Evaluating the impact a restaurant aggregator might have on a UK National Restaurant Chain and with that impact in mind consider whether prevailing retail theories apply in the online world.

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Background & Motivation

This dissertation seeks to examine what impact Deliveroo (known as an Aggregator) might have on the business of one UK national restaurant chain. Its focus is; a) identify whether this impact will be an increase or loss of sales, and b) develop a spatially based financial model to be used as the basis for allocating to restaurants any additional Deliveroo derived revenue. It also examined whether prevailing retail theories still are relevant to the online world. This study is designed to investigate an issue of financial and strategic value to commerce. The role that business interrupters, such as Deliveoo, are having on commerce is an issue that many sectors of the economy are grappling with. Furthermore, investigating the interplay between catchment areas, as well as considering how spatial modelling might be applied to revenue allocation, are issues of relevance to most industries.

Data & Methods

Data was obtained from the following sources;
A) Location of sponsoring company's restaurants;
B) Data on competing restaurants service was extracted from Deliveroo's website;
C) 2017 Estimates population from the Office for National Statistics' website
D) Statistics on Deliveroo app downloads and the size of the food delivery market was based on various papers published on-line.

A 10 stage methodology was designed; summarised as follows: i) manipulate datasets ii) create maps to represent Trading Zone (TZs), areas of TZ overlap, cannibalisation and lost sales; iii) analyse data on competing restaurants, iv) calculate financial value & probability of cannibalisation and lost sales, v) model revenue sharing arrangements.

Key Findings

The analysis has shown that all cities (n=12), with the exception of one can be expected to experience an increase in sales. Introducing Deliveroo will expand TZs but introduces the risk of cannibalisation of sales to Deliveroo, and risk of lost sales to competitors. The key message is to understand the spatial relationship between the location of Delivery, Dine-In and competing restaurants.
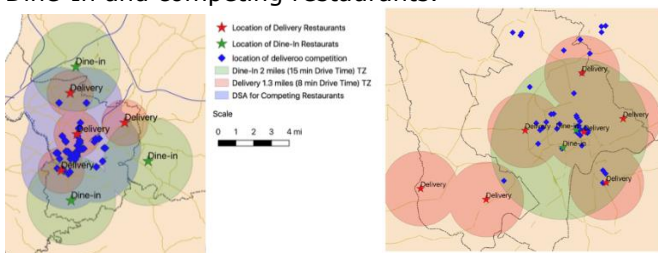

Figure 1 (L). How a Concentrated Pattern impacts catchment areas. Figure 2 (R). How a Lineal pattern impacts catchment areas.

Two financial model have been proposed, both use postcode as the basis for apportionment. One model is based on TZs, the other uses a nearest neighbour algorithm to apportion income to the restaurant nearest the postcode in question (see Figure 3). Each approach has its attractions but also disadvantages.
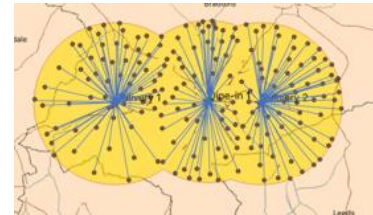

Figure 3. Revenue Allocation by Nearest Neighbour

The study has shown that prevailing retail theories will need to be updated. The key differences between the real and online worlds are that in the online world it is the product that is doing the travelling and not the consumer and the distance needing to be travelled is determined by the Aggregator and not the consumer. This means that the relationship between i) time, ii) cost of travel, and iii) distance will need to be updated.
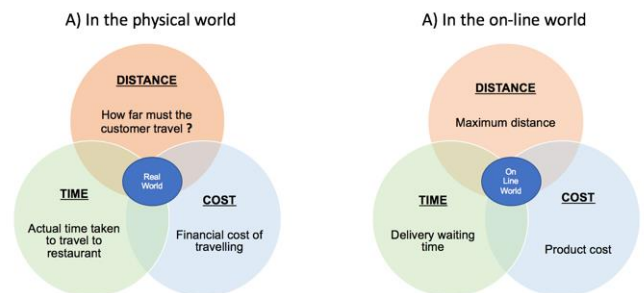

Figure 4. Relationship between Distance, Time & Cost

Value of the Research

This dissertation has demonstrated that GIS techniques are effective to:
a)   Assess the impact that Aggregators might have on a business, and
b)   Create a spatially based financial model to allocate income.

The work is of potential interest to Deliveroo and other food delivery apps who may be looking for empirical evidence refuting claims that partnering with them will result in high levels of lost or cannibalized sales. The revenue allocation models might also be applicable in any situation where a business is seeking to allocate revenue across competing as well as overlapping sales territories.

Given the parallels between restaurant food delivery and wider food retailing such as supermarkets and specialist foods and therefore there is some scope to examine how this study might be applied to those operators.