



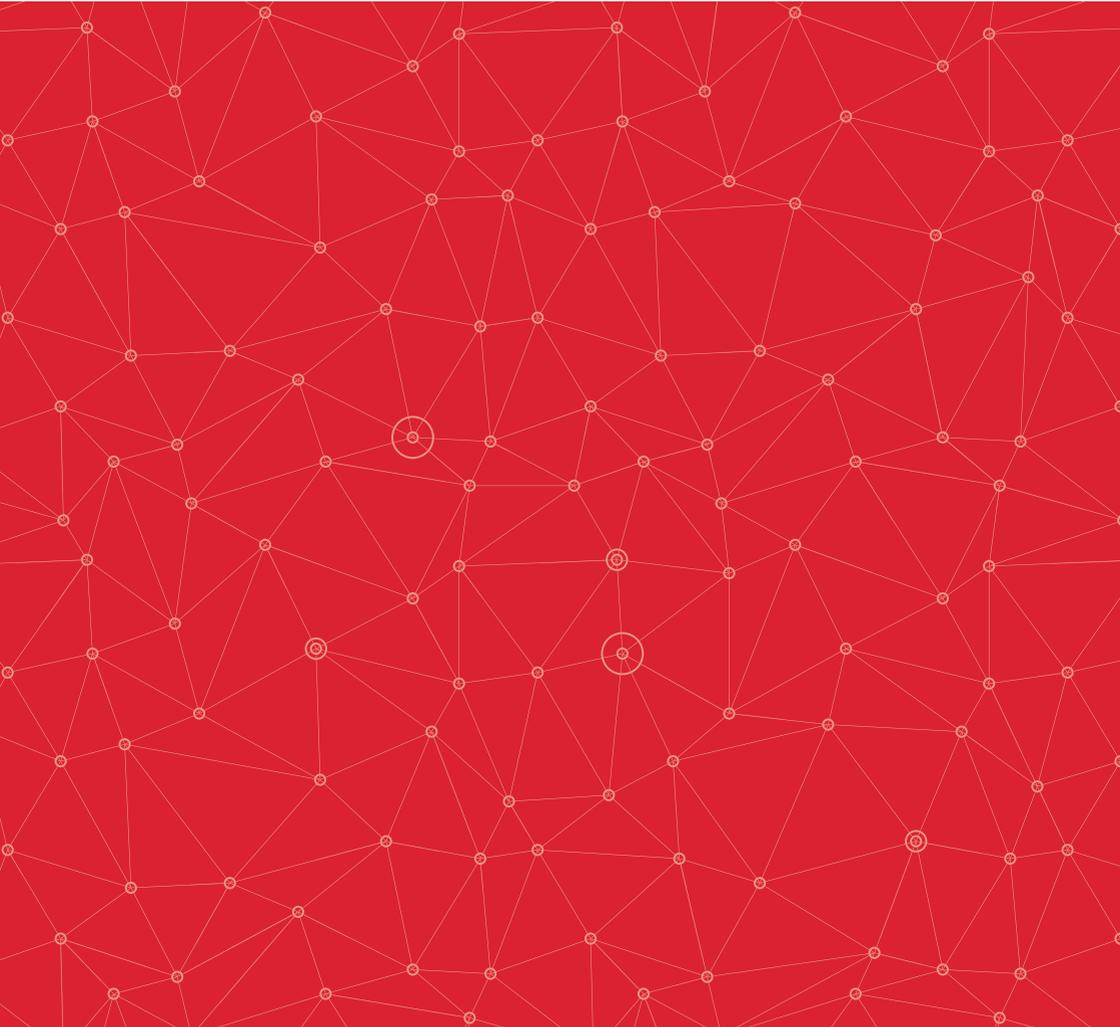
THE  
OPERATIONAL  
RESEARCH  
SOCIETY

INSIDE:

Emotion in Analytics  
Delve Analytics – analysing you  
Instagram Insight  
Ten Years of Analytics

# Analytics Quarterly

SUMMER 2016



# Join the OR Society and the Analytics Network



THE  
OPERATIONAL  
RESEARCH  
SOCIETY

Operational Research is the science of better decision-making and we are the professional home of the Operational Research (O.R.) and analytics community in the UK.

We support our members as they develop their skills and careers as operational researchers, analysts, academics and decision-makers.

We offer:

-  TRAINING
-  NETWORKING
-  ACCREDITATION
-  AWARDS AND MEDALS
-  JOURNALS
-  VOLUNTEERING
-  O.R. ADVOCACY AND EDUCATION

Our Analytics Network provides a forum for analysts to share knowledge, experience and contacts. It is also preparing to offer a new Analytics Journal and is running leading edge events such as the Annual Analytics Summit.

Join the OR Society here:  
[www.theORSociety.com](http://www.theORSociety.com)

# Editorial

Welcome to the Operational Research Society's newest publication, the re-launched Analytics Quarterly.

The discovery, interpretation and communication of meaningful patterns in structured and unstructured data has been a part of Operational Researchers' work for many years. In the last few years, many of the techniques we employ to derive insight and value from such data has been given a classification, analytics.

Analytics relies on the simultaneous application of statistics, computer programming and Operational Research (O.R.) techniques to quantify performance and communicate insight. Analytics firmly occupies the 'Now', a time when the convergence of intelligent devices, social networking, ubiquitous broadband networking and data analysis is ushering in a new economic system.

This new environment is moving us from the information economy to 'the intelligent economy', a place where it is no longer sufficient to provide access to information in pursuit of insight and competitive advantage, but to provide the ability to analyse and act upon that data too.

According to a recent report from IDC, the big data and analytics market is expected to be worth more than \$187 billion in 2019 worldwide, up from \$122 billion in 2015. Services will represent more than half of all big data and analytics revenue with software representing the second largest category in a \$55 billion.

By industry, IDC believe that discrete manufacturing will be the biggest industry to chase big data, followed by banking and process manufacturing. Government, services, telecom and retail will also be large growth areas.

"This new environment is moving us from the information economy to 'the intelligent economy'..."

Analytics Quarterly has been developed to support the Analytics community and talk about topics like best practices and the latest trends in analytics. It will carry feature articles and news relating to the application of Analytics in business and the sustainable management of communities, the Internet of Things (IoT) and the promotion of the distribution of analytics technologies in business, social, health, and educational sectors.

I hope you enjoy it. 



Nigel Cummings

## Contents:

News in Brief	4
Instagram Insight	5
Delve Analytics – analysing you	8
Emotion in Analytics	9
Ten Years of Analytics	10

# News in Brief

## GLOBAL LEARNING ANALYTICS MARKET REPORT

A new research report about the Global Learning Analytics Market covering trends and developments from 2015 onwards to 2019 is now available for you to access. The research report published by Technavio's analysts forecast the global learning analytics market to grow at a CAGR of 25.54% until 2019.

The report covers the present scenario and the growth prospects of the global learning analytics market for 2015-2019. To calculate the market size, the report considers revenue generated from software licenses, maintenance, implementation, and subscriptions. In addition, the report considers the revenue generated from:

- Content analytics
- Adaptive learning analytics
- Functional support analytics
- Social media analytics
- Predictive analytics

BI and analytics platforms cover all BI and analytics solutions that are deployed within organisations. Learning analytics software uses tools and applications for collecting, managing, and analysing both structured and unstructured data to improve multiple processes and activities. Learning analytical tools include content analytics, adaptive learning analytics, functional support analytics, social media analytics, and predictive analytics. 

Access the report at: [www.reportlinker.com/p03376019-summary/Global-Learning-Analytics-Market-Research-Report.html](http://www.reportlinker.com/p03376019-summary/Global-Learning-Analytics-Market-Research-Report.html)



## GENERAL MOTORS ANALYTICS WINS INFORMS PRIZE

General Motors, which use big data and advanced analytics to predict failure of certain automotive components and systems before customers are affected, is the winner of the 2016 INFORMS Prize for O.R. and Management Science.

GM is able to alert customers through its OnStar system which covers potential issues with a vehicle's battery, fuel pump and starter engineering. The system is said to "transform an emergency repair into planned maintenance"; as such, a good example of applying O.R. and Management Science to the most complex issues the company faces. 

Read more at:

[www.informs.org/Recognize-Excellence/INFORMS-Prizes-Awards/INFORMS-Prize](http://www.informs.org/Recognize-Excellence/INFORMS-Prizes-Awards/INFORMS-Prize)

## ON THE EDGE

Edge Analytics is the new tool to help analysts make sense of the deluge of data brought along by the Internet of Things (IoT) by reducing the need to store and process all the data at a central location.

Processing large quantities of IoT data in real time equates to new security and capacity challenges for analysts. One way of addressing these challenges is to put automated, intelligent analytics at the "edge", near where the data is generated.

Nik Rouda, senior analyst at ESG Research, recently said, "trying to decide what data to save and what to use is as important as having the facility to capture it. Rather than sending every bit of data to a centralised location, Edge Analytics places another layer of intelligence and automation where the data resides." 

Find out: [www.datanami.com/2015/09/22/the-data-of-things-how-edge-analytics-and-iot-go-hand-in-hand/](http://www.datanami.com/2015/09/22/the-data-of-things-how-edge-analytics-and-iot-go-hand-in-hand/)

# Instagram Insight

Compared with other social networks, Instagram is relatively simple, focused exclusively on sharing photos and video with 'friends'. Behind that simplicity, though, lies big business and with any modern business comes analytics.



Savvy businesses have been a part of the Instagram community since its beginning, using the platform as a way to showcase their products and services in a rich, digital shop window that allows interaction with customers and potential customers. Fashion houses can feature followers in the latest lines; fitness trainers can show off their favourite workout equipment; photographers can talk about preferred lenses. As far as the public is concerned, these conversation-starters are innocently provided but may influence their future purchasing.

This ability to influence people visually about the purchasing choices they make has value – \$1 billion dollars to be precise. This was how

## 300 million

active monthly users and the number is growing daily



Posts tagged with a location receive

79%

higher engagement

Instagram's engagement rate for top brands is



# 58

times higher than Facebook &



# 120

times higher than Twitter

## The Instagram Selfie: personality and product placement



much Facebook paid for Instagram, and the site continues to generate incredible wealth. A recent Daily Mail article claimed that each individual Instagram user's posts could be worth as much as £4,160 a year in terms of brand promotion.

Lydia Faye Jones, founder of Want Her Wardrobe Boutique, has over 8,000 Instagram followers and could be earning in excess of £12,480 a year from promoting brands, according to a newly published Insta-Index. Accounts with 17,000 followers can earn £26,520 a year – above the average salary in the UK – whilst bigger influencers with over 100,000 followers, representing over 10,000 UK accounts, could earn a six figure salary of £156,000 a year, the same as a Harley Street doctor.

### TOOLS FOR THE JOB

Instagram is launching a series of tools for businesses and brands, including tailored business profiles, access to maps and directions, as well as tools for tracking the analytics around posts and a mobile ad-buying experience.

Instagram's analytics offering will be called "Insights," and will be focused on two main areas: follower demographics and post analytics. The

follower analytics section will offer demographic details about a business' audience, including follower location, age and gender.

Location information is available by country or by city, which makes it useful to bigger brands and smaller, local businesses alike. Knowing where the majority of users are based can also help businesses better determine when to post content.

However, Instagram's new algorithmic-based timeline will disrupt that flow by personalising the feed to each user, rather than presenting posts chronologically. In addition to providing details like gender and age, graphed out as a circle graph and bar chart, follower analytics will also let businesses/users track how many new followers have been gained on an hourly and daily basis. This facility can help pinpoint which posts worked to convert users to followers or which posts may be going viral.

This is all serious revenue stream-creating analytics, and will be available to everyone, not just professionals in business. This 'socialising' of business analytics will help those we might call "citizen analysts" to compete with larger brands for followers and significant financial rewards. 

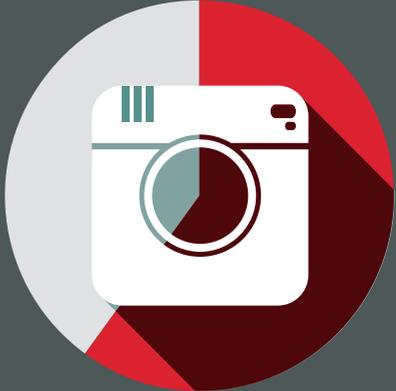
70   
  
million  
photos per day

\$595  
million  
in mobile ad  
revenues  
worldwide  
this year; and  
\$2.81 billion  
by 2017



  
The average engagement per  
Instagram post has grown by  
**416%**  
over two years

B2C marketers are significantly more likely (60%) to increase Instagram activities than B2B marketers (40%) this year.



# Delve Analytics – analysing you



In April this year Microsoft rolled out Delve, an Office 365 analytics add-on to provide its users with a context-aware search and discovery workplace on personal productivity.

The add-on not only displays how many hours are spent in meetings, attending to email and on work tasks, but is also capable of providing insights into the quality of such activities. In its analysis and presentation of the time spent in meetings, Delve shows a user's total amount of hours spent in meetings with information on which of those gatherings are may have been a waste of time.

The Delve dashboard has a facility called Focus Hours which graphically depicts how often the user has at least two hours between meetings to conduct work. Providing such insight allows its users to schedule meetings in a manner that helps maximise their work day and assist those users trying achieve an equable work life balance.

Delve also yields 'email etiquette' analytics, such as percentage of emails read by recipients, along with the time it took colleagues to reply. Collaboration can be scrutinised by an inbuilt network module, tracking which are easy collaborators and which are 'collaboration-phobic'.

This may be seen as keeping an unhealthy close eye on workers, but (according to Microsoft) the

Delve add-on is primarily designed to provide insight to benefit the individual, not their bosses. Each Delve analytics dashboard can only be seen by its own individual registered user, meaning the individual can see without any fear of being scrutinised by other members of their organisation exactly how they spend time.

If Office 365 is available for you, you may already have access to Microsoft's Delve add-on. Simply go to the Office 365 web experience at [portal.office.com](https://portal.office.com), open Delve from the app launcher and click Analytics on the left-hand side of the window. At the top of your personal dashboard, you'll see a summary of how much time you've spent this week in meetings, on email, in focused work time and working after hours. You can also set goals for each of these areas to work towards. 

Read more and see some helpful video and graphics about using Delve at <https://blogs.office.com/2016/04/06/take-back-your-time-with-delve-analytics/#mmp6ZrzmkVolS09G.99>

 Office Delve

# Emotion in Analytics

Companies engaged in analytics are realising that simply understanding a person's identity or footprint in their world is insufficient for deriving maximum return from analytics investment.

It has become clear that analytics could better serve marketing needs if it were possible to determine what customers thought about and what their frame of mind was at any particular point in time.

This has given rise to developments in 'emotional analytics', a critical next step for taking advantage of very fine grain insight. Traditional analytics still has an important place for identifying revenue streams for business, but the application of 'fine-grain' derivation tools to customer data will almost certainly be one of the next big things in analytics.

We have already seen that sentiment analysis can only provide approximations of future states of being – a case in point being the last general election where sentiment analysis was routinely applied to Twitter feeds to try and determine who would be the next in power. The analysis failed, predicting the incorrect outcome.

Adopting a finer-grain view of the individuals behind the Twitter feeds during that period of analysis might have enabled poll predictors to frame their predictions more accurately. Similarly the application of finer grain emotion analytics might allow businesses to adapt their behaviours according to what their customers really feel rather than what they think their customers feel based on their analysis of unstructured coarse data.

According to Conrad Bates, managing partner at EYC3 (an advanced analytics and data specialist company), "the emotion is what gives you the edge, just knowing the subject isn't enough."

Recognising and allowing for emotion is as important for internal organisational decision-making as it is for sales and customer engagement.



Alan D. Duncan, research director at Gartner, believes that analytics leaders striving for a data-driven culture must take positive steps to engage with emotions. Business analytics can provide a major stimulus for transformational change. Yet neuroscience and psychology show us that people are typically not "wired" to engage with facts.

According to Mr Duncan, "when it comes to using analytics for influence, the facts are of little importance until the psychological and emotional aspects of an issue have been addressed. Analytics leaders must therefore find ways to engage with and overcome these psychological resistance factors if they are to ensure that data is presented in a compelling manner that supports the right decisions and drives actions that add value." 

More information on this topic can be found at: <https://itbrief.co.nz/story/getting-emotional-business-analytics/>

# Ten Years of Analytics

Back in 2006, Tom Davenport referred to analytics in his groundbreaking Harvard Business Review article on Competing on Analytics as the “killer app” for competing in a world awash with data and data crunching software. It was all so exciting; analytics was being adopted by companies worldwide to provide them with an edge over their competitors.



Tom Davenport: Analytics is the “killer app”

“Saracens’ technical analyst uses tactical data analytics to provide insight to coaching staff”

For a while it was true; adoption of analytics-based strategies did seem to provide new routes to business growth and profitability. New analytics software packages appeared in new software markets, all promising to provide a competitive edge by dredging insight and revenue generation from unstructured and legacy data.

Consumer products, finance, retail, travel and entertainment were all subjected to analytics. When once we had been awash with data, we were now awash with analytics. Although numerous organisations embraced analytics, only a handful achieved a level of proficiency required to become leaders in their industry.

Analytics was instrumental to Capital One, for example, in improving business in excess of 20% growth in earnings per share every year since it became a public company. Analytics also allowed Amazon to dominate online retailing and make huge profits despite enormous investments in growth and infrastructure. In sports, the real secret weapon wasn’t performance-enhancing drugs, but stats.

From NASCAR to Formula One, race organisers now employ analytics strategies to shave split-seconds off lap times and provide a more thrilling spectacle for audiences. In F1, telemetry has been in use since the 1980s to stream live data from the car to engineers in the pit lane – more recently advanced analytics has been employed to deal with the massive streams of data collected in racing. Last year, Forbes reported that teams at the US Grand Prix collected 243 terabytes of data

– slightly less than the total amount of data stored in the US Library of Congress.

According to Thomas Mayer, COO of the Lotus F1 team, “Formula One has always been on the cutting edge of technological development so it was natural that data analysis would become a big thing for us. It saves us time and money – instead of having to rely on trial and error, we have real data provided by 2,000 sensors on the car.”

West Ham United’s technical scout and analyst Rory Campbell proved that making sense of the infinitely available statistical data about football and then communicating what really mattered from it to the club’s key decision-makers made up the difference between success and failure in competition with other teams.

In rugby union, all the leading clubs use data analytics to keep an eye on fitness, injury prevention and tracking players through GPS. Saracens’ technical analyst Bill Gerrard uses tactical data analytics to provide insight to coaching staff who are strongly wedded to data analysis.

Now that analytics has come of age, some companies are still having difficulties adapting to a data driven world in which analytics is viewed as ‘king’.

John Poppelaars recently blogged about MIT’s analytics survey from his O.R. space within Alltop.com: “From the MIT Sloan report, several of the reported reasons for having difficulty in gaining a competitive edge with analytics are related to organisational focus and culture.” He went on to say that the MIT survey results show that this is due to lack of senior sponsorship.

“Formula One has always been on the cutting edge of technological development so it was natural that data analysis would become a big thing for us.”

Also, senior management doesn’t use analytics in their strategic decision-making, meaning localised initiatives have little impact. These organisations have high expectations on what they will get from analytics, but will need to go through organisational changes in the way decisions are made before the benefits of analytics become visible.

After more than 10 years since Tom Davenport described analytics as the “killer app”, it is clear that the companies leaping ahead of the competition are the ones who wholeheartedly and systematically make the leap to analytics. 

References: MIT Sloan Survey: <http://sloanreview.mit.edu/projects/strategy-drives-digital-transformation/>



The Operational Research Society's Annual Blackett Memorial Lecture was established in honour of Lord Patrick Blackett – a physicist, Nobel prizewinner and pioneer of Operational Research (O.R.) who advocated for scientists to advise on matters of strategy and tactics during the Second World War.



**Machines that learn:  
big data or explanatory  
models?**

**Professor Andrew Blake,  
Alan Turing Institute**

In machine vision systems, how can two competing deep learning paradigms be integrated, and what has already been achieved? Professor Blake holds Fellowships and Medals from many distinguished societies and was a pioneer in developing the theory and algorithms that make it possible for computers to behave as seeing machines.

## Thurs 17 November 2016

Central Hall, Westminster, London  
[www.c-h-w.com](http://www.c-h-w.com)

### Timings:

**16:00** Tea and biscuits

**16:30** President's Welcome and Society awards followed by the lecture from Andrew Blake (Alan Turing Institute)

**18:00** Drinks reception

**19:00** Evening meal for invited guests

**21:00** Close

Admission free – open to all

[www.theORSociety.com/Blackett](http://www.theORSociety.com/Blackett)