Innovative Green SMEs in China – Using Multiple Data Source

Jie Ren
School of Management and Economics
Beijing Institute of Technology

Content

- Introduction
- Background
- Governmental structure
- Data Base
- Result & Discussion
- Limitation

Introduction

- Key Questions:
  - What is the current situation of China's Green SMEs?
  - What factors will influence the sustainable field in China: policy, location and global market
  - Unstructured data scraping and Chinese language analysis
  - Cooperation between Government, University and the Enterprises in China's Green Good Sector.
  - How do the Chinese green enterprises manage their international market?
- Challenges
  - None Structured data collection
  - Data integration (Different data source: Structured data +unstructured data; Chinese version company web pages + English version company web pages + Alibaba information)

Background

Projects

2006: Top-1000 Energy-Consuming Enterprises Program (2006-2010)

2007: Coal Bed Methane Mining Subsidy

2008: -Biomass Power Generation Subsidy -Wind Turbine Subsidy

2009: -Solar Roofs Project -Golden Sun Project -Subsidy on PHEV, EV and FC -RMB387 billion on Smart Grid Project

1997 | Green Building | Heavy Pollution Enterprises | Renewable Energy | Low Carbon Comprehensive | 2012

Law

1997: China's Energy Conservation **Law**

2000: Law on Prevention and Control of Atmospheric Pollution" (Revised)

2002: Environmental Impact Assessment Law

2003: Cleaner Production Promotion **Law**

2005: Renewable energy law

Plan and Programs

2000: Medium and Long Term Science and Technology Development Plan(2000-2020)

2005: Medium and Long Term Plan for the Oil Refining Industry (2005-2020)

2006: -11th 5-Year Plan -Medium and Long Term Plan for Renewable Energy Development (2006-2020)

2007: -National Program in Response to Climate Change -Medium and Long Term Plan for Renewable Energy Development

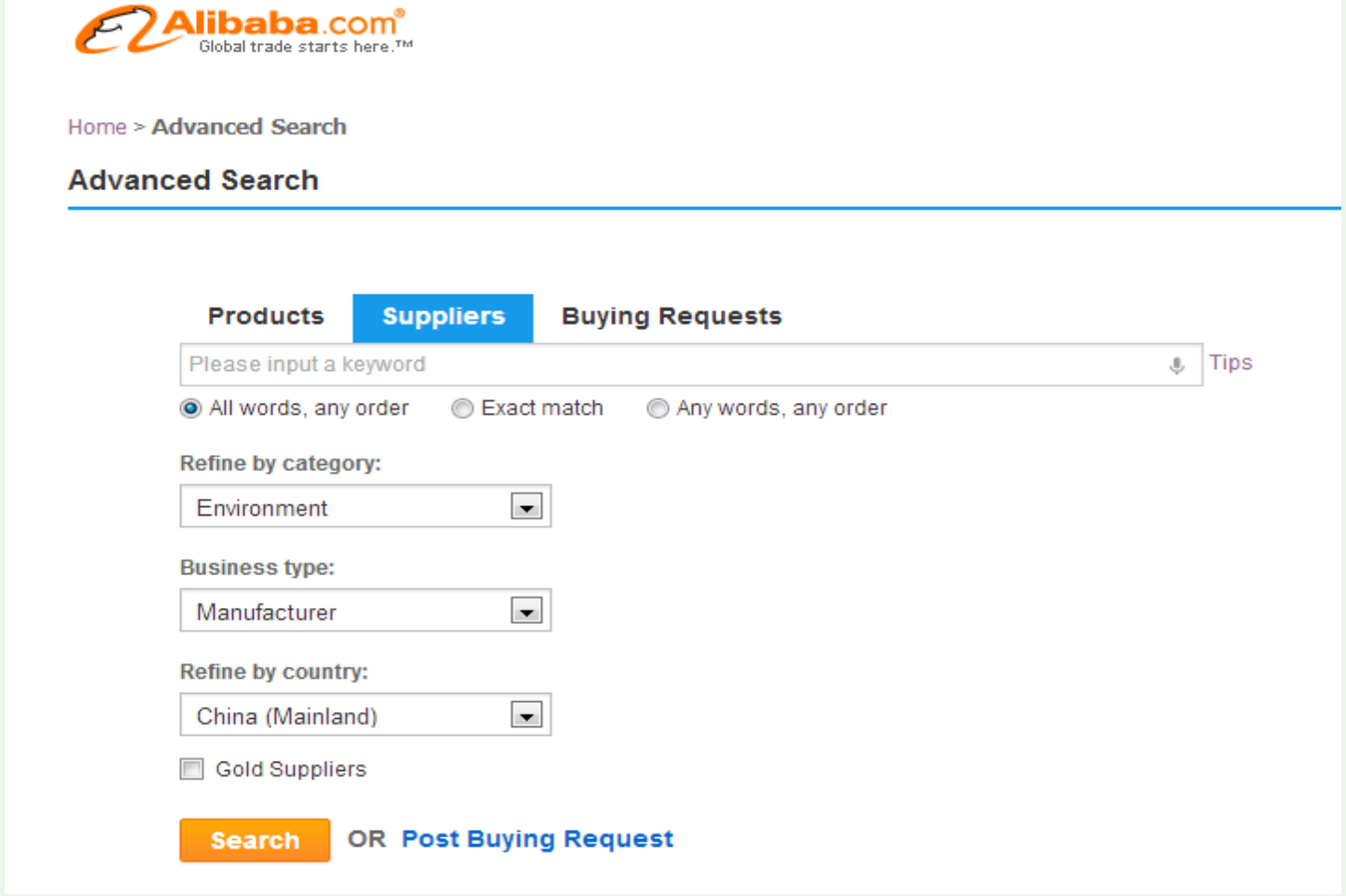
2011: 12th 5-Year Plan

Green Definition

General	[1]
Environmental	[2]General
	[3]Biological treatment
	[4]Air Pollution
	[5]Environmental Monitoring, Instrumentation and Analysis
	[6]Marine pollution control
	[7]Noise & Vibration control
	[8]Contaminated land reclamation & remediation
	[9]Waste management
	[10]Water supply and waste water treatment
	[11]Recovery and recycling
Renewable energy	[12]General
	[13]Wave & tidal
	[14]Biomass
	[15]Wind
	[16]Geothermal
	[17]Photovoltaic /solar

Emerging low carbon	[18]General
	[19]Alternative fuel vehicle
	[20]Alternative fuels
	[21]Electrochemical processes
	[22]Battery
	[23]Additional energy sources
	[24]Carbon capture & storage
	[25]Energy management
	[26]Building technologies

Data Selection



Chinese Enterprise Data

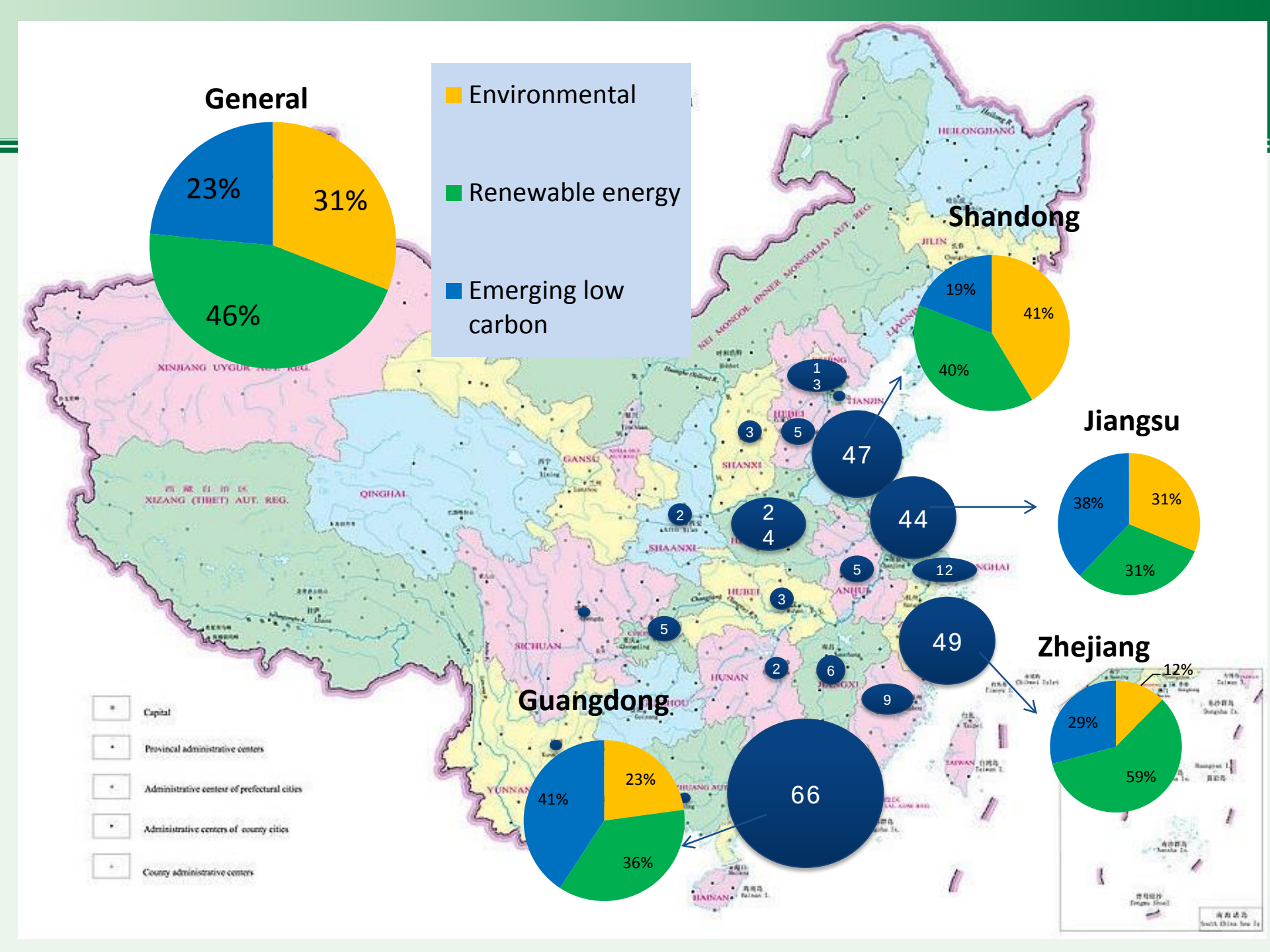
--with Alibaba

Began in 1999, Alibaba.com is a B2B portal to connect Chinese manufactures with overseas buyers. It serves to bring together importers and exporters form more than 240 countries and regions.

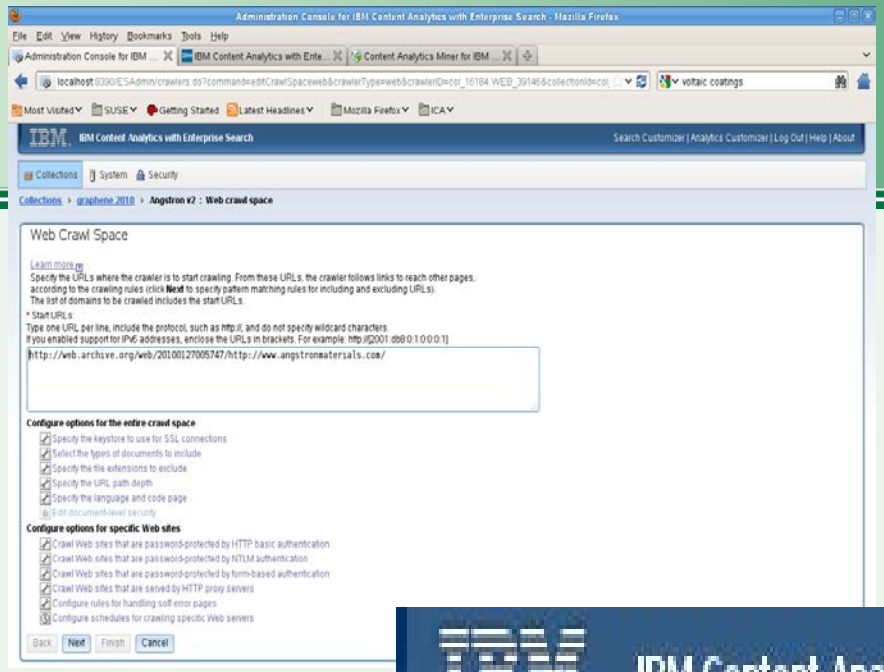
Advantages	Disadvantages
• More than 61 million registered members • Began in 1999, 14 years history • Active Enterprises in Global Markets • Semi-structured Company information • Detailed Company Profile • Information of the product on shelves • Special categories related with green technology for suppliers, as “Energy”, “Environment”...	• Up to 50 characters in the searching textbox • Boolean logic inadaptable • Wildcard inadaptable • Hard to filter, more manual work • Most of the companies are cross sector in Alibaba categories

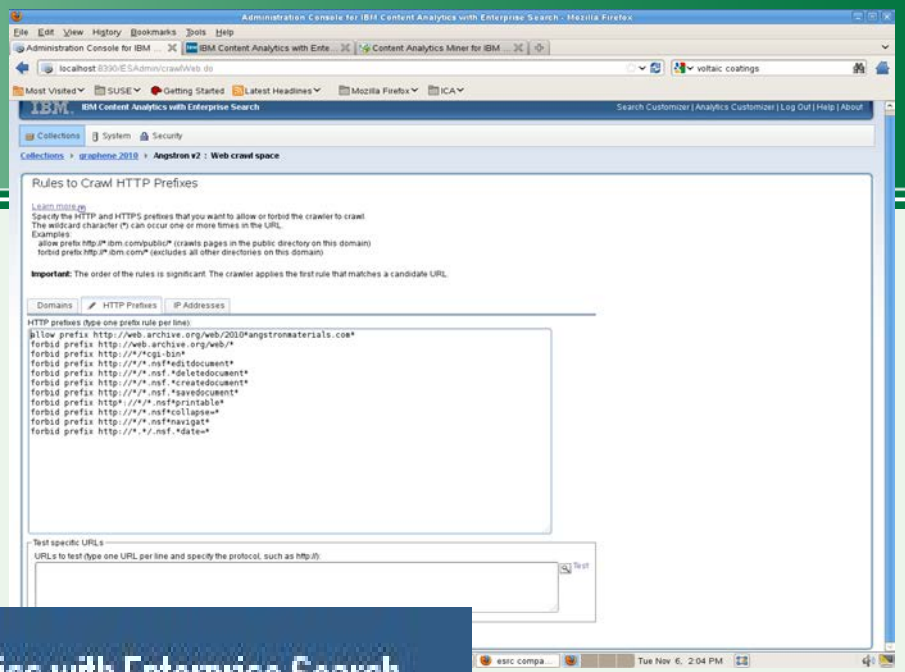
Data Description

- 300 SMEs in Green Sector
  - 300 Alibaba company profiles
  - 191 Chinese version sites (63.67%)
  - 194 English version sites (64.67%)
  - 2004-2011 Wayback achieve
- Established Year**:** 2002-2011
- Data Base
  - Company basic information from **Alibaba**
  - **Publication** from web of Science
    - 4 companies, 6 articles, 5 green papers
  - **Patent data** from Derwent
    - 58 companies, 582 patents, 364(62.5%) are green patents, 160 (43.9%) Solar field patents
  - **Company Webpages**
    - 57919 Chinese web pages
    - 42974 English web pages

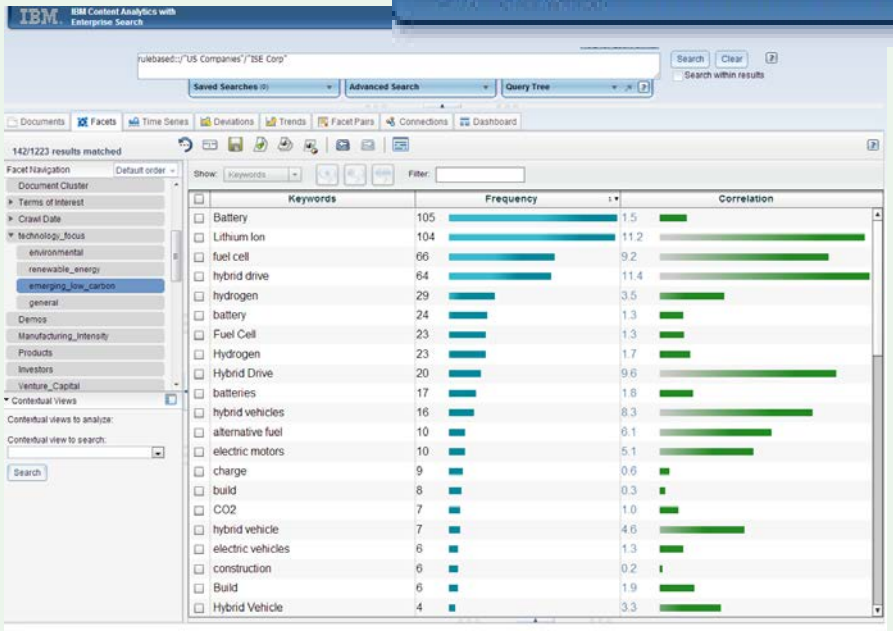

General
23%
31%
46%
Environmental
Renewable energy
Emerging low carbon
Shandong
19%
41%
40%
Jiangsu
38%
31%
31%
Zhejiang
12%
29%
59%
Guangdong
23%
41%
36%
13
3
5
47
44
24
2
5
12
3
5
49
2
6
9
66
Capital
Provincal administrative centers
Administrative center of prefectural cities
Administrative centers of county cities
County administrative centers

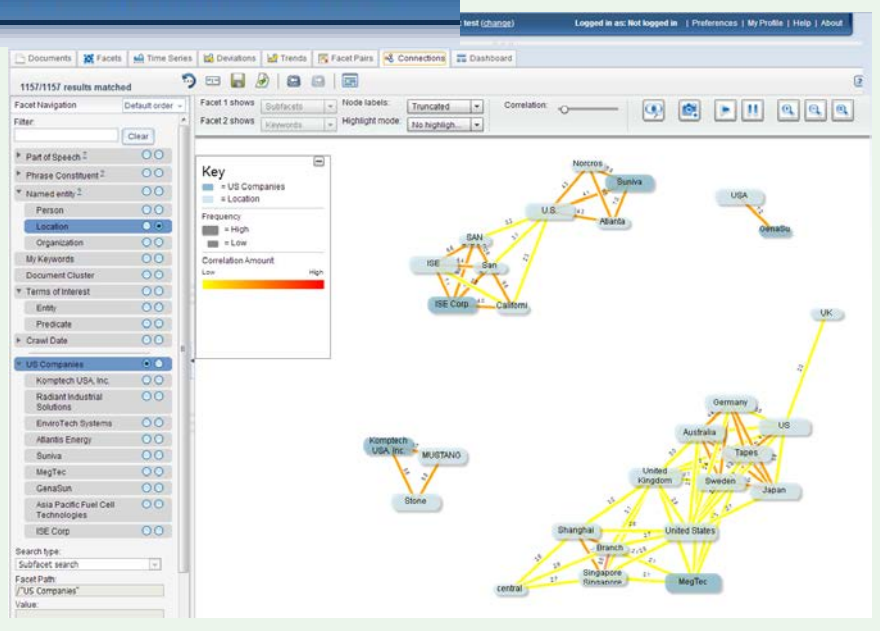
- Why “webscraping”?
  - Lack of data information for SMEs in China
  - Public data as a potentially source
  - Rich information in product
- Problems
  - How can website data be used?
  - How to integrate the data?





IBM Content Analytics with Enterprise Search





Web variables

- number of pages
- Instances of Variables
- Demo
- products
- government links
- trials

- manufacturing Intensity
- R&D Instant
- university link
- venture capital
- greenness

E.g. Trials (Keywords: experimental, experimentation, exploratory, pilot, prelim, preliminary, provisional, tentative, test, testing, trial, in-process)

	Number of company	cover rate %	Instances	Instances per company	mean	min	max	median
products	187	96.39	22907	122.50	1.019828	0.014298	4.703191	0.72973
trials	171	88.14	107569	629.06	0.505924	0.004333	2.03125	0.303797
government links	138	71.13	3052	22.11	0.12394	0.000433	1.03125	0.068729
manufacturing Intensity	181	93.30	17499	96.68	0.458349	0.013158	4	0.242641
university link	71	36.60	882	12.42	0.074704	0.002293	1	0.025
venture capital	44	22.68	211	4.79	0.024695	0.0013	0.128205	0.015159
greenness	117	60.31	4794	40.97	0.186849	0.002064	2.068182	0.083333
R&D Intensity	164	84.54	4615	28.14	0.302459	0.00311	2.068966	0.141804
Demo	147	75.77	4501	30.62	0.224178	0.000867	2	0.090909

Limitation, Challenges and future work

- Limitation of the work
  - Alibaba data base
  - Webscraping information missing
- Challenges
  - Non-structured website data integration
  - Chinese textual analysis
- Future work
  - Chinese web information analysis
  - Chinese and English version webpages comparasion
  - Wayback information analysis
  - Case study on special SMEs in China

Thank you!

Jie Ren
renjie_3@163.com