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Data collection and saturation in exploring the public sector accounting in Bangladesh

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Abstract*:* The study aims to explore the data collection procedures and analysis of public sector accounting (PSA) practices in Bangladesh. This study adopts a qualitative methodology, employing interviews with government accountants and regulatory personnel. To investigate current public sector accounting practices and issues in Bangladesh, a significant focus is placed on government accountants due to their practical expertise and alignment with the study's purpose. Out of the 95 respondents from entities such as the CGA (50), CAG (20), Ministry of Finance (05), iBAS++ project (10), and academic community (10), a total of 22 interviews were meticulously chosen to meet the study's goals, ensuring the highest level of data quality. Data collection tools encompass semi-structured in-depth interviews featuring targeted questions, supplemented by participant observation and document analysis. In conjunction with interviews, the researcher employs direct observations to document participants' behaviors and activities and those of the studied institutions and companies. Before inputting data into computer software, the researcher conducted data analyses and coding interpretation. NVivo software was employed for data classification, clustering, and memo-writing facilitation. Supporting data from document reviews and observations are also taken into account. When the researcher listens to the recordings and notices similar responses and comments from respondents across different locations, consistently revealing similar data, the researcher focuses on refining thematic arrangements within the data categories. The data saturation occurred in different phases, encompassing information, observations, and documentation. For instance, in the case of public sector accounting practices, saturation was observed with the 13th participant concerning regulatory-related questions and procedures. Regarding problems and issues of PSA, saturation was reached with the 19th individual, and ultimately, overall saturation concerning expert experiences was attained with the 22nd respondent. Furthermore, the researcher engaged in discussions with numerous additional respondents to gain insights from these three distinct backgrounds.

Keywords: *Public sector accounting; data collection procedures; data analysis; data saturation*

1. Introduction

Recent developments in accounting research have garnered increased attention and significance in the private and public sectors (Bartocci et al., 2022). While the secondary function of accounting involves aiding management in making informed decisions by preparing various managerial reports,

its primary role revolves around furnishing financial information to external stakeholders by generating financial statements from financial transactions (Nagendrakumar, 2015, 2006). Traditional accounting studies predominantly concentrated on the private sector; however, contemporary research indicates a shifting focus toward the public sector (Grossy et al., 2023).

However, recent developments in the accounting domain underscore the widespread acknowledgment within the accounting profession that public sector or governmental accounting holds profound significance and plays an essential role in a nation's sustained development (Bracci et al., 2015). The successful implementation of strategies using financial information derived from the accounting system is pivotal in determining an entity's overall success (Umble et al., 2003). Broadly, accounting is an information system providing data for informed decision-making. This imperative extends to ensuring accountability and transparency in both the private and public or governmental sectors (Atuilik & Salia, 2019; Biancon et al., 2018).

Khan (2019) underscores the composition of Bangladesh's public sector, which includes budgetary and extra-budgetary entities of the central government, local government units, public sector corporations, and financial and non-financial enterprises. Bangladesh's public sector encompasses budgeted and extra-budgetary governmental bodies, statutory public entities, public enterprises, and municipal or local government entities (Islam, 2020). According to the CAG (Additional Functions) Act of 1974, the Comptroller and Auditor General (C&AG) is vested with the authority to prepare government or public sector accounts. This ambit should encompass government accounts, spanning the budgetary central government, which includes ministries, divisions, and departments, alongside extra-budgetary governmental units such as statutory public authorities or autonomous bodies, local authorities or local governments, and public sector enterprises or commercial undertakings (Rahman, 2021).

Bangladesh has recently embraced the Public Financial Management (PFM) framework to enhance government financial reporting, transparency, and accountability (Khan, 2019). Nonetheless, these endeavors' actual impacts and benefits remain a topic of ongoing discussion. Rahman et al. (2019) contend that Bangladesh's financial management transparency falls short in accessibility, significance, reliability, comprehensiveness, consistency, and timely disclosure of social, economic, and political information related to government activities. This deficiency hinders the public's ability to evaluate government officials or legislators. They assert that bolstering the public sector's accounting and auditing framework is the sole pathway toward achieving transparency and accountability in Bangladesh's financial reporting.

Recently, Bangladesh has digitized the public sector's cash-based financial accounting and reporting system. Nevertheless, employing various accounting systems across ministries and governmental bodies poses hindrances to the effective implementation and quality of International Public Sector Accounting Standards Board (IPSAS) (Rajib et al., 2019). Delays in generating reports and the constrained nature of accounting systems constitute significant challenges that may require years to rectify (Bhattacharya et al., 2021).

The study aims to offer justifications through a qualitative research approach to achieve the study's objectives. Consequently, the selected research design is exploratory, addressing the fundamental research question's 'what' and 'how' dimensions. The study aims to explore the data collection and saturation process in exploring the public sector accounting practices in Bangladesh. This study adopts

a qualitative methodology, employing interviews with government accountants and regulatory personnel. Data collection tools encompass semi-structured in-depth interviews featuring targeted questions, supplemented by participant observation and document analysis. In conjunction with interviews, the researcher employs direct observations to document participants' behaviors and activities and those of the studied institutions and companies. Supporting data from document reviews and observations are also taken into account. When the researcher listens to the recordings and notices similar responses and comments from respondents across different locations, consistently revealing similar data, the researcher focuses on refining thematic arrangements within the data categories. The data saturation occurred in different phases, encompassing information, observations, and documentation. For instance, in the case of public sector accounting practices, saturation was observed with the 13th participant concerning regulatory-related questions and procedures. Regarding problems and issues of PSA, saturation was reached with the 19th individual, and ultimately, overall saturation concerning expert experiences was attained with the 22nd respondent. Furthermore, the researcher engaged in discussions with numerous additional respondents to gain insights from these three distinct backgrounds.

2. Literature review

The terms 'research methodology' and 'methods' are occasionally used interchangeably. This practice, however, constrains the scope of research methodology and overlooks the researcher's ontological stance from the outset (Alam, 2021; Ahrens & Chapman, 2006). This study recognizes the distinctions between these terms and regards research methods as a subset of research methodology. Hence, the study adopts a comprehensive perspective that considers research methodology as an overarching approach encompassing research methods and the researcher's ontological and epistemological positions (Elharidy et al., 2008; Silverman, 2006; Tomkins & Groves, 1983). Consequently, the chosen methodology mirrors the researcher's philosophical standpoint, impacting the preferred mode of investigation (research methods) (Burrell & Morgan, 1979). According to Burrell and Morgan (1979), the researcher's ontology, epistemology, and assumptions regarding human nature lay the foundation for determining the research methodology.

2.1 Exploratory Study

The procedures involved in collecting, analyzing, interpreting, and reporting data within research studies constitute what is referred to as a research design (Alam, 2021; Creswell & Clark, 2003; Creswell et al., 2011). This design is the overarching strategy that bridges conceptual research concerns with tangible and attainable empirical research. However, the research design outlines the approach for obtaining the necessary data, the methods for collecting and analyzing these data, and how this information will be utilized to address the research question (Bengtsson, 2016). Robson (2002) expounds on three research designs: exploratory, descriptive, and explanatory. Saunders et al. (2007) assert that exploratory research is carried out when there exists a limited understanding of a phenomenon and the problem has yet to be explicitly defined. Its purpose is not to furnish definitive and conclusive answers to research questions but to delve into the subject with varying levels of depth. As a result, its focus lies on tackling novel issues that have yet to see prior research (Blumberg et al., 2014). Even in extreme cases, exploratory research lays the groundwork for more conclusive research by shaping the initial research design, sampling methodology, and data acquisition method (Igwenagu, 2016).

Bryman (2008) defines philosophical assumptions or paradigms as a collection of beliefs that dictate what should be investigated, how research should be conducted, and how the results should be interpreted. These paradigms encompass the researcher's overarching worldviews (Creswell, 2009). Lincoln and Guba (1985) assert that a paradigm encapsulates the researcher's assumptions about how an investigation should unfold methodology, the researcher's understanding of truth and reality about ontology, and how the investigator acquires this truth or reality. As such, a researcher's choice of methodology is influenced by their philosophical assumptions concerning ontology or human nature, as well as epistemology (Collis & Hussey, 2003).

2.2 Data saturation

Saturation, a lack of new information, codes, or themes from the data source, is an important and hotly contested issue in qualitative research methodology (Sandelowski, 1995; Lincoln & Guba, 1985). It generally refers to attaining the highest degree of informational repetition or resemblance without adding new material or insightful analysis to the study's primary body. Indeed, the history of qualitative research has established the concept of data saturation, especially regarding or supporting validity. Thus, data saturation is regarded as a criterion that "meets with the ontological and epistemological basis of qualitative research" and as "the flagship of validity for qualitative research" (Constantinou et al., 2017, p. 583). It is said to be saturated when enough data is gathered to fulfill the research objectives. Saturation in this study mainly refers to the perception of data saturation (Merriam, 2009). Furthermore, without stressing it, Cohen et al. (2000) defined the saturation point as the point at which "nothing new" has occurred (suggesting the notion of data saturation).

According to Guest et al. (2006), "thematic exhaustion" refers to the point at which no new themes are derived from the data bank. Data saturation is the data collection and analysis stage when new information produces little or no change to the codebook, with variations containing additional new codes and refinements of code definitions. This concept of saturation is comparable to data saturation as information redundancy. According to Guest et al. (2006), 94 percent of what they call high-frequency codes—codes applied to many interview transcriptions—were found after the first six interviews and 97 percent after the subsequent 12 interviews, based on the interviews (they revised theme development and their codebook after every sixth interview, hence the multiples of six; no rationale was given for this). As a result, the respondents to their survey created a uniform data sample and employed a standard set of questions to evaluate the "generalizability" of their conclusions. Additionally, some researchers asserted that data saturation had occurred because no new codes had appeared during data collection, assessment, and analysis. For instance, "the lead investigator stopped data collection when saturation was reached in both subsamples, reviewing the audiotaped and written notes throughout the trial to check saturation." Following each interview session, the interviewers reviewed saturation and significant findings (Underhill et al., 2015, p.670).

3. Methodology

3.1 Research Design and Approach

This study adopts a qualitative approach rooted in subjectivist conceptions of reality. This approach is guided by the belief that a natural or physical world exists, which cannot be fully explored through rigidly structured methods. Additionally, it acknowledges humans' crucial role as social actors, actively interpreting and influencing their surroundings. The study recognizes and appreciates the substantial contributions of these social actors, specifically accounting practitioners and regulators, intimately associated with the phenomenon under investigation.

In general, there are three research approaches or methods: qualitative methods, quantitative methods, and hybrid methods (Alam, 2021; Creswell, 2003; Creswell & Plano-Clark, 2011; Teddlie & Tashakkori, 2009). Since this research involves collecting and analyzing qualitative data, the research questions are addressed through in-depth interviews conducted using a survey methodology. The justification for the chosen approach is as follows:

Qualitative research is intended to provide the researcher with a means of comprehending a phenomenon through observation or interaction with the study's participants (Alam, 2021; Denzin & Lincoln, 2008). Consequently, qualitative researchers are interested in investigating and explaining phenomena in their natural context. So, qualitative researchers attempt to make sense of or interpret phenomena based on the meanings people attribute to them (Denzin & Lincoln, 2008). One of the most significant advantages of qualitative methods is their potential to generate detailed descriptions of participants' thought processes and their tendency to focus on answering the "why" behind a phenomenon (Creswell, 2003).

This study aims to employ a qualitative methodology by conducting interviews with government accountants and regulatory personnel. The qualitative component of this study involves conducting in-depth interviews with government accountants in managerial positions and regulatory personnel to address the sub-research question. Accounting administrators or Chief Accounting and Finance Officers (CAFOs) are pivotal decision-makers directly involved in shaping the operations of their offices. On the other hand, regulators such as the office of the CAG and the Ministry of Finance (MoF) issue rules, regulations, and directives governing the public sector accounting practice, conduct of accountants, and defining the structure of government accounting offices. Apart from these, the study also considers respondents working as consultants for the World Bank project and academics to get expert opinions on the study. Hence, collecting interview data from these categories of participants is likely to offer a more comprehensive understanding of the relationship between concentration and performance compared to previous studies. Table 1 below illustrates the summary of the research methodology.

Table 1: Summary of the research methodology

Contents	Instructions
Research method	Qualitative research
Research approach	Inductive
Types of Research	Exploratory Study
Research design	Exploratory study research design
Research population and scope	Accountants (OCGA), Regulators (OCAG, MOF), Experts (Consultants iBAS++ projects and Academicians)
Sampling method and technique	Non-probability and Purposive sampling technique
Pretest sample size	Seven respondents
Research sample size	22 respondents (OCGA, OCAG, MOF, Consultants)
Data gathering procedure	Semi-structured face-to-face interviews, observations, and documentation
Data analysis	Thematic analysis

Software	NVivo Software

3.2 Sampling Method

Respondents were selected through a systematic sampling approach (Page et al., 2021; Bhardwaj, 2019). Generally, a research sample consists of individuals, organizations, or specific cases of interest (Bhardwaj, 2019). This study employed a non-probability sampling approach, as it is commonly used in business research, and its research objectives and inquiries are best addressed through qualitative research (Alam, 2021; Zikmund et al., 2013). In the non-probability technique, populations are not equally likely to be selected, and random selection does not consider the specific nature of the research's purpose (Sarker & AL-Muaalemi, 2022; Kothari, 2004). According to Obilor (2023), non-probability sampling primarily falls into four categories: convenience, quota, snowball, and judgmental, also known as purposeful, selective, and subjective sampling. In this regard, sampling is determined by the study's objectives, research questions, and research goals (Saunders et al., 2007).

This study advocates using purposeful sampling to identify and select information-rich and typical cases (organizations and interviewees within these organizations) to align with the research objectives and questions. A sampling strategy is employed to achieve the research goals. Purposeful sampling allows the researcher to select the most suitable subjects based on their knowledge and ability to address the research questions (Saunders et al., 2007). The selection of participants or data sources is based on the anticipated depth of their knowledge and the relevance of the information to the research questions (Yin, 2011), and sampling is conducted with a specific objective (Lincoln & Guba, 1985).

Interview Participant Selection

Interviewing individuals with diverse viewpoints can enhance the credibility of findings (Adeoye-Olatunde & Olenik, 2021). As a result, three groups of interviewees were surveyed: government accountants in managerial positions within the office of the Comptroller General of Accounts (CGA), regulators with oversight over accounting systems including the Comptroller and Auditor General's (C&AG) office and the Ministry of Finance, and a third category of experts with specialized knowledge in government accounting, such as consultants working under the World Bank-funded project iBAS++ and academics (Alam, 2021).

Among these categories, government accountants carry the most weight because they possess extensive knowledge about the current practice, inherent problems, and challenges in government accounting, which aligns with the primary objective of the research. Most respondents are selected from managerial positions, such as additional CGAs and Chief Accounting and Financial Officers (CAFOs) within the CGA office. Senior managers are believed to have comprehensive insight into the accounting department's strategies, policies, and procedures. Their involvement in decision-making and strategic choices related to government accounting further justifies their selection. Additionally, their familiarity with the current accounting landscape and the regulatory framework within the context of government accounting positions them well to comprehend the research problem compared to non-management personnel.

Similarly, regulators overseeing and regulating the government accounting sector are chosen due to their in-depth understanding of accounting regulation and policy formulation. This group includes senior managers from the CAG office and the Ministry of Finance. The expert panel comprises

individuals outside the accounting office with expertise and academic knowledge of accounting practices. These experts can recommend best practices based on their specialized knowledge.

In selecting interview participants, emphasis is placed on their academic backgrounds and work experiences in various aspects of government accounting. As a result, the research employs purposive sampling to ensure a diverse range of perspectives and expertise among the interview participants. Selecting appropriate respondents for data acquisition was a critical step for the researcher. Between December 7, 2020, and January 31, 2021, the researcher visited government accounting offices under the CGA to gain a practical understanding of government accounting practices. During this period, the researcher observed how government accounting offices conducted accounting transactions using the iBAS++ accounting software. They also noted which transactions were processed through Electronic Funds Transfer (EFT), which still used checks, and the manual registers used to record transactions and the software.
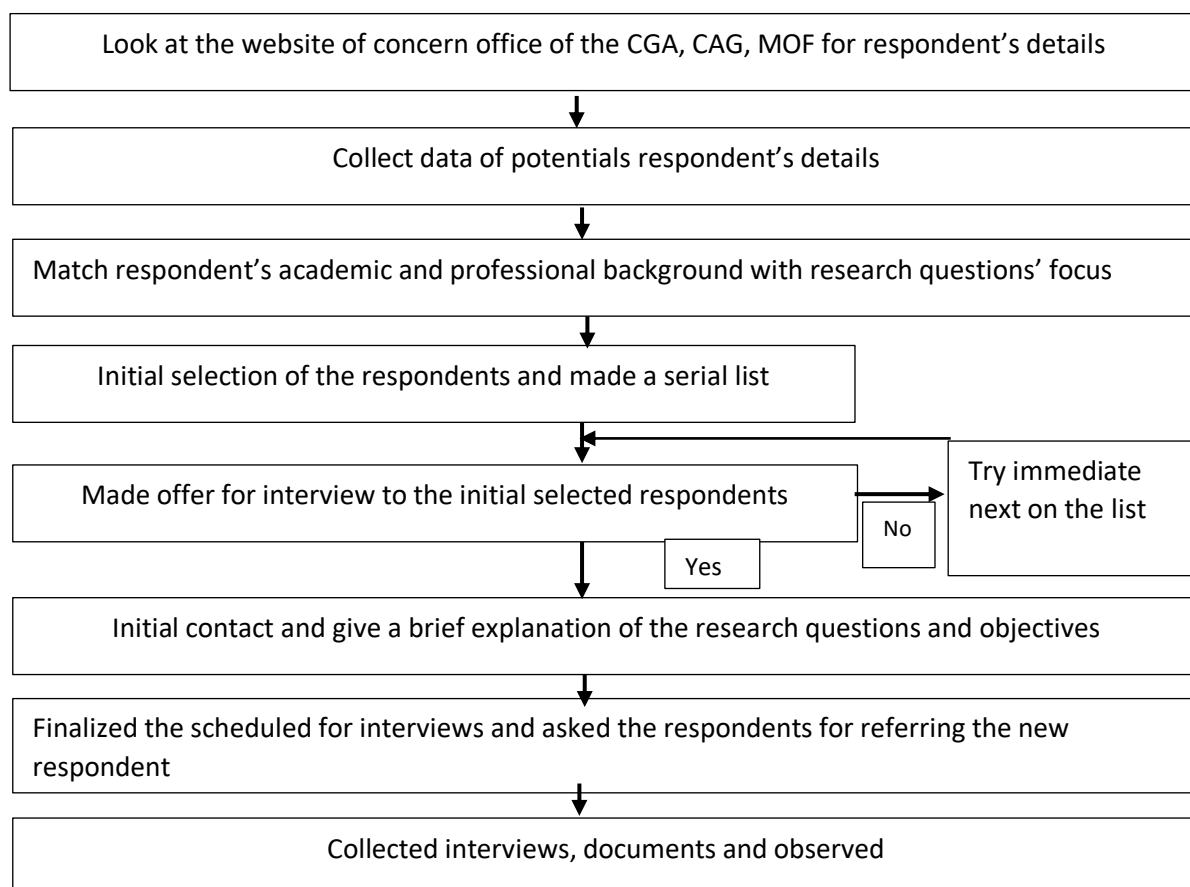

Figure 1: Respondents' Selection and Data Collection, Process

This visit also served the purpose of identifying potential interview respondents. The researcher collected background information on potential interviewees from the CGA and Ministry of Finance websites and compiled a list. Before reaching out to them, the researcher finalized the interview questions. A formal written request was submitted to the head of the accounts office, such as the Controller General of Accounts (CGA), seeking permission to gather data from the office. During a meeting with the CGA, the researcher explained the study's objectives, potential benefits, and significance, leading to the CGA granting permission and issuing an approval letter. With the approval letter, the researcher contacted potential interviewees with an offer letter and the CGA's interview

approval. Meetings were then held with those who agreed to participate in the interviews, where the study's purpose and objectives were discussed, and interview dates were scheduled. Figure 1 outlines the process of selecting respondents, collecting data, and processing the information.

Sample Size

To understand accounting practices comprehensively, interviews were conducted with various participants, including government accountants or practitioners, regulators, and expert committees. This approach to selecting the sample contributed to the credibility of the research (Alam, 2021; Quintão et al., 2020).

To effectively address the study's purpose of investigating current practices and issues of public sector accounting in Bangladesh, particular emphasis was placed on government accountants, who possess practical knowledge in this field and are best suited to address the study's objectives. From a total of 95 potential respondents from various entities, including the office of the CGA (50), the CAG (20), the Ministry of Finance (05), the iBAS++ project (10), and the academic community (10), a final selection of 22 interviews were made to fulfill the study's objectives. These interviewees were selected based on their extensive experience in the field of public-sector accounting in Bangladesh. As a result, the study encompassed three distinct categories of respondents: government accountants and auditors from entities like the CGA and CAG, regulators such as officials from the Ministry of Finance, and expert panels of academics and consultants who possess substantial expertise in this domain. Face-to-face interviews were conducted and recorded using digital tape recorders or devices. The length of these interviews varied between 40 and 90 minutes.

3.3 Data Collection Instrumentation

Qualitative research is a method of inquiry employed to explore and understand individuals' beliefs, attitudes, behaviors, and interactions (Alam, 2021). It focuses on descriptive data rather than quantitative measurements, examining variables within their natural context. This approach aims to comprehensively understand human behavior and the underlying factors that influence it (Cooper & Schindler, 2008; Creswell, 2011).

Research instruments are tools used to measure specific phenomena. These instruments encompass questionnaires, interviews, and surveys, forming a collection of protocols and instruments that guide the data collection process. This study's data collection instruments include semi-structured in-depth interviews with tailored questions, participant observation, and document analysis.

In-depth Interviews

Interviews offer in-depth insights into participants' experiences and viewpoints on a specific topic (Alam, 2021). This study examines various aspects related to the government accounting office, regulations, current practices, challenges associated with the practice, and the status of IPSAS implementation from practitioners' perspectives. As previously discussed, interviews are instrumental in identifying variables and addressing sub-questions in the study.

This study adopted a semi-structured approach to developing interview questions, leveraging an unstructured style (Alam, 2021). The unstructured nature provides critical questions that guide the investigation while allowing flexibility to explore ideas more deeply (Gill et al., 2010). A three-step process was employed in their selection and finalization process to ensure the validity of the questions. Initially, the researcher compiled a list of questions through literature review and

consultations with the supervisor. Other researchers in the field reviewed the questions to enhance their face validity. The improved set of questions was sent to an expert council of six members, including four professors and two government accountants, by incorporating their feedback to ensure content validity. Their input was incorporated to formulate the final interview questions.

Within this context, interviewee categories such as account managers (e.g., CAFOs) and regulators were selected to offer a comprehensive understanding of the study's objectives. Semi-structured interviews were employed to achieve the research aims. To comprehensively comprehend accounting practices, interviews were conducted with officials, regulators, practitioners, and expert panels, encompassing diverse professional backgrounds and positions. This approach enhances the reliability of findings in alignment with the study's objectives (Alam, 2021).

Participant's Observation

Qualitative observation involves collecting data through the researcher's field notes on individuals' behaviors and activities within the research site. In conjunction with interviews, the researcher employs direct observations to document participants' behaviors and activities and those of the studied institutions and companies. This approach enhances the researcher's comprehension of the issues at hand. Observations serve as a testament that the observer effectively perceived and understood the events, and participant observation provides a direct insight into the phenomenon. When coupled with interviews and document analysis, observation contributes to the researcher's holistic grasp of the event (Alam, 2021).

Participant observations enable the researcher to tap into "one's capability to understand the motives, viewpoints, concerns, interests, unconscious behaviors, customs, and the like" (Lincoln & Guba, 1985). The researcher keenly observes the respondent's communication style, facial expressions, manner of speech, and attitudes during participant observation. These observations are then utilized for further discussion, contributing to the study's thoroughness and completion (Alam, 2024).

Observations were conducted within the respective organizations during the interview periods. A mode of nonparticipant observation was employed. All relevant information and events were promptly recorded in the field notes throughout the observation. Additionally, field notes were taken during informal conversations and interactions with participants. After the observation, the field notes will be promptly expanded upon.

Documentary Sources

Various documentary sources encompass administrative laws and regulations, financial guidelines, government financial reports, and audited accounts used for the study. The examination also included audit department manuals, assessment reports, and policy documents. Cross-referencing documents with each other or with other sources was employed to validate or corroborate information (Alam, 2021). This investigation involved scouring various Bangladeshi government websites' archival resources and physically visiting the CGA, CAG, MoF, and university libraries.

Since the practice of PSA in Bangladesh is legitimized by various legal precedents periodically issued by the government of Bangladesh, this study also collected and analyzed relevant regulations. These include Articles 80 to 92 of Part II of Chapter Five and Articles 127 to 132 of Chapter Eight of the Constitution of the People's Republic of Bangladesh; The Bangladesh (Comptroller and Auditor General) Order, 1972; The Comptroller and Auditor General (Additional Functions) Ordinance, 1973; the Comptroller and Auditor-General (Additional Functions) Act, 1974; the Comptroller and Auditor-

General (Additional Functions) (Amendment) Ordinance, 1983; An Introduction to Indian Government Accounts, 1917; Ministry of Finance Circular issued in June 2002; Account Code (Volume I): General Accounting Principles and Methods; Account Code (Volume II): Treasury Accounts; Account Code (Volume III): Departmental Accounts; and Account Code (Volume IV): Departmental Accounts.

Additionally, records such as Accounts kept in Account Offices-1938 (Revised 1998); Book of Account Forms (1935); Classification Chart, 2nd Edition (Revised as of August 5, 1999); List of Major and Minor Heads of Account of Receipts and Disbursements, 1988; Provisional Revised Code List of Major Heads of Accounts of Receipts and Disbursements, 1983; Treasury Rules 1944 (Revised in 1998), General Finance Rule (GFR) 1947 (Revised in 1998); and Provisional Revised Code List of Major Heads of Accounts of Receipts and Disbursements, 1983, were also considered.

3.4 Data Management

An appropriate data management structure was established. Initially, all interviews were recorded on tape and then transcribed into digital recordings, which were subsequently uploaded to software for further analysis. Additionally, written interviews and observation notes were input into the software. Qualitative software (QSR NVivo Project, Version 12) was employed to transcribe recordings and code all other data sources for these purposes. In addition to coding, the software will also be utilized for ranking, summarizing, linking, graphing, and other data administration tasks. The software facilitates secure data storage and streamlines the retrieval process.

3.5 Data Analysis

Qualitative studies gather data from various sources, including documents, archival records, interviews, etc. (Alam, 2021; Yin, 2003). In this research, qualitative data were collected through in-depth interviews, supplemented by a review of documents such as directives, legal codes, the country's growth plan, and other relevant materials governing the government accounting structure and conduct. The researcher attempted to code common themes from the transcribed interviews during the initial data analysis derived from the semi-structured interviews. Data coding involves organizing data into text sections before composing the information and represents a formal representation of analytical thinking (Alam, 2021; Linneberg & Korsgaard, 2019). Saldana (2013) described data coding as an intermediate step between data collection and analysis. Moreover, data coding is not merely a data analysis and explication process. However, it also enables researchers to establish connections between data and concepts and from concepts to the relationships between all the data and the research question (Linneberg & Korsgaard, 2019).

Secondly, based on the codes, the researcher will generate themes that comprise two or more codes and are related to the supporting texts (Welsh, 2002). Subcategories were then organized for final writing and analysis. This strategy allows the researcher to obtain results from all three categories by identifying ideas and themes (Alam, 2021; Linneberg & Korsgaard, 2019). Respondents' responses were descriptively coded according to the arrangement of research questions during the data coding procedure. Therefore, the researcher utilized NVivo for initial categorization. Based on this categorization, the researcher summarized the responses and generated themes for each interview question. The researcher derived themes from the coding process, and there are two methods for classifying themes: inductively from new information and deductively from theory and prior research (Locke et al., 2022; Linneberg & Korsgaard, 2019). This research employed a deductive methodology to extract themes from institutional theory and previous research. Before inputting the data into

computer software, the researcher interpreted the data analysis based on the coding. The researcher utilized NVivo software to assist with data classification, clustering, and memo writing.

This investigation involved conceptual analysis to analyze and interpret interview and document data. Thematic analysis was used to analyze the data, which has become a standard technique for qualitative data analysis in various fields (Linneberg & Korsgaard, 2019). Flexibility is the most essential characteristic of this method (Braun & Clarke, 2006). Thematic analysis involves recognizing, analyzing, and reporting themes from data. Alam (2021) describes adaptability as a highly flexible critical realism paradigm. Therefore, thematic analysis is theoretically flexible and can be pragmatic across a broader range of theoretical, epistemological, and ontological methodologies (Locke et al., 2022). Thematic analysis, according to Alam (2021), is a practical and adaptable tool for data analysis that can provide an in-depth, comprehensive, and composite account of data. Braun and Clarke (2006) outlined a helpful guideline for conducting thematic analysis, which is provided below in Table 2.

Table 2: Data Collection Procedures

Steps	Procedures
Data collection	Notes taking and recording of interviews
Familiarization with the data	Transcribing the data, reading it, and highlighting initial ideas
Producing initial codes	Coding interesting pieces of data and patterns of experiences coming from direct quotes or paraphrased common ideas
Searching for themes	Combining relevant codes or patterns into potential themes, where themes are defined as patterns such as "conversation topics, vocabulary, recurring activities, meanings, feelings, or folk sayings and proverbs" (Taylor & Bogdan, 1984, p. 131).
Reviewing themes	Checking the relevance of the themes with the coded extracts and the entire data set and creating a thematic map of the analysis
Defining and naming themes	Refining the themes and the overall story, they tell to draw a comprehensive picture from the collective experience.
Producing the report	Selecting vivid examples, relating the analysis to the research questions, objectives, and literature, and producing a scholarly report from the emerging patterns
Obtaining feedback	Discussing the findings with the participant in follow-up interviews
Building a valid argument	Reading the existing literature in the field, making inferences, and developing a storyline.

After generating the codes, themes, and categories from the transcribed data, the researcher proceeded to explain and interpret the data.
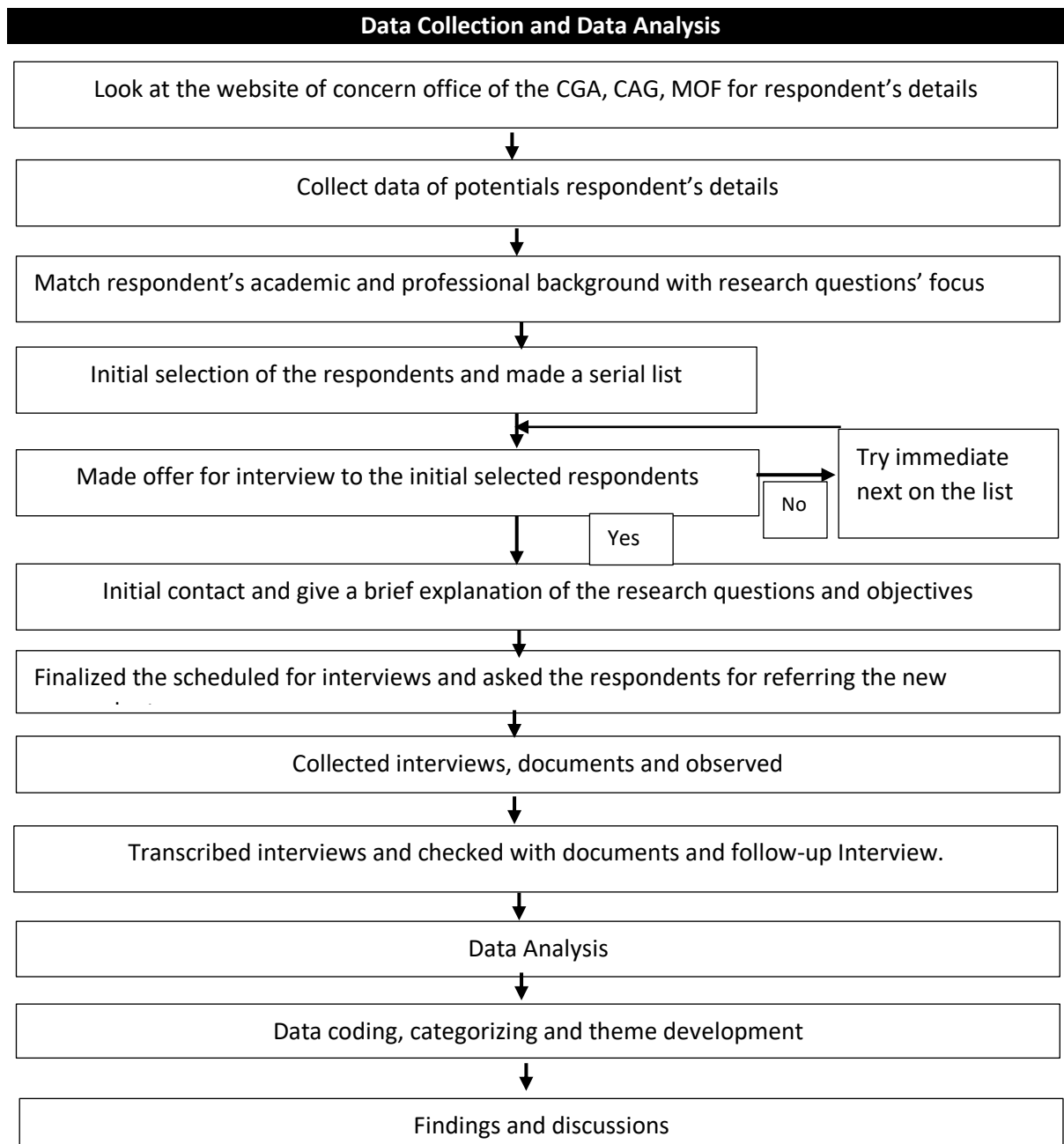
Data Collection and Data Analysis

Look at the website of concern office of the CGA, CAG, MOF for respondent's details

Collect data of potentials respondent's details

Match respondent's academic and professional background with research questions' focus

Initial selection of the respondents and made a serial list

Made offer for interview to the initial selected respondents → No → Try immediate next on the list

Yes

Initial contact and give a brief explanation of the research questions and objectives

Finalized the scheduled for interviews and asked the respondents for referring the new

Collected interviews, documents and observed

Transcribed interviews and checked with documents and follow-up Interview.

Data Analysis

Data coding, categorizing and theme development

Findings and discussions

Figure 2: Respondents' Selection, Data Collection, and Data Analysis Process

This investigation utilized NVivo software to analyze the data collected from interviews. The interviews were recorded using the voice recorder software on the researcher's Android smartphone and were subsequently transcribed in their entirety. The researcher received prior training in NVivo software and analyzed the transcribed interview data with an expert in qualitative research using NVivo software. The procedures for data analysis using NVivo software are as follows:
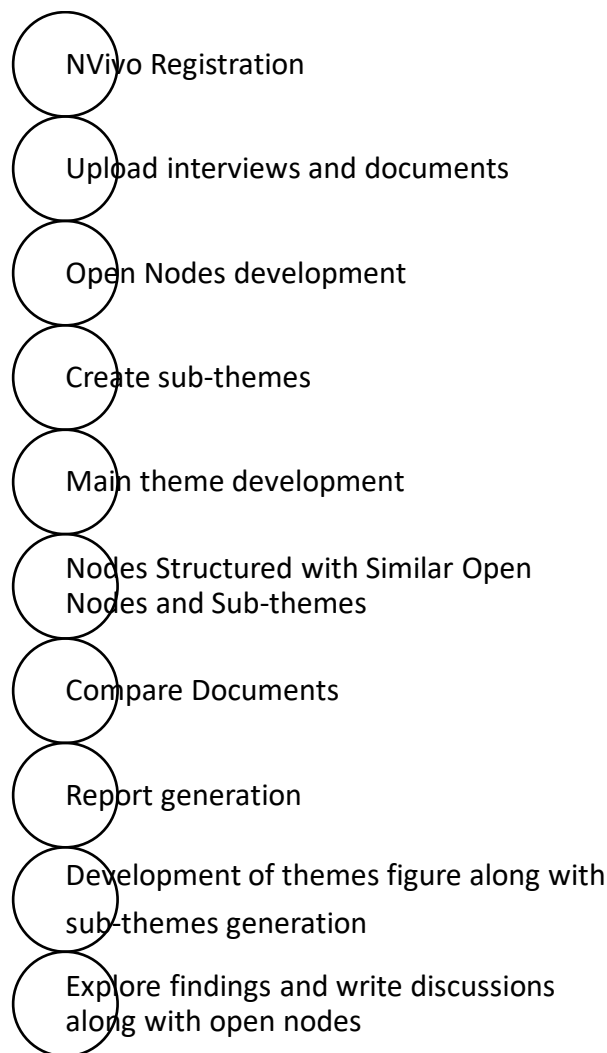
NVivo Data analysis process

NVivo Registration

Upload interviews and documents

Open Nodes development

Create sub-themes

Main theme development

Nodes Structured with Similar Open Nodes and Sub-themes

Compare Documents

Report generation

Development of themes figure along with sub-themes generation

Explore findings and write discussions along with open nodes

Figure 3: NVivo Data analysis process

3.6 Ensuring Validity and Reliability

Quantitative researchers often challenge the validity and dependability of field-based research, contending that qualitative research instruments lack scientific rigor and precision (Yin, 2003). In contrast, qualitative researchers assert that validity and reliability issues are rooted in positivism and should not be embraced in qualitative research (Ronkainen & Wiltshire, 2021; Alam, 2021). Rather than focusing on validity and reliability, qualitative researchers typically prioritize the "plausibility" and "trustworthiness" of their conclusions (Covaleski et al., 1998). According to Locke (2001)

> *"In the theory-building mode, by contrast, where researchers move from the empirical observation to the development of concepts and their proposed relations, claims are made about the plausibility of the theorized elements—not about the extent of their expression in a population" (p.39).*

Despite differing opinions regarding the reliability and validity of qualitative research, the current study will take several measures to ensure the reliability of the research findings. For instance, the use of multiple data sources (interviews, observation, and documents) enhanced the cross-comparison of

information and increased "theoretical sufficiency" (Alam, 2021; Quintão et al., 2020). Additionally, six months of fieldwork enabled the researcher to be regarded as a regular member of the organizations that facilitated the interview process without introducing bias into the research findings and provided access to other confidential information and meetings.

Furthermore, this thesis extensively employs quotations as evidence for the reported findings. This approach not only assures the reliability and validity of the research findings but also elucidates the 'everyday life' of the officials in their routine interactions (Alam, 2021). Additionally, some officials were presented with the preliminary findings of this research during data collection. Their responses were incorporated into the final analysis, and in some instances, additional information was sought to support specific conclusions.

Moreover, cross-interviews were employed to mitigate interview bias, and this was achieved by posing the same questions to various interviewees, including officials from the same and different offices. In some instances, officials' responses were thoroughly compared for inconsistencies and discrepancies, and more importantly, the implications of their responses were investigated. This approach not only enhances the validity of the research but also aids in identifying patterns that will be discussed in the findings.

3.7 Ethical Consideration

The present research prioritizes essential ethical considerations. Before participating, potential research participants were required to provide informed consent. No coercion or financial incentives were employed to induce participation in this study. Prospective participants were thoroughly informed about the study's objectives and methodologies. To this end, a research summary was provided to all visited organizations. During interactions, the interview's objectives were reiterated, and advance requests for recording were made for each interview. The scheduling of interviews was determined by potential interviewees, with every effort made to minimize disruptions to work or personal commitments. Before the interviews, a pledge of confidentiality and anonymity was extended to the interviewees. In this thesis, all interviewees were assigned fictitious identities.

Furthermore, a letter of ethical approval from the University was obtained to safeguard the researcher, the participating organizations, and the research participants from potential legal repercussions.

4. Saturational evidence

The primary objectives of this research are to evaluate the current practices of PSA in Bangladesh, explore the problems and challenges in these practices, investigate the present status of IPSAS adoption in Bangladesh, and propose recommendations or guidelines for the development or reform of PSA in the country. Data collection took place from November 11, 2020, to February 24, 2022, involving various clusters of respondents. The study achieved data saturation with 22 respondents from diverse backgrounds, including regulators, practitioners, academicians, and experts. Guest et al. (2006) identified a saturation point with the 12th respondent when dealing with homogenous groups, and Latham (2013) reached saturation after the 11th participant in his CEO examination. Despite having diverse backgrounds, the respondents in this research are significantly interconnected in various aspects. Alam (2021) achieved data saturation with 17 respondents while developing a Shariah governance framework in Bangladesh using a diversified respondent cluster. The data saturation occurred in different phases, encompassing information, observations, and documentation. For

instance, in the case of public sector accounting practices, saturation was observed with the 13th participant concerning regulatory-related questions and procedures. Regarding problems and issues of PSA, saturation was reached with the 19th individual, and ultimately, overall saturation concerning expert experiences was attained with the 22nd respondent. The saturation process of the research is depicted in Figure 4 below.
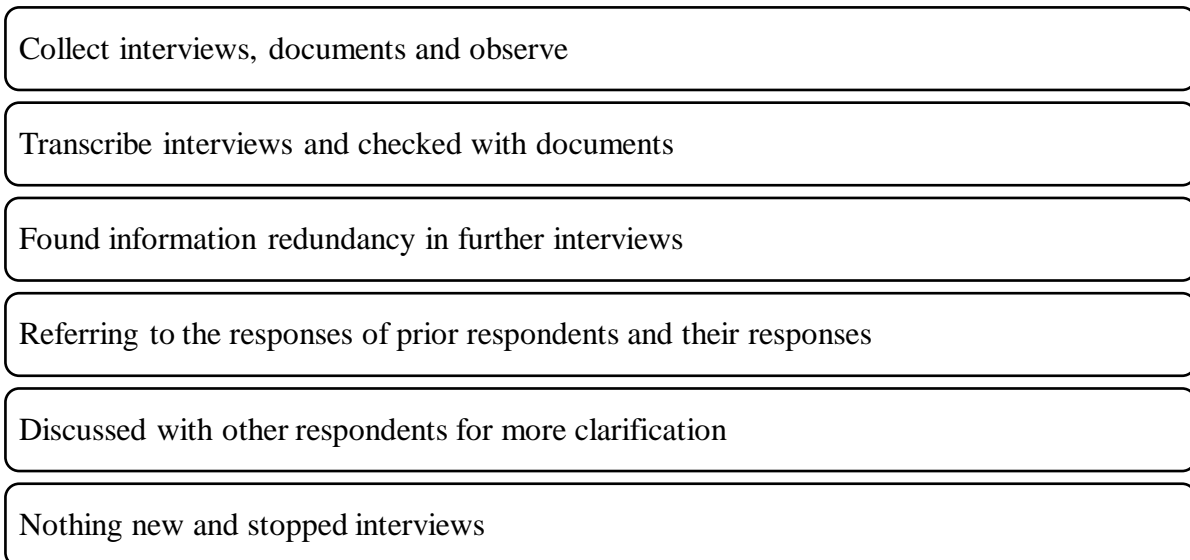
> Collect interviews, documents and observe

> Transcribe interviews and checked with documents

> Found information redundancy in further interviews

> Referring to the responses of prior respondents and their responses

> Discussed with other respondents for more clarification

> Nothing new and stopped interviews

Figure 4: Saturation Process

Supporting data from document reviews and observations are also taken into account. When the researcher listens to the recordings and notices similar responses and comments from respondents across different locations, consistently revealing similar data, the researcher focuses on refining thematic arrangements within the data categories. The code name 'P' (Interview Participant) is assigned to individuals from the CGA, CAG, and MoF offices and experts connected to the research. Furthermore, the researcher engaged in discussions with numerous additional respondents to gain insights from these three distinct backgrounds.

5.   Conclusion

The study focused on the data collection and analysis of the accounting practice of the public sector in Bangladesh. This study adopts a qualitative methodology, employing interviews with government accountants and regulatory personnel, prioritizing the government accountants because of their knowledge and expertise in the area of PSA in Bangladesh. Data collection tools encompass semi-structured in-depth interviews featuring targeted questions, supplemented by participant observation and document analysis. In conjunction with interviews, the researcher employs direct observations to document participants' behaviors and activities and those of the studied institutions and companies. NVivo software was used for data classification, clustering, and memo-writing facilitation. Supporting data from document reviews and observations are also taken into account. The data saturation occurred in different phases, encompassing information, observations, and documentation. For instance, in the case of public sector accounting practices, saturation was observed with the 13th participant concerning regulatory-related questions and procedures. Regarding problems and issues of PSA, saturation was reached with the 19th individual, and ultimately, overall saturation concerning expert experiences was attained with the 22nd respondent. To address apprehensions about the

reliability and validity of qualitative research, this study acknowledges the divergent viewpoints embraced by quantitative researchers. While quantitative researchers often scrutinize the rigor and scientific precision of qualitative methods, qualitative researchers contend that conclusions must be "plausible" and "trustworthy." To bolster the accuracy of this study, several measures were adopted, including integrating multiple data sources, comprehensive fieldwork, incorporating quotations as substantiation, and engagement of official input during data collection. The study highlighted the data collection and saturation process using qualitative methodology in Bangladesh's public sector accounting research. It is documented that the purpose of exploring the practice of accounting and the status of adopting IPSAS in the PSA in Bangladesh can be explained using the qualitative research methodology. So, this study contributes to academic or applied research to conduct further in-depth studies to explain or explore the practices using qualitative methods. However, it limits its scope of using qualitative methodology, whereas the application of quantitative or mixed research methods should be addressed. So, it could be a suggestion for future studies to explore the application of quantitative or mixed methodology in PSA.

Conflicts of Interest: The author has no conflicts of interest to disclose concerning this study.

Declarations: This manuscript has not been published to any other journal or online sources.

Data Availability: The author has all the data employed in this research and is open to sharing it upon reasonable request.

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