledge of how to choose an appropriate process to get results/insights
- ▶ No idea that some of their issues/challenges can be solved by AI & Data Analytics


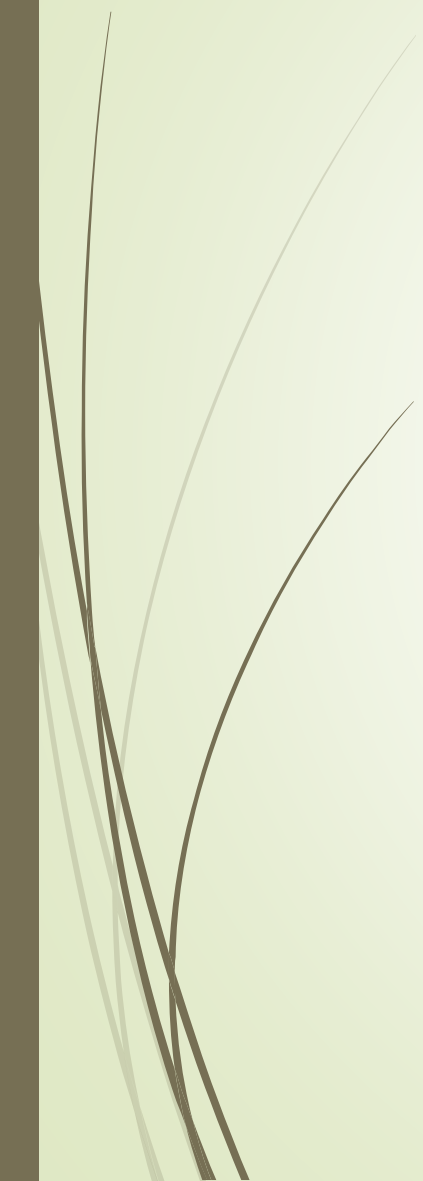
**As SMEs have no idea of benefits in using data, they may find it worthless to adopt a data strategy**



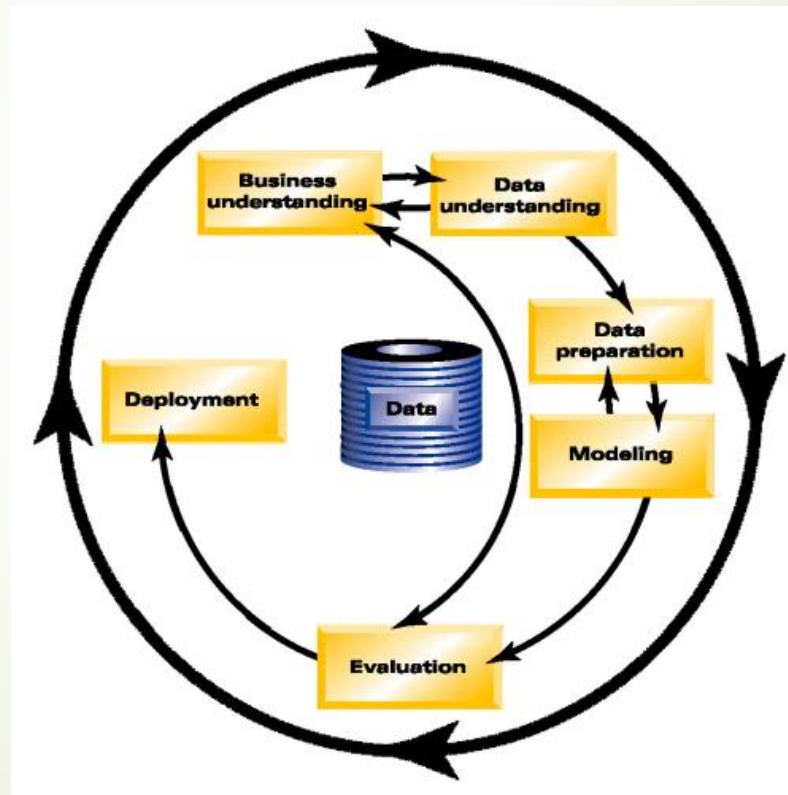
# AI has been proven to drive more profits for enterprises across all sectors

**sectors** (I have personally implemented these and received lots of testimonials from companies whom benefited from AI)



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- What are the work involved in AI & big data before SMEs can benefit from good usable results?

Based on CRISP-DM (conceived in 1996), still the top methodology for analytics, data mining, or data science projects (KDnuggets, 2014)



## The initial CRISP-DM Process Model: Phases & Tasks

### **Business Understanding**

**Determine  
Business Objectives**

**Situation Assessment**

**Determine  
Data Mining Goal**

### **Data Understanding**

**Initial Data Collection**

**Data Description**

**Data Quality  
Verification**

**Exploratory Analysis**

**Etc.....**

### **Data Preparation**

**Selection**

**Cleaning**

**Construction**

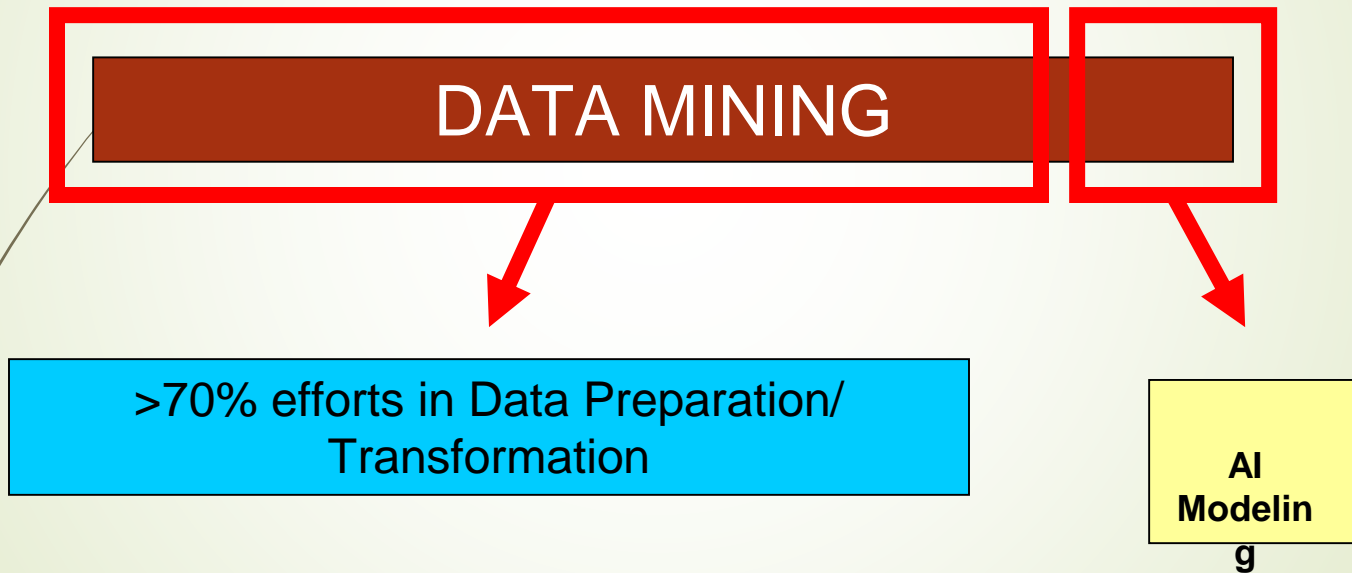
**Integration**

**Formatting**

**Transformation**

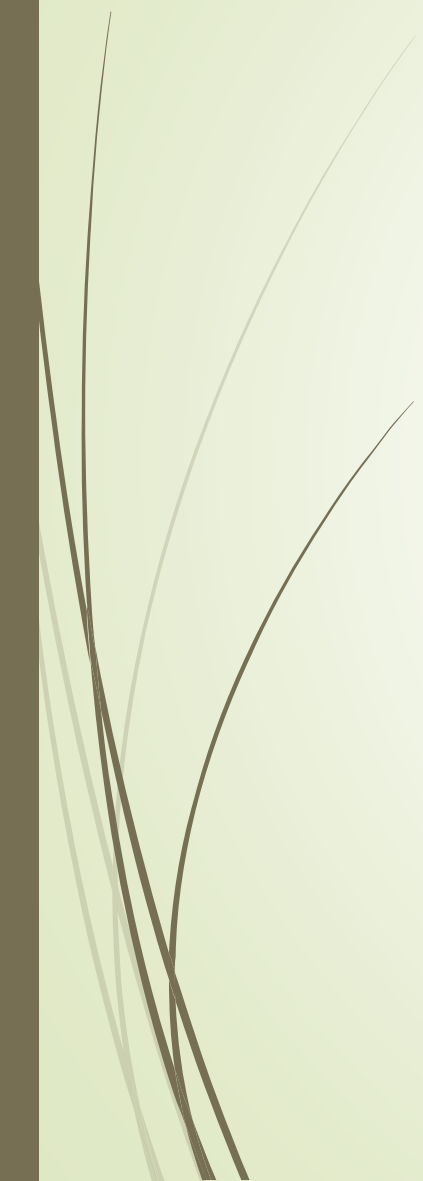
**Etc....**

# What does Data Mining Involve?

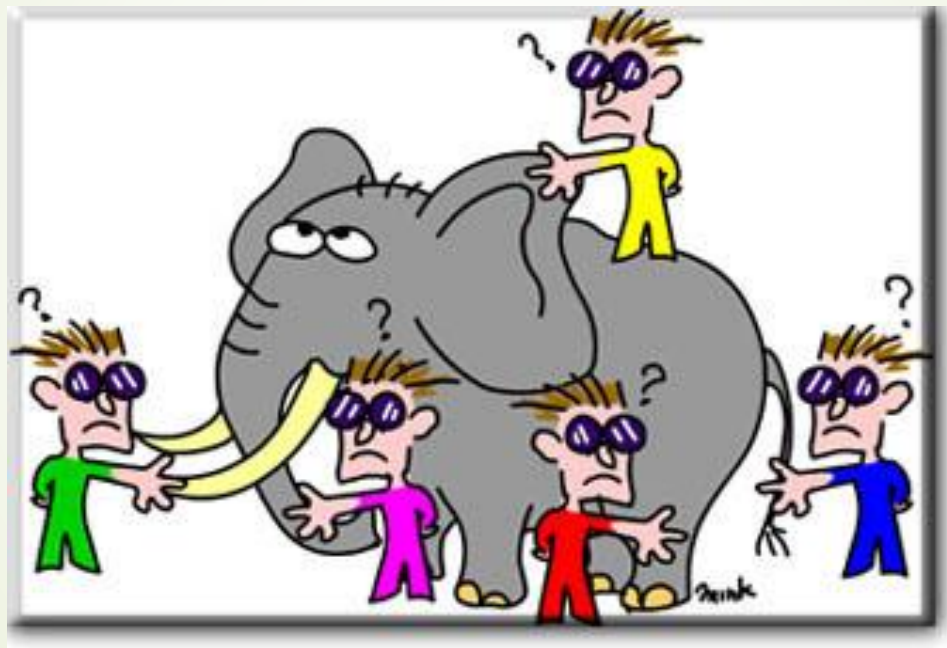




# Many SME businesses do not know how to analyse data!

- Data Quality
  - Usability & relevancy
  - Data collection
  - Consistency
  - Continuous process (long term vs short term)
  - Generic patterns can't be used to derive USP
  - Analysis Results may not be optimised or even inaccurate!
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## Blind Men with the Elephant






# SMEs in relation to data

1. Those who are ignorant about benefits of data, have not started to use their data
  2. Those who know data is important but struggling with the right way to get results from their data and/or given up on using data due to bad experience with BI (vs AI)
  3. Those who know data is important and beneficial
- Data issues with SMEs :
- a. Did not capture due to ignorance about importance of data
  - b. Did not capture relevant data or sufficient data to benefit from AI
  - c. Unable to benefit from data from government sources to generate insights for their USP
  - d. Not willing to spend money on this area as they prefer to spend money to running day to day operations with no improvement
  - e. Not aware of what to do and cannot afford to hire consultants for this area
  - f. Not willing to look at future as they are not sure if they can survive






# Suggestions to encourage SMEs to leverage on AI & Data Analytics to transform their business

1. Practical education
2. Appropriate government assistance programs
3. Incentivise practitioners & local SME solution providers to work with SME businesses to increase cycle of adoption in Singapore



# 1) Education has to be practical, not just theories

- ▶ **Practical Education** programs & courses (not just based on theories or book knowledge but **taught by practitioners based on actual experience**) for different levels of SMEs (beginner, intermediate and advance users of analytics)
- ▶ Education programs should also **cater to** management & staff with **different roles in SMEs** as their analysis requirements are different
- ▶ So its **NOT a one-size fits all** kind of approach



## 2) Government assistance programs

SMEs Go Digital is a good 1<sup>st</sup> step for SMEs to capture data digitally but is more focused on data for operational purposes.

- ▶ We should encourage SMEs to be more strategic by capturing relevant data which adds value to their **analysis process. This in turn helps to strengthen their USP** (unique selling proposition) and identify target markets so as to transform their business model and increase their competitiveness
- ▶ **AI & Data Analytics as a stand alone government assistance program** (eg in Capability Development Grants) to encourage more SMEs to leverage on data to **derive useful insights to transform their businesses**
- ▶ Strengthen capabilities of local SME solution providers to **build up homegrown data analytics expertise**. As data analytics is a continuous, iterative process, it is **important to have local support**.



### 3) Cycle of adoption: Incentivise local successes Create local success stories

- ▶ **Incentivise experienced practitioners & local SME solution providers to work with SME businesses** to create local success stories, shorten learning curve & **inspiring other SME businesses** to leverage on AI to transform their businesses. It is important to **deepen implementation experience in order to produce workable solutions.**
- ▶ In this way, one government scheme can be used to help both SMEs solution provider and SME businesses
- ▶ With good local support, SMEs will be able to grow internationally

# Thank You for listening

For More Information,

Email: [irene@datamining.com.sg](mailto:irene@datamining.com.sg)

Mobile: +65 9850 2810



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