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## **1.1 Introduction**

Welcome to **SABABAT ~ 4.0** – the **Smart Automated Builder and Big Analysis Tool Version 4.0**, an autonomous, intelligent statistical and data analysis tool developed by **Abbadh Labs LTD** designed to transform how researchers, undergraduates and data analysts approach data analysis. At SABABAT, we understand the complexity and challenges undergraduate researchers face when analyzing vast amounts of data. With a mission to simplify and streamline the research process, SABABAT removes the barriers to data analysis, enabling anyone, regardless of their technical expertise, to generate meaningful insights quickly and efficiently.

SABABAT is designed to bridge the gap between simplicity and advanced statistical analysis. For researchers who have no deep background in data science or statistical

analysis, SABABAT makes complex data processing as easy as uploading a dataset. For data analysts, SABABAT provides an intuitive interface to automate tedious tasks, and interprets results, allowing them to focus on more strategic analysis rather than time-consuming programming or manual processing.

Whether you are a novice researcher, a seasoned data analyst, or a business professional looking to leverage the power of data, SABABAT offers a powerful yet simple solution. With SABABAT, you no longer need to be an expert in **Python**, **R**, or **SPSS** to conduct data analysis. We've designed SABABAT to be your one-stop tool for simplifying, automating, and enhancing your research journey.

## 1.2 Overview

**SABABAT ~ 4.0** is an autonomous intelligent research, statistical and data analysis tool that revolutionizes the way data analysis and research are conducted. The core idea behind SABABAT is simplification, making complex data analysis processes accessible to everyone, from researchers with no technical background to experienced data analysts. Our platform offers a seamless user experience that eliminates the need for in-depth technical knowledge, yet provides the tools and capabilities expected by professionals.

SABABAT integrates state-of-the-art **data digitization**, **collection**, **analysis**, **automated reporting** and **visualization** tools, powered by artificial intelligence and machine learning algorithms, to offer a comprehensive solution. Whether you need to digitize your research data, compare datasets, test of hypothesis or even conduct a

literature review and automated reporting, SABABAT has you covered. It's more than just a tool, it's a research assistant, analyst, and report generator all rolled into one.

### 1.3 Introduction

**SABABAT** offers a suite of powerful quantitative data analysis features designed to simplify and enhance the research and data analysis process. These features are built to cater to both beginners and experienced professionals, enabling you to perform complex tasks with ease.

- **Data Digitization:** SABABAT allows users to convert structured PDF questionnaires into digital forms that can be shared and filled online, automating the data collection process. From the main dashboard, users simply: Enter the name of their organization or their personal name. Provide a valid email address (preferably a school or work email). Upload a structured questionnaire in PDF format, designed according to SABABAT's supported format. Click the Submit button. Once submitted, SABABAT instantly digitizes the uploaded PDF and generates a unique link. This link can then be shared with friends, colleagues, or respondents. When recipients open the link, they can fill out the form online and submit their responses directly. All collected responses are automatically sent back to the original user, streamlining the process of survey distribution and data gathering.

- **Data Collection:** SABABAT streamlines the data collection process by automatically gathering responses from structured questionnaires shared through a unique link. After digitizing and submitting a structured PDF questionnaire, users are prompted to set a **target number of responses**, the total number of respondents they expect. SABABAT then generates a unique link, which the user can share with their audience. As respondents begin filling the form via the link, SABABAT automatically collects their responses and continues tracking submissions in real time. Once the number of completed responses reaches the set target, the system compiles the data and makes it available for download on the **Track Questionnaire** page. The downloaded file is provided in Excel format and contains a **well-structured frequency table**. For each question, the table includes:

- Frequency counts
- Percentages
- Summary statistics for numeric fields (e.g., **mean, median, mode, standard deviation**, etc.) This organized dataset is clean, comprehensive, and ready for immediate analysis, eliminating the need for manual data entry or processing.

- **Data Analysis:** SABABAT transforms the way users analyze data by offering a **no-code, fully automated, and deeply analytical platform** that handles everything from basic statistics to advanced machine learning–level modeling. With just a dataset upload, users can tap into a rich suite of statistical tools, without

writing a single line of code. After uploading their dataset through the **Get Advanced Analysis** button (located directly below the Submit button on the main dashboard), users gain immediate access to SABABAT's full analytical toolkit. This feature is entirely **free** and designed to simplify complex analysis. **SABABAT supports a wide range of statistical techniques including:**

### **Descriptive Statistics**

- Frequency Distribution Tables
- Mean, Median, Mode
- Range, Variance, Standard Deviation
- Percentiles and Quartiles
- Skewness & Kurtosis

### **Data Visualization**

- Histograms
- Box Plots
- Stem-and-Leaf Plots
- Time Plots (Random Walk & Brownian Motion)
- Dynamic Interactive Charts

### **Inferential Statistics & Hypothesis Testing**

- T-Tests (Paired & Unpaired)
- Chi-Square Test of Independence

- ANOVA (Analysis of Variance)
- Mann-Whitney U Test
- Wilcoxon Signed-Rank Test
- Cross Tabulation

### **Correlation & Regression**

- Pearson & Spearman's Rank Correlation
- Simple Linear Regression
- Multiple Linear Regression
- Logistic Regression
- Covariance
- Canonical Correlation Analysis

### **Time Series & Forecasting**

- ACF & PACF
- ARIMA Modeling
- Augmented Dickey-Fuller Test

### **Advanced Multivariate Techniques**

- Principal Component Analysis (PCA)
- Factor Analysis
- Cluster Analysis (K-Means, Hierarchical)
- MANOVA (Multivariate Analysis of Variance)

- Discriminant Analysis
- Multidimensional Scaling (MDS)
- Structural Equation Modeling (SEM)
- Latent Dirichlet Allocation (LDA)

## **Sampling Tools**

- Sample Size Calculators
- Stratified Sampling Previews

All outputs include **interpretable visualizations, detailed summaries, and downloadable Excel reports**, making SABABAT perfect for students, researchers, and professionals alike. SABABAT truly redefines simplicity in data analysis, **everything is automatic, fast, clean, and always free.**

- **Data Visualization:** Create stunning and interactive visualizations of your data. SABABAT supports various charts, graphs, and diagrams and even 3D charts to help you better understand trends, patterns, and outliers in your data.
- **Interpreting Results:** After users receive their results from the **Advanced Analysis**, SABABAT goes a step further by offering an **Interpretation** feature. By simply clicking the **Interpretation** button (available alongside the results), users gain instant, AI-driven explanations and insights that help them understand what the statistical values actually mean. Whether it's a regression coefficient, a chi-square value, or a p-value, SABABAT **translates technical results into clear language** that users can easily act upon. This feature is especially useful for



making informed decisions in academic research, business strategy, healthcare, and more, without needing deep statistical knowledge.

**Key benefits include:**

- Step-by-step explanation of outputs
- Guidance on what the results imply
- Suggestions for next steps
- Enhanced decision-making through insight-driven summaries.

This ensures users not only get data, but also **understand the story the data tells.**

- **Automated Reporting** : SABABAT isn't just a data tool, it's your personal research assistant. Through its **Automated Reporting** feature, users can generate **fully structured academic documents** with zero effort. This includes complete research chapters from **Chapter One to Chapter Five**, already formatted to meet institutional standards. When users scroll down the main dashboard, they'll find the **Premium Features** section. Under this section, the **Project Wizard** tool is where the real magic happens. With a single input, SABABAT can produce:

- **Chapter 1 to Chapter 5** of a research project
- Well-organized content with **up-to-date citations** (25+ recent references)
- **Double line spacing, Times New Roman, Font Size 12**
- Complete adherence to standard academic formatting
- Zero editing required, ready for direct submission

This is the **most powerful and essential tool for undergraduate students**, especially those working on their final-year projects, term papers, or theses. It eliminates writer's block, saves hours of work, and ensures high-quality output backed by academic references. Whether you're stuck on your **statement of the problem, literature review, methodology, or data analysis chapter**, SABABAT gives you a polished draft in minutes.

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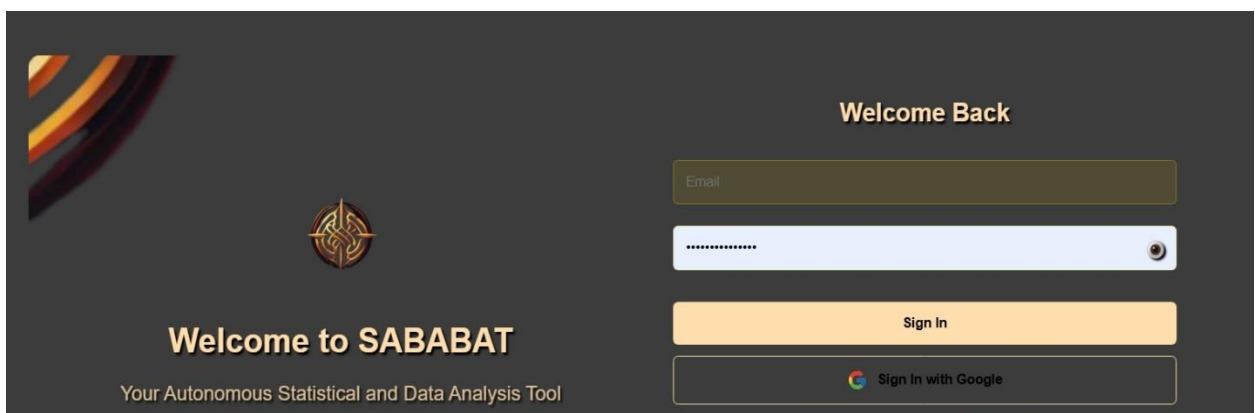
## Chapter Two

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### 1.4 Getting Started

Welcome to SABABAT! This guide will walk you through the process of creating an account, logging in, and setting up the tool. We've designed SABABAT to prioritize simplicity and efficiency, ensuring you can start analyzing data with minimal effort. Below are the detailed instructions for creating an account, logging in, and navigating the platform.

### 1.5 Account Creation



Creating an account on SABABAT is straightforward and user-friendly. Follow these steps to register:

### 1. **Sign-Up Process:**

- Navigate to the **Sign-Up** page.
- Enter the following details:
  - **Username:** Choose a unique username.
  - **Email Address:** Provide a valid email address.
  - **Password:** Create a secure password.
  - **Confirm Password:** Re-enter the same password to confirm.
- Click the **Sign Up** button.
- After successful registration, you will see a button redirecting you to the **Login** page.

### 2. **Google Authentication:**

For even faster registration, SABABAT offers **Google Authentication:**

- Click the **Sign in with Google** button.
- Select your Google account, and SABABAT will automatically retrieve your name, email, profile picture.
- After authorization, you will be redirected directly to the SABABAT platform.

**Note:** SABABAT values your privacy and ensures that your data is securely stored. For more details on how we handle your information, please review our [Data Privacy Policy].

## 1.1 Login Instructions

After registering, logging in is just as simple:

1. On the **Login** page, enter your:
  - **Username or Email.**
  - **Password.**
2. Click the **Login** button to access your account.
3. If you used **Google Authentication**, simply click the **Sign in with Google** button to log in instantly.

Once logged in, you will be redirected to the **SABABAT loading screen**, displaying “SABABAT Version 4.0” as it initializes and opens your personalized dashboard.

## 1.2 System Requirements

SABABAT is a web-based tool, optimized for modern browsers and devices. To ensure smooth performance, please meet the following system requirements:

- **Supported Browsers:**
  - Google Chrome (Version 90 or higher).
  - Microsoft Edge (Version 90 or higher).
  - Mozilla Firefox (Version 85 or higher).
  - Safari (Version 14 or higher).
- **Internet Connection:**
  - A stable internet connection with a minimum speed of 5 Mbps is recommended for seamless data uploads and visualizations.
- **Device Compatibility:**
  - SABABAT works on both desktop and mobile devices. However, for an optimal experience, we recommend using a desktop or laptop.

## 1.4 Setting up the tool

SABABAT is designed for simplicity, requiring minimal setup so you can dive right into data analysis:

### 1. **Dashboard Overview:**

Upon logging in, you'll land on the main dashboard. Your **Google profile picture** will appear in the top-right corner if you signed in with Google. For those who signed up manually, a default user icon will display until you upload a profile picture by clicking on it.

## 2. Customization:

- **Changing Profile Picture:**
  - Click on the profile icon in the top-right corner.
  - Upload a desired image to personalize your profile.
- **Dark Mode/Light Mode:**
  - Click the **Menu Icon** (hamburger icon) in the top-left corner.
  - In the side navigation (sidenav), toggle between **Dark Mode** and **Light Mode**.
  - Dark Mode uses the color #3c3c3c for a sleek, modern appearance.

## 3. Navigation and Features:

- **Menu Access:**
  - Click the **Menu Icon** to open the sidenav, where you can access all actions and tools within SABABAT.
- **Profile Information:**
  - In the sidenav, you'll find a **Profile Information** section.
  - Click the dropdown to view:
    - For Google sign-in users: Your Google name and email address.
    - For manual sign-up users: Your username and email address.

## 4. Data Upload and Analysis

SABABAT offers a flexible and user-friendly system for uploading and analyzing data, supporting a variety of file formats. While **PDF** and **CSV** files are the most commonly used formats, SABABAT also accepts the following:

- **Supported File Formats:**
  - **PDF** (Portable Document Format).
  - **CSV** (Comma-Separated Values).
  - **DOC** (Microsoft Word).
  - **DOCX** (Microsoft Word, newer versions).
  - **XLSX** (Microsoft Excel).

Our primary focus is on **PDF** and **CSV** uploads, ensuring seamless integration and smooth processing for analysis tasks. The platform's flexibility allows users to choose the format that best suits their data needs.

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## Preparing for Data Upload and Analysis

Before diving into the data upload and analysis process, it's essential to understand how the **SABABAT User Interface (UI)** and **Dashboard** function. These elements play a significant role in navigating the platform and accessing its powerful tools.

In the next chapter, we will provide a detailed overview of the SABABAT user interface and its various components, including:

- The layout and navigation.

- Key features and tools available.
- How to interact with different elements to perform tasks efficiently.

Understanding the UI will give you a solid foundation, making it easier to upload your data and begin the analysis process. Once familiar with the interface, you can seamlessly upload your files, run analyses, visualize data, and generate insights—all with just a few clicks.

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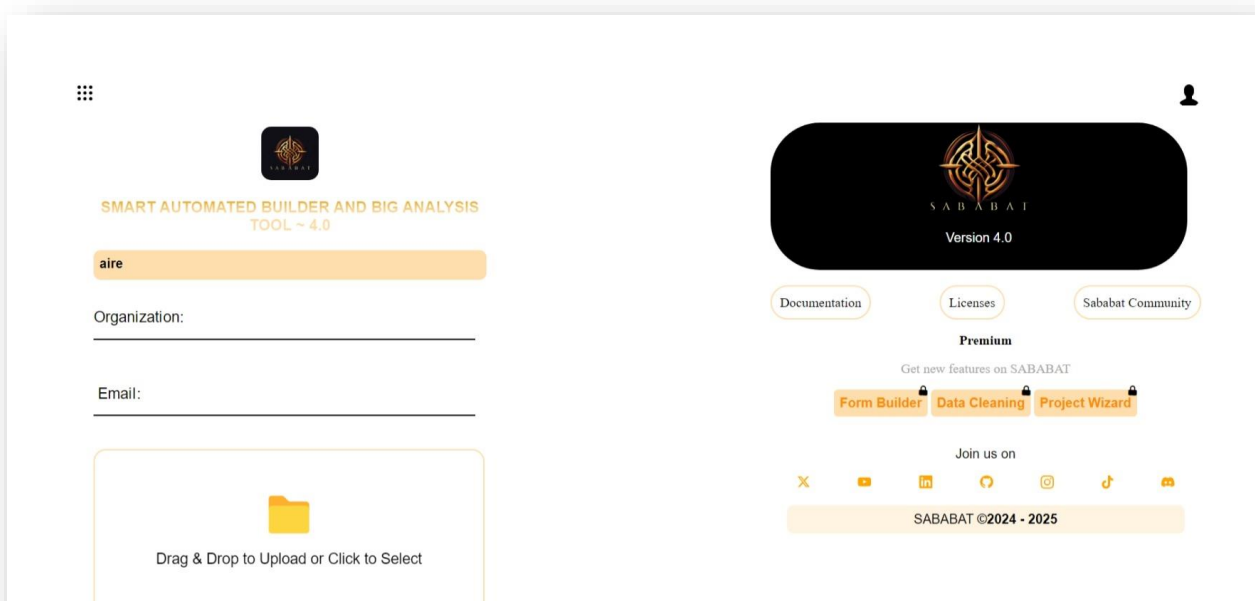
## Chapter Three

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### 1.1 User Interface Overview

The main dashboard of SABABAT is designed to provide a seamless user experience, especially for users looking to analyze questionnaires or conduct advanced data analysis. Let's break down the key elements of the interface based on the uploaded layout:

#### Main Dashboard Layout





## **FIG 1.1 SMART AUTOMATED BUILDER AND BIG ANALYSIS TOOL INTERFACE 1**

At the top of the interface:

- **SABABAT Logo and Name:** The logo and the name "SMART AUTOMATED BUILDER AND BIG ANALYSIS TOOL ~ 4.0" prominently display the platform's identity and version.
  - **Menu Button:** On the left, a menu icon provides easy access to additional features and settings.
- 

### **Input Fields**

#### **1. Organization:**

- This field allows users to input the name of their organization or institution.
- If the user is not affiliated with any organization, they can input their full name.

## 2. Email:

- This input field accepts any email address (organization, personal, or school).
  - It's essential for receiving updates and accessing reports.
- 

## Upload Section

- **Drag & Drop Upload Box:**

- Users can upload their questionnaire here by either dragging the file or clicking to select it.
- **Supported Formats:** The preferred format for uploads is **PDF**, though **DOC** files are also accepted.
- **Important Note: CSV and Excel files (XLS/XLSX)** are not supported in this section, as the upload is specifically for questionnaires.

- **Submit Button:**

- Once the file is uploaded, users can click the **Submit** button to complete the process.
  - Upon submission, the header will update, indicating that the form has been submitted.
- 

## Form Processing and Link Generation

- After submission, the system generates a **unique link** to the uploaded questionnaire.
  - A **Share Button** appears, allowing users to distribute the form to others for responses.
  - A **Track Questionnaire** button enables users to monitor who has filled out the form, providing real-time updates.
- 

### "Don't Have a Questionnaire?" Button

- This button caters to users who do not have a questionnaire but want to analyze pre-existing data (time-series data or any other dataset).
- Clicking this button opens up various options for advanced data analysis, including **univariate**, **bivariate**, and **multivariate** analyses.

### SABABAT's Dynamic Information Box

In the right side of the main dashboard, there is a **rectangular box with rounded corners** designed to dynamically display **insights and updates** about SABABAT. This area continuously changes content to provide users with helpful information, including:

- **Feature highlights** and tips on using the platform.
- **Updates and announcements** about new tools or functionalities.
- **Quick guides** to help users navigate the interface more effectively.

This box serves as a **mini information hub** within the dashboard, ensuring users stay informed without needing to navigate away from the main page.

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### Three Exclusive Desktop Buttons

Below the dynamic information box, there are **three buttons** that provide access to essential resources for users:

#### 1. Documentation Button:

- Clicking this button opens the complete **SABABAT documentation**, offering detailed guides, explanations, and tutorials on how to use the platform's features effectively.
- The documentation includes step-by-step instructions, screenshots, and examples for both basic and advanced tools.

#### 2. License Button:

- This button provides information about SABABAT's **licenses**, including terms of use, copyright details, and legal guidelines for the platform.
- It ensures users understand the terms under which they can use the platform and any restrictions that may apply.

#### 3. Community Button:

- The **SABABAT Community** button takes users to a dedicated space where they can connect with other SABABAT users.

- Here, users can access forums, discussion boards, and user-generated content to share insights, ask questions, and collaborate on projects.
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## Desktop-Only Access

These three buttons (Documentation, License, and Community) are **exclusive to desktop or PC users** and **will not appear** on mobile devices. This design choice ensures that the mobile interface remains **clean and optimized** for smaller screens, focusing on core functionalities rather than extensive resources.

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## SABABAT Virtual Assistant

At the **bottom-right corner** of the screen, there is a **bot icon** that acts as a direct link to SABABAT's virtual assistant chatbot.

### Features of the SABABAT Virtual Assistant:

- **Simplicity and Speed:** SABABAT emphasizes a **fast and simple user experience**. Instead of navigating through a Help Center or FAQ, users can interact with the chatbot for quick answers.
- **SABABAT-Specific Knowledge:** The chatbot is trained to understand the **entire SABABAT ecosystem** and can answer any questions related to the platform, including:

- How to use features.
- How to subscribe to wallets.
- Guidance on accessing premium tools.

### Using the Chatbot:

- **Summoning the Bot:** Clicking on the bot icon **summons** the chatbot, which will pop up in a small window at the bottom-right corner.
  - **Chat Interface:** Users can type their questions directly into the chat window and receive instant responses.
  - **Full-Screen Mode:** If users prefer a larger interface, they can expand the chatbot to **full screen** by clicking a dedicated button.
  - **Closing the Bot:** To exit the chat, users can click the **close (X) button**, which will return the interface to its original state.
- 

### Premium Features

Below the dynamic , three buttons are available for **Premium Users** only:

#### 1. **Form Builder:**

- An **AI-powered questionnaire generator** that creates detailed, sectioned questionnaires based on the user's research questions, aims, and objectives.

- It automatically structures the questions to align with the research goals.

## 2. **Data Cleaning:**

- This feature cleans uploaded data in milliseconds, identifying errors and correcting them.
- Users receive an **error log** showing what was corrected.
- The feature leverages both **AI** and **machine learning algorithms** to ensure data accuracy and consistency.

## 3. **Project Wizard:**

- The most attractive feature for users. The **Project Wizard** automates the generation of entire research projects (Chapters 1 through 5).
- Users only need to provide their **research topic, aims, objectives, and data**.
- The system ensures **plagiarism-free** content by running checks before delivering results.

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## **Premium Access**

- To access these premium features, users need to subscribe to SABABAT's premium plan. Details on how to become a premium user are available within the platform.

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## **Social Media Links**

At the bottom of the dashboard, links to various social media platforms are provided:

- **Platforms:** X (formerly Twitter), YouTube, Instagram, GitHub, LinkedIn, Discord.
  - These links help users:
    - Stay updated with SABABAT's latest features.
    - Join communities of researchers and data analysts.
    - Share their experiences and connect with others using SABABAT.
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## Conclusion

The main page offers a user-friendly interface for uploading and analyzing questionnaires. It's essential to understand how to navigate these features effectively, which we will explore further in the coming chapters. The premium services, such as Form Builder, Data Cleaning, and Project Wizard, provide powerful tools to enhance the user experience, making SABABAT a comprehensive platform for research and data analysis.



