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Digitalisation of Pakistan's tax system

Pathway for enhancing tax efficiency and compliance

Shaheen Naseer
Anudhii Sundaram
Zulfiqar Younas

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Digitalization of Pakistan's Tax System – Pathway for enhancing tax efficiency and compliance

Shaheen Naseer[1]

(University of Oxford)

Anudhii Sundaram[2]

(University of Oxford)

and

Zulfiqar Younas[3]

(Ministry of Finance, Government of Pakistan)

1. Shaheen Naseer is a Senior Postdoctoral Researcher at the Future of Development Programme, under the Oxford Martin School, University of Oxford
2. Anudhii Sundaram is a Predoctoral Researcher at the Future of Development Programme, under the Oxford Martin School, University of Oxford
3. Zulfiqar Younas is Additional Finance Secretary at the Ministry of Finance in the Government of Pakistan

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ABSTRACT

This report intends to serve as an implicit performance review of Pakistan's apex tax authority, the Federal Board of Revenue, particularly focusing on the aspect of dispute resolution within the taxation system. The study uses a sample of 18,782 complaints against the FBR from nearly two million complaints on the Pakistan Citizen's Portal (PCP) in the years 2021 and 2022. The poor performance of tax authorities adversely affects tax collection, administration, dispute resolution, and resource allocation, which makes the performance appraisal of these bodies a pressing issue. Given the data we have access to, this report aims to find evidence on how the FBR responds to its citizens' complaints, if there exists a mismatch between the complaint resolution status marked by the citizens and the FBR, how this misalignment impacts citizens' satisfaction, and what this implies about the changes needed within the tax system to make it more responsive to citizens' needs. The broad policy implication of this report is that there is an urgent call to digitalize the taxation system in Pakistan. The digital transformation of the tax system in Pakistan is a key step towards improving the dispute resolution mechanism as well as enhancing revenue collection, expenditure efficiency, fiscal transparency, and accountability.

1. INTRODUCTION

Taxes play an indispensable role in influencing the political, economic, and social fabric of a country. It is a universally known fact that taxes help governments raise revenue to invest in public goods, such as healthcare and education and build public infrastructure, both of which are integral to fostering socio-economic development (Amirthalingam, 2012). They also influence the business and investment climate of a country, which are also key to a country's economic growth (Zarif, 2022). Additionally, they directly affect citizens' routine lives, which creates a link between them and the government that is based on the fundamental values of transparency, accountability, and integrity. Thus, it can be argued that establishing a robust taxation system, which includes effective compliance and dispute resolution mechanisms, has positive spill-over effects on the overall economy of a country. In contrast, countries with a weak taxation system, fraught with complex procedures, administrative delays, and corruption, typically struggle to raise sufficient revenue, and consequently, are unable to meet the demands of the public, leading to disappointment and dissatisfaction among its citizens. Pakistan is one such country in the South Asian region that is suffering from the adverse consequences of its poorly managed taxation system. A combination of factors such as widespread tax evasion, presence of large informal sectors, rent-seeking among tax collectors, weak administration and compliance system, lack of data and records, lack of automation, poor enforcement mechanisms, complex laws and procedures, outdated processes, inadequate human resource skills, and absence of speedy dispute resolution systems, together affect the taxation system in Pakistan (Zafar, 2017; Hassan, 2019). Further, there is a growing sense of dejection among citizens belonging to the salaried class as they bear the disproportionate burden of generating revenue through direct taxes. This sense of unfairness is amplified by the affluent segments of Pakistan who make negligible contributions to the national exchequer. The conflict between citizens' expectations and the government's taxation system has naturally led to an increase in tax-related disputes and litigations in the country. And the absence of effective dispute resolution mechanisms has led to an increased number of pending cases, which has caused even more public disappointment and dissatisfaction. For instance, from 2014 to 2016, the combined pendency of litigation cases in the Supreme Court ("SC") and the high courts ("HCs") increased from 304,813 to 312,478 (Hassan, 2019).

Given the status of the taxation system in Pakistan, there is an urgent need for wide-ranging and meaningful reforms of the Federal Board of Revenue (FBR), which is the federal law enforcement agency that is responsible for handling all tax-related matters in Pakistan. An organizational and functional overhaul of FBR's structure is an important step towards fixing the loopholes in the current tax framework and administration. This will help FBR align its actions with its broader mission and goals regarding revenue generation and creating an environment where investment decisions and resource allocation are driven by efficiency and competitiveness.

This report intends to serve as an implicit performance review of the FBR, particularly focusing on the aspect of dispute resolution within the taxation system. The study uses a sample of 18,782 complaints against the FBR from nearly two million complaints on the Pakistan Citizen's Portal (PCP) in the years 2021 and 2022. PCP is a government-owned mobile application that aims to promote citizen-centric participatory governance (PCP, 2018). Citizens using the PCP platform receive comprehensive assistance from the government agencies they engage with. This platform also enables citizens to provide feedback to various government entities, lodge personal complaints and grievances, report legal infringements by individuals, and seek advice on specific matters. Using advanced machine learning techniques for data analysis and visualization, this report attempts to fill the gaps in the existing literature on the usage of credible and objective data to assess the performance of tax-governing bodies in developing countries. Tax authorities such as the FBR are typically responsible for designing an efficient and comprehensive tax framework that strives to be just and fair for all segments of society. However, the poor performance of tax authorities adversely affects tax collection, administration, dispute resolution, and resource allocation, which makes the performance appraisal of these bodies a pressing issue. Given the data we have access to, this report only focuses on examining how a tax authority responds to its citizens' complaints, its impact on citizen satisfaction, and what that implies about the overall efficiency of the tax system.

The broad policy implication of this report is that there is an urgent need to digitalize the taxation system in Pakistan. In other words, the country needs technological solutions to build a path towards sustainable economic growth. Due to its complex tax laws and

regulations, navigating the tax landscape in Pakistan has posed a great challenge, both for the taxpayers and tax authorities which has consequently, deterred the former from complying with the tax laws, while the latter struggles to enforce those laws effectively. Rampant corruption in the system has further discouraged taxpayers from fulfilling their obligations towards the government and the tax authorities suffer because of revenue leakages and low tax revenue. This mismatch between the expectations and actions of the citizens and the government often leads to disputes that can be addressed by introducing standard practices that automate the process of taxation and make it more transparent and reliable for all. The digital transformation of the tax system in Pakistan is a key step towards enhancing revenue collection and expenditure efficiency, along with improving fiscal transparency and accountability. Using information and communication technology (ICT) tools, the tax administrative capacity can improve significantly in the form of handling big data flows and keeping a track record of complex taxpayer activities efficiently. Additionally, leveraging ICT tools can enable the government to create better mechanisms to prevent tax evasion, resolve tax-related disputes, and ensure more effective enforcement of these mechanisms (IMF, 2017; UNESCAP, 2022). A transparent and fair tax system will lead to increased revenue for the government, which it can use to finance critical public services and infrastructure. Thus, an overhaul of the tax system using technological solutions can benefit the overall economy by accelerating economic growth and development in Pakistan.

Past literature on digitalization has highlighted its positive effects on tax collection, compliance, and administration (Chen et al., 2017; Strømme, 2018; Popkova et al., 2019; Nazarov et al., 2020; Mihai et al., 2021; Skachkova, 2021; Tsindeliani et al., 2021; Uyar et al., 2021; Martínez et al., 2022; Hesami et al., 2024). For instance, Okunogbe and Santoro (2023) conducted a cross-country analysis to show that digital technologies are often associated with improvements in both tax collection and compliance and that low and middle-income countries benefit significantly more in terms of revenue gains by adopting emerging technologies within their tax system. Their study shows that only increasing e-filing adoption by half could boost tax revenues by 1.6 per cent of GDP. Digitalization streamlines tax administration processes by reducing manual work, which leads to cost savings for tax authorities and quicker processing times for taxpayers. Digital platforms such as electronic filing and payment systems simplify the tax process, making it more

convenient for taxpayers to pay taxes on time, thereby enhancing compliance. Using advanced digital tools such as blockchain and artificial intelligence can enable tax authorities to track and monitor taxpayer transactions, and help identify discrepancies, thus reducing the chances of tax evasion and fraud (OECD, 2016; Faúndez-Ugalde et al., 2020; Verbeken, 2021; Kamil, 2022; Saragih et al., 2023). Digitalization also facilitates taxpayer registration and identification, enabling tax authorities to expand the tax base, leading to an increase in tax collections, without the need for increasing tax rates. Further, digital platforms can promote transparency in tax administration by providing taxpayers access to their tax-related information online. This transparency fosters a relationship of trust and cooperation between taxpayers and the government and can also enhance citizens' perceptions of public sector performance (Valle-Cruz et al., 2016; Gritzalis, 2017; Porumbescu, 2017; Alessandro et al., 2021). The vast amounts of data generated through digitalization can be analyzed to understand taxpayer behaviour, compliance trends, and revenue patterns, which can subsequently be used to target enforcement efforts and optimize tax collection strategies. Thus, leveraging digital tools and technologies is crucial for tax authorities to enhance taxpayer compliance and revenue collection.

To reiterate, the primary motive of this report is to attempt to assess the performance of a tax authority (in this report the FBR in Pakistan), particularly focusing on the nature of complaints against it by citizens, the factors affecting the resolution of complaints, what this implies about the effectiveness of the dispute resolution mechanisms in place and what major reforms are needed to enhance the efficiency, transparency, and accountability of the taxation system. The remainder of this report is organized as follows. Section 2 sheds light on the data set used and the sample characteristics. Section 3 discusses the methodology of the study and the analysis adopted. Section 4 presents the results, and Section 5 elaborates upon the broad policy implications, followed by a conclusion in Section 6.

2. DATA AND SAMPLE CHARACTERISTICS

The report is based on the data extracted from Pakistan Citizen's Portal (PCP). As mentioned before, PCP is a government-owned mobile application that aims to promote citizen-centric participatory governance. The data used in this study is based on nearly two million complaints recorded on PCP in the years 2021 and 2022. From this, a sample of 18,782 complaints was drawn which were only complaints addressed to the FBR. There are four unique categories of FBR complaints referred to as the 'Level Two' classification in this report. These are Sales Tax, Income Tax, Customs, and Federal Excise. Table 1 shows the frequency and percentage of complaints recorded against every level two category. From the table, we can see that the maximum number of complaints are related to sales tax, with a share of 40 per cent of the total complaints in the sample. For income and customs tax, the share of complaints is 30 and 24 per cent respectively, while complaints related to federal excise are only 5.5 per cent in the sample.

Table 1: Complaint Frequency by Category (Level two)

	Freq.	Percent	Cum.
Customs	4530	24.12	24.12
Federal Excise	1035	5.51	29.63
Income Tax	5692	30.31	59.94
Sales Tax	7525	40.06	100.00
Total	**18782**	**100.00**	

The complaints are further classified into a 'Level three' category which has 50 unique values based on the specific nature of complaints recorded on the portal. Figure 1 visualizes the distribution of complaints in this category. A detailed frequency table for the level three category is given in Appendix Table A1.

Figure 1: Pie chart of complaints to FBR among different sectors (Level Three)

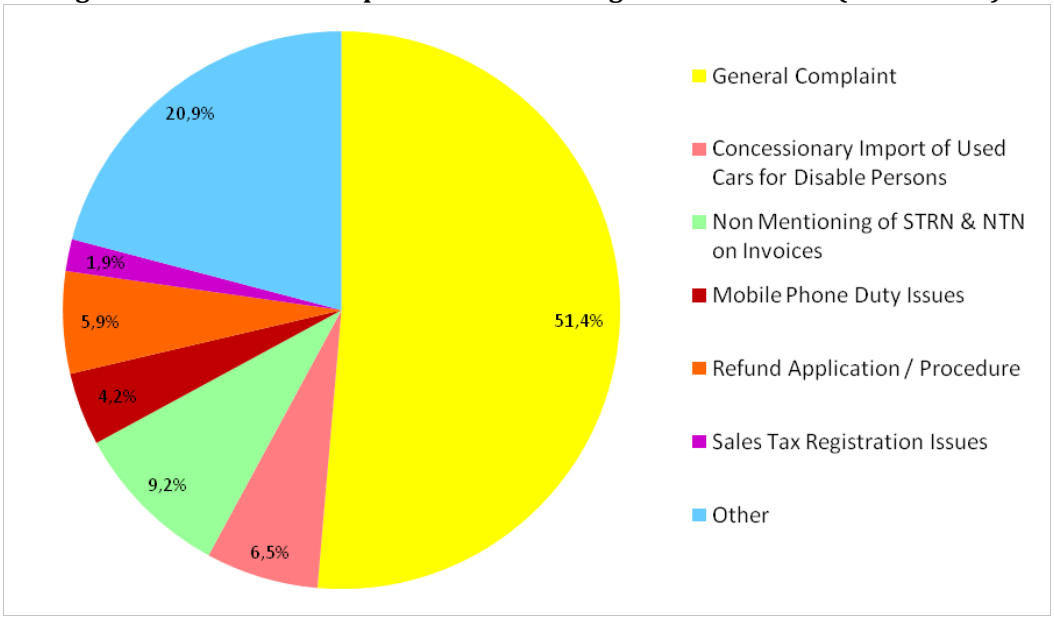
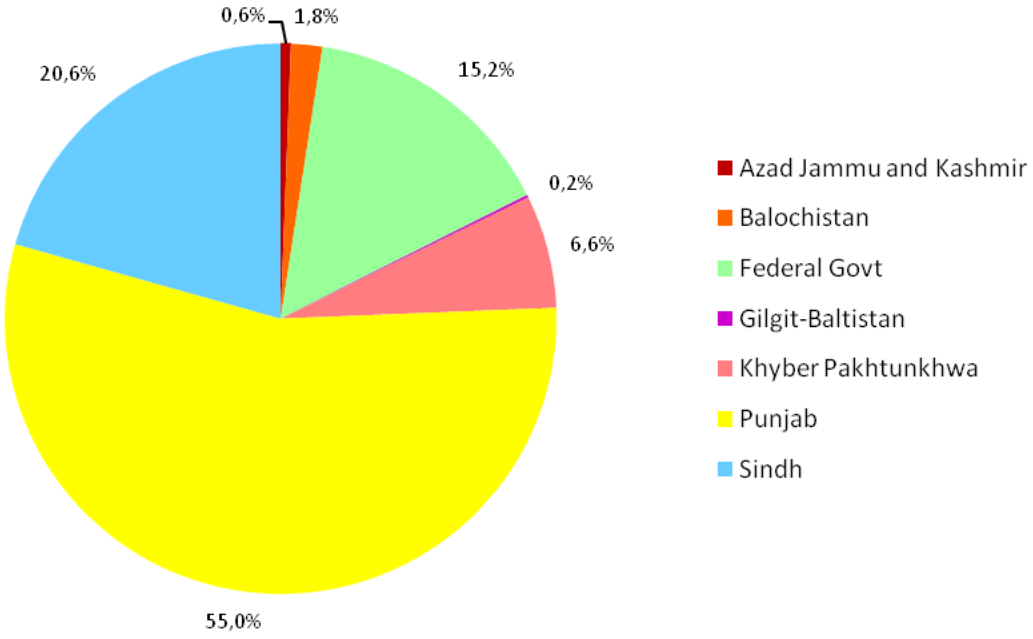


Figure 2 shows the distribution of complaints based on the first level of location i.e. the province for which the complaint was about. This category has seven unique values. In our sample of data, about 90 per cent of the complaints are concerned with only three provinces. More than half of the complaints were about Punjab (55 per cent), followed by Sindh (20.6 per cent) and Federal Government (15.16 per cent).

Figure 2: Pie chart of complaints to FBR among different provinces



More importantly, the complaints were classified into different categories based on 'citizen satisfaction' and 'government assessment'. For this report, citizen satisfaction is defined as the status of resolution of the complaint from the complainant's side, classified as "Not Resolved", "Partially Resolved", and "Resolved". On the other hand, government assessment is defined as the status of resolution of the complaint from the FBR's side, classified as "Relief not granted", "Partial relief granted", and "Relief granted". Figures 3 and 4 illustrate the percentage of complaints based on the relief status granted by the government and the resolution status of the citizen, respectively.

Figure 3: Bar chart of different Relief Status granted by FBR

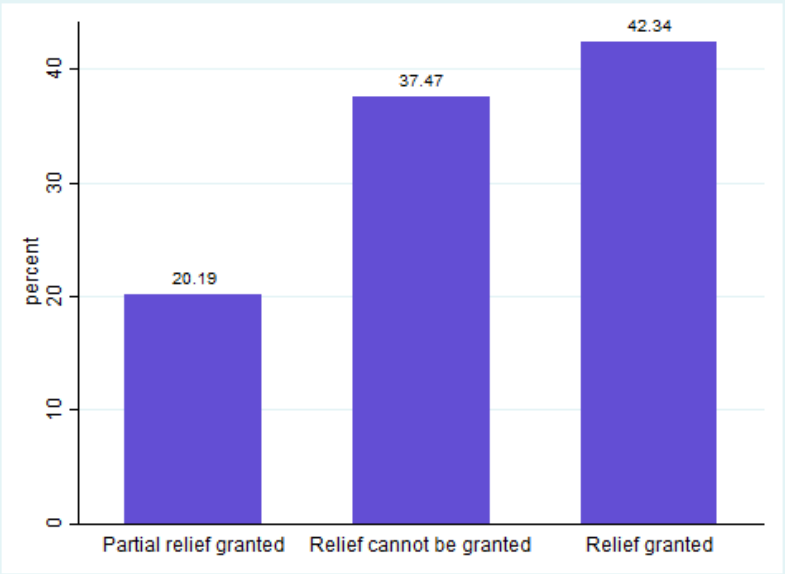
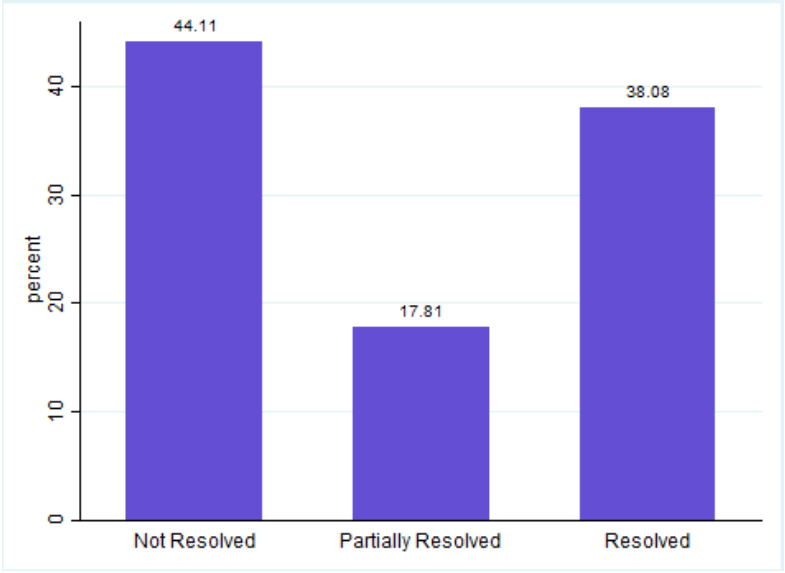
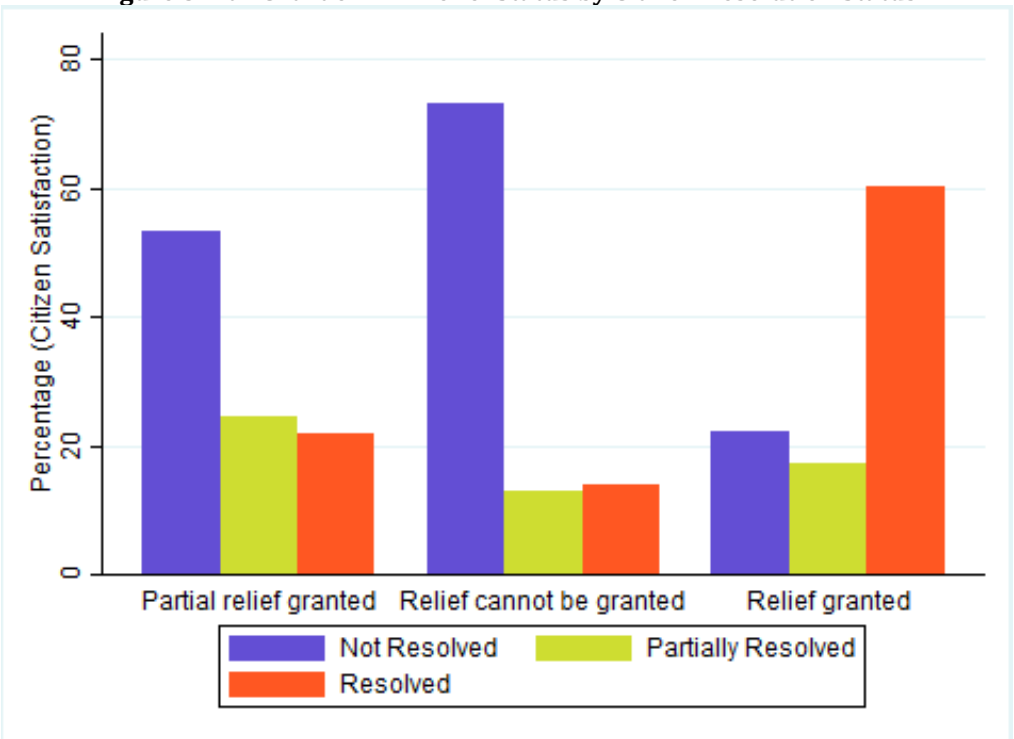


Figure 4: Bar chart of different Citizen Resolution Status



As can be seen from the bar charts, out of the total complaint cases in the sample, 42.34 per cent have been marked as 'Relief granted' by the government, while about 20 per cent have been marked as 'Relief not granted'. 'Partial relief' is granted to the citizens by the government in nearly 37 per cent of the complaints. On the contrary, for 38 per cent of the complaints, citizens have marked the resolution status as 'Resolved', for 17.8 per cent of the cases as 'Partially resolved' and for about 44 per cent of the complaints as 'Not resolved'. The figures above clearly demonstrate the mismatch between the government's assessment of complaints and citizen satisfaction. Figure 5 further visualizes this discrepancy. The bar chart illustrates the percentage of cases of different government assessment categories across the categories of citizen satisfaction. Of the total percentage of complaints in which the government claimed to have granted relief to citizens, while 60 per cent of the complainants were satisfied with the government's resolution of their complaints, nearly 21 per cent marked their resolution status as 'Not resolved' and about 18 per cent marked it as 'Partially resolved'. In cases where only partial relief was granted by the government, over 55 per cent were not satisfied with the resolution, marking the status as 'Not resolved. Citizen satisfaction and government are almost aligned only for the final category, in which relief is not granted to citizens with over 70 per cent marking the resolution status as 'Not resolved'.

Figure 5: Bar Chart of FBR Relief Status by Citizen Resolution Status

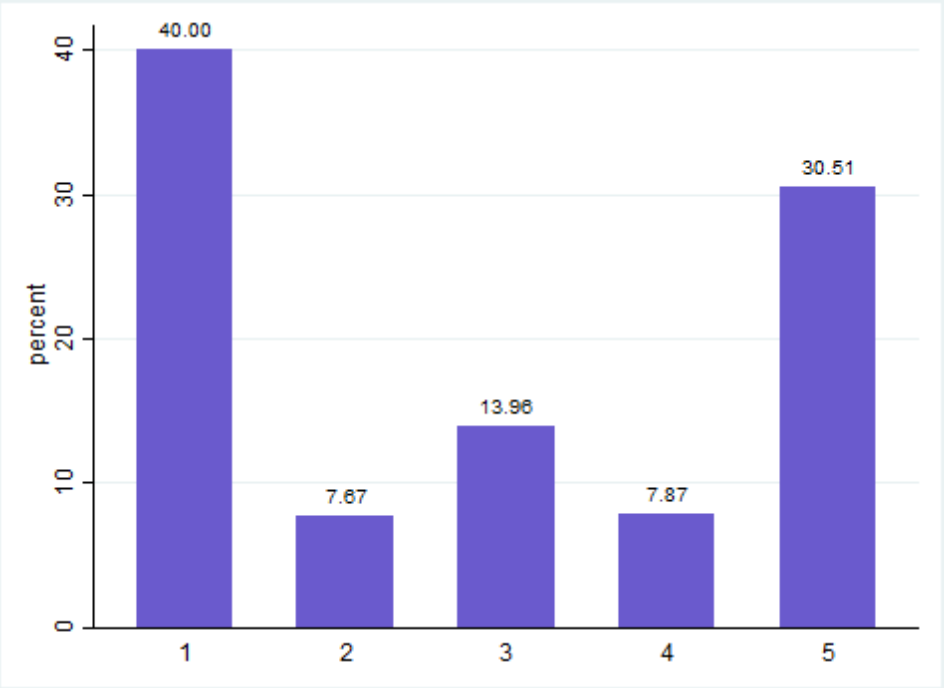


To understand the share of complaints in the sample related to digitalization, words associated with digitalization such as automation, online, and technology, were generated after which we calculated the number of complaints that contained words from this list. Of the total complaints in the sample, 1,171 or about 6.2 per cent were related to digitalization. The pie chart in Figure 6 illustrates the share of complaints about digitalization.

Figure 6: Pie chart of complaints to FBR by gender and digitalization

The complainants in the sample were also asked to provide a rating to FBR based on the status of complaint resolution. The rating was based on a scale of 5, with '1' being the poorest rating and '5' being the best. Figure 7 visualizes the distribution of complainant ratings in the sample. About 30 per cent of the complainants rated the resolution of complaints '5', while 40 per cent rated '1'. Roughly 7.6 per cent rated the resolution of complaints '2' and 7.9 per cent rated '4'. This implies that in the sample, overall, more complainants are dissatisfied with the relief granted by FBR in response to their complaints.

Figure 7: Bar chart of Complainant's Rating (Stars)



Examining the characteristics of the complainants in the sample shows that over 95 per cent of the complaints on the portal were registered by men, while only about 4 per cent of the complaints were by women. Most of the complainants are from two provinces: 64 per cent of the complainants are from the Punjab province and 17 per cent are from the province of Sindh. The sample of complainants largely represents an educated population: 9.25 per cent of the complainants had completed A levels (minimum 12 years of school education), about 30 per cent had completed a bachelor's degree, nearly 10 per cent had a diploma or certification, and about 37 per cent had a master's or a higher degree. The share of complainants with limited schooling or no education at all was 8 per cent, of which the latter was only 1.62 per cent. The complainants in the sample have varied professional backgrounds, however, the maximum number of complainants (16 per cent) are in the corporate sector, 13.92 per cent are in private business, 13 per cent are students, and about 12.3 per cent are engineers. Detailed tables with complainant characteristics are given in Appendix Table A3.

3. METHODOLOGY

This report primarily relies on using appropriate data visualization tools to analyze the sample of complaints and draw meaningful insights that can aid policymakers in formulating policies that can enhance the efficiency and competitiveness of the tax ecosystem in Pakistan, specifically focusing on the process of dispute resolution mechanism. Table 2 describes all the variables used in the study. Besides, the study also uses a fixed effects logistic regression model to examine the factors (external to FBR) that may affect citizen satisfaction. The regression model is as follows:

$$Y_i = \beta X_i + \gamma_d + \delta_q + \alpha_P + \lambda_{L2} + \lambda_{L3} + \theta_g + \varepsilon_i$$

where Y_i is a binary variable that measures citizen satisfaction which is categorized as citizen optimism or citizen pessimism, based on the status of complaint resolution. Citizen optimism is a dummy variable that equals one if citizen resolution status equals "Resolved", but government relief status is "Relief not granted" and zero otherwise. Similarly, citizen pessimism is a dummy variable that equals one if citizen resolution status equals "Not resolved", but government relief status is "Relief granted" and zero otherwise. X_i is a set of independent variables that may affect citizen satisfaction such as complexity of the complaint, age and gender of complainant, and the year of complaint. δq, α_p, λ_{L2}, λ_{L3} and θ_g represent district, qualification, profession, level two, level three, and government fixed effects. ε_i is the error term and the standard errors are robust.

Table 2: Description of variables in the data set

Variable	Description
Level two	The second level of classification for the complaints, with 4 unique values: Sales Tax (40.06%), Income Tax (30.31%), Customs (24.12%) and Federal Excise (5.51%). The first level of classification is the same for all complaints, it is FBR.
Level three	The third level of classification for the complaints, with 50 unique values. Top 3 classifications are General Complaint (51.38%), Non-Mentioning of STRN & NTN on Invoices (9.19%) and Concessionary Import of Used Cars for Disabled Persons (6.53%).
Complaint province	The first level of location (province) which the complaint was about, with 7 unique values. Top 3 provinces are Punjab (54.99%), Sindh (20.64%) and Federal Govt (15.16%).
Relief status	The status of resolution of the complaint from the complainee's side, classified by "Partial relief granted" (20.19%), "Relief granted" (42.34%), and "Relief cannot be granted" (37.47%).
Department	The department to which the complaint was filed, with 456 unique values. Top 3 provinces are Federal Board of Revenue (72.40%), Punjab Revenue Authority (9.57%) and Sindh Revenue Board (2.91%).
Department Province	The provincial location of department to which the complaint was filed, with 7 unique values.
Government	The provincial government to which the complaint was filed, with 7 unique values. Top 3 governments being complained are Federal Government of Pakistan (83.68%), Government of Punjab (11.22%) and Government of Sindh (3.27%).
Dob	The complainant's date of birth.
Age	The age is calculated from the date of birth, as the difference between date("today") and dob.
Gender	The complainant's gender: Female (3.94%), Male (95.85%) or Other (0.21%).
Profession	The profession that the complainant works in, with 15 unique values. Top 5 professions excluding the unspecified are Corporate Sector (16.00%), Private Business (13.92%), Student (13.09%), Engineer (12.35%) and Lawyer (10.72%).
Qualification	The academic qualification that the complainant holds, with 17 unique values.
Citizen resolution status	The status of resolution of the complaint from the complainant side, classified by "Partially Resolved" (17.81%), "Resolved" (38.08%), and "Not Resolved" (44.11%).
Star	Complainant's rating for the resolution, ranging from 1 to 5 (1 star 40.00%, 2 stars 7.67%, 3 stars 13.96%, 4 stars 7.87%, 5 stars 30.51%).
Complexity	Complaint complexity is the number of words in the translated complaint.
Delay	Delay is measured in days and calculated as the difference between the date the complaint was filed and the date when the feedback for the complaint was received.

4. RESULTS

The results generated by the logistic regression model are given in Table 3. Table 3 shows results for regressing citizen pessimism on a set of independent variables along with controlling for different combinations of fixed effects. Not controlling for any fixed effect while performing the regression, as given in column 1 of Table 3, we find that standardized complexity has a significant negative linear association with citizen pessimism. Standardized complexity is simply the standardized value of the number of words in a complaint. However, controlling for all fixed effects, the association does not stay significant as can be seen in column 6. Similarly, the complainant's age and gender also have a statistically significant linear association with citizen pessimism initially, but this significance disappears as we account for different fixed effects. The variable 'Year is 2021', however, remains statistically significant even after controlling for all fixed effects. This implies that there were factors beyond the model in this study that influenced the dispute resolution process of FBR in 2021, causing immense dissatisfaction among citizens with the relief granted to them. While we may not have been able to find strong evidence of an association between the complainant's age and gender, and complaint complexity with citizen complaint resolution status, the strong positive association between the year 2021 and citizen pessimism points towards the primary objective of this report, which is to shed light on the mismatch between citizen resolution and tax authorities' relief status. Due to data constraints, this report refrains from making tall claims about the specific factors affecting the mechanism of resolving tax disputes in Pakistan, however, our model certainly provides evidence against the status quo, which is not ideal and requires reforms within the system to enhance citizen satisfaction. Table A4 in the appendix shows results for regressing citizen optimism on the same set of independent variables, controlling for different combinations of fixed effects.

On further analysis, using different data visualization tools, the study found some intriguing results. Figure 8 illustrates the average number of words in a complaint across different categories of taxes and Figure 9 illustrates the average delay across these categories. Average number of words is measured as the mean of the number of words in each category. Average delay is measured in days and calculated as the difference between the date the complaint was filed and the date when the feedback for the

Table 3: Regression of Citizen being overly pessimistic in comparison to relief status marked by FBR

	Citizen Pessimism				
Variables	(1)	(2)	(3)	(4)	(5)
Standard Complexity	-0.00443**	-0.00378*	-0.00397**	-0.00111	-0.00147
	(0.00175)	(0.00199)	(0.00202)	(0.00211)	(0.00211)
Complainant's gender	0.0151*	0.0113	0.0123	0.0114	0.0111
	(0.00866)	(0.00948)	(0.00975)	(0.00978)	(0.00977)
Complainant's age	-0.00090***	-0.00090***	-0.00046**	0.000346	0.000341
	(0.000121)	(0.000134)	(0.000191)	(0.000237)	(0.000237)
Year is 2021	0.0541***	0.0554***	0.00571***	0.0652***	0.0662***
	(0.00371)	(0.00408)	(0.00411)	(0.00424)	(0.00425)
Constant	0.0468***	0.0500***	0.0310**	-0.00506	-0.00519
	(0.00970)	(0.0106)	(0.0121)	(0.0135)	(0.0135)
District Fixed Effect	No	Yes	No	No	Yes
Qualification Fixed Effect	No	No	Yes	Yes	Yes
Profession Fixed Effect	No	No	Yes	Yes	Yes
Level two Fixed Effect	No	No	No	Yes	Yes
Level three Fixed Effect	No	No	No	Yes	Yes
Government Fixed Effect	No	No	No	No	Yes
Observations	18,765	16,321	16,274	16,273	16,273
R^2	0.003	0.013	0.018	0.022	0.024

Note: Robust standard errors appear in brackets. Dependent variable for all Models is the dummy variable that turns on if citizen complaint status equals "Not Resolved" but government resolution status is "Relief granted" and zero in other scenarios. Independent variables are standardized complexity (total number of words in the complaint, values are standardized to mean of 0 and standard deviation of 0), male (a dummy variable that turns on if the complainer is male), year is 2021 (a dummy variable that turns on if the year is 2021) and age. A set of fixed effects: district, qualification, profession, level two, category, government. *** p<0.01, ** p<0.05, * p<0.1.

complaint was received for each value of the complaint category. From figures 8 and 9, we see that complaints under sales tax have the least number of words on average, and the average delay in complaint resolution is also the lowest for this category. Complaints in the other tax categories have on average, a higher number of words than the sales tax complaints, and their delay time is also higher, on average by 15 to 20 days. This seemingly trivial result points towards the larger issue of inefficiency within the tax authority, FBR. The authority does not have an automated robust central system in place to analyze, comprehend, and quickly solve citizen complaints. For every category of

complaint, the system should be well-equipped to provide a prompt resolution, with seamless dissemination of information to different branches within the authority, depending on the nature of the complaint. If we assume that the longer the complaint, the more complex the issue, our claim about the poor performance of FBR in dispute resolution, gains even more significance.

Figure 8: Bar Chart of Average Number of Words by Category (Level Two)

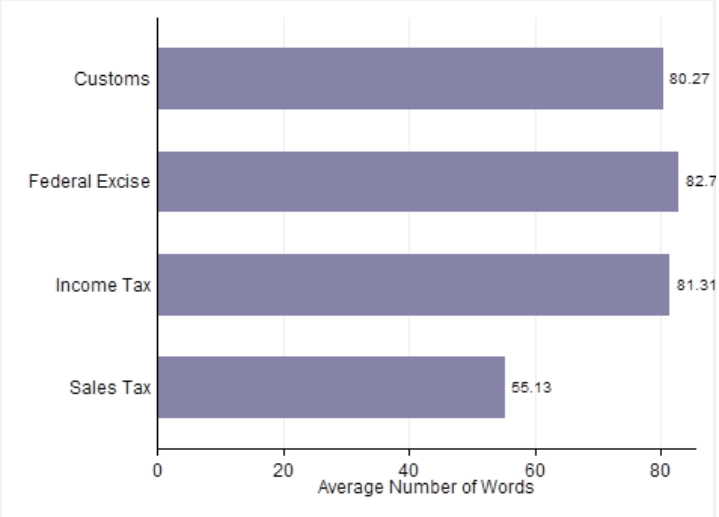


Figure 9: Bar Chart of Average Delay by Category (Level Two)

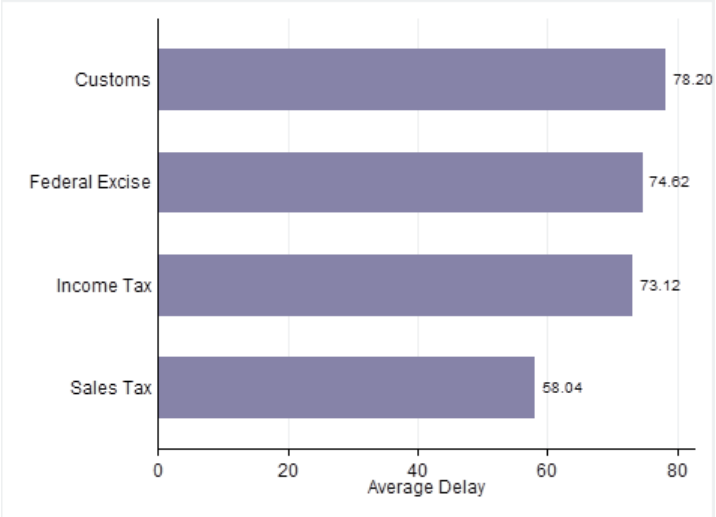
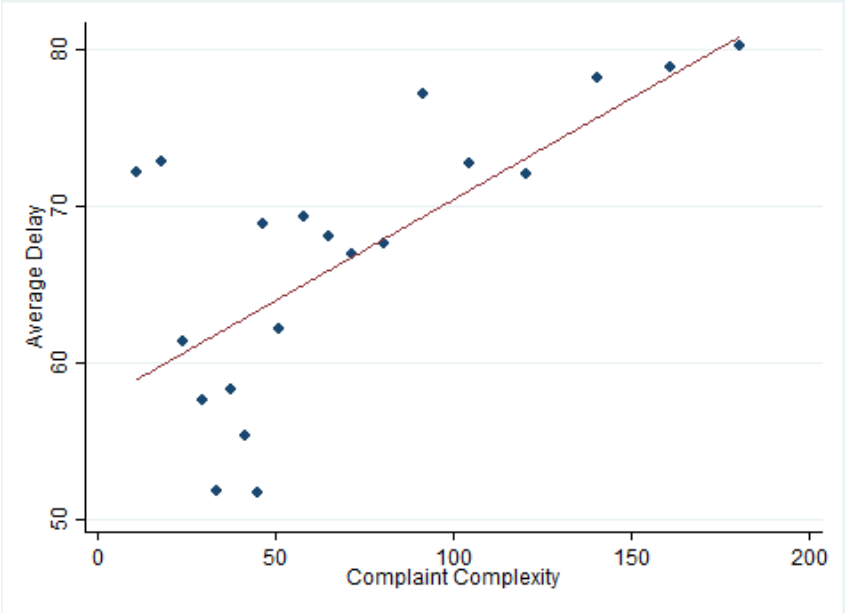


Figure 10 shows a bin scatter plot that illustrates the average delay in the complaint's resolution when the complaint complexity is under 200 words. There are 10,560 complaints with a word count under 200 and 44 complaints with a word count above 200.

Even though the scatter plot does not show a strictly linear association between the average delay and complexity of complaints in the sample, we can see that for complaints

Figure 10: Bin Scatter Plot of Delay by Complexity Under 200 words



with a higher number of words (about 150 to 200), the average delay is between 70 to 80 days. For our analysis, we also used information on the ratings given by the citizens based on their complaint resolution status. Figures 11 and 12 plot the complainant's rating (measured from 1 to 5) using bar charts for complaints to the Federal Board of Revenue. Figure 11 includes complaints where the government deemed that the relief to citizens is 'Granted' while Figure 12 includes complaints, where the relief to citizens is 'Not granted'. Focusing particularly on Figure 11, we observe that even though the government has 'granted relief' to all the complainants in this sample, only about 46 per cent of the complainants gave the rating 5 based on their resolution status. This implies that over half of the complainants were not completely satisfied with the relief granted to them by FBR, thereby providing another evidence of the substandard performance of the tax authority in resolving citizen complaints which perpetuates citizen pessimism. In this sample, about 5 per cent gave the rating 2 and 22 per cent gave the rating 1, which is the lowest.

Figure 11: Bar chart of Complainant's Rating by Relief Granted

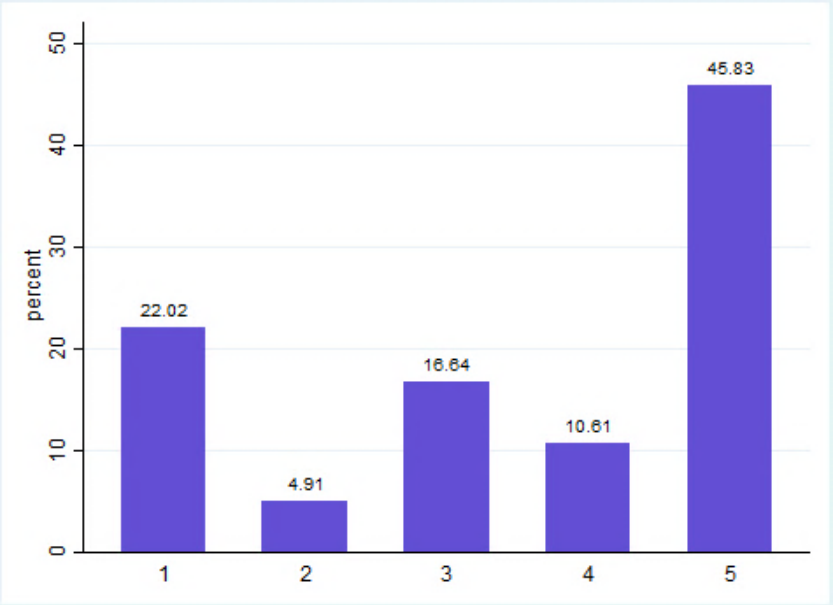


Figure 12: Bar chart of Complainant's Rating by Relief Not Granted

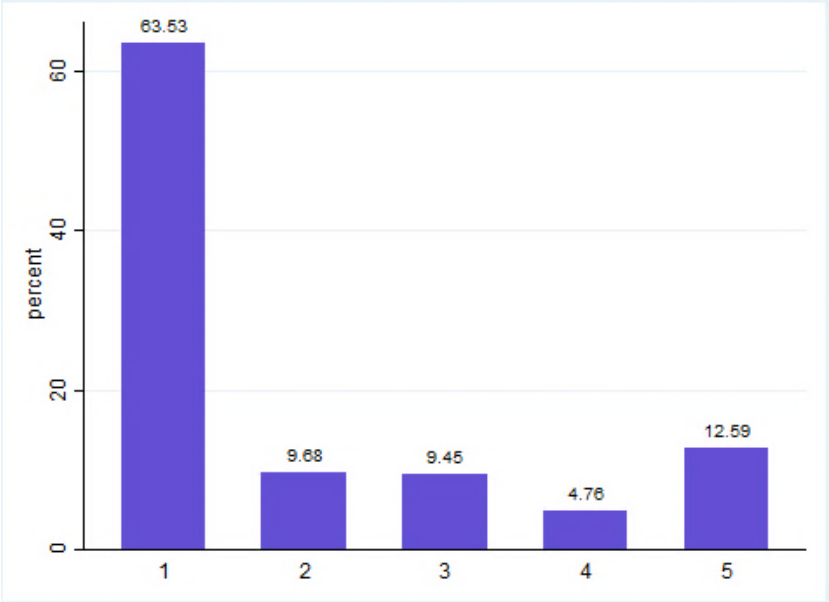
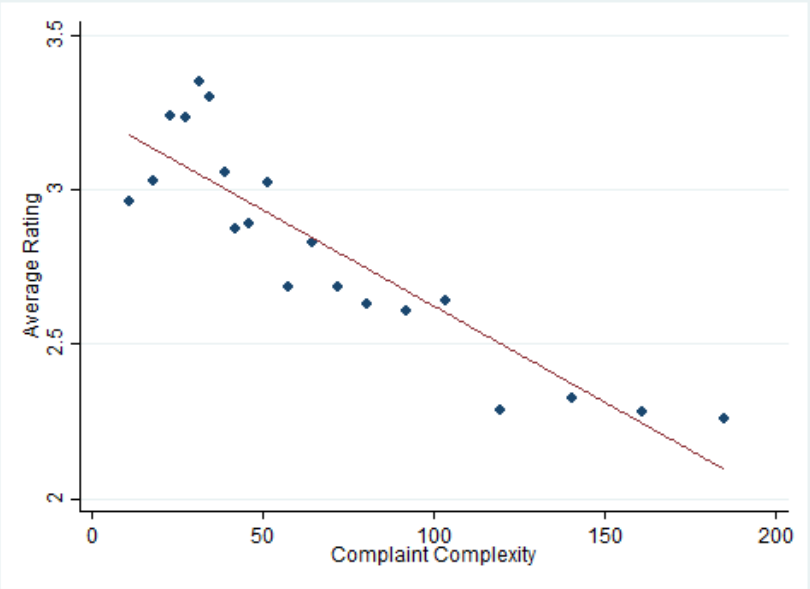


Figure 13 demonstrates a bin scatter plot between average citizen rating measured from 1 to 5 against complaint complexity. There is a negative linear association between average rating and complaint complexity. As the complexity of the complaint increases, the average rating given by the citizen decreases. This supports the argument that we made earlier about the positive association between average number of words in a complaint and the average delay in complaint resolution, which in turn affects citizen

satisfaction. Thus, the tax authority's inability to respond promptly to complex citizen complaints not only leads to delays in complaint resolution, but also shapes the dynamic

Figure 13: Bin Scatter Plot of Average Rating by Complexity



between citizens and the government, by influencing the former's perception of the tax authority as an accountable, reliable, and efficient body that addresses citizens' grievances.

5. DISCUSSION AND POLICY IMPLICATIONS

This report attempts to highlight that the status quo in which the FBR is operating is inefficient, by particularly focusing on the aspect of dispute resolution. It provides evidence of the mismatch between the citizen resolution status and the relief granted by the government, which leads to citizen pessimism and dissatisfaction. Some studies in the past have highlighted the strong positive association between public service delivery and willingness to pay taxes (Glaser, 1999; Habibov et al., 2018). In the context of this report, service delivery is synonymous with FBR's ability to create a tax framework that simplifies complex procedures and tax laws, encourages tax compliance, and ensures speedy dispute resolution, in case of tax-related grievances of the citizens. By establishing an efficient and transparent mechanism to resolve citizen complaints, the tax authority can serve as a responsible government body that the citizens can rely upon, especially given the sensitivity of tax-related issues. Besides, when citizens perceive the tax authority to be fair and equitable in its treatment of all taxpayers and they trust the government to be using their tax payments efficiently to provide quality public services, they are more likely to fulfil their tax obligations (Habibov et al., 2018). Thus, enhancing citizen satisfaction with the tax authority can lead to higher levels of tax compliance and revenue collection. However, to foster a relationship of trust and cooperation with the taxpayers, the tax authority, in our report the FBR, must provide clear and accessible information to the citizens, address their grievances promptly, and empower them to comprehend and comply with tax laws more effectively.

The broad policy implication of this report is that there is an urgent need to digitalize tax administration in Pakistan, with a greater focus on the effective implementation of existing policies about digitalization. Given that the current system is riddled with complex tax laws and procedures, poor enforcement mechanisms, inadequate human resources, weak dispute resolution mechanisms, and rampant corruption, the digital transformation of the tax system is a crucial step towards improving revenue collection, fiscal transparency, and accountability. Particularly concerning dispute resolution, the mismatch between the expectations and actions of the citizens and the government can be addressed by introducing standard digital practices that automate the process of taxation and make it more transparent for all.

Although Pakistan is way behind in terms of digital maturity as compared to other countries, it has been taking small steps to implement a digital tax administration system to enhance efficiency and compliance in tax-related matters. For instance, FBR has introduced digital platforms to enable taxpayers to electronically submit their tax returns and make tax payments online. These platforms intend to streamline the tax filing procedure and reduce reliance on traditional paperwork. FBR has also introduced a digital process for taxpayer registration and has implemented an Electronic Notice Management System (ENMS) to issue electronic notices to taxpayers. This system was designed to reduce delays and administrative burdens by facilitating communication between tax authorities and taxpayers. Besides, FBR has introduced digital verification platforms to enable taxpayers to verify their tax profiles and payments, thus giving taxpayers access to their tax-related information and improving accuracy in tax reporting. Further, it has set up Taxpayer Facilitation Centres (TFCs) which have digital facilities to aid taxpayers in tax-related matters, alongside organizing awareness and training sessions to familiarize taxpayers with digital tax administration systems (FBR, 2023). The FBR has also been working on automating diverse tax procedures to enhance efficiency and minimize manual involvement. This encompasses deploying electronic data interchange (EDI) systems to facilitate smooth information exchange between taxpayers and tax authorities (FBR, 2020). However, these initiatives will only fructify when the implementation is effective.

In addition to the existing initiatives to digitalize the tax system, FBR can consider the use of advanced technological tools such as blockchain and artificial intelligence to improve the efficiency of the system. For instance, blockchain technology can help the government maintain a transparent record of transactions, which can help tax authorities verify the accuracy of financial data, reducing the likelihood of tax evasion or fraud (OECD, 2016; Mazur, 2022, Hendriyetty et al., 2023). It allows tamper-proof sharing of taxpayer information between government agencies and tax authorities, thereby facilitating seamless exchange of data. On the other, AI-driven analytical tools can assess vast amounts of taxpayer data to detect patterns, anomalies, and potential compliance issues. AI algorithms can also help in examining taxpayer risk profiles based on various factors, such as past behaviour, industry trends, and economic indicators, which can help tax authorities target their resources in high-risk areas. AI technologies can automate routine

tasks, such as data entry, document processing, and compliance checks, freeing up human resources for more complex and strategic activities (Faúndez-Ugalde et al., 2020; Saragih et al., 2023). This automation leads to greater efficiency and accuracy in tax administration processes.

In general, the policymakers in Pakistan should prioritize the effective execution of initiatives under 'GovTech', as also outlined in the IMF's insights on GovTech (Moszoro et al., 2023). Govtech involves the use of ICT tools within the public sector to enhance governance processes and promote citizen participation. It aims to modernize the public sector by streamlining administrative processes and enhancing service delivery to citizens (PSEB, 2020). However, the adoption of ICT solutions by government entities in Pakistan has been typically slow due to resistance to change the status quo. Yet, policymakers in Pakistan must actively advocate for the adoption of digital tools by the public sector to ensure greater responsiveness to citizen needs, as well as increased efficiency and accountability. To move forward on the path of digitalization, it is also of utmost importance for the government in Pakistan to reduce the rural-urban digital divide and ensure that internet connection and digital devices are accessible to all.

The adoption of ICT solutions to improve the dispute resolution mechanism particularly can make the process more efficient and accessible by allowing better management of citizen complaints, reducing delays in the dispensation of justice, and introducing more transparency in the system to curb corruption. FBR can develop online portals and case management systems that enable taxpayers to submit documents electronically, track the status of their complaints, and communicate with tax officials online. These systems can reduce complex paperwork and provide real-time updates to taxpayers, thus simplifying the dispute resolution process. FBR can also set up an online dispute resolution (ODR) platform that allows taxpayers and tax officials to resolve disputes collaboratively by engaging in virtual negotiations and reaching settlements without the need for a mediator. Further, it can leverage artificial intelligence technologies to assess large volumes of data related to tax disputes and blockchain technology to maintain immutable records of transactions between parties, thereby enhancing the integrity and transparency of the dispute resolution process. Blockchain-driven solutions can enable the FBR to securely store and authenticate evidence, monitor the progress of cases, and

check the authenticity of digital records. By providing transparent and verifiable evidence, these advanced technological tools can reduce the time and resources required to resolve disputes between taxpayers and tax authorities. FBR can also develop an interactive mobile application for tax-related disputes to enhance accessibility and engagement among taxpayers. While introducing digital tools in the tax administrative framework, it is also the onus of tax authorities to provide resources such as training modules and tutorials to enhance taxpayers' digital literacy and provide them guidance on digital dispute resolution procedures to help them navigate the process seamlessly. In addition to digitalization, it is crucial to establish uniform business practices to expedite justice for taxpayers. This standardization allows tax authorities to refer to these practices for guidance when completing assessments. Enhancing the quality of tax assessment procedures through regular training sessions on tax laws for tax officials, as well as reviewing their assessment practices, and assigning audit responsibilities to competent and experienced officers can significantly reduce tax-related disputes. Besides, the Alternative Dispute Resolution (ADR) mechanism, such as mediation and arbitration, which offer alternative pathways for resolving tax disputes outside of traditional court proceedings, must also be strengthened.

The FBR in Pakistan can also seek inspiration from other developing economies in the region such as India, Bangladesh, and China which have made significant strides in recent years to digitalize their tax administration. For example, in India, the adoption of digital tools has revolutionized the process of information collection and decision-making by tax authorities, as evidenced by the implementation of new tax policies and audit methodologies. The Indian income-tax administration has adopted automation in tax-related processes, including electronic filing of tax and income tax returns, digital communication, and faceless assessments, leading to the establishment of a well-organized income-tax portal (EY India, 2023). Deloitte India conducted a survey of companies across different industries, from financial services to life sciences and health, to obtain their perspective on the digital transformation initiatives undertaken by the Indian tax administration (Deloitte India, 2023). They reported that 51 per cent of the respondents appreciated improved data accessibility and availability on tax portals, 33 per cent mentioned ease in operations and better cash flows, 48 per cent stated reduced time spent on compliance, and 33 per cent reported having better control over data.

Therefore, the incorporation of technology into the tax system in India has been pivotal in assisting businesses in managing data and ensuring compliance. Additionally, it has motivated taxpayers to embrace automation and modernize operations. Similarly, in Bangladesh, the digital economy ecosystem has been on a rapid rise. The National Board of Revenue (NBR), which is the apex authority for tax administration in the country, provides several e-services, including application for tax identification number (e-TIN), tax payments and tax return filing, through its website, as part of the digitalization of the income tax administration. Since the introduction of the electronic tax identification number system in 2014, the number of tax registrations has tripled in Bangladesh (Sarker and Ahmed, 2022). The NBR has also developed an e-learning portal to inform individuals about tax system modifications via numerous e-learning courses. These initiatives are geared towards simplifying various tax procedures and enhancing digital communication between the government and taxpayers. In China, the State Taxation Administration (STA) has also significantly increased the use of digital technology and highly sophisticated analytical tools, which has helped in enhancing voluntary compliance, identifying risks, and building resilience to external shocks such as the COVID-19 pandemic. The STA has been making significant progress in utilizing advanced technologies such as big data, cloud computing, and artificial intelligence to streamline the taxation process, thereby alleviating administrative burdens for taxpayers (OECD Forum on Tax Administration, 2021). For instance, leveraging artificial intelligence, the STA introduced an online platform named 'Robochat', which functions as an intelligent Q&A platform to enhance taxpayer satisfaction. Moreover, during the planning phase of China's major VAT reform in 2019, the STA utilized sophisticated analytical models based on big data technology to evaluate various rate combinations, aiding the government in selecting the most optimal policy framework and improving the precision of auditing programs.

Many other countries such as the United Kingdom, Canada, France, Australia, Spain, Italy, Netherlands, and the United States of America, have also modernized their systems for digital tax administration. According to OECD (2019), 80 per cent of the 59 tax administrations within the OECD that were surveyed, used data analytics tools, 75 per cent had machine learning capabilities, and 50 per cent had digital assistant tools. This is also matched by the spending, with ICT infrastructure comprising 50 per cent of capital expenditure (OECD, 2021). The digital revolution across the world has gained momentum

in the last decade, with governments adopting ICT solutions to improve the quality of governance and provide better public services to their citizens. In the backdrop of the COVID-19 pandemic and the consequent economic crisis, the need for transitioning to a digital public service delivery ecosystem has never been more pressing. Thus, this next decade serves as an opportunity for governments to act upon their digital initiatives with greater urgency, harnessing ICT systems, data, and automation. Particularly, in the context of taxation, this is imperative to improve effectiveness in collecting revenue, as well as to provide better taxpayer service. Some countries have also begun assessing and experimenting with advanced technological tools such as blockchain to improve tax efficiency, transparency, and compliance. For instance, in Kazakhstan, the implementation of a blockchain-based system to manage a portion of VAT receipts has entered the final stage and has begun showing positive outcomes (State Revenue Committee, 2020). The tax authority in the UK has also begun assessing the incorporation of blockchain technology in its digital tax administration system, to enhance tax compliance processes for businesses (IMF, 2017; OTS, 2019). Likewise, the European Commission's Directorate-General for Taxation and Customs has started exploring the use of blockchain technology as a potential foundation for the Digital Single Market (WTO, 2019). The Inland Revenue Authority of Singapore (IRAS) has also been evaluating the application of blockchain for secure data sharing and artificial intelligence for risk assessment and compliance monitoring. The Internal Revenue Service (IRS) in the United States has been considering the potential applications of blockchain and artificial intelligence in tax administration for improving taxpayer identity verification, fraud detection, and compliance monitoring (Bureau of the Fiscal Service, 2021). Similarly, the Australian Taxation Office (ATO) has been exploring advanced ICT tools for streamlining tax processes, particularly to improve tax compliance (KPMG, 2022).

Thus, FBR has many real-world examples of digital tax administrations to seek inspiration from and emulate. However, to build a sustainable digital taxation system, it is imperative for FBR to also consider the social and demographic factors influencing the full engagement of different groups in its digital revolution, given Pakistan's context (Bassey et al., 2022). This is significant as the digital taxation ecosystem approach can only succeed with the active participation and support of all the stakeholders outside of the tax authorities. Given the wide-ranging impact digital taxation can have on the economy

from changing taxpayer behaviour to facilitating ease of doing business, all relevant stakeholders must be involved in the policymaking process (Canares, 2016).

6. CONCLUSION

This report mainly attempts to highlight the inefficient functioning of FBR in Pakistan, specifically focusing on the poor dispute resolution mechanism that has led to more citizen pessimism. In this report, we emphasise the importance of enhancing citizen satisfaction with the tax authority to improve tax compliance. When taxpayers view the tax system to be transparent, equitable, and responsive to their concerns, they are inclined to willingly fulfil their tax responsibilities, instead of engaging in non-compliance or evasion. This fosters a more efficient tax system, which ultimately benefits both the government and the citizens.

We propose that Pakistan's FBR can enhance the efficiency of its tax administration by strategically adopting digitalization. By narrowing the digital divide, encouraging the use of digital tools among its citizens, enhancing digital literacy, and utilizing ICT solutions for improving tax compliance, dispute resolution and fiscal management, Pakistan can pave the path for a more prosperous future. The government's dedication, combined with active collaboration with stakeholders, is essential for achieving enduring growth in tax revenue and fiscal efficiency.

However, the digital tax environment must recognize the involvement of stakeholders, their incentives, and their conduct, both in their engagements with tax authorities and with each other. Additionally, the significance of context, especially concerning the facilitation and promotion of digital taxation within a local setting, along with the accessibility and cost-effectiveness of e-taxation services in terms of software and hardware, should be recognized. Lastly, the outcomes stemming from the implementation of digital taxation should be examined, including an assessment of the potential benefits and costs.

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8. A. Appendix – Tables

Table A1: Complaint Frequency by Category (Level three)

	Freq.	Percent	Cum.
Add IBAN	24	0.13	0.13
Airport Clearance Issues	195	1.04	1.17
Benami Accounts	109	0.58	1.75
Benami Complaints	178	0.95	2.69
CPR not visible in Payments Section	30	0.16	2.85
CPR not visible in Sale Tax return	47	0.25	3.10
Calculation	112	0.60	3.70
Calculation error	158	0.84	4.54
Car Duty Issues	113	0.60	5.14
Change Accounting Period	24	0.13	5.27
Change Jurisdiction	243	1.29	6.56
Change email and cell in profile	74	0.39	6.96
Concessionary Import of Used Cars for Disabled	1226	6.53	13.49
Correction in Income Tax CPR	110	0.59	14.07
Correction of Name (AOP)	14	0.07	14.15
Correction of Name (Company)	9	0.05	14.19
Correction of Name (Individual)	31	0.17	14.36
Corruption	1	0.01	14.36
Extension in Return Filing	55	0.29	14.66
Filing of Returns	271	1.44	16.10
Foreigner's Registration/Enrollment	37	0.20	16.30
General Complaint	9650	51.38	67.68
Income Tax Return Revision	136	0.72	68.40
Income Tax Withholding Statement Annual u/s 149	39	0.21	68.61
Income Tax Withholding Statement Monthly	28	0.15	68.76
Law-related question	129	0.69	69.44
Mobile Phone Duty Issues	794	4.23	73.67
Name not in ATL	176	0.94	74.61
Non-Mentioning of STRN & NTN on Invoices	1727	9.19	83.80
Non-Resident's Return Filing	113	0.60	84.41
Null Return	32	0.17	84.58
Online Import Issues	293	1.56	86.14
Problem in Return Submission	51	0.27	86.41
Provincial services entry	67	0.36	86.76
Purchase Invoice Feeding	177	0.94	87.71
Refund Application / Procedure	1112	5.92	93.63
Revision of Statement of Final Taxation	7	0.04	93.66
Revision of Wealth Statement	11	0.06	93.72
Sale Tax ATL	32	0.17	93.89
Sale Tax Refund	159	0.85	94.74
Sale Tax Revision	175	0.93	95.67
Sales Tax Exemption	161	0.86	96.53
Sales Tax Penalty Payment	44	0.23	96.76
Sales Tax Registration Issues	348	1.85	98.62
Senior Citizen Credit	31	0.17	98.78
Statement of Final Taxation	12	0.06	98.84
Suspended/ Blacklisted taxpayer	25	0.13	98.98
Suspended/ Non-Active in Sale Tax	86	0.46	99.44
Update DOB	5	0.03	99.46
Used Car Duty Issues	101	0.54	100.00
Total	**18782**	**100.00**	

Table A2: Complaint Frequency by Province

	Freq.	Percent	Cum.
Azad Jammu and Kashmir	112	0.60	0.60
Balochistan	345	1.84	2.43
Federal Govt	2848	15.16	17.60
Gilgit-Baltistan	29	0.15	17.75
Khyber Pakhtunkhwa	1244	6.62	24.37
Punjab	10328	54.99	79.36
Sindh	3876	20.64	100.00
Total	**18782**	**100.00**	

Table A3: Complaint Frequency by Complainant Characteristics

Table A3 (a): Complainant gender

	Freq.	Percent	Cum.
Female	740	3.94	3.94
Male	17992	95.85	99.79
Other	39	0.21	100.00
Total	18771	100.00	

Table A3 (b): Complainant citizen province

	Freq.	Percent	Cum.
Azad Jammu and Kashmir	135	0.81	0.81
Balochistan	324	1.94	2.75
Federal Govt	1359	8.13	10.88
Gilgit-Baltistan	28	0.17	11.05
Khyber Pakhtunkhwa	1353	8.10	19.15
Punjab	10712	64.12	83.27
Sindh	2795	16.73	100.00
Total	16706	100.00	

Table A3 (c): Complainant qualification

	Freq.	Percent	Cum.
BS (4 years)	2442	13.21	13.21
Bachelor's degree (2 Years)	2226	12.04	25.25
Bachelor's degree (5 Years)	1097	5.93	31.19
Certification	1697	9.18	40.37
Diploma	191	1.03	41.40
Diploma of Associate Engineering (DAE 3 Years)	362	1.96	43.36
Doctorate	196	1.06	44.42
FA / FSc / A Levels (12 Years)	1710	9.25	53.67
MBBS (5 years)	474	2.56	56.23
MPhil / MS (18 years)	1087	5.88	62.11
Master's degree	5308	28.71	90.83
Matriculation / O Levels	830	4.49	95.32
Middle School	332	1.80	97.11
None of the Above	300	1.62	98.73
Post Doctorate	80	0.43	99.17
Short Course	74	0.40	99.57
Training	80	0.43	100.00
Total	18486	100.00	

Table A3(d): Complainant profession

	Freq.	Percent	Cum.
Armed Forces	625	3.38	3.38
Civil Service	1385	7.49	10.87
Corporate Sector	2958	16.00	26.88
Doctor / Medical Worker	578	3.13	30.00
Engineer	2283	12.35	42.35
Journalism	123	0.67	43.02
Lawyer	1982	10.72	53.74
NGO Worker	86	0.47	54.21
None of the above	1840	9.95	64.16
Political Worker	110	0.60	64.76
Private Business	2573	13.92	78.67
Senior Citizen / Retired	455	2.46	81.14
Social Worker	498	2.69	83.83
Student	2419	13.09	96.92
Teacher	570	3.08	100.00
Total	18485	100.00	

Table A4: Regression of FBR being overly optimistic in comparison to resolution status marked by Citizens

	Citizen Optimism				
Variables	(1)	(2)	(3)	(4)	(5)
Standard Complexity	-0.000876	-0.000490	-0.00125	-0.00195	-0.00186
	(0.00110)	(0.00126)	(0.00127)	(0.00133)	(0.00133)
Complainant is male	-0.000308	-0.00312	-0.000823	-0.000093	-0.000448
	(0.00547)	(0.00598)	(0.00614)	(0.00617)	(0.00617)
Complainant's age	-0.000522***	-0.00047***	-0.00045***	-0.00036***	-0.00032***
	(0.0000762)	(0.00008)	(0.000120)	(0.000149)	(0.000150)
Year is 2021	0.00555**	0.00496*	0.00421	0.00384	0.00340
	(0.00234)	(0.00258)	(0.00259)	(0.00268)	(0.00269)
Constant	0.0401***	0.0415***	0.0387***	0.0349***	0.0341***
	(0.00613)	(0.00670)	(0.00762)	(0.00855)	(0.00855)
District Fixed Effect	No	Yes	No	No	Yes
Qualification Fixed Effect	No	No	Yes	Yes	Yes
Profession Fixed Effect	No	No	Yes	Yes	Yes
Level two Fixed Effect	No	No	No	Yes	Yes
Level three Fixed Effect	No	No	No	Yes	Yes
Government Fixed Effect	No	No	No	No	Yes
Observations	18,765	16,321	16,274	16,273	16,273
R^2	0.003	0.013	0.018	0.022	0.024

Note: Robust standard errors appear in brackets. Dependent variable for all Models is the dummy variable that turns on if citizen complaint status equals "Resolved" but government resolution status is "Relief cannot be granted" and zero in other scenarios. Independent variables are standardized complexity (total number of words in the complaint, values are standardized to mean of 0 and standard deviation of 1), male (a dummy variable that turns on if the complainer is male), year is 2021 (a dummy variable that turns on if the year is 2021) and age. A set of fixed effects: district, qualification, profession, level two, category, government. *** p<0.01, ** p<0.05, * p<0.1.

8. B. Appendix – Figures

Figure A1: Pie chart of complaints to FBR among different sectors (Level Two)

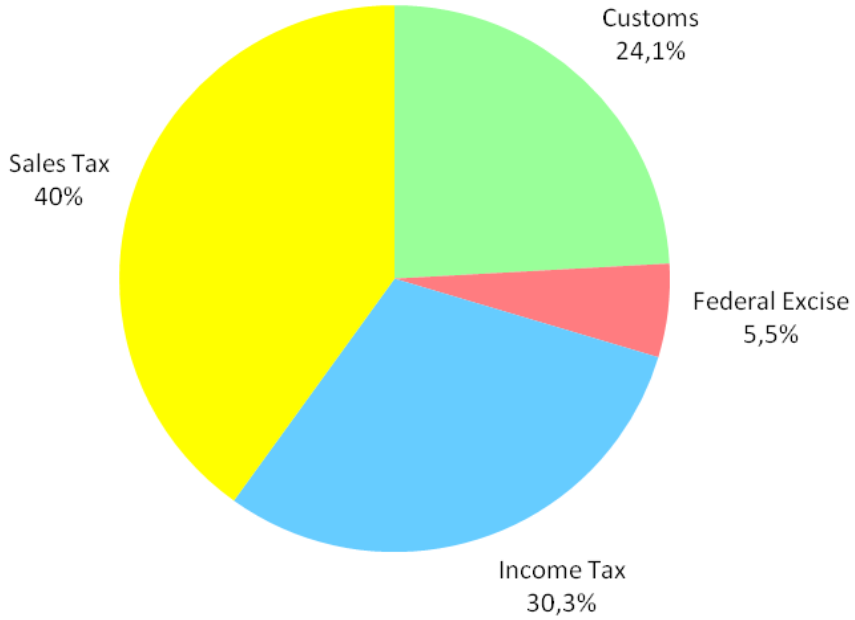


Figure A2: Pie chart of complaints to FBR by gender

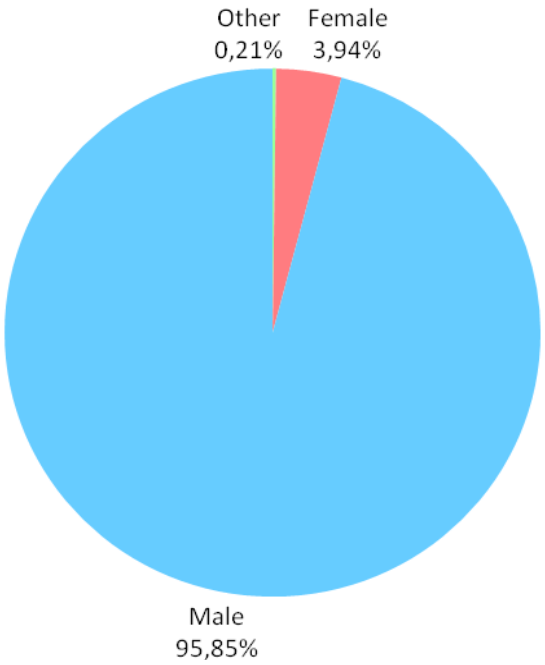


Figure A3: Pie chart of complaints to FBR among different Governments

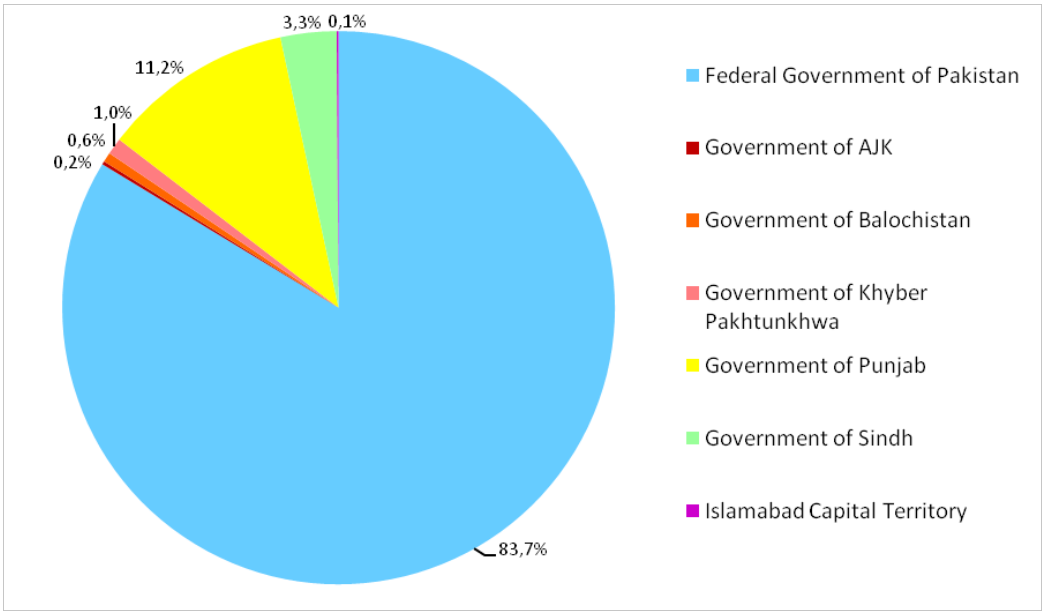


Figure A4: Pie chart of complaints to FBR gender-wise

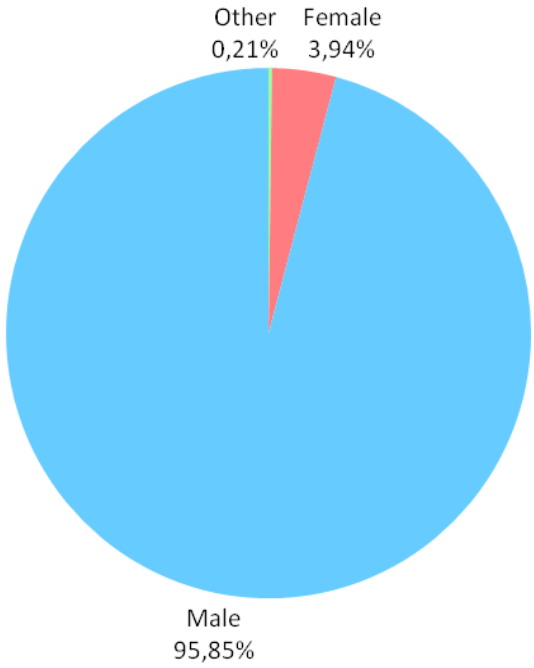
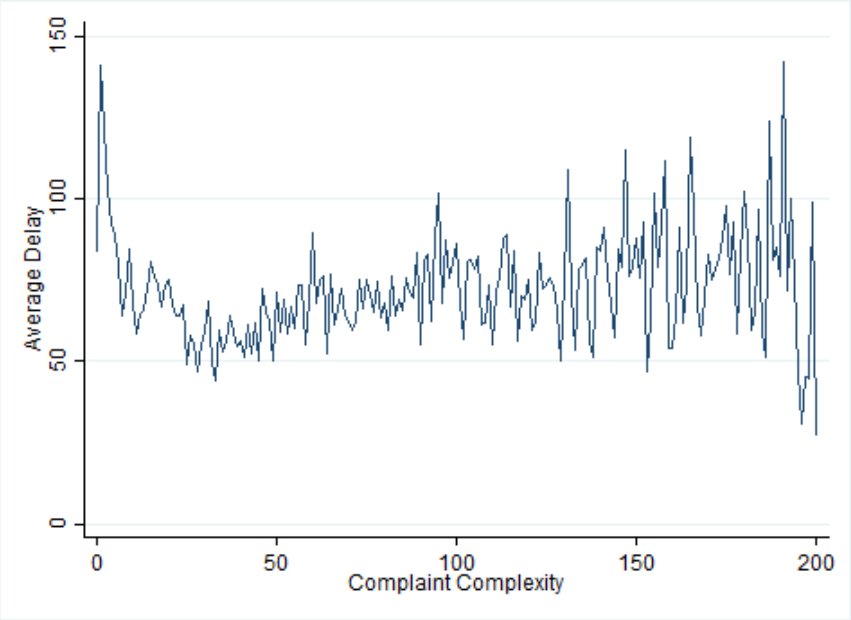
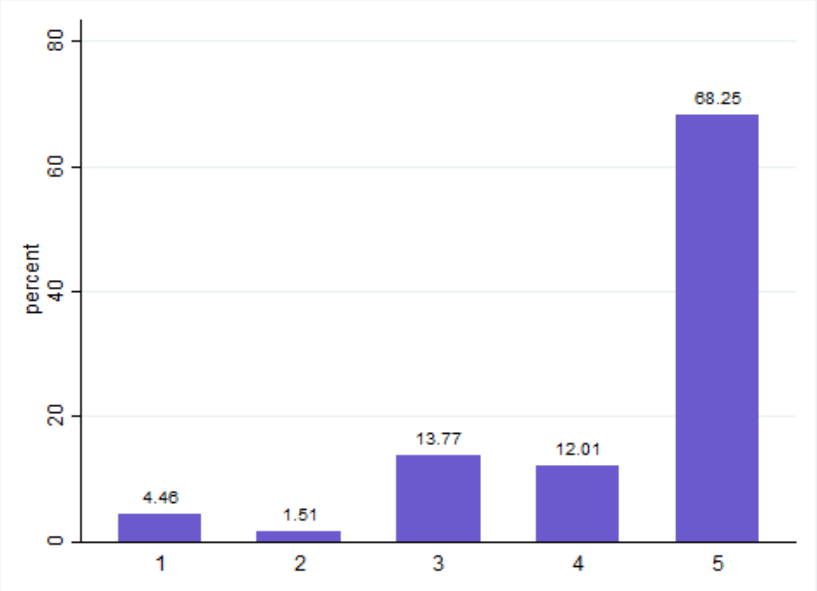


Figure A5: Line Chart of Delay by Complexity Under 200 words



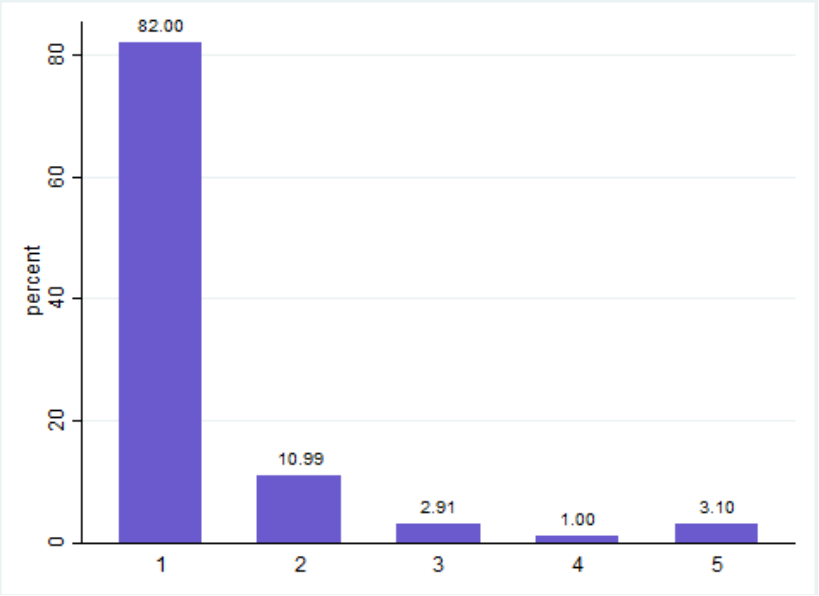
Note: There are 10,560 complaints with word count under 200 and 44 complaints with word count above 200.

Figure A6: Bar chart of Complainant's Rating for the Citizen Resolution Status 'Resolved'



Note: the bar chart illustrates the Citizen Rating (stars) measured from 1 to 5 for complaints to the Federal Board of Revenue. It includes complaints where the Citizen Resolution Status is 'Resolved'.

Figure A7: Bar chart of Complainant's Rating for the Citizen Resolution Status 'Not Resolved'



Note: the bar chart illustrates the Citizen Rating (stars) measured from 1 to 5 for complaints to the Federal Board of Revenue. It includes complaints where the Citizen Resolution Status is 'Not Resolved'.

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