

Will We Ever Give Up Our Beloved Excel?

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EXECUTIVE SUMMARY

The perceived costs of moving beyond Excel are slowing accountants' adoption of powerful analytics technology. Our study examines from a rational decision-making view why professionals do not want to let go of Excel. The results indicate where the real problem lies.

A 2017 column in *The Wall Street Journal* incited a near riot by suggesting Microsoft Corp.'s Excel spreadsheets, dare they say it, be retired and replaced with more advanced software for information and data analytics.¹ Author Tatyana Shumsky argued the beloved spreadsheet application had not kept pace with the current demands of the accounting profession. This set off a firestorm of angry responses, so much so that the responses themselves became the subject of coverage in the financial press. Suggesting Excel might be dead "sent shudders through my body," one respondent said, and another noted that he'd give up Excel "after you ripped it from my cold, dead hands."²

This is not the first time Excel has come under fire. Executives, management accountants, auditors, finance professionals, IT experts, and academics have been cautioning people about its limitations for years. Spreadsheets are tedious, notoriously error-prone, and simply cannot support the advanced data analysis today's global business environment demands.³ The relentless pressure accountants are facing to become data-savvy strategic contributors may have fueled the negative reaction to Shumsky's article. Demand for data scientists is rivaling that for accounting and finance professionals in all areas of the profession, from managerial to audit to tax to regulatory compliance.⁴

Two factors are contributing to the analytics revolution: the explosion of the data ecosystem and the power of software tools to analyze it.⁵ While the profession has little if any control over the growth and digitization of data, we do dictate our adoption of the tools. If the reaction to the *Wall Street Journal* proclamation is any indication, some of us are putting up a fight when it comes to Excel despite growing evidence of the power of sophisticated data analytics tools.

One might expect the threats facing the finance and accounting industry would motivate professionals to master new technology tools, which a brave minority has done by embracing the new world of Big Data. It is more common, however, to hear words like “threat,” “survival,” and “obsolescence” when listening to the drumbeat of press on data analytics, blockchain, and artificial intelligence (AI). Accountants’ fears are not simple paranoia: Experts from many parts of the globe have placed accountants and bookkeepers in the top five of a “hit list of jobs” in line for replacement by technology.⁶

Although management accountants and auditors are particularly vulnerable to rapid replacement at technology’s hands, nearly all accounting tasks face an automated future. The profession’s sustainability depends on our ability to retool rather than resist. Even entry-level positions require knowledge of more sophisticated analytics tools, such as the skills to code using R and Python, rather than how to build Excel spreadsheets.⁷

Since accountants are powerless to stop the automation snowball, they must overcome their aversion to change. To do this, we first need to understand why accounting and finance professionals react so strongly to the mere suggestion of retiring Excel. In this article, we investigate why accountants resist replacing Excel with newer, more powerful analytics technology. We specifically aimed to determine whether accountants discount the value of the analytics technology, hesitate because of perceived costs to switch, or both.

We will present results from a survey of practicing professional accountants. Participants attended either the 2018 IMA Annual Conference & Expo Research Lab or a society of CPAs state meeting. Our findings indicate that accountants know the benefits of switching to sophisticated data analytics tools and recognize the value, which, as expected, reduce the professionals’ re-

sistance to the change.

We found that the real problem lies in the costs of switching—and not necessarily the financial ones. These costs directly influence the professionals’ resistance to change, but do not diminish their perceived value of the tool. The popular press and research outlets alike continue to stress to professionals the importance of embracing data analytics, recognizing the disruption to the profession, the death of the audit, and so forth. We agree, and this is not a criticism of these articles; rather, we will add evidence to the discussion of challenges facing companies trying to encourage the change. Our survey participants know it is good for them to embrace advanced data analytics, but Excel is simply a hard habit to break. Our evidence suggests management needs to make the switch from Excel easier to do rather than selling the importance of switching.

BACKGROUND

User resistance to new systems or technology is not a new phenomenon, nor is it exclusive to information technology. In fact, a review of the research identified studies of resistance to process change in IT dating back to 1957.⁸ Despite an extensive body of literature, researchers have yet to achieve definitive answers or solutions. One reason may be that much of the research is specific to context, such as resistance to tracking software; organization, such as a university in the United Kingdom and a handful of banks; or industry, such as healthcare. While researchers identify common factors and make recommendations, they may not be able to generalize their findings.

What we examined differs from past work because it involves a nearly wholesale change from a ubiquitous tool that arguably forms the foundational identity of an entire profession. Those arguing against the demise of Excel describe it as “essentially an open standard for accountants” used because “all accountants know how it works.”⁹ Unfortunately, this type of argument may simply serve to reinforce our resistance to change. The switch to a sophisticated analytics approach affects nearly every task and every function in accounting at every size of organization operating in every industry. If we believe one article’s admonition to “adapt or die,” it is critical that we understand the seemingly visceral re-

action to the proposed replacement of Excel.¹⁰

THEORY AND HYPOTHESES

The literature theorizes key reasons for resistance to organizational change. One is individual-level issues such as inertia.¹¹ Another is threats and power loss.¹² Negative expectancies also contribute to resistance to change.¹³ Researchers have explored organizational factors to respond to resistance and encourage technology acceptance, including top management leadership style and learning culture.¹⁴ This research has generated a robust body of best practices and recommendations, yet we still see “an astonishing number of people resist” even when “the best available guidelines and principles” are followed.¹⁵

In 2009, Hee-Woong Kim and Atreyi Kankanhalli proposed that the current knowledge on resistance is incomplete because we have not examined *how* users evaluate the loss or threat a new technology causes.¹⁶ Kim and Kankanhalli suggest status quo bias theory, which explains the preference to maintain a current state or situation, regardless of the seemingly apparent benefits of a change.¹⁷ (For more, see “Breaking the Excel Routine” in the March 2020 issue of *Strategic Finance*, sfmagazine.com/post-entry/march-2020-breaking-the-excel-routine.)

A number of factors may influence maintaining the status quo, but several studies indicate the assessment of relevant costs against benefits of adoption as a primary component.¹⁸ Since accountants are well versed in cost-benefit analysis as a basis for decision making and action, we should expect them to apply some version of it when considering the switch.

Rational decision-making costs include uncertainty costs (potential for unexpected hassles), transition costs (learning time and effort), and sunk costs (loss of work).¹⁹ These costs apply to resisting the move away from Excel and embracing new data analysis tools. Since the spreadsheet has become so entrenched, the costs of learning a new technology software application can seem daunting because of the learning curve. Hiccups on the road to completing any given task are likely to push accountants back to their comfort zone. The transition and sunk costs seem nearly insurmountable, especially when considering the decades spent

working with and learning Excel, creating elaborate spreadsheets, and mastering pivot tables.

Switching benefits are defined as “the perceived utility a user would enjoy in switching from the status quo to the new IS [information system].”²⁰ Examples of benefits include increased effectiveness, efficiency, productivity, and quality of work, as well as the resulting increase in advantages or rewards.²¹ Benefits may also include decreases in manual and cognitive effort, fewer errors, and reduced frustration caused by the software’s limits.²² The net of switching benefits and costs is the perceived value of the change to a new information system or technology.²³ Based on this information, we propose hypotheses to examine the benefits and costs, and their effect on perceived value:

- Hypothesis 1a (H1a): Higher perceived switching benefits from the change from Excel to a data analytics tool will increase the perceived value of the change.
- Hypothesis 1b (H1b): Higher perceived switching costs from the change from Excel to a data analytics tool will decrease the perceived value of the change.

Prior literature supports the notion that individuals faced with changes to a process, system, or technology maximize value in the decision to accept or resist and, therefore, this perceived value should directly influence their decision making and behavior.²⁴ Our next hypothesis examines this influence:

- Hypothesis 2 (H2): Greater perceived value of a change from Excel to a data analytics tool will reduce user resistance to change.

The above arguments suggest that accountants follow a rational decision-making process: Weigh the costs against the benefits, and if this value is positive (negative), implement (resist) the change. Recognizing the value of a data analytics tool, however, does not guarantee that users will willingly switch from Excel. After all, most of us rationally understand the value of a nutritious diet, but that does not make it easier to switch from chocolate cake to an apple. Accordingly, negative psychological reactions to sacrificing Excel for data analytics tools may directly affect the resistance to change beyond their effect on perceived value.²⁵ Therefore, we propose the following hypothesis to reflect the direct

Table 1: Respondent Demographics

| | Number | Percent |
|---|-------------|---------|
| Gender | | |
| Female | 37 | 40.2% |
| Male | 54 | 58.7% |
| No response | 1 | 1.1% |
| Highest Degree Completed | | |
| Some undergraduate college credit | 2 | 2.2% |
| Bachelor's degree | 27 | 29.3% |
| Some graduate school credit | 36 | 39.1% |
| Graduate degree | 27 | 29.3% |
| No response | 2 | 2.2% |
| Average Business Experience (Years) | 11.6 | |
| Position | | |
| Entry-level | 14 | 15.2% |
| Supervisory | 24 | 26.1% |
| Middle management | 24 | 26.1% |
| Executive management | 25 | 27.2% |
| Board of directors | 5 | 5.4% |
| Size of Business (Employees) | | |
| 0-100 | 26 | 28.3% |
| 101-500 | 21 | 22.8% |
| 501-1,000 | 16 | 17.4% |
| 1,001-5,000 | 10 | 10.9% |
| 5,001-10,000 | 9 | 9.8% |
| >10,000 | 10 | 10.9% |
| Type of Accounting Information System | | |
| General ledger (e.g., Quickbooks and Sage50) | 33 | 35.9% |
| ERP (e.g., Netbooks, Netsuite, SAP) | 27 | 29.3% |
| Business management system (e.g., Microsoft Dynamics GP) | 12 | 13.0% |
| In-house, proprietary system or other legacy system | 8 | 8.7% |
| Other (e.g., customized industry system, such as commodities) | 8 | 8.7% |
| Not sure | 4 | 4.3% |

relationship between costs and resistance:

- Hypothesis 3 (H3): Higher perceived switching costs will increase user resistance to change.

METHODOLOGY

We conducted a survey with accounting and finance professionals who participated in the 2018 IMA Annual Conference & Expo Research Lab or a state society of CPAs meeting. The study sample consisted of currently practicing accounting professionals likely affected by

the push toward a data analytics environment. To provide strong control over the execution of the survey, one author was present to collect the data.

As Table 1 shows, the 92 participants have an average of 11.6 years of business experience at a range of business sizes and represent all levels of responsibility, including entry-level (15.2%), supervisory level (26.1%), middle management (26.1%), executive level (27.2%), and board of directors (5.4%). Participants use a variety of accounting information systems, including general

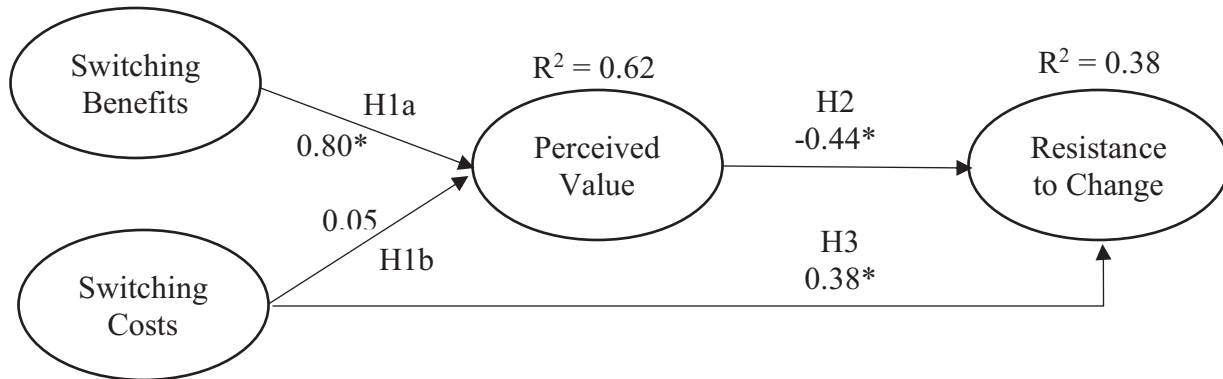
Table 2: Survey**Perceptions about learning and using a new/different data analysis tool:**

The blank '___' in questions below represents the new or future data analysis tool the participant would most likely adopt.

| Scale: 1=Very UNLIKELY to use to 7=Very LIKELY to use | Mean (SD) |
|--|----------------------|
| 1 Considering the time and effort that I have to spend, the change to the new way of working with the ___ system is worthwhile. | 4.51 (1.36) |
| 2 Considering the loss that I incur, the change to the new way of working with the ___ system is of good value. | 4.19 (1.30) |
| 3 Considering the hassle that I have to experience, the change to the new way of working with the ___ system is beneficial to me. | 4.15 (1.51) |
| 4 Changing to the new way of working with the ___ system would enhance my effectiveness on the job compared to working in the current way. | 4.49 (1.59) |
| 5 Changing to the new way of working with the ___ system would enable me to accomplish relevant tasks more quickly compared to working in the current way. | 4.62 (1.45) |
| 6 Changing to the new way of working with the ___ system would increase my productivity compared to working in the current way. | 4.46 (1.57) |
| 7 Changing to the new way of working with the ___ system would improve the quality of the work I do compared to working in the current way. | 4.21 (1.67) |
| 8 I have already put a lot of time and effort into mastering the current way of working. | 4.99 (1.49) |
| 9 It would take a lot of time and effort to switch to the new way of working with the ___ system. | 4.74 (1.43) |
| 10 Switching to the new way of working with the ___ system could result in unexpected hassles. | 4.96 (1.44) |
| 11 I would lose a lot in my work if I were to switch to the new way of working with the ___ system. | 4.08 (1.60) |
| 12 I will not comply with the change to the new way of working with the ___ system. | 2.80 (1.20) |
| 13 I will not cooperate with the change to the new way of working with the ___ system. | 2.81 (1.26) |
| 14 I oppose the change to the new way of working with the ___ system. | 3.19 (1.43) |
| 15 I do not agree with the change to the new way of working with the ___ system. | 3.36 (1.46) |

Sources: Hee-Woong Kim and Atreyi Kankanhalli, "Investigating User Resistance to Information Systems Implementation: A Status Quo Bias Perspective," *MIS Quarterly*, September 2009, pp. 567-582; Wayne H. Bovey and Andrew Hede, "Resistance to Organisational Change: The Role of Defence Mechanisms," *Journal of Managerial Psychology*, November 2001, pp. 534-548; Deepak Sirdeshmukh, Jagdip Singh, and Barry Sabol, "Consumer Trust, Value, and Loyalty in Relational Exchanges," *Journal of Marketing*, January 2002, pp. 15-37; Gary C. Moore and Izak Benbasat, "Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation," *Information Systems Research*, September 1991, pp. 173-191; Michael A. Jones, David L. Mothersbaugh, and Sharon E. Beatty, "Switching Barriers and Repurchase Intentions in Services," *Journal of Retailing*, Summer 2000, pp. 259-274; Viswanath Venkatesh and Fred D. Davis, "A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies," *Management Science*, February 2000, pp. 186-204; Shirley Taylor and Peter A. Todd, "Understanding Information Technology Usage: A Test of Competing Models," *Information Systems Research*, June 1995, pp. 144-176; Ronald L. Thompson, Christopher A. Higgins, and Jane M. Howell, "Personal Computing: Toward a Conceptual Model of Utilization," *MIS Quarterly*, March 1991, pp. 124-143.

Figure 1: Resistance Model Path Analysis and Coefficients



* p-value <0.01

ledger systems (35.9%), business management systems (13%), enterprise resource planning (ERP) systems (29.3%), and in-house proprietary systems (8.7%). The table lists additional demographic information.

We developed the survey instrument from prior research on information system resistance. Participants ranked their agreement on a scale of 1 to 7, with 1 being very unlikely to use and 7 being very likely to use. To calculate our four main variables, we then averaged each survey section's questions and notated where each set of questions came from:

- Four switching benefits (SWB) questions,²⁶
- Four switching costs (SWC) questions,²⁷
- Three perceived value (PVL) questions,²⁸
- Four user resistance to change (RTC) questions.²⁹

Table 2 shows these questions and their means. We also asked several questions for control variables, including the number of years and frequency of Excel use. Lastly, we gathered demographic data on gender, education, career position, and organization size.

RESULTS

To evaluate our hypotheses, we performed a path analysis, which allows us to evaluate the strength and significance of relationships between our variables. Figure 1 shows our user-resistance model and path coefficients.

Beginning with the left side of the model and representing the influence of switching benefits and costs on perceived value, we find a significant causal relationship ($R^2 = 0.62$, F statistic = 72.56, p-value <0.01). This is, however, driven by benefits, as the relationship between benefits and value is significantly positive (path coefficient beta = 0.80, p-value <0.01), while the relationship between costs and value is not (path coefficient beta = 0.05, p-value = 0.46). We find support for H1a but not H1b. This suggests respondents recognize the value of switching to data analytics tools, and the costs of the switch do not diminish this value.

Next, our analysis indicates that both perceived value and switching costs have significant influence on user resistance to change, together explaining 38% of its variance ($R^2 = 0.38$, F statistic = 27.46, p-value <0.01). As expected, perceived value reduces user resistance (coefficient = -0.44, p-value < 0.01), while switching costs influence greater resistance (coefficient = 0.38, p-value <0.01), supporting both H2 and H3.

Although we did not hypothesize any relationship between the Excel usage and intensity variables, we included these as control variables in the model. None significantly related to any variables of interest in our survey, nor did they exert any significant influence on the path analysis. This is somewhat surprising, consider-

ing that transition and sunk costs might be more daunting for those who have used Excel intensively for an extended time. It lends some credence to the notion that Excel is so firmly ingrained in the accounting psyche that devotion to it is almost a standard at entry into the profession. It also suggests that Excel is a significant component of the current accounting curriculum at universities, with students being well versed in it by graduation.

THE CHALLENGE IN CHANGE

Overall, we find a significant relationship exists between the benefits of switching from Excel to the perceived value of the new tools, which reduces users' resistance to switch. Switching costs do not reduce the perceived value, but instead directly increase user resistance. In other words, accountants *know* that data analytics tools are inherently valuable—just like that apple is valuable to a person's health—but they still resist the switch from the chocolate cake. It is not a question of whether accountants fail to see the value of data analytics tools over Excel or that they view Excel as equally capable. Although they know switching would be advantageous, they hesitate to do it because the costs of switching outweigh the benefits.

Whether the costs are real or imagined, the costs of switching may be onerous and are likely distinct for each professional and may require customized approaches. Our findings do suggest, however, an important and actionable implication. Namely, if we as a profession want to move away from Excel and toward data analytics software, we no longer need to sell the tools or their importance to the profession; rather, we need to make it easier for accountants to switch to them. To do so, management will need to invest in and support the change, whether through dedicated training, temporary release from other work commitments, incentives, or all three.

Our objective in this article was to first examine user resistance from a rational decision-making view. The next steps are to examine other potential contributors to status quo bias. For example, social norms prevalent in the accounting industry that encourage and expect Excel proficiency, combined with colleagues' admiration of Excel mastery, are likely to reinforce an individual's resistance to give up Excel.

This is evident in the response to the article from *The Wall Street Journal*, in which a software consultant noted, "There's a Red Badge of Courage that people wear when they stay up all night and work a spreadsheet to get something that they think is unique and artisanal."³⁰ Fears of control loss, which refers to individuals' need to determine their own situation, likely spike when directed to give up the spreadsheet tool that has become the foundation for so much of an accountant's career existence.³¹ One software consultant marveled that he had never encountered so much resistance to a change over his 17-year career.³²

The only substantive rebuttal to the original *Wall Street Journal* article is that Excel is not as error-prone as some espouse. This is not a ringing endorsement of Excel's value, nor a valid reason to leave the technical work of analytics to data scientists. It is apparent that much more work is needed to loosen the stranglehold of Excel over the accounting profession.

Analytics promise to help improve decision making, not just to automate processes.³³ Since accountants more and more work in the growing role as strategic partners in business, they are in a prime position to take advantage of these developments. Management accountants' data analysis abilities need to better support management decision making, which includes more data types such as nonfinancial data, as well as skills in data warehousing, pattern and trend analysis, data visualization, and possibly even advances into natural language processing and AI.³⁴ At this time of expanding technologies, it is important to delve deeper into the more advanced tools and new capabilities currently available to management accountants. No tool, however, is useful if accountants do not use it.

Our study contributes insight into accounting and finance professionals' tendency to resist replacing a potentially inadequate spreadsheet software with more robust data analysis applications. To encourage technology acceptance, organizations can understand why individuals resist the change and can tailor their technology implementation initiatives and training. Factors to explore include controls, interorganizational relationships, production environments, and accounting systems.³⁵ Individuals themselves can understand their own behavior and recognize when they have dug in

their heels. Adopting newer, more advanced applications will bring benefits to both the individual and the organization. Academic researchers can build on our findings to refine models of IT-resistance behavior and develop interventions that encourage acceptance more readily. Finally, accounting educators can make data analytics tools the basis of the curriculum, rather than Excel, but this will, of course, require that educators make the switch themselves.

While Excel will likely have its diehard supporters in the near term, accountants can no longer afford to cling to inadequate technologies. The industry is in jeopardy of becoming the latest profession consigned to the history books if we do not embrace a future filled with data, AI, and innovations we have yet to imagine. ■

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