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Constraints and Tool Aspirations in Internal Audit Information Work: Evidence from Polish and International Auditors

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Abstract

Professional standards position internal auditors as providers of both assurance and consulting services, yet the information required to deliver these services increasingly depends on access to analytical tools and organizational conditions that may constrain communication and analysis. Using survey data from 652 internal auditors (Poland: $n=515$; international sample: $n=137$), this study examines (a) perceived barriers to developing and using information-related competencies, (b) unmet needs for information tools, and (c) the types of tools auditors would like to use but do not. Barriers were measured as seven binary options (e.g., lack of access to tools, lack of experience, concerns about information misuse). Unmet tool needs were measured with a binary indicator and an open-ended question on specific tools. We include a single competence indicator as a contextual predictor: a composite score capturing self-assessed information processing and analysis competence (CIPS).

Results show that lack of access to analytical software/tools and lack of experience/knowledge are the most frequently endorsed constraints. Compared with Polish internal auditors, international respondents more often report lack of experience/knowledge, whereas Polish internal auditors more often report concerns that shared information could be used for other purposes. Unmet tool needs are

more prevalent in the international sample. In multivariable models, lack of access to tools, lack of experience/knowledge, and concerns about information misuse are independently associated with higher odds of reporting unmet tool needs. Higher CIPS is associated with lower likelihood of endorsing the two core constraints (access and experience) and shows a weak negative association with unmet tool needs. The findings highlight the need to interpret tool- and competence-related constraints against professional norms (confidentiality and restricted disclosure) and to distinguish capacity deficits from context-driven constraints.

Keywords: internal audit; information tools; competence gaps; barriers; data analytics; cross-country comparison

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Introduction

Internal auditing is a knowledge- and information-intensive function. Auditors generate, interpret, and communicate findings that inform governance, risk management, and decision-making (Lenz & Enslin, 2025). At the same time, professional norms emphasize confidentiality, objectivity, and independence, which shape what can be communicated and to whom (The Institute of Internal Auditors [IIA, 2016, 2024]). Within this regulated space, the ability to work with data and analytical tools becomes a practical condition for delivering both assurance and consulting engagements (IIA, 2016, 2024). This article focuses on (a) perceived constraints that hinder the development or application of information-related competencies, (b) unmet needs for information tools, and (c) the types of tools auditors would like to use but currently do not.

In addition, the analyses examine how these constraints relate to a focused competence indicator capturing information processing and analysis (CIPS).

Theoretical Background

From the perspective of internal audit practice, information work encompasses acquiring data, analyzing and interpreting it, and communicating results within organizational boundaries. The literature on internal audit in Poland has emphasized the centrality of communication and the organizational context in shaping the effectiveness of audit work (Przybylska et al., 2020; Przybylska et al., 2021; Trębecki, 2019). Rydzak (2019, 2020) further highlights that reputational and political sensitivities may create incentives for defensive information behavior, reinforcing the importance of safeguards and professional norms. Standards issued by the IIA define internal auditing as an independent, objective assurance and consulting activity and embed confidentiality and disciplined communication as core principles (IIA, 2016, 2024).

These norms imply that constraints reported by auditors may reflect not only individual deficits but also rational adaptations to professional obligations and organizational risk. Against this background, tool access and analytic capability

can be treated as enabling conditions for high-quality information processing, while barriers can be interpreted as potential frictions between normative expectations and operational capacity. The role of internal audit in mitigating information asymmetry and supporting governance has also been discussed through agency and behavioral lenses in Polish scholarship (Kańduła & Przybylska, 2019).

Research Questions

RQ2.1 Which barriers/constraints are most frequently reported by internal auditors, and does the profile differ between the Polish and international samples?

RQ2.2 How often do auditors report unmet needs for information tools, and does the prevalence differ between Poland and the international sample?

RQ2.3 Which tool categories dominate in open-ended responses, and do they differ between Poland and the international sample?

RQ2.4 Which barriers co-occur with unmet tool needs, and does the pattern of associations differ between Poland and the international sample?

RQ2.5 Does competence in information processing and analysis (CIPS) differentiate (a) the barrier profile and (b) the probability of reporting unmet tool needs?

Method

Sample and procedure

Data comes from a survey of internal auditors administered in two language versions. The Polish sample (PL) includes 515 respondents, and the international sample (INT) includes 137 respondents. After excluding records with missing values in the closed-ended core variables used in this article (barriers and unmet tool needs), the analytic sample size is N=652. For analyses involving competence composite (CIPS), listwise deletion yields N=579.

Measures

Barriers/constraints (V170). Respondents indicated which reasons, in their view, explain low levels or omission of information-related competencies in internal auditing. Seven binary options were available: (1) lack of access/ability to use analytical software/tools; (2) lack of experience and knowledge; (3) personal discomfort; (4) perception that the tool is ineffective/inefficient; (5) fear of the auditee/audience reaction; (6) concern that shared information may be used for other purposes; and (7) other reasons. Unmet tool needs (V180). Respondents answered whether there are IT tools for acquiring, analyzing, and presenting information/data that they do not use but would like to use (Yes/No). Those answering "Yes" provided an open-ended description of tools (X180.1).

Information processing and analysis competence (CIPS/S150). As a contextual predictor, we use a composite score based on five self-ratings of competence in:

(a) preparing electronic documents, (b) working with large datasets ("Big Data"), (c) monitoring social media and online tools, (d) analyzing numerical data, and (e) analyzing non-numerical data. The CIPS score is computed as the mean of the five items on a 1-10 scale (Polish questionnaires occasionally used 11 as an upper endpoint; those values were recoded to 10). Cases with fewer than three non-missing item responses were treated as missing for CIPS.

Analytical strategy

RQ2.1-RQ2.2 are addressed with descriptive frequencies and tests of between-sample differences, complemented by odds ratios from logistic models. RQ2.3 uses a transparent dictionary-based coding scheme applied to open-ended responses, allowing multi-label classification (a response may map to multiple categories). RQ2.4 uses multivariable logistic regression predicting unmet tool needs from the barrier set and country. RQ2.5 uses logistic models linking CIPS (standardized) to each barrier (adjusted for country), and to unmet tool needs (with and without barriers). Robust (HC0) standard errors are reported for multivariable logistic models; multiple testing in RQ2.1 and RQ2.5a is controlled using Holm-adjusted p-values.

Results

RQ2.1 Barriers and constraints (V170)

The most frequently endorsed constraints in both samples were lack of access/ability to use analytical software/tools (PL: 56.9%; INT: 56.2%) and lack of experience/knowledge (PL: 37.5%; INT: 51.8%). After Holm adjustment across the seven barrier comparisons, only the difference for lack of experience/knowledge remained statistically significant, with higher odds in the international sample (OR=1.79). The difference for concerns about information misuse (higher in Poland) did not remain significant after adjustment.

Table 1
Barriers/constraints reported by internal auditors (percent endorsing each option)

Barrier	PL (%)	INT (%)	OR	95% CI (low)	95% CI (high)	p (Holm)
Lack of access/ability to use analytical software (availability constraint)	56.9	56.2	0.97	0.67	1.42	1.000
Lack of experience and knowledge	37.5	51.8	1.79	1.23	2.62	0.018
Personal discomfort	30.3	30.7	1.02	0.68	1.53	1.000
Perception that the tool is ineffective/inefficient	21.2	13.9	0.6	0.35	1.02	0.290
Fear of the auditee/audience reaction	18.1	19.7	1.11	0.69	1.79	1.000
Concern that shared information may be used for other purposes	33.6	22.6	0.58	0.37	0.9	0.088
Other reasons (open-ended)	9.1	5.1	0.54	0.24	1.21	0.540

Note. OR compares INT vs PL (OR>1 indicates higher odds in INT). p-values are Holm-adjusted across seven comparisons.

RQ2.2 Unmet tool needs (V180)

Unmet tool needs were reported by 22.7% of Polish auditors and 32.8% of international auditors. A logistic model indicates higher odds of reporting unmet tool needs in the international sample (OR=1.66).

Table 2
Prevalence of unmet tool needs (V180)

Country	N	Unmet tool need (V180=Yes) %
PL	515	22.7
INT	137	32.8

Note. V180 indicates whether respondents would like to use IT tools they currently do not use.

RQ2.3 Tool categories in open-ended responses (X180.1)

Among respondents who reported unmet tool needs (n=163), open-ended answers were coded into non-exclusive categories using keyword rules (e.g., 'ACL'ACL; 'Power BI/Tableau/Qlik/BI'BI tools; 'SQL/query'SQL/Query; 'data mining/big data/analytics'Data analytics). A large share of responses was vague or non-specific. Across specific tool mentions, ACL and audit analytics/GRC/sampling tools were most frequent in Poland, whereas IDEA and statistical/programming tools appeared relatively more often in the international sample; however, none of these differences remained statistically robust after Holm adjustment.

Table 3
Tool categories requested in open-ended answers (X180.1; multi-label coding)

Category	PL (%)	INT (%)	OR (INT vs PL)	95% CI (low)	95% CI (high)	p (Holm)
Unspecified/vague response	49.6	53.3	1.16	0.58	2.31	1.000
ACL	18.8	11.1	0.54	0.19	1.53	1.000
IDEA	2.6	8.9	3.71	0.8	17.27	0.849
BI	8.5	8.9	1.04	0.31	3.52	1.000
SQL/Query	5.1	2.2	0.42	0.05	3.59	1.000
Excel	4.3	0.0	0.22	0.01	4.15	1.000
Stats/Prog	4.3	11.1	2.8	0.77	10.18	1.000
Data analytics	8.5	8.9	1.04	0.31	3.52	1.000
Audit analytics / GRC / sampling tools	13.7	13.3	0.97	0.35	2.66	1.000

Note. Percentages are within the V180=Yes subgroup (PL: n=117; INT: n=46). Categories are non-exclusive; a response may contribute to multiple categories.

RQ2.4 Barriers associated with unmet tool needs

In a multivariable logistic regression predicting unmet tool needs from the barrier set and country (robust SE), the strongest independent associations were observed for (a) lack of access/ability to use analytical software/tools, (b) lack of experience/knowledge, (c) concerns about information misuse, and (d) selecting 'other reasons'. Country remained a significant predictor, with higher odds of unmet tool needs in the international sample.

Table 4
Predictors of unmet tool needs (V180=Yes): multivariable logistic model

Predictor	OR	95% CI (low)	95% CI (high)	p
Country (INT vs PL)	1.73	1.1	2.71	0.017
Lack of access/ability to use analytical software (availability constraint)	2.13	1.44	3.17	<.001
Lack of experience and knowledge	1.89	1.28	2.81	0.001
Personal discomfort	1.02	0.66	1.57	0.938
Perception that the tool is ineffective/inefficient	0.76	0.44	1.29	0.305
Fear of the auditee/audience reaction	1.54	0.94	2.54	0.088
Concern that shared information may be used for other purposes	1.93	1.28	2.92	0.002
Other reasons (open-ended)	2.94	1.49	5.79	0.002

Note. Robust (HCO) standard errors. OR>1 indicates higher odds of unmet tool needs.

RQ2.5 CIPS and (a) barriers, (b) unmet tool needs

Higher CIPS is associated with a lower probability of endorsing the two core constraints: lack of access to analytical tools (OR per 1 SD=0.76) and lack of experience/knowledge (OR=0.57), even after Holm adjustment across barriers. In the model predicting unmet tool needs, CIPS shows a weak negative association after adjusting for country and barriers (OR per 1 SD=0.81), which is marginally significant with robust standard errors.

Figure 1. CIPS and probability of endorsing each barrier (odds ratios; adjusted for country).

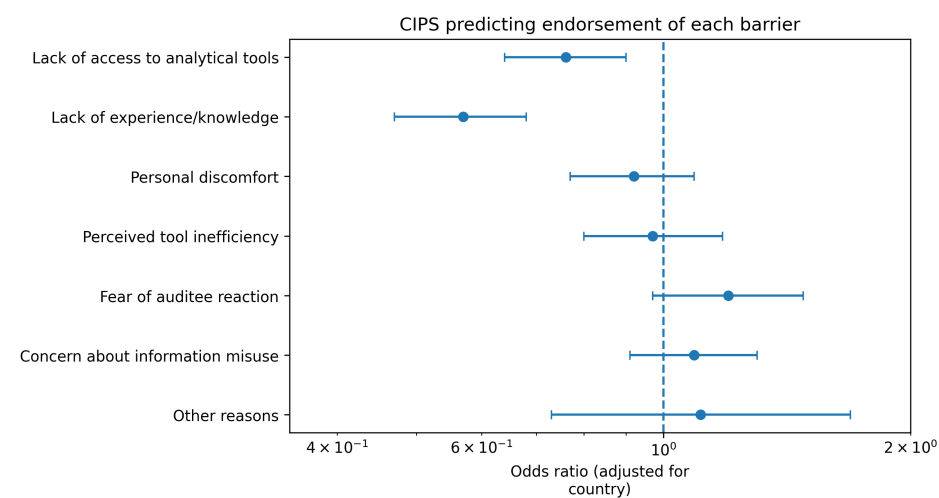


Table 5
CIPS as a predictor of barriers (logistic models adjusted for country)

Barrier	OR (per 1 SD CIPS)	95% CI (low)	95% CI (high)	p (Holm)
Lack of access/ability to use analytical software (availability constraint)	0.76	0.64	0.9	0.009
Lack of experience and knowledge	0.57	0.47	0.68	<.001
Personal discomfort	0.92	0.77	1.09	1.000
Perception that the tool is ineffective/inefficient	0.97	0.8	1.18	1.000
Fear of the auditee/audience reaction	1.2	0.97	1.48	0.439
Concern that shared information may be used for other purposes	1.09	0.91	1.3	1.000
Other reasons (open-ended)	1.11	0.73	1.69	1.000

Note. Robust (HC0) standard errors; Holm adjustment across seven models.

Table 6
Unmet tool needs (V180=Yes) predicted by CIPS, country, and barriers (robust logistic model)

Predictor	OR	95% CI (low)	95% CI (high)	p
CIPS (per 1 SD increase)	0.81	0.66	1.0	0.052
Country (INT vs PL)	1.77	1.12	2.82	0.015
Lack of access/ability to use analytical software (availability constraint)	1.78	1.17	2.71	0.007
Lack of experience and knowledge	1.47	0.97	2.24	0.072
Personal discomfort	0.88	0.56	1.38	0.570
Perception that the tool is ineffective/inefficient	0.65	0.37	1.14	0.133
Fear of the auditee/audience reaction	1.63	0.97	2.76	0.067
Concern that shared information may be used for other purposes	1.77	1.15	2.73	0.009
Other reasons (open-ended)	2.73	1.32	5.67	0.007

Note. OR for CIPS is per 1 SD increase in the standardized CIPS score.

Discussion

This study examined constraints and tool aspirations in internal auditors' information work in a compact analytical frame. Two patterns are particularly salient. First, the most common constraints concern structural capacity (access to analytical tools) and human capital (experience/knowledge). Second, cross-country differences suggest distinct contextual emphases: international respondents more often report experience-related constraints, whereas Polish respondents more often indicate concerns that information might be used for other purposes. This aligns with prior discussions of organizational sensitivity and reputational risk around auditing and the potential for defensive information behavior (Rydzak, 2019, 2020). Tool aspirations are not merely descriptive; they co-occur with specific constraint profiles.

In multivariable models, lack of tool access, lack of experience, and concerns about information misuse are independently associated with reporting unmet tool needs. Importantly, these associations should be interpreted in the light of professional norms: confidentiality and restricted disclosure can limit the visibility and externalization of audit information (IIA, 2016, 2024), which may increase perceived risk when tools enable broader dissemination or more traceable evidence trails. The competence context (CIPS) adds nuance: auditors who rate their information processing and analysis competence higher are less likely to cite access- and experience-related constraints.

The association between CIPS and unmet tool needs is weak and sensitive to model specification, suggesting that unmet needs may reflect organizational infrastructure gaps even among competent auditors.

Practical Implications

Practically, the findings point to differentiated support strategies. Where experience/knowledge constraints dominate, targeted training and mentoring in data analytics and tool use may be most effective. Where information-misuse concerns are salient, strengthening governance safeguards (clear escalation rules, protection of auditor independence, and transparent handling of audit evidence) may reduce defensive constraints. Across contexts, investments in accessible audit analytics infrastructure should be paired with guidance consistent with confidentiality and professional standards (IIA, 2016, 2024).

Limitations

The study relies on self-reported survey data and is subject to common limitations of self-assessment and cross-sectional designs. The international sample is smaller and likely heterogeneous, and country grouping should be interpreted as contextual rather than strictly national. Open-ended tool coding used keyword rules and thus may under-detect tools described in highly idiosyncratic language. Finally, the present article uses a single competence indicator (CIPS) to keep the analytical frame compact; future work could integrate richer measures of skills, organizational support, and actual tool use.

Conclusion

Internal auditors' information work is constrained by both capacity factors (tools and experience) and context-driven concerns about how information may be used. Unmet tool needs are patterned rather than random and are linked to specific barrier profiles. Recognizing the role of professional norms and governance context is essential for interpreting these constraints and designing interventions that strengthen audit effectiveness without compromising confidentiality.

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