



**American
Accounting
Association**

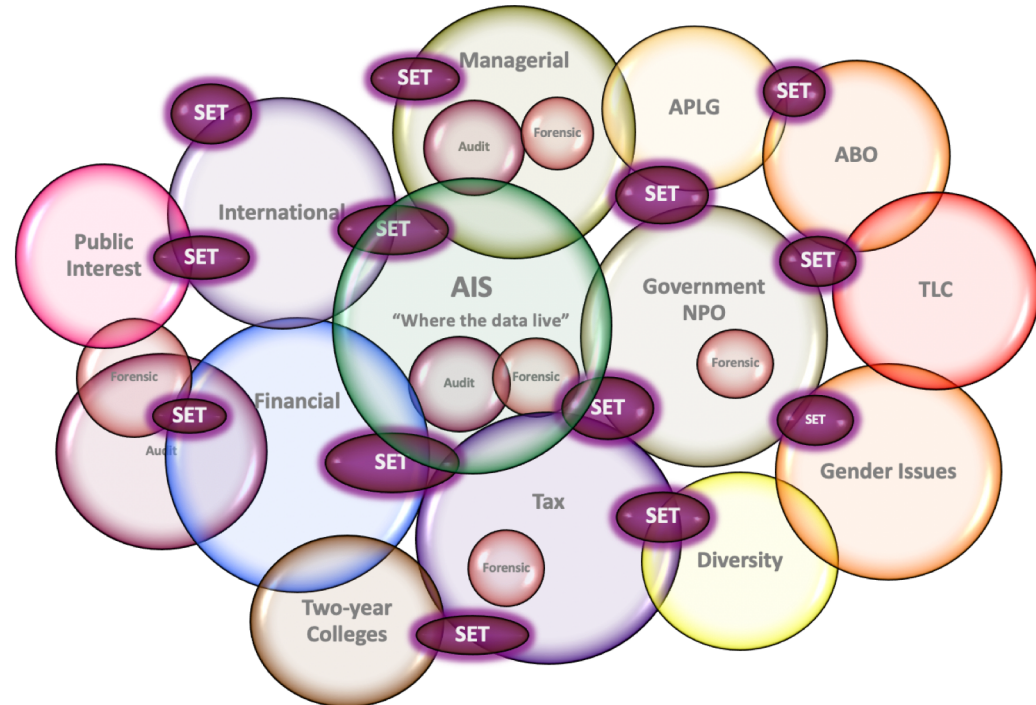
Strategic and Emerging
Technologies

weARE

webinar series on

Accounting Research + Education

March 26, 2021



Bringing Scholarly Data Analytics Knowledge Using Emerging Technology Tools in Accounting into Classrooms: A Bibliometric Approach



Moderator

Karen Osterheld, Bentley University



Speaker

Brigitte Muehlmann, Babson College

with contributions from:

Qi Liu, University of Rhode Island

Victoria Chiu, SUNY Oswego

Amelia Baldwin, University of South Alabama

LEARNING OBJECTIVES

Participants will understand how...

- ❑ **SEC interactive data** can be used from entry-level financial reporting on
- ❑ **Tableau** can be applied to full population audit
- ❑ **Celonis** can be used for process mining

Participants will also take away...

- ❑ **Related key research insights**
- ❑ **First-hand experience using the open-access SEC interactive Data in the classroom**
 - Covid-19-inspired demonstration
 - Lessons learned
 - Useful tips

MOTIVATION

Accounting tends to be appreciated when it is in sync with current business practice, but less when it falls behind. I aim to instill in my students an enthusiasm for:

- Timeless key elements of the system
 - Contemporary implementation
 - Opportunities for innovation
-
- To assist accounting faculty with data analytics contents adoption in all their courses.
 - Push for education from industry and AACSB requirements.
 - Started as member of the SET Section's Continuing Education Committee in 2017.
 - Resources are current AAA events, plus much research has been published, which is not widely known in the accounting academy.

MOTIVATION

- **Research is available mainly in six journals:**
 - AAA: *Journal of Emerging Technologies in Accounting (JETA)*,
Journal of Information Systems (JIS)
 - Open Source: *Accounting Information Systems Educator Journal (AISEJ)*,
International Journal of Digital Accounting Research (IJDAR)
 - Elsevier: *International Journal of Accounting Information Systems (IJAIS)*
 - Wiley: *Intelligent Systems in Accounting, Finance and Management (ISAFM)*
- **Co-authored article in Issues in Accounting Education (online early)**
<https://meridian.allenpress.com/iae/article/doi/10.2308/ISSUES-19-079/441679/Bringing-Scholarly-Data-Analytics-Knowledge-Using>
 - **Classroom applications by accounting area**
 - **Introductory articles by analytical method**
 - **Description and Download Link of Disclosed DA Tools**

FULL POPULATION AUDIT

Identify data outliers and patterns through visualization

tableau+public

GALLERY

AUTHORS

BLOG

RESOURCES

ACTIVITY

ABOUT

SIGN UP

Weekend Invoice Postings

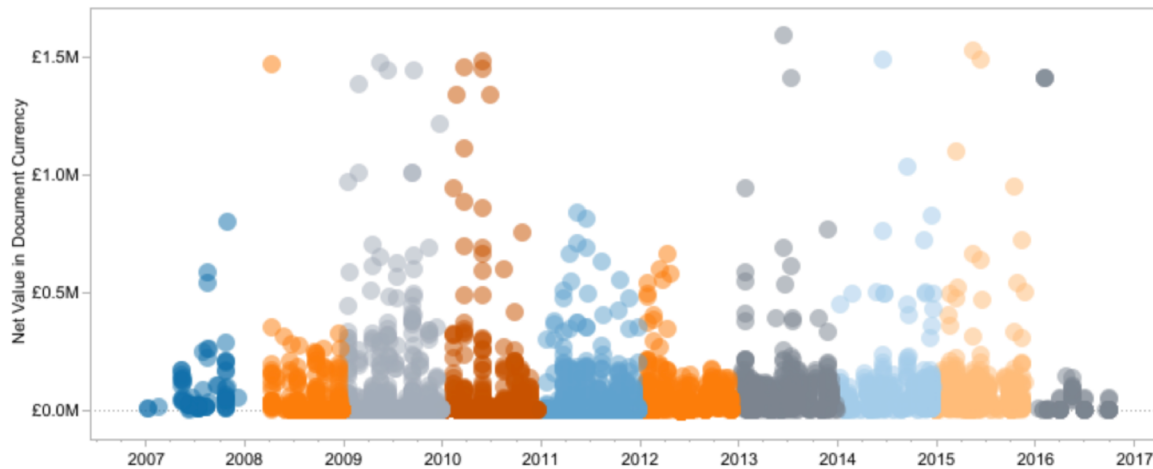
Value of Invoices at Exact Date Level

Points are coloured by year.

Filter for desired date range

1/13/2006

7/13/2017



12,346
Invoices Created on a
Saturday or Sunday

FULL POPULATION AUDIT

KEY RESEARCH INSIGHTS



Codesso, M., de Freitas, M.M., Wang, X., de Carvalho, A. and da Silva Filho, A.A.

Continuous Audit Implementation at Cia. Hering in Brazil.

Journal of Emerging Technologies in Accounting, 17(2), pp.103-118. 2020.

This paper details the implementation of continuous audit at Cia. Hering, a large Brazilian clothing retailer.

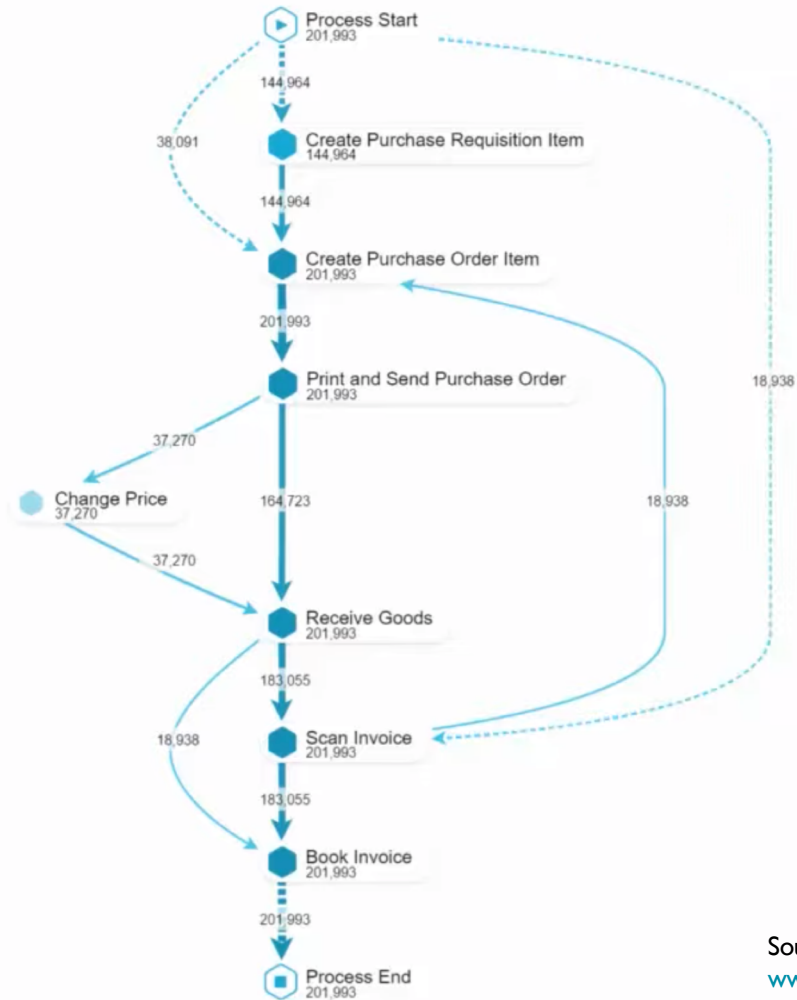
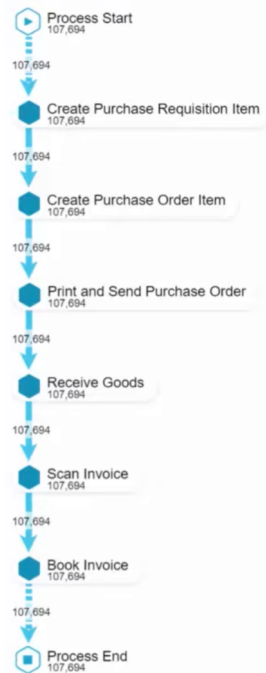
The Brazilian tax authority collects sales tax in real time.

Overpayments constrain cash flow while the company is waiting for a refund.

Visualization of daily invoices protects from overpayments.

PROCESS MINING

Discover processes as they actually operate.



Source:
www.celonis.com

PROCESS MINING

KEY RESEARCH INSIGHTS



Baader, G. and Krcmar, H.,

Reducing false positives in fraud detection: Combining the red flag approach with process mining.

International Journal of Accounting Information Systems, 31, pp.1-16. 2018.

Applied the processes to the purchase-to-pay business process.

RED FLAGS visualize hints for unusual behavior

PROCESS MINING visualizes the as-is business process from the underlying dataset

Identified 15* of 31 fraud cases in the dataset

False positive rate: 0.37%, considerably lower than in similar research papers

* include bid rigging, redirected payments, uses of shell companies, overpriced product and non-received discount kick-back

SEC INTERACTIVE DATA

10-K
Cover
Document and Entity Information
Financial Statements
CONSOLIDATED BALANCE SHEETS
CONSOLIDATED BALANCE SHEETS (Parenthetical)
CONSOLIDATED STATEMENTS OF INCOME
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY (Parenthetical)
CONSOLIDATED STATEMENTS OF CASH FLOWS
Notes to Financial Statements
Accounting Policies
Notes Tables
Notes Details
All Reports

CHEESECAKE FACTORY INC CIK#: 0000887596 (see all company filings)

SIC: 5812 - RETAIL-EATING PLACES
 State location: CA | State of Inc.: DE | Fiscal Year End: 1229
 formerly: CHEESECAKE FACTORY INCORPORATED (filings through 2007-03-01)
 (Office of Trade & Services)
 Get **insider transactions** for this issuer.

Business Address
 26901 MALIBU HILLS RD
 CALABASAS HILLS CA 91301
 818-871-3000

Mailing Address
 26901 MALIBU HILLS RD
 CALABASAS HILLS CA 91301

Filter Results

Filing Type: 10-k Prior to: (YYYYMMDD) Ownership? include exclude only Limit Results Per Page: 40 Entries Search Show All

Search Within Files [EDGAR](#) | Full Text Search

Enter keywords: _____ Search

Items 1 - 29 [RSS Feed](#)

Filings	Format	Description	Filing Date	File/Film Number
10-K	Documents Interactive Data	Annual report [Section 13 and 15(d), not S-K Item 405] Acc-no: 0001104659-21-027547 (34 Act) Size: 14 MB	2021-02-24	000-20574 21674569
10-K/A	Documents Interactive Data	[Amend] Annual report [Section 13 and 15(d), not S-K Item 405] Acc-no: 0001104659-20-075634 (34 Act) Size: 10 MB	2020-06-22	000-20574 20978913
10-K	Documents Interactive Data	Annual report [Section 13 and 15(d), not S-K Item 405] Acc-no: 0001104659-20-032031 (34 Act) Size: 11 MB	2020-03-12	000-20574 20706450
10-K	Documents Interactive Data	Annual report [Section 13 and 15(d), not S-K Item 405] Acc-no: 0001104659-19-012501 (34 Act) Size: 9 MB	2019-03-04	000-20574 19654783
10-K	Documents Interactive Data	Annual report [Section 13 and 15(d), not S-K Item 405] Acc-no: 0001104659-18-013503 (34 Act) Size: 8 MB	2018-02-28	000-20574 18652295
10-K	Documents Interactive Data	Annual report [Section 13 and 15(d), not S-K Item 405] Acc-no: 0001104659-17-013246 (34 Act) Size: 9 MB	2017-03-02	000-20574 17656969
10-K	Documents Interactive Data	Annual report [Section 13 and 15(d), not S-K Item 405] Acc-no: 0001104659-16-100056 (34 Act) Size: 8 MB	2016-02-25	000-20574 161456752
10-K	Documents Interactive Data	Annual report [Section 13 and 15(d), not S-K Item 405] Acc-no: 0001104659-15-015350 (34 Act) Size: 10 MB	2015-03-02	000-20574 15661025
10-K	Documents Interactive Data	Annual report [Section 13 and 15(d), not S-K Item 405] Acc-no: 0001104659-14-014213 (34 Act) Size: 10 MB	2014-02-27	000-20574 14649962
10-K	Documents Interactive Data	Annual report [Section 13 and 15(d), not S-K Item 405] Acc-no: 0001104659-13-016153 (34 Act) Size: 10 MB	2013-02-28	000-20574 13653188
10-K	Documents Interactive Data	Annual report [Section 13 and 15(d), not S-K Item 405] Acc-no: 0001104659-12-014640 (34 Act) Size: 10 MB	2012-02-29	000-20574 12653647
10-K	Documents Interactive Data	Annual report [Section 13 and 15(d), not S-K Item 405] Acc-no: 0001104659-11-009361 (34 Act) Size: 7 MB	2011-02-23	000-20574 11632914

Source: https://www.sec.gov/cgi-bin/browse-edgar?action=getcompany&CIK=0000887596&type=10-k&dateb=&owner=exclude&count=40&search_text=

SEC INTERACTIVE DATA

HOW I BECAME INTERESTED

- Presented by Mike Willis, SEC Office of Structured Disclosure, at AAA's Transformative Technologies Workshop (TTW) in August 2018
 - Tried a demonstration to students in Fall 2018
 - Never looked back

SEC INTERACTIVE DATA DEMONSTRATION (I)



SEC Charges The Cheesecake Factory For Misleading COVID-19 Disclosures

As set forth in the SEC's order, in its SEC filings on March 23 and April 3, 2020, The Cheesecake Factory stated that its restaurants were "operating sustainably" during the COVID-19 pandemic.

December 4, 2020

- Was the company able to sustain its revenue in FY2020?
- Does their cash flow support their assertion that they were “operating sustainably”?

SEC INTERACTIVE DATA DEMONSTRATION (II)



All in all, U.S. agencies committed about \$2.5 billion to help develop Moderna's vaccine and buy doses, according to the [New York Times](#).

November 24, 2020

- How much COVID-19 vaccine financing did the company receive in 2020?
- When did the money come in?
- How much revenue did the company earn in 2020?

SEC INTERACTIVE DATA

LESSONS LEARNED

- **All public companies covered**, including small caps, not only those selected by database provider
- **Available to students any time** during and after studying, access from anywhere in the world
- **No subscription, no cost**
- **Financial statements as filed**, available on screen, as pdf, and in Excel
 - Line item definitions & reference to FASB codification
 - Notes, plus: Notes tables & details
 - Full 10-K, searchable right there, too

SEC INTERACTIVE DATA

KEY RESEARCH INSIGHTS



Cong, Y., Du, H. and Vasarhelyi, M.A.

Are XBRL files being accessed?

Evidence from the SEC EDGAR log file dataset.

Journal of Information Systems, 32(3), pp.23-29. 2018.

Q3/2012 – Q1/2015

880 small companies, user accesses to 5,016 unique XBRL filings

61% accessed XBRL files, 39% accessed conventional files

SEC INTERACTIVE DATA

KEY RESEARCH INSIGHTS



Chychyla, R. and Kogan, A.

Using XBRL to conduct a large-scale study of discrepancies between the accounting numbers in Compustat and SEC 10-K filings.

Journal of Information Systems, 29(1), pp.37-72. 2015.

Research insights

XBRL filings vs. Compustat data for 30 accounting items

13 items – no differences, e.g., Total Assets, Total Liabilities, Net Income

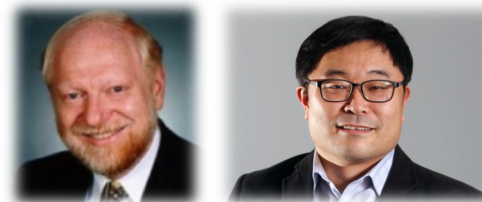
17 items – significantly changed, e.g., COGS, gross profit

Compustat data standardized to improve data comparability across companies

Studied 5,000+ domestic US-GAAP companies, 10/2011 – 9/2012

SEC INTERACTIVE DATA

KEY RESEARCH INSIGHTS



Boritz, J.E. and No, W.G., 2020.

**How Significant are the Differences in Financial Data Provided by Key Data Sources?
A Comparison of XBRL, Compustat, Yahoo! Finance, and Google Finance.**

Journal of Information Systems, 34(3), pp.47-75

Incremental additional research insights

Compared to 10-K filings, **variances in Compustat < Yahoo! Finance < Google Finance**

Widely used bankruptcy prediction and earnings quality models affected by the differences

SEC INTERACTIVE DATA

TIPS: For the syllabus and/or LMS

Obtaining reports of public companies from the SEC website:

	Description
1	Go to https://www.sec.gov/edgar/searchedgar/companysearch.html , and bookmark it.
2	Enter the company name, e.g., “moderna”, in the search box.
3	Click on “Classic version” in the upper right-hand corner.
4	Enter the form under “Filter results, Filing type”, e.g., 10-K, 10-Q, 20-F, 40-F
5	Click on Interactive Data
6	Click on what you are looking for, e.g., Financial Statements Notes to Financial Statements Notes Details <u>Note:</u> The Notes Details and other items offer useful additional details.
	You can view the information on the screen, print a pdf (“Print Document”), or Download an Excel file (“View Excel Document”).
	<u>A noteworthy feature:</u> If you want to understand what a financial statement line item means, or see the reference to the FASB Codification, simply click on it on the screen, and a box appears with an explanation.

SEC INTERACTIVE DATA

TIPS: For locating interesting examples efficiently

EDGAR Search and Access
Latest Filings
Company Filings
Mutual Funds
Variable Insurance Products
Daily Filings by Type
Boolean Archive Search
EDGAR Full Text Search
CIK Lookup
Confidential Treatment Orders
Effectiveness Notices
About EDGAR
EDGAR - Information for Filers



Daily Filings by Type

10-K financials “hot off the press”



EDGAR Full Text Search

E.g., impairment in the last xx days

LINK: [HTTPS://WWW.SEC.GOV/EDGAR/SEARCHEDGAR/COMPANYSEARCH.HTML](https://www.sec.gov/edgar/searchedgar/companysearch.html)



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