

## Do More Polarized Comments Get More Attention?

### Overview

Social media is an increasingly important platform of discussing, consuming, and disseminating information (e.g., news). A crucial and distinct feature of social media is that users can share and comment on news, which also impacts how others consume news. Previous research suggest that more arousal and more polarized news generate more attention on social media (Berger & Milkman, 2012; Demszky et al., 2019); however, we don't know whether it holds for the comments of the news as well.

The aim of the thesis is to understand whether more polarized comments get more attention. One way of empirically answering this question is the following: (1) scrape the posts and related comments of the recent news or a news event of your choice (e.g., the Coronavirus); (2) quantify the polarization of the comments (Demszky et al., 2019; Gentzkow et al., 2019); (3) link the polarization of the comments to the number of likes or retweets of the comments.

### Requirements

- High interest in the topic
- Programming skills in Python or R

### Language

English

### Literature

**Berger, J. / Milkman, K. L.** (2012). "What Makes Online Content Viral?", *Journal of Marketing Research*, 49(2), 192-205.

**Demszky, D. / Garg, N. / Voigt, R. / Zou, J. / Gentzkow, M. / Shapiro, J. / Jurafsky, D.** (2019). "Analyzing Polarization in Social Media: Method and Application to Tweets on 21 Mass Shootings", *Proceedings of the 17th Annual NAACL*, 2970-3005.

**Gentzkow, M. / Shapiro, J. M. / Taddy, M.** (2019), "Measuring Group Differences in High-Dimensional Choices: Method and Application to Congressional Speech", *Econometrica*, 87(4), 1307-1340.

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## The Role of Status Symbols on Information Quality in Review Systems

### Overview

Online reviews give consumers the opportunity to learn about the experiences of other consumers and help to reduce the problem of asymmetric information, leading to more purchases. Therefore, firms aspire to have a high level of review activity in their online platforms. A common strategy to stimulate consumers to write reviews is to provide status symbols, such as badges (e.g., Taobao, Amazon, Yelp). While this strategy is effective to generate more reviews and keep consumers engaged with the online platform, the desire to acquire a status symbol or to retain it could lead consumers to focus more on the quantity than on the quality of their contributions.

For this thesis, you will receive a data set containing around 1 million reviews of 1,000 consumers who are active reviewers in an online platform. You will extend this dataset by collecting the evolution of these customers' reviews and status symbols over several weeks using web-scraping methods.

Using this extended data set, your goal is to (1) investigate whether and how gaining (losing) status in the online platform influences the quality of online reviews and (2) discuss the implications of your findings for the design of review systems and for consumers.

### Requirements

- Knowledge of econometrics and statistical software, such as R or Python
- Programming skills and willingness to learn and work with text analysis and web-scraping methods
- You must treat the provided data set as confidential and must not use it for other purposes

### Language

English / German

### Literature

**Burtch, G. / Hong, Y. / Bapna, R. / Griskevicius, V.** (2017). "Stimulating Online Reviews by Combining Financial Incentives and Social Norms", *Management Science*, 64(5), 2065-2082.

**Felbermayr, A. / Nanopoulos, A.** (2016), "The Role of Emotions for the Perceived Usefulness in Online Customer Reviews", *Journal of Interactive Marketing*, 36 (2016), 60-76.

**Khern-am-nuai, W. / Kannan, K. / Ghasemkhani, H.** (2018). "Extrinsic Versus Intrinsic Rewards for Contributing Reviews in an Online Platform", *Information Systems Research*, 29(4), 871-892.

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## Masterarbeit mit Praxispartner: Handelsverband Hessen

### Überblick

Die Digitalisierung der Handelsbranche bergt nicht nur viele Chancen, sondern auch Herausforderungen für Unternehmen. Einerseits sollen Digitalisierungsmaßnahmen dazu führen, dass Unternehmen effizienter agieren können, andererseits sind sie häufig mit einem hohen Einsatz und Investitionsaufwand verknüpft. Dabei ist es nicht klar, unter welchen Bedingungen solche Investitionen zu einem Erfolg auf dem Weg in die Digitalisierung führen können.

Das Ziel dieser Arbeit besteht darin, Investitionen von Handelsunternehmen in Bereich Digitalisierung zu untersuchen. Dabei erheben Sie Daten zum Investitionsvolumen und zum Digitalisierungsstand der Handelsunternehmen in Hessen und führen eine deskriptive Analysen anhand zugrundliegender Merkmale, wie Segment, Unternehmensgröße und Vertriebsweg. Darüber hinaus Analysieren Sie anhand ökonomischer Verfahren oder Verfahren im Bereich „Machine Learning“ unter welchen Bedingungen solche Investitionen zu einer erfolgreichen Digitalisierung führen.

Der Handelsverband Hessen vertritt die Interessen der Handelsbranche in Hessen und unterstützt diese Masterarbeit durch den Zugang zu über 7.000 Handelsunternehmen, Finanzinstituten und weiteren thematischen Partnern, sowie durch die aktive Begleitung durch seine Mitarbeiter in Frankfurt.

### Voraussetzungen

- Hohes Interesse an Handel, Digitalisierung und Controlling
- Statistische und ökonomische Grundkenntnisse
- Die Masterarbeit soll bis Anfang Oktober 2020 abgeschlossen werden
- Die Ergebnisse der Masterarbeit werden vom Handelsverband Hessen auf dem Hessischen Handelstag 2020 (21.10.2020) vorgestellt

### Sprache

Deutsch

### Literatur

**Dellaert, B.G.C.** (2019), "The Consumer Production Journey: Marketing to Consumers as Co-Producers in the Sharing Economy", *Journal of the Academy of Marketing Science*, 47(2), 238-254.

**Barua, A. / Konana, P. / Whinston, A.B. / Yin, F.** (2004), "An Empirical Investigation of Net-Enabled Business Value", *MIS Quarterly*, 28(4), 585-620.

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## Innovators vs. Imitators: Who is More Successful on Social Media?

### Overview

Content producers in social media can either position themselves close to other successful producers (imitate) or try to create and populate their own market niche (innovate).

How prevalent are these two positioning strategies (and which is associated with higher success)?

To answer these questions, the student is provided with access to an extensive database of Instagram account data (followers, posts, profile data). Using this data, the student is asked to

- (1) gather data on a sample of Instagram accounts (e.g. accounts of brands, politicians or influencers)
- (2) measure their positioning (based on content similarity to related accounts)
- (3) provide a descriptive overview of the distribution of the positioning strategies and their association with success measures (e.g., engagement rates).

### Requirements

- High motivation and interest in the topic
- Experience with a statistical programming language, such as Python (preferred) or R

### Language

English / German

### Literature

**Animesh, A. / Viswanathan, S. / Agarwal, R.** (2011). "Competing "Creatively" in Sponsored Search Markets: The Effect of Rank, Differentiation Strategy, and Competition on Performance.", *Information Systems Research*, 22 (1), 153-169.

**Day, G. S. / Wensley, R.** (1988). "Assessing Advantage: A Framework for Diagnosing Competitive Superiority.", *Journal of Marketing*, 52 (2), 1-20.

**Gong, J. / Abhishek, V. / Li, B.** (2017). "Examining the Impact of Keyword Ambiguity on Search Advertising Performance: A Topic Model Approach.", *MIS Quarterly*, 42 (3), 805-829.

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## Do Marketing Topics Gain or Lose Importance in Earnings Calls? An Empirical Analysis Using Two Text Mining Methods

### Overview

There is an ongoing discussion about the importance of marketing. Although many people believe marketing is important and even becoming more important, there are others who claim that, in many cases, marketing is not important. However, using structured data, it is difficult to measure how important marketing is to firms' management and investors.

A potential new method to measure the importance of marketing is using text mining to analyse firm-related narratives such as the earnings conference calls. There are various methods in text mining that can be used for this purpose. One of them is the more straight-forward "bag-of-words" method (Hassan et. al., 2019), and another more complicated one is the estimator which applies recent advanced in machine learning introduced by Gentzkow et. al. (2019).

In this thesis, you will adopt the above mentioned two methods of text mining using the publicly available transcripts of earnings conference calls, with the goals to answer the following questions: (1) Do marketing topics gain or lose importance in earnings calls? (2) How different are the results using these two methods? (3) What are the advantages and disadvantages of each method?

### Requirements

- High interest in the topic
- Programming skills in R or Python to conduct the textual analysis
- Basic knowledge of econometrics and statistical software, such as STATA or R

### Language

English

### Literature

**Gentzkow, M. / Shapiro, J.M. / Taddy, M.** (2019). "Measuring Group Differences in High-Dimensional Choices: Method and Application to Congressional Speech", *Econometrica*, 87(4), 1307-1340.

**Hassan, T.A. / Hollander, S. / van Lent, L. / Tahoun, A.** (2019), "Firm-Level Political Risk: Measurement and Effects", *Quarterly Journal of Economics*, 134(4), 2135-2202.

**Loughran, T. / McDonald, B.** (2016), "Textual Analysis in Accounting and Finance: A Survey", *Journal of Accounting Research*, 54(4), 1187-1230.

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## Who Collects Your Data? Investigating the German Online User-Tracking Landscape

### Overview

Data generated by online user-tracking tools are an essential resource for marketers and advertisers to personalize display advertising and offerings. Over the past decade an increase in different technologies, accompanied by a growing number of commercial tracking solutions, led to a diverse landscape of online user tracking implementations. This complex landscape makes it very difficult for users to keep an overview of the involved parties collecting their browsing history.

The aim of the thesis is to shed light on this opaque industry and to provide online users with information about who collects their browsing data on which websites and for what purpose. Therefore the master student should (1) give an overview over the current online user-tracking possibilities and providers, (2) collect data on the implemented tracking solutions on the Top 100 websites in Germany by utilizing a tool like *Ghostery* and (3) empirically analyze the collected data to provide transparency over the German online user-tracking landscape.

### Requirements

- Interest and experience in doing empirical research
- Familiarity with the software R or Python

### Language

English / German

### Literature

**Gopal, R. D. / Hidaji, H. / Patterson, R. A. / Rolland, E. / Zhdanov, D.** (2018). "How Much to Share with Third Parties? User Privacy Concerns and Website Dilemmas", *MIS Quarterly*, 42(1), 143-164.

**Karaj, A. / Macbeth, S. / Berson, R. / Pujol, J. M.** (2018). "Whotracks.me: Monitoring the Online Tracking Landscape at Scale", Working Paper. Available via [researchgate.net](https://www.researchgate.net)

**Kosorin, D.** (2018). "Data in Digital Advertising: Understand the Data Landscape and Design a Winning Strategy", Self Publishing.

**Cliqz International GmbH** (2019). "Chrome Browser Tracking Extension: Ghostery", URL: <https://www.ghostery.com/de/>

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## How Does the Stock Market React to Data Breaches?

### Overview

Once a firm fails to protect its consumers' privacy, how would it suffer? The stock market gives quantifiable answers with its instantaneous reactions. When the Facebook–Cambridge Analytica data scandal erupted in 2018, over \$119 billion was wiped off Facebook's market value with a dramatic decline of its stock price. However, would the reaction be as strong when generalized to other firms? How long would the impact last? Would the market react differently to different firms?

In this thesis, the student will (1) search for data breaches from sources like privacy rights clearinghouse or through mining announcements, (2) collect stock market data from APIs like Yahoo Finance, (3) examine the impact of data breaches on stock performance and market activity, (4) explore heterogeneity in market behavior.

### Requirements

- High interest in the topic
- Knowledge of econometrics
- Knowledge of programming skills (Python or R)

### Language

English

### Literature

**Acquisti, A. / Friedman, A. / Telang, R.** (2006). "Is There a Cost to Privacy Breaches? An Event Study", *ICIS 2006 Proceedings*, 94.

**Lange, R. / Burger, E.W.** (2017). "Long-term Market Implications of Data Breaches, not", *Journal of Information Privacy and Security*, 13(4), 186-206.

**Rosati, P. / Cummins, M. / Deeney, P. / Gogolin, F. / van der Werff, L. / Lynn, T.** (2017). "The Effect of Data Breach Announcements Beyond the Stock Price: Empirical Evidence on Market Activity", *International Review of Financial Analysis*, 49, 146–154.

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## Quantifying the Impact of GDPR Fines on Companies

### Overview

The EU General Data Protection Regulation (GDPR) had a big impact on companies by imposing several new data processing obligations on them. Companies that do not comply with the GDPR can be subject to fines up to €20 million or 4% of the annual global turnover. Since the enforcement of GDPR, many companies have been sued and fined due to non-compliance to various legal obligations, with fines up to over €200 million.

Apart from the financial effect of the fine, companies and their shareholders can also have to endure further losses from such fines. Depending on the severity and nature of the non-compliance, such legal fines can e.g., have a significant impact on companies' stock prices or reputation. This thesis aims to analyse the impact that GDPR fines had on companies and which factors further increased or mitigated the losses a company and its shareholders are facing.

### Requirements

- Intermediate experience in statistical analyses, e.g. regression analysis
- Willingness to collect and analyse necessary data

### Language

English / German

### Literature

**Armour, J. / Mayer, C. / Polo, A.** (2017). "Regulatory Sanctions and Reputational Damage in Financial Markets", *Journal of Financial and Quantitative Analysis*, 52 (4), 1429-1448

**General Data Protection Regulation**, Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016, *Official Journal of the European Union*, 59 (1-88), 2016

**Köster, H. / Pelster, M.** (2017), "Financial Penalties and Bank Performance", *Journal of Banking & Finance*, 79, 57-73

**Tankard, C.** (2016), "What the GDPR Means for Businesses", *Network Security*, 6, 5-8

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## Die Gier nach Daten – Welche Datenverarbeitungs-Berechtigungen werden von den beliebtesten Apps eingeholt?

### Überblick

Mittlerweile gibt es mehr als 3 Mrd. Smartphone-Nutzer weltweit. Im Schnitt hat jeder Nutzer mehr als 80 Apps auf dem Smartphone installiert. Alles deutet auf den Trend zur verstärkten Nutzung von mobilen Endgeräten und einem damit einhergehenden Anstieg der Nutzung von Apps hin. Während der App-Kanal für Unternehmen viele Vorteile bietet, geht aus der App-Nutzung ein erhöhtes Privatsphäre- und Sicherheitsrisiko hervor.

Im Rahmen dieser Arbeit, sollen Sie erforschen welche Berechtigungen die Top 50 kostenlosen iOS Apps und die Top 50 kostenlosen Android Apps anfragen. Sie führen hierzu statische Analysen der App Dateien (Android Application Packages bzw. iOS App Store Packages) mithilfe hierzu geeigneter Frameworks (z.B. MobSF) durch. Ziel der Arbeit ist es basierend auf den Ergebnissen der statischen Analysen einen „Permission-Score“ für die Apps zu erstellen.

### Voraussetzungen

- Hohes Interesse am Thema Privatsphäre und die Fähigkeit zu eigenständiger Arbeit an Verfahren zur automatisierten Auswertung von Apps (APKs bzw. IPAs)
- Grundkenntnisse in der Programmiersprache Python bzw. R

### Sprache

Englisch / Deutsch

### Literatur

**Feal, Á. / Calciati, P. / Vallina-Rodriguez, N. / Troncoso, C. / Gorla, A.** (2019). "Angel or Devil? A Privacy Study of Mobile Parental Control Apps", *Privacy Enhancing Technologies Symposium (PETS)*, Montreal.

**Han, C. / Reyes, I. / Elazari Baron, A. / Reardon, J. / Fael, A. / Bamberger, K. / Egelman, S., Vallina-Rodriguez, N.** (2019). "Do You Get What You Pay For? Comparing The Privacy Behaviors of Free vs. Paid Apps", *The Workshop on Technology and Consumer Protection (ConPro '19)*, Berkeley.

**Momen, N. / Hatamian, M. / Fritsch, L.** (2019). "Did App Privacy Improve After the GDPR?", *IEEE Security & Privacy*, 17(6), 10-20.

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