



Exploring Technology Adoption Level of Accounting Tools by University Students in Pakistan: A Qualitative Approach

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ABSTRACT

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The aim of this study is to understand the factors which are influencing the green purchase behavior of customers in the context of emerging economy. It focuses on the behavior of consumers towards environment-friendly products; green products interest in Pakistan has been increasing meaningfully due to the increased interest in green environment electronic products. Data were collected through individual semi-structured interviews with 12 professionals from the education and healthcare industry with at least half of the participants aged 42 and above. The transcripts were analyzed thematically through Nvivo 14 with the coding process for generating main and sub-themes informed by TAM theory for interpretation. Four main themes emerged within the healthcare and educational institute's narratives. They identified with (1) The eco-friendly products, (2) the sustainable environment, (3) green purchase, behavioral intentions and (4) Social influence themes were made. This study shows that a narrative thematic analysis can be used to explore the factors which are influencing green consumer purchase intention. Further, the policy maker and strategist should plan green advertising for awareness among common users. This study is one of the first to focus on the impact of green purchase intentions towards eco-friendly products in Pakistan and best to our knowledge it is a novel contribution to qualitative research.

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1. Introduction

Nowadays, we observe the destruction of the environment brought on by resource extraction and rapid, unsustainable infrastructural development (Lin & Park, 2018; Sreen et al., 2018). One of the main contributing factors to the environment's degrading condition is assumed to be consumer buying behavior (Lin & Park, 2018). Green buying involves buying items that are environmentally friendly and avoiding dangerous ones (Lee, 2018). Several businesses have begun selling green products in recent years, and consumers from all over the globe are gradually recognizing the attractiveness of green buying. Even though consumers' concern about implementing green purchasing behaviors has evolved, such zeal and desire have not yet translated into specific behavior (Rahman & Joshi, 2019). Determining the factors affecting customer perception of an eco-friendly product is essential for companies and policymakers because it offers insights into sustainable competitive strategies. The inadequate technology, resources, and infrastructure deficiency make students from developing countries such as Pakistan face difficulty in using and adopting accounting tools (Neuwirth, Jović, & Mukherji, 2021). Given the above research issues, the research intends to present an in-depth case study that explores the technology levels of university students in Pakistan who adopt accounting tools.

In this research, we are interested in the intricacies of their experiences and the reasons that matter when they make choices. This research intends to provide helpful suggestions for education programs in accounting in such countries (Al Mallak, Tan, & Laswad, 2020). It further brings out the need for customized accounting education programs to be implemented in developing countries like Pakistan in order to solve the challenges that developing countries' students undergo and shows the need to deal with such challenges in order to increase the students of universities in Pakistan and the other similar regions willingness to apply accounting methods. This study is timely given the reality that technology is fast becoming an indispensable tool within accounting practices and the pressing need to examine it from the perspective of students in developing countries (Mystakidis & Berki, 2018). It remains evident that as the global economy changes and develops, accounting professionals need insight into different available technological platforms for the excellent management of financial resources and the accuracy of financial reports. Assessing the extent of the employment of accounting tools by students in developing countries and the determinants of the patterns of employment is essential for planning specific strategies and measures that aim at enhancing the standards of accounting training and reducing the inequalities in the new information technology in these regions (Habib et al., 2021). The role that technology plays in the field of accounting has gained traction. However, there is a shortage of research focusing specifically on experiences for students in universities from developing nations (Neumeyer, Santos, & Morris, 2020). Most current studies target advanced countries with better accessibility to technology and infrastructure and typically employ quantitative methods that may not be able to provide the full range and depth of the student's experiences using accounting tools (Şahin et al., 2022). This study addresses these issues in the literature, offering an in-depth, contextualized view of technology usage levels among university students in developing countries. Through analyzing various aspects, including accessibility to technology and internet connectivity, technological knowledge, perceived value accessibility, as well as institutional support, and cultural background, this study hopes to add to the expanding amount of information about the use of technology in accounting education. It will also provide important insights to guide the design of educational policies and programs for the next generation of accountants in developing countries.

The challenge of studying is the lack of knowledge of the adoption rates of accounting tools used by students at universities in developing countries, as well as the factors that affect their use patterns (Khalaf & Hussein, 2023). Students from the developing world particularly have challenges with the availability of resources, access to technology, or even the infrastructure, which may immediately affect students' ability to integrate technology into their various accounting courses (Ahmed & Harrison, 2021). In addition, students and/or instructors implement the technology tools in most cases without understanding their contexts because these studies are quantitative and concentrate on developed nations (Ain et al., 2019). There is a lack of comprehension that precludes the development of measures and action plans that are aimed at meeting the needs of accounting students from developing economies and, as a result, limiting their capacity to meet the expectations in terms of their roles in the accounting field in the contemporary world of digitalized accounting (Qader et al., 2022). The field of accounting, where technology has advanced, demands students who are adaptable to the world (Habib et al., 2021). While the research on the use of technology in accounting has mainly focused on developed countries (Alshurafat et al., 2021), it is critical to appreciate the students' perspectives in developing economies. 2021). Current research contribute the available literature through a qualitative exploration of the level of accounting software adoption among students of developing economies and the factors that influence the pattern of adoption while providing insights that will help in the development of effective strategies Almaiah, Al-Khasawneh and Althunibat (2020) for enhancing the quality of accounting education in Pakistan. The research goals in this investigation are

- To assess the technological use and adoption rate of accounting software with digital technology in the education of students from developing countries.
- To determine the most important factors that affect the acceptance of accounting tools, focusing on factors like accessibility to the Internet, technology, and support from institutions.
- To assess the roles played by institutions, educators, and policymakers in promoting the use of accounting tools and focus on providing suggestions for improvement.

The research aims to understand the intricate interaction between societal, individual, and environmental elements that impact students from developing countries' acceptance of accounting tools by taking on these research objectives. The findings of this study will not only contribute to the current literature about technology adoption within accounting schools, but will also focus on providing helpful information for educational institutions, policymakers, and other stakeholders in countries that are developing to prepare future accountants to work in the digital age.

2. Literature Review

The increasing dependence on technological tools in accounting instruction has led to university students' curiosity about the use levels of accounting tools (Aldredge, Rogers, & Smith, 2021), specifically in Pakistan. The purpose of this research review is to not only review pertinent research work but also provide a stepping stone for further work in the area. The review focused on the accounting technology acceptance model concerning university students in developing countries, explicitly averting factors affecting adoption level and its implications on education outcomes (Thottoli, 2021). The review further included results from the qualitative study, delineating the main research findings and testing, as well as new opportunities for research. The table below provides the working definition and scope of the most critical research on the subject, including the authors, the study's focus on the theoretical framework, methodological methodology, and research gaps. This literature review also attempts to contribute to further understanding of the previous research concerning accounting tools" used by university students in developing countries conducting the studies and indicate future research opportunities.

Table 1

Author(s)	Study	Theory	Approach	Research Gap
Hossain and Rahman (2019)	Adoption of accounting tools by SMEs in Bangladesh	TAM	Quantitative	Narrowed geographic representation; Need for alternative theoretical frameworks
Ajayi, Ayo and Olamide (2019)	Adoption of accounting software among Nigerian university students	TAM	Quantitative	Imperfect geographic representation; Need for longitudinal research
Moorthy et al. (2019)	Accounting tool adoption by Malaysian university students and educators	TAM	Qualitative	Geographical representation is limited; research on intervention options is required.
Tarisayi and Munyaradzi (2021)	Accounting software usage among Zimbabwean university students	UTAUT	Qualitative	Limited geographic representation; Need for research on the role of institutional support
Asuquo, Udoayang and Professor (2020)	Factors affecting accounting software adoption among Nigerian SMEs	UTAUT	Quantitative	Need for alternative theoretical frameworks; Need for research on intervention strategies
Asuquo, Udoayang and Professor (2020)	Accounting software adoption among Nigerian SMEs	TAM	Quantitative	Limited geographic representation; Need for research on the role of institutional support

According to the researcher, students at universities in developing countries have a poor appreciation of accounting tool concepts. Regarding future research, both geographic scope and diversity in theoretical models are underdeveloped. These studies should also embrace a wide range of longitudinal advocacy and the development of education programs to increase institutional endorsement for accounting practices in this respect (Oluwatoyin Olufemi, Folajimi Festus, & Munir Adekunle, 2021).

2.1. Technology Adoption Theory

Several studies have focused on students from developing countries using accounting tools with the help of various models of technology adoption. One of the most accepted concepts is the Technology Acceptance Model (TAM), which explains technology adoption. The level of intention for a person to use the technology depends on the perceived usefulness and the perceived ease of use. Perceived usefulness is the degree to which an individual believes

that the technology will boost the performance of their system. In contrast, perceived user-friendliness is related to the extent to which an individual thinks that together, this technology is effortless (Venkatesh et al., 2003). The model was developed by Venkatesh et al. (2003). The UTAUT (Unified Theory of Acceptance and Use of Technology) is an all-encompassing model that combines elements of a variety of theories of technology adoption. It reveals that a person's decision to utilize technology is determined by four primary factors: performance expectation, effort expectation, social influence, and facilitation conditions. The performance expectation in UTAUT is similar to the perception of usefulness in TAM (Technology Acceptance Model), and effort expectancy is similar to the perceived ease of use. Social influence is the perception of the pressure of others to adopt the technology. Facilitating conditions are the extent of a person's belief that the infrastructure and support are available to support with technologies. The theory was developed by Rogers and Havens (1962). DOI theory explains how innovations are spread throughout the population over time. It lists five variables influencing the acceptance of technological advancements: relative advantages, compatibility, and trialability—moreover, the ability to observe. Relative advantage is the extent to which technology is perceived to be superior to the alternatives currently in use, and compatibility refers to the degree to which technology's capabilities align with the needs and values of users. In contrast, complexity refers to the perceived difficulty with it. Trialability refers to the ease of testing technologies, while observability refers to the extent to which the technology's benefits are apparent to others.

2.2. Adoption Level of Accounting Tools

Research indicates varying technology adoption levels for accounting tools among university students in developing countries (Valencia-Arias, Chalela-Naffah, & Bermúdez-Hernández, 2019). Akhter et al. (2020) discovered that students in Bangladesh are at a moderate level of technological adoption for accounting tools, with perceived value and user-friendliness as significant indicators of the level of use. In the same way, Awofala et al. (2019) reported that Nigerian university students use accounting software to moderate to high levels, as well as computer self-efficacy and perceived utility being the most significant factors.

2.3. Barriers to Adoption

Despite the benefits that could be gained from together the accounting system, it is several obstacles to its adoption by students from countries with low levels of development. The significant barriers to using accounting software are the lack of technological infrastructures, the cost of software, and ignorance (Majumdar, Garg, & Jain, 2021). Moreover, changes at the level of culture, like the language barrier and the general reluctance to change processes, are other reasons why accounting software takes forever to be rolled out (Glyptis et al., 2020).

2.4. Effect on Educational Outcomes

The application of accounting tools has been shown to enhance academic performance among students from less developed countries. Shaw et al. (2020) have established in their studies that accounting tools heighten productivity, precision, and the acquisition of critical reasoning knowledge. Furthermore, using accounting software has increased job opportunities and employability (Marchington & Grugulis, 2000).

3. Research Methodology

3.1. Sampling

In order to attain the study's objectives, purposive sampling was applied in this study in that the selection of individuals was done based on specific criteria relevant to the research aims. The controlling population includes accounting students in several universities in Pakistan. This sampling strategy ensures that all the selected respondents have used their accounting software for study or working considerations, which are crucial in providing outcomes related to the study objective.

3.2. Data Collection

Semi-structured interviews were chosen as the most appropriate method of data collection. This strategy gives the researcher proper ventilation by allowing him or her to pose as many questions as he or she considers necessary, especially to follow up on answers those participants provided when they were required to provide their personal opinions. The

participants, depending on their location and convenience, conduct the interviews in person and via videoconferencing (Braun & Clarke, 2006).

3.3. Analysis approach

Data decoding in this study was performed with a thematic analysis approach, which consists of identifying, analyzing, and reporting patterns (themes) within the data (Braun & Clarke, 2006; Lugo, 2022). The process included the following steps:

Data Familiarization: This study's data familiarisation aspect included scanning, reading, and re-reading the interview transcripts to the level where the participants' responses could be predicted.

Generating initial codes: Segments that captured the intent and meaning of the data collected were identified and coded.

I am searching for themes, the level at which 'the codes' are ordered into broader emerging patterns, such as potential themes.

Reviewing themes: This evaluated the themes and themes to check for the evidence in the data that supports each theme and what refinements were needed.

Defining and naming themes: Every theme named and defined in this section was constructed to reflect the pattern's essential nature.

Writing the report: In this part of the paper, all themes and their interpretations were summarized and included in the research report.

3.4. Trustworthiness

This study ensured the research's trustworthiness through the following criteria: credibility, transferability, dependability, and confirmability. However, the use of peer debriefing, member checking, and triangulation improved the study's trustworthiness.

4. Data Analysis

NVivo 14 was employed to implement various qualitative data analysis techniques, including transcription of audio/video recordings as well as thematic analysis and coding of data cluster analysis, and word methods for frequency analysis (Braun & Clarke, 2006). In this study, the participants display these characteristics:

The participants have different socio-economic, cultural, and educational backgrounds, giving an extensive view of technology adoption in developing countries.

Students Participants: All students enrolled in accounting courses at various universities.

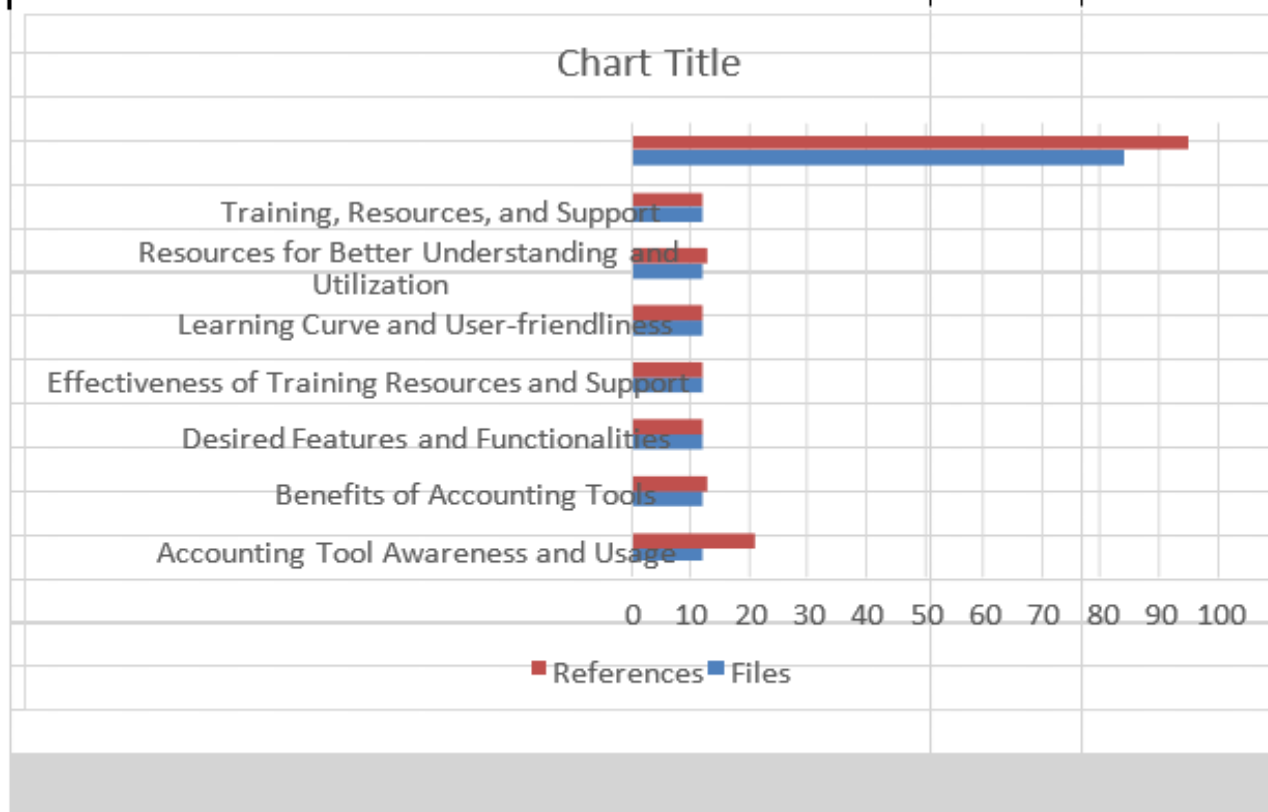
Motivation and obstacles: The research examines the motivations and obstacles faced by those who participate in implementing accounting software, like accessibility to technology and training, cost, and support tools.

Table 2

Sub-theme	Description
Demographics	Personal and organizational information of the participant, including name, gender, age, qualification, and university.
Accounting Tool Awareness and Usage	Awareness and experience of using various accounting tools such as SAP, Xero, Peachtree, and T24. Also, the duration of usage.
Training, Resources, and Support	Types of training, resources, and support received by the participant, such as online training, hands-on training, physical classes, and online tutorials.
Effectiveness of Training Resources and Support	The participant's evaluation of the effectiveness of the training resources and support in building confidence and preparing them for the practical use of the tools.
Benefits of Accounting Tools	Perceived benefits of using accounting tools, such as enhanced efficiency, accuracy, decision-making, streamlined financial management, reduced errors, reduced labor and effort, and time-saving.
Learning Curve and User-friendliness	The ease of learning and overall user-friendliness of the accounting tools, with the learning curve varying across different tools. Some tools are more user-friendly and intuitive, allowing users to adapt easily and benefit from their features.
Desired Features and Functionalities	Features and functionalities that would make accounting tools more attractive and useful, such as improved interfaces, customization options, collaboration features, software integration, and advanced reporting.
Resources for Better Understanding and Utilization	Resources that could help participants better understand and utilize accounting tools, such as interactive tutorials, hands-on workshops, and training sessions.
Appreciation and Closing	Thanking the participant for their time, insights, and cooperation, highlighting how their input will contribute to the research and potentially enhance accounting tool adoption among university students. Also, expressing the participant's interest

Table 3

Name	Files	References
Accounting Tool Awareness and Usage	12	21
Benefits of Accounting Tools	12	13
Desired Features and Functionalities	12	12
Effectiveness of Training Resources and Support	12	12
Learning Curve and User-friendliness	12	12
Resources for Better Understanding and Utilization	12	13
Training, Resources, and Support	12	12



The purpose of this qualitative research is to understand the use of accounting software among students from low-income nations, and with the intention of identifying key factors that hinder their integration. This research seeks to discover ways to boost learning and expanding the use of digital technology in these areas by studying the impact on educational institutions as well as socioeconomic factors that ultimately contribute to better outcomes in education as well as economic growth. More recent studies show that accounting tools can improve the learning process and increase learners' productivity in developing countries (Asuquo, Udoayang, & Professor, 2020). Such studies have highlighted various factors, including the infrastructure, cost, and level of Existing tools. Along this line of thought, it has also been observed that the level of digital literacy of teachers and students has a significant bearing on the effectiveness of the tools implemented. Previous research has stressed the need for such coordinated approaches by assessing the experiences of various participants, such as teachers, students, and policymakers, regarding the challenges and opportunities of accounting technology. Guided by the findings of this research, this one will offer insight into the factors that aid or inhibit the usage of accounting tools by students from less developed regions.

"Accountancy pedagogy that includes practical work and area-based projects may help the students to understand them better" (P1). Interactive tutorials and practical lessons can facilitate a student's ability to apply the features of accounting documents. Valencia-Arias,

a mix of topics, such as demographics, the awareness and use of accounting tools as well as training, resources and support, efficiency of training and support advantages in accounting tool, the learning curve and user-friendliness. It also covered desired features and functions, as well as tools for better understanding and use.

The interview was conducted in which all participants shared their personal and organizational details, such as status, gender, education level and their university. They also talked about their understanding and experiences together different accounting tools such as MS Excel, Peachtree, as well as other online tools. They also shared the kinds of training as well as the resources and support they received from these tools for accounting including online tutorials, classes, and other courses during the course of their MBA and MS courses. In addition, the participants evaluated the quality of the education resources and the assistance they received and also analyzed the benefits they perceive from together the accounting software, like better decision-making efficiency, greater precision, and more effective analysis of data. They also talked about the learning curve and user-friendliness of accounting software, along with the functions and features that could make these tools more efficient, including user interface customization and collaborative capabilities integration with software, as well as advanced reports.

The participants unanimously agreed that interactive classes and hands-on workshops can assist users in understanding and using accounting technology. The discussion revealed crucial information about the extent of students' adoption of technology in countries with low levels of development who use accounting software to study. The interview was conducted in which all participants gave their personal and professional details, such as status, gender, qualifications as well as their school of choice. They also talked about their understanding and experience with different accounting tools such as MS Excel, Peachtree, as well as other online tools. They also shared the kinds of training and resources they received from the accounting tools like online tutorials, classes, and other courses during the MBA and MS courses.

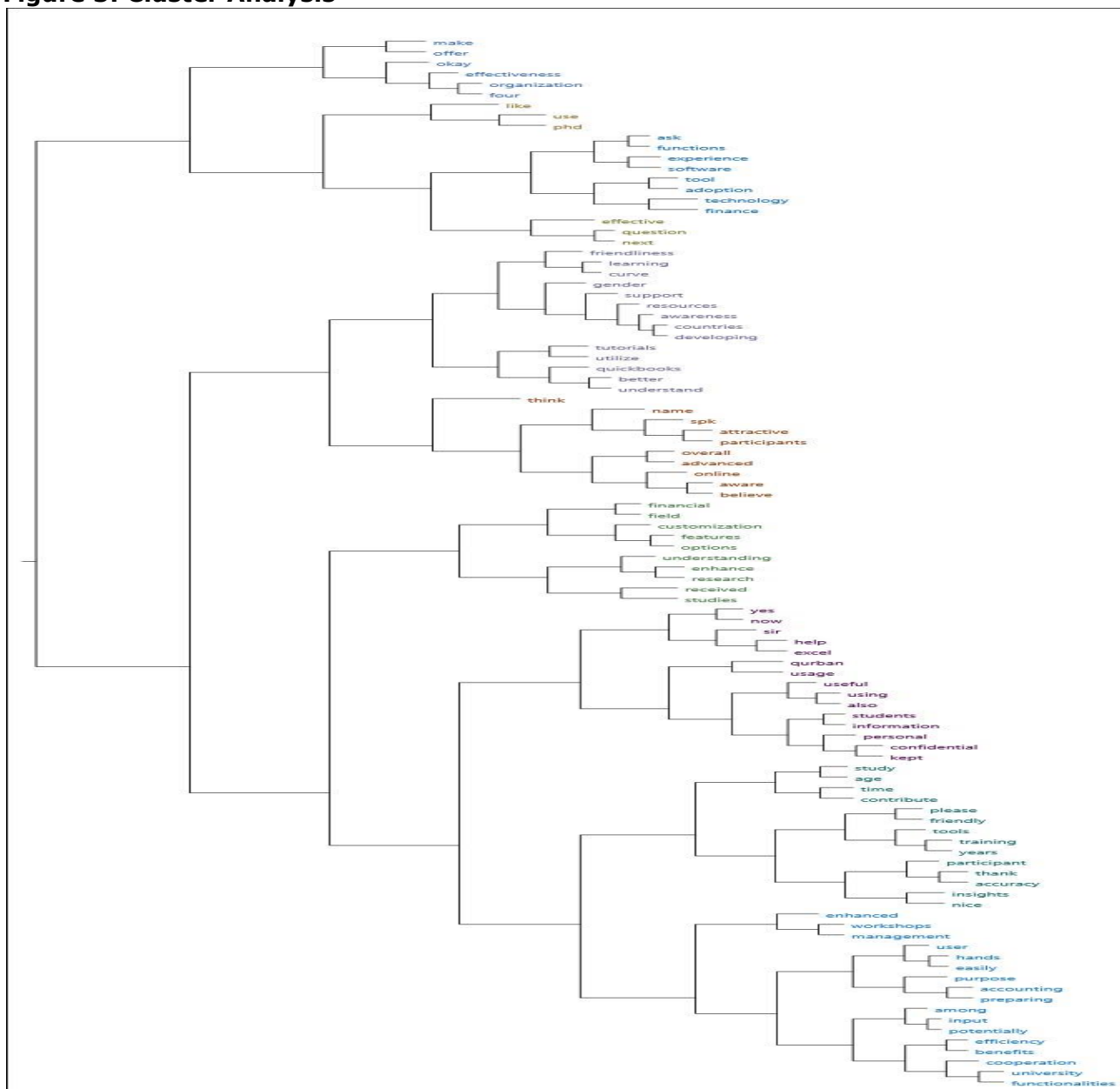
In addition, the participants evaluated the quality of the education resources and support they received and also analyzed the potential benefits of with software for accounting, like better decision-making efficiency, greater accuracy, and better analysis of data. They also talked about the learning curve as well as the usability of accounting software, and the functions and features which could make the products more efficient, including user interface customization as well as collaborative features integration with software, and advanced reporting. The participants agreed unanimously that interactive classes and hands-on workshops can assist users in understanding and using accounting technology. The discussion revealed crucial information regarding the level of students' adoption of technology in countries with low levels of development who use accounting software for their studies.

Figure 2: Tree map

tools	okay	using	user	adoption	enhanced	benefit	help	informal	like	useful	please	age	sir		
				participa	years	spk	online	works	effectiv	research	software	under	utilize	ask	
		name					technol	confid	person	aware	quick	contri	finan	friend	
		university		study	thank	receive			prepar	input	usage	enhanc	option	think	
	resources		learning				friendlin	make							
				tutorials	use	unders			advan	poten	also	insig	belie	field	man
accounting		features					gender	overall							
		tool		curve	better	among			attract	hands	exce		func	orga	purp
	training						accurac	time				nice	yes	kept	now
		support							countri	quest	awar				
			students	functiona	efficienc	experie	effectiv	coope	develo	qurba	custo	studie	easily	offer	ph
										finan	four	partic			

The tree map can be described as a visual representation of the data hierarchy. The rectangles represent a set of data, subdivided into smaller rectangles, each representing a particular subset of the data. The bigger this rectangle, the higher the significance of the information. In the same way, the color of the rectangle could be used to symbolize the value or type of data. Figure 3 depicts cluster analysis, a type of multivariate statistical technique that enables categorizing objects or observations into distinct groups depending on their similarities. It is a non-supervised learning method commonly used in machine learning and pattern detection. The purpose of cluster analysis is to find clusters of items, such as observations or objects that appear closer to one another than other items. This is done by determining the similarity and dissimilarity of observations or objects by their characteristics and then classifying them into clusters according to the similarities or differences.

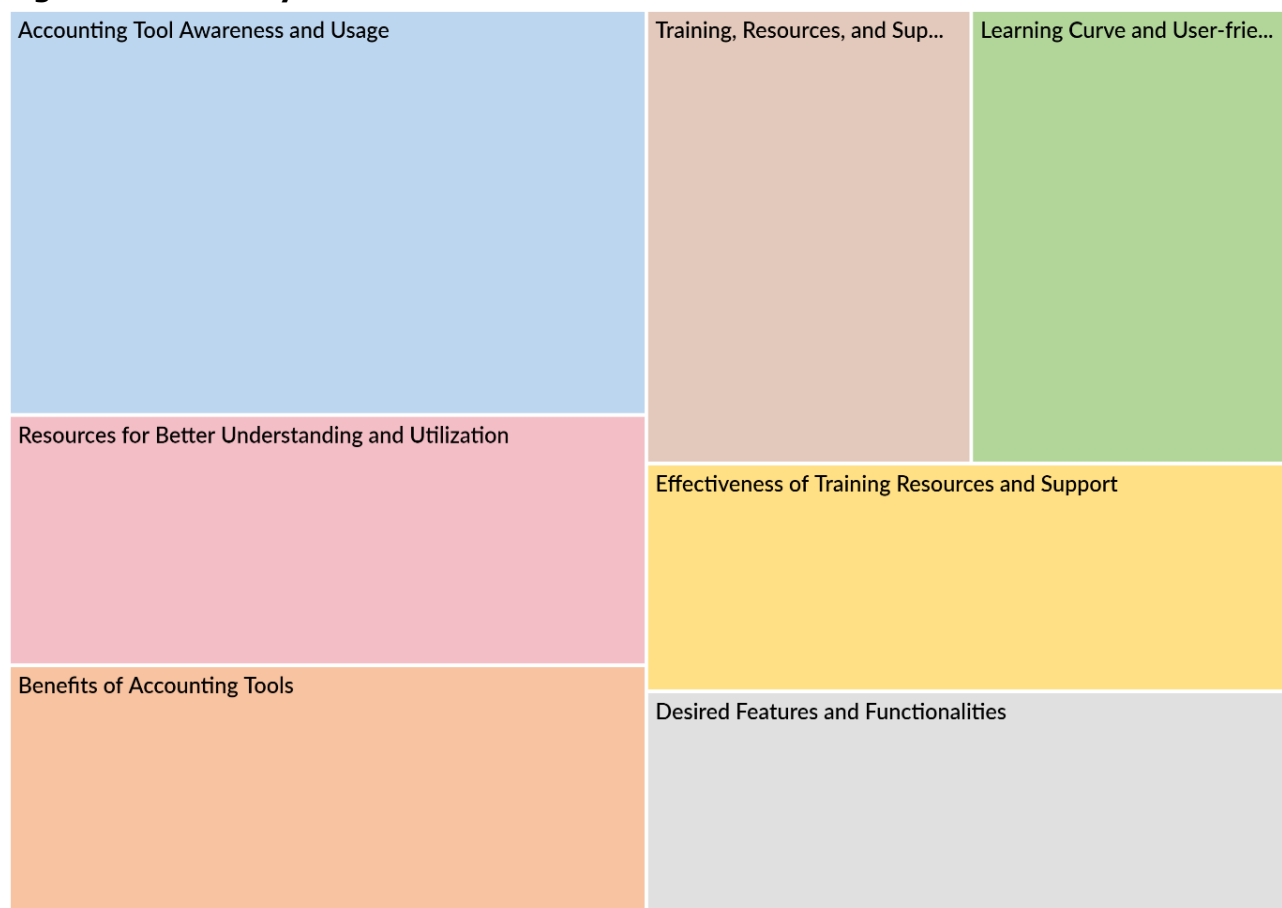
Figure 3: Cluster Analysis



5. Discussion

Hierarchical charts, also called tree diagrams, as shown in Figure 4, are graphic representations of a system or an organization and consist of the relationships at various levels or parts. These include several nodes or boxes padded at the edges with lines signifying the arrangement and the passage of data or activity.

Figure 1: Hierarchy Chart



The depicted boxes signify a distinctive position or level within the hierarchy of the organization or the system. The lines connecting the boxes indicate relationships between boxes of the organizational structure. Hierarchical charts are often used in managing projects and decision-making processes, in the organization's management, and in many other areas where it is necessary to understand the interrelationships and the dependencies of various levels or components within a system.

5.1. Limitations of study

However, the study has limitations that are quite troubling and should be acknowledged. First, the results may be valid only in the specific context of the developing countries included in the study. Therefore, they may not be generalized to other populations or contexts. Also, such a small number of research subjects would probably never be able to represent the full range of experiences or perspectives in using accounting tools for students from developing countries. In addition, the respondents may suffer from social approval or recall bias that might raise the question of the reliability of the information they provided during the investigation.

5.2. Future Directions

Several new research perspectives could be proposed based on the results and the limitations offered by this research. Cross-regional or cross-educational system studies may assist in identifying best practices and inserting accounting methods. Qualitative research could be triangulated with studies or analytics on the usage pattern to enhance comprehension of the determinants of using accounting software. Research that observes changes in the use of accounting tools and the results over time would also help assess the impact of the policies and the interventions. Moreover, the design and application of programs and policies targeting an increase in the use of accounting tools and improvement in learning outcomes could also be investigated. The research direction envisaged for the near future will assist in understanding the problems and possibilities connected with applying accounting tools in rapidly developing countries such as Pakistan.

6. Conclusion

Also, this study contributes valuable insight into the use of accounting tools by students from poor countries, as well as significant factors that limit or aid their use. The results revolve around the availability of technology and skills, the available quantitative measure of accounting tools, and the institutions' help, all significant factors affecting the effectiveness of accounting tool utilization in these countries. The study underscores factors such as accessibility, infrastructure, and the demand to design relevant and easy-to-use tools, as well as promote the use of technology among teachers and students. Further, the role of education institutions and the government in executing the policies and investments to create favorable conditions for the use of technology is vital. Acknowledging these dimensions and learning how they affect the stakeholders helps them come up with more targeted approaches to mitigate challenges and capitalize on the opportunities of the tools of accounting towards enhancement of learning outcomes and promotion of digital inclusiveness in disadvantaged nations. Future research can build on these findings in comparative-type studies with the inclusion of baseline quantitative data and evaluate the effectiveness of specific interventions aimed at increasing the use of accounting software. Ultimately, these efforts may help yield desirable educational outcomes and economic growth in these countries.

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