Who Are You Gonna Call?: A smart recommendation system for carrier-shipper matching

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Motivation / Background

GlobalTranz seeks a system, a carrier scorecard, to complement its current relationship and cost-based carrier-shipper matching process.

- Matching is more than calling preferred and familiar partners but also about assessing all potential candidates with objective metrics.
- Customized matching to serve different shippers on different lanes with various needs is critical.
- There is a need for generating recommended carriers that could be universally applied and standardized for use in the varying TMS platforms.

Key Question / Hypothesis

How to more effectively and objectively narrow down list of recommended carriers and develop long-term strategic partnership when serving specific shippers?

Geographical Fit
+
Level of Service
+
Financial / Cost Fit
+
Carrier Feature Labels
||
The RIGHT carriers?

Relevant Literature

Jintana, J., Sopadang, A., & Ramingwong, S. (2020). Matching Consignees/Shippers Recommendation System in Courier Service Using Data Analytics. *Applied Sciences*, *10*(16), 5585.

Maras, E. (2015). CHOOSING A 3PL: Shippers' Scorecards Expand. *Food Logistics*, *164*, 28,30-33.







The Problem

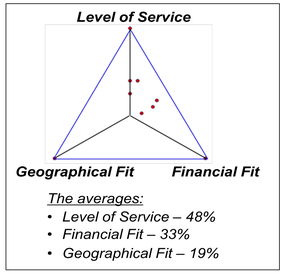
- How to define, who to define AND what performance metrics / feature labels define the "goodness of fit" of a carrier?
- How to incorporate both non-numeric and numeric data into generating "goodness of fit" score?

Methodology

- The carrier representatives evaluated the "goodness of fit" when applying the proposed metrics to rank carriers.
- More metrics were added in each iteration until the carrier representatives did not see the "goodness of fit" improving.
- The feature labels were developed through interviewing with internal stakeholders of GlobalTranz.

Results

Carrier ID	GlobalTranz Survey Result Score	Uniform Goodness of Fit Score	100% Geo Fit Ranking	100% LoS Ranking	100% Fin Fit Ranking
Carrier A	1	1	1	14	11
Carrier B	2	2	2	3	7
Carrier C	3	14	15	1	12
Carrier D	4	4	5	9	2
Carrier E	5	8	8	4	9
Carrier F	6	15	13	2	21
Carrier G	7	11	12	5	14
Carrier H	8	12	11	6	17
Carrier I	9	7	6	7	19
Carrier J	10	6	7	8	16
Carrier K	11	13	14	13	5
Carrier L	12	18	19	11	10
Carrier M	13	3	3	17	1
Carrier N	14	16	17	10	15
Carrier O	15	10	10	15	3
Carrier P	16	17	16	12	20
Carrier Q	17	20	21	16	6
Carrier R	18	5	4	19	8
Carrier S	19	9	9	20	4
Carrier T	20	19	18	18	18
Carrier U	21	21	20	21	13



The averages:
- *Level of Service – 48%*
- *Financial Fit – 33%*
- *Geographical Fit – 19%*

Survey Results (6 responses)

A GlobalTranz Survey Result Score was generated by the survey result while the Uniform "Goodness of Fit" Score was created by assigning equal weights to the three metrics. The weights of the metrics are arbitrary. Three extreme cases where one of the metrics is weighted at 100% and the other two metrics are at 0% is shown above. We recommend using a survey to understand what GlobalTranz prefers.

Contribution

1. A prototype recommendation system developed in Python with 15+ sub-metrics
2. Generates recommended carriers ranked by
   - ❑ "Goodness of fit" score
   - ❑ Desired metrics for GlobalTranz
3. Alleviates potential subjectiveness in the current carrier-shipper matching process

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