Sustainability Reporting and the Digital Stakeholder

The Shortcut to an Accounting Shortage Solution

Improving Leadership Development Efficacy

GENERATIVE AI IN ACCOUNTING APPLICATIONS

Contents / 11.23

STRATEGIC FINANCE

An ESG Wake-Up Call

Embracing sustainable business management can help companies contribute
to a healthier, fairer, and more prosperous world for all.

By Richard T. Brady, CMA, CGFM, CDFM

Environmental, social, and governance (ESG) investing emerged as a transformative force in the world of finance, with investors increasingly considering not just financial returns, but also the broader impact of their investments. In recent times, however, there has been a noticeable decline in ESG investments. While it may seem paradoxical, the decrease in ESG investments highlights the need for increased emphasis on sustainable business management practices to ensure transparent, accurate, and comprehensive reporting and the long-term viability of businesses and markets.

Sustainable business management is crucial from a long-term planning perspective because it ensures a company's resilience and continuity in an ever-changing world. By prioritizing sustainability, businesses mitigate risks associated with environmental regulations, resource scarcity, and shifting consumer preferences. They also future-proof their operations by fostering

innovation, reducing waste, and enhancing supply chain resilience. In the end, sustainable business practices lead to cost savings, improved brand reputation, and increased customer loyalty, translating to sustainable profits over time. Long-term planning that incorporates sustainability not only aligns with ethical and environmental considerations but also safeguards a company's competitive advantage and growth potential in a rapidly evolving global landscape.

Accounting and finance professionals play a crucial role in measuring and reporting on a company's sustainability efforts. Moreover, they play a leading role in advocating for sustainable business practices to ensure a company remains a going concern. Accounting ensures that sustainability efforts are transparently documented and reported, helps to identify and manage potential risks, quantifies the impact of sustainability initiatives, and can uncover cost-saving opportunities and operational efficiencies. In short, accounting for sustainable business management practices not only aligns with ethical and environmental imperatives but also creates business value.

IMA® (Institute of Management Accountants) is committed to advocating for sustainable business practices and to providing resources to help practitioners serve as leaders in this area. To educate and support members, the organization also offers the IMA Sustainability Business Practices Certificate™, which aims to help accounting and finance professionals navigate the complexities of their role in sustainable business practices. IMA also has conducted groundbreaking research on the topic of sustainable business management, including the recent *Achieving Effective Internal Control over Sustainability Reporting*, written in conjunction with COSO (Committee of Sponsoring Organizations of the Treadway Commission).

Declining ESG investments may be seen as a short-term phenomenon, driven by market sentiment. Yet the true value of ESG and sustainability lies in their ability to foster a long-term view on business management. Accounting and finance professionals who embrace sustainable business management principles enable their companies to be more resilient and profitable, thereby promoting growth in their communities and society. The decline in ESG investments serves as a wake-up call for the importance of sustainable business management and reveals the need for more transparent, precise, and thorough reporting to restore trust and confidence in business. As the world faces mounting geopolitical, social, and economic challenges, sustainable business management is not just a trend but an enabling positive force in contributing to a healthier, fairer, and more prosperous world for all.

Richard T. Brady, CMA, CGFM, CDFM, is the CEO of the American Society of Military Comptrollers (ASMC) and Chair of the IMA Global Board of Directors. He's a member of IMA's Nation's Capital Chapter. You can reach Rich at rich.brady@imanet.org or via LinkedIn.

STRATEGICFINANCE

IMA's Certification for
Accountants and
Financial Professionals
in Business

Welcome, New CMAs: September 2023

1,131 IMA members became CMAs between September 1 and September 30, 2023.

By Ella Suponitskiy, CMA, CPA, CAE

For more information on CMA certification, visit www.imanet.org/cma–certification.

Ragul A
Mohit Aagarwal
Jelyn Baybayon Aban
Osama Elsaid Abdallah
Mohamed Ahmed
    Abdeldayem Shehata

Ahmed Mohamed
    Abdelqader Ali
Michael Angelo Acosta
Lubna Adnan Mohammad
    Arda
Mohamed Yaser Akileh
Tarek Al Asadi
Georges Al Khawli
Abdullah Al Mulhim
Ahmed Abdullatif Al
    Saleh

Muhammed Shareef
    Alappadimmal
Albandary K. Alburaik
Hanan Sayed Hashem Algharbi
M K Anwar Ali
Jenan Alnasser
Abdullah Mohammed Alsayara
Zakaria Jamal Alsayed Ahmad
Maryah Altayeb
Bassam Abdelhalim Aly
Mohamed Adly Eidarous Aly

Ahmed Jaafar Alzahaira
Muhammed Irfan
    Ambalathveettil Pattath
Baoying An
Jeslin Anna Jose
Nadera Yousef Arabiat
Aya Atallah Mohamed Ismail
Bheemaraya Gupta Ba
Qingxuan Ba
Jinju Bai
Xinran Bai
Trishala Vishwanath Bangera
Swastik Bansal
Bin Bao
Samer Barghouti
Tania Barnard
Jordan Benson
Dolly Espiritu Bernal
Nihar Hiren Bhatt
Siwen Bi
Wenshen Bi
Elvin Biju
Xuemei Bing
Debangan Biswas
Michael Essam Kamel
    Botrous Hanna
John Henry Bouquet
Haiyan Bu
Jianne Cabuyao
Huiying Cai
Liang Cai
Liping Cai
Wen Cai
Wenwen Cai
Xiaolin Cai
Yingmei Cai
Bin Cao
Min Cao
Qian Cao
Qingyun Cao
Wei Cao
Yan Cao
Zhuo Cao
Melinda J. Caporin
Lian Kyle Rayos Del
    Sol Castillo
Janice Vergara Catolico
Lagan Chai
Lili Chai
Shabeen Chalil
Anjali Chauhan

Baihui Chen
Bijun Chen
Chaonan Chen
Chen Chen
Cong Chen
Guihua Chen
Jiaxin Chen
Jing Chen
Jinzan Chen
Juanjuan Chen
Jueying Chen
Kang Chen
Laiqing Chen
Lanyan Chen
Lei Chen
Linhua Chen
Meijuan Chen
Minglin Chen
Qian Chen
Qin Chen
Ruixin Chen
Shaorong Chen
Shu Chen
Shuai Chen
Shuangshuang Chen
Shuxian Chen
Si Chen
Weiduo Chen
Weixuan Chen
Weiyan Chen
Xi Chen
Xiaofan Chen
Xiaofang Chen
Xiaojuan Chen
Xin Chen
Xuexian Chen
Yan Chen
Yang Chen
Yanhong Chen
Yi Chen
Ying Chen
Yuan Chen
Yuanyuan Chen
Yun Chen
Zhengjun Chen
Zhuo Chen
Lin Cheng
Wenbo Cheng
Yanzhou Cheng
Parth Fulchand Chheda
Jigisha Chittora

Min Chu
Kristin Chudler
Vittoria Fani Ciotti
Johanna Copley
Elaine Mary Chua Co-Wong
Peilei Cui
Ying Cui
Qiuping Da
Suna Dai
Tieshan Dai
Zhiming Dai
Jiangyu Dan
Akash Mahesh Davey
Derik Dawny
Coen Gerardus Hendricus De
    Jong
Gang Deng
Jinhua Deng
Ling Deng
Wan Deng
Yu Deng
Reshma Dhanashankar
Lingling Ding
Shuang Ding
Yu Ding
Thu Dinh Thi Hong
Manli Dong
Siwei Dong
Weiwei Dong
Yuqi Dong
Zhifeng Dong
Zhuanxia Dong
Schleiden Caitan D'Silva
Jiaxing Du
Jingpei Du
Jinling Du
Qianwen Du
Baoli Duan
Dongdong Duan
Guangdi Duan
Haiping Duan
Linfang Duan
Meng Duan
Yuling Duan
Yunchu Duan
Pooja Dumre
Amanda M. Dunham
Dolly Omprakash
    Duseja
Abdelrahman Fathy Elfiky
Reem Rizk Esmail Elgammal

Mohamed Mohamed Ahmed Ramadan El-Hadidi
Elsaid Mohamed Abdelkader Elhefnawi
Faziljan Tirkashovich Eshankulov
Chenchen Fan
Lijuan Fan
Minjie Fan
Wei Fan
Weichen Fan
Wen Fan
Xuefei Fan
Lingjun Fang
Yinyan Fang
Bingyu Feng
Han Feng
Junjie Feng
Meijuan Feng
Siyan Feng
Wei Feng
Xiaoqian Feng
Yinbo Feng
Guizhi Fu
Tingli Fu
Xiaoyan Fu
Yajing Fu
Yang Fu
Yao Fu
Yingxia Fu
Sathish G
Feiwen Gan
Weiqiang Gan
Fangfang Gao
Huan Gao
Kai Gao
Lin Gao
Qiongying Gao
June Ge
Jun Geng
Lanfang Geng
Qiangwei Geng
Rui Geng
Zhuo Geng
Spencer Dalton Gillispie
Justine Baron Chua Go
Jingjing Gong
Lei Gong
Xiaoyan Gong
Xu Gong
Ye Gong

Royline Gonsalves
Jacob D. Goodman
Haixia Gu
Huajing Gu
Lingling Gu
Siyi Gu
Xiaolei Gu
Xiaoli Gu
Yan Gu
Yanjing Gu
Serkan Gulcan
Jiawen Guo
Junwei Guo
Pingping Guo
Ran Guo
Weiying Guo
Xiaolan Guo
Xin Guo
Yanling Guo
Yuxiang Guo
Yuyuan Guo
Zhenyan Guo
Zhidong Guo
Akash Gupta
Anpayani Gupta
Jan Gwerder
Wegdan Ali Ahmed Hadi
Babiker Abdelrahman Haimed
Guoxuan Han
Kunxiang Han
Lingzhi Han
Ruiling Han
Tingting Han
Xueyan Han
Yalin Han
Shahriar Hasan
Dan He
Dapeng He
Guangyang He
Guanxing He
Hao He
Jingting He
Peng He
Wei He
Xiaoxia He
Yingchao He
Brandi Herbert
Jonnie Mar Adlaon Herebese
Julian Herms
Patrick Hodson
Chengshi Hou

Wanwan Hou
Bowen Hu
Jiajia Hu
Jingjing Hu
Longmei Hu
Na Hu
Ping Hu
Qiuling Hu
Richabilige Hu
Wenhua Hu
Xiufeng Hu
Yao Hu
Ying Hu
Yu Hu
Sha Hua
Baotao Huang
Gang Huang
Haixia Huang
Haiyan Huang
Jiachen Huang
Jieyu Huang
Jing Huang
Lihua Huang
Mingwei Huang
Rong Huang
Shanqi Huang
Suifang Huang
Weilan Huang
Xiaoling Huang
Xiaoyun Huang
Yanyang Huang
Yuefen Huang
Yunxuan Huang
Yuting Huang
Jiaojiao Huo
Xinyi Huo
Micha Benedikt Hurni
Abdel Rahman Hieder Ideas
Khaqan Iftikhar
Justin Phillip Contreras Ilao
Yoshinori Inaba
Mary Joana Domingo Isidro
Ahmad Mohammad Issa
Richu Jacob
Akanksha Jain
Surbhi Jain
Stanley James
Usha Jangid
Ganpati Jha
Dongmei Ji
Huizhen Ji

Xiaoxuan Ji
Hongzhen Jia
Lu Jia
Chaozhong Jiang
Chunhuan Jiang
Dongchun Jiang
Jieying Jiang
Jingfang Jiang
Jinhua Jiang
Liwei Jiang
Mengxue Jiang
Peili Jiang
Yufang Jiang
Yusen Jiang
Zhencai Jiang
Zheng Jiang
Zhiru Jiang
Anqi Jin
Lifen Jin
Yan Jin
Xin Jing
Alein Johnson
Alex James Johnson
Anet Johnson
Gary Johnson
Jacob Johnson
Rebekah Jones
Irfan Ahammed K
Karvarnan Kalangadan
Yibo Kan
Meina Kang
Jasmin Kannampuzhath
    Jamaludheen
Ashvinder Katyal
Bing Ke
Hyobin Kim
Jun Kim
Renjani Mary Koikalethu
Lingqiang Kong
Yunfei Kong
Farhad Yoosaf
    Kouvaprontavida
Akathoottumadom
    Manikandakumar Krishna
    Kumar
Chini Ku
Jiandong Lai
Yuhua Lai
Aiping Lan
Yangliu Lao
Winston D. Lazarte, Jr.

Xiulin Le
Loic M. Le Grand
Ai Li
Bo Li
Chunrong Li
Cui Li
Cuitong Li
Deyu Li
Feng Li
Haidong Li
Hanjing Li
Hanjun Li
Heng Li
Huicong Li
Jiaman Li
Jiaoqian Li
Jiaxi Li
Jiayi Li
Jingxue Li
Juan Li
Juanjiao Li
Jun Li
Junfang Li
Junjie Li
Junqiong Li
Li Li
Lin Li
Lixia Li
Lu Li
Na Li
Pan Li
Pei Li
Ping Li
Pingping Li
Qian Li
Qiaoling Li
Qiliang Li
Qing Li
Qingliang Li
Qingya Li
Qiong Li
Ruoheng Li
Shasha Li
Shuai Li
Shurong Li
Tao Li
Wenting Li
Xia Li
Xiance Li
Xianjun Li
Xiao Li

Xiaokun Li
Xiaoyan Li
Xinru Li
Xiuhua Li
Xu Li
Xuewei Li
Ya Li
Yani Li
Yi Li
Yibin Li
Yihua Li
Yinghui Li
Yingying Li
Yun Li
Zhaodi Li
Zhe Li
Zhengli Li
Zhi Li
Zhuoran Li
Zijun Li
Kunling Lian
Baohuan Liang
Bijun Liang
Junke Liang
Liang Liang
Tian Liang
Wenyuan Liang
Xiaoyan Liang
Xinyue Liang
Youyan Liang
Baofen Liao
Jinxiang Liao
Minjun Liao
Yinshen Liao
Hua Lin
Shuming Lin
Yonglan Lin
Zeyi Lin
Zeyu Lin
Bo Liu
Caixia Liu
Chen Liu
Chenghui Liu
Hua Liu
Huan Liu
Jia Liu
Jian Liu
Jiangyan Liu
Jianhua Liu
Jiantong Liu
Jianyun Liu

Jiapeng Liu
Jie Liu
Jingyuan Liu
Jiyong Liu
Junjie Liu
Lei Liu
Leiqian Liu
Li Liu
Lingfeng Liu
Mei Liu
Ping Liu
Qi Liu
Qianqian Liu
Qianru Liu
Qiuli Liu
Runchao Liu
Ruoyu Liu
Shanshan Liu
Shuhao Liu
Shujuan Liu
Shuyuan Liu
Sicheng Liu
Tingting Liu
Wei Liu
Xiaoqing Liu
Xiaoshu Liu
Xin Liu
Ya Liu
Yan Liu
Yanfei Liu
Yang Liu
Yanni Liu
Yaping Liu
Ying Liu
Yingmei Liu
Yingxin Liu
Yongyi Liu
Yu Liu
Yuan Liu
Yuanyuan Liu
Yuhua Liu
Yunjing Liu
Zhaopeng Liu
Beiyi Lu
Fengxia Lu
Jueyan Lu
Liping Lu
Lu Lu
Mengdi Lu
Min Lu
Qixiao Lu

Rongjuan Lu
Rongxi Lu
Sixie Lu
Xiaoli Lu
Yangjun Lu
Yingjie Lu
Yuanyuan Lu
Fenghua Luo
Hong Luo
Jianhong Luo
Lichun Luo
Linling Luo
Mali Luo
Mengxue Luo
Xin Luo
Lihua Lv
Xiaomin Lv
Yun Lv
Jing Ma
Li Ma
Litao Ma
Qiaoyang Ma
Ruirui Ma
Wenbin Ma
Wenxia Ma
Yichen Ma
Yijing Ma
Mohamed Samy Aly
    Mohamed Maharem
Chenghan Mai
Rafael Ernesto Malaret
Kelvin Dale Guinto Manusig
Chenye Mao
Xin Mao
Alfred Karl Agias Maravillas
Rolex Aquino Marquez
Rose Mary Martin
David Joel Mathews
Nanda Kishore Matta
Nathan W. Mecham
Vazira Quresh Mehsari
Ragi Mehta
Le Mei
Lei Mei
Li Mei
Fengjuan Meng
Guansheng Meng
Haisu Meng
Lihua Meng
Sikun Meng
Yang Meng

Madhura Pradip Mhaskar
Jiemin Miao
Lei Miao
Qingguo Miao
Lan Mo
Jisna Marakkar Mohamed
Bassam Omar Mohammed
Abdelrahman M. Moharem
Kristian G. Mortenson
Hui Mu
Muhasin Mukkali
Mustafa Mohamed Mustafa
Mai Thi Truc Nguyen
Thanh Mai Nguyen
Phu Nguyen Hoang
Hai Nguyen Ta
Dien Nguyen Thi
Yiwen Ni
Yanqin Nie
Eva Nijssen
Arcyl Paltongan Orfiano
Weifeng Ouyang
Hongxu Pan
Jia Pan
Meirong Pan
Miaomiao Pan
Tong Pan
Wenjing Pan
Xiuli Pan
Yijiang Pan
Yue Pan
Yufu Pan
Ruihuan Pang
Saad Patel
Tejswini Patel
Congyang Pei
Tianhua Pei
Yue Pei
Eva Peleteiro Fernandez
Chunhua Peng
Dan Peng
Danfeng Peng
Hao Peng
Qin Peng
Qinghua Peng
Tian Peng
Xuemei Peng
Ying Peng
Yuxiao Peng
Krista Peyton
Carol Pham

Yuwei Pi
Yiwei Ping
Ankita Abhay Prabhu
    Chandelkar
Xinyun Pu
Xuan Pu
Yangli Pu
Haiyan Qi
Liyue Qi
Rui Qi
Xiaoxuan Qi
Jingcai Qiao
Jianhua Qin
Qingyang Qin
Zhijuan Qin
Chunling Qiu
Doreen Camille Bulawan
    Quisido
Allison Raddant
Nahid Amin Ali Rahamtalla
Bharat Sadananda Raikar
Aljin Raj
Anuraj Chandrathil Rajagopal
Aditya Rajeev
Shiju Mathew Raju
Mingyu Rao
Yuling Rao
Reshma Reghunathan Nair
Qing Ren
Rui Ren
Madeline Reschke
Lauren Robichaud
Guanshen Ruan
Wei Ruan
Arunaachalam S N
Mohammed Shamil Saeed
Windel Frits Pepito Salas
Mustafa Nageeb Ali Salim
Aniket Vilas Salvi
Khaled Zaher Sara
Mohammed Abdel–Fatah
    Sayed
Ali Irfan Shaikh
Harim Abdul Rahim Shaikh
Zhikai Shan
Yingying Shang
Zhen Shao
Mohammed Shareef KP
Nazli Shariatmadari
Muhammed Shaz
Yunbi She

Chunhong Shen
Feifan Shen
Lina Shen
Luqi Shen
Mengjiao Shen
Shuoqiu Shen
Yiting Shen
Gaozhi Sheng
Jinfeng Shi
Lili Shi
Meiling Shi
Paifang Shi
Qiongwen Shi
Wen Shi
Xiaojing Shi
Derek James Shoemaker
Hasmukh Keshubhai Solanki
Chengjie Song
Jiao Song
Ruicong Song
Ruijie Song
Weijie Song
Yang Song
Yaqi Song
Yunxia Song
Ziqi Song
Lingling Su
Mingwei Su
Wen Su
Xuejian Su
Subickshaa Subramanian
Fangli Sun
Guoying Sun
Hongyan Sun
Huiying Sun
Jin Sun
Jing Sun
Kexun Sun
Kuo Hwa Sun
Lei Sun
Mingdong Sun
Ping Sun
Shunlong Sun
Yating Sun
Yuanzhao Sun
Man Sau Tam
Dan Tan
Jianping Tan
Jing Tan
Jinrui Tan
Mengjuan Tan

Chuanjun Tang
Guoxi Tang
Honglu Tang
Jie Tang
Jihong Tang
Jingnan Tang
Kang Tang
Li Tang
Lingyun Tang
Ruisheng Tang
Shuli Tang
Wen Tang
Wenjie Tang
Wenli Tang
Xiaohui Tang
Xuelian Tang
Yaxuan Tang
Yexin Tang
Yiyu Tang
Yulan Tang
Zheren Tang
Ning Tao
Najmal Thajudheen
Ou Tian
Wenjuan Tian
Xinxin Tian
Michelle Anne Bernaldez
    Torrefranca
Khanh Tran Mai
Trang Tran Thai Thien
Thu Tran Thanh
Huazhen Tu
Jian Tu
Hredya Unnikrishnan
Meena V
Akshay Basantlal Vaishya
Stijn Van Der Zanden
Hariharan Venkatachalam
Natalie Walton
Chuangui Wan
Wei Wan
Ai Ling Wang
Beibei Wang
Bin Wang
Bing Wang
Caixia Wang
Chunbo Wang
Danni Wang
Fangli Wang
Fatao Wang
Feng Wang

Guanting Wang
Haimin Wang
Hui Wang
Huiyu Wang
Jia Wang
Jianbing Wang
Jianchun Wang
Jiaohui Wang
Jingmei Wang
Li Wang
Lin Wang
Lixiang Wang
Man Wang
Meng Wang
Mengjie Wang
Mengru Wang
Mingyue Wang
Qi Wang
Qiuyue Wang
Rui Wang
Runjin Wang
Sha Wang
Shibo Wang
Tao Wang
Tianfeng Wang
Tianyu Wang
Wei Wang
Xiangbing Wang
Xiao Wang
Xiaojie Wang
Xiaomin Wang
Xiaoming Wang
Xiaoping Wang
Xinfang Wang
Xingqin Wang
Xinlin Wang
Xiuling Wang
Xue Wang
Xueting Wang
Yalin Wang
Yamei Wang
Yan Wang
Yanbo Wang
Yanfei Wang
Yang Wang
Yanming Wang
Yanqing Wang
Yayi Wang
Ye Wang
Yihan Wang
Yijiong Wang

Ying Wang
Yingying Wang
Yiyun Wang
Yu Wang
Yuankuo Wang
Yue Wang
Yufen Wang
Yuqi Wang
Yuqing Wang
Yuxuan Wang
Zaijiang Wang
Zhipeng Wang
Zhiqing Wang
Zhufeng Wang
Bin Wei
Rong Wei
Saiqin Wei
Tao Wei
Ying Wei
Danwei Wen
Fangrui Wen
Xiaoli Wen
Xiaomei Wen
Xin Wen
Yan Weng
Aixuan Wu
Baiji Wu
Baiwen Wu
Chuanbin Wu
Chunfang Wu
Huafang Wu
Jiali Wu
Jing Wu
Jinjian Wu
Juanjuan Wu
Liming Wu
Lingyue Wu
Minyu Wu
Qinying Wu
Shuyan Wu
Tingting Wu
Wen Wu
Xiaohua Wu
Xiaonan Wu
Xinyi Wu
Yao Wu
Yina Wu
Yongfei Wu
Zhiying Wu
Jiping Xi
Shuqing Xia

Xiuqi Xia
Xuemin Xia
Yixin Xia
Lina Xiang
Yang Xiao
Ziyu Xiao
Chong Xie
Fengxian Xie
Gaojin Xie
Linqiong Xie
Qian Xie
Shuang Xie
Weiyu Xie
Xiaofan Xie
Yang Xie
Yanzi Xie
Jiawei Xing
Jiayong Xiong
Panpan Xiong
Qi Xiong
Weiping Xiong
Bo Xu
Chang Xu
Li Xu
Min Xu
Qianghua Xu
Ruojie Xu
Sheng Xu
Shuhai Xu
Wenjia Xu
Xia Xu
Xiang Xu
Xiaohui Xu
Xuejun Xu
Yilong Xu
Ying Xu
Yishen Xu
Yuan Xu
Yuanfang Xu
Zhangyu Xu
Zhenyu Xu
Zhiwei Xu
Zizhe Xu
Jing Xue
Ling Xue
Shanying Xue
Xin Xun
Naoki Yamada
Huijun Yan
Huimin Yan
Jiafeng Yan

Lili Yan
Mengping Yan
Mengying Yan
Min Yan
Peng Yan
Shuang Yan
Xiaoqin Yan
Bo Yang
Chenchen Yang
Chengbin Yang
Chenrui Yang
Haoran Yang
Hong Yang
Huaiyi Yang
Lihang Yang
Meili Yang
Mi Yang
Min Yang
Shuangxia Yang
Wei Yang
Weili Yang
Xianghong Yang
Xianyan Yang
Yanni Yang
Yi Yang
Yicheng Yang
Yunzhi Yang
Zekun Yang
Juanping Yao
Ahmad Yassine
Bo Ye
Fen Ye
Hua Ye
Lina Ye
Liu Ye
Liuyan Ye
Shen Yi
Xiaoliu Yi
Beibei Yin
Hui Yin
Juan Yin
Na Yin
Wenting Yin
Xiao Yin
Shaohui Ying
Dongxue You
Hui You
Chenghai Yu
Fei Yu
Gongfeng Yu
Hong Yu

Hongying Yu
Juanjuan Yu
Lei Yu
Mengnan Yu
Qiuping Yu
Qiuying Yu
Wen Yu
Xiaoqian Yu
Xingyi Yu
Zhonghua Yu
Fen Yuan
Chunyuan Yue
Mohamed Abdelwahab Zaki
Shufang Zang
Li Zeng
Weiqi Zeng
Baiyueyang Zhang
Can Zhang
Dan Zhang
Fang Zhang
Fuqin Zhang
Guangti Zhang
Haihong Zhang
Haijing Zhang
Haixia Zhang
Hengxiao Zhang
Hong Zhang
Hongyan Zhang
Hua Zhang
Huan Zhang
Huiling Zhang
Jiandi Zhang
Jianjin Zhang
Jianpeng Zhang
Jidan Zhang
Jie Zhang
Jiejie Zhang
Jing Zhang
Jinglei Zhang
Juanjuan Zhang
Juanli Zhang
Juhong Zhang
Jun Zhang
Li Zhang
Lihan Zhang
Lin Zhang
Ling Zhang
Liuliu Zhang
Lixin Zhang
Lu Zhang
Meiyu Zhang

Ming Zhang
Ningning Zhang
Qi Zhang
Qian Zhang
Qingqing Zhang
Qiong Zhang
Ruiyu Zhang
Shenjie Zhang
Shuhua Zhang
Sisi Zhang
Suhong Zhang
Ting Zhang
Wei Zhang
Weiwei Zhang
Weixia Zhang
Weixin Zhang
Wenjing Zhang
Xianming Zhang
Xiaoli Zhang
Xiaoyun Zhang
Xinhui Zhang
Xiwei Zhang
Xiya Zhang
Xuemei Zhang
Xueying Zhang
Yahan Zhang
Yalin Zhang
Yan Zhang
Yinping Zhang
Yinuo Zhang
Yuanlin Zhang
Yujia Zhang
Yujie Zhang
Yun Zhang
Zhiqian Zhang
Zhongming Zhang
Chen Zhao
Dan Zhao
Dongfang Zhao
Guoqiang Zhao
Hairong Zhao
Hongman Zhao
Hongmei Zhao
Jialu Zhao
Jingli Zhao
Juan Zhao
Luyu Zhao
Minyi Zhao
Ping Zhao
Qing Zhao
Shidong Zhao

Xiaomin Zhao
Xiaoming Zhao
Xin Zhao
Xinhong Zhao
Yang Zhao
Yibo Zhao
Ying Zhao
Yingmin Zhao
Yujie Zhao
Yuxin Zhao
Zihua Zhao
Jie Zheng
Pengfei Zheng
Qingping Zheng
Shibo Zheng
Shuzhan Zheng
Lijun Zhong
Cheng Zhou
Chuanzhi Zhou
Chubing Zhou
Honglin Zhou
Hongxia Zhou
Hongyan Zhou
Huiting Zhou
Jiating Zhou
Jie Zhou
Jintao Zhou
Miao Zhou
Pinghong Zhou
Qingjing Zhou
Rui Zhou
Ting Zhou
Yang Zhou
Yating Zhou
Yiwei Zhou
Yongqi Zhou
Zhuang Zhou
Chen Zhu
Huirong Zhu
Jiawen Zhu
Jing Zhu
Lin Zhu
Ling Zhu
Qianqian Zhu
Siting Zhu
Xingyu Zhu
Yiting Zhu
Mulan Zhuang
Lanlan Zou
Tingting Zou
Xinru Zou

Yu Zou
Faming Zuo
Ming ZuoShumin Zheng
Shuwen Zheng
Yi Zheng
Yinqing Zheng
Yixuan Zheng
Jiali Zhong
Qin Zhong
Xiaoqing Zhong
Xin Zhong
Bei Zhou
Bo Zhou
Dengbo Zhou
Fan Zhou
Fei Zhou
Haijian Zhou
Jun Zhou
Kexuan Zhou
Lanying Zhou
Lijun Zhou
Lixia Zhou
Meng Zhou
Miaojun Zhou
Min Zhou
Ning Zhou
Qin Zhou
Xiujuan Zhou
Yandong Zhou
Yayun Zhou
Zhixing Zhou
Junyi Zhu
Linmei Zhu
Mian Zhu
Ting Zhu
Weiting Zhu
Wenhao Zhu
Ye Zhu
Yinan Zhu
Ying Zhu
Jiaman Zhuang
Mingyu Zhuang
Yan Zhuang
Xuemei Zhuo
Kartik Zibbu
Fangxing Zou
Qiong Zou
Qunying Zou
Wei Zou
Yong Zou
Shuyan Zuo

The Best Leaders Empower Their Personnel

Leaders who are logical yet empathetic and authentic foster trust and belonging in employees and inspire improved performance.

By David Frankenberg, CMA, CFM, CPA, CIA, PMP

In *Unleashed: The Unapologetic Leader's Guide to Empowering Everyone Around You*, Frances Frei and Anne Morriss make the case that we should shift the focus of leadership development from addressing the shortcomings of leaders themselves to assessing and improving their impact on the members of their team. Effective leadership, in their estimation, is about empowering other people as a result of managers' presence and influence and making sure that positive impact on rank-and-file personnel continues, even in leaders' absence.

What sets this book apart in a sea of books on various leadership tactics lies in its actionable information and specificity. There are multiple case studies from real-world examples illustrating problems that leaders have faced and how components of the co-authors' leadership framework played into the solution. Additionally, the authors delve a level deeper and deliver tactical guidance on topics within the arena of diversity, equity, and inclusion, such as how to recruit

and retain talented female employees and ideas for creating spaces in the workplace where LGBTQ+ people feel a sense of belonging.

Frei and Morriss draw on their extensive experience working in and with early-stage tech start-ups, public sector agencies, and large companies such as Uber to lay out a leadership framework that maximizes such empowerment. The book is broken down into two overarching sections: exploring how employees can be empowered when leaders are actively engaged with them ("presence") and analyzing how that impact can be maintained when the team is functioning without the leader around ("absence").

In the presence section, Frei and Morriss emphasize the importance of the concepts of trust and belonging for leaders. Trust is developed in personnel by leaders leveraging a combination of empathy, logic, and authenticity. Additionally, setting high performance standards, demonstrating devotion to personnel, and championing differences among team members are methods that the authors argue can be leveraged to empower employees. When leaders aren't present, the authors suggest that their influence can persist by ensuring that team members are aligned with the appropriate strategy and priorities and an innovative organizational culture of shared beliefs and values has been established.

The book cover's image of a horse galloping forward is a powerful metaphor for the spirit and speed of a fully engaged and empowered workforce. By leveraging the tactics, following the lessons from the framework laid out in *Unleashed*, and staying true to its focus on external orientation, managers can improve their own overall performance as leaders and that of their organization.
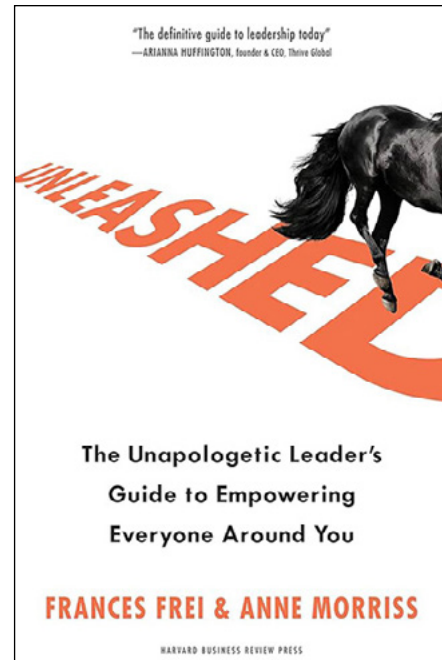
David Frankenberg, CMA, CFM, CPA, CIA, PMP, is the CFO of Nashville Electric Service. You can reach him at david.frankenberg@gmail.com.

Goodwill Impairment Analysis

Management accountants have the opportunity to improve financial reporting through testing goodwill impairment analysis.

By Nathan Zeigler, CPA

In addition to falling leaves and holiday festivities, the fourth quarter brings for many financial reporting professionals another tradition: the annual goodwill impairment assessment. Each year requires a thoughtful review of new economic factors and other considerations that could impact an impairment analysis. Whether the annual impairment test is performed during the fourth quarter or at a different time, it's critical for finance teams to maintain awareness of activities and events that could trigger an impairment.

U.S. Generally Accepted Accounting Principles require goodwill to be tested for impairment on an annual basis or, more frequently, when events or changing circumstances would "more likely than not" reduce the fair value of a reporting unit below its carrying amount. This impairment test is performed at a reporting unit level. The accounting requirements for goodwill are outlined in *Accounting Standards Codification*® *Topic 350, Intangibles–Goodwill and Other*,

which goes into additional detail on the determination of reporting units.

In a rare instance of flexibility, the accounting guidance allows for the impairment test to be completed using either a quantitative or qualitative approach. A quantitative test requires estimating the fair value of each reporting unit and comparing the estimated fair value to the carrying value of the unit to ensure the fair value hasn't declined below carrying value. A qualitative test is performed by evaluating relevant events and circumstances to determine whether it's more likely than not that the fair value of a reporting unit is less than the carrying amount. The economic and operating environment at the time a goodwill impairment test is performed directly impacts the inputs and conclusions, regardless of whether a quantitative or qualitative approach is used.

Assessment and Inflation

Since 2022, inflation has been one of the top economic considerations for finance professionals. Although inflation has tempered in 2023, costs continue to increase. Inflation impacts an impairment analysis in multiple ways. Notably, inflation expectations will be reflected in a business's financial forecast. Goodwill impairment tests often use financial forecasts as a key data point, particularly when a discounted cash flow analysis is performed for reporting unit valuation in a quantitative test. Increasing costs that drive down margins will result in decreased free cash flows, decreasing the value of a business.

Financial reporting professionals should understand and challenge the inflation assumptions utilized in forecasts. Inflation may materialize in different ways for individual reporting units based on cost structure and ability (or inability) to pass increased expenses on to customers through higher prices. It's also helpful to consider how each reporting unit will perform through a full economic cycle, which may extend beyond management's forecast horizon. Over the full cycle, discrete items pressuring costs such as supply chain issues often normalize.

Assessment and Interest Rates

High inflation leads to another consideration for goodwill impairment analysis–interest rates. During 2022 and 2023, the Federal Reserve increased interest rates at a bristling pace in its aggressive fight against inflation. As the Fed has increased rates, yields on U.S. Treasuries have followed a similar upward trajectory. U.S. Treasury yields are often used to represent a risk-free rate of return. Without consideration of other factors, higher risk-free rates drive up discount rates in a discounted cash flow analysis. Higher discount rates decrease the value of future cash flows resulting in a lower value when performing a discounted cash flow to value a reporting unit for goodwill impairment.

Outside of discount rates, higher interest rates impact capital allocation decisions. For example, in early 2022, an entity plans to use debt to fund a significant multiyear capital investment to modernize operations, resulting in long-term expense savings. Then in 2023, this project is delayed or abandoned when it could no longer be funded with low-cost debt. These changes in business strategy can be particularly meaningful to a qualitative goodwill assessment, making it more challenging to bridge back to assumptions used in previous valuations that no longer apply to the current operating strategy.

Public Company Valuations

Looking at the valuations of public companies is a helpful data point in assessing the value of a reporting unit and evaluating goodwill for impairment. Public company valuations are often used in an impairment analysis as a benchmark for the valuation of reporting units. Specifically, valuation multiples of relevant comparable companies can be applied to determine the value of a reporting unit in a market-based valuation approach. However, valuation multiples aren't perfect as public equities markets move in unpredictable ways, particularly as they quickly absorb constantly changing narratives about the economy.

Market volatility creates another challenge in performing a goodwill impairment test. The stock prices of companies in an entire industry may move in unison even when the factors driving market movement only relate to specific entities. For example, the first half of 2023 saw a significant drop in valuations of banks due to the failure of certain regional financial institutions. The entire banking industry was impacted by market volatility, although the failed institutions had idiosyncratic risks that weren't systemic.

In a volatile market environment, it can be helpful to assess stock price trends, or valuation multiples as of different dates, to provide the additional context of valuations over time. Additionally, benchmark companies and relevant valuation multiples should be carefully selected to reflect the unique characteristics of each reporting unit to minimize the risk of comparing apples to oranges.

Navigating these variables to assess goodwill for impairment is challenging. As an additional step, a third-party valuation expert can be engaged. Valuation firms provide a broad scope of services from a full reporting unit valuation to a targeted assessment of key assumptions and inputs. A third party offers an unbiased view of the value of a business and may provide market data or industry insights not readily available to management. Supplemental support from a third-party expert strengthens a goodwill analysis and gives external auditors additional confidence over management's conclusions.

Although testing goodwill for impairment can be performed as a "check-the-box" procedure, it represents an opportunity for financial reporting professionals to engage with stakeholders across their company and develop a deeper understanding of the business, economic risks, and current operating environment. The knowledge gained during a goodwill impairment assessment can be leveraged in the financial reporting process to ensure disclosures reflect current risks and provide context to reported results. Maybe this year, financial reporting teams can come together to celebrate a newly beloved annual tradition: the goodwill impairment test. I'll bring the hot cocoa.

Nathan Zeigler, CPA, is vice president manager–accounting policy at Bank of America and a member of IMA's Financial Reporting Committee. He can be reached at nathan.zeigler@bofa.com.

Leading Remote or Hybrid Teams

Leaders need to take special care to communicate effectively with remote or hybrid team members to keep them focused and motivated.

By David J. Elrod, CMA, CSCA, CPA

Over my career, I've led remote teams at several companies even before the COVID-19 pandemic compelled many of us into working from home and onto Zoom or other videoconferencing software platforms. My current employer, Lightship, is a remote-first company. I've yet to meet any of my team members in person, and it wasn't until very recently that I met my manager despite working at the company for more than a year. The lessons I've learned managing remote team members over the years also apply to hybrid teams.

Remote teams used to be unusual unless you worked for a big company with a global workforce, but the pandemic changed that, and now most professionals have experienced remote teamwork to some degree. These teams require a more nuanced approach if leaders and middle managers hope to be successful.

The basic tenets of leadership still apply to remote or hybrid teams, but leaders must pay special

attention to honing their communication skills, striving for clarity, and giving–and being open to receiving–feedback. These things take on more significance with remote or hybrid teams because remote employees don't get face-to-face reinforcement or body language cues that can help those in the office to be successful.

For example, leaders often benefit from spontaneous interactions with team members in an office. Such conversations can spark new ideas or offer an opportunity to encourage employees if they're struggling. While leaders can undoubtedly do the same thing remotely, they must make a concerted effort to create these beneficial interactions.

Communicate Frequently

Good leaders communicate frequently, but when everyone is in the office together, ad hoc and nonverbal communications amplify the messages that the leader is trying to convey. Unfortunately, those off-the-cuff interactions and nonverbal cues don't happen frequently with remote teams, so leaders lose a big part of their arsenal to inspire and motivate their teams.

To combat that loss of in-person conversations, leaders of remote or hybrid teams must focus on frequent communication with the tools they have to connect with their direct reports. My company uses Zoom and Slack as the primary means to communicate beyond email, and I utilize them extensively. Almost all my calls with my team are on Zoom, and we turn on our cameras. I want them to see and hear me and vice versa. Those visual cues are just as important as my words, especially if I'm having a difficult discussion.

For short-form communication, Slack works well. It saves my team from the pileup of emails in their inboxes and lets us keep multiple conversation threads going. Slack works like text messages and can be a great way to connect spontaneously and broadcast messages across the team. Not everything has to be a Zoom call or email, but I don't want to shy away from communicating because I'm afraid of stuffing their inboxes or giving them video fatigue. With an in-person team, I may chat with everyone in the hallway outside our offices to build rapport and boost morale. With remote teams, Slack can accomplish similar goals.

Provide Clarity

Working together in the office provides ample opportunities to have interactions that demonstrate what's important to the organization. For example, leaders can drop into a team member's office for a quick update on a project or field critical questions in the break room, but remote teams miss these opportunities for reinforcement and clarification. As a result, remote employees may feel rudderless because of a lack of clarity about the organization's mission, strategic plans, and priorities.

To combat this, leaders must continually remind their teams of the most critical goals to provide direction and give assurance that they're on the right track. For example, at my company, we're small enough to have all-hands town hall meetings where the CEO reminds us of what we're focused on. After a few company-wide meetings, this may seem redundant, but it keeps what's most important for our company top of mind. Additionally, those priorities can change rapidly, so having a regular reminder of strategic plans and key initiatives keeps us all focused on value-added tasks.

Not every organization can hold regular town hall meetings with all employees, but at the business-unit or team level, these all-hands meetings are necessary for organizations with remote or hybrid teams. My team is small, but I've adopted the same approach as my CEO in our team meetings. I remind everyone of what we're focused on and how we're progressing as part of our periodic check-ins. This gives them clarity about what's most important for our team to prioritize and accomplish.

Give Regular Feedback

Feedback is essential regardless of whether a team is in the office, but it takes on a heightened level of importance for remote or hybrid teams. Remote employees often feel like they're on

an island, which can sometimes seem desolate. As a result, it's hard to gauge success or failure, especially if the company's performance-review processes revolve around an annual cadence. In addition, limited feedback can make remote employees feel less connected to their organization, which can negatively affect performance.

Remote or hybrid team leaders must provide regular feedback. I prefer a quarterly cadence for formal performance feedback because it allows employees to adjust or improve their work throughout the year. Still, I also provide informal feedback on Zoom calls or Slack to ensure my team members know when they've done well or have opportunities for improvement.

I find it especially important to provide positive reinforcement for remote or hybrid employees because they don't get such cues as often as they would if we were in an office together. In addition, many employees leave their jobs because they don't feel appreciated by their managers. That risk is particularly high with remote employees, so regular feedback is critical for leaders who want to keep great team members amid a challenging environment for recruiting and retaining talented accounting and finance professionals.

Leading remote or hybrid teams can be challenging, but with a few adjustments, it can be done as effectively as managing in-person teams. Frequent communication is essential to ensure that everyone feels connected even if they never see each other in person. Leaders must provide clarity of purpose and priorities so that disparate teams can work toward a common goal rather than meander independently through their work tasks. Finally, formal and informal feedback must be frequent and thoughtful to help remote teams succeed. Remote and hybrid work is here to stay, and leaders must adapt to be successful.

David J. Elrod, CMA, CSCA, CPA, is the head of finance at Lightship, a member of IMA's Atlanta Chapter, and a former dean of the IMA Leadership Academy. He can be reached at davidjelrod @gmail.com.

Ethical Decision Making: From Dilemmas to Solutions

Leaders who follow and share ethical frameworks can improve their team's conduct and bolster their organization's reputation.

By Amanda Laura, CMA, and Passard Dean, DBA, CMA, CSCA, CFE, CIA

Ethical decision making serves as the bedrock for resolving practical issues, dilemmas, or quandaries. It involves a systematic approach to considering moral principles, standards, values, and consequences. An effective ethical framework typically includes the following components:

1. Identifying the issue. Recognizing a practical issue and understanding its complexity is the first step toward ethical decision making.

2. Gathering information. Collecting relevant facts, perspectives, and potential consequences associated with the issue allows for a comprehensive analysis.

3. Applying ethical theories. Utilizing established ethical theories, such as deontology, virtue ethics, or consequentialism, helps people to evaluate potential courses of action.

4. Considering stakeholder perspectives. Acknowledging the interests and concerns of all stakeholders involved promotes inclusive decision making and minimizes biases.

5. Assessing consequences. Evaluating the short- and long-term consequences of different actions aids in choosing the most ethically sound approach.

6. Reflecting on personal values. Understanding one's values and biases is crucial for making ethical decisions that align with personal integrity.

Key Ethical Theories

Several ethical theories provide different frameworks for understanding what's right and wrong. Here are some of the most important:

1. Deontological ethics. This is based on the idea that certain moral rules and principles should guide our behavior, regardless of the consequences. According to deontological ethics, some actions are inherently right or wrong, and we have a duty to follow these rules.

2. Virtue ethics. This is based on the idea that we should cultivate virtues–positive character traits–in ourselves and others. According to virtue ethics, an action is morally right if it's consistent with the integrity we should strive to embody, such as honesty, courage, and compassion. This theory emphasizes the importance of developing a strong moral character.

3. Consequentialism. This evaluates an action's morality based on its consequences or outcomes. According to consequentialism, an effort is considered morally right if it leads to favorable results or produces the most significant overall good impact with the fewest harmful consequences. The focus is on the action's result or outcome rather than the action's intrinsic nature.

Utilitarianism, a popular form of consequentialism, suggests that the moral worth of an action is determined by its ability to maximize happiness or well-being for the most significant number of people. In this framework, the consequences are typically measured in terms of pleasure, happiness, satisfaction, or preference fulfillment.

Contemporary Ethical Issues

In today's complex and interconnected world, we face many ethical issues that require careful consideration and informed decision making. Here are some of the most pressing ones that we face today:

Climate change. Climate change is one of today's most significant ethical issues. It's a global problem that requires collective action to address. Ethical considerations include questions about our responsibility to future generations, our obligation to reduce greenhouse gas emissions, and our duty to protect vulnerable communities from the impacts of climate change.

AI. The rapid development of AI raises many ethical questions, such as concerns about the impact of AI-powered automation on jobs, privacy, and human autonomy. There are also concerns about the potential for AI to be used for unethical purposes, such as autonomous weapons or facial recognition technology that could be used for mass surveillance.

Healthcare. Healthcare is a complex field that raises many ethical dilemmas. Questions about allocating scarce resources, the right to healthcare access, and the ethical considerations of emerging technologies such as genetic engineering and assisted reproductive treatment procedures are all significant ethical issues in healthcare.

Social justice. Social justice issues, such as poverty, inequality, and discrimination, require ethical considerations. Ethical theories such as egalitarianism and distributive justice provide frameworks for understanding and addressing these issues. Questions about fairness, equality, and human rights are central to discussions of social justice.

Ethical Issues in Business and Commerce

Business ethics encompasses analyzing a range of workplace issues, including corporate social responsibility, balancing profitability with environmental impact, fair competition, equal pay, and employee rights, through a lens of ethical principles and moral values. Ethics plays a crucial role in shaping the behavior of a business's employees. It helps companies maintain a positive

reputation, foster customer trust, and create a positive work environment.

The ethical principle of justice involves treating individuals fairly and equitably. In the workplace, this means ensuring that employees are compensated fairly for their work and that they have equal opportunities for advancement. It also means that businesses should be transparent and accountable in their dealings with stakeholders.

The ethical principle of autonomy is that individuals should be free to make decisions about their own lives. In the workplace, this means respecting employees' autonomy and allowing them to make decisions about their work and personal lives. It also means ensuring that employees have the freedom to express their opinions and ideas without fear of retaliation.

Issues such as discrimination, harassment, and unfair labor practices challenge the ethical fabric of workplaces. Establishing inclusive and equitable work environments, promoting diversity, and ensuring fair compensation are vital in addressing these concerns.

In addition, ethical considerations in marketing, product safety, and customer privacy are crucial in maintaining trust between businesses and consumers. Transparency, honesty, and safeguarding consumer rights are central to ethical commerce and retail.

Ethical Challenges in Technology and Innovation

Rapid technological advancements raise concerns about data privacy, surveillance, and algorithmic biases. Ethical practices prioritize user consent, data anonymization, and responsible use of technology to preserve privacy rights.

The ethical implications of AI and automation span various domains, including employment, decision making, and bias. Safeguarding against algorithmic discrimination and ensuring accountability in developing and deploying AI systems are essential.

The unequal access to technology and internet connectivity creates a digital divide, exacerbating existing social and economic disparities. Ethical professionals call for efforts to bridge this gap and promote digital inclusivity.

Ethical principles provide a framework for making business decisions that promote the well-being of individuals and society. Ethical frameworks provide a valuable rubric for addressing practical issues across various domains, including business, technology, interpersonal relationships, politics, and healthcare.

By incorporating ethical decision-making processes, individuals and organizations can navigate complex challenges in a manner that upholds fundamental values, promotes fairness, and considers the well-being of all stakeholders involved. Understanding the ethical dimensions of practical issues is crucial for fostering a just and sustainable future.

Amanda Laura, CMA, is a finance assistant at Petrolcom Oil & Gas Services, a board member of IMA's Abu Dhabi Chapter, and a member of IMA's Committee on Ethics. You can reach her at amanda.laura0606@gmail.com.

Passard Dean, DBA, CMA, CSCA, CFE, CIA, is interim dean of the Donald R. Tapia College of Business at Saint Leo University and a member of IMA's Committee on Ethics. You can reach him at passard.dean@saintleo.edu.

Classifying Freelance Professionals

Changes and proposed regulations on worker classification can impact freelance professional service workers.

By Candace Witherspoon, Ph.D., CFE, and Casey Colson, Ph.D., CPA

Although current worker classification issues have mostly focused on companies like Lyft and Uber, recent changes and proposed regulations have unique consequences for freelance professional service workers, such as accountants and consultants, and their employers. While "gig economy" professional service workers are less common than freelancers in other industries, this work arrangement continues to solve workers' desire for flexibility and employers' need for seasonal assistance and intermittent expertise. However, emerging tax legislation and guidelines at the federal and state levels affect whether these professionals are classified as independent contractors or employees.

According to a 2020 National Employment Law Project report, "10 to 30 percent of employers (or more) misclassify their employees as independent contractors." Since misclassification can

result in steep penalties for employers, companies should familiarize themselves with new employee classification laws.

Internal Revenue Service Rules

Worker classification relies on the degree of control and independence the worker retains; federal and state guidelines often differ, however. For example, in 2020, the Internal Revenue Service (IRS) began using the common law control test, which replaced the 20-factor test, to determine employment taxes. This test uses three factors to ascertain employment status: (1) the behavioral control of the employer over the worker, (2) the financial control of the employer over the worker, and (3) the type of relationship between the employer and the worker.

   If there exists a high degree of behavioral and financial control or factors that indicate an employee/employer relationship (e.g., no written contract or vacation pay is available), then the worker's classification may more closely align with employee status. No single factor is weighted more heavily. While the IRS employs these factors, the proposed U.S. Department of Labor (DOL) guidelines are more broadly defined.

Department of Labor Rules

In addition to changes to the IRS guidelines, wage and hour laws may be impacted by new classification guidelines that were proposed in October 2022 by the DOL. The proposed guidelines make classifying a worker as an independent contractor difficult under the Fair Labor Standards Act. The proposal uses a "totality-of-the-circumstances" approach and requires that workers be classified as employees if they're "economically dependent" on a company based on a multifactor economic realities test with no prioritization of factors. Yet some of the factors include investment by the worker and the employer and the nature and degree of control, including whether the employer uses technological supervision. A worker with a significant financial investment and little employer supervision may have greater evidence that they're an independent contractor than a worker with insignificant financial investment and who is closely monitored.

   The DOL currently operates under the Independent Contractor Status Under the Fair Labor Standards Act (2021 IC) rule, which specifies two core factors–the nature and degree of control over work and the worker's opportunity for profit and loss. Other noncore factors include the skill required for the job, the degree of permanence of the working relationship between the worker and employer, and whether the work is part of an integrated production unit. Under 2021 IC, a person who works under an employer's supervision and receives an hourly wage for full-time assembly line work with an indefinite end is almost certainly an employee.

Differing State Laws

While some U.S. states use the same common law control test as the IRS, other states are increasingly adopting the ABC test or some version of it. The ABC test includes the following considerations in determining worker status:

- The worker is free from the control and direction of the employer.
- The worker performs work outside of the usual course of the employer's business.
- The worker has established their own business in the same industry in which the work is being performed.

   If the worker fits the above criteria, they'll likely be classified as an independent contractor. To complicate the issue of differing state laws, some states are enacting changes that may also affect employers in other states. Notably, California created Assembly Bill (AB) 5, which took effect beginning in 2020 and was designed to target app-based platform economies. This legislation applies to freelance professionals and makes it more difficult for companies to classify workers residing in California as independent contractors. AB 5 includes exemptions, however. For instance, an

individual who holds an active license from California and is a lawyer, architect, engineer, private investigator, or accountant is exempt from AB 5 and may be classified as an independent contractor. Workers exempted from AB 5 must still comply with the Borello test, which uses a 13-factor test with each factor weighted equally.

AB 2257, passed in September 2020, created more exemptions from AB 5. In November 2020, California voters passed Proposition 22, which exempted most app-based platform economies from AB 5, effectively mitigating the effects of AB 5 on the industry initially targeted by the bill. In August 2021, a California district court ruled Proposition 22 unconstitutional. This ruling was subsequently overturned, and the case is now before the state's Supreme Court. Notwithstanding, freelance unlicensed accountants or inactive Certified Public Accountants (CPAs) must still comply with AB 5 regardless of whether the employer is located in California, while active CPAs are exempt.

While California has acted to curtail misclassification issues, other states are also implementing changes influenced by California's reclassification. For instance, in July 2021, New Jersey passed A-5890, which provides the state with greater power to deal with companies allegedly misclassifying workers, including stop-work orders. Moreover, in August 2022, the state's Supreme Court provided further guidance on classifying a worker's employment status by relying on the ABC test to reach its decision in *East Bay Drywall, LLC v. Department of Labor and Workforce Development.* East Bay Drywall classified four workers and 12 entities as independent contractors, but the court determined that the contractors weren't likely to be able to continue to operate if their connection with East Bay Drywall ended.

Consequently, while East Bay satisfied the first two factors of the ABC test, the company failed the third factor, which requires sufficient evidence that workers are engaged in an independently established business or trade, regardless of a contractor's corporate status. East Bay was required to pay interest, penalties, and more than $42,000 of unpaid disability and unemployment contributions. This ruling illustrates the burden that businesses may face when classifying workers as independent contractors and highlights the need to understand federal and individual state laws surrounding worker classification.

Given the recent increase in freelance workers, employers should familiarize themselves with worker classification legislation and guidelines. Understanding these laws may help employers avoid exorbitant fines—levied by state and federal governments—that can reach into the millions, such as fines for unpaid workers' compensation premiums, unemployment insurance, payroll taxes, and civil and criminal charges for misclassifying workers.

Candace Witherspoon, Ph.D., CFE, is a professor at the Harley Langdale Jr. College of Business Administration at Valdosta State University. You can reach her at (229) 253-4229 or clwitherspoon@valdosta.edu.

Casey Colson, Ph.D., CPA, is an assistant professor at the Harley Langdale Jr. College of Business Administration at Valdosta State University. You can reach Casey at (229) 249-4344 or cjmarcru@valdosta.edu.
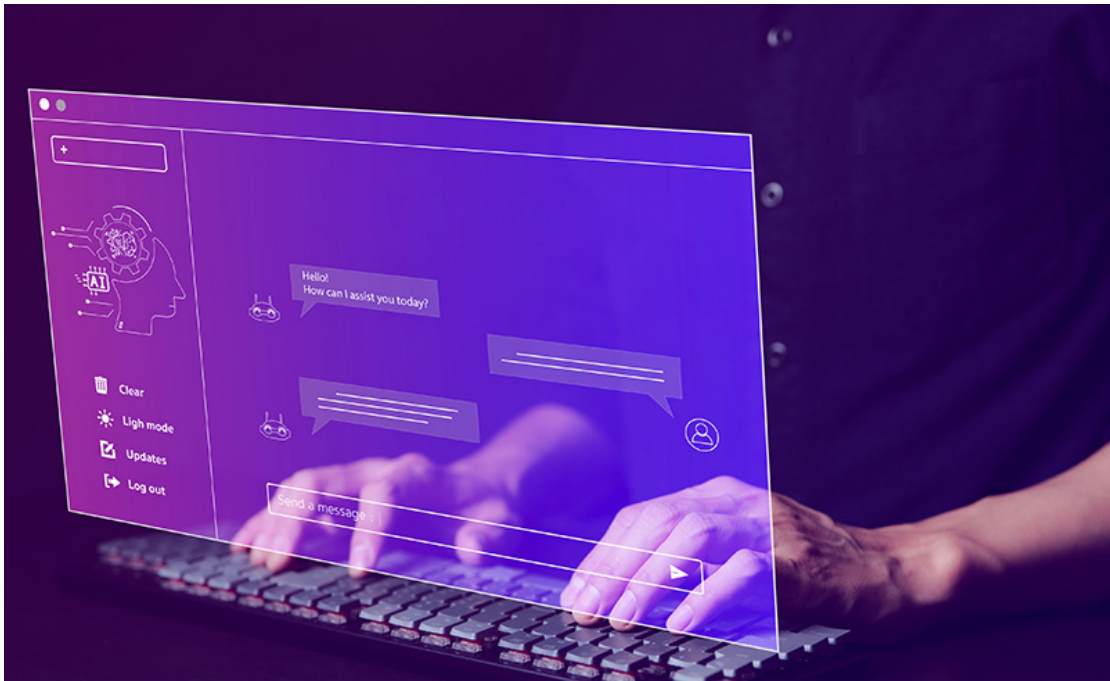
Generative AI in Accounting Applications

A live example provides a guide for strategically using ChatGPT to create
an aging of accounts receivable report.

By Kelly Richmond Pope, Ph.D., CPA; Lamont Black, Ph.D.; and Matthew Stern, Ph.D.

While AI hasn't yet reached a sophistication level that allows accountants to kick up their feet and let the machines handle everything, it can be strategically deployed to accomplish tasks for which it's well suited, using techniques that are proven to deliver results. The lowest hanging fruit may be leveraging ChatGPT to write Python code that will automate routine tasks, such as an accounting report.

ChatGPT can be used to automate the preparation of various reports, such as an aging of accounts receivable. The main point to take away from the demonstration is how one uses ChatGPT will determine the quality of the output one gets from it. Prompt engineering, defined as the process of structuring text that can be understood by a generative AI model, greatly impacts the quality of output you get from ChatGPT.

Aging of Accounts Receivable Report

Suppose you're a company that has three customers (Purple Hypothesis Fitness, River Bend Club,

and West Coast Fitness), and management needs an aging of accounts receivable report that looks like Table 1.

TABLE 1: AGING OF ACCOUNTS RECEIVABLE REPORT

Customer Name	Current	1-59 days	31-60 days	61-90 days	More than 90 days	Total Outstanding
Purple Hypothesis Fitness	875.31	1,031.76	0.00	244.58	0.00	2,151.65
River Bend Club	0.00	747.35	756.12	0.00	0.00	1,503.47
West Coast Fitness	12,322.38	0.00	0.00	0.00	0.00	12,322.38
Subtotal	13,197.69	1,779.11	756.12	244.58	0.00	15,977.50

Before we start, ask yourself: How would you create this report? Most accountants complete this type of "table making" task in Excel, but that's often a time-consuming process. Accountants with a knack for technology might explore newer software or even delve into coding to complete this task. However, for many newly minted and seasoned accountants alike, the prospect of mastering new software or coding can be intimidating.

The good news is ChatGPT can write, run, and debug computer code. "Low code" or "no code" chatbots such as ChatGPT and Bard can be guided by human conversation to do complicated tasks without the user memorizing detailed commands or syntax. This example shows how ChatGPT can write code that will create an aging of accounts receivable table for you. No Excel, no fancy new software, and no coding needed–all one needs to do is to have a conversation with ChatGPT just like one would with a junior analyst. ChatGPT can be the perfect virtual assistant.

Think of ChatGPT as an interface for working with a computer and data. In the past, computers couldn't receive instructions in natural (human) language, such as English and Spanish. Instead, accountants needed coders to tell computers what to do. But AI empowers accountants to communicate with computers directly in natural human languages. You can think of AI as a "go between" between the accountant and the computer.

The following is a high-level outline of steps showing how an accountant can talk to ChatGPT to produce a report.

Steps for Creating an Aging of Receivables Report with ChatGPT

1. Ask ChatGPT to explain the hypothetical contents of a report on the aging of accounts receivable.

What we asked ChatGPT is in Figure 1.

Notice that we aren't describing the details of the report ourselves. Instead, we ask ChatGPT to retrieve knowledge of an aging of accounts receivable. This is a way to plan ahead and work with ChatGPT to describe the end goal, which gives ChatGPT an idea of where it's ultimately going. The actual data doesn't come until step three. Depending on the description ChatGPT generates, you can customize the output and correct errors in an iterative fashion.
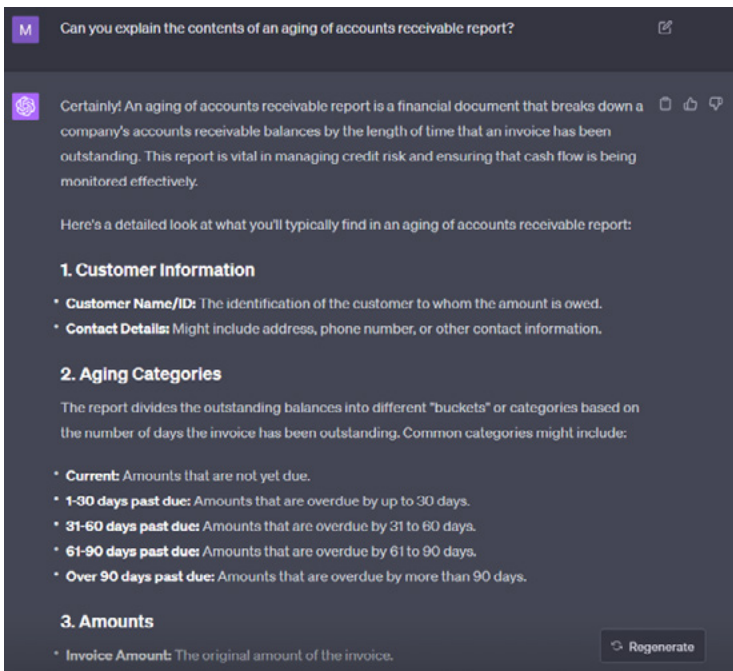
Figure 1
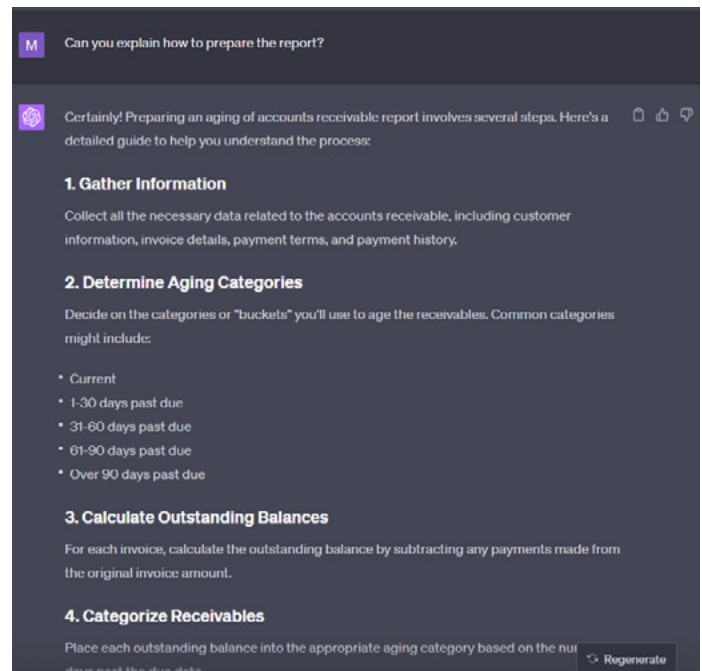
Figure 2

Try ChatGPT and see how it can help automate accounting tasks. For advanced analytics, users must subscribe to ChatGPT Plus.

2. Ask ChatGPT to explain, in general, the steps needed to create the report from a list of invoices.

We're again working backward by getting a detailed description of the task into the chat before asking ChatGPT to write code.

Our prompt and the response in this step is in Figure 2.

We're working smarter, not harder, by giving guidance and having ChatGPT do the work. We're asking ChatGPT to retrieve information and construct a plan for us, instead of writing the details ourselves.

3. Upload any data files containing the list of invoices and customers and ask ChatGPT how it should modify the plan it described in the previous step, now that it knows what the files look like.

For our simplified example, we're going to upload Excel (or .csv) files with Tables 2 and 3.

In this step, we attached the two files to a chat prompt and asked ChatGPT, "Can you inspect the invoice list and customer list that we've uploaded and modify your plan accordingly?"

This highlights why it was so important to have ChatGPT form a plan before we uploaded the data. We're giving ChatGPT the files after having asked for a description of the steps needed to generate the report, which ensures that ChatGPT will view the files with the appropriate context in mind.

ChatGPT is AI, so approach it like you would a human conversation. This type of sequential conversation will also help you give ChatGPT information about the aspects of the process that must be customized (e.g., file names and data structure). You can upload any type of data file in a ChatGPT prompt, so this is quite straightforward. Just be sure to turn on the code interpreter in your settings. (There are services available from OpenAI to ensure that data remains private and isn't used for training purposes.)

4. Ask ChatGPT to self-critique and identify potential issues in the previous step.

Asking for self-critique can improve performance. Doing so adds an additional level of

TABLE 2: INVOICE LIST

Customer Number	Invoice No.	Invoice Date	Quantity	Amount	Payment Terms
IL-1348	IL-1348-088945	5/5/2023	2,730	$244.58	net30
IL-1348	IL-1348-089018	7/4/2023	12,834	$1,031.76	net30
IL-1348	IL-1348-089082	7/11/2023	5,748	$422.59	net30
IL-1348	IL-1348-089328	8/2/2023	5,646	$452.72	net30
IL-6427	IL-6427-089099	7/12/2023	33,414	$5,027.06	1perc10daysnet30
IL-6427	IL-6427-089175	7/19/2023	27,012	$3,292.17	1perc10daysnet30
IL-6427	IL-6427-089197	7/25/2023	32,982	$4,003.15	1perc10daysnet30
IL-6399	IL-6399-089011	7/4/2023	8,580	$756.12	net60
IL-6399	IL-6399-089081	7/11/2023	3,462	$324.68	net60
IL-6399	IL-6399-089152	7/18/2023	4,890	$422.67	net60

TABLE 3: CUSTOMER LIST

Customer Number	Customer Name	Street	City	State	Zip Code
IL-6399	River Bend Club	N. Kingsbury Street	Chicago	Illinois	60654
IL-6427	West Coast Fitness	W. Rand Road	Mount Prospect	Illinois	60067
IL-1348	Purple Hypothesis Fitness	Lake Street	Oak Park	Illinois	60301

error-detection and correction to the process. Not only are you as a user making sure the content of the report is what you intend and the plan for creating it is sensible, but you can also have ChatGPT to serve as a second set of eyes. Although you can ask ChatGPT to self-critique at any step, we've found that it's usually most important once ChatGPT starts writing code and dealing with data sets.

As an example, you might add the prompt "Please critically evaluate the code you have written to identify any errors in it." You can add additional context if you are concerned about specific issues or potential errors. For example, you might use the prompt "Please critically evaluate the code you have written to ensure that it will satisfactorily handle missing values."

5. Tell ChatGPT to write the code once its verbal description of the task is complete and accurate.

In this step, ChatGPT writes code (such as Python) to access the data and produce the table. You want to prevent ChatGPT from writing code until it fully understands the deliverable, the process for obtaining it, and the inputs it will use in the process. We've found ChatGPT will "jump the gun" and start writing code too early if not discouraged from doing so, which is why we started by asking ChatGPT to describe the report we wanted and the steps needed to prepare it but didn't tell it to write any code yet.

6. Review the code and output; offer suggestions for improvement.

The next step is to review the code and output provided by ChatGPT and offer suggestions to ChatGPT so that it can improve it. Often, ChatGPT will output code that the user can't easily understand. We discourage accountants from using code without first establishing that it's correct.

Thankfully, ChatGPT can help the user understand the code in at least two ways. First, the user can ask ChatGPT to write simpler code with better comments. Second, the user can copy and paste specific lines that they find confusing and ask ChatGPT to clarify what the code does. Surprisingly, little programming knowledge is required when the user exploits these two capabilities of ChatGPT. Ask ChatGPT to create a graphical user interface (GUI) and code file that can be used to run the code on the user's computer. A GUI uses windows, icons, and menus to allow the user to complete the task instead of requiring them to write and execute code directly. For example, we asked ChatGPT to create a GUI that lets the user select files and prepare a report at the click of a button. Figure 3 shows the interface ChatGPT produced for us.

This looks similar to a window in an accounting software program. It demonstrates the ability
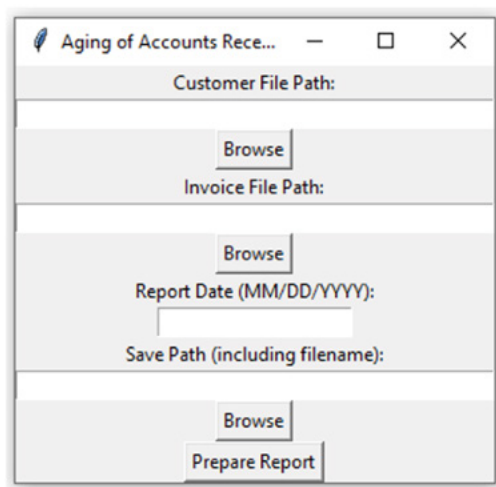
Figure 3

of ChatGPT to help anyone, including those who feel technologically challenged. If you're unsure how to do this, you can ask ChatGPT what information it needs from you to create a GUI. It will

likely ask you what appearance and features you want the GUI to have. This final step helps make the code more usable after being downloaded to your own local computer.

Following these steps enables you to write code that can be used repeatedly, effectively automating the task of preparing an aging of accounts receivable. And the code was created through simply having a conversation with ChatGPT and explaining what needs to be accomplished. It's like talking to a junior analyst who needs a bit more guidance than their extensive knowledge and capabilities would otherwise lead one to believe.

Dos and Don'ts: ChatGPT for Automating Tasks

Correctly employing ChatGPT can help accountants effectively use the tool for automating tasks.

ChatGPT has the potential to transform the field of accounting. We provided a simple example in which an accountant was able to produce a report on the aging of accounts receivable simply

Dos	Don'ts
Do engage in conversations: Use multiple, shorter prompts for clearer communication and better results. *Example: Instead of sending one long request, break it into two or three shorter, focused questions.*	**Don't use long prompts:** Don't overload it with too much information in one prompt, as it can lead to confusion and missed details. *Example: Rather than asking multiple unrelated questions in one message, space them out for clarity.*
Do be clear: Make sure ChatGPT understands what you want from the beginning. You can even ask it to describe the report you're preparing. *Example: If you want a report like an aging of accounts receivable, ask for a description of the report first so ChatGPT knows what the end goal is before it starts writing code.*	**Don't hope it just gets you:** Don't expect ChatGPT to guess your goals. *Example: Don't wait and hope ChatGPT figures out what you're after–just tell it!*
Do talk about the steps first: Before getting any code, ask ChatGPT to list out, in simple words, what steps the code must do to accomplish the goal. *Example: If you want a program that makes an aging of accounts receivable report, ask how it'll turn a list of invoices into the report described in the chat.*	**Don't jump straight to code:** Don't ask for the code until you've talked about and understood the easy-to-follow steps it's supposed to do. *Example: Don't ask for code that prepares an aging of accounts receivable report without first discussing the steps needed to transform a list of invoices into the report described in the chat.*
Do verify ChatGPT's output: Always review and confirm the accuracy of what ChatGPT provides. *Example: If ChatGPT lists out steps for preparing an aging of accounts receivable report, make sure each step is sensible.*	**Don't take everything at face value:** Remember, ChatGPT can make mistakes. *Example: If ChatGPT suggests a step in the report preparation that seems unusual or incorrect, don't proceed until you're confident the step is correct.*
Do consider ChatGPT for a task first: Always explore how ChatGPT can help you to get something done. *Examples: Ask ChatGPT to describe a report, explain output you don't understand, and so on.*	**Don't try to do everything yourself:** Don't do everything on your own when ChatGPT can assist. *Example: Don't write a detailed description of a standard report yourself, try to correct errors manually, etc.*
Do explicitly set the level: Tell ChatGPT if you want expert advice or if you need things explained simply. *Example: Ask "Explain this to me like I'm in high school" or "Give me an expert's take on this."*	**Don't just hope ChatGPT picks the right level:** Don't expect ChatGPT to just know how detailed or simple you want the answer to be. Always specify. *Example: If you want an explanation in simple language, don't assume ChatGPT will provide it without being asked to do so.*

Do fill in the blanks: Give ChatGPT all the specifics it needs, such as your filenames and where they're saved. *Example: If you need help with a file, say something like, "I have a file named 'data.xlsx' in my 'Documents' folder."*	**Don't omit the details:** Don't assume ChatGPT knows your setup, and don't waste time fixing things later because you left out details. *Example: If you get code but didn't mention your file was in a different folder, you'll end up having to change the code yourself.*
Do embrace iteration: Talk back and forth with ChatGPT until things are just right. You can even ask ChatGPT to critique its own work. *Example: If the first answer isn't perfect, ask questions or provide feedback to make it better.*	**Don't rush to finish:** Don't just take the first output ChatGPT generates without reviewing it or asking ChatGPT to critically evaluate it. *Example: If ChatGPT suggests a method and it doesn't seem quite right, don't hesitate to ask for alternatives.*
Do treat ChatGPT as an assistant: Think of ChatGPT as a helper that boosts what you can do. *Example: ChatGPT can help you write code to prepare a report, but it needs your guidance for what to include in the report and how to prepare it.*	**Don't expect ChatGPT to do everything on its own:** Remember, ChatGPT is here to assist, not to do everything for you. *Example: Don't upload a list of invoices with a request to "make an aging of accounts receivable report" and expect to get good results.*
Do take responsibility for understanding: Take charge in ensuring you fully grasp a topic. Use ChatGPT as a tool to aid in this quest. *Example: Use ChatGPT to speed up the preparation of commonly prepared reports like an aging of accounts receivable report; you can also use it to gain an understanding of a report you don't initially understand.*	**Don't move on assumptions:** Never proceed, especially with tasks like report making, without a solid grasp of their core purpose. *Example: Don't ask ChatGPT to prepare a report you've heard about that you don't understand.*
Do mind the memory: Keep conversations concise and periodically ask for summaries, as ChatGPT has a limited memory of about 3,000 words. *Example: If you need to ask ChatGPT to explain a report to you, be sure to "start from scratch" after you're ready to proceed.*	**Don't overestimate capacity:** Don't assume ChatGPT retains an endless memory of the conversation. *Example: Don't let a description of the report you're preparing get buried very deep in the chat history before you ask ChatGPT to prepare the report, because it may "forget" what it told you earlier and behave as if it doesn't know what the report should contain (once the chat exceeds about 3,000 words).*

by conversing with ChatGPT. In this way, ChatGPT functions like an advanced accounting analyst. Generative AI is well trained to know accounting and can respond to guidance from the accountant to accomplish the desired task.

AI facilitates the automation of working with data by writing code to transform data in the desired ways. In this way, AI empowers accountants to do routine tasks in less time and focus on higher-value tasks such as managerial decision making. Accountants need to learn how to work with ChatGPT to unlock the full potential of its capabilities for accounting applications. The hope is that this example proves useful as you start experimenting with this exciting new AI technology. This wave of AI innovation that we're experiencing could enhance your performance and take your accounting to the next level!

Kelly Richmond Pope, Ph.D., CPA, is the Dr. Barry Jay Epstein Endowed Professor of Accounting at DePaul University and the author of *Fool Me Once: Scams, Stories, and Secrets from the Trillion-Dollar Fraud Industry*. She can be reached at kpope2@depaul.edu.

Lamont Black, Ph.D., is an associate professor of finance in the Driehaus College of Business at DePaul University. He is a financial futurist whose interests focus on cryptocurrency, blockchain, and data analytics. You can reach him at lblack6@depaul.edu.

Matthew Stern, Ph.D., is an assistant professor, School of Accountancy & MIS, Director of the Undergraduate in Business Analytics at DePaul. You can reach him at m.stern@depaul.edu.

Sustainability Reporting and the Digital Stakeholder

The drive for greater sustainability disclosure brings with it major challenges as businesses face increasing demand from stakeholders.

By Ariela Caglio, Ph.D., and Paolo Quattrone, Ph.D.

As society demands a shift from a narrow view of accountability that serves only shareholders toward an ethical view, there's an increasing drive for companies to disclose more information on carbon emissions; diversity; environmental, social, and governance (ESG); and other sustainability metrics. In fact, the rates of sustainability reporting among the world's leading 250 companies are at 96%, up from just 12% in 1993, and three-quarters of these companies connect their activities to the United Nations (UN) Sustainable Development Goals (SDGs). Indeed, ESG disclosures are cited by The Wall Street Journal as among the top 10 challenges faced by finance chiefs, while the International Sustainability Standards Board (ISSB) and the European Financial Reporting Advisory Group (EFRAG) have been intensively working on sustainability reporting standards and the

U.S. Securities & Exchange Commission (SEC) has proposed rule changes on climate-related disclosures (see "Reporting Standards").

A "digital stakeholder" is one that has been empowered by current digital tools to access myriad sources of information about corporations. By leveraging corporate websites, social media platforms, and stakeholder engagement platforms that allow for two-way communication, stakeholders can access up-to-date, comprehensive information about companies in a timely and efficient manner. Digital technologies allow stakeholders to collect information on what's important to them and to more easily interact to pressure organizations into making novel disclosures. This makes the multidimensional nature of value–the idea that the value of a corporation is not solely determined by its financial performance, but also by a variety of other factors that matter to a broader range of stakeholders (rather than solely to shareholders)–more explicit than ever before. These factors can include a company's social and environmental impact, its reputation and brand value, and its relational capital. This concept recognizes that corporations create (or destroy) value in many ways that aren't captured by traditional financial metrics and is part of a broader shift toward more holistic and sustainable ways of measuring corporate performance to embrace the expectations of different stakeholders.

This drive for greater disclosure brings with it major challenges as businesses navigate the changing world of ESG and sustainability reporting. For instance, what are the complications underlying the definition of sustainable key performance indicators (KPIs) given the new, multidimensional, and more volatile notions of value expressed by stakeholders? What is the role of new technologies in supporting a more dynamic approach to how corporations communicate information regarding workers and human capital, customer relationships, governance, trust, transparency, and sustainable projects? And what is the role of a company's finance function in this evolution?

Reporting Standards

ISSB: The ISSB has issued global sustainability disclosure standards that provide a global baseline for companies to report on their sustainability-related risks and opportunities, with specific reference to climate-related disclosures.

EFRAG: In April 2021, the European Commission adopted a legislative proposal for a Corporate Sustainability Reporting Directive (CSRD) that requires companies within its scope to report using a double materiality perspective in compliance with European Sustainability Reporting Standards (ESRS) adopted by the European Commission as delegated acts. The first companies will have to apply the standards in the financial year 2024 for reports published in 2025.

SEC: The SEC has proposed rule changes that would require registrants to include certain climate-related disclosures in their registration statements and periodic reports. This includes information about climate-related risks that are likely to have a material impact on the business, results of operations, and certain climate-related financial statement metrics in a note to companies' audited financial statements.

Our Study

We conducted a research study in which we interviewed senior managers at two companies, Novo Nordisk and CARE (a pseudonym used for confidentiality), in order to understand how companies are navigating the dynamic world of sustainability. We chose these two businesses because both have been involved in ESG for nearly two decades and have developed best practices in sustainability. There are no clear-cut definitions, standards, and responsibilities in the ESG space, so trying to be a leader in this regard is a challenging and ever-changing endeavor. We used these two case studies to show the sustainability reporting landscape and how it may evolve as a result of the pervasive use of digital technologies.

Novo Nordisk is a leading global pharmaceutical company that treats diabetes, obesity, and

other serious chronic diseases, and it defines sustainability in terms of adding value to society and its future business. The company measures value in relation to patients (e.g., number of patients reached with diabetes-care products; patients reached via access and affordability initiatives; and healthcare professionals trained), employees (e.g., number of total employees; employee turnover; and gender in leadership, management, and its board), suppliers (e.g., number of direct suppliers), the government (e.g., the company's total tax contribution), and shareholders (e.g., dividends and share repurchases).

The company follows the UN Guiding Principles on Business and Human Rights, the UN Global Compact, the UN's SDG Leave No One Behind principle, and the International Integrated Reporting Council (IIRC) reporting principles.

Novo Nordisk has conducted a materiality assessment of all 169 targets toward the materiality of its operations and license to operate using the SDG Self-Assessment Tool, which was developed by the Earth Security Group together with SAB Miller. This helps the company formulate ways of maximizing its positive impact and minimizing its negative impact, while also actively working on partnerships that allow it to address specific UN SDGs. For example, through its Cities Changing Diabetes partnership program, Novo Nordisk addresses SDG 11 (Sustainable Cities and Communities), SDG 13 (Climate Action), and SDG 17 (Partnerships for the Goals).

Key Terms

The **UN Guiding Principles on Business and Human Rights** are a set of guidelines for states and companies to prevent, address, and remedy human rights abuses.

The **UN Global Compact** is a voluntary initiative based on CEO commitments to implement universal sustainability principles in support of UN goals.

The **UN SDG Leave No One Behind** principle is the central promise of the 2030 Agenda for Sustainable Development and its SDGs. It represents the unequivocal commitment of all UN member states to eradicate poverty in all its forms, end discrimination and exclusion, and reduce the inequalities and vulnerabilities that leave people behind and undermine the potential of individuals and of humanity as a whole.

The **IIRC** set out a principle-based framework called the Integrated Reporting <IR> Framework. An integrated report combines both financial and nonfinancial information and communicates how an organization's strategy, governance, performance, and prospects, in the context of its external environment, create, preserve, or erode value in the short, medium, and long term.

The **UN 2030 Agenda for Sustainable Development** is a shared blueprint for peace and prosperity for people and the planet, now and into the future. It was adopted by all UN member states in 2015. At its heart are the 17 SDGs, which recognize that ending poverty and other deprivations must go hand in hand with strategies that improve health and education, reduce inequality, and spur economic growth—all while tackling climate change and working to preserve our oceans and forests.

The **TCFD** has developed a framework to help public companies and other organizations disclose climate-related risks and opportunities.

The **SASB** is a nonprofit organization that has developed industry-specific sustainability accounting standards. These standards identify the subset of sustainability issues most relevant to financial performance in each of 77 industries. As of August 2022, the ISSB of the International Financial Reporting Standards (IFRS) Foundation assumed responsibility for the SASB Standards.

CDP is a not-for-profit charity that provides a system for measuring, detecting, managing, and globally sharing information regarding climate change.

GRI is a nonprofit international organization established to define the standards of sustainable performance reporting for companies and organizations of any size, belonging to any sector and country in the world.

The second company, CARE, operates around the globe and sells its products worldwide. Its products range from personal to home care. It practices innovation across the value chain via brand building, supply chain management, and the use of digitization and data analytics. In particular, it focuses on lean innovation, combining consumer-based insights with breakthrough science.

CARE considers corporate citizenship an important facet of its business, which revolves around five key areas: community impact, diversity and inclusion, gender equality, environmental sustainability, and ethics and corporate responsibility. For instance, it works on a number of global programs as well as specific regional campaigns in various countries. Equality and inclusion start inside the company and reach outside the corporate boundaries to partners from the supply and value ecosystem and local communities. In this vein, CARE has developed a plan with 14 goals and actionable steps that impact employees, brands, partners, and citizens. The company also created a set of goals in line with the UN 2030 Agenda for Sustainable Development, targeting not only the reduction of its environmental footprint, but also the ways it can help restore the world, for example, through the reuse of packaging, helping to save energy in homes, and reducing the environmental footprint of suppliers, buyers, and manufacturing sites. (See Table 1 for a summary of key insights from the two case studies.)

Measuring Sustainability: Key Challenges

Developing concrete measures for sustainability takes time and persistence and isn't necessarily uniform across the various aspects of sustainability. Sustainability measurement is a process that involves trial and error, especially given the presence of different external sustainability frameworks and constant pressures for more disclosure from stakeholders, including regulators and investors. For example, up until 2021, Novo Nordisk had to respond to multiple questionnaires coming from investors, rating agencies, and regulators. Some of these questionnaires overlapped in terms of requested ESG information, which led the company to find a creative and cost-effective solution to streamline its response to ESG queries through a virtual ESG portal, combining static and dynamic ways to present information.

Both companies would benefit from current trends toward standardization of sustainability metrics because this would reduce some of the pressures both face in navigating the demanding and changing ESG space. However, one of the greatest challenges is that it's difficult to predict which KPIs will matter in a few months, or even in a year, as circumstances change. The materiality of sustainability KPIs is dynamic. For example, the COVID-19 pandemic didn't figure into the predictions of multinationals, yet it has propelled them to reflect on what to do differently in the future, including investing more in sustainability initiatives for employees, customers, and supply chains. This has translated into changes in sustainability KPIs.

Managers at CARE noted that consumers in certain countries have become far more aware of sustainability issues since the start of the pandemic. In addition, managing supply chains, especially during COVID, meant focusing on bringing products directly to customers as well as on expanding the use of data platforms and machine learning to assess consumer consumption and raw material availability. CARE adheres to two principles when determining KPIs: stability and dynamism. Stability means that at least 80% of measures are the same year over year to allow CARE to track improvements. Dynamism translates into introducing 10% to 20% of measures every year to allow for flexibility to reacting to changing circumstances. Thus, the expectations of digital stakeholders are dynamic and continuously evolving.

Another complex aspect is to reconcile sustainability/ESG performance with financial performance. Not all sustainability initiatives are straightforward in terms of value creation and consequences; some may take time to achieve financial stability. For instance, one element that complicates sustainability performance is the life-cycle assessments of products and striking a balance between different dimensions of sustainability. For example, CARE has made a clear commitment to uphold sustainability across all its brands and products but not at any cost, so

TABLE 1: KEY INSIGHTS

	CARE	Novo Nordisk
Measuring sustainability: key areas	■ Sustainable value creation, financial value (sales, profit, and cash), and brand value for customers ■ Community impact, diversity and inclusion, gender equality, environmental footprint metrics for operations, ethics, and corporate responsibility ■ SDG impact	■ Value created for patients, employees, suppliers, the government, and shareholders ■ 18 ESG-related categories, following the company's sustainability strategies (Circular for Zero, the company's zero environmental impact strategy; the defeat diabetes program; and diversity and inclusion) and external sustainability frameworks (e.g., SASB and Value Reporting Foundation) ■ SDG impact
Communicating sustainability: push-and-pull reporting	■ Annual sustainability report (external, push) ■ ESG portal (external, push) ■ Social media/market-level media outreach initiatives (external, pull) ■ Customer engagement and focus groups (external, pull) ■ Sustainability tracker (internal, pull) ■ News portal (internal, pull)	■ Annual integrated report (external, push) ■ Interactive ESG portal (external, pull) ■ Purpose and sustainability tracker (internal, pull)
Overall insights and action points for CFOs and finance functions	The materiality of ESG KPIs is dynamic: ■ Keep open and interactive communication with all stakeholders. ■ Allow dynamism in measures by introducing 10% to 20% of new KPIs every year to allow for flexibility in reacting to changing circumstances (80% to 90% of measures should stay the same to track year-to-year improvements). ■ Be mindful of the intrinsic trade-off between sustainable performance and financial performance. The benefits from sustainability initiatives need to balance the costs for the approach to be sustainable in the original sense of the word. Use a mix of financial and ESG, and short-term and long-term KPIs to assess the sustainability of initiatives. ■ Be proactive, flexible, and innovative in navigating the ESG world by using different disclosure channels according to a combination of the push-and-pull reporting models. This will help to solve the trade-off between standardization and customization of sustainability information.	

the trade-off between sustainability and cost is addressed on a case-by-case basis. Another good example is the conundrum of using plastic rather than glass packaging in products. From the standpoint of carbon dioxide (CO_2) emissions, the energy impact of recycling glass is worse than that of plastic. Plastic waste is more abundant than glass waste, however, and plastic is a more visible issue to tackle from the standpoint of consumers.

In some cases, there's an intrinsic trade-off between sustainable performance and financial

performance. For example, when determining what ESG initiatives to implement, companies need to determine what structural changes can be made (e.g., switching to electric vehicles or changing product packaging) and what measures to compensate with (e.g., planting trees). CARE, for example, prefers to follow strategies resulting in a combination of structural solutions and compensatory effects, although its managers observed that numerous companies prefer compensating initiatives because they're easier to implement and track and, sometimes, they're less costly. CARE is also aware that not all sustainability KPIs can be clearly formulated and translated into monetary terms. Environmental KPIs may lend themselves more easily to such translations, while social KPIs, which are inherently more complicated to track and more connected with sentiment, may present a certain level of difficulty in being monetized. In any case, both companies recognize that the benefits from sustainability initiatives need to balance the costs to be sustainable in the original sense of the word.

Communicating Sustainability

Both Novo Nordisk and CARE have various layers of ESG disclosures resulting from regulatory requirements as well as voluntary choices. Novo Nordisk produces an audited annual integrated report containing a dedicated ESG section. This formalized communication covers financial, environmental, and social statements, as well as a management review. It's a single inclusive document offering a comprehensive overview of the company's performance, progress, positions, and strategic initiatives.

The ESG portal, which is available on Novo Nordisk's website, allows the company to pool relevant ESG information into one platform. Novo Nordisk introduced the ESG portal in an attempt to present ESG information in one place in both static (through webpages and Excel spreadsheets) and dynamic (through Tableau-powered visuals) ways not only to satisfy the overlapping requests of investors and rating agencies, but also to allow all stakeholders to interact with ESG information in their own way. This portal allows interested parties to interact with different ESG-related data (i.e., energy consumption, water consumption, CO_2 emissions, waste, patients reached with diabetes care products, donations and other contributions, employees, health and safety, animals purchased for research, diversity and inclusion, human rights and labor rights, business ethics, facilitations, supplier audits, patient safety and product quality, company trust, sustainable tax approach, and environmental management). The ESG portal could, for example, help active investors find answers to the more specific questions they prefer to ask, such as how the company addresses human rights violations in its supply chain. Passive investors, who are more interested in asking the same questions of all the companies in their portfolios, would also be able to find the more general ESG information they need. Other stakeholders, such as consumers or society at large, may locate information on how, for instance, the company has worked toward gender equality and diversity.

Novo Nordisk also has an internal channel, the Purpose and Sustainability Tracker, which provides quarterly updates to all internal stakeholders (e.g., employees, its locations in different countries, and production sites) and allows them to gauge the company's performance against its corresponding peers in terms of ESG metrics.

In line with its social responsibility and corporate citizenship drive, CARE produces an annual sustainability report. The company replicates this report on the website of each location in other countries to underline its impact across regions.

For the purpose of investors, CARE also maintains a dedicated ESG portal that covers information contained in the sustainability report. However, it presents this material in a manner tailored to the information needs of investors, with separate sections for ESG matters as well as for the various reporting frameworks CARE adheres to, including the Task Force on Climate-Related Financial Disclosures (TCFD), the Sustainability Accounting Standards Board (SASB), CDP, and Global Reporting Initiative (GRI).

The company also encourages employees to share ESG impact stories on social media to

show the value that the company and its businesses are creating. CARE allows consumers to send the company a message through its Facebook page and also to reach out to individual CARE employees through their LinkedIn profiles. The company also runs a specialized program for CARE ambassadors, offering comprehensive training to certain employees of all functions and levels on how to represent the company. Similar to Novo Nordisk, CARE also maintains a sustainability tracker, which presents up-to-date aggregated employee and brand initiative performance. With the pandemic hindering in-person communication, CARE also started a quarterly COVID-19 newsletter to address the reduced information flow to employees. This newsletter has now morphed into a news portal available on the company website.

In addition, over the past few years, CARE has been in the process of rapid automation and digitization of various processes to enhance productivity. The company also uses machine learning to establish algorithms for making decisions. Yet there are some stakeholder engagement processes, such as regular focus groups with consumers, that can't be digitized.

Both Novo Nordisk and CARE are thus proactive in their approaches to using technology to aid their ESG disclosures. Also, both have taken on the initiative of educating their stakeholders on aspects of sustainability with which stakeholders are struggling. Novo Nordisk is communicating with its passive and active investors, which allows the company to transfer ESG know-how to investors while at the same time allowing it to learn the ESG views of its investors. CARE has education initiatives for its consumers, as it believes that better-informed consumers make better sustainability-related decisions, which ultimately impact not only CARE but also society as a whole. CARE believes in making consumers part of the ESG solution rather than part of the ESG problem.

Key Messages for CFOs and the Finance Function

The disclosure practices we observed in Novo Nordisk and CARE reflect the multidimensional value created by various initiatives that both companies promote, and the use of digital technologies allows them to engage in open communication with stakeholders. This benefits both sides in understanding each other better as well as in making the development and maintenance of dynamic KPIs possible.

Indeed, the two case studies hint at the evolving way in which information is disclosed. Beyond what's reported, just as critical is how this information is delivered. Specifically, we're witnessing a combination of a "push and pull" notion of value and corporate reporting. In the push model of reporting, the report producer has control of the scope, timing, and modes of delivery of disclosures. Conversely, in the pull model, the availability of new technologies and of large pools of data, which can be recombined at will by digital stakeholders, implies that their ability to invent or ask for measures of performance that are in line with their perceived notions of value is of an exponentially high quantity and variety.

For instance, although Novo Nordisk's annual integrated report is a good example of push reporting, its ESG portal allows stakeholders to pull information in the manner they choose. Likewise, CARE's annual sustainability report exemplifies push reporting, but stakeholders can also engage with the ESG information through several social media platforms at their own pace and in their own way, thus pulling information that's relevant to them.

This combination of a push-and-pull model also lets possible trade-offs emerge between the different dimensions of financial value and other values. Corporate sustainability measures vary and reflect different—and sometimes conflicting—stakeholders' expectations, so the challenge is in consistent measurement and management from company to company. Further, a balance between short- and long-term results can be elusive. The market-driven focus is on short-term results, but a full appreciation of sustainability necessitates an accounting for long-term considerations as well, such as issues of intergenerational justice, climate change, and sustainability development.

Finally, we learned from our study that companies should ensure that CFOs and finance functions focus on sustainability. As strategic partners and financial advisors, sustainability is part

of the job. CFOs understand how sustainability can align positively with both the strategic goals and financial value creation of their companies in the short and long term. They're used to using standards (for producing financial statements) and to flexibly adapting KPIs and reports to respond to the information needs of their final users (for internal performance measurement and evaluation). Therefore, CFOs know how to balance the current tensions between standardization and customization of sustainability information.

Sustainable CFOs ideally use data and new tools to support the integration of ESG into strategic decision making and investment strategies. They ensure ESG data quality for external and internal reporting and drive sustainability improvements throughout the organization, setting KPIs, tracking and monitoring progress, and integrating ESG into budget setting, forecasting, and incentive systems. By leveraging digital technologies, sustainable CFOs are in the best position to collect company-wide data and provide reports and dashboards that can be used interactively, internally and externally, according to both a push and a pull logic.

Companies today need innovative modes of reporting and of designing sustainability performance metrics based on engagement with different audiences. New technologies are pivotal to this evolution, and the role of the finance function therefore becomes even more crucial.

Further Reading

Reports
Cornelis T. van der Lugt, Shari Helaine Littan, Milana Erlik, Basheer Abhari, and Aspen (Harding) Axelman, *Climate Risk and Strategies: Finance Function Readiness to Meet Accelerating Demands*, December 2022.

Loreal Jiles, Shari Helaine Littan, Diane Jules, Roopa Venkatesh, Brad J. Monterio, and Heather H. Collins, Diversifying Global Accounting Talent: Actionable Solutions for Progress (with CalCPA and International Federation of Accountants), April 2022.

Shari Helaine Littan, Arnaud Brohé, Kevin Fertig, Christine Khong, and Jaxie Friedman, *Management Accountants Role in Sustainable Business Strategy A Guide to Reducing a Carbon Footprint*, February 2022.

Delphine Gibassier, Diane-Laure Arjaliès, and Claire Garnier, *Sustainability CFO: The CFO of the Future?* May 2018.

Strategic Finance articles
Anum Zahra, Brad Monterio, and Paul E. Juras, COSO and Trust in Sustainability Reporting, May 2023.

Daniel Butcher, People, Planet, and Profit at King Arthur Baking Company, March 2023.

Brigitte de Graaff and Paul E. Juras, Integrated Thinking for Sustainable Business Management, February 2023.

Amanda Pavan and Jerry G. Kreuze, The SASB and Sustainability Standards, September 2022.

Daniel Butcher, CFO to CFO: Leading the Way on Sustainability, April 2022.

Brigitte de Graaff, Sustainable Business Management, April 2022.

Mark L. Frigo and Ray Whittington, SASB Metrics, Risk, and Sustainability, April 2020.

Shari Littan, Liv Watson, and Natalia Kaleta-Schraa, Financial and Sustainable Reporting Converge, January 2021.

Cristiano Busco, Giovanni Fiori, Mark L. Frigo, and Angelo Riccaboni, Sustainable Development Goals, September 2017.

Certificate
IMA Sustainability Business Practices Certificate™

Ariela Caglio, Ph.D., is an associate professor in the accounting department and director of the accounting knowledge area of the SDA Bocconi School of Management at Bocconi University. She can be reached at ariela.caglio@sdabocconi.it.

Paolo Quattrone, Ph.D., is a professor of accounting, governance, and society, and director of The Centre for the Analysis of Investment Risk at the Alliance Manchester Business School. He can be reached at paolo.quattrone@manchester.ac.uk.

Improving Leadership Development Efficacy

Professional leadership training platforms are bringing blended offerings and the most current technology to wherever learners are.

By Burak Malkoc, Ph.D., CMA, and Jeremy Berman

According to a 2019 Harvard Business Review article, 25% of leadership development programs yield positive results. This equates to a spend of $120 billion every year on ineffective leadership training, resulting in leaders lacking the necessary skills to execute their job duties. The impact can cascade through teams, potentially creating toxic work environments and dissatisfied employees. Arriving at a clear picture of what distinguishes the best platforms and offerings calls for a look back at professional development's origins in the broader scheme of human learning.

Leadership Training Models

In the 19th Century, German psychologist Hermann Ebbinghaus discovered the forgetting curve. According to his study, human beings can retain and recall 25% of the information they're exposed to in a 24-hour period. That retention diminishes over time, with only 10% of learning

retained within the first year. So, what does this mean for learning strategies and the efficacy of leadership development programs? The usage of learning models needs to be revisited.

Leadership styles. Leadership studies have evolved from trait-based analysis to value-centric leadership profiles. The purpose of current leadership research is to uncover the behaviors and values of those leaders who positively impact organizations. As seen through our extensive research, companies often select leaders with a particular style to fit their industry and corporate requirements. Some companies then invest time and effort to strengthen and further develop leadership capabilities.

However, as leadership development is still in the early stages of research application, learning and development practitioners most often follow an experience-based method to educate future leaders. In other words, the common solution is a stand-and-deliver, lecture-based event without any follow-up, learning model, or strategy for ongoing support. This approach rarely produces the intended results of organizational performance improvement. To ensure learning efficacy and to allow the programs' educators to teach adequate domains to develop new leaders, a learning model-based approach is needed.

Approach to leadership training. The nuanced requirements of an impactful leadership development program ladder up to a compelling experience. Education requires learning new behaviors, which is very challenging for most human beings. The automatic cost-benefit analysis system in the human mind evaluates every learning and change opportunity based on current and imminent problems. Is the lesson addressing or solving an existing challenge? Or is it more like an investment in potential opportunities in the near future? In both cases, the intrinsic motivation to learn is informed by the presence of real-life, concrete problems and seeking a novel approach to solve them.

Malcolm Knowles and Richard Feynman are two key researchers who discovered that adult learners are more likely to acquire new knowledge, continue their quest to learn, and even practice the learned behaviors if the teaching follows a certain structure. In 2016, Michael Beer, Magnus Finnström, and Derek Schrader said leaders and managers who go through leadership training programs acquire new behaviors but often can't sustain them. They theorized that leadership training programs' design, delivery, context, and consistency all play a significant role in solving this critical and longtime problem.

We have direct experience with high-efficacy results through their shared work with the leadership development platform Dream See Do (DSD). Currently, thought-leading training and coaching providers are utilizing the features of DSD as the backbone of their virtual and blended work for corporate training. In one such example, DSD client Goleman EI (a leader in providing expert training for employees and teams in emotional intelligence, or EQ) leverages platform and design support to activate its fully reimagined virtual and blended training experience. This approach is helping the company to transform leaders' self-awareness and EQ in practice, thereby having a profound impact on its businesses. This type of training model results in 450% better engagement than industry averages.

The Connection, Practice, and Reflection (CPR) model, as shown in Figure 1, requires leaders to connect with associates in an organization very well and lead by example to ensure high levels of participation, engagement, and motivation. The DSD learning model starts with a "connection" paradigm to set the tone of leadership development. DSD's learning platform is built to allow various forms of practice as well.

As the digital system is flexible to set and reset, learners can adapt the "practice" to their learning styles or the benchmark best-in-class practices. This feature is valuable because learners prefer to choose how they learn.

"Reflection" is the last element of DSD's learning flywheel, which supports both learning efficacy and the establishment of deep connections among associates. Recent neuroscientific research supports the value of "reflection" for learning purposes. "Synaptic plasticity" is the term describing the creation of new synapses in the brain through social interactions and discussion

FIGURE 1: CPR LEARNING MODEL

CPR Model
Enabling transformative blended and virtual training and coaching by
activating connection, practice, and reflection

The CPR Learning Flywheel

Connect

Deeper Learning that Sticks!

Reflect

Practice
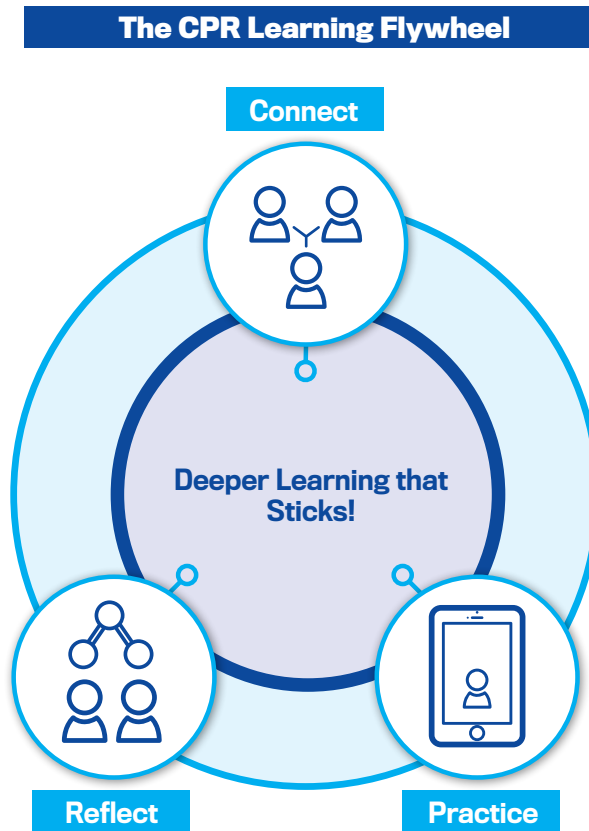
of specific topics. This phenomenon is unique and valuable in an online and hybrid learning platform because a simple process of thinking and listening to others significantly increases new learnings.

As highlighted earlier, technology can be leveraged to vastly improve the efficacy and return on investment (ROI) of blended leadership training and coaching. There are other platforms on the market that have different modalities for learning, such as LinkedIn Learning's passive but massive volume of content and innovative business simulation companies like BTS, that simulate real-life experiences as part of the training process. With depth and breadth of options, the challenging part is threefold: (1) determining how to select the right learning platform, (2) identifying the best methodology and approach for deploying this system, and (3) tying learning goals to company strategy and leadership growth objectives.

Currently, vendors supplying learning management systems and learning experience platforms are abundant, and each company is specialized in specific ways to serve their clients. In an ideal state, these systems should be designed and built to adapt to clients' training needs to create an engaging learning environment that keeps employees excited to acquire the necessary skills to operate efficiently and creatively (for more on this, see *Relational Leading* by Lone Hersted and Kenneth J. Gergen). The best-in-class corporate learning platforms on the market prioritize innovation, motivation, and product excellence over sales, user volume, and profits.

Some systems are clunky and awkward to use or have very limited capabilities. They lack the features necessary to create an engaging learning experience that will motivate participants

during their learning journeys. They may also lack the essential elements for learning that sticks: connection, practice, and reflection. The book *Make It Stick* emphasizes the importance of adequate practice by inquiring about what's been learned. To improve learning outcomes and ROI, current platforms would benefit from modern tools for group and peer interaction, coaching sessions, mutual support, and facilitated learning.

Many well-known learning platforms offer automation and intelligent reporting capabilities to save time and prove ROI. As departments such as human resources (HR) transform to become more strategic and more Millennials become managers and leaders, the demand for impactful personal growth and professional development opportunities is increasing. Learning and development and HR departments need easy access to a range of high-quality leadership training and coaching to ensure better performance, employee retention, and engagement. The next generation of learning platforms has started to emerge with both learning-engagement features and rich automation and reporting.

Enter: Large Learning Models

With the recent proliferation of generative AI and large learning models (LLMs), technology will continue to play an important role in leadership development. As with the other functionalities mentioned previously, it will be critical that learning platforms employ the use of these newer AI-powered tools in a human-centered, ethical, and thoughtful manner. There are proven methods and approaches to deploy technology in powerful ways to enhance, concretize, and track dynamic leadership development experiences. Finance professionals can partner with HR team members to determine if the leadership development program that's been budgeted for will actually yield new behaviors.

Curriculum of leadership domains. For much of the 20th Century, the level of industry competition was a significant variable in the strategic analysis of a company and its performance projections. The incumbents competed to obtain more of the existing customers' business, while new entrants targeted that same customer base to get a foothold. This dynamism fueled various forms of innovation and drove many countries' economy to new heights. Most industries previously isolated to national territories before the 1990s became exposed to global companies after the end of the Cold War and the dissolution of the Union of Soviet Socialist Republics (USSR). Dyson, IKEA, and ING are some examples of European companies that penetrated U.S. consumer markets, and major American companies set up operations in China, India, and Southeast Asia.

Today, the share of S&P 500 companies' international operations accounts for 40% of their total revenue (see *S&P 500 2016: Global Sales*). This complex and challenging global landscape required many companies to train their senior leaders in rapidly changing global business practices and cultural differences crucial to conduct effective operations and to stay competitive in response to volatile, uncertain, complex, and ambiguous (VUCA) circumstances.

As international and local competition intensified drastically since that time, organizations developed different ways of innovating products, processes, and management techniques to sustain their market presence. In that context, leadership competencies became an even more vital piece of this formula, and companies had to begin to invest in managerial training and leadership development to energize the workforce and improve their innovative performance.

As innovation requires significant interactions among an organization's personnel, collaborative skills have become valuable for achieving a high level of employee ownership and engagement, which indirectly fuels innovation. However, innovation management is risky and complex because of unknown factors and uncertainties. It requires a significant amount of leadership skills to activate the potential human capital of an organization.

Additionally, innovation is no longer restricted to inside of the company but rather has shifted to more of an open-process form. Consequently, managers must acquire and develop capabilities to lead and influence other professionals from different companies and organizations. In one of our experiences, an organization invested several million dollars in upgrading its enterprise computer

system. Senior management was under pressure to increase profitability to the next level because of an increased asset base. The solution required advanced leadership skills to discover what service was valuable to customers, capturing data and metrics to monitor service performance and engaging customer-facing employees to deliver on the strategic plan's promise.

Learning Models for Value Creation

The ability to seize the opportunity and energize the workforce to accomplish a novel business outcome can be accomplished in the presence of impactful leadership practices. A comprehensive leadership curriculum that thoroughly understands strategy, social capital, and employee interactions is essential for value creation for all stakeholders.

During a leadership development consulting engagement with a British company, one of the authors of this article, Jeremy Berman, planned a hackathon with the company's renowned outdoor apparel client, REI. A hackathon is a short and engaging sprint during which teams conceive and prototype new product and service ideas. The goal of this particular experience was to help coach the leadership team on agile EQ practices while simultaneously getting them to connect more deeply with its core teams in a fun and motivating environment. During this hackathon, leadership and the core teams worked hand in hand to create mobile app prototypes for future product ideas.

All roles were a vital part of this process, especially the role of the finance team, which helped to determine the viability of these product ideas while directly seeing the ROI for the leadership development consulting that Berman and his team deployed. By creating a modern way for senior leaders and managers to more intimately connect with their teams, share ideas, and set expectations, leaders gained insights into their core employee needs while learning and practicing new skills on the fly. Reflection exercises were held for weeks after the event, and all of the outcomes were codified on the company's project management system.

In this context, a leadership team can learn and practice new soft skills in the flow of work while building tighter camaraderie with its core team members. For REI, all of this resulted in improved company morale and two product ideas being brought all the way through to production. Further, technology was effectively used as a central hub to store new strategies and blueprints for exercises in group practice and reflection.

Training and coaching platforms such as DSD are designed to deliver various leadership competencies in a range of experiential manners. The unique tools include industry, organizational, and individual assessments to build the right combinations of leadership development programs. Program delivery can be reviewed and assessed to ensure high-level efficacy and applicability. As you think about ways that your teams can engage in powerful and contextual leadership and management exercises, consider how your colleagues will choose the right type of program and the right technology to properly support that program. The latter will help you measure the ROI (both financial and behavioral) of a program when it's chosen thoughtfully.

Learning modalities: blended training. Previously, most leadership development programs and staff training courses have been delivered in-person, face-to-face in a group setting. Limiting development opportunities to this approach only will increasingly present significant challenges in the current work environment because of time constraints and logistical considerations.

Further, program developers no longer realistically expect employees to travel from various locations to convene for training, particularly when it's impractical, expensive, and unnecessary. Learning platforms have developed and grown to a level where blended learning can be delivered successfully. DSD and other platforms such as Thought Industries, for example, have experimented with blended training for several years and have observed significant improvements in learning.

Modern learning models afford the opportunity to allow self-learning and discovery that's truly engaging to introduce new material and content. Most adult learners have been exposed

to learning content through education or on-the-job experience. When the material being introduced is fairly new, it's productive to allow individuals to absorb it on their own during the initial steps of the learning process. This is also good practice, as leaders need to acquire the habit of self-development.

The material must be delivered in a compelling manner and tied to the accounting and finance leader's work stream and strategic objectives. We have seen that automatic supportive reminders or notifications through your learning platform of choice, in addition to having ways to connect, practice, and reflect, are key elements of a successful program.

The second crucial point is that the content should be delivered in a thoughtful cadence. According to researchers on learning efficacy, recall strength (the ability to remember new information) increases significantly when new learnings are spaced out. Allowing hours and days in between learning sessions increases retention and, therefore, the formation of new cognition. Of course, all new learnings must be further explored and practiced in various ways for cognition to occur fully in the mind.

The most recent empirical experiment conducted on the effect of spacing out learning revealed very practical and useful information. In 2008, University of California San Diego researchers devised an experiment with more than 1,000 test subjects. Researchers inquired about two unknowns: time to test and first study interval.

As shown in Table 1, if learners need to explore what they've learned, the optimum learning interval is one to two days. If it's one month, then weekly studies are more useful. Using this type of knowledge, we recommend against cramming more complex leadership competencies exclusively into onetime, in-person seminars or forcing too much material too quickly on anyone. Leveraging a range of modalities across a well-planned, longitudinal experience over time will be better received and net stronger outcomes for deeper dives into learning.

TABLE 1: STUDY INTERVAL TIMES FOR EFFECTIVE RECALL (MODIFIED VERSION)

Time to Test	First Study Interval
1 week	1-2 days
1 month	1 week

Benchmark before Launching an Initiative

As a finance professional, you're likely accustomed to benchmarking your company's performance before you approve any expenditures. The same discretion can apply to leadership development program investment. A simple way to begin to evaluate the ROI of these essential expenditures is to look at a few key metrics that can be correlated with effective leadership and managerial development.

For example, the number of new initiatives that were implemented after the completion of the program would be an excellent place to start. Then you can determine how these new initiatives are expected to increase revenue or save operating costs. It's critical to isolate the new initiatives that were formulated after acquiring the most recent leadership competencies.

The need for comprehensive leadership skills in the workplace is more prevalent than ever, as are the challenges of developing these skills via virtual training. We recommend that senior executives and future leaders study the DSD and CPR learning models and the corresponding digital learning platforms. They're rooted in feedback and insights from a range of industries and disciplines, including accounting and finance professionals.

Holistic leadership competencies are crucial to deploy well-orchestrated strategy-execution initiatives. As a finance professional, you have the responsibility to steer your organization in the right direction, which certainly includes this significant opportunity to influence the leadership and management development investment.

Table 2 provides a starting point with factors to apply in evaluating a leadership development program. What is your favorite approach to leading an initiative of change at your company? Who are the critical partners whose support you need to obtain? What do you need to do to bring this topic to the forefront of the management team's priorities? The best next step is to keep asking these critical questions.

TABLE 2: LEADERSHIP DEVELOPMENT EVALUATION TEMPLATE

#	Evaluation Criteria	Weight	Provider 1		Provider 2	
			Y/N	Score	Y/N	Score
1	Leadership style: appropriate for industry and corporate values	15.0%	Y	15.0%	Y	15.0%
2	Learning model: platform supporting adult learning	10.0%	Y	10.0%	N	0.0%
3	Connectivity: supporting interpersonal development	12.5%	Y	12.5%	N	0.0%
4	Practice: spaced and recall strength-centric	10.0%	Y	10.0%	Y	10.0%
5	Reflect: tools and drills creating synaptic plasticity	12.5%	Y	12.5%	Y	12.5%
6	Comprehensive curriculum	20.0%	Y	20.0%	N	0.0%
7	Learning modality (blended)	20.0%	Y	20.0%	N	0.0%
	Total Score	**100.0%**		**100.0%**		**37.5%**

Burak Malkoc, Ph.D., CMA, is principal advisor of Pegasus Improvement Tech. You can reach him at malkoc1188@gmail.com.

Jeremy Berman is CEO of Dream See Do. He can be reached at jeremy@dreamseedo.com.

The Shortcut to an Accounting Shortage Solution

Changes companies make today to invest in technology and professional development can secure sustained success tomorrow.

By Neil Taurins

The accounting shortage is here and could worsen in the future with the perfect storm of an aging workforce nearing retirement age and fewer students pursuing degrees in accounting. But your company can take a shortcut today to weather the storm and work toward a solution.

More than 300,000 U.S. accountants and auditors have left their jobs in the past two years, with both young (25 to 34) and midcareer (45 to 54) professionals departing in high numbers starting in 2019, according to U.S. Bureau of Labor Statistics Data as reported by *The Wall Street Journal*. We're already seeing the effects today. Some 600 U.S. publicly listed companies disclosed a material weakness related to personnel in accounting or information technology during the second quarter of 2023, a 40.6% increase from the same period in 2019, according to *The Wall Street Journal*.

So, what can your company do today to fight the accountant shortage? Solving the problem starts with ensuring your team has the right technology and then investing in professional

development, team training, and advancement opportunities. Solving the shortage on a company level begins with working to change your culture and evaluating how your current tech is helping (or hurting) efficiency.

Invest in Technology That Drives Efficiency

Improving and investing in new technology seems like a simple solution, but it's one that's frequently overlooked. According to MIP Fund Accounting's 2023 Trends and Insights Report, 61% of 416 respondents said their current technology was time-consuming. This builds on results from a previous survey that showed nearly half of 400 respondents utilized six different digital tools to do their jobs, with 23% of professionals relying on eight digital tools. Disparate tools decreased efficiency, with 78% of respondents spending at least a quarter of their workday managing multiple systems.

Inefficient, dated technology is limiting finance and accounting team success and efficiency. Your team spends about 520 hours (about three weeks a year, or 10 hours each week) navigating between the different tools required to complete finance jobs based on the statistics above.

Ensuring that your company's technology meets your current team needs is critical to retaining talent. According to the 2022 Wolters Kluwer Annual Accounting Industry Survey Report, improving operational workflows, increasing employee effectiveness, and investing in new technologies that support remote work were three vital strategic goals that companies were targeting in 2023.

Furthermore, the survey highlighted several different benefits of new technology:

- 71% said that technology is helping to reduce the number of hours worked per client and by tax return.
- 73% said technology is helping to improve average client response time, and 72% said technology is helping them recruit and retain clients.
- 62% said technology is helping them add new services.

When your company's technology solves client issues, it's solving organizational pain points. Yet, despite the benefits of technology, fewer than 20% of companies felt they were using their technology to the fullest potential, according to Wolters Kluwer. Consider whether your company is working as efficiently as possible and if your technology is helping the process or hindering it. Even a shift to cloud-based systems can have a transformative effect on your organizational workflow (see "Examining Cloud-Based Software").

A pivotal question to examine is whether your technology utilizes workflow automation.

Automation helps your team work smarter and more efficiently. Studies have shown that 95% of IT and engineering leaders say automation improves an organization's operations and communication between team members. Automating repetitive administrative manual tasks frees up your team to do the work that matters and makes a difference to your company. In fact, more organizations are making workflow automation a priority. According to McKinsey, 66% of companies have begun introducing software to automate workflows since 2020.

When your team manually completes tasks, it's creating inefficiency and adding to team dissatisfaction. Manual workflows make it difficult for your company to scale and grow. Plus, they increase compliance issues by elevating the risk of human error, creating inefficiencies based on employee variation, and reducing visibility into your company as a whole.

So, what can your company do to ensure it's using its technology to the fullest potential and supporting its employees along the way?

1. Ask for and encourage candid feedback from your team. Too often, companies stick with what's working because it's worked before. Just because you're using the technology doesn't mean it's the best option available today. Ask for this feedback from team members with various years of experience. Consider asking your team what they like about your current software, what pain points they have, what features could be added that would make their jobs easier, and other similar questions.

2. Aggregate key takeaways from the feedback. After compiling all the feedback from your team, common themes will emerge and become more apparent. The challenges, in particular, will influence your go-forward plan.

3. Examine your technology's purpose. Technology bloat is a common occurrence that occurs in businesses worldwide. Too often, companies use multiple pieces of software with numerous repetitive functions. Features overlap and even repeat with varying degrees of effectiveness. So, how do you figure out which technology to keep and which to replace? Look for technology that embraces automation and allows your team more time for informed decision making.

Your technology must improve data collection and evaluation and create insights faster. Using technology from multiple providers introduces more opportunities for human error and slows down the data aggregation process.

Condensing the number of providers your company works with centralizes the data into one system that can be leveraged across a company's technological system, allowing for more insightful discussions internally and with stakeholders without having to navigate multiple programs and reducing errors associated with manual operations.

4. Determine a go-forward plan. After your evaluation process, it's time to figure out what your go-forward plan will be. Here, you'll have your company's technology mapped out, along with the feedback from your team, and you'll decide what your next steps are going to be. Whether that means sunsetting inefficient systems or looking for new vendors entirely, this process will take time, but the benefits are undeniable. Sunsetting dated systems saves costs related to technology upkeep and improves efficiency by eliminating siloed, single-purpose systems.

There isn't going to be a magic bullet that solves all your problems, but by working with and keeping your team members informed during the process, you'll be able to identify the right systems to support your employees. For more details, see "What's in a Go-Forward Plan?"

Your team members need to play a central role in the transition process because they'll handle the day-to-day operations. Partner with a vendor that works to support the transition and ensures that your team is supported in its day-to-day efforts.

Your go-forward plan will have multiple moving parts, so it's crucial that leadership regularly communicates updates and keeps the entire company on the same page as you advance.

If you're seeking out new software, consider incorporating team members who were involved in the plan development process to sit in and listen to the pitches. Again, there's no one solution that will solve all the pain points brought to light, but if new software would alleviate some of the

most recurring pain points, your team and your go-forward plan will make it abundantly clear.

5. Support and train staff. If you're considering moving to a new vendor or system, ensure your vendor supports your team as it starts working with the technology. Work with a vendor that has the training to support your employees even after implementation. These training programs will help your team get up to speed on the new software and will be rich with professional development opportunities.

Continue to collect your team's feedback, take the feedback to your vendor, and see if they have solutions. The best partners work to support an organization from implementation to several years down the road. Your success is your vendor's success, and it's essential always to remember that. Plus, the feedback your team produces is invaluable to vendors. If you're experiencing an issue with the technology, it's likely another user has the same experience.

Adopting data-driven technology that embraces automation and supports your company's continuous professional development training is essential to retain talent and attract new finance and accounting team members to join. Still, it's only half the shortcut.

The Training That Moves Your Team Forward

Investing in professional development for all employees is key to long-term success. Hold team training opportunities and regularly share opportunities for advancement.

New finance and accounting team members entering the field must have the appropriate training to succeed. According to a Dell Technologies survey of 15,000-plus Generation Z respondents entering the workforce, 44% felt both schools and businesses need to work together to bridge the digital skills gap, and more than one-third of respondents felt that their school education didn't prepare them with the technology skills needed for their planned career with 56% having received either very basic or no digital skills training.

If your team doesn't feel supported, they'll find an organization that will help them succeed. According to the Dell survey, 36% of Gen Z respondents plan to keep acquiring new digital skills to ensure continuous employment throughout their career.

Examine your company's training and professional development options. Your company can find ways to support its team members. Establishing a mentorship program that pairs new finance and accounting team members with more experienced team members is a simple way to help new team members and give seasoned finance and accounting team members a platform to share their skills. Keep these sessions small, limit the number of mentees to each mentor, and consider an incentive to encourage mentor participation.

Also, consider whether you can implement a new hire support program. Joining a company and getting used to its culture can be intimidating, and while onboarding helps new finance and

<div>

What's in a Go-Forward Plan?

- Start your go-forward plan with a review of your company's current software, including the following questions:
  - What are the benefits?
  - What are the drawbacks?
  - Does the vendor still support the software?
  - Is the software regularly updated?
  - Does the software feature cross-compatibility?
- Incorporate and condense feedback, noting pain points and developing a wish list of features.
- Examine your technology and develop a plan to replace, condense, or upgrade software, weighing collected feedback.
- Begin searching for technology vendors. Consider timelines, cost, and cross-compatibility.

Though there's no one-size-fits-all technology, through continued training and upskilling, you can support your team through the implementation process.

</div>

accounting team members get over initial fears, it can take time before a new hire is comfortable. Creating a program for new finance and accounting team members to get to know each other and socialize is one way to ensure you're creating a healthy culture in your organization.

Another critical component of the accountant shortage is a lack of advancement opportunities. Accounting has a negative stigma associated with low starting salaries and the hurdles related to advancement. *The Wall Street Journal* noted accountants had a starting salary of $66,504 in 2021 and that while median salaries have increased 14% from 2010 to 2021, that lags drastically behind median starting salaries for similar positions, like in data science and others where median starting pay has increased by 30% to 40%.

Your leadership team has the opportunity to be the most prominent advocate for your company's advancement. Too often, executives and senior leaders downplay team accomplishments and don't go out of their way to highlight the heights young finance and accounting team members can reach if they stay with a company. Be a cheerleader for your organization, develop a program for young finance and accounting team members, and support their growth opportunities.

Plus, remember your current team members too. While attracting talent is important, retaining the talent you have under your roof today is equally important. Develop programs to support employees and seek feedback on your company's culture. It's easy to rest on your laurels, but the best companies are continually evolving and improving. Just because your company has had a culture that's existed for 20, 40, or even 60 years doesn't mean you should stop adapting to the times. A progressive culture that evolves to meet the needs of its team members contributes to workplace satisfaction.

When it comes to solving the accounting shortage, your company must highlight its training and career progression opportunities and emerging trends. Whether attracting new finance and accounting team members or recognizing the contributions of someone who has been with you for decades, it's essential to remember that people are the reason behind your company's success.

Getting to the Finish Line Together

Finance and accounting team members could feel the effects of the accountant shortage for years to come, but there's potential to come out of this transformed on the other end. While the problem may worsen, your company can't afford to ignore the pressing need for technology investment and continuous training and professional development. See "How to Approach Implementation" for some initial considerations for getting started.

Together, companies, professional organizations, and even colleges and universities will weather the next few years, and the industry as a whole will come out of this stronger. Efforts to combat the shortage are underway and already creating meaningful change. The collective efforts around improving student interest in accounting are also something to be lauded.

IMA® (Institute of Management Accountants) President and CEO Mike DePrisco; Global Board

---

How to Approach Implementation

Vendor support for your team should be the determining factor if you partner with a vendor. Any piece of software has a learning curve and can only be as effective as the training to get used to it. The more training opportunities that are available, the easier it is to implement new technology and support your team through upskilling. Elements to consider:

● Does the vendor offer training around the product?
● How current is the training, and how regularly is it updated?
● Does the training come in multiple formats like free classes, paid subscriptions, and online/in-person?
● Does the training support continuing professional education credits?
● What sort of support options does the provider feature?

of Directors Chair Rich Brady; Diversity, Equity, and Inclusion (DE&I) Committee Chair Rinku Bhattacharya; and Volunteer Leadership Committee Chair Roopa Venkatesh noted that "IMA is taking strategic actions to address the talent pipeline shortage in the accounting profession in a holistic manner that builds value and promotes trust in the profession."

To that end, IMA published *Talent Retention in the U.S. Accounting and Finance Profession* and *Talent Retention in the Asia–Pacific Accounting and Finance Profession* in October 2023. Further, in a crucial step to pivoting to growth areas in the industry in order to attract new talent to the profession, in collaboration with the Committee of Sponsoring Organizations of the Treadway Commission (COSO), IMA published a report in March 2023, in part to create awareness about how accountants can play a critical role in sustainability reporting.

DE&I efforts are equally paramount to drawing new talent across the profession. IMA's research and thought leadership, in collaboration with IMA's DE&I Committee, released the Diversifying Global Accounting Talent research series, where IMA partnered with the International Federation of Accountants, CalCPA, and more than 60 accounting associations to analyze the state of DE&I in the global accountancy and finance profession.

As we continue to work to prevent an accountant shortage, we'll likely continue to see companies step up to meet challenges around hiring and retention and share the best continuous practices around training and advancement. There will surely be innovation in the field to address the shortage.

A continuously growing trend over the last few years is hiring nonaccountants for accounting positions and supporting them through training programs, according to the Society for Human Resource Management. SHRM spoke with Yvonne Hinson, CEO of the American Accounting Association, who highlighted the trend of hiring engineers and other similar majors, to work for the company. It's another strategy to improve innovation in the field and addresses areas that could represent weaknesses for your company.

The shortcut to solving the accountant shortage is a larger issue than just one company can solve, but the foundational changes companies take today to invest in technology and ongoing professional development can position them for continuous, sustained success tomorrow.

Neil Taurins is the general manager of nonprofit solutions at MIP Fund Accounting by Community Brands. He can be reached at neil.taurins@communitybrands.com.
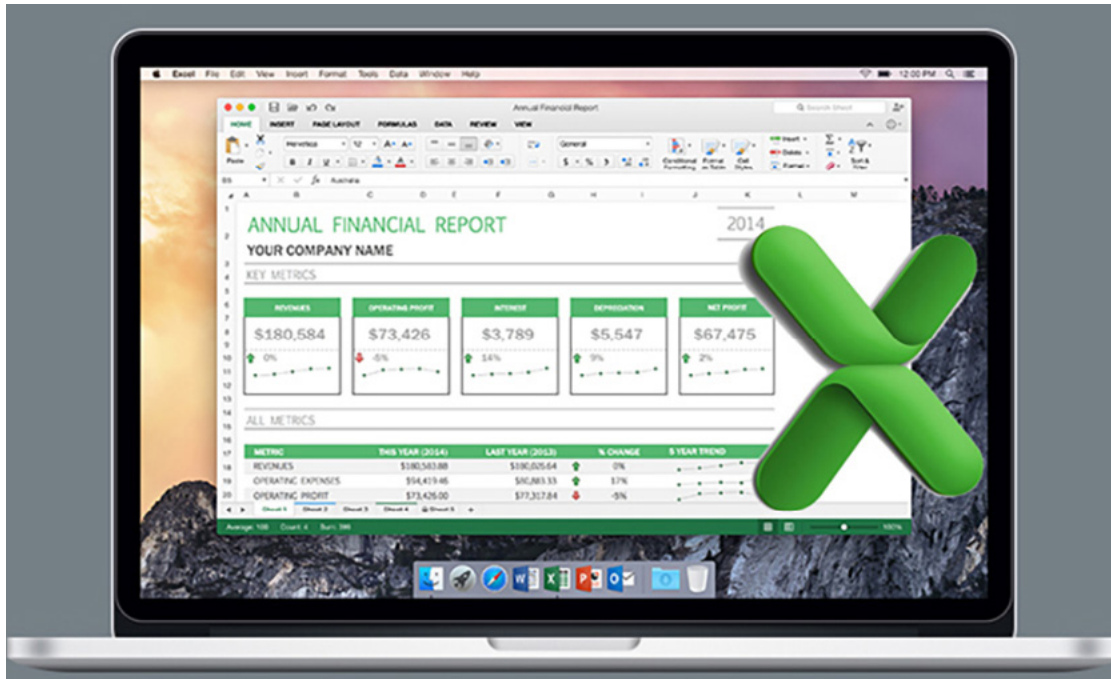
Python Inside of Excel

Microsoft brings support for Python into Excel, adding the power of the programming language within the familiar Excel environment.

By Bill Jelen

The computing language Python appeared on my radar 10 years ago. I was having a great conversation with a college student who loved Excel. I started asking what class at school taught her about Excel and how she used Excel. But soon, she started telling me about an analytics course that used Python and how she could do so much more with Python than she could do in Excel.

That day, back in 2013, I bought a book on Python. I read through the examples, such as a customer segmentation process called k–means clustering, that seemed very powerful. But I made no progress with Python because I couldn't follow the steps to get it installed on my computer. Any install process that starts with "Open a command prompt with administrative rights in Windows" is an immediate barrier to entry. The steps to be followed were something along the lines of "Download and install Python. Install Jupyter Notebook so you have a place to edit and

run code." Then it directed me to install a dizzying array of different open-source libraries—all from a command prompt. This was all before I could attempt my first line of Python code. It was all too complicated. The Python book collected dust. Eventually, the book was donated to a thrift store.

Microsoft Removes Many Barriers to Entry

To use today's preview of Python in Excel, you need to be running Microsoft 365 and join the Microsoft Insiders program at the beta level. Restart Excel, and you'll see a large Insert Python icon between the Function Library and the Name Manager (see Figure 1).

To start running Python, you can use the Insert Python icon, simply type "=PY(" or press Ctrl+Alt+Shift+P. After any of these actions, the Excel Formula Bar changes to a Python Editor. Paste in some Python code from the web or ChatGPT. A drop-down icon to the left of the Formula Bar offers a choice to return the Python results as Excel Values or as a Python object that you can reuse in later cells.
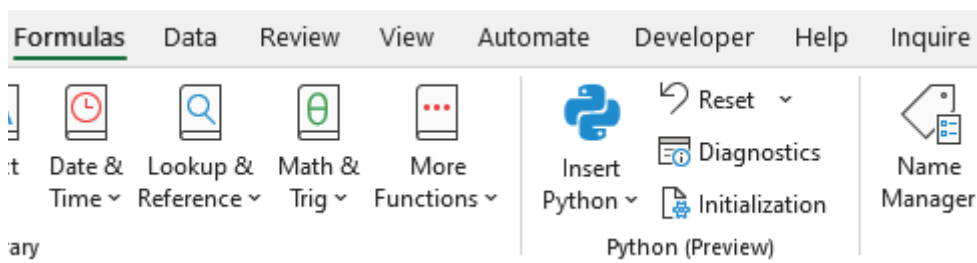

Figure 1

A Simple "Hello World" Example of Python in Excel

Open any spreadsheet that has some existing Excel data, including at least one column of numbers.

Select a blank cell to the right of your data.

Press Ctrl+Alt+Shift+P to change the Excel formula bar to a Python editor.

Most people keep their Excel formula bar set to display just one line of the formula. Use the "V" icon on the right side of the formula bar to expand the formula bar. Hover the mouse on the thin gray bar just below the formula bar to reveal a vertical two-headed arrow. Click and drag so you can see four to six lines in the formula bar.

A table in Python is called a "data frame." Most examples on the internet store the table in a variable called "df," which is short for data frame. Type "df=" to get your Excel data into Python. Using your mouse, click the top-left corner cell of your data. Use either the mouse or Ctrl+* or Ctrl+Shift+Down arrow, Right arrow to select the Excel data. The Python editor will create the following line of code:

df=xl("A1:C1262", headers=True)

In this code, the XL function is a new function designed to pass Excel data to Python. The headers=True is necessary to tell Python that the first row of your data set contains descriptive headers instead of numbers.

In the Python version of the Excel formula bar, use Enter to go to a new line and Ctrl+Enter to accept the formula. Press Enter to go to the second line of your code. Type df.describe(). Use the drop-down arrow to the left of the formula bar and choose to return the results as an Excel Value (see Figure 2).

Press Ctrl+Enter to run your code.

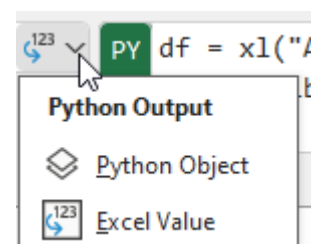After a short delay, Python returns descriptive statistics about your data, as shown in Figure 3.
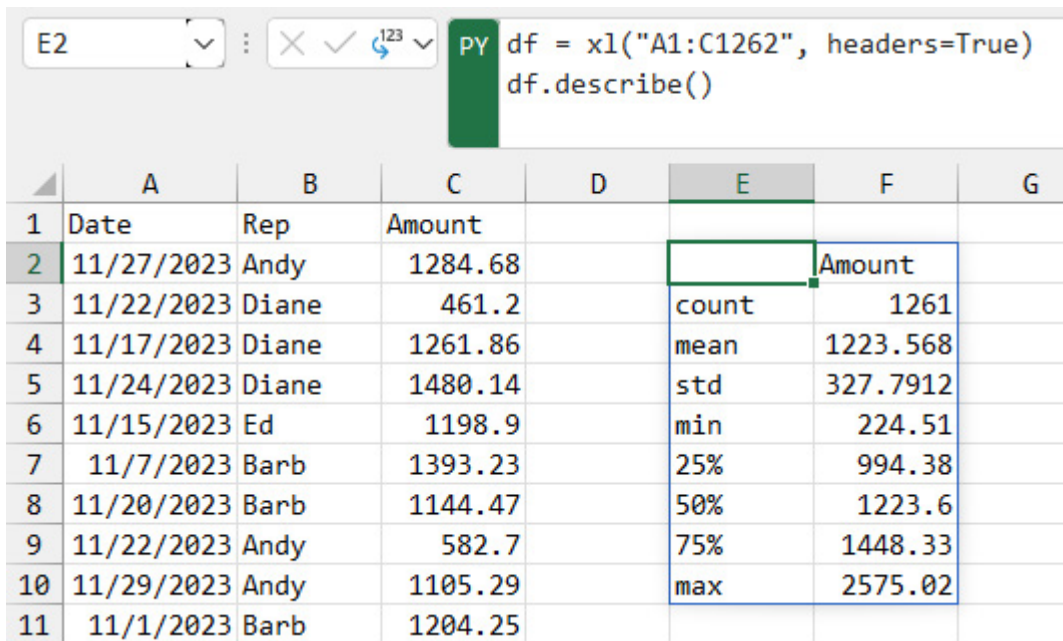

Figure 2

```
E2          PY  df = xl("A1:C1262", headers=True)
                df.describe()
```

▲	A	B	C	D	E	F	G
1	Date	Rep	Amount			Amount	
2	11/27/2023	Andy	1284.68		count	1261	
3	11/22/2023	Diane	461.2		mean	1223.568	
4	11/17/2023	Diane	1261.86		std	327.7912	
5	11/24/2023	Diane	1480.14		min	224.51	
6	11/15/2023	Ed	1198.9		25%	994.38	
7	11/7/2023	Barb	1393.23		50%	1223.6	
8	11/20/2023	Barb	1144.47		75%	1448.33	
9	11/22/2023	Andy	582.7		max	2575.02	
10	11/29/2023	Andy	1105.29				
11	11/1/2023	Barb	1204.25				

Figure 3

This is a simple example that could easily be replicated with a handful of Excel functions. The important concept here is that you were able to run your first Python script without ever leaving Excel. Behind the scenes, Excel set up an environment with all of the libraries shown in Figure 4 already loaded. As you copy code from ChatGPT or the internet, you can safely eliminate any line that's already shown in Figure 4.

Actually, the code in Figure 4 might change from time to time. You can see the current initialization code by using the Initialization icon shown back in Figure 1.


```
Initialization

# The following import statements are pre-loaded.
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import statsmodels as sm
import seaborn as sns
import excel
from excel import client_timezone, client_locale
import warnings

warnings.simplefilter('ignore')

# Set default conversions for the xl() function.
excel.set_xl_scalar_conversion(excel.convert_to_scalar)
excel.set_xl_array_conversion(excel.convert_to_dataframe)
```

Figure 4

An Advanced Customer Segmentation Example in Python

When I first read the Python book back in 2013, I was intrigued by the process called k-means clustering. You start with a data set that shows all of the items purchased by all of your customers. Your goal is to find clusters of similar customers so you can send them a similar marketing offer. Python uses machine learning to group customers into k-clusters with similar buying patterns.

One simple example is students at a middle school dance. If you plotted the location of each student in the gym, the computer would be able to identify a cluster of boys on one side of the gym and a cluster of girls on the other side of the gym. Actually, k-means will simply identify that there's a cluster here and another cluster there. It will be up to you to figure out what each cluster has in common. If you ran the k-means process again, but this time asking for 10 clusters, you might find cliques, such as the football players here and the chess club members over there.

Another example is from a big-box retailer. If it can identify expectant mothers from customer purchases, it can develop a relationship with the mom-to-be, as she's going to be needing a crib, stroller, and a lot of diapers. Find all the customers who are buying folic acid and have k-means

look at all of the other purchases, and a cluster of expectant mothers will become clear.

As for me, I sell books about Excel, Visual Basic for Applications (VBA), Power Query, and Power BI. If I have a new book coming out about Power BI, I'd want to send a targeted email to customers who have shown an interest in Power BI in the past.

For my first experiment with k-means, I used 100 random customers with scores along an X and Y dimension. I guessed that there should be five clusters of customers in my database. Here's a simplified explanation of the k-means process: The k-means algorithm randomly draws five cluster centers. It measures the distance from each cluster center to the nearest customer. The goal is to move the cluster centers around in order to minimize the sum of squares of the distance from the cluster center to the customers within that cluster. Python will run the algorithm again and again until it arrives at the smallest sum of squares.

Any time I start thinking about building this routine into Excel, my head starts spinning as I consider the VBA or circular reference formulas required.

Figure 5 shows the Python code that I mostly adapted from examples on the internet or by asking ChatGPT. It's five basic steps: (1) Import the library that includes the k-means algorithm; (2) identify my Excel data using the xl() function; (3) include two lines to perform k-means; (4) most importantly, add a new column to my Excel data that identifies which cluster number each customer belongs to; and (5) chart the results.

Figure 5

The code from Figure 5 is entered as a formula in cell D2. This code returns an image of the chart showing the results of the k-means clustering, as shown in Figure 6. Each group of customers is in a different color, and the center of the five cluster centers is drawn in red.
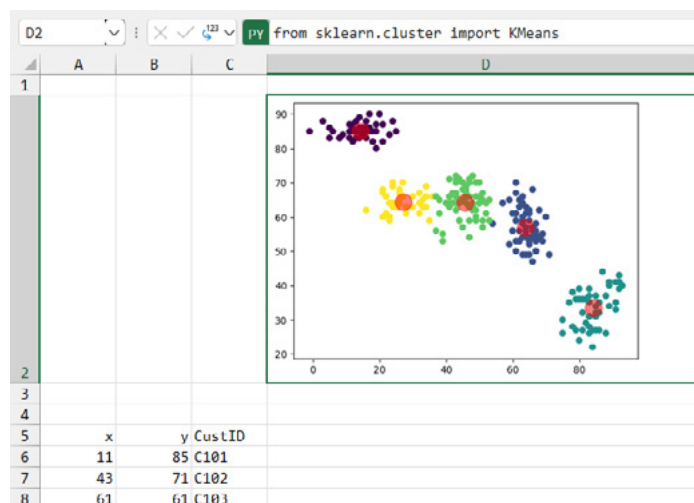

Figure 6

If I edit the code in D2 to use three clusters instead of five, the chart will update with a new assignment of clusters, as shown in Figure 7. In this case, the center of the teal cluster in the top left is in between two obvious clusters of customers. It looks like five clusters is better than three clusters.

However, another edit of the code to look for eight clusters and the algorithm suggests that the cluster in the lower right could possibly be two distinct clusters, as shown in Figure 8.

Adapting This K-Means Example to Real-Life Data

The example above demonstrates a simple customer segmentation process with 100 customers and their purchases of two products. The chart looks great. But what do you do with this? And how are you supposed to translate your customer purchase information into the X and Y values? I started with a download of Customer ID, Product ID, and Revenue. Using an XLOOKUP table, I classified each product as belonging to one of four categories. I used a query using the Get & Transform tools (Power Query) on the Data tab in Excel to build a table showing Customer ID and then four columns of revenue, one for each product category. This table is shown in columns A:F of Figure 9. (Column B, with the actual customer names, is hidden in the screenshot.) Rather than editing the number of clusters, I built a small pivot table and a slicer so I could easily choose a number of clusters. The result of the slicer is out of view, in cell W11.

Notice how Python in Excel allows me to integrate my existing knowledge of Power Query and Pivot Tables in Excel to do familiar tasks, and then I can call Python for the heavy-lifting portions of the process.

The code shown in Figure 9 doesn't try to build charts in four dimensions. Instead, the code simply adds a new column for Cluster Number to the right of the original data and then returns
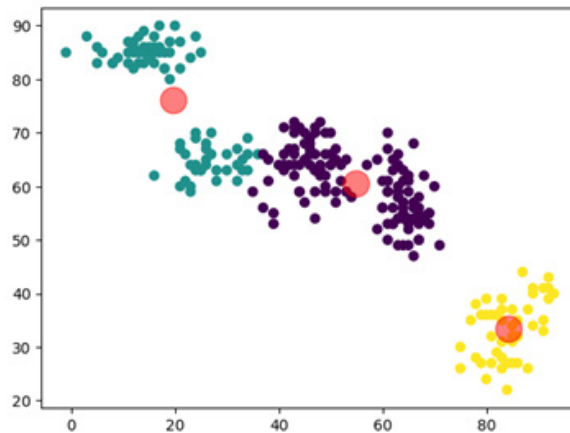

Figure 7

Figure 8

```python
from sklearn.cluster import KMeans
df=xl("Summary[#All]", headers=True)
cluster_count = xl("W11")

df_cluster = df[['XL', 'PBI', 'PQ', 'VBA']]
kmeans = KMeans(n_clusters=cluster_count, n_init=10)
kmeans.fit(df_cluster)

# Add the Cluster Label back to df
df["Cluster"] = kmeans.labels_
df
```

CustID	XL	PBI	PQ	VBA
1	82.82	76.83	0.00	19.95
2	7.99	0.00	0.00	0.00
3	60.87	0.00	22.98	0.00
4	28.97	0.00	17.99	0.00
5	9.99	0.00	0.00	0.00
6	80.39	9.99	14.95	11.34
7	9.99	0.00	0.00	0.00
8	9.99	0.00	0.00	0.00
9	9.99	0.00	0.00	0.00
10	13.99	3.00	3.00	0.00

Clusters

2	3	4
5	6	7
8	9	10

CustID	XL	PBI	PQ	VBA	Cluster
1	82.82	76.83	0	19.95	2
2	7.99	0	0	0	0
3	60.87	0	22.98	0	0
4	28.97	0	17.99	0	0
5	9.99	0	0	0	0
6	80.385	9.99	14.95	11.335	2
7	9.99	0	0	0	0
8	9.99	0	0	0	0
9	9.99	0	0	0	0

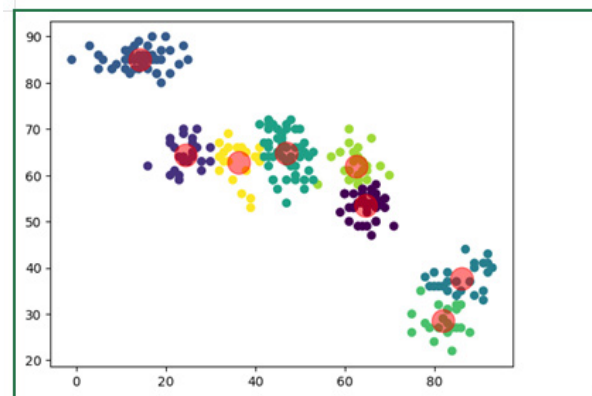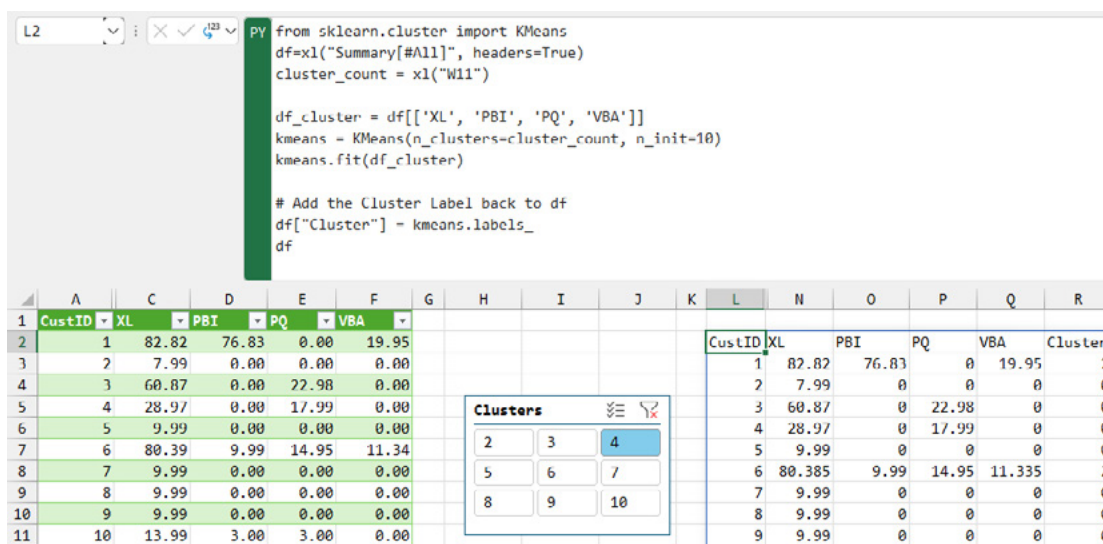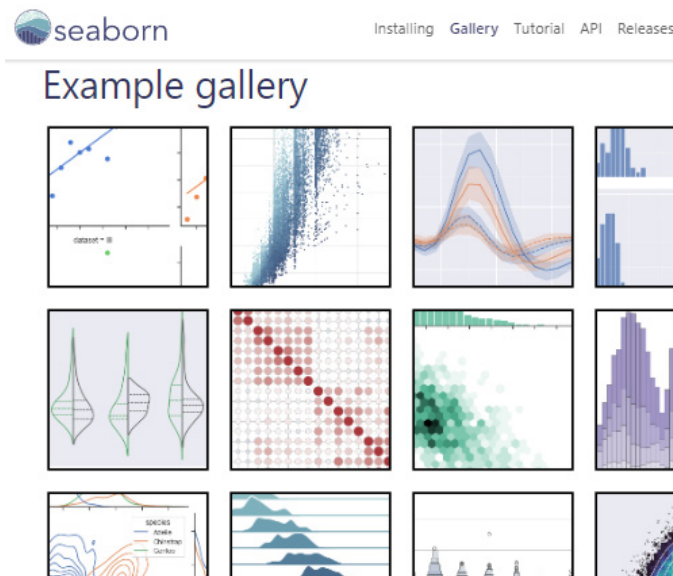*Figure 9*

the data frame to Excel. There are more than 18,000 customers in my database, and the k-means algorithm runs in under 10 seconds. It's an amazing second attempt at writing Python.

This is just one powerful example showing just one algorithm available from just one library designed for Python. While Excel loads the five popular Python libraries shown in Figure 4, you can import other libraries such as:

● Astropy for astronomy
● Beautifulsoup4 for screen scraping
● Gensim for natural language processing
● Matplotlib and Seaborn for charting

The complete set of supported libraries is here.

Perform a Google search for Seaborn gallery, and you'll see 49 new chart types that aren't available in Excel. A subset of those charts is shown in Figure 10. Click on any chart in the gallery, and simple Python code is presented.

Figure 10

Bill Jelen is the host of MrExcel.com and the author of 67 books about Excel. He helped create IMA's Excel courses on data analytics and the IMA Excel 365: Tips in Ten series of microlearning courses. Send questions for future articles to IMA@MrExcel.com.

Accounting Digital Transformation

As the ERP landscape evolves, organizations can implement a digital transformation that accounts for changing business needs.

By Tatyana Corban, CPA, PMP, Prosci CCP, and Jun Liu, CMA, CSCA, PMP, Prosci CCP

Organizations are adapting to rapidly changing economic, social, regulatory, and business environments by bringing new capabilities through digital transformations. Digital transformations are affecting many parts of organizations, including the accounting and finance domains. For finance leaders, there's a very high probability of involvement in defining and leading digital transformations related to finance within an organization.

Often this calls for evaluation and development of solutions to address new business and financial regulatory requirements, reduce costs, and streamline processes. But what are the best practices in creating and implementing modern system architecture, including enterprise resource planning (ERP) systems?

Legacy systems often can't accommodate current requirements and lack modern capabilities. An ERP upgrade or change is often a foundational requirement. These changes may require

significant money and time investment, and they might not provide 100% of the required capabilities for flexibility and complexity. Other business software could integrate with ERP and become part of the solution.

For the most successful and effective digital transformation, it's important for an organization to evaluate digital assets and capabilities holistically, document current and future operating models, and capture and prioritize all business requirements, capabilities, and processes.

Digital Transformation Best Practices

The best practice in approaching digital transformation is to set digital strategy first, then design and implement the platform system architecture. This "product and platform" approach is recommended by McKinsey. The following steps guide this process:

1. Define and understand your organization's strategic objectives.
2. Identify what business capabilities are essential for organizational success.
3. Identify your current operating model, capabilities, architecture, and processes.
4. Identify the desired future operating model and business processes.
5. Identify gaps between the current and the desired state.
6. Evaluate and propose new systems and/or processes.
7. Document new proposed system architecture and outcomes.

Once you receive approval for the timeline and budget, it's important to complete the full implementation with a sense of urgency (on time and on budget) while evaluating the solutions and adjusting where needed.

Business Needs

A new ERP, a major upgrade (e.g., migrating data and applications from an on-premises server to the cloud), or a supporting integrated system may be the right answer if the current systems are any of the following:

1. Outdated or inefficient
2. Unable to meet growing operations (scalability issues) leading to a loss of customers, market share, and/or profitability
3. Not meeting security, compliance, and regulatory requirements
4. No longer supported by vendors
5. Escalating system maintenance costs
6. Unable to integrate with modern technological advancements (e.g., AI)

You may need to make changes to address these pain points. On the other hand, there are circumstances when it's beneficial to postpone adopting a new ERP solution or software upgrade. These circumstances might include the following:

1. Limited resources, including financial constraints
2. Unclear business objectives
3. Ongoing organizational turmoil with high turnover, internal conflicts, and leadership changes
4. Unique business needs requiring extensive customization
5. Undocumented, unclear, or inefficient business processes
6. Unrealistic timelines and very tight implementation schedule
7. No ERP vendor support for the newly chosen system

Modern ERP Deployment Options

In ERP evaluation, consider three major deployment options for modern ERPs (below). Each deployment model offers distinct advantages and considerations.

● Cloud-based ERPs are generally known for accessibility and scalability, lower infrastructure costs, rapid implementation and upgrades, enhanced data security, and reliability.

- On-premises ERPs generally provide better control and customization due to the internal hosting aspect. They integrate with other on-site systems and offer more control over data storage and compliance with data privacy regulations. This would likely involve higher up-front costs, including hardware, software licenses, and IT resources.
- Hybrid ERPs offer flexibility and integration. They combine both on-premises and cloud elements, allowing businesses to leverage the benefits of both deployments. Integration and data synchronization between different deployment models require careful planning and coordination.

Capabilities of Modern ERPs

Modern ERP systems and related business software encompass a broader range of functionalities, including accounting, inventory management, supply-chain management, human resources, customer relationship management, project management, and more. ERP software aims to integrate all aspects of a business's operations into a single, unified system.

ERP allows for the automation and optimization of workflows, as well as resource allocation and collaboration among different teams beyond financial processes. ERP software is designed to handle the needs of larger organizations with complex operations and multiple departments. It can scale up to accommodate a growing business, supporting increased transaction volumes, additional users, and expanding functionalities.

In each case, the expectations regarding the out-of-the-box ERP functions to meet the business requirements would vary from department to department. For instance:

- Finance would require budget planning, forecasting, cash management, procurement, credit and collections, revenue recognition, and financial reporting.
- HR would require flexibility (to adapt to the rapidly changing talent market) and support for recruitment, hiring, and onboarding, compensation and benefits administration, employee development, employee experience improvement, reporting workforce analytics insights, and managing a complex global organizational hierarchy.
- Global manufacturing organizations would require features to bring together their workforce data across several countries and help to transform their complex manufacturing environment.
- Global supply chain management would require a global view of data and visibility into the supply chain to perform more accurate forecasting by increasing agility to respond to market changes.
- IT would require the ability to address deployment options of both on-premises infrastructure and cloud computing, data security, customized user needs, strong system support, and advisory service.

The capabilities of modern ERP systems are vast, evolving, and critical in today's digitized business ecosystem. The decision to adopt them should stem from a well-researched digital strategy. By defining and implementing digital strategy, an organization is establishing a foundation for improvements to data architecture, business processes, and user experience. These aren't short-term investments but rather commitments to shaping the organization's long-term success trajectory. Every choice–be it an ERP system or another type of business software, customization level, or deployment model–should resonate with the organization's unique needs and future vision. Central to the success of such digital transformations is proactive leadership and organizational alignment.

Tatyana Corban, CPA, PMP, Prosci CCP, is a manufacturing cost and inventory controls professional at Intel Corporation. She's also a member of IMA's Technology Solutions and Practices Committee and IMA's Portland Chapter. Follow her on LinkedIn.

Jun Liu, CMA, CSCA, PMP, Prosci CCP, is a solutions architect at Microsoft Japan and a member of IMA's Technology Solutions and Practices Committee and Japan Chapter. He can be reached at junliu1@microsoft.com.

From Cookies to a Career

The encouragement of an accounting professor helped this young professional decide to take the CMA exam, which boosted her career.

By Jessica Roth, CMA, CPA

What if I told you that a poster changed my life? As a college freshman in my first semester at Ashland University, I saw a poster that seemed interesting enough, announcing a "Holiday Party," with cookie decorating and fun games, hosted by the IMA® (Institute of Management Accountants) student chapter on campus. I'd never heard of IMA, but I figured any party with cookies would be fun. I didn't realize it at the time, but as a result of that meeting, I would find a group of lifelong friends and connect with inspirational professors who truly shaped my professional career.

After that initial introduction, I joined the chapter and eventually took on leadership roles. I vividly remember during the fall of my senior year when my accounting professor asked me to stay after class. She was the faculty advisor for our IMA chapter, and since I was the president that year, she wanted to know when I was going to start studying for the CMA® (Certified Management Accountant) exam. I recall staring at her awkwardly–I was juggling a senior class load, managing

my duties with the IMA chapter, working at an internship, and looking to start preparing for the CPA (Certified Public Accountant) exam, as I was planning to pursue a career in public accounting. I couldn't imagine adding one more responsibility to my plate.

Fortunately for me, this professor wasn't about to take no for an answer. She asserted that the CMA would be vitally important in my professional career, even in the world of public accounting. She encouraged me throughout my study journey (and even nominated me for a CMA Scholarship) and was one of the first to congratulate me for passing the exam and earning this prestigious certification. Looking back now, a few years later, I can honestly say that she was right–the CMA designation is a truly invaluable tool.

When I tell people I work in public accounting, they tend to assume I do tax returns all day. While taxes are certainly a part of my job, I prefer to envision my role as an interpreter. No, I don't speak another language–at least, not in the traditional sense. Accounting is often referred to as the language of business, and it's my job to interpret that language into something meaningful for the small businesses that I work with each day.

Small business owners are amazing; they have a passion and are excited to share it with the world, whether they're running a manufacturing plant, a dental office, a craft store, or even a farm. Almost always, accounting and taxes are far from that passion, so it's our job as accounting professionals to not only speak the language of accounting, but also to interpret it in a way that gives meaningful information to business owners so they can continue to pursue their dreams.

The CMA exam focuses on the knowledge and skills accounting professionals need to fulfill this valuable interpreter role. From budgeting, cost management, and internal controls to financial statement preparation and decision analysis, the subject matter tested on the CMA is part of my daily life. As I continue my career in public accounting, I know I'm well equipped as a CMA to serve the small businesses in my community. I'm certain that while decorating cookies as a college student, I never could have imagined that I would be where I am today, but I'm thankful for the part IMA played in that journey.

Jessica Roth, CMA, CPA, is a senior accountant at Whitcomb & Hess CPAs and Financial Advisors in Ashland, Ohio. You can reach her at jroth@whitcomb.com.