

THE GOVERNANCE STRUCTURE AND FLAWS WITHIN; A CASE STUDY OF MINISTRY OF SCIENCE AND TECHNOLOGY AND ITS PUBLIC SECTOR ENTITIES

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ABSTRACT

Pakistan has around 40 Ministries/Divisions and there are a number of Public Sector Entities/SOEs working under their administrative control. The Rules of Business 1973 provide details of the autonomous bodies or Public Sector Entities as we call them, But the Rules of Business are not vivid enough. The Public Sector Entities are either taking grants from their respective Ministries and using them on their own without any adequate accountability or else, in some cases, the organizations provide essential statutory/regulatory functions and generate huge amounts of money. The money is used by the organizations and there is no governmental surveillance system for accountability in place. The State-Owned Enterprises Act 2023 and The PFM Act 2019 provide the essential framework for governance of these Public Sector Entities but still, much needs to be done.

The study reviewed the organizations under the administrative control of the Ministry of Science and Technology. The Ministry has 14 autonomous bodies under its control and all are significant in terms of providing essential services related to advancement of science and technology in the country. We studied the Ministry as a whole and then focused on 5 autonomous bodies.

The research found out structural flaws within the structure of governance and has come up with certain recommendations to eradicate them. The autonomous bodies shall have a schedule in the Rules of business 1973 as proposed by the Institutional Reforms Cell headed by Ishrat Husain. The organizations shall be categorized as per Section 36 of the PFM Act 2019 and shall follow the SOE Act 2023 and SOE Policy 2023 as well. The organizations shall manage their human resources effectively and shall have proper heads overseeing their administrative matters adequately.

PREFACE

The research was intended to study the intricacies of the governance system of the country in details. The prime objective of the study was to provide the government with some viable solutions to its most pressing problems.

The study is a diagnostic analysis of the problems that plague the civil and public service in the country. The research was carried out with an understanding that the Ministry of Science and Technology is a Kaleidoscopic version of the federal government and an insight into the problems being encountered by this particular Ministry will provide a peek into the structural fault lines within the governance that hinder any meaningful progress.

This study would not have been possible without the very generous support of RASTA. We thank RASTA for providing us with a platform to conduct an investigative research on the budget executing agencies of federal government controlled by the Ministry of Science and Technology.

We are eternally indebted to Mohsin Mushtaq Chandna for his unwavering support and kind guidance throughout the process. We also thank Iram Anjum Khan and Usman Akhtar Bajwa for finding time for us and for making us learn about the reasons that make our system frail and fail.

The officers of the Ministry have also been kind enough in providing all the necessary data. Our sincerest thanks are due to them.

The study is a first of its kind. We hope that this will spur debate in the academia and Public Service and will make the authorities understand the importance of institutional Reforms.

TABLE OF CONTENTS

ABSTRACT	i
PREFACE	ii
TABLE OF CONTENTS.....	iii
LIST OF FIGURES AND TABLES	v
INTRODUCTION	1
1.1 Purpose and Scope of the Study	3
LITERATURE REVIEW	4
RESEARCH METHODOLOGY	8
3.1 Approaches Used in the Research:.....	9
DISCUSSION AND FINDINGS - I	10
4.1 History of the Ministry of Science and Technology and Present Portfolio.....	10
4.2 Wings of the Ministry	10
4.2.1 The International Liaison Wing:.....	10
4.2.2 The Technology Wing	11
4.2.3 Organization Wing.....	11
4.2.4 Electronics Wing/ PSDP Wing.....	11
4.2.5 Finance and Accounts Wing	12
4.2.6 Policy and Coordination Wing.....	12
4.2.7 Administration Wing.....	12
4.3 Organizations working under the control of the Ministry	12
4.3.1 Pakistan Council for Scientific and Industrial Research (PCSIR).....	12
4.3.2 Pakistan Council for Science & Technology (PCST).....	13
4.3.3 Pakistan Engineering Council (PEC).....	13
4.3.4 Pakistan National Accreditation Council (PNAC)	14
4.3.5. Pakistan Science Foundation (PSF).....	14
4.3.6 Pakistan Halal Authority (PHA)	14
4.3.7 Pakistan Council of Renewable Energy Technologies (PCRET)	14
4.3.8 Pakistan Standards and Quality Control Authority (PSQCA).....	15
4.3.9 Council for Works and Housing Research (CWHR).....	15
4.3.10 National Institute of Oceanography (NIO).....	16

4.3.11 STEDEC Technology Commercialization Corporation of Pakistan.....	16
4.3.12 National University of Technology (NUTECH).....	16
4.3.13 National University of Sciences and Technology (NUST).....	16
4.3.14 COMSATS University, Islamabad (CUI).....	17
FINDINGS AND DISCUSSIONS - II	18
5.1 A Detailed Overview of the Selected Organizations.....	18
5.1.1 PCSIR.....	18
5.1.2 PCST.....	18
5.1.3 CWHR Overview	19
5.1.4 PSQCA	19
5.1.5 STEDEC.....	20
5.2 Thematic Analysis.....	21
5.2.1 Graphical Analysis	21
5.3 Budgetary Analysis.....	21
Lack of Vision.....	27
Political Interference and lack of intellectual integrity.....	27
RECOMMENDATIONS.....	28
6.1 Amendments in the Rules of Business, 1973.....	28
6.2 Redistribution of Work within the Ministry.....	28
6.3 Setting up Attainable Goals	28
6.4 Categorization of PSEs under Section 36 of PFM Act 2019.....	28
6.5 Formulation of Adequate Service Rules/ Regulations of the PSEs	29
6.6 Appointment of Heads of Organizations.....	29
6.7 Triple Helix Model and Clarity of Purpose.....	29
6.8 Winding up of CWHR and Equity based Investments in PCSIR/PCST.....	29
6.9 Recommendations for STEDEC.....	29
6.10 Recommendations for PSQCA.....	30
REFERENCES.....	31
APPENDIX: The Questionnaire	33

LIST OF FIGURES AND TABLES

<i>Figure 1: Functioning of public sector reforms.....</i>	<i>5</i>
<i>Figure 2: Officers of the Ministry of Science and Technology.....</i>	<i>21</i>
<i>Figure 3: Officers of the organizations/PSEs.....</i>	<i>21</i>
<i>Figure 4: Ministry of Science and Technology grants to autonomous organizations</i>	<i>23</i>
<i>Figure 5: Ministry of Science and Technology Secretariat current budget.....</i>	<i>23</i>
<i>Figure 6: PCSIR current budget.....</i>	<i>24</i>
<i>Figure 7: CWHR current budget</i>	<i>24</i>
<i>Figure 8: PCST current budget.....</i>	<i>25</i>
<i>Table 1: Ministry of Science and Technology grants to autonomous organizations (Rs. millions)</i>	<i>22</i>
<i>Table 2: Revised PSDP allocation 2022-23</i>	<i>25</i>
<i>Table 3: Overview of income statements (actual) for last five years (Rs. millions).....</i>	<i>25</i>

INTRODUCTION

The Ministry of Science and Technology was created in the year 1965 to build a platform for the development and advancement of science and technology in Pakistan. It was an era full of zeal, novel ideas and an endeavor to take the country to the highest possible level of technological advancement, and the government was deeply inclined towards scientific growth and development (Awami Politics, n.d.). Besides, the trio of Universities, Research Organizations and Industry needed a proper platform to collaborate and create opportunities for implementing the ideas conceived by the scientists (Hussain, 2024).

At present, the Ministry of Science and Technology has 14 organizations under its direct administrative control. Out of these, three are Universities and the rest are either research organizations or they work as regulatory authorities. The organizations that work as regulatory authorities are responsible for, mostly- but not limited to, monitoring the standards of quality of the products developed by the industries in the country. This means that the scope of work of these organizations is momentous. Still, as we see, not much has been attained in terms of scientific advancement in the country. Why has the voyage not resulted in adequate outcomes and how inefficient is the administration of these SOEs or PSEs? These questions are the focus of the research.

The Public Sector entities that fall under the administrative control of the Ministry of Science and Technology may be defined as Public Sector Enterprises as per the definition of PSEs/SOEs provided by OECD (Allen et al., 2013). The definition states that “Public sector entities or State-owned entities are the government owned or government controlled entities whose assets are held in corporate form and which generate the bulk of their revenues by the sale of goods and services.”

The organizations that are being governed by the Ministry are almost all defined as body corporates in their respective acts, they all offer the sale of goods and services in one way or the other and the government holds a major role in appointing their board members and heads and so on and so forth. None of the 16 organizations has been declared as an attached department in the Rules of business, 1973 (GOP, 2021). Their absence in schedule 3 of the ROB, 1973 and their ambiguous presence in Schedule 2 makes their administration a treacherous path that the Ministry has to tread.

The Ministry of Science & Technology in its present form has been in operation since 1972. It is supposed to be the national focal point for planning, coordinating and executing scientific advancement in the country.

The Day-to-day business assigned to this Division under Schedule-II of the Rules of Business 1973 is undertaken by four technical Wings each headed by BS-20 level officers, while the Administration and Finance & Accounts Wings are being headed respectively by the Joint Secretary Administration and Chief Finance & Accounts Officer (CF&AO). The Planning & Development Cell is also operating in the Ministry. Although the Planning and development Wing is in rudimentary shape and officers from the Planning Commission that are supposed to be part of the cell have never been posted there. The Organization Wing is headed by an officer of the civil service who is in BS 20.

A detailed overview of the Ministry explicitly details the flaws within the administrative structure of the Ministry. A brief picture of the business assigned to the different wings of the Ministry is given below:

There are eight Wings within the Ministry namely,

- 1) Technology Wing
- 2) Electronics Wing
- 3) International Liaison Wing
- 4) Organization Wing
- 5) Planning and Development Cell/Wing
- 6) Finance Wing
- 7) Policy and Coordination Wing
- 8) Administration Wing

In fact, the eight Wings within the Ministry are supposed to develop cohesion and provide the subordinate organizations a way forward. But here, a clear division in authority, responsibility and subsequent accountability is evident.

Prima facie, the work distribution within the Ministry is irregular. The job description provided by the relevant authorities is inviable. For instance, the officers working in the Electronics Wing are doing work that had to be carried out by a dedicated Planning Cell. Each Ministry at the federal level has an independent Planning Wing that is generally manned by the officers of the Planning Commission but, unfortunately, here, the story is different. There is NO presence of the Planning Commission at the Ministry which means that effectively, the most important job is being carried out by officers that have no training in the subject. And then almost all the wings are somehow doing the same thing, in one way or another, so this clearly weighs down the efforts that are needed to bring about a reasonable change in the working of the organizations. Almost all organizations have potential to grow but the growth is stunted owing to the mismanagement of the resources available. The development projects mostly linger on for years and resultantly, the cost of a project goes way beyond the initial estimation.

Given this background the present report will begin with an analysis of the Ministry itself and its various wings that perform different activities in the context of providing an insight into what went wrong and how it can be improved. An overview of the Ministry during the data collection phase revealed that there are multiple problems in terms of turf within the Ministry and the wings lack efficient coordination. This results in bad governance and a dichotomy of authority that produces friction within the offices and resultantly, the work suffers.

This research paper is going to be a thorough analysis of the Ministry and will strive to present a vivid picture of the progress made by the organizations that fall under the administrative control of the Ministry. This paper will also elucidate the problems that have been encountered in achieving the desired outcomes from the organizations.

The paper studies the basic concept of Public Finance Management in the country and focuses on the fact that how have the subject organizations followed the dictums of modern-day Public Finance Management. This paper will also discuss the role and importance of the Finance Division in the financial management of the Public Entities that fall under the administrative control of this Ministry. Keeping in view the PFM Act,2019 and the subsequent legislations, and the present situation of the organizations, this research will come up with recommendations that can help the organizations find some substance, budget sustainability, transparency and meaning! In fact, this research is an endeavor to study Public Sector Expenditure Management in the field of Science and Technology and

will try to carve out a path for the organizations specifically and for the government generally, to tread upon. It will also spur a debate as to whether we need to dissolve some organizations if revival is not an option as the deterioration has been deep and irreversible.

1.1 Purpose and Scope of the Study

The purpose of this study is to present a kaleidoscopic version of the fault lines within the system of governance in the country. The study is aimed at coming up with a detailed diagnostic analysis of the reason behind sub-optimal outcomes of the organizations that fall under the ambit of the Ministry of Science and Technology. This study will also consider the organizations that are self-sufficient and get no grants from the government but as they use government's authority so are supposed to deposit the revenue into the government exchequer. Besides, this study will analyze as to what the government will gain if at least a particular chunk of the revenue generated by them is brought under government's control.

In fact, Public Sector Expenditure goes beyond the Revenue, or the Cash flow forecast of the administrative ministry/division owing to the losses incurred by these government offices that have ambiguous status as they take grants from the government but not all the revenue generated by them is remitted into the Federal Consolidated Fund. As stated earlier, the subject study will illustrate through evidence that in some cases, privatization or winding up is the only way forward as in the case of Council of Housing and Works Research, an organization under the Ministry of science and Technology and then there are a few cases like STEDEC where revival or partial privatization of the organization is necessary for better governance.

The main research question that will be addressed in this study will be as follows:

- . What is Public Sector Expenditure and how is it adversely affected in fiscally redundant organizations?
 - . Are there some organizations that need major revival to maximize utility and some that need to be wound up?
 - . Is it necessary to keep the dying organizations alive at the expense of the Public Exchequer?
- Some associated research questions will be as follows:
- . What has been the role of the Finance Division in providing an adequate framework to the Ministries?
 - . Are there any fault lines within the governance structure of the Ministry of Science and Technology that exacerbate the problems of the organizations?

The main objectives of the study will be.

1. Evaluate the Public Sector Expenditure Management in the context of organizations that fall under Ministry of Science and Technology's domain.
2. Evaluate the impact of research carried out by the organizations and an evaluation of the way these organizations misuse the authority vested in them?
3. Try to find out the essence of the existence of organizations or in some cases the necessity of death or privatization of certain organization/organizations.

By developing a dialogue with the officers working in the selected organizations, Finance Division and at the Ministry -the way forward for these Research and Development related organizations will be delineated.

LITERATURE REVIEW

Although the subject is not a new one and the institutional reforms cell headed by Ishrat Husain came up with a good deal of reports on the subject matter, still apart from a few manuscripts and a book by Ishrat Husain entitled "Governing the Ungovernable" not much has been written academically about institutional reforms in the entities owned by the state. Nonetheless, working papers of IMF, PIDE and World Bank were found to be very pertinent in illustrating the need for reform in the Public Sector and the reasons for sub-optimal performance by the government sector entities or the autonomous bodies. N'Diaye (2001) described at length the need for reform in the government in Africa. The paper seems relevant in this country's milieu as well. The author opined that the presence of government in all sectors of economy leads to disastrous consequences. As per the author the way to institutional reforms is only through separation of government from those sectors of economy that provide goods and services.

The author also describes the interventionist system in the services sector and stated that the regulatory system is entrenched in the African economy, each sector is super regulated and foreign direct investment is attracted by providing the investors with monopoly rights. The absence of fair competition gives rise to sub-optimal outcomes.

This clearly is the case with Pakistan too. There are multiple organizations that are presently regulating the industries in Pakistan, each has a mandate that overlaps with the mandate of the other and there is very little value addition coming out of these regulatory/accreditation bodies.

Another important paper in detail describes the role of institutions in governance and the relationship between institutions and public sector organizations. This paper gave a description of the formal and informal institutions and stated that ". Formal institutions are the (written) laws, regulations, legal agreements, contracts, and constitutions that are enforced by third parties, while informal institutions are the (usually unwritten) norms procedures, conventions and traditions that are often embedded in culture. The paper described at length the difference between Institutional reform and organizational change and stated that organizational change is brought into play by institutional reforms. Institutions are changed, tackled and managed by organizations as per the authors so what is important is political settlement as the public sector effectiveness is fundamentally political.

GSDRC. (n.d.). proposes a framework of six elements to assess political commitment and ownership of reforms: a) whether impetus for change is external or internal, b) whether domestic actors have been the drivers behind assessing policy options, outcomes and costs/benefits; c) the extent of consultation with stakeholders; d) public commitment and allocation of resources; e) continuity of effort and commitment of resources and planning for the long term; and f) whether processes for adaptation and learning have been established.

Zafarullah & Huque (2013) describes at length the informal and formal norms prevalent in the public sector institutions and it is argued that the reforms can only come when those norms are changed and the impetus to change comes from within. One result of not taking informal institutions into account can be 'isomorphic mimicry' – when governments copy formal rules without changing implicit rules and norms (Pritchett et al., 2010).

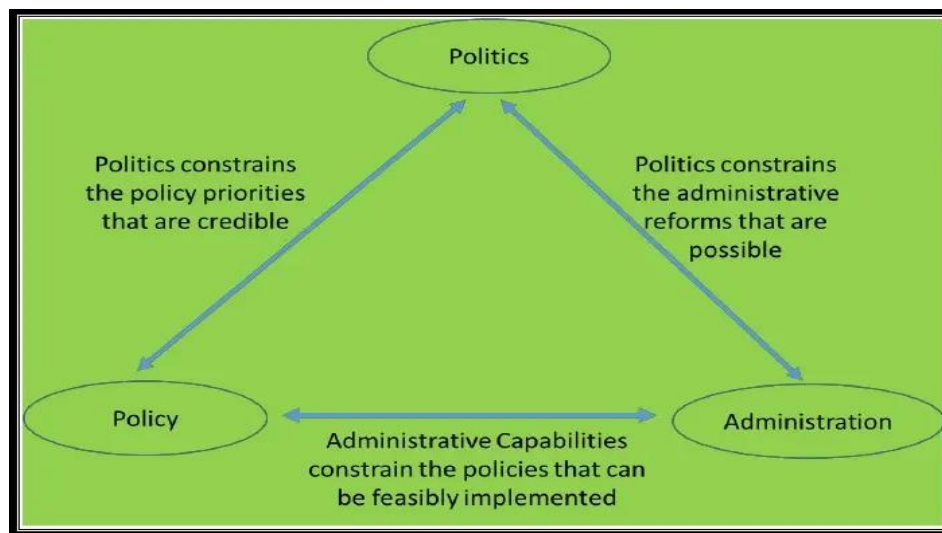
In fact, the essence of change in institutions is the understanding and acceptance of a need for change by the ones who implement the changes. (Helmke & Levitsky 2004). In the context of Pakistan, we see that the reforms are mostly identified by the donor agencies. This leads to a halfhearted approach and no significant change transpires.

Emmanson & Ajayi (2021) explained the state of reforms within the public sector entities in Nigeria that were carried out between 2015-2020 and stated that most of the reforms have failed owing to widespread corruption and reluctance to adapt to the reforms identified by the donors.

In the case of Pakistan, the same problem has been encountered. Husain (2018) has narrated the tale of institutional decay in the last 40 years and has stated that misplaced priorities of the government diminished the growth that had been achieved in the initial 40 years of Pakistan.

Kugelman & Husain (2018) explains the necessity of reforms in the public sector Entities in Pakistan. It opines that the institutes have been politicized and the civil service suffers from a decay that is entrenched in its system and that hinders any growth of the PSEs. N'Diaye (2001). enunciates the importance of restricting the government's role in provision of goods and services and involvement of the private sector in the same so as to provide an impetus of growth to the entrepreneurial class.

Figure 1: Functioning of public sector reforms



Source: The Common Wealth (2016).

The flowchart illustrated above was given in The Common Wealth (2016) that presents the way public sector reforms have worked out in the commonwealth countries.

It comes up with the nine guiding principles of reforms that are as follows:

1. A new pragmatic and result-oriented framework.
2. Clarification of objectives
3. Intelligent political strategies and policies
4. Goal oriented competencies and skills development
5. Experimentation and innovation
6. Professionalism and improved morale
7. A code of conduct for public sector entities

8. Pragmatic anti-corruption practices
9. Effective public financial management

The book in detail describes the way different countries have benefitted from the reforms process and how the other developing countries can take lead from the countries included in the book.

Another seminal paper illustrated the fact that the major chunk of public sector reforms has been a result of objectives set out by the donor agencies and that is why the reforms have not been very successful.

GCPSE (n.d.) illustrated the paradigm shift that has occurred over the last few decades. The old norms of public administration have changed and have paved the way for the New Public Management that is more people centric and market oriented. The reforms in the civil service make a significant contribution to the implementation of the concept of new public management. In the same paper the example of Singapore has been quoted and it has been noted that making the civil service a more competitive and rewarding career has served well. The new public management differs in many respects from the old public administration and a thorough understanding of the same is very important for the civil servants of the developing countries.

Brinkerhoff & Johnson (2009) states that the world has gone even farther than the concept of new public management-NPM was based upon the principles of market-oriented treatment of the public sector enterprises and it has worked to a large extent in the OECD countries but in the developing world it has not worked as efficiently as was imagined. The new world with its globalization and amorphous borders between north and south is fraught with practical implications for the new public management and now, the need for reforms and coming up with a new paradigm is apparent. As we see in the case of Pakistan, the institutions have weakened and there is widespread corruption in the public sector enterprises that has resulted in continuous loss making of the organizations. A new model for reform and actionable planning is urgently needed.

Iacovino et al. (2017) states that in the present world the public administration can take benefit from the three models of public administration namely the OPA Model, the NPM method and the PG method. In all these models there is an ideology that is continuum. "The need for public service delivery "and at this particular point in time, the public service practitioners can amalgamate all the three principles to help achieve the task.

Faraz (2020) gave the solution to the ailments that plague the institutions in Pakistan and that was a "comprehensive civil service reform "and the reforms can come if the political will is strong, and the reforms included restructuring the federal government. This meant that the 440 organizations working under the federal government need to be categorized and then brought under two categories: a) autonomous bodies and b) executive departments.

This paper is very important in the context of our study as the main problem with the entities that fall under the Ministry of Science and Technology is that they have not been categorized adequately. The government needs to decide as to what should be the scope of work of these organizations and whether the organization needs to be retained or liquidated or in some cases, Privatized.

In Khan & Hijazi (2003). the positive and negative consequences of privatization have been narrated at length. The same will be discussed while making recommendations towards the end.

Most of the literature that we found was in the context of institutional reform and this research paper is the first in delving deep into the working of the public sector entities under the administrative control of the Ministry of Science and Technology. All the literature available points to one direction and that is “A strong Political Will “and instilling a performance-based budgeting in the PSEs and dealing with these PSEs by amalgamating the old public administration principles with the ideas of new public management.

RESEARCH METHODOLOGY

Methodology used in the research was primarily qualitative and was based upon thematic analysis of the content available with the researchers. However, a quantitative analysis of the budgets along with objective performance indicators was also carried out.

Yin and Stark's Case Study model was applied wherein embedded research was carried out by selecting a few groups of government offices and each one of these 5 organizations was taken as a case study and then through the literature available and field study, a thorough analysis was carried out. The modicum of research was content analysis and decoding the ideas presented by the officers from all these organizations, Ministry of Science and Technology, Finance Division and the Cabinet Division. The themes upon which the content analysis was based were as follows:

- The public sector financial management and the hurdles therein
- The willingness to bring about reform
- The framework of Rules/Regulations
- The understanding of the scope of organization
- The intellectual and moral integrity of the officers

The organizations working under the administrative control of the Ministry of Science and Technology were studied with a particular focus on the five selected organizations. Through the study of their statutes and their performance thereunder an exhaustive analysis was carried out. The role of the Finance Division and Cabinet Division in the present state of affairs was also deeply analyzed.

Purposive Sampling: To study the concept of Public Sector Expenditure Management for Budget sustainability in detail a particular purposive sampling of respondents was done by dividing the federal government into two groups of people:

Group A: This group consisted of the officers of the federal government.

Group B: This group consisted of the officers from the selected autonomous bodies. A particular questionnaire was circulated and used for the interviews.

At the instrument level "Key Informants Interviews" were the primary source of research. As stated above, the officers were divided into two categories:

- 1) The officers from the Federal Government.
- 2) Officers from the autonomous bodies.

After selecting officers, multiple group discussions were carried out.

As stated earlier, the research was, in the form of a thematic analysis. It is pertinent to mention here that the process for thematic analysis was primarily developed by Virginia Braun and Victoria Clarke. The process allows the researcher to have a flexible ground to generate and code themes that are most relevant to his/her study and then devise questions. There are two approaches that are fundamental to the thematic analysis:

A: Inductive Reasoning Inductive reasoning means that the researcher acquires data first and then gets it sorted out into themes and from those themes -the researcher derives the results or the findings.

B: Deductive Reasoning: It is when the researcher already has some preconceived notions about the data and arranges the themes accordingly and after in-depth interviews and analysis of secondary data, reaches the findings or conclusions.

Furthermore, there are two types of approaches to the thematic analysis of secondary data. It's either a semantic approach where the researcher dwells on the language and gets conclusions as per the texts available and the other approach is latent where the researcher dwells deep into the underlying context of the data collected and derives conclusions.

3.1 Approaches Used in the Research:

This research primarily used the following approaches:

A: Inductive Reasoning: As the PI has been a part of the civil service for over a decade, hence some understanding of the malignancies of the system was already in head. But as there has been no research on the subject matter earlier, hence, Inductive Reasoning was used to conduct the research. Nonetheless, the themes constructed had due share of the preconceived notions of the researcher and the second approach that was applied to derive findings and conclusions is the latent approach.

The themes were coded into various questions and upon receiving responses the codes will be deciphered through LATENT and INDUCTIVE REASONING.

Research was primarily intended to be qualitative in nature, but a brief quantitative analysis also helped explain the financial condition of the organizations and the Ministry in general. The study also quantitatively analyzed the budgeting and expenditure details of the organizations where in the descriptive analysis of the organizations would be carried out. The PFM Act,2019 and the subsequent Legislations-Financial Statements of the organizations, their Rules and Regulations, and their Acts have been the focus of the study.

DISCUSSION AND FINDINGS - I

4.1 History of the Ministry of Science and Technology and Present Portfolio

The Ministry of Science and Technology was initially established as the Scientific and Technological Research Division in the year 1964. This Division was administratively responsible for the National Science Council, the Council of Scientific and Industrial Research, the Atomic Energy Commission and the Space and Upper Atmospheric Research Committee.

The Ministry of Science & Technology in its present form has been in operation since 1971 (Joint Economic Adviser, 2024). As per the Rules of Business 1973, 14 Organizations and multiple functions have been assigned to the Ministry.

A detailed overview of the Ministry explicitly details the flaws within the administrative structure of the Ministry. A brief picture of the business assigned to the different wings of the Ministry is given below:

There are 8 Wings within the Ministry namely,

- 1) Technology Wing
- 2) Electronics Wing
- 3) International Liaison Wing
- 4) Organization Wing
- 5) Planning and Development Cell/Wing
- 6) Finance Wing
- 7) Policy and Coordination Wing
- 8) Administration Wing

In fact, the eight Wings within the Ministry are supposed to develop cohesion and provide the subordinate organizations a way forward. But here, the dichotomy of authority is evident.

4.2 Wings of the Ministry

4.2.1 The International Liaison Wing:

Mandate: International Cooperation in Science & Technology constitutes an integral function of the Ministry of Science and Technology (MoST) under Schedule-II [Rule 3 (3)]-28 (9)] of the Rules of Business-1973. It is mandated to provide opportunities to subordinate organizations of the Ministry and Pakistani Scientists / Engineers to interact with their international counterparts to enhance individual as well as institutional capacities (GOP, 2022).

Main Functions: To manage matters pertaining to bilateral and multilateral cooperation in Scientific & Technological fields under the umbrella of Bilateral Agreements/MRAs/PoCs/MoUs, Joint Economic Commissions (JECs), Joint Ministerial Commissions (JMCs) and Working Groups (WGs) on Science & Technology.

Analysis: A detailed analysis of the IL Wing entails that much of the focus of this Wing is on developing Memorandums of Understandings with multiple organizations and creating opportunities for international trainings for the officers of the Ministry and scientists from the many organizations that fall under the Ministry's ambit but at the same time, nothing concrete has been achieved so far. Of late, around Seven MOUs have been signed but those need better management as mere signing up documents can't create the spirit of inquiry in the country (Officers of the IL Wing, 2024).

4.2.2 The Technology Wing

The Technology Wing has been entrusted to initiate and monitor various programs for the development of technology and industrialization in the country. This Wing also acts as a liaison wing between various Ministries and National and International bodies for development of Science and Technology in the country.

Mandate:

- Promotion and development of industrial technologies
- Promotion of Metrology, Standards, Testing and Quality Assurance System
- Promotion of mechanism and procedures to provide for effective conservation and efficient use of energy
- Establishment of accreditation system for testing laboratories and certification bodies across the country
- WTO / TBT affairs relating to PSQCA
- Technical matters of PCSIR, PNAC, PSQCA, PEC, PHA and NEECA

Analysis: An analysis of the Technology Wing elucidates that the Wing has been trying hard to develop different policies to enhance scientific advancement in the country. The National Industrial Hemp and Medicinal Cannabis Policy was developed by the Technology Wing in collaboration with the Pakistan Scientific and Industrial Research Council. This policy enunciated the use of Hemp for medicinal purposes. Besides, a National Quality Policy has also been developed by the same Wing in coordination with the organizations that perform regulatory/accreditation functions in the country.

On a closer look, we see that policies have been duly developed but still, the implementation is a far cry. The National Industrial Hemp and Cannabis Policy, for example, still needs validation by the cabinet and the project that was initiated by the PCSIR concerning development of industrial cannabis has not come up with anything substantive.

4.2.3 Organization Wing

The Organization Wing generally deals with the administrative matters of the Organizations. The appointment of heads of those organizations and routine administrative matters are dealt with by the organization Wing.

Analysis: The organization wing is presently working as a coordination Wing and nothing substantive has been performed by this Wing. The scope of this Wing can be increased by making it part of the many endeavors that the Ministry is carrying out to develop scientific and technological advancement in the country. The organization wing is generally manned by civil servants and needs to have a say in the policy related issues of the Ministry.

4.2.4 Electronics Wing/ PSDP Wing

The electronics wing is primarily dealing with the development related projects of the Ministry and is also working on amending various bills/acts of the organizations. The same wing also coordinates the E-governance in the Ministry.

Analysis: There is a dire need for change in the portfolio of the electronics wing. The electronics wing is performing the functions of the development wing as well, which needs to change. There needs to be a dedicated Planning Wing within the Ministry that can work on the Public Sector Development Program related projects of the Ministry (Ahmed, 2024).

4.2.5 Finance and Accounts Wing

The finance and accounts Wing carries out a great deal of functions. It manages the planning related to the budget of the Ministry and its organizations. It also coordinates with the audit authorities in terms of managing the external audit of the Ministry and its subordinate organizations.

The Finance and Accounting Wing has striven to work with the organizations and help them get over many of their financial obstacles as most of the organizations have not devised elaborate financial rules. The Finance and Accounts Wing keeps track of the financial performance of the organizations and provides all the necessary assistance to them.

4.2.6 Policy and Coordination Wing

This Wing deals with the development of National Science Innovation Policy and deals with the technical matters of some chosen organizations. A holistic appraisal of the wing elucidates the fact that many functions of this Wing overlap with the functions of the Technology Wing. This wing has a deep coordination with the Pakistan council of Science and Technology and in the past, the idea of merging PCST with this Wing was floated but couldn't be materialized.

The development of National Science Technology Innovation Policy was a breakthrough, but the Wing needs to work in close coordination with the organizations and get the same implemented.

4.2.7 Administration Wing

This wing manages the administrative matters of the Ministry with a focus on the personnel management within the Ministry and the management of resources of the Ministry.

To sum it all up, it can be stated that the Ministry needs to reorganize itself and see if there is a need for eight independent wings or not? What if the distribution of work is done in a way that fewer wings with multiple and varied functions are created?

Presently, there are 14 organizations working directly under the umbrella of the Ministry of Science & Technology. One of the autonomous bodies has further developed two subordinate offices but those have not been made part of the study. Owing to multiple attempts by the Federal Government to reorganize and reform the public sector entities, some of the organizations previously working with the Ministry have been transferred to other ministries and some new organizations have been placed under the mandate of the Ministry of Science and Technology.

We have categorized these organizations into following three broad categories:

1. Universities
2. Research oriented entities
3. Regulatory bodies/accreditation providers

Each organization has a distinctive mandate, differs in size, scope and functions as well.

4.3 Organizations working under the control of the Ministry

4.3.1 Pakistan Council for Scientific and Industrial Research (PCSIR)

Mandate: PCSIR was established through PCSIR Act, 1973 with a mandate to undertake, promote and guide scientific and technological research of problems connected with establishment and development of industries in Pakistan and provide them with solutions that will improve their processes and efficiency by providing necessary technical assistance for growth and sustainability. Besides, PCSIR is supposed to offer technical assistance to the industry in optimizing their processes, contributing to workplace safety and problem-solving technologies.

Progress: PCSIR initially developed 16 research laboratories in all major cities of Pakistan like Karachi, Lahore, Peshawar, Quetta and Balochistan. These laboratories aid and support the small and medium scale industries in research, testing and improving their efficiencies. These laboratories provide testing, analysis, and accreditation in the areas of textile, food, pharmaceuticals, and cosmetics to industries to help them improve their processes and technologies. PCSIR has been upgrading their existing laboratories on a yearly basis and injecting funds to modernize these laboratories to increase their capabilities in R&D and testing.

Problems: The research gave us a critical overview of the organization. We see that the organization suffered a great deal because of the absence of a regular head. Since the appointment of the present Chairman PCSIR, the organization has started working towards attaining its mandate, but the manpower required for elaborate research activities is not present within the organization. The development projects of the organization depict a good deal of aims and ambitions but nothing much has been done. The organization is primarily performing the functions of accreditation of products and the creation or development of new products is not optimal. There is a great deal of challenges faced by the organization in terms of human resource and in the absence of approved Service Rules and Regulations it has not been able to recruit new scientists and hence the organization seems far from achieving its objectives.

4.3.2 Pakistan Council for Science & Technology (PCST)

Mandate: PCST was established through PCST Act, 2017 with a mandate to advise the Federal Government on national policies on science technology and innovation for building up a strong and self-reliant science and technology system (GOP, 2024). Its aim is to undertake policy research, organize study groups or task forces, formulate policy proposals, monitoring and evaluation of science, technology and innovation policy. Besides, it collects, updates statistics and maintains a database on Science and Technology potentials of the country.

Problems: The fundamental problem with the organization is that it has been working without any head for the last many years. Since the adoption of its Act in 2017, it has not been provided with a proper Chairman and the duties of the head of the organization have been performed by the Secretary of the Ministry. Being a pure scientific organization, it has been difficult for them to come up with any novel scheme. Besides, the service Rules and regulations of the organization have just been approved which means that the organization was operating without any adequate regulations which hindered the recruitment of any new blood within the organization

4.3.3 Pakistan Engineering Council (PEC)

Mandate: PEC was established through PEC Act, 1976 and is mandated to regulate the engineering profession in the country and has to perform various functions for achieving rapid and sustainable growth in all national, economic and social fields. The main responsibilities of PEC include registration of engineers, consulting engineers, constructors/operators and accreditation of engineering programs offered by universities/institutes and assisting the Federal Government as a Think Tank in establishing standards for engineering products and services. Besides, PEC issues licenses to the engineers, register engineering firms and regulates the engineering education in the country. PEC acts as an Arbitration Forum to settle disputes in the construction / consultancy contracts between the two or more parties. PEC also reviews and develops the curricula for engineering programs based on the Outcome-Based Education (OBE) System.

Progress: PEC has been a better equipped organization in a way and has successfully transformed manual registration of engineers and engineering firms to an online registration system facilitating engineers and firms to register with the body seamlessly. PEC has made significant contributions in

the development of engineering curriculum in the country and plays its role in accreditation of universities / institutes in the country.

Problems: PEC is a very autonomous organization and as such the government doesn't have much say in its operation. This can well be argued that PEC makes a case for government's less intervention in managing the Public Sector Entities and shows that once provided with efficient infrastructure and autonomy some organizations can do well but on the other hand, it accrues large sums of money that ought to have been accredited into the FCF or the TSA, but this never happened. So, the writ of the government is a big question mark here!

4.3.4 Pakistan National Accreditation Council (PNAC)

Mandate: PNAC was established in 1998 through PNAC Act, 2017 and has the mandate to accredit all kinds of conformity assessment bodies such as Laboratories (testing/calibration/medical), Inspection Bodies (IBs), Systems, products, personnel, halal Certification Bodies (CBs).

Progress: PNAC is the only organization in Pakistan which launched Halal Accreditation in 2023 and became a member of International Halal Accreditation Forum (IHAF) and Standards and Metrology Institute for the Islamic Countries.

Problem: The organization has generally maintained good work and has efficient administration. This organization is also relatively autonomous and has performed well in accreditation of the products and services. The intervention of the government is not much, and a dedicated team does its work effectively. The problem with this organization is that its work sometimes overlaps with the work being done by the PHA and PSQCA and again it doesn't accredit any money into the FCF which causes a noticeable loss to the government exchequer.

4.3.5. Pakistan Science Foundation (PSF)

Mandate: Pakistan Science Foundation (PSF) was established in 1973 through PSF Act, 1973 with the mandate to promote scientific and technological activities having a bearing on the socio-economic needs of the country. PSF plays a significant role in science promotion and carrying out applied research at universities and institution level.

Problems: In general, the problem with this organization is that its job again overlaps with the work of the Pakistan Council for Science and Technology and there are many corruptions related complaints within the organization and again, it earns and receives billions in the name of research but there is no accountability.

4.3.6 Pakistan Halal Authority (PHA)

Mandate: Pakistan Halal Authority (PHA) was established under the PHA Act, 2016 and is a Regulatory body and is mandated to enhance Halal global trade evolving with new patterns of trade and production. PHA assures compliance with international, regional and national standards, laws, rules and policies on Halal products, processes, and services. PHA is the sole Authority for certifying products and services including meat/ slaughterhouses, and imports/ exports of Halal articles.

Problems: The organization doesn't have vivid framework and its work overlaps with the work being done by PNAC.

4.3.7 Pakistan Council of Renewable Energy Technologies (PCRET)

Mandate: Pakistan Council of Renewable Energy Technologies (PCRET) was established in 2001 by merging the National Institute of Silicon Technology (NIST) and Pakistan Council for Appropriate Technology (PCAT). PCRET is mandated for coordinating R&D and promotional activities in different Renewable Energy (RE) Technologies

Problems: With the passage of time, PCRET moved its focus from R&D to mere testing which resulted in investing development funds in unproductive projects. Prima facie, the organization has lost its meaning.

4.3.8 Pakistan Standards and Quality Control Authority (PSQCA)

Mandate: PSQCA was established through an Act in 1996 and provides one window services for Standardization and Conformity Assessment. PSQCA is designated as National Standard Body (NSB) of Pakistan and National Enquiry Point (NEP). Its core function is to promote and engage stakeholders in standardization activities i.e. development of Pakistan standards and ensuring that consumers and industrial goods are products as per standards set for the safety of the Pakistan's populace. PSQCA has to ensure protection of health, environment and discourage deceptive practices in Pakistan. The mandate of PSQCA is quite broad and it performs following functions under its mandate:

Licensing of locally manufactured products as per international practices to provide the market access of quality products within Pakistan.

Certification of Imported products as per international practices to provide the market access of quality products in Pakistan Accredited testing of locally manufactured and imported product as per Pakistan Standards.

Bilateral and Multilateral Technical Cooperation with counterparts in the area of Standards, Conformity Assessment Procedures, Technical Regulations, Capacity Building, Acceptance of testing and inspection report for facilitation of trade.

Registration of 3rd party Inspection agencies ensuring inspection services of locally manufactured and imported products as per applicable Standards. Securing membership at International and Regional level i.e. International Organization for Standardization (ISO), International Electro Technical Committee (IEC), International Organization for Legal Metrology (OIML), Standards and Metrology Institute for Islamic Countries (SMIC), South Asian Regional Standards Organization (SARSO). PSQCA takes part in policy level activities in the above international and regional standards organizations.

Problems: Widespread corruption, inadequate infrastructure and absence of a regular head are some of the problems being encountered by PSQCA. It's a financially very stable organization but has no set frame of financial rules and many audit objections have been raised as the officers there take up a particular share of the revenue generated by the products accredited by the organization. This practice has no legal basis and here comes the need for financial reforms in the country (CFAO, 2024).

4.3.9 Council for Works and Housing Research (CWHR)

Mandate: Council for Works and Housing Research (CWHR) was established through a Resolution in 1964 with the mandate to create and strengthen necessary infrastructure for Research and Development (R&D) activities in the field of housing and works. Presently, CWHR is the only organization at national level responsible for quality testing of construction materials, carries out R&D and conducts research for the construction sector. CWHR undertakes commercialization of R&D activities including transfer of technology.

Progress: Since past many years, the council has been defunct and the Institutional Reforms Cell advised its closure. Of late, a resolution was passed in the senate in which it was opined that the organization ought to be retained.

But, the organization is in total chaos. An analysis of the documents shared by the council with the Ministry revealed that it lacks the human resource that can carry out research in the construction

sector. The condition of Human Resource management at the organization is abysmal. The post of the Chairman has been vacant since long and there have been no recruitments lately. The highest-ranking regular employee of the CWHR is an officer in grade 18. The organization is being headed by an officer from PCSIR and there is no rule that can justify this arrangement.

4.3.10 National Institute of Oceanography (NIO)

Mandate: National Institute of Oceanography (NIO) was established under the NIO Act, 2007 with the mandate to undertake multi-disciplinary research in physical, chemical, biological and geological oceanography in Pakistan's Maritime Zones (GOP, n.d.). It studies marine resources, including fisheries, minerals, and other potential economic resources in the ocean

Problems: The organization is performing well in general and if provided with better funds it can increase its work and will help the subject of oceanography to flourish in the country.

4.3.11 STEDEC Technology Commercialization Corporation of Pakistan

STEDEC Technology Commercialization Corporation (STCC) of Pakistan (Private) Limited was established in 1987 under the Companies Ordinance 1984 for the primary objective of commercializing PCSIR's products, processes and technologies. Subsequently, the scope was broadened to assist other R&D institutions, specifically those of MoST, in their commercialization efforts. STEDEC generates revenues through its commercial activities and no development / non-development budgetary allocations are made to STEDEC in the Federal Government budget. The purpose of STEDEC is to promote Industry-Academia-R&D linkages; through seeking inputs from the industry and academia as well as extending firm support towards adapting state of art foreign technologies in the local market, so as to boost industrial development. Ultimately reducing the country's dependence on foreign technologies and resources as well as enhancing import substitution.

Progress: STEDEC has successfully developed its sales and marketing network throughout Punjab to commercialize and promote products developed by the S&T organizations. But the commercialization of products has been on a marginal level. SOE Act 2023 listed it as a commercial entity and subsequently it had to be privatized but the Ministry wants to retain it and transform it into an advanced Institute (GOP, 2023).

4.3.12 National University of Technology (NUTECH)

National University of Technology was established as a pioneer national technology university envisioned to become an internationally acclaimed research university for producing scientists that can lead the technological advancement. NUTECH caters for all eight levels of the National Qualification Framework (NQF).

4.3.13 National University of Sciences and Technology (NUST)

National University of Science and Technology (NUST) was established through NUST Act, 1997 with the aim to provide higher education experience grounded in through leadership, co-creation of knowledge and sustainability. NUST is striving to change the university into a world-class Centre of excellence and lead the transformation of Pakistan towards a rapidly developing knowledge economy and to realize the national objective of a progressive and prosperous country among comity of nations.

4.3.14 COMSATS University, Islamabad (CUI)

Mandate: COMSATS University Islamabad was established under the COMSATS University Islamabad Act, 2018 with a mandate to provide education and scholarship in such branches of knowledge as it may deem fit, and to make provision for research.

Progress: COMSATS University Islamabad (CUI) is a fast-growing research-based university in Pakistan, with a wide range of academic programs, ranging from basic sciences to cutting edge emerging technologies and a network of inter-disciplinary research centers making it a good place for higher studies leading to MS and PhD degrees. CUI was granted the status of Degree Awarding Institute (DAI) by the Federal Government of Pakistan on August 12, 2000, it was upgraded to a Federally Chartered University in April 2018.

Prima Facie, the universities under the administrative control of the Ministry of Science and Technology are performing fine and the independence provided to them has brought some fruit.

FINDINGS AND DISCUSSIONS - II

5.1 A Detailed Overview of the Selected Organizations

5.1.1 PCSIR

Introduction

PCSIR is one of the pioneer organizations in the country mandated to undertake scientific and technological/industrial research in the country. PCSIR's Council of 21 members is a decision-making body that sets out plans for growth of PCSIR. PCSIR is supposed to conduct extensive research in the domain of medicine, textiles, construction, food, and environment. The Council as defined by the Act could have been a very effective body but for ages, the members of the governing body have not been appointed. As per the PCSIR Act out of 21 council members, 4 have to act as Governing body members. One-member Finance and one-member science and one member technical-along with the chairman. Since past 5 years or so, the PCSIR is functioning without any full-time member finance and member science. The posts have been assigned to the officers of the PCSIR on a look-after charge basis. This has led to inefficient management of the organization and any meaningful linkage between the academia, industry and the organization, that was the essence of the creation of the organization, has not been developed so far.

A detailed overview of the products developed by PCSIR indicates that most of the products that have, so far, been developed are of no concrete value. PCSIR needs to develop liaison with the Universities, especially the Universities that fall under the control of Ministry of Science and Technology and with the industry to conform to its mandate. It is mainly providing testing services to the industry which goes in conflict with its mandate.

Budgetary Analysis

A scrutiny of its budget indicates that PCSIR is heavily reliant on the Government Budget for meeting its current expenditure and the amount of revenue generation from its own resources is quite meager. Around 60 percent of the budget is spent on employee-related expenses which indicates that there is a huge chunk that is being paid in pay and pensions. Besides, PCSIR is just focusing on testing/accreditation rather than undertaking proper scientific research so as to produce quality scientific products. Multiple PSDP Projects have been undertaken by the organization without any criteria to measure the success of any PSDP project and the organization is executing several projects that have long passed their estimated time.

5.1.2 PCST

PCST has been mandated to advise the Federal Government on all matters relating to the development of science and technology in the country and to undertake policy research, formulate policy proposals and evaluation of science, technology and innovation policy which is to be prepared by the Ministry's Policy and coordination Wing.

Progress and Problems and Budgetary Analysis

The scope of PCST according to its mandate is limited with no clarity on how to contribute towards the scientific advancement of the country. Since its inception in 1964, the organization has failed to carry out any outstanding research (Joint Scientific Adviser Policy, 2024). It just manages and

maintains a database for scientists, engineers and doctors which is being done by many other organizations in the country as well. The key positions like Chairperson, PCST and various posts of Senior management level have been lying vacant since 2018. PCST also failed to draft its Service Rules/Regulations governing affairs of its employees timely. During the exercise of re-organizing of the Federal Government, it was recommended that PCST may be merged with either PSF or with the Policy and Coordination wing of the Ministry itself. On an in-depth analysis, it transpired that there is a certain inertia in the organization, and it has lost its meaning over time. But, the organization is significant as it works as a secretariat for the National Commission on Science and Technology and it needs to revitalize itself. (Bajwa,U. 2024)

A look at the budget of the organization shows that most of the budget is related to employee-related expenditure.

5.1.3 CWHR Overview

CWHR was established through a Resolution in 1964 and transferred to the Ministry of Science & Technology thereafter. It was created with a vision to provide research and development in the field of housing and works and to help the construction sector in coming up with affordable housing. It was also mandated to promote R&D in Civil Engineering, construction of model structures and collaboration with national/international agencies.

Progress, Problems and Budgetary Analysis

CWHR worked well for the initial few years but since the advent of private construction companies in Karachi, it miserably suffered. The officers of the organization started using the resources available to establish their own businesses and as a result, the organization lost its vitality.

Besides, several key positions have remained vacant for over a decade. The last regular appointment for the post of Chairman, CWHR was made in 2011. Thereafter, no regular and full time Chairman was appointed in the organization. CWHR has awfully failed in fulfilling its statutory mandate. Rather than coming up with some meaningful work in the field, its focus had just limited to publication of research papers, conducting seminars, and holding training sessions. In the past, the organization undertook a few PSDP projects which were left in limbo and the money was mostly misappropriated by the Project Directors.

Corruption, Negligence and Incompetence has plagued the organization. All its budget is being used for disbursement of salaries. No research has been carried out by the organization in the last decade at least.

5.1.4 PSQCA

PSQCA is a regulatory body which was developed in 1996 with the mandate for Standardization and Conformity Assessment. It was meant for development of Standards and ensuring that consumer and industrial goods are produced as per International Standards for human health and safety, animal health, protection of environment, protection of consumers and prevention of deceptive practices.

Progress, Problems and Budgetary Analysis

PSQCA started as a progressive organization which initially developed various standards for quality testing and control of various consumer products being used by millions of consumers in Pakistan. It

ensures that quality standards are being fulfilled by the manufacturers in producing various products according to the national standards notified by the Federal Government (Ahmed, 2024). It has developed standards and communicates them to the manufacturers and other stakeholders for compliance at the time of production.

Nonetheless, PSQCA operations are tainted with allegations of malpractice and corruption. It has not developed any set of financial or administrative rules so far and billions of rupees earned as revenue are distributed within the organization (GOP, various issues). The same could have well been made part of the Federal Consolidated Fund or Treasury Single Account. So, the question that comes to mind is why the government has never pondered over bringing the money of the organization under its control? Or else the silence indicates negligence on the part of the governing authorities.

An exhaustive analysis of the infrastructure of the organization depicted a dire need for reforms. The organization has recently been listed in the SOEs that are to be governed under the State-Owned Enterprises Act 2023. Since its inception, it has worked without three major Deputy Director Generals that are supposed to be part of the board of directors of the Authority.

It is also pertinent to mention here that PSQCA has been working without any Head for the past 4 years. Multiple times the charge of DG PSQCA was assigned to the officers of the Ministry. This is a glaring disregard for the rules and regulations of the government as the post of DG PSQCA is an MP-1 post and no officer in grade 20 can be assigned the subject charge. PSQCA needs a major structural overhaul (Rizwan, 2024).

5.1.5 STEDEC

STEDEC was established with a goal to form a national organization for commercializing indigenous research and to give market insights to organizations mandated to conduct research and development, so that they can adapt their processes to make viable commercial activities. It also helps the research-based organizations to make investment in pilot plans, management and marketing of products developed locally with the goal to be self-sufficient and less dependent on imports.

Progress Problems and Budgetary Analysis

STEDEC was created in 1987 as a subsidiary to PCSIR to facilitate commercialization of products developed by PCSIR. It is a self-revenue generating organization with no allocation in the Federal Government's budget. Although STEDEC was made to facilitate public sector R&D organizations for commercialization and marketing of their products, it did not work beyond a very limited scope and never made significant efforts to expand. The key post of the organization i.e. the Managing Director is lying vacant from 2021 and the affairs of the organizations are entrusted to the officers of PCSIR on a look after charge basis.

The posts of members of the Board of Directors of STEDEC have been vacant for a long time and immediate appointments are needed to make the organization functional. Besides, The Company ought to diversify its portfolio and expand its customer base and they should offer commercialization and marketing services for the private sector as well. The organization has been declared as a State-Owned Entity by the Central Monitoring Unit of the Finance Division and as per the SOE Policy 2023- all SOEs must be privatized unless they hold strategic significance.

Thus, the organization has to be privatized or else the Ministry needs to transform the company and convince the Federal Government that it holds strategic significance.

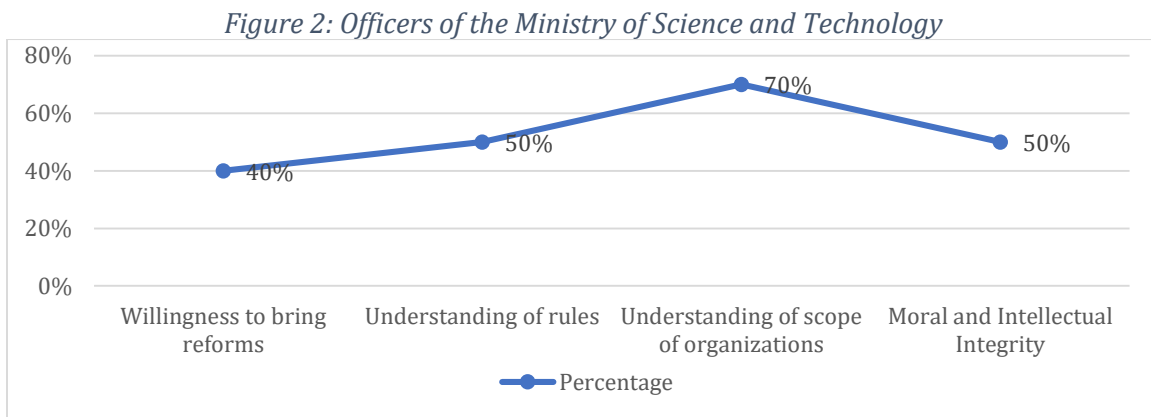
5.2 Thematic Analysis

As stated earlier, this study was based on a few themes that are narrated below:

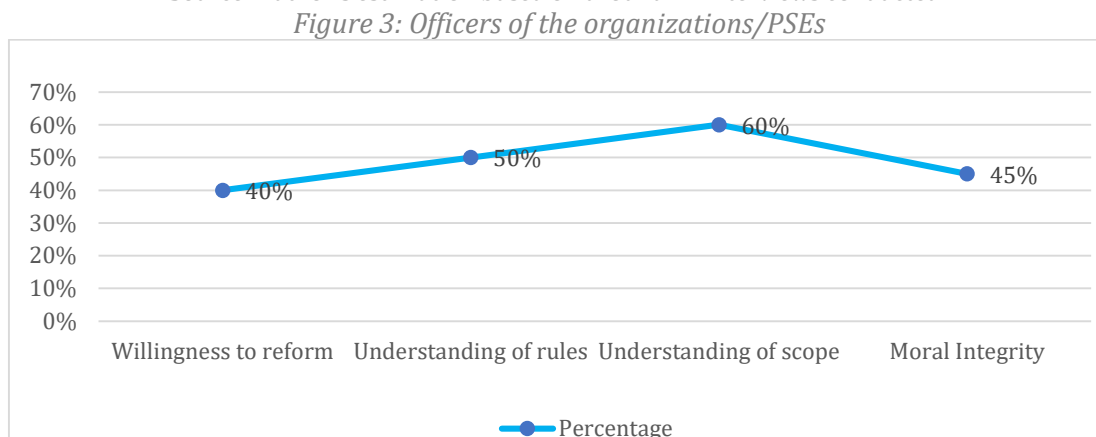
- i. Willingness of the government machinery to bring about reform in the organizations
- ii. Understanding of the Rules and Regulations
- iii. Understanding of the scope of organizations
- iv. Intellectual and Moral Integrity of the Officers -both from the Ministry and federal government and the officers of the organizations under study.

On the basis of “Key informants Interviews “and the purposive sampling, a graphical analysis of the government machinery is illustrated below:

5.2.1 Graphical Analysis



Source: Author's estimation based on around 15 interviews conducted.



Source: Author's estimation based on around 20 interviews conducted.

5.3 Budgetary Analysis

A somewhat detailed analysis of the Budgets allocated to the organizations is necessary in order to fathom out the efficiency of the organizations that have been made part of the study.

A major objective of the study was to understand as to how the public sector expenditure is managed by these organizations and what is the progress of these organizations in terms of monetary

transactions. Where has the Budget of these organizations gone? MOST provides grants to several PSEs under its administrative control. The question that was the focus of the study was whether the organizations have some financial vitality, or have they become fiscally redundant over-time? Table number 1 shows the grants provided by the Ministry to its autonomous bodies.

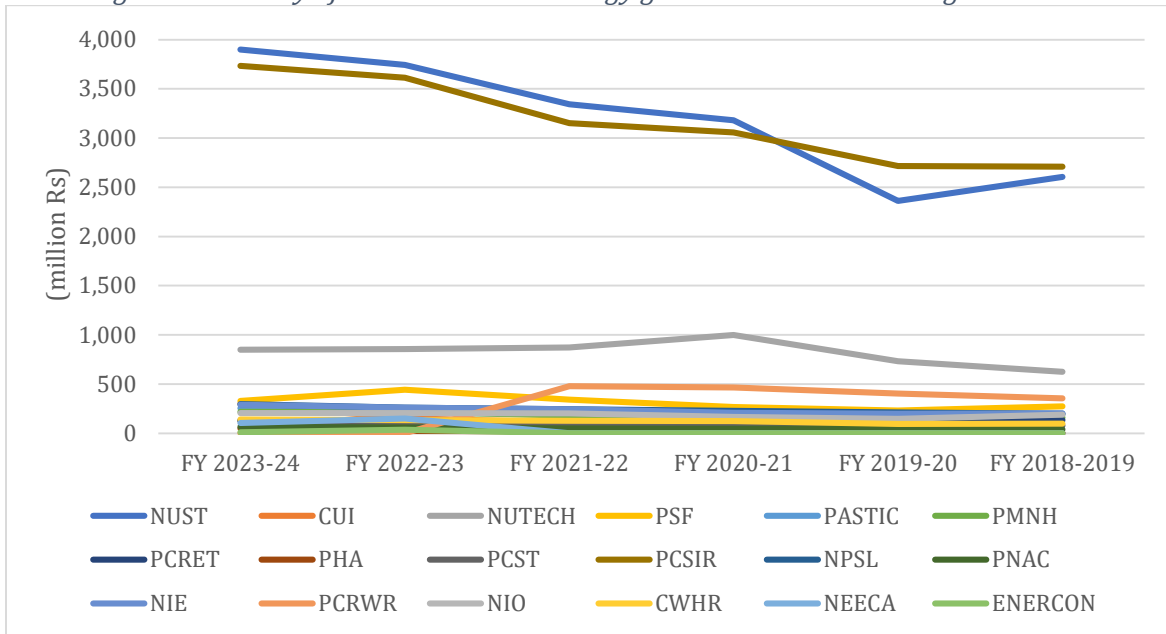
Table 1: Ministry of Science and Technology grants to autonomous organizations (Rs. millions)

		FY 2023-24		FY 2022-23		FY 2021-22		FY 2020-21		FY 2019-20		FY 2018-2019	
Autonomous Organizations		Budget	Expenditure	Budget	Expenditure	Budget	Expenditure	Budget	Expenditure	Budget	Expenditure	Budget	Expenditure
1	NUST	3899.6	1836.5	3744.4	3744.4	3343.5	3343.5	3180.3	3180.3	2362.5	2362.5	2604.8	2604.8
2	CUI	300.0	72.6	152.0	152.0	109.1	109.1	120.3	120.3	0.0	0.0	0.0	0.0
3	NUTECH	850.0	288.0	855.0	855.0	871.0	871.0	1000.0	1000.0	731.3	731.3	624.0	618.5
4	PSF	327.4	139.0	444.0	444.0	342.5	342.5	268.1	268.1	230.9	230.0	272.4	272.4
5	PASTIC	255.6	118.0	224.6	224.5	209.4	209.4	186.3	186.3	175.1	175.1	192.2	192.2
6	PMNH	217.1	92.9	217.4	217.4	178.7	178.7	159.7	159.6	142.9	141.5	159.2	159.0
7	PCRET	131.7	53.3	124.3	123.2	123.6	115.8	121.7	119.9	112.2	105.6	135.1	132.8
8	PHA	47.9	17.8	23.7	23.0	21.0	20.0	14.2	14.0	11.8	10.9	3.6	3.5
9	PCST	125.6	50.8	95.2	95.2	86.9	86.9	83.2	83.2	85.2	85.2	78.9	78.9
10	PCSIR	3732.3	1707.8	3612.7	3612.7	3150.8	3150.7	3056.9	3056.8	2716.9	2716.6	2707.6	2704.6
11	NPSL	297.4	135.5	259.3	259.3	244.8	244.8	227.6	227.5	210.5	210.5	197.4	197.4
12	PNAC	64.4	25.1	57.6	57.6	50.9	50.9	45.5	45.5	50.1	50.1	39.7	39.4
13	NIE	288.5	125.6	261.8	258.7	244.0	244.0	208.8	208.8	200.0	199.9	202.6	202.6
14	PCRWR	0.0	0.0	0.0	0.0	480.0	479.3	464.2	464.2	402.8	402.8	355.9	355.9
15	NIO	206.5	77.0	205.2	205.0	202.8	195.6	165.3	160.4	146.6	146.5	189.8	185.6
16	CWHR	140.9	57.8	133.7	133.7	126.4	126.4	124.2	123.7	94.0	93.5	97.2	93.6
17	NEECA	105.0	35.7	150.0	150.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	ENERCON	11.1	10.9	36.7	36.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total (C)		11000.83	4844.34	10597.51	10591.93	9785.35	9768.70	9426.31	9418.66	7672.76	7661.96	7860.38	7841.20

Source: Federal Budget documents from 2018 to 2023.

PCSIR has received the second highest grant (34% in FY 2023-24) in the sample period. For the last FY under study it is close to 4 Billion rupees. Whereas CWHR (1.3%), PCST (1.1%) are relatively smaller grant receivers.

Figure 4: Ministry of Science and Technology grants to autonomous organizations

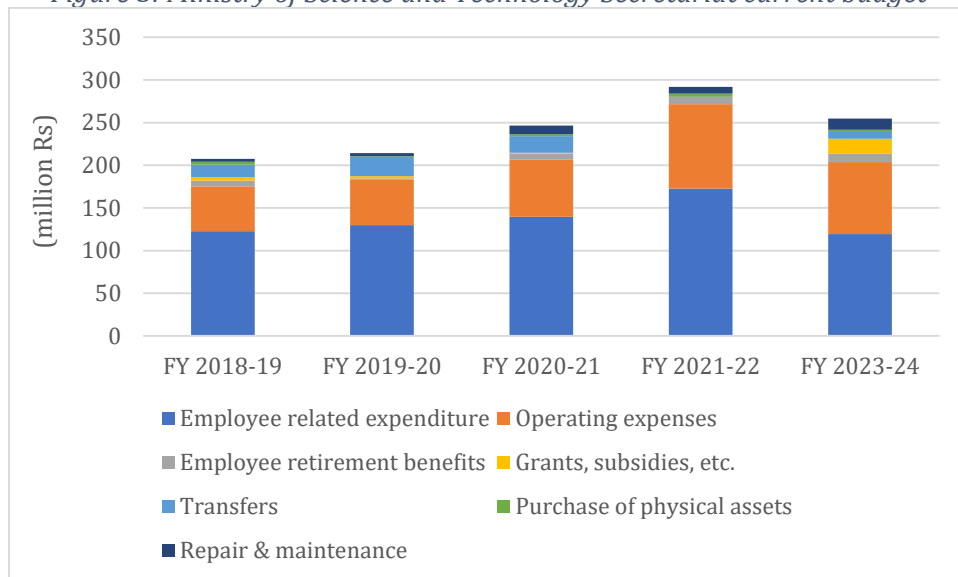


Source: Federal Budget documents from 2018 to 2023.

PCSIR has been able to secure grants at an incremental rate. PCSIR has been awarded a budget in FY 2023-24 which was higher by 1.4 times from FY 2018-19 budgeted value. Where for CWHR it is 1.5 percent and for PCST it has been higher by a ratio of 1.6 times.

Next we shift to the recurrent budget to see the object classifications of the spending by the Ministry and by our sample Autonomous organizations of MOST.

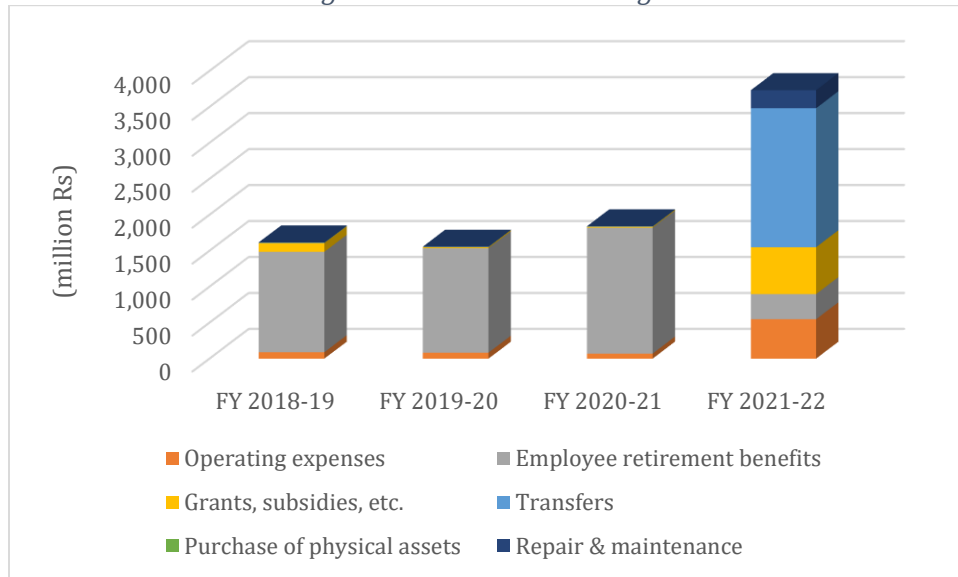
Figure 5: Ministry of Science and Technology Secretariat current budget



Source: Federal Budget documents from 2018 to 2023.

Recurrent budget of the MOST secretariat is increasing over time with close to 60% of the budget going to the Employee related expenditures.

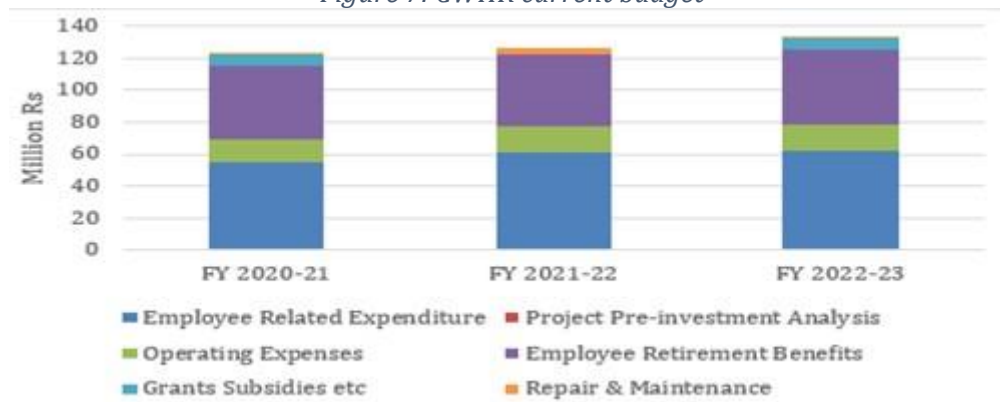
Figure 6: PCSIR current budget



Source: Federal Budget documents from 2018 to 2023.

Recurrent budget is on the rise. Especially in the last year transfer payment has increased. In the earlier years it has been mainly in terms of the Employee related retirement benefits.

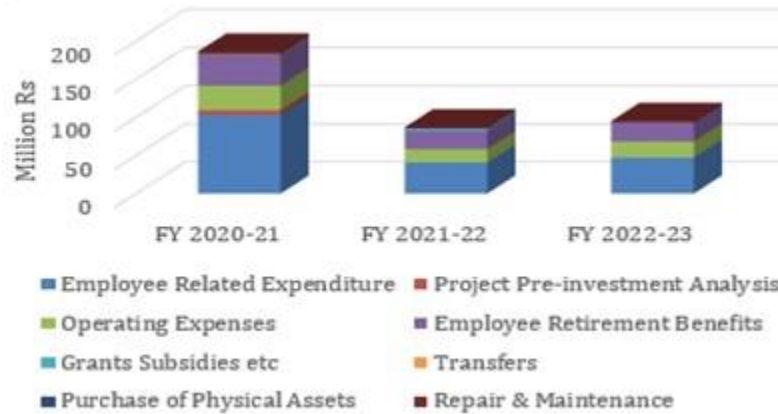
Figure 7: CWHR current budget



Source: Federal Budget documents from 2018 to 2023.

Employee and Pension related expenditures take almost 80% of the recurrent budget in CWHR thus leaving lesser room for main function.

Figure 8: PCST current budget



Source: Federal Budget documents from 2018 to 2023.

For PCST budgetary position is no different. Employee salary and pension take away most of the budget.

Next if we look at the development budget then it is the same proportions as was the case of current allocations. However, like other development spending these also are susceptible to cuts and reallocations. Table number 2 gives an overview of the development budget granted to the sample organizations.

Table 2: Revised PSDP allocation 2022-23

PCSIR	35.87% (2,286.13 million Rs)
PCST	0.46% (29.321 million Rs)
PSQCA	0.65% (41.677 million Rs)

Source: Federal Budget documents from 2018 to 2023.

PCSIR gets the highest development allocation among all the PSEs under the administrative control of the Ministry and it is close to 36% of the total development budget of the division.

Now in the case of STEDEC Technology Commercialization Corporation the following table shows the financial position over the last five years.

Table 3: Overview of income statements (actual) for last five years (Rs. millions)

Description	2022-23	2021-22	2020-21	2019-20	2018-19
Sales	198.9	166.3	124.4	88.4	148.1
Cost of Sale	(154.3)	(135.5)	(97.7)	(75.0)	(120.2)
Gross Profit	44.6	30.7	26.7	13.4	27.9
Distribution Cost	(8.9)	(9.6)	(9.5)	(11.0)	(11.8)
Admin Expenses	(15.8)	(14.6)	(14.7)	(13.6)	(16.3)
Other Expenses	(1.2)	(0.5)	(0.3)	(0.1)	(0.2)
Other Income	2.2	2.3	2.1	2.1	2.3
Profit/ (Loss) from Operations	20.7	8.3	4.3	(9.2)	1.9
Financial Cost	(0.21)	(0.2)	(1.1)	(1.3)	(0.9)
Profit / (Loss) before taxation	20.5	8.1	3.2	(10.6)	1.0
Taxation	1.2	(2.3)	(1.6)	(1.4)	(1.9)
Profit / (Loss) after taxation	21.7	5.8	1.6	(12.0)	(0.9)

Source: Federal Budget documents from 2018 to 2023.

The company has been able to rebound from a negative profit after taxation in the 2018-2020 period. In the outgoing completed fiscal year (FY 2022-23) it was 21.7 million (11% of the sales).

PSQCA doesn't get any grant from the government other than a few development schemes, but it manages to earn a tremendous amount of money. Audit Authorities have time and again pointed out the lack of accountability on part of the organization. The organization has still not framed its financial rules, which is a lacuna that needs to be addressed. As per the record available from the AGP Office, the organization earned around 2 billion rupees even after carrying out all its expenditure. As per TSA Rules 2020 and subsequently framed Cash Management and TSA Rules 2024, the money earned by the PSE had to be debited into the Federal Consolidated Fund, but the organization vehemently denies doing that.

CONCLUSION

The study was conducted to gain an insight into the governance structure of Pakistan's federal government and was aimed at finding out loopholes within the system. The study endeavored to get an understanding of the working of the Ministry and its autonomous bodies and has made us come up with these two basic conclusions:

Lack of Vision

Ministry and the organizations suffer from a dearth of creativity and have lost any adequate vision or meaning. This needs to change. Schedule 3 to the Rules of business, 1973 mandates the Ministry with an advanced role in scientific and technological advancement of the country. Ministry needs to attain that objective by having a vivid understanding of the potential of its organizations.

Political Interference and lack of intellectual integrity

Time and again, the Ministry has been used as a breeding ground for politicians where they have recruited their political cronies. This resulted in the loss of merit-based inductions and resultantly, the Ministry suffered a great deal. This also needs to be looked into thoroughly and the federal government shall make sure that such inductions are not made, and organizations are allowed to flourish by recruiting fresh blood that can help them achieve their goals. The officers of the organizations shall function with high moral values and add substance to the advancement of science and technology in the country.

This is where the governance suffers largely. And it's only through a morally and intellectually sound civil/public service that the goal of technological transformation can be achieved!

RECOMMENDATIONS

An exhaustive study of the Ministry and of the sample organizations through key-informant interviews of the samples developed – Following Recommendations have come to fore:

6.1 Amendments in the Rules of Business, 1973

As per the recommendations of the 37 meetings carried out by the Institutional Reforms Cell headed by Ishrat Husain, the 16 organizations of the Ministry need to be placed in the Schedule 3(A) to the Rules of Business.

Schedule 3 of the Rules of Business has not been amended by the Cabinet Division even after the approvals from the federal government. The lists that illustrate the executive departments and the autonomous bodies as provided by the IRC, don't have any PSE from the Ministry of science and Technology. Schedule 2 to the Rules of business,1973 does describe the PSEs as being a part of the Ministry but there is a certain ambiguity. There needs to be a vivid classification of the PSEs of the Ministry as autonomous bodies or as executive departments of the Ministry (Anjum, 2024).

PCSIR and PSQCA ought to be made part of the Schedule that will illustrate the autonomous bodies of the federal government. PCST may be declared as an executive department of the Ministry with a revised and revitalized role.

6.2 Redistribution of Work within the Ministry

The work distribution within the Ministry is unjust, to say the least. There is no need for an advanced group of advisers at the Ministry when the similar functions fall under the domain of organizations working under the Ministry (Ahmad, 2024). There is a certain duplication of work that needs to be reassessed comprehensively. There must be a dedicated Planning Cell at the Ministry manned by the officers of the Planning Commission and assisted by civil servants. The many wings created in the Ministry only tend to provide unnecessary jobs to technocrats and they are mostly performing duties that contradict with their educational qualifications and expertise. The lack of efficient coordination within the Ministry magnifies the problems of the already dormant organizations of the Ministry.

6.3 Setting up Attainable Goals

The Ministry lacks vision (Bajwa, 2024). It needs to set a particular goal and then decide as to how that goal will be achieved. The prime goal of the Ministry of Science and Technology should be coming up with solutions to country's growth in the Science Sector. With a large number of research organizations working under its domain, Ministry shall be capable of producing quality products that can substitute imports in the sector of science and technology. It shall devise its role vividly. The business assigned to it under Schedule 2 to the Rules of Business is clear but needs understanding on part of the Ministry. Ministry shall focus on goal achievement rather than signing up MOUs that linger on for ages and projects that always outrun their course (Bajwa, 2024).

6.4 Categorization of PSEs under Section 36 of PFM Act 2019

As per Section 36 of the PFM Act 2019, it is the statutory responsibility of the Finance Division to categorize the Public Entities of the federal government as either Research Organizations, Business enterprises or Regulatory bodies.

This categorization has not been done so far (Ali, 2024). Without this clear categorization, the organizations will continue working against their mandate as in the case of PCSIR. The categorization will also bring PSQCA under some control of the government and the money that the organization distributes within itself will be made part of the FCF. (Chandna, 2024) (The organization receives 13 percent of the total revenue gained by the 165 products accredited/certified by it).

6.5 Formulation of Adequate Service Rules/ Regulations of the PSEs

The organizations need to develop a set of rules or regulations as mandated by their respective acts so as to bring about clarity in administering their affairs. The absence of approved Rules/Regulations results in negative outcomes. For instance, there have been no recruitments in PCSIR for the past many years. Same is the case with PSQCA.

6.6 Appointment of Heads of Organizations

PSQCA has been without a Director General for the past 5 years. PCST is working without a chairman since 2017. STEDEC also has a vacant position of DG.

This has led to a certain inertia and inefficiency and has abysmally affected the morale of the organizations. Officers assigned to look after charge have gone beyond their authority and there is a venom of financial and moral corruption running in the veins of almost all the organizations under study. With this state of affairs, nothing concrete can be achieved by the organizations and the Ministry.

6.7 Triple Helix Model and Clarity of Purpose

The Science and Technology Policy drafted by the Ministry provides a certain vision.

A collaboration between Academia, Industry and Research Organizations. This was called as a Triple Helix Model where Universities will come up with innovative ideas and research organizations will help them create quality products and industry will disseminate and buy out the products developed by the research organizations and the Ministry. Apparently, this was a very practical approach and will provide the government with the clarity as to where shall it invest. Government shall keep itself directly involved in the domain of basic sciences only and for the Applied Sciences where the model of triple helix comes into play- an adequate financial involvement shall be ensured. This is important so that the government can get return on its investments and the economic development can be attained (Williams, 2024).

6.8 Winding up of CWHR and Equity based Investments in PCSIR/PCST

The Council for Housing and Works Research has lost its meaning over the course of time. As per the present study, the recommendations of Institutional Reforms Cell shall be implemented and the organization ought to be wound up.

PCSIR can be better managed if some sort of equity-based investment is opened up for production of quality goods (Hussain, 2024; Sharif, 2024) and the management of its affairs has some presence of the private sector in it. This is not easy as it's a humongous organization with 17 laboratories and several institutes but still some kind of Public-Private Partnership in its projects can give good results and can end the inertia and lack of creativity that has plagued the organization. PCSIR has come up with insignificant products like creams to enhance the skin tone, some pesticides etc. This was not the objective behind the creation of an entity of such magnitude and with assets worth billions in all the major cities of the country.

6.9 Recommendations for STEDEC

The State-Owned Enterprises Policy 2023 is clear enough and STEDEC will need to be retained as it is a monopoly service provider (GOP, 2023) but, it needs to have a redefined role. The Ministry is already working on transformation of STEDEC into a novel institute.

6.10 Recommendations for PSQCA

PSQCA shall be made part of the listed statutory state-owned entities and shall be restructured as per the State-Owned Enterprises Policy 2023. PSQCA shall remit its revenues into the TSA. They should have adequate rules followed by regulations so that the quality of human resource is improved and there is some transparency in its operations. PSQCA shall have a proper enforcement directorate that can cease the production of substandard public goods to ensure public health safety as per international norms.

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APPENDIX: THE QUESTIONNAIRE

- 1) What is the Mandate of organization?
- 2) How is the budget allocated in the organization quarter wise? Revenue Generation /Expenditure Year Wise.
- 3) How does the organization utilize its budget? Whether they invest in any scheme or otherwise?
- 4) How many projects are being carried out as per the mandate of the organization?
- 5) How PSDP projects of the organization contribute to the overall goals of the organization?
- 6) Does the organization track the performance of each project in terms of goal achievement and financial viability?
- 7) Study of last five years' performance (please attach any supporting document).
- 8) Does the organization observe financial prudence? Whether they meet up their expenditures from within the budgetary allocations or otherwise.
- 9) Future plans of the organization for next year.
- 10) What is Approved Strength / Filled / Vacant Strength Year Wise?
- 11) Treasury Single Account Rules 2020 have been repealed. Why was the subject decision taken? How are the new Rules different from the TSA Rules 2020?
- 12) What is the statutory responsibility of the Finance Division as per Chapter 36 of the PFM Act 2019 concerning categorization of the public entities?
- 13) To make it clear, Finance Division was supposed to categorise the public entities or as per say the autonomous bodies/subordinate offices/executive departments into different categories. This would have made the management of TSA practical. Not all the organizations can be made part of the TSA but those that function as Regulatory Bodies and acquire trillions in the name of the government were supposed to credit their earnings into Non-Food Account 1. Apparently, no such categorization has been made.
- 14) Is the above statement true?
- 15) Our present study has elucidated some flaws in the financial governance that has led to a colossal loss to the exchequer. For example, an organization under the Ministry of Science and Technology named as Pakistan Standards and Quality Control Authority has a budget in trillions but they don't deposit anything in the FCF.
- 16) Should there not be a mechanism to change this situation?
- 17) TSA Rules 2024 ordain that Ministries must submit a projection of cash inflows and outflows. How far has it been successful, and does it include the subordinate offices and attached departments of the Ministry too?
- 18) Has the Cabinet Division made necessary amendments in the Rules of Business and defined the executive departments and attached departments and subordinate offices?
- 19) If not-then how is the TSA Regimen going to work?