How to monitor the social and public impact of the Physical Internet

Giuseppina Schiavone, PhD[1]

[1]Sustainability Advanced Analytics Consultancy

SAAC

INTRODUCTION

Social and public impact plays a relevant role in successful **Governance, Access and Adoption of the Physical Internet (PI)** as defined in the ALICE Roadmap. Processes for continuous detection, tracking and monitoring of **environmental-social-governance (ESG) aspects** able to capture the benefits of incremental solutions' deployment for the PI require gathering, processing and modeling of **complex data.**

OBJECTIVES

A generic dashboard for at-a-glance comparison of companies' ESG-related impact as emerging from unstructured publicly available data. The dashboard addresses and it is not limited to, small-to-medium (SME) logistics businesses and aims at **increasing impact's awareness, stimulating transparency and data sharing, with implications for measuring and monitoring the social and public impact of the PI.**
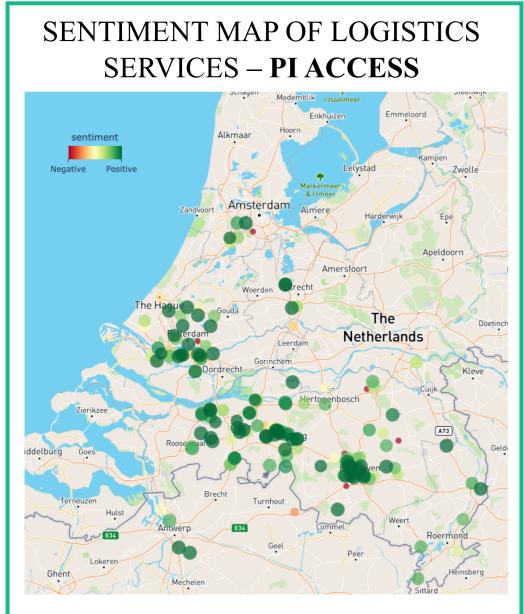
METHODOLOGY

Data Gathering: Google Maps Reviews / Ratings, first possible source of publicly available data, were obtained via responsible scraping (search within 50km radius around major Dutch cities: Rotterdam, Breda, Eindhoven). Companies' sizes gathered from graydongo.nl, adoption of environmental/social policies from companies' websites and social media presence from Facebook.
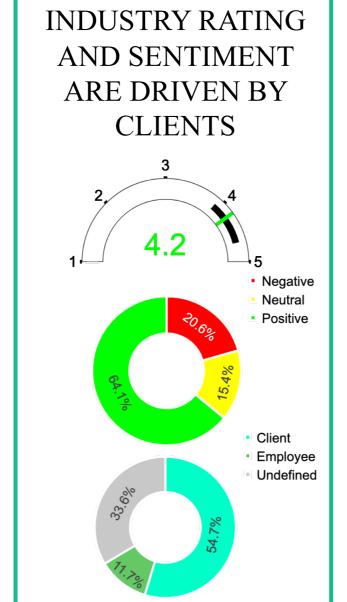
Data Processing and Modeling: filtering out of companies without reviews, application of NLP (Natural Language Processing) to analyze review, descriptive statistics, annotation of reviews per sentiment polarity and reviewer profile, evaluation of a pre-trained model of sentiment analysis, selection of a companies' subset (criteria: SME, reviews>20, unique location), identification of the logistics lexicon from the most frequent words (appearing >100 times)
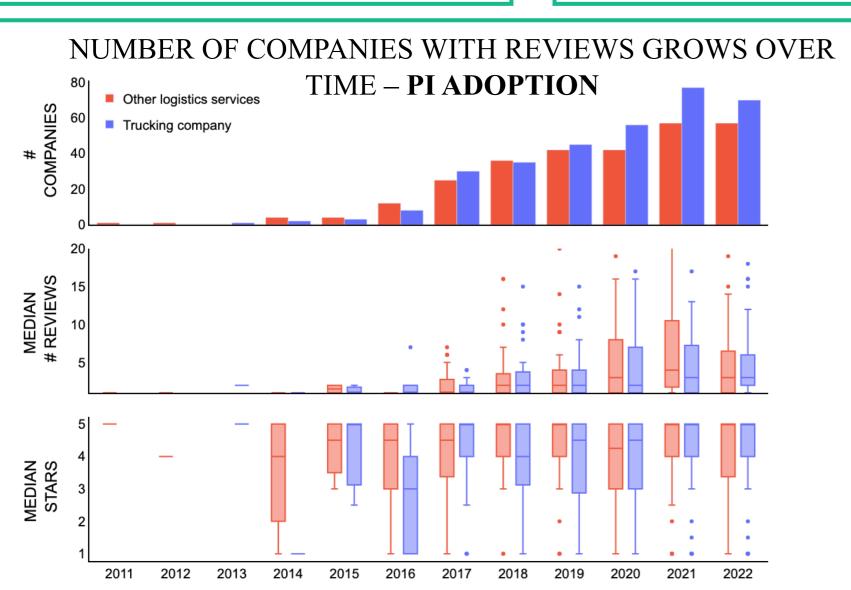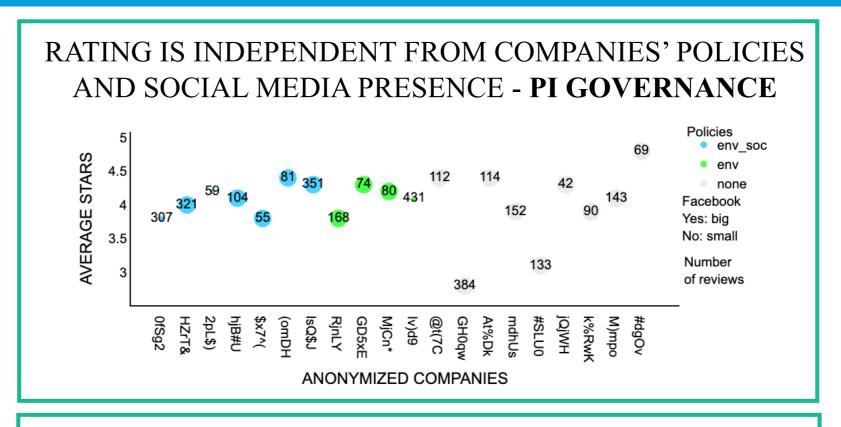
Preliminary Impact metrics:
- Number of reviews, Reviews' rating, Reviews' sentiment polarity
- Social media presence
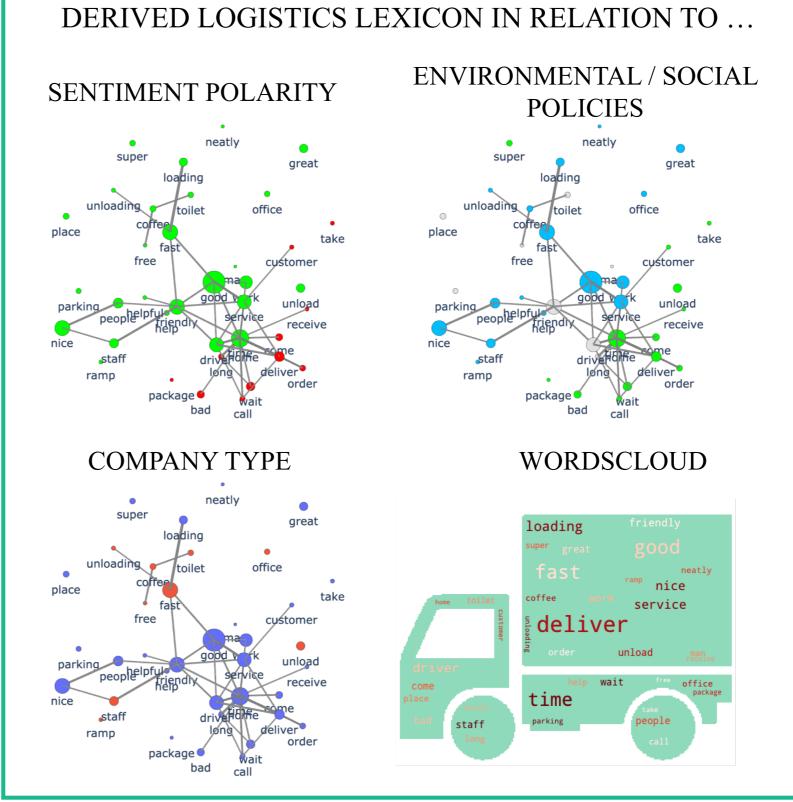- Adoption of Environmental and/or Social policies

RESULTS: TOP OF MIND DASHBOARD

SENTIMENT MAP OF LOGISTICS SERVICES – PI ACCESS

INDUSTRY RATING AND SENTIMENT ARE DRIVEN BY CLIENTS

4.2

- Negative
- Neutral
- Positive

20.6% / 15.4% / 64.1%

- Client
- Employee
- Undefined

33.6% / 54.7% / 41.7%

RATING IS INDEPENDENT FROM COMPANIES' POLICIES AND SOCIAL MEDIA PRESENCE - PI GOVERNANCE

Policies
- env_soc
- env
- none

Facebook
Yes: big
No: small

Number of reviews

DERIVED LOGISTICS LEXICON IN RELATION TO …

SENTIMENT POLARITY

ENVIRONMENTAL / SOCIAL POLICIES

COMPANY TYPE

WORDSCLOUD

NUMBER OF COMPANIES WITH REVIEWS GROWS OVER TIME – PI ADOPTION

- Other logistics services
- Trucking company

The Google search, conducted in September 2022, resulted in a total of 391 businesses (48% having reviews, 57% having rating) in 73 cities, 7908 stars, 3395 reviews (85% English translated), spanning throughout a period of 11 years. Only companies having reviews were considered (N=187), of these, 60% were identified as trucking companies, the remaining as offering other logistics services; 30% were located in Tilburg, Eindhoven, Rotterdam, Breda. The number of companies with reviews grew over time peaking during the COVID-19 pandemic. Google Maps Reviews were generally positive for this industry. 60% of the selected companies adopting social policies also adopts environmental policies. The derived logistics lexicon mostly captured clients' appreciation rather than employees' satisfaction.

IMPLICATIONS & FUTURE WORK

Google Maps Review helped capturing general and company-specific trends in customers' satisfaction. Monitoring wider public and social impact requires the integration of other data sources in relation to environment, employees, inhabitants (to get for example insights into road and workplace safety, emission, noise, energy and resource use, biodiversity, equality, labor conditions).

Next steps will focus on **(i) stakeholders' validation (companies, consumers, workforce, policy makers), (ii) gathering/processing/modeling of new data sources, (iii) deployment of stakeholder-specific dashboard(s) through the network for the PI developers and coordinators.**

We will evaluate how such a dashboard can stimulate transparency and data sharing among the players of the PI.

ACKNOWLEDGEMENT

IPIC 2023
9th International Physical Internet Conference
June 13-15, 2023
Athens, Greece

alice | Alliance for Logistics Innovation through Collaboration in Europe

i-SENSE GROUP