

Big Data Provides New Opportunities

How big data is revolutionizing the parking industry

Big data, analytics and predictive analytics are common buzzwords in online and print media. Thanks to Facebook and Google, they have become ubiquitous across many industries even in professional sports where many teams leverage analytics to guide game strategy and to create budget efficient teams with the ideal player composition.

Some of this trend is a result of the popular book by Michael Lewis, "Moneyball." The success of Facebook and Google whose business models are underpinned by predictive analysis can be regarded as an impetus for other industries to pursue new revenue streams through the use of data and analytics. Despite its obvious revenue potential, the definition of big data is still abstract to some extent.

Big data gives information

Generally speaking, big data is a large and complex set of data. Yet on a more detailed level, each company coins their own definition of big data and analytics in alignment with their respective business model. Big data can be large sets of collective and inter-related data (terabytes or even more per day) which can be used to derive meaningful information to meet a business need. This could be in the form of data to drive decision making, to build a new revenue stream or to sell aggregated data to another company.

While data-based business models are not a new concept, what is unique is the interest in big data irrespective of the size. Large retailers, defense contractors and mobile phone companies have been using data as a key tool in their business models for some time. However, as the cost to store data has decreased, and the ease of gathering data from multiple sources has increased, the advancement of complex algorithms to derive patterns from large amounts of data has helped make big data a reality across all industries. As technology evolves and advances further, companies are spending less time creating and maintaining a data mart, and more time learning about and understanding data. Big data has also created new revenue opportunities as companies monetize data by creating new services or by using data as the foundation for decision making or to reduce risk.

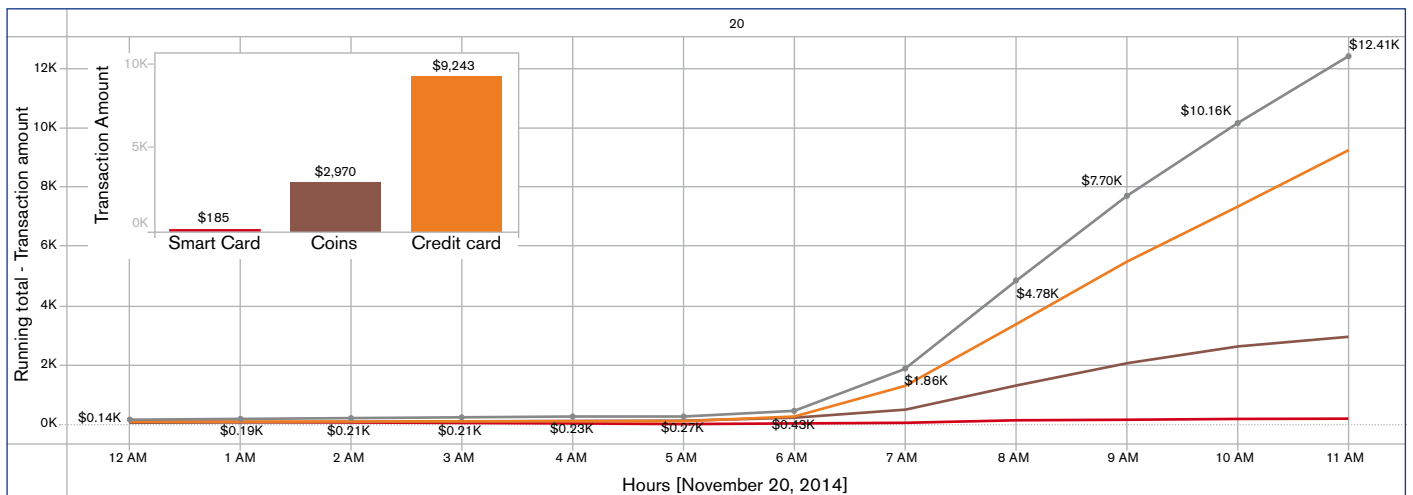
Big data's role in parking

The parking industry remained unchanged for many years. But with the evolution and

adoption of cellular technology which allowed parking metres to wirelessly communicate data from the parking metre to a centralised data mart, the role and relevance of big data and analytics increased. Today, parking programs are data rich, comprised of inter-related data points such as payment transactions, occupancy data, sensor data, enforcement data, length of stay data, metre status data and more. With the appropriate technological blend, this data can be analysed and organised into usable information which customers then use to understand and predict customer behaviour patterns. These in turn help cities to adjust and refine their parking programs in the following areas: Revenue Management, Efficiency Management, and Metre (Device) Management.

Efficiency management

The main goal of many cities is to improve the efficiency of their program in order to minimise the stress often times associated



The cumulative revenue for the day

with parking. Efficiency is mainly evaluated by a city's ability to manage their parking capacity, generate turnover, and to predict and address fluctuations due to events and unexpected variables like accidents or construction. Big data and analytics can help cities by providing predictive occupancy patterns based on past data and planned events like sporting events, parades or street fairs.

Capacity data with relation to payment percentage will help the City adjust enforcement staff numbers accordingly to meet the demand. Payment types composition (coin vs. credit card) help collections processes to streamline schedule and frequency of collections. Data on capacity patterns allow the city to adjust rate structures and maximum time stays which benefits both motorists and retailers/businesses.

Revenue management

Tracking revenue trends and variations in revenue cycles provides insight into useful

patterns which can be refined with changes to program variables like maximum parking time, rates, and enforcement hours. Occupancy trend versus paid parking spaces can also help the city increase its revenue.

Metre management

Efficient metre management is key to the overall efficiency and success of a city's parking program. Big data on real-time metre status and faults, in combination with data on past trends can help metre maintenance personnel mitigate device failure risks, thus reducing impact to capacity and revenue.

Collecting and analysing user key strokes can help a city to understand metre user interface navigation patterns while power consumption data based on location can reduce failures.

The future of many industries will depend on their ability to leverage big data and analytics to improve operational efficiency,

generate new revenue streams, and incorporate data-driven decision making into their organizations. The parking industry, which has become a data-rich industry, must also embrace and understand the role of big data and analytics and in doing so, will help cities implement more efficient and intelligent parking programs. ■



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