How Artificial Intelligence is Impacting Accountants

T-Sheets Bootcamp
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Donny C. Shimamoto, CPA, CITP, CGMA

- Donny is the founder and managing director of IntrapriseTechKnowlogies LLC, an advisory-focused CPA firm specializing in innovation management and organizational development for small businesses, middle market organizations, and nonprofits. Donny is a recognized thought leader and educator in the Accounting Technology, IT Risk Management, and Performance Management fields.

- Donny serves as an outsourced Chief Innovation Officer and business transformation advisor for accounting and internal audit departments who are seeking to increase their value proposition and help drive holistic improvement in their organizations. He helps with IT risk assessments and guides remediation strategies, development of departments’ innovation strategies, streamlining of internal operations, and increasing staff proficiency with IT tools supporting operations and service delivery.

- Donny was recognized as one of the Top Thought Leaders in Public Accounting by CPA Practice Advisor from 2012 to 2019, Top 100 Most Influential People in Accounting (2013/2014/2017/2018) by Accounting Today, received the 2009–2010 President’s Award from the Hawaii Society of CPAs, was named to CPA Technology Advisor’s 40 Under 40 list in 2007 & 2009 & 2014, and was also a Hawaii Top High Tech Leader in 2004.
Audience Polls

- What is your Organization Type/Size?
  - Small Firm
  - Medium Firm
  - Large Firm
  - Business & Industry
  - Vendor/Consultant

- What is your role?
  - Lead Executive
  - Executive Leadership
  - Dept Director/Manager
  - Dept Staff
  - Vendor/Consultant

- What is your primary Area of Practice?
  - Accounting & Financial Reporting
  - Audit
  - Tax
  - Vendor/Consultant

Choose one from each set of options that best matches how you view your organization and your role in your organization.
How AI is Impacting Accountants

- The Current State of Artificial Intelligence
- Understanding the Risk AI Poses to our Profession
- Understanding the Risk AI Poses to our Organizations
  - Machine Learning
  - Data Bias
  - Implications for Management Accountants
- We Must Embrace AI
The Current State of Artificial Intelligence

- Artificial Intelligence technologies are close (0–2 years) to becoming mature enough to be part of mainstream use
- Artificial Intelligence is already being used in mainstream business and its use is expected to continue to grow
Gartner Hype Cycle – Overview

Source: Gartner; via Alfonso Olaiz, AICPA, Dec 2017
Gartner Hype Cycle for Artificial Intelligence

Source: Gartner; via Alfonso Olaiz, AICPA, Dec 2017

Expectations

Plateau will be reached:
- less than 2 years
- 2 to 5 years
- 5 to 10 years
- more than 10 years

Time
How Businesses Can Use Artificial Intelligence

- **Assisted intelligence** – Now widely available, improves what people and organizations are already doing. Involves clearly defined, rules-based, repeatable tasks. Amplifies the value of existing activity.

- **Augmented intelligence** – Emerging today, enables organizations and people to do things they couldn’t otherwise do. Lends new capability to human activity. Fundamentally alters nature of task. Not many off-the-shelf applications. New models often give them new alternatives to consider that don’t match their past experience or gut feelings.

- **Autonomous intelligence** – Being developed for the future, creates and deploys machines that act on their own.

(from “A strategist’s guide to Artificial Intelligence”. Strategy+Business Digital Summer 2017)
AI revenue share by technology in 2025

- Machine Learning currently provides the most potential opportunity for business value

- Lots of research is dedicated to deep learning because it will provide the capabilities (e.g. image recognition and speech recognition) that will drive additional technical capabilities
  - Computer Vision
  - Natural Language Processing

Based on current AI theory we can anticipate the direction of future AI developments and determine what parts of our profession are at risk.
Understanding What Can Be Automated by AI

- The Automation Framework provides a method for analyzing tasks
- AI technologies can be mapped into the framework

Source: https://medium.com/@abhasvc/ais-threat-to-society-is-scariert-than-trump-ff7e9d42ea74; via Alfonso Olaiz, AICPA, Dec 2017
Mapping an Occupation’s Tasks – Retail Salesperson

- Manual Task Map
- Automation Map

Source: https://medium.com/@abhasvc/ais-threat-to-society-is-scarier-than-trump-ff7e9d42ea74; via Alfonso Olaiz, AICPA, Dec 2017
Mapping an Occupation’s Tasks – Medical Doctor

- Manual Task Map

- Automation Map

Source: https://medium.com/@abhasvc/ais-threat-to-society-is-scariert-han-trump-ff7e9d42ea74; via Alfonso Olaiz, AICPA, Dec 2017
Growing proportion of tasks within accounting and legal related occupations susceptible to automation.


Technology advancements will drive occupations towards bottom right quadrant.

Projected net change in employment 2016-2026.
Understanding the Risk Artificial Intelligence Poses to our Organizations

• This section will focus on machine learning and inductive reasoning since this is where most organizations are able to currently find some leverage in artificial intelligence.

• This section is partially adapted from this article: http://www.ifac.org/global-knowledge-gateway/technology/discussion/why-accountants-must-embrace-machine-learning
Machine Learning & Inductive Reasoning

- Machine learning is good at “inductive reasoning”
  - Based on a set of existing data points or examples, the computer can figure out what the “rules” are to determine the result

- By processing thousands of data points that may be able to be gathered about a given set of situations
  - Machine learning can figure out which ones are relevant, or not
  - Then apply the inferred rules to another similar set of data to predict the outcome

- Examples: Amazon, Kindle, Netflix
Inductive Reasoning is Dependent Upon Data

- Because inductive reasoning “learns” from existing data sets
  - It is important to know if the data sets that are used to “teach” machine learning algorithms have inherent biases
  - This is called having “Biased Data”
  - When used by AI, this will result in **biased results**

- Biased Data could be positive or negative
  - Positive = the bias correctly represents the desired outcome
  - Negative = the bias incorrectly represents the desired outcome
  - Safeguards must be put in place to prevent or at least detect the negative outcome from occurring
Machine Learning for Management Accountants

• Application of AI in controllership:
  - Classification of transactions using historical data to predict classification of incoming transactions
  - Consider the risk of a misclassification, especially for vendors that have multiple purposes

• Application of AI in financial planning & analysis
  - Predictive analytics for forecasting
  - Consider the risk of data biasing, especially if future plans are significantly different than historical data
We Must Embrace Artificial Intelligence

- AI presents many opportunities for management accountants if we embrace its capabilities and leverage it as a tool to improve the value we provide to our clients.
Accountants Must Embrace Artificial Intelligence

- AI will not replace management accountants
  - It will augment and enhance the services that accountants and can provide to their clients
- AI presents an opportunity to automate routine data analysis and allows accountants to focus on:
  - Understanding business processes and key data points
  - Design of automation procedures and algorithms for analysis
  - Review of exceptions and refinement of algorithms
- Accountants can also increase their value to their clients
  - By helping improve governance, risk management, and internal controls related to AI as it is used throughout the organization
Thank you!

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