

TEXT ANALYTICS, AUTOMATION, KNOWLEDGE MANAGEMENT & INTELLIGENT SEARCH



Abstract

Text analytics is the fundamental part of data analysis using known and unknown information that are extracted from big data sets. This is similar to data mining. Unknown data is extracted to create knowledge management and train AI systems. With this information, more menial tasks can be performed by expert systems rather than people, changing automatization in the future. Having the capability of an advanced AI system such as intelligent search optimizes search processes in extreme ways, potentially changing the trajectory of technology and the future.



Introduction and Background

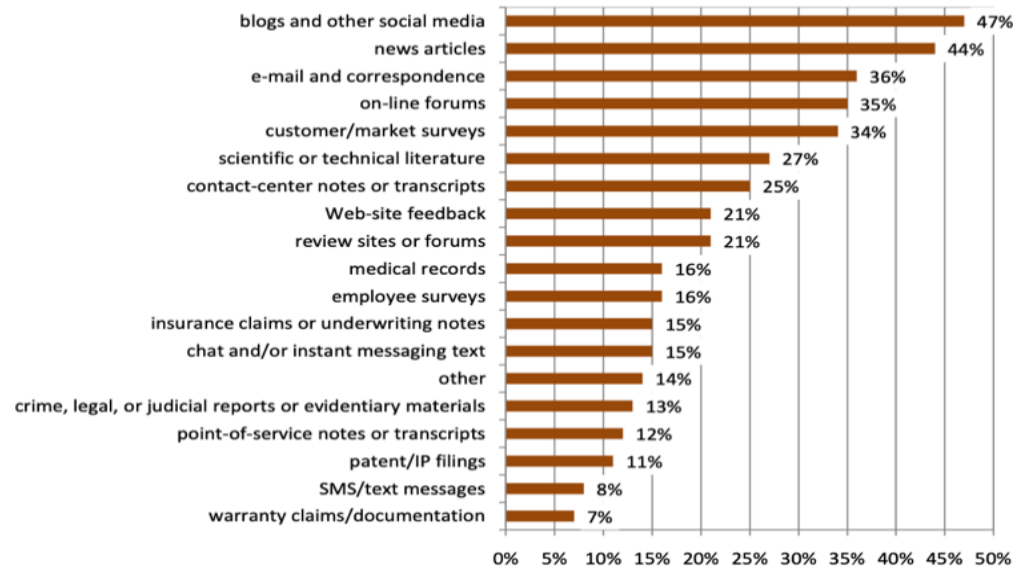


Text Analytics

- Is a subdivision of the Natural Language Processing field in computational linguistics
- Which is also referred to as text data mining or knowledge-discovery in text
- Its main role is extracting non-trivial information
 - Using textual patterns, linguistic-based and machine learning-based approaches from non-structured sources

Text Analytics

What textual information are you analyzing or do you plan to analyze?



Information to be
analyzed
(Grimes, 2009)



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Text Analytics

What are your primary applications where text comes into play?



Types of
applications fields
(Grimes, 2009)



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Automation

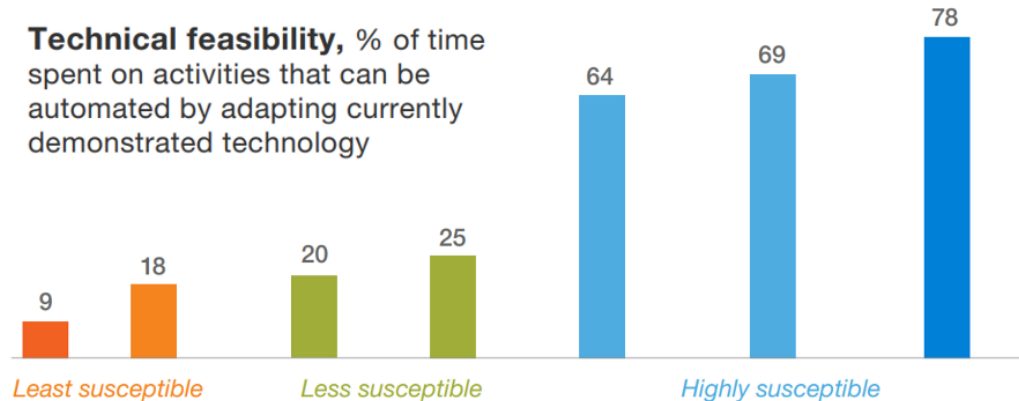
- Labor-saving technologies allow tasks to be completed with minimal human interaction
- Examples of Automation
 - Water Heater
 - Thermostat
 - Roomba
 - Tesla Auto Pilot



(Imprex)

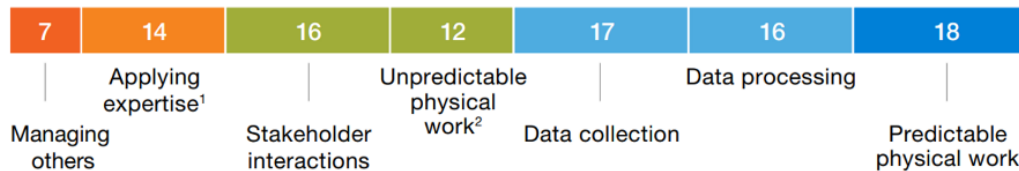
Automation

Technical feasibility, % of time spent on activities that can be automated by adapting currently demonstrated technology



Susceptibility of occupations are to automation (Chui, Manyika, & Miremadi, 2016)

Time spent in all US occupations, %

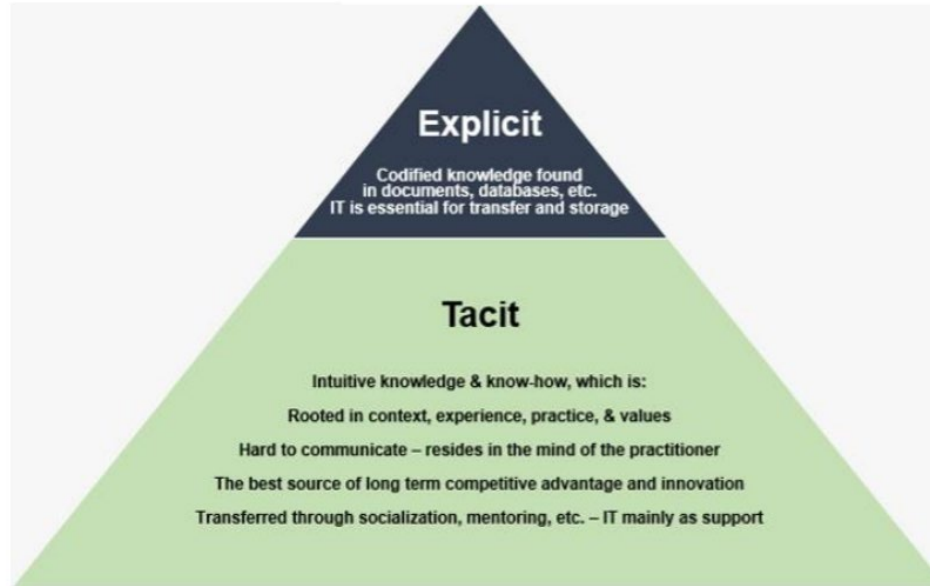


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Knowledge Management

- Knowledge Management is used to make it efficient for users in an organization. The information is saved for the organization.
- Benefits of KM are productivity, minimize risks, and make faster decisions to help business become better.
- Four practices of KM:
 - Discovery
 - Capture
 - Process
 - Maintaining knowledge

Knowledge Management

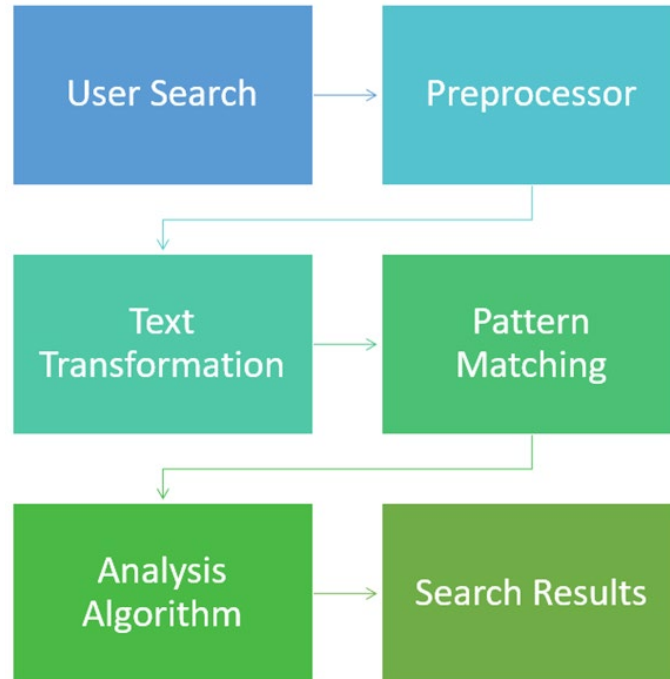


Different Types
of Knowledge
Management
(Hajric, 2018)

Intelligent Search

- Need
- Design (Parsing and presentation of data)
- Learning/Heuristics
- Use Cases/Applicability

Intelligent Search



Issues

Text Analytics

- The biggest concern in text analytics is the ability to access big data
 - Private servers/databases vs public servers/databases
- Which brings us to the second issue being how reliable the data can be and how you categorize big data
 - What is considered big data?
 - Hardware issues?
 - Training issues?

Automation

- Structural Unemployment
 - Persistent, long-term unemployment
 - Increasing from advancements in artificial intelligence
- Low skilled workers replaced by machines



(Dulcio, Bents)

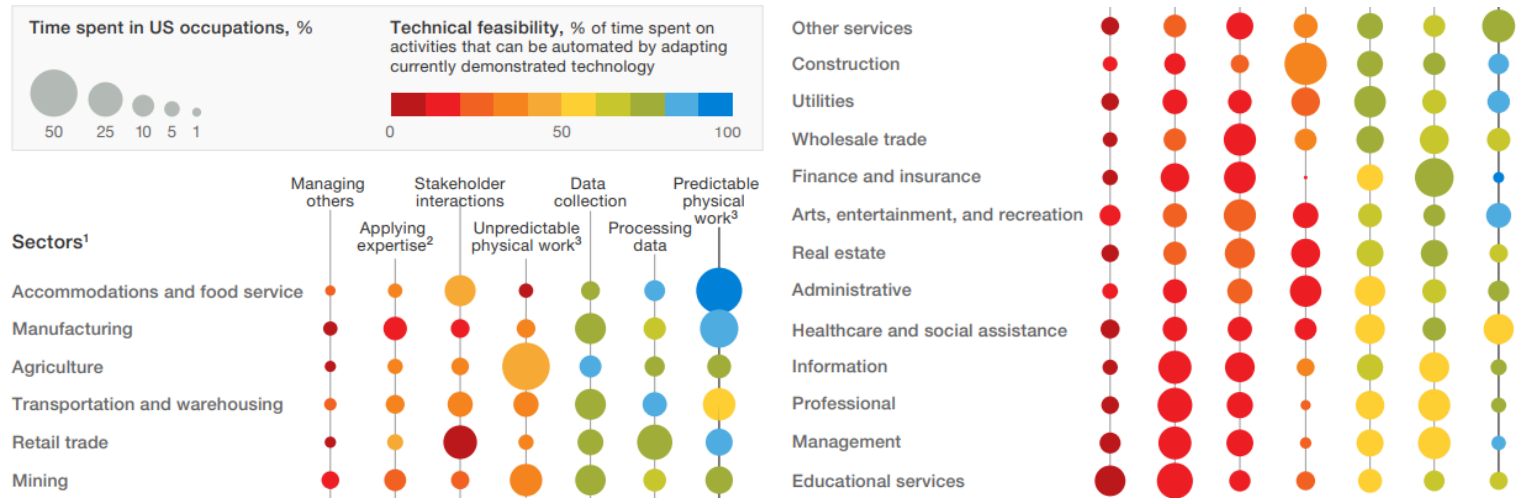
Automation



(UBI, Works)

- Minimum Basic Income
 - Combat advancements in automation
 - Tax-free amount of money
 - Provided by the government from the taxes on machines
 - Safety net allowing for job transitions and unexpected unemployment

Automation

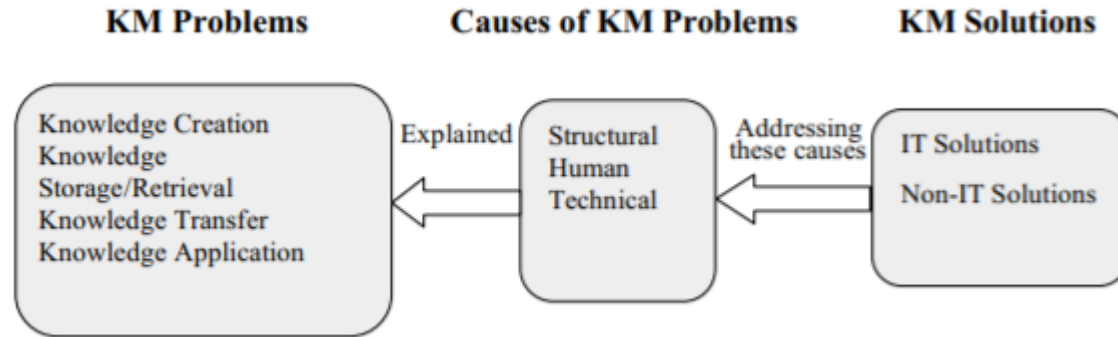


Technical feasibility by activity type for many industry sectors (Chui, Manyika, & Miremedi, 2016)

Knowledge Management

- Issues arise with capturing and sharing knowledge that need to be updated.
- Another issue is to determine which information is valuable to keep in the system.
- Causes of KM Problems:
 - Structural Related Causes
 - Human Related Causes
 - Technical Related Causes

Knowledge Management



KM Problems, Causes, and Solutions (Ou & Davison, 2007)

Intelligent Search

- Lack of Data Uniformity and Structure
- Impact on Distinct Algorithms
- Material Cost of Investment
- Reliability of Available Data
- Performance Cost

Intelligent Search

Cognitive Search | 8 Critical Requirements



BIG DATA SCALE
& RELIABILITY



COMPREHENSIVE,
ROBUST DATA
SOURCE
INGESTION



EXTENSIBLE
DATA
TRANSFORMATION



NATURAL
LANGUAGE
UNDERSTANDING
& TEXT ANALYTICS



DYNAMIC
CONTENT
UNIFICATION
& ANALYTICS



INTELLIGENT,
DATA-CENTRIC
SECURITY



FLEXIBLE UXD
& SOLUTION
ACCELERATION



ADAPTIVE,
LEARNING-BASED
RELEVANCE &
COLLABORATION



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Summary

- Text analytics is the fundamental property to utilize intelligent search
- Using knowledge management allows for automation to be reached

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