Educational Administration: Theory and Practice
2024, 30(5),9523-9530
ISSN: 2148-2403
https://kuey.net/

Research Article

"Unraveling The Role Of IBM SPSS: A Comprehensive Examination Of Usage Patterns, Perceived Benefits, And Challenges In Research Practice"

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Citation: Dr. Payal Jain, Dr. Shraddha Sengar (2024), "Unraveling The Role Of IBM SPSS: A Comprehensive Examination Of Usage Patterns, Perceived Benefits, And Challenges In Research Practice", *Educational Administration: Theory and Practice*, *30*(5), 9523-9530
Doi: 10.53555/kuey.v30i5.4609

ARTICLE INFO

ABSTRACT

Statistical analysis is crucial for drawing meaningful conclusions in modern research across various disciplines. IBM SPSS has emerged as a widely utilized tool for data analysis, offering extensive analytical capabilities and user-friendly features. Despite its empirical usage, there exists a gap in research systematically examining SPSS's impact and importance. This study aims to address this gap by investigating the significance of SPSS in research work through an examination of usage patterns and perceived limitations among researchers. Data was collected from 460 respondents through a questionnaire survey, revealing diverse familiarity levels with SPSS and a generally positive perception of its importance and effectiveness in research. The findings underscore SPSS's pivotal role in enhancing research outcomes, though challenges such as the need for expert guidance persist. Overall, this study contributes to a deeper understanding of SPSS's role in research practice and emphasizes the importance of leveraging its potential for robust data analysis.

Keyword: Analysis; Research; SPSS, Software; Statistics

Introduction:

Statistical analysis plays an important role in modern research in various disciplines, providing researchers with the necessary tools to draw meaningful conclusions from the information. Among the multitude of statistics software available, IBM SPSS is a widely adopted and powerful tool for data analysis. The importance of SPSS in research work cannot be overemphasized as it suits the various needs of researchers in fields like social science, health services, business, education.

The use of SPSS software has been increasing rapidly in recent years due to its user-friendly interface, extensive analytical capabilities, and strong statistical techniques. Researchers rely on this software to efficiently organize, process, and analyze data.

Despite SPSS being widely used empirically, there exists a gap in research that systematically examines its impact and importance in research practice, while anecdotal evidence suggests the usefulness of SPSS in enhancing research outcomes in a research context. A comprehensive understanding of its role and effectiveness also became an illusion.

This empirical study therefore seeks to address this by examining the importance of SPSS software in research work through a rigorous investigation of its usage patterns and perceived limitations among researchers.

Objective:

- To highlight the importance of SPSS in research work in various subjects, especially the study that aims to achieve various objectives.
- To assess the patterns of use of SPSS software among researchers, including the frequency of use, would be familiar with their characteristics, including proficiency in statistical techniques facilitated by SPSS.

➢ To identify the perceived benefits of using SPSS software in research practices, such as its ability to facilitate analysis on data collection as well as its role in providing descriptive statistics, hypothesis testing, regression analysis, data visualization.
➢ To identify the challenges and limitations associated with the use of specialized software in research, including technical difficulties, learning curve, and limitations in addressing complex analytical needs on software-related issues.

Research Methodology:

The study here uses a quantitative research design to examine the importance of SPSS software in research work. A cross sectional approach is used to collect data from 460 respondents through a questionnaire survey.

Sampling Techniques:

The respondents are selected through convenient sampling reasons which ensure accessibility and practicality in data collection. The participants are individuals who have experience in using SPSS software for research purposes in various subjects.

Data Collection instrument:

A questionnaire was developed to collect relevant data from the respondents. The questionnaire included closed questions designed to assess the frequency of use of SPSS, perceived benefits and challenges and its impact on the research outcome.

Data Collection Process:

The questionnaire was distributed electronically to the selected respondents through an online survey platform. Clear instructions were given to ensure uniformity in responses and minimize bias.

Data Analysis:

Age-

Among the 460 respondents, the distribution of age is as follows:

- 4.3% fall within the age range of 15-25 years.
- 39.1% are between the ages of 26-35 years.
- 32.6% fall within the age range of 35-45 years.
- 23.9% are 45 years old or above.

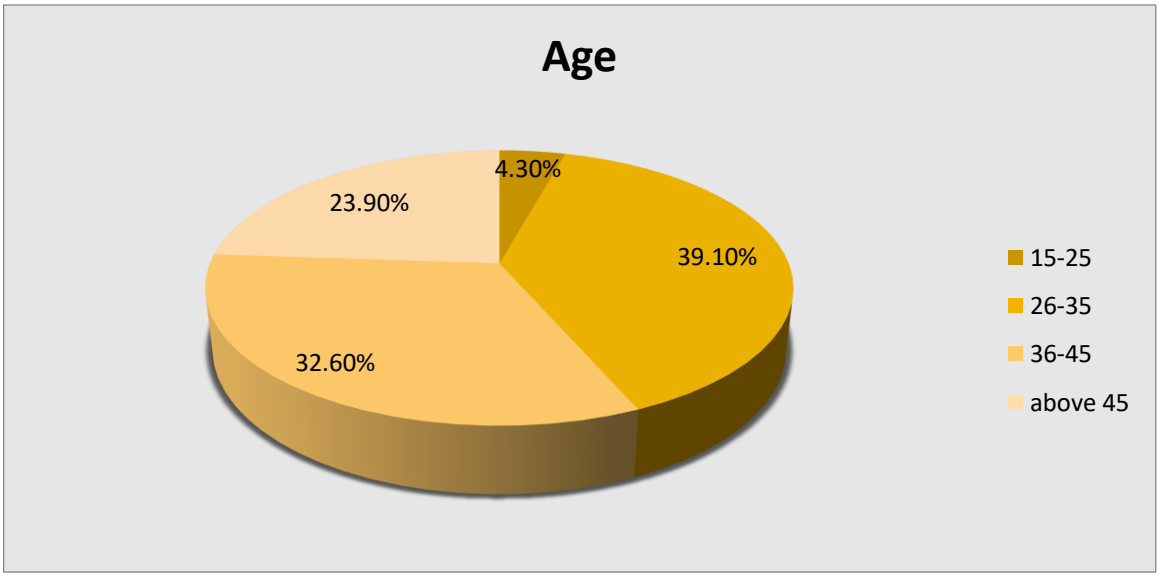

Figure-1- Age

Gender-

Among the 460 respondents, the gender distribution is as follows:

- 39.1% identify as male.
- 60.9% identify as female.

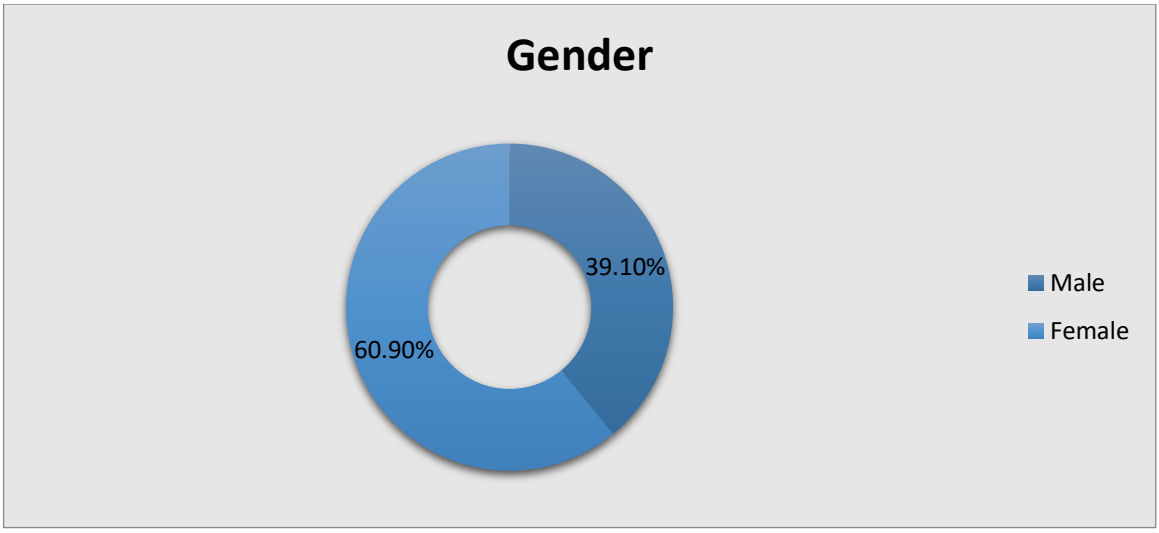

Figure-2-Gender

Discipline-

Among the 460 respondents, the distribution of disciplines is as follows:

- Commerce: 39.1%
- Management: 34.8%
- Literature (Hindi/English/Other): 2.2%
- Science: 6.5%
- Mathematics: 4.3%
- Arts: 4.3%
- IT/Computer: 6.5%
- Home science: 2.2%

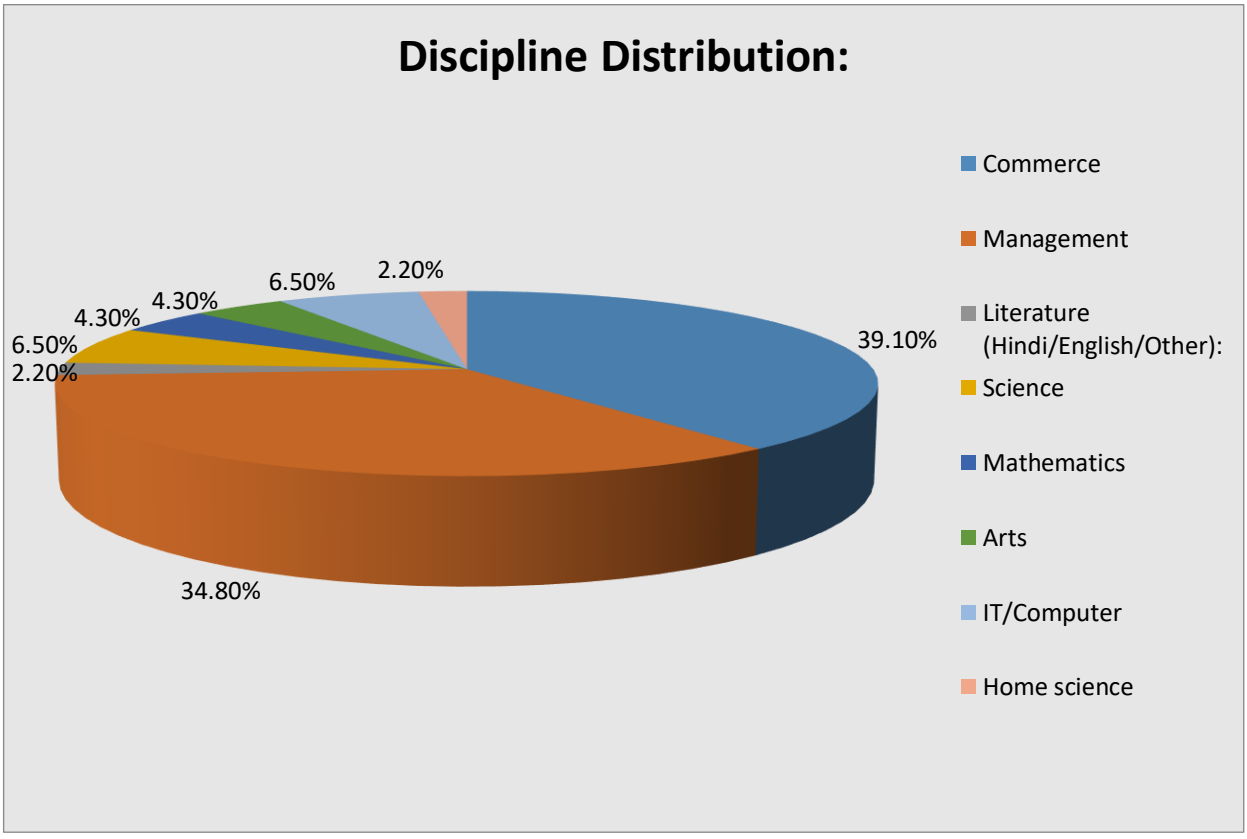

Figure-3- Discipline

Familiarity with SPSS:

Awareness and Usage:

- 91.3% have heard of SPSS before: Approximately 420 respondents.
- 63% have used SPSS software in their research work: Approximately 290 respondents.
- 19.6% have used SPSS sometimes in their research work: Approximately 90 respondents.

Analysis of familiarity with SPSS

Among the 460 respondents, familiarity with SPSS varies. A significant portion, 26.1%, indicated being "very much aware" of SPSS. Additionally, 41.3% reported being "aware" of it. A smaller proportion, 19.6%, expressed being "neither aware nor unaware." Meanwhile, 10.9% stated they were "unaware" of SPSS, and no respondents claimed to be "very much unaware." Finally, 2.2% of respondents mentioned that they are not currently using SPSS. These findings suggest a diverse range of familiarity levels with SPSS among the respondents.

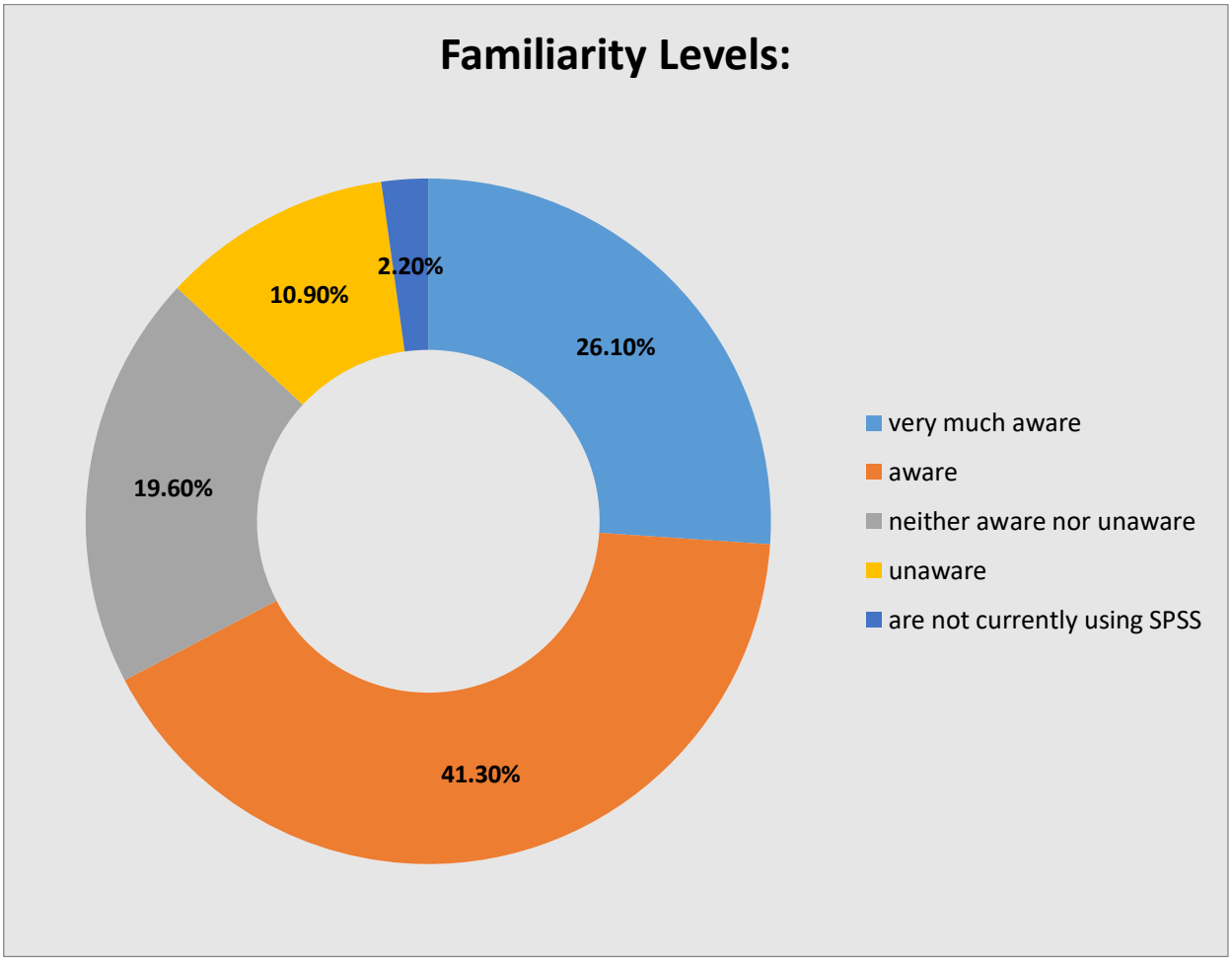

Figure-4- Familiarity Levels

If yes, how would you describe your familiarity with SPSS?

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claimed to be "very much unaware." Finally, 2.2% of respondents mentioned that they are not currently using SPSS. These findings suggest a diverse range of familiarity levels with SPSS among the respondents.

Perception of SPSS:
Agreement Levels on Statements:

Statement	Strongly Agree	Agree:	Neutral:	Disagree	Strongly Disagree
SPSS is a must for all types of research	60	220	120	60	0
SPSS produces correct results of data:	130	250	80	0	0
Analysis of SPSS is easy to understand:	70	220	150	0	20
Interpretation of SPSS analysis is easy:	80	240	90	30	20
You can analyze the results of SPSS by yourself:	80	190	140	40	10
You need expert guidance to understand SPSS results:	150	180	70	60	0
Mathematical tools like Ratio, Percentage, Average are easy to understand:	200	220	40	0	0
Mathematical tools can produce the same results as SPSS:	60	230	110	60	0
Results produced by SPSS are more reliable than mathematical tools:	120	160	160	10	10
SPSS makes research work more effective and authentic:	130	240	90	0	0

Table-1- Perception of SPSS

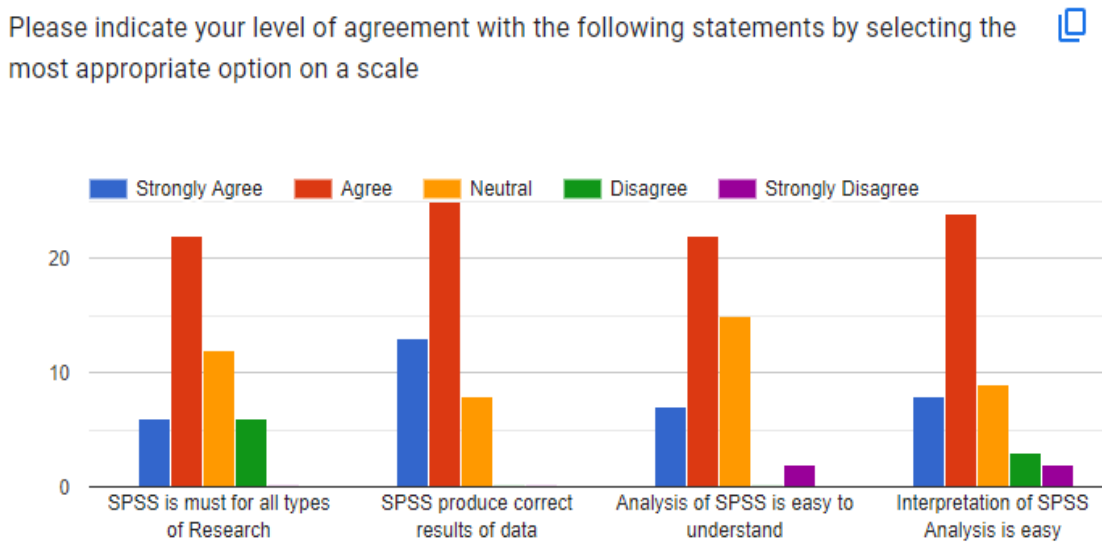

Figure-5- Perception of SPSS

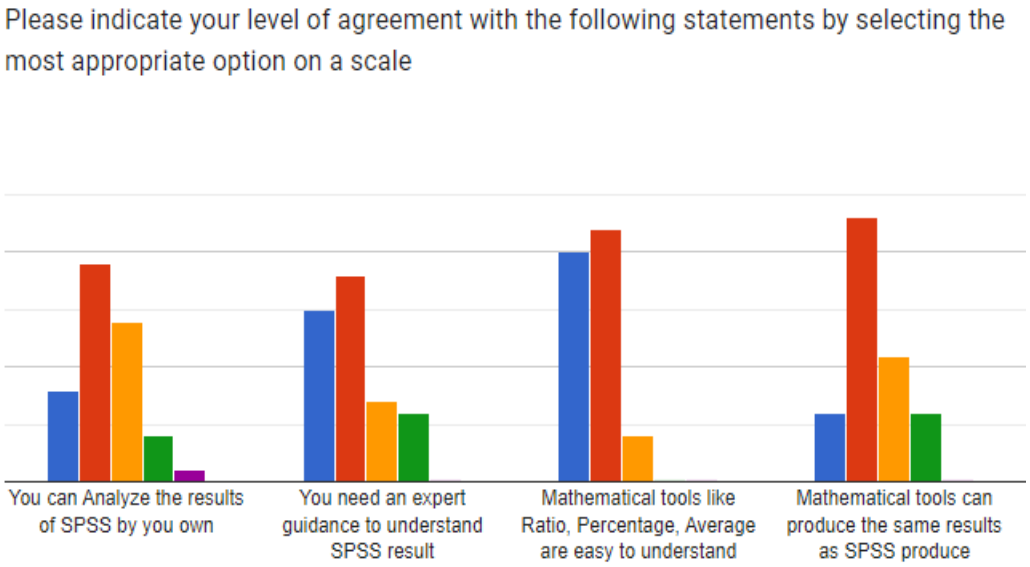

Figure-6- Perception of SPSS

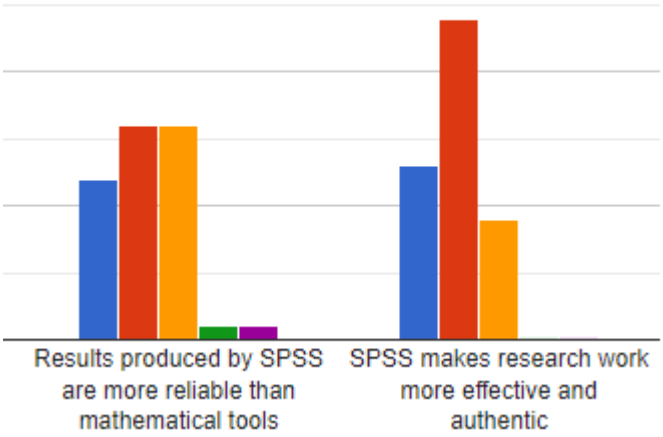

Figure-7- Perception of SPSS

Challenges encountered while using SPSS for research purposes.

Yes (28.3%): Nearly a third of the respondents (28.3%) reported encountering challenges while using SPSS for research purposes. This indicates that there is a substantial portion of users who faced difficulties with the software. These challenges could range from data entry issues, syntax errors, difficulty in performing specific analyses, or challenges in interpreting the output.

No (43.5%): The majority of respondents (43.5%) reported not encountering any challenges while using SPSS. This suggests that for a significant portion of users, SPSS is user-friendly and does not pose significant obstacles in their research endeavors. It's possible that these users had adequate training or experience with the software, enabling them to navigate it effectively.

Sometimes (28.3%): An equal proportion of respondents (28.3%) reported encountering challenges with SPSS on an occasional basis. This category indicates that while SPSS may generally be manageable for these users, there are still instances where they face difficulties. These occasional challenges could stem from various factors such as complex data structures, unfamiliar analyses, or occasional software glitches.

Types of Challenges faced by respondents who encountered difficulties while using SPSS for research purposes.

Installation (13%):
Approximately 13% of respondents reported facing challenges during the installation process of SPSS. Installation issues can be frustrating and may stem from compatibility issues, unclear installation instructions, or technical errors. Improving the installation process by providing clearer instructions and troubleshooting resources can help alleviate these challenges.

Entering Data (13%):
Another 13% of respondents encountered challenges with entering data into SPSS. Data entry is a critical step in the research process, and difficulties in this phase can lead to errors in analysis or interpretation. Providing training resources on data entry best practices and offering support for data cleaning and formatting can assist users in overcoming these challenges.

Analyzing Data (6.5%):
A smaller percentage (6.5%) of respondents faced challenges during the data analysis phase in SPSS. Analyzing data involves selecting appropriate statistical techniques, interpreting output, and drawing meaningful conclusions. Offering guidance on statistical analysis methods, providing tutorials on using SPSS for analysis, and offering support for troubleshooting errors can help users navigate this stage more effectively.

Interpretation of Results (19.6%):
A significant proportion (19.6%) of respondents encountered challenges with interpreting the results generated by SPSS. Result interpretation requires a solid understanding of statistical concepts and the ability to translate findings into meaningful insights for research. Providing educational resources on result interpretation and offering support for understanding statistical output can assist users in overcoming these challenges.

Updating the Software (6.5%):
Approximately 6.5% of respondents faced challenges with updating the SPSS software. Keeping software up-to-date is essential for accessing new features, bug fixes, and performance improvements. Streamlining the update process, providing clear instructions, and addressing any technical issues that arise during updates can help users maintain the latest version of the software more effectively.

Seeking Professional Support (26.1%):
A significant portion (26.1%) of respondents encountered challenges when seeking professional support for SPSS-related issues. Effective support channels and timely assistance are essential for resolving technical difficulties and addressing user questions. Improving support resources, including documentation, online forums, and responsive customer service, can help users overcome challenges when seeking assistance.

Learning Curve and Software Complexity (2.2% each):
A small percentage of respondents (2.2% each) mentioned challenges related to the learning curve and complexity of SPSS. Learning to use SPSS effectively requires time and effort, and proficiency may vary among users. Providing comprehensive training resources, tutorials, and user-friendly documentation can help users overcome these challenges and become proficient in using SPSS for research.

Limited Tools in SPSS Package (2.2%):
Another 2.2% of respondents noted challenges related to the availability of specific tools within the SPSS package. For example, the need to install separate software like AMOS for certain analyses. Enhancing the integration of tools within the SPSS package or providing clear guidance on accessing additional tools can help address these challenges.

The preference for using SPSS software over mathematical tools, such as manual calculations for ratios, percentages, and averages, is evident among the respondents. Let's analyze the data based on the provided percentages:

SPSS (69.6%): A significant majority of respondents (69.6%) indicated a preference for using SPSS software for data analysis. SPSS offers a wide range of statistical tools and functionalities that can streamline data analysis processes, including data manipulation, descriptive statistics, and hypothesis testing, and advanced statistical modeling. The software's user-friendly interface and built-in features make it a popular choice among researchers for data analysis tasks.

Mathematical Tools (21.7%): A smaller percentage of respondents (21.7%) expressed a preference for using mathematical tools, such as manual calculations for ratios, percentages, and averages. While mathematical calculations can be performed manually or using spreadsheet software like Microsoft Excel, they may be less

efficient and prone to errors compared to using dedicated statistical software like SPSS. However, some researchers may prefer manual calculations for specific analyses or for educational purposes.

Any other options if available (8.7%): A small proportion of respondents (8.7%) expressed interest in exploring other options if available. These respondents may be open to considering alternative tools or methods for data analysis, depending on their specific research needs, preferences, or familiarity with other software packages. Exploring additional options could involve comparing different statistical software packages, programming languages for data analysis (e.g., R or Python), or specialized tools for specific analytical tasks.
Overall, the data suggests a generally positive perception of SPSS software, with many respondents agreeing that it is essential for research, produces correct results, and enhances the effectiveness and authenticity of research work. Additionally, there is a tendency to view SPSS results as more reliable compared to mathematical tools. However, some respondents also express the need for expert guidance to understand SPSS results.
The data from the survey indicates a predominantly positive perception of SPSS software among respondents. A significant portion of respondents believe that SPSS is essential for all types of research, with a majority agreeing that it produces correct results and makes research work more effective and authentic.
Moreover, many respondents find the analysis and interpretation of SPSS results to be relatively easy, though there is a notable proportion who feel expert guidance is necessary to understand SPSS results fully. Despite this, there is a consensus that SPSS results are more reliable compared to mathematical tools.
Additionally, while some respondents acknowledge the ease of understanding mathematical tools like ratio, percentage, and average, there is still a prevalent belief that SPSS offers distinct advantages in research analysis.
While SPSS is favored for its effectiveness and ease of use, challenges such as installation issues and result interpretation complexities need to be addressed to enhance user experience and maximize the software's potential in research practice.
In summary, the data underscores the importance of SPSS in research endeavors, highlighting its role in generating reliable results and enhancing the effectiveness and authenticity of research outcomes. However, there remains a recognition of the need for expertise in fully harnessing the potential of SPSS for research analysis.

Conclusion:

In conclusion, this research sheds light on the significance of IBM SPSS in research across various disciplines. The findings highlight the widespread awareness and usage of SPSS among researchers, indicating its pivotal role in enhancing research outcomes. Despite its empirical usage, challenges such as installation difficulties, data entry issues, and result interpretation complexities persist, underscoring the need for continuous improvement and support mechanisms to enhance user experience. The preference for SPSS over mathematical tools for data analysis further emphasizes the software's effectiveness and user-friendliness. Moving forward, addressing these challenges and leveraging SPSS's potential for robust data analysis will be crucial in advancing research practice and facilitating meaningful conclusions in various fields.

References:

https://www.techtarget.com/whatis/definition/SPSS-Statistical-Package-for-the-Social-Sciences#:~:text=SPSS%20(Statistical%20Package%20for%20the%20Social%20Sciences)%2C%20also%20known,expanded%20into%20other%20data%20markets.
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