

## **How Do Prior Education and Firm Internal Signaling Influence Auditors' Use and Reliance on New Technology?**

Saad Bin Anis  
Natalia Kochetova  
Ibrahim Pelja

*Preliminary research mini proposal. Please do not share or quote.*

### **Context and Idea**

Historically, audit firms would hire graduates with educational backgrounds in such areas as accounting, finance, and business. This was because such backgrounds have a strong overlap with the knowledge and training needed to perform an audit. Recently, audit firms increased hiring graduates with strong mathematical and technical backgrounds, such as data analytics, computer science, mathematics, into audit positions. In addition, audit firms emphasize the importance of the use of cutting-edge technology during training sessions and other developmental meetings for audit personnel. The stated reason for both trends is a desire by audit firms to increase the use and reliance on new technology by their auditors. However, it is unclear if these policies indeed increase auditor willingness to use new technologies on audit engagements. While these policies may make auditors, on average, more willing to use new technologies, the auditors with educational backgrounds in subjects other than auditing (e.g. business analytics, computer science) may be less skeptical of the output, or over-reliant, on these technologies.

We propose to experimentally test if hiring “non-auditor” auditors and intra-firm signaling emphasizing use of cutting-edge technologies will (a) contribute to increasing the use of such technologies by auditors; and (b) increase reliance on output from new technologies while reducing professional skepticism. We propose to conduct an experiment with one measure factor (educational background) and one factor manipulated between participants (firm culture surrounding technology). We will use two groups of master’s students who are potential hires for the Big 4 audit firms in Norway as participants. One group will consist of students with data analytics-intensive degrees, such as business analytics, computer science/mathematics, and econometrics/statistics. The other group will include students with a traditional accounting and auditing degrees.

To test the impact of the signaling by the audit firms, we will manipulate the firm’s vision that is communicated to the participants as a part of an introduction to the firm. One group of participants will get a vision focused on the importance of cutting -edge technology use, while the other group will get a vision focused on the importance audit quality and professionalism.

We will then measure the willingness of the participants to use new technology and rely on its output in the context of an audit engagement. We will do so by giving the participants an audit task where they must choose between two audit approaches, where one is an intensive data analytics-based approach (“new, cutting edge technology”) and the other is a

well-known, less innovative audit approach (“traditional method”). We will then test if the willingness to use new technology, as well as the degree of auditor reliance on the technology, varies among the groups.

### **Potential Contribution**

Audit firms are currently investing heavily in their workforce and their infrastructure to enhance their capabilities in new technologies such as data analytics, block-chain and AI. Audit firms cite two reasons for doing so. First, audit firms recognize that adopting such new technologies in their audit methodologies would likely improve the quality and efficiency of the audit. Therefore,, successfully incorporating such technologies would likely provide the audit firm with a significant competitive advantage over their competition. In addition, the clients of audit firms are also increasingly incorporating these new technologies in their business processes. As a result, companies are increasingly expecting their auditors to be familiar with these new technologies. Hence, competence in these new, cutting-edge technologies is becoming increasingly a necessity for the auditor.

Audit firms expect that new hires with strong backgrounds in computing, data analytics, and mathematics are likely to be more willing to adopt and rely on such new technologies relative to new hires with a traditional accounting or auditing degrees. This is because such new hires are likely more familiar and more comfortable with use of cutting-edge technologies than candidates with traditional backgrounds. Another reason cited by audit firms is that candidates with non-audit backgrounds are more open-minded about the use of new technology relative to “traditional” auditors.

While the reasons cited by audit firms seem plausible, it is nevertheless unclear how auditor willingness to use new technology is impacted by the auditor’s educational background. It may be that prior education in new technology has little to no impact on the auditor willingness to use it in an audit context. It is possible that prior education in fields such as machine learning or data analytics may make such new hires less likely to use new, cutting-edge technologies in assurance context because they are more familiar with the shortcomings of such technologies. In a similar vein, it is unclear how much impact firm signaling surrounding use of cutting edge tech has on auditor willingness to use it or rely on it.

Further, it is unclear how new hiring policies and messaging surrounding technology may affect auditor skepticism. Auditors must display professional skepticism to conduct a quality audit. Hiring candidates with technical, non-accounting/non-auditing backgrounds and emphasizing technology use as a key part of the firm vision may make auditors more willing to use new technologies, but it could also make them overly reliant on it or accepting of the results from such technologies with lowered skepticism. This could, in turn, adversely affect audit quality.

### **Theory and Preliminary Research Design**

Under the **theory of technology domination (TTD)** (Arnold and Sutton, 1998), factors influencing whether a person will rely on a decision aid include (a) familiarity with the decision aid and (b) cognitive fit between the thinking of the user and the decision-aid. We use TTD to suggest that participants with a background in data analytics/computer science/statistics (“technical group”) will have a higher degree of familiarity and cognitive fit

with new technologies, relative to participant with accounting/auditing-only backgrounds (“traditional group”). Therefore, the technical group is likely to report significantly higher scores for willingness to use advanced data analytics-based approaches/technologies, as well as higher scores for reliance on the outputs of such technologies.

We next use **motivated reasoning** to postulate that participants who are at a firm with a vision statement that emphasizes cutting-edge technology adoption (“tech firm”) will have higher reported scores for the willingness to use advanced data analytics-based approaches, as well as higher scores for reliance on the outputs of such technologies. In contrast, participants who at a firm with a vision that emphasizes audit quality (“quality firm”) will have lower reported scores for the willingness use advanced data analytics-based approaches, and for reliance on the outputs of such technologies. This is because the firm vision statement will give the participants directional goals to make decisions in a manner consistent with the signaled values of the firm.

We will measure participants’ cognitive fit and familiarity with an advanced data analytics technology (presented in an experimental scenario) using 7-point Likert scales. The dependent variables will be (a) willingness to adopt a given a less/more technology-intensive audit approach, on a 7-point Likert scale; and (b) reliance on the output of more technology-intensive method, again using a 7-point Likert scale.

We expect that auditors in a technical group will be relatively more willing to rely on new technology-based audit methods and will also be more likely to rely on the results of these methods due to their belief in the effectiveness of these advanced methods built through prior education. In addition, auditors at a tech firm will be more willing to adopt and rely on advanced new technology, relative to auditors at a quality firm.

Using TTD, we anticipate that the degree of cognitive fit and familiarity will moderate this relationship. Auditors with technical backgrounds who have strong degree of cognitive fit and familiarity with the new technology will over-rely on it by, for example, accepting wrong results or not being skeptical of the results. This result will likely be more pronounced at a tech firm.

The experimental scenario will involve use of a more/less advanced data-analytics tool. It will embed an error in the output that would call for exercising professional skepticism.

The figures below summarize our predictions.

