Science, Education and Innovations in the Context of Modern Problems

Issue 1, Vol. 9, 2026

RESEARCH ARTICLE

Algorithmic tax enforcement and AI-based risk scoring: a critical assessment of Türkiye's Kurgan system

Salahattin Altundağ
Dr. Assistant Professor
Dicle University
Türkiye
E-mail: salahattinaltundag@gmail.com; Orcid: 0000-0002-6198-7959

Issue web link https://imcra-az.org/archive/389-science-education-and-innovations-in-the-context-of-modern-problems-issue-1-vol-9-2026.html

Keywords Algorithmic Tax Enforcement, AI-Based Risk Scoring, Kurgan (KURGAN), False-Document/False-Invoice Fraud, Procedural Safeguards, Algorithmic Transparency, Taxpayer Rights

Abstract

This study critically examines Kurgan (KURGAN), an AI-enabled risk scoring and early-warning system introduced by the Tax Inspection Board of the Ministry of Treasury and Finance in Türkiye to combat false-document/false-invoice fraud, within the broader framework of algorithmic tax enforcement. The study adopts a qualitative single-case design and combines doctrinal (normative) legal analysis with qualitative document analysis of Law No. 213 (Tax Procedure Law), secondary legislation, official strategy and guidance documents, and relevant national and international scholarship. The findings suggest that Kurgan's establishment ("day zero") and transaction-level, big-data-driven risk scoring architecture is designed to enable more targeted audits and improved administrative efficiency by identifying high-risk patterns in near real time. At the same time, the analysis highlights substantial governance and rights-related tensions, including limited algorithmic transparency and explainability, the potential de facto redistribution of the burden of proof toward taxpayers, exposure to false-positive/false-negative risks, and uncertainty regarding the practical robustness of procedural safeguards protecting taxpayers' rights. Building on these findings, the study proposes design principles and policy recommendations centered on explainable AI, robust human oversight, sound data governance, and independent technical–legal auditing, alongside transparent, multi-tier remedy and feedback mechanisms. It also outlines a future research agenda for empirical assessments of Kurgan's effects on enforcement outcomes, tax morale, and taxpayer trust in the tax administration.

Citation

Altundağ S. (2026). Algorithmic tax enforcement and ai-based risk scoring: a critical assessment of Türkiye's Kurgan system. *Science, Education and Innovations in the Context of Modern Problems*, 9(1), 135–141. https://doi.org/10.56334/sei/9.1.12

Received: 11.09.2025 | Accepted: 20.11.2025 | Published: 20.12.2025 (available online)

Introduction

In the era of digital transformation and big data, the design and implementation of public policies are increasingly mediated through algorithmic systems; the concept of *algorithmic governance* foregrounds both the opportunities and the risks of this shift (Katzenbach & Ulbricht, 2019; Kango, 2025). Tax administrations have become one of the most visible laboratories of this transformation, deploying AI- and machine-learning-based risk scoring and targeted audit tools. The international literature suggests that algorithmic tax enforcement can help reduce the tax gap and enable more efficient use of audit resources; however, it also indicates that an emerging *algorithmic tax power* may

generate new tensions for fundamental rights and procedural safeguards (Caliendo, 2025; Hadwick, 2024). In Türkiye, the phenomenon of false documents/false invoices is described in the Ministry of Treasury and Finance's *Strategy to Combat False Documents—Establishment-Supervised Analysis (KURGAN) Guide* dated October 1, 2025 as a structural problem causing billions of Turkish lira in public losses each year; KURGAN (an AI-enabled risk scoring system used in Türkiye's tax audit framework) is presented as the new era's AI-supported early-warning system and risk-scoring infrastructure for combating false document fraud (Tax Inspection Board of the Ministry of Treasury and Finance [VDK], 2025).

This article aims to critically assess KURGAN in light of the literature on algorithmic tax enforcement, AI-based risk scoring, and procedural safeguards. The study proceeds from three hypothetical propositions: H1, KURGAN's establishment- and transaction-based risk-scoring architecture enhances early-warning capacity in combating false documents; H2, if algorithmic transparency and explainability remain limited, KURGAN may in practice disrupt the balances embedded in tax procedure law with respect to the burden of proof and the right to defense; and H3, false-positive and false-negative classifications may adversely affect tax morale and taxpayers' trust (Caliendo, 2025; Hadwick, 2024). Accordingly, the article addresses the following questions: What risk-scoring logic underpins KURGAN in tax auditing? Which procedural safeguards does the system strengthen or weaken in terms of algorithmic transparency and explainability? How does the possibility of misclassification shape the risk profile for taxpayers' trust in the tax administration and for voluntary compliance?

In the literature review, the article synthesizes debates on algorithmic governance and algorithmic tax enforcement and argues that AI-based risk scoring systems both increase audit effectiveness and—because they fall within the category of "high-risk AI systems"—call for rights-oriented, context-specific regulation (Caliendo, 2025; Hadwick, 2024; Katzenbach & Ulbricht, 2019). Methodologically, the study adopts a qualitative, single-case design that treats KURGAN as its focal case in Türkiye; data are thematically coded through a doctrinal legal analysis and qualitative document analysis of Law No. 213 (Tax Procedure Law), secondary legislation, the VDK guide, and assessments published by professional bodies and consulting firms (VDK, 2025). The findings indicate that KURGAN is designed as a big-data-driven risk scoring system capable of detecting false-document networks at an early stage; however, the limited disclosure of risk criteria, weighting logic, and threshold values creates "black box" zones that undermine algorithmic transparency. The discussion section offers a normative analysis of these findings with respect to the de facto redistribution of the burden of proof, false-positive/false-negative risks, and implications for tax morale.

Finally, the article proposes a design framework for KURGAN and similar systems grounded in explainable AI, robust human oversight, sound data governance, independent technical–legal auditing, and effective complaint-and-feedback mechanisms. It also outlines a future research agenda for empirical studies focusing on taxpayer perceptions, voluntary compliance, and comparative country experiences (Caliendo, 2025; Hadwick, 2024). From this perspective, the article's central conclusion is as follows: while KURGAN carries strong digital early-warning potential in combating false documents, realizing this potential without harming tax justice and taxpayers' rights depends on redesigning algorithmic tax power in a manner that is transparent, auditable, and aligned with procedural safeguards.

1. Theoretical framework / literature review

1.1. Algorithmic Governance and Algorithmic Tax Enforcement

Algorithmic governance is defined as the shaping of public decisions through data-driven, automated classification and prediction models, whereby algorithms become the de facto infrastructure of public policy (Katzenbach & Ulbricht, 2019). Tax administrations sit at the center of this transformation: large-scale databases, risk profiling tools, and machine-learning models are increasingly integrated into decision-support systems for tasks such as audit selection, verification of tax returns, and monitoring of indirect tax risks. In the literature, this trend—discussed under the heading of *algorithmic tax enforcement*—is conceptualized as the exercise of the tax authority's classic powers through data-driven prediction and ranking algorithms, giving rise to a form of *algorithmic tax power* (Caliendo, 2025; Hadwick, 2024). This study positions Kurgan as a context-specific example of this global wave of algorithmic tax enforcement within Türkiye.

1.2. AI-Based Risk Scoring Systems and Big Data

The objective of risk-based tax auditing is to direct limited audit capacity toward taxpayers and transactions with a higher likelihood of noncompliance. In recent years, risk scoring systems have increasingly relied on machine-learning models operating on datasets derived from financial statements, electronic documents, and third-party reporting (Wibowo, 2022). In applications where rule-based risk classification is combined with supervised-learning algorithms, empirical findings suggest improved precision in audit selection and higher tax revenues (Eberhartinger, Safaei, Sureth-Sloane, & Wu, 2021). These studies indicate that tax avoidance may be comparatively lower in administrations that use risk profiling and predictive modeling; however, outcomes are sensitive to data quality, governance capacity, and institutional transparency. Accordingly, AI-supported risk scoring infrastructures are governance instruments whose effectiveness depends not only on technical design but also on the institutional context.

1.3. Procedural Safeguards, Burden of Proof, and Fundamental Rights in Tax Auditing

The literature on algorithmic tax enforcement emphasizes that, alongside efficiency gains, new risk domains emerge with respect to procedural safeguards and fundamental rights. In the European Union context, studies suggest that when tax administrations use high-risk AI systems, they must comply with the European Convention on Human Rights, the EU Charter of Fundamental Rights, the GDPR, and the provisions of the draft EU Artificial Intelligence regulation; in particular, they are required to secure effective oversight of automated decision-making, reason-giving, human intervention, and accessible remedies (Hadwick, 2024). Debates around the notion of *algorithmic tax power* focus on how risk scores may affect the presumption of innocence and the principles of equality and proportionality; they indicate that false-positive scores can generate audit pressure and reputational harm for innocent taxpayers, while false-negative scores can conceal large-scale tax gaps (Caliendo, 2025). For these reasons, the literature argues that unless risk-scoring algorithms are transparent, explainable, impartial, and amenable to judicial review, the right to defense, the fair allocation of the burden of proof, and fair-trial guarantees embedded in tax procedure law may be undermined in practice.

1.4. The Türkiye Context: The Legal and Institutional Framework of Kurgan

In Türkiye, Kurgan (*Kuruluş Gözetimli Analiz Sistemi*; Turkish acronym: KURGAN) was announced as a core component of the strategy to combat false documents through the policy text dated October 1, 2025 and the guide published by the Tax Inspection Board (Hazine ve Maliye Bakanlığı Vergi Denetim Kurulu Başkanlığı, 2025). According to the guide, Kurgan—unlike conventional risk analysis systems—is designed as an early-warning system that uses big data analytics, generates transaction-level risk scores, and produces real-time electronic signaling. The system integrates e-invoice (e-fatura), e-ledger (e-defter), customs, banking, and tax return data to score specific transactions for false-document risk and, for high-risk transactions, sends information-request letters to taxpayers via electronic notification (Hazine ve Maliye Bakanlığı Vergi Denetim Kurulu Başkanlığı, 2025). It is stated that, in connection with Law No. 213 (Tax Procedure Law) and secondary regulations, Kurgan aims both to reduce tax loss and evasion and to encourage taxpayers to manage their own compliance risks through early warning.

2. Method, methodology

2.1. Research Design: A Qualitative, Single-Case Study

This study is a qualitative single-case study focusing on Kurgan (KURGAN), a key policy instrument in Türkiye's efforts to combat false documents. Following Yin's (2018) approach, Kurgan is treated as a contemporary phenomenon examined within its specific legal and institutional context (Yin, 2018). The research design integrates a doctrinal (normative) legal analysis aimed at explaining governance and procedural safeguards in algorithmic tax auditing with qualitative document analysis.

2.2. Data Sources and the Document Analysis Process

The dataset comprises Law No. 213 (Tax Procedure Law), relevant secondary regulations, the *Strategy to Combat False Documents* and the *Kurgan Guide* dated October 1, 2025, statements issued by the Tax Inspection Board and professional organizations, and recent academic studies on algorithmic tax enforcement (Hazine ve Maliye Bakanlığı Vergi Denetim Kurulu Başkanlığı, 2025). The document analysis follows Dalglish et al.'s (2020) proposed steps of systematic reading, coding, and theme development. The texts were coded under the themes of "transparency and

explainability," "procedural safeguards," "burden of proof," "false-positive/false-negative risks," and "human intervention," and the findings were synthesized across these themes (Dalglish et al., 2020).

2.3. Limitations and Validity–Reliability

A primary limitation is the lack of direct access to the technical design of the Kurgan algorithm and to internal databases. The findings rely on a normative analysis based on legal texts and secondary sources rather than on empirical taxpayer data. Reliability was strengthened through cross-comparison of different document types and literature-based triangulation (Yin, 2018; Dalglish et al., 2020).

3. Findings and discussion

3.1. Kurgan's Risk-Scoring Logic and the Promise of Targeted Auditing

The document analysis indicates that Kurgan (KURGAN) is designed around a big-data-driven risk-scoring logic based on establishment ("day zero") and transaction-level indicators. According to the guide, the system integrates e-documents, e-ledgers, banking, customs, and tax return data to generate scores for the likelihood of false-document use for each transaction, and it sends information-request letters to taxpayers via electronic notification for high-risk transactions (Tax Inspection Board of the Ministry of Treasury and Finance [VDK], 2025; Consulta, 2025). This architecture reflects an early-warning logic aimed at identifying false-document risk not retroactively but in the current period and as rapidly as possible (Koç, 2025).

Within this framework, Kurgan offers major promises relative to the conventional "audit pool" approach—more targeted audits, more efficient resource allocation, and strengthened voluntary compliance (VDK, 2025; KPMG Türkiye, 2025). At the same time, these promises remain largely programmatic; empirical evidence is still limited as to the extent to which the system has produced additional tax assessments and deterrence in combating false documents.

3.2. Algorithmic Transparency, Explainability, and the De Facto Redistribution of the Burden of Proof

Although the guide and related statements provide a categorical list of Kurgan's data sources and risk factors, they do not offer detailed information on the structure of the algorithmic model, the weighting logic, or threshold values (VDK, 2025; Consulta, 2025). Particularly in dynamic models that incorporate machine learning, this lack of specificity makes it difficult for taxpayers to anticipate which combinations of factors generate high risk scores, creating "black box" zones and pointing to a concrete manifestation of what the literature describes as *algorithmic tax power* (Caliendo, 2025). As Hadwick (2024) shows in the EU context, when high-risk AI systems used by tax administrations are weakly designed in terms of explainability, human intervention, and remedies, serious gaps emerge from a fundamental-rights perspective.

In the Kurgan context, the findings suggest that even if the risk signal is formally characterized as "informational," in practice invoices receiving high risk scores can impose substantial evidentiary pressure on taxpayers. According to KPMG Türkiye's assessment, in false-document examinations going forward, taxpayers will be expected to substantiate the genuineness of the transaction across 13 criteria—providing strong indications that the burden of proof may de facto shift away from a taxpayer-favorable balance toward a taxpayer-adverse one (KPMG Türkiye, 2025; Koç, 2025). This raises the question of how automated risk scores can be reconciled with the right to defense and the principle of proportionality as embedded in tax procedure law.

3.3. False-Positive/False-Negative Risks, Tax Morale, and Taxpayer Trust

Kurgan's establishment- and transaction-level scoring logic—also taking network structures into account—appears suitable for detecting false-document networks at an early stage; however, it cannot fully eliminate the possibility of false positives (classifying an honest taxpayer as high risk) and false negatives (allowing risky actors to evade detection) (VDK, 2025; Consulta, 2025). In tax risk analysis, the use of numerous criteria and large-scale datasets means that even small modeling errors can affect a broad taxpayer population. Hadwick (2024) emphasizes that scandals observed in EU examples demonstrate how algorithmic tax enforcement can generate discriminatory and disproportionate outcomes; accordingly, tax administrations must manage misclassification risks with particular seriousness.

The normative assessment in this study indicates that Kurgan's claim to support voluntary compliance is highly sensitive to how the system is perceived by taxpayers. In an environment where risk scores are generated through a non-transparent logic and defenses based on "unknowing involvement" are effectively narrowed, honest taxpayers may come to perceive themselves as potential suspects, which can erode trust in the tax administration. For algorithmic tax monitoring to strengthen tax morale, predictable rules, explainable decisions, and effective remedies are therefore essential (Caliendo, 2025).

3.4. Design Principles and Discussion of Policy Recommendations

The findings highlight four overarching design principles for Kurgan and similar systems: explainable AI, robust human oversight, sound data governance, and independent auditing. Caliendo (2025), within the framework of a "digital taxpayer bill of rights," proposes institutional mechanisms to ensure the provision of reasons for tax algorithms, meaningful human review, and public accountability for automated decisions; Hadwick (2024), in the context of the draft EU Artificial Intelligence regulation, calls for stricter procedural safeguards for tax-specific high-risk systems. The OECD's global principles on combating tax crime likewise suggest that risk-analysis tools should be designed from both effectiveness and fundamental-rights perspectives (Consulta, 2025).

Applied to Kurgan, these principles can be operationalized through more detailed and comprehensible publication of the criteria used in risk scoring and the evidentiary expectations imposed on taxpayers; ensuring that risk signals are not, by themselves, treated as a sufficient basis for severe sanctions; subjecting the algorithm to regular independent technical and legal audits; and establishing transparent, multi-tier remedy pathways for taxpayers (VDK, 2025; KPMG Türkiye, 2025). Such a redesign would align with the goal of increasing effectiveness in combating false documents while also strengthening the democratic legitimacy of algorithmic tax enforcement and its compliance with taxpayer rights.

Conclusion and recommendations

This study aims to critically evaluate Kurgan (KURGAN), the *Establishment-Supervised Analysis* system used in Türkiye's efforts to combat false documents, in light of the literature on algorithmic tax enforcement and AI-based risk scoring. The core research questions address (i) Kurgan's risk-scoring logic and its promises of targeted auditing, (ii) the tensions this architecture generates in terms of algorithmic transparency and procedural safeguards, and (iii) the potential implications of false-positive/false-negative classifications for tax morale and taxpayer trust (Caliendo, 2025; Hadwick, 2024). Although no quantitative hypotheses are tested, the study begins from the assumption that Kurgan may offer strong early-warning capacity in combating false documents, while also producing controversial outcomes with respect to transparency and the de facto allocation of the burden of proof.

The findings from the document analysis largely corroborate these assumptions. Official guides and regulations indicate that Kurgan is a big-data-driven risk scoring system that integrates multiple data sources—such as e-documents, e-ledgers, customs, banking, and tax return data—through establishment- and transaction-level indicators (Hazine ve Maliye Bakanlığı Vergi Denetim Kurulu Başkanlığı, 2025). The system is grounded in an early-warning logic intended to identify false-document networks prior to retroactive examinations and to concentrate audit resources on high-risk transactions. Practitioner assessments suggest that this approach may improve the precision of audit selection, increase administrative resource efficiency, and support voluntary compliance.

At the same time, the analysis highlights significant areas of tension. Limited publicly available information regarding risk criteria and the algorithmic model's weighting logic strengthens the system's "black box" character and makes it difficult for taxpayers to anticipate which behaviors will increase their risk scores (Caliendo, 2025). The narrowing of defenses based on "unknowing involvement" and the expectation that taxpayers will substantiate transaction genuineness through extensive sets of criteria intensify concerns that the burden of proof is shifting de facto against taxpayers. The cluster of risks discussed in European examples—including false-positive/false-negative outcomes, discriminatory effects, and potential fundamental-rights violations—likewise constitutes a set of issues that must be taken seriously in the Türkiye context (Hadwick, 2024). In this way, Kurgan becomes visible not merely as a technical risk-analysis tool but also as a normative space in which *algorithmic tax power* is instantiated (Caliendo, 2025).

Building on these findings, the study develops concrete design and policy recommendations for Kurgan and similar algorithmic tax systems. Risk criteria and evidentiary expectations should be published in more detailed and

comprehensible form so that taxpayers can access predictable standards of conduct. A high-risk signal should not, by itself, be treated as a sufficient basis for severe sanctions; in all cases, meaningful human review, reason-giving, and proportionality should be ensured. The algorithm's performance, misclassification rates, and potential biases should be subjected at regular intervals to independent technical and legal audits, and the results should be shared transparently with the public. Establishing rapid and effective remedy pathways and feedback mechanisms for taxpayers would strengthen the democratic legitimacy of algorithmic tax power (Caliendo, 2025).

Future research should prioritize empirical studies that measure Kurgan's actual effect on combating false documents and its contribution to revenue collection, as well as field research examining how different taxpayer groups perceive the system and how it shapes tax morale and trust in the administration. Comparative analyses that situate the Türkiye experience alongside other countries' algorithmic tax enforcement practices would also be valuable for design improvements and for the development of global normative frameworks (Hadwick, 2024). In conclusion, the study shows that Kurgan offers strong early-warning capacity for digital tax auditing; however, this capacity can genuinely strengthen tax justice and taxpayer trust only if it is institutionalized in a manner consistent with transparency, procedural safeguards, and fundamental rights.

Ethical Considerations

This study is based exclusively on doctrinal legal analysis and qualitative examination of publicly available laws, secondary legislation, official policy documents, and academic literature. It does not involve human participants, personal data collection, interviews, surveys, or experimental interventions. Consequently, formal ethical approval was not required. Nevertheless, the research was conducted in accordance with general principles of research integrity, academic honesty, and responsible scholarship. Special care was taken to ensure accurate interpretation of legal texts, faithful citation of sources, and balanced critical analysis, particularly given the public significance of algorithmic governance, artificial intelligence, and taxpayer rights.

Acknowledgements

The author gratefully acknowledges the scholarly contributions of researchers and practitioners whose work on algorithmic governance, artificial intelligence, and tax law informed the analytical framework of this study. Appreciation is also extended to the academic environment of Dicle University, which provided the intellectual setting and institutional support conducive to the completion of this research.

Funding

This research received no external funding from public, commercial, or non-profit funding bodies.

Conflict of Interest

The author declares no conflict of interest. The analysis presented in this article is entirely independent and was not influenced by any financial, institutional, or professional affiliations with tax authorities, technology providers, or other interested parties.

Conference Submission Note

This paper has been **submitted for presentation and publication** within the scope of the **12th International CEO Social Sciences Congress (CEOSSC)**, to be held on **6–7 December 2025** at **Metropolitan University Karachi, Pakistan**, with online participation options. The study is prepared in accordance with the academic, ethical, and scientific standards of the CEO Congress and its collaborating international institutions.

References

1. Caliendo, P. (2025). Algorithmic tax power and constitutional safeguards: Global perspectives on AI, bias, and digital tax justice. *Beijing Law Review, 16*(3), 1861–1879. https://www.scirp.org/journal/papercitationdetails?journalid=260&paperid=145651
2. Consulta. (2025). *Sahte belge ile mücadelede yeni dönem – KURGAN (Vergi Sirküleri 2025/67)* [A new era in combating false documents—KURGAN (Tax Circular 2025/67)]. https://www.consulta.com.tr/tr/sirkuler/sahte-belge-ile-mucadelede-yeni-donem-kurgan/945

3. Dalglish, S. L., Khalid, H., & McMahon, S. A. (2020). Document analysis in health policy research: An overview. *Health Policy and Planning, 35*(10), 1424–1430. https://pmc.ncbi.nlm.nih.gov/articles/PMC7886435
4. Eberhartinger, E., Safaei, R., Sureth-Sloane, C., & Wu, Y. (2021). *Are risk-based tax audit strategies rewarded? An analysis of corporate tax avoidance* (TRR 266 Accounting for Transparency Working Paper Series No. 60). https://www.accounting-for-transparency.de/publications/no-60-are-risk-based-tax-audit-strategies-rewarded-an-analysis-of-corporate-tax-avoidance/
5. Hadwick, D. (2024). Slipping through the cracks: The carve-outs for AI tax enforcement systems in the EU AI Act. *European Papers, 9*(3), 936–955. https://www.europeanpapers.eu/en/e-journal/slipping-through-cracks-carve-outs-ai-tax-enforcement-systems-eu-ai-act
6. Hazine ve Maliye Bakanlığı Vergi Denetim Kurulu Başkanlığı. (2025). *1 Ekim 2025 sahte belgeyle mücadele stratejisi – Kuruluş gözetimli analiz (KURGAN): Mükellef ve meslek mensupları rehberi* [Strategy to combat false documents (October 1, 2025)—KURGAN taxpayer and professional guide]. https://vdk.hmb.gov.tr/duyuru/sahte-belge-ile-mucadele-stratejisi-ve-kurgan-rehberi
7. Kango, U. (2025). Algorithmic governance. In W. Xu (Ed.), *Handbook of human-centered artificial intelligence*. Springer. https://link.springer.com/book/10.1007/978-981-97-8440-0
8. Katzenbach, C., & Ulbricht, L. (2019). Algorithmic governance. *Internet Policy Review, 8*(4), 1–18. https://policyreview.info/concepts/algorithmic-governance
9. Koç, V. B. (2025, October 3). *Kuruluş gözetimli analiz sistemi (KURGAN)'nin vergilendirme etkileri, maliyet ve kârlılık konusuna yoğunlaşan denetimlerin gelişimi* [Taxation effects of KURGAN and the evolution of audits focusing on cost and profitability]. Alomaliye.com. https://www.alomaliye.com/2025/10/03/kurulus-gozetimli-analiz-sistemi-kurgan-nin-vergilendirme-etkileri-maliyet-ve-karlilik/
10. KPMG Türkiye. (2025). *KURGAN yazıları ve yeni bir denetim yaklaşımı* [KURGAN notes and a new audit approach]. KPMG Vergi Blogu. https://kpmgvergi.com/blog/kurgan-yazilari-ve-yeni-bir-denetim-yaklasimi/1363
11. Wibowo, B. D. S. (2022). XBRL open information model for risk-based tax audit using machine learning. *International Journal of Informatics, Information System and Computer Engineering, 3*(1), 21–46. https://ojs.unikom.ac.id/index.php/injiiscom/article/view/6891
12. Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). Sage. https://uk.sagepub.com/en-gb/eur/case-study-research-and-applications/book250150