

Hospitality Opportunities in HS2-Era Birmingham, UK

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1 Introduction & Business Problem

A new rail infrastructure project has recently been confirmed in the UK, the 'HS2'. This ambitious transport system will connect the capital, London, to the second-most populous city in the UK, Birmingham (and the greater conurbation in the West Midlands), and later to northern England and Scotland. Rail transport times between London and Birmingham will be reduced from 1hr 24 mins to just 49 mins, over a similar time period that increasing environmental pressure is building to reduce on air travel.

Birmingham City plans to capitalise on the transport upgrade for massive economic regeneration, and are mobilising for an urban development master plan that intends to create 36,000 new jobs, build 4,000 new homes, and provide £1.4bn economic uplift. The plan identifies six 'Places for Growth' across the City, for the purposes of tourism, retail, business, learning, research, and a new creative sector.

For the latter, the area/neighbourhood of Digbeth has been identified as the main area for the growing number of companies involved with digital technologies, design, TV production and arts.

Although development of the main infrastructure project has not yet started, a hospitality entrepreneur and an investor (the clients for this data science project) have requested a brief analysis of pre-existing popular venues and hotels around Digbeth and the likely site of the new railway station. They are looking to strategically position 2-3 venues (1 boutique hotel*, and 1-2 restaurants) in the target area that would cater to both current popular demands and the future demands of the growing community of creative sector professionals living in or visiting the area.

(* A boutique hotel is typically a stylised hotel of 10-100 rooms with individualised 'unique selling points')

In particular, the clients (the target audience) have two questions at this pre-concept stage, and only a limited budget:

- What are the most popular (commonly visited) restaurant cuisines in and around the Digbeth area (i.e. the cluster of neighbourhoods) of Birmingham City, UK?
- What is the closest upmarket hotel near to (or in) Digbeth, Birmingham? How far from the Digbeth area is it? What is its customer rating?

2 Data

This project will primarily utilise location and venue (visit and rating) data available through Foursquare. Foursquare is a location technology company that, in 2009, developed a crowd-sourcing 'check-in' system that make sense of where phones go, and offers a proprietary dataset (called Pilgrim) built upon over 13+ billion check-ins.

The project also uses a composite dataset that contains the postcode districts for Birmingham, their respective latitudes and longitudes, and estimated population by postcode (based upon 2011 UK census data). This dataset was extracted from data curated by Chris Bell on www.dougal.co.uk (for which, the author is extremely grateful), and is available on a public domain licence. The data has been loaded directly into the IBM Watson Studio project, and connected with this notebook.

Lastly, the contextual data for the background of this project (i.e. information about HS2 and Birmingham City's master development plan), but not used in the data analysis of this project, has been taken from the Birmingham City Council website (www.birmingham.gov.uk/).

3 Methodology

3.1 Data Pre-processing and Exploration

The data were cleaned, and extraneous data regarding postcode districts outside of Birmingham City were dropped, as the initial datasets covered the entirety of Birmingham County. There was minimal external data to clean, however, as the majority of data was generated through the Foursquare API during the workflow.

Notably, as some data results from Foursquare API searches were produced within the code, this was also cleaned, and irrelevant data was also dropped.

The Foursquare search results and also the neighbourhood locations were both visualized through the Folium module on Python.

3.2 Neighbourhood Exploration and Clustering

For the first question: **What are the most popular (commonly visited) restaurant cuisines in and around the Digbeth area (i.e. the cluster of neighbourhoods) of Birmingham City, UK?**

The methodology used was unsupervised machine learning, through the K-mean clustering algorithms, to apportion the Birmingham City neighbourhoods into five clusters. The cluster corresponding with the target district and its neighbouring postcodes was further examined for venue popularity and predominance.

For the second question: **What is the closest upmarket hotel near to (or in) Digbeth, Birmingham? How far from the Digbeth area is it? What is its customer rating?**

Foursquare search results for term 'Hotel' and category type 'Hotel' were centred upon Digbeth neighbourhood, and the results list was generated. This was then sorted by distance. Starting from the closest, the official (hotel) star rating was confirmed through other hotel booking sites, namely www.booking.com, and the closest 4* or 5* hotel was identified. Using further exploration of this specific venue, the Foursquare user rating was ascertained, as were other tips.

4 Results

The results found that:

The top ten most popular venue types in the Digbeth area are:

- Gay bar
- Chinese restaurant
- Hotel
- Korean restaurant
- Japanese restaurant
- Music venue
- Cocktail bar
- Grocery store
- Pub
- Record shop

The K-means neighbourhood clustering had ultimately clustered Digbeth with 38 other neighbourhoods. Collectively, from this neighbourhood cluster, the only restaurant cuisines that were in the three most popular venue categories for each neighbourhood were:

- Italian restaurant (1)
- Chinese restaurant (1)
- Asian restaurant (1)
- Indian restaurant (3)
- Pakistani restaurant (1)

The only restaurant cuisine that was listed in the 'most popular' venue category in any of the neighbourhoods, however, was Italian. Notably, this was not in Digbeth.

In terms of the closest up-market hotel to the Digbeth area, the results identified: **Hotel Indigo**. Hotel Indigo was 1,329m from the centre of Digbeth, and had a user rating 7.9/10.

5 Discussion

The results suggest that there are pre-existing customer bases for Italian, Chinese, Asian, Indian and Pakistani food in the wider cluster of neighborhoods, but that specifically in Digby there were only Asian restaurant venues. This would suggest that there may be a niche in considering Indian, Italian, or Pakistani restaurant enterprises in the future, for Digbeth.

The results also suggest that there are no nearby boutique hotels to Digbeth, i.e. within one mile. The closest upmarket hotel belongs to the Indigo Hotel chain, but appears to have very favourable customer reviews. Given the expected growth in the creative sector/industry in the city in this area in the future, it appears worthwhile to further explore the potential for placement of a boutique hotel here.

6 Conclusion

To sum, future development in Birmingham represents an opportunity for increased hospitality enterprises, including with a potential boutique hotel and also specific restaurant cuisines, e.g. Italian.