Teaching Fintech in IS

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IT&BA Teaching Workshop
Agenda

- The need of Teaching Fintech in MBA core
- IS or Finance to teach?
- Some Fintech MBA Programs
- My Fintech class
- Looking forward
The Finance Industry is being disrupted!
Finance Education is being disrupted!

• He questioned the value of auditors, lawyers, traditional finance topics, Finance education, Finance jobs
  – Dissolving of Banks and stock exchanges in 10 years, or new form of them
  – Dissolving of the finance and accounting department by 2030

• Fintech is perhaps the only topic needs to be taught
  – “Only quant (not finance quant) is needed, I mean fintech, coding, python, big data, analytics and the like”

https://media.chicagobooth.edu/Mediasite6/Play/3d58319fa2da4e0a8526598516b4bc8d1d
The FinTech MBA at NYU Stern

The finance industry has historically gone hand-in-hand with MBA degrees. Even as MBAs are becoming increasingly popular in other industries, finance is still the biggest MBA job sector and accounts for 22 percent of all MBA jobs, according to the 2014 QS TopMBA.com Jobs and Salary Trends Report.

While finance has always been a prominent staple of business school, it’s also been a bit of an “old-school” science. In recent years, the role of technology in business increased dramatically as computers, big data and business analysts have entered the arena. These developments have opened up new sectors and industries including FinTech.

What is FinTech? As we outlined in a previous post, FinTech, also known as Financial Technology, is an industry made up of companies that use new technology and innovation to better compete in the marketplace of traditional financial institutions. Basically, FinTech is “innovation in financial services” and is mainly composed of startups and established financial and technology companies looking to enhance or replace traditional financial services.
FinTech Landscape – Disruptive Forces in Financial services

Digital & Mobile payments:
- Braintree
- Bitnet
- flint
- Jumio
- TransferWise
- iZettle
- LevelUp
- unicorn
- Dwolla
- Gumroad
- Cashstar
- Instamed
- PayNearMe
- peerTransfer
- Square
- WePay
- Tipalti
- Trust
- sumup
- ZenBanx
- Ripple
- Circle
- Coinbase
- Xapo
- Ripple

Capital Markets & Investing:
- Betterment
- EQuityZen
- Investize
- LexShares
- iex
- 6Fusion
- ADDEPAR
- Dough
- MARKiT
- SecondMarket
- wealthfront
- Quantopian

Banking & Corporate Finance:
- Continuity
- Bluearp
- Plaid
- Coupa
- squareup
- Justworks
- KANTOX
- MarketInvoice
- Bill.com
- Avalara
- Intacct
- Switchfly

Big Data & Analytics:
- Kensho
- OpenGov
- Feedzai
- Draft
- Metric Insights
- Eagle Alpha
- Cardlytics
- Swift
- Data
- DemystData
- ZestFinance
- Xignite

Financial platforms:
- Biz2Credit
- Can Capital
- Upstart
- Hotcard
- SoFi
- Upstart
- C2FO
- Even
- Wonga
- ApplePie
- LendUp

Crowdfunding & peer-to-peer lending:
- eMoneyPool
- Dealstruck
- Fundera
- StartUpLending
- LendingHome
- LendingClub
- AVANT
- CommonBond
- OurCrowd
- Prosper
- Prosper

Personal financial management:
- activehours
- CoPatient
- MileIQ
- Expensify
- FutureAdvisor
- My绍

Blockchain technology:
- BitGo
- Mirror
- Blockchain
- Coinsetter
My Fintech Class

Spring 2017 Course Syllabus
Fintech and Big Data Financial Analytics
Course #: FIN 6368, section 001
Jindal School of Management, The University of Texas at Dallas

Course Information
Course
- Course Title: Fintech and Big Data Financial Analytics
- Course Number: FIN 6368.001 (27582)
- Dates: Friday, 1:30 PM - 3:45 PM
- Room: JSOM 2.102

Professor Contact Information
- Professor: Eric Zheng
- Office Phone: 972-883-5914
- Email Address: ericz@utdallas.edu
- Office Location: SCM 3.404
- Office Hour: Thursday, 2:00-3:00 PM or by appointment
- Other Information: http://www.utdallas.edu/~ericzh

TA Contact Information:
- TA:

Course Prerequisites, Co-requisites, and/or Other Restrictions
None, but knowledge on statistics, quant, algorithm is a plus.

Course Description
IT-enabled innovations have reshaped the finance industry, leading to the emergence of Fintech. Big data analytics in particular have changed how financial information is disseminated, processed, and analyzed. Individual investors and financial institutions who are able to leverage the new IT to analyze big financial data will have a leading edge. This class discusses these new opportunities and challenges. It seeks to equip students with these highly coveted skills in the market. Topics to be covered (but not limited to) include: machine learning in financial analytics, statistical arbitrage, Quant and computational finance, big data-driven alpha models, high frequency trading, social trading, artificial intelligence (deep learning), P2P lending and Blockchain. The class will be based on R.
Fintech Topics I cover

• Seeking smart alpha
  – big data alpha models

• Robo-advising, Algorithm trading and High frequency trading
  – Quant analysis: e.g. StatArb (mean-reverting & momentum), pairs trading, cointegration, microstructure analysis

• Big data financial analytics
  – Text analytics, Social media analytics, R Spark
  – Modeling level-2 and TAQ (tick-by-tick) data

• Machine learning and Artificial Intelligence (Deep Learning)
  – H2O and Tensorflow

• Emerging Fintech topics
  – Social Trading and Blockchain
• In an Alpha strategy, we want to discover the factors that are highly related to the price movement

• In training, I constructed three samples:
  • increase more than 8% within 5 trading days
  • decrease more than 8% within 5 trading days
  • Price moves within 1% within 5 trading days

• Using deep learning to predict (score) whether a stock swings more than 8%
R Deep Learning Implementation
• **Data Processing (Chinese stock market)**
  – Used 5-minute level of data, i.e. 48 data points a day
• **Weekly rebalance**
• **Deep Factors**
  – A stock’s propensity score of swing > 8% within 5 trading days
Project 1: constructing big data based alpha trading strategy

1. Construct fundamental factors
   – download the fundamental data for S&P500 stocks from Quandl

2. Construct TA factors
   – download the daily trading data
   – construct technical indicators you deem relevant
     • Compare with the values at stockta.com, stockcharts etc.

3. Construct big-data factors
   – Retrieving tweets, Yahoo News and Google News and reddit news using R for the chosen stocks
   – Analyze the sentiment of the news

4. Construct the big data based alpha trading strategy & back-test it
   – calculate the portfolio performance using return, Sharpe ratio and max drawdown etc.

5. Test the strategy in your Interactive broker paper account
R Packages Used for Financial Analytics

• R Finance
  – Quantmod, TTR, perform, fArma, fGarch, TSA, xts, tseries, fUnitRoots, PerformanceAnalytics

• R text mining/social media analytics
  – twitterR, TM, NLPPackages

• R big data
  – Rsparkling, Sparklyr

• R machine learning/deep learning
  – Association rule, clustering, decision tree, neural net, support vector machine (SVM) etc.
  – Nnet, H2O, Deepnet, Tensorflow
Thoughts?

• Is business analytics really a big deal to be taught?

• What would be the next “business analytics” for IS?

• Are we the middleman to be eliminated between students and the job?