THE CLASSIFICATION OF SUSTAINABLE BUSINESS MODEL PATTERNS USING MACHINE LEARNING

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Sustainable business model patterns as a means to create impactful businesses – NBM 2020

THRIVE
Measuring what matters most

OVERVIEW

Key concepts

- Business model patterns as problem-solution combinations
- Business model innovation for sustainability is to strive for sustainable business models
- Descriptive (practical) vs prescriptive (design) approach
- Explained by taxonomy vs typology
- Machine learning and natural language processing tool
- Analysis of sustainability reports and audited public corporate literature

Aim

- Accurately describe an organizations business model
- Associate with organizational sustainability performance
- Across industries, regions and scales
- Process that can automatically replicate and scale
- Determine success or failure

HOW TO DRIVE THE TRANSITION TO SUSTAINABLE BUSINESS MODELS

Measuring what matters most

Sustainability Performance Measurement (Maltz et al. 2018; Evans et al. 2017; Boons et al. 2013; Morioka et al. 2016).

Define (into existence) vs Discern (identification):

Business Model categorization (Remane et al. 2017; Lüdeke-Freund et al. 2018; Gassmann et al. 2014).

Business Model Innovation for Sustainability (Schaltegger et al. 2012; França et al. 2017):

Determine which business models are more sustainable than others.

MEASURING → DESCRIBING → EVALUATING

We live in an economy where we privatize gains, socialize losses and underprice risk — Thomas L Friedman

DEFINE & DISCERN (SUSTAINABLE) BUSINESS MODELS

Leverage:

Pattern theory (Alexander 1977; Leitner 2015): Problem-Solution combination

Machine Learning (Kotsiantis et al. 2007; Binkhonain & Zhao 2019)

Design Science Research approach (Aken 2004; Hevner et al. 2004)

Control for Bias & Variance (Mehrabi et al. 2019; Lambert 2015)

Taxonomy/Typology:

Archetypes (Bocken et al. 2014)

Ideal-Types (Stubbs & Cocklin 2008)

Frameworks (Fielt 2013)

Necessary & sufficient: (Upward & Jones 2016; Robèrt 2003; Broman & Robèrt 2017)

Able to categorize source PDFs/HTML documents up to 83% accuracy using Lüdeke-Freund et al. (2018) taxonomy (45 BMPs within 11 Groups).

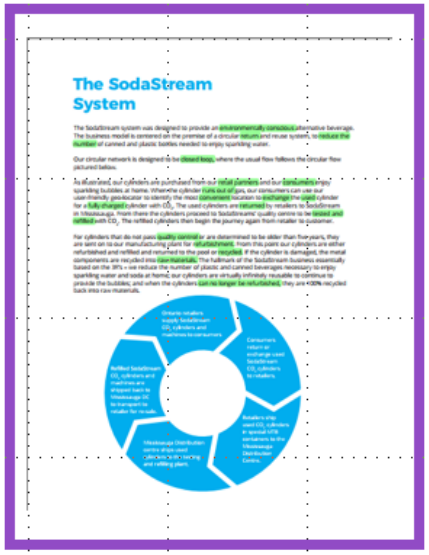
Allowing us to answer questions:

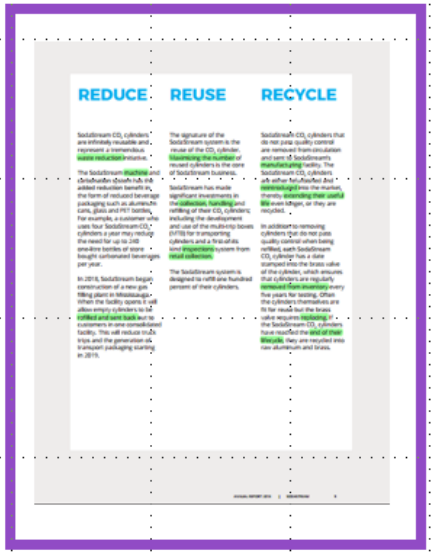
What is an enterprise's business model?

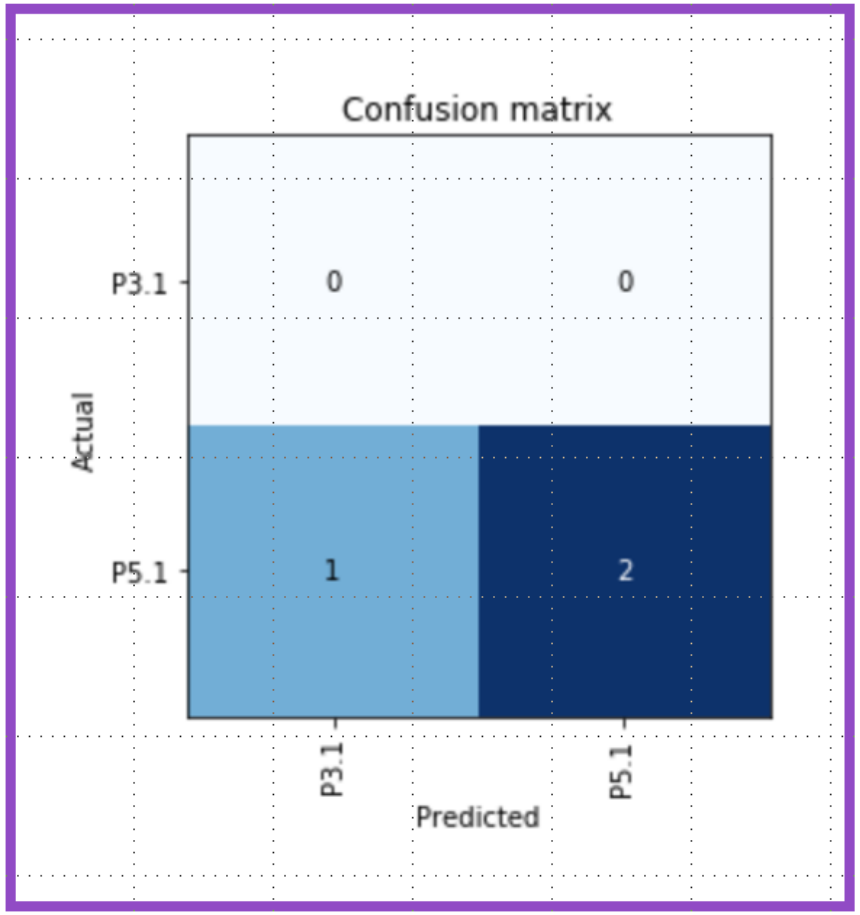
Which business models are associated with enterprises that perform more sustainably?

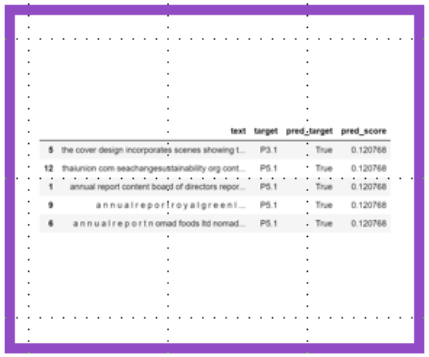
Don't sit waiting to join the Dodo! - Mike Barry

RESULTS THUS FAR...









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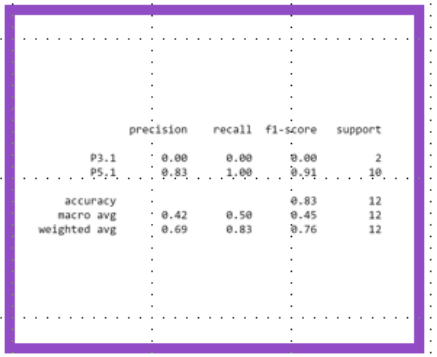
5	the cover design incorporates scenes showing t...	P3.1	True	0.120768
12	thaiunion com seachangesustainability org cont...	P5.1	True	0.120768
1	annual report content board of directors repor...	P5.1	True	0.120768
9	annualreportroyalgreenl...	P5.1	True	0.120768
6	annualreportn omad foods ltd nomad...	P5.1	True	0.120768



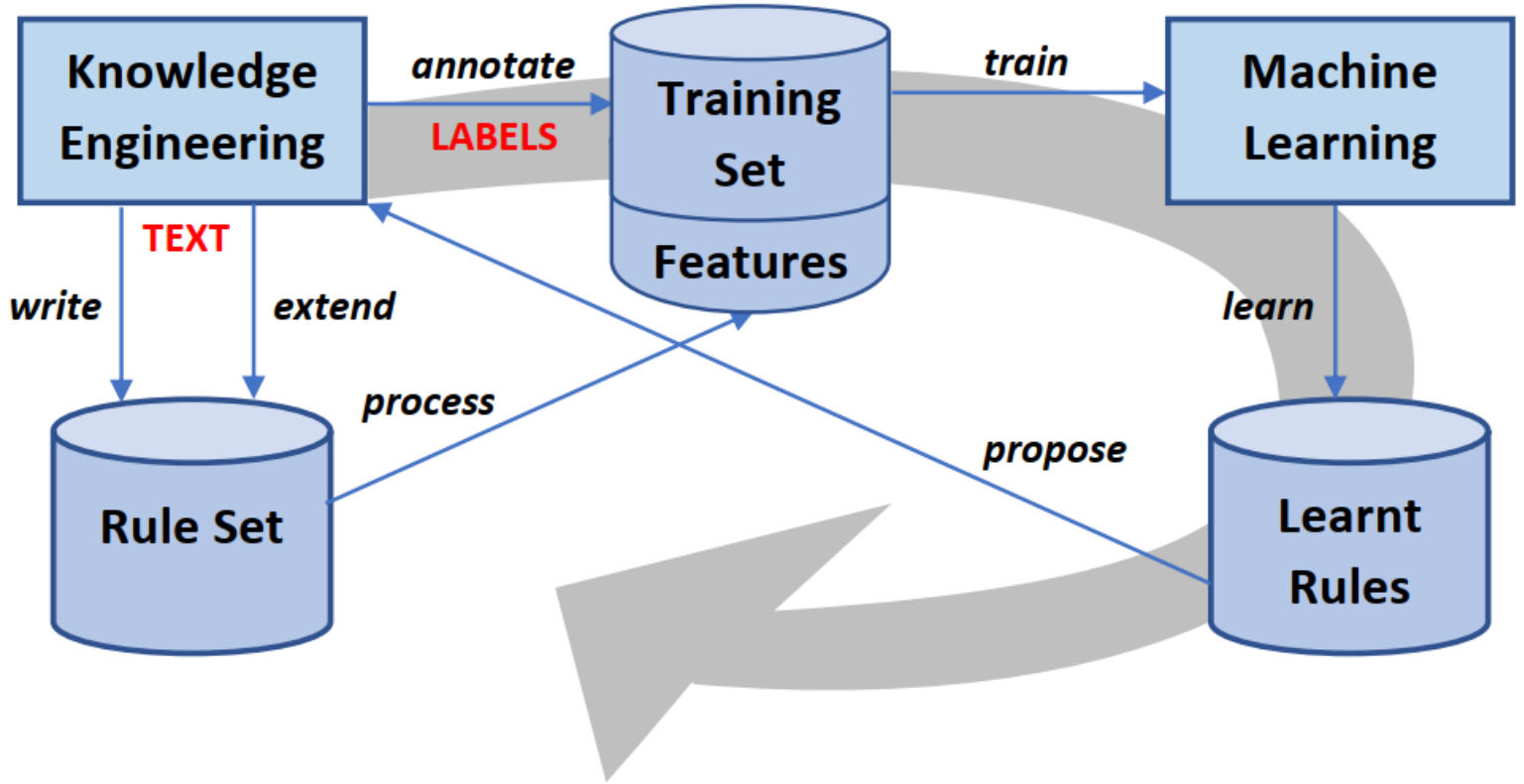
	precision	recall	f1-score	support
P3.1	0.00	0.00	0.00	2
P5.1	0.83	1.00	0.91	10
accuracy			0.83	12
macro avg	0.42	0.50	0.45	12
weighted avg	0.69	0.83	0.76	12

Participate and receive copy of results. Which BMs are more sustainable than others?

Which BMPs are most common among certain industries or sectors?

Which combinations of BMPs empirically correlate with higher levels of sustainability performance?

THE FUTURE OF SBM CATEGORIZATION USING MACHINE LEARNING



Source: The Classification of Sustainable Business Model Patterns using Machine Learning by Morris D Fedeli and Florian Lüdeke-Freund 2020.

Which business models outperform others?
Examine business model pattern as proven problem-solution combinations;

Apply the process to other entities (sector model, country model).

Benefits of this approach:
Automated, scalable, unbiased, repeatable and transparent.

Providing the basis of a pattern language.

The Classification of Sustainable Business Model Patterns using Machine Learning

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International New Business Model Conference
2020

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