

Digital Accounting Notebook (DAN): A Student-Centric Learning-Driven Accounting Pedagogy for HEIs

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ABSTRACT

Complying with technology-based lifestyle and work environment of individuals is inevitable in today's era of information and technology. Separating and keeping accounting education away from such developments are not possible. "E-learning environments" that is one of the main education and communication means of today present many new facilities to practitioners and learners in every field of accounting education. Our era requires being educated in a manner being equipped with characteristics to evaluate, interpret information, to draw attention to issues and determine information necessary for managerial decisions with the use of information and communication technologies to operate as accountant. The advancements brought in by such information and communication technologies, "a strategic alteration" in accounting education and applications became indispensable. E-accounting became an important need in educational system today to learn limitless accounting using endless information sources and versatile interaction. Use of DAN is expected to bring a revolutionary change in accounting teaching and learning pedagogy being a part of student-centric learning-driven model of education, with its unique features that will facilitate smart, innovative, interactive, faster and sustainable learning. The present study is conducted to assess the need of smart accounting teaching and learning solutions and devising a solution in the form of DAN which will make them industry ready. The study reveals the fact that this device may bring a radical change in student's participation in accounting learning because of its advantageous features.

KEYWORDS: Digital-Accounting-Notebook (DAN), E-accounting, Sustainable learning, Digital-accounting learning, Information and Communication Technologies (ICT)

INTRODUCTION

By 2030, it is likely that India will be a youth dominated country. With nearly 140 million people in the college-going age group, one in every four graduates in the world will be a product of the Indian higher education system. As per the Higher Education vision- road to progress: 2013 to 2030, in recent years, India has undertaken massive structural and systemic changes that have started to yield encouraging results. Intensive use of technology is one of the significant factors that have contributed to this growth and can help envision the 2030 dream. Accounting education in India is being imparted as a segment of Commerce stream at the senior secondary level in schools, at undergraduate level in colleges and at Postgraduate level in universities. But the professional status is not accorded to those passing out after having obtained the accounting education at this level

(Gurdip Singh, 2004). Currently, 4.03 million students are pursuing B.Com programmes in India, according to the All India Survey of Higher Education (AISHE) published by the HRD Ministry on Sept. 22. The Accounting education is restricted to the traditional teaching subjects like Management Accounting, Cost Accounting and Financial Accounting, etc., as an integral part of curricula but it lacks the inclusion of E-Commerce and software based Accounting curriculum which is the very requirement for their employability. Moreover the way of teaching accounting is still the conventional Guru system, where teachers still use archaic methods for elucidating accounting problems. On the contrary, business schools make use of ground-breaking innovations in their way of teachings. They use the techniques like Flash and computer presentations to empower their student's knowledge.

The present study is based on the objectives of accounting education to be effective in order to face future challenges of global economy in the field of business and industry. E-accounting became an important need in educational system because it enables those learning and to learn accounting limitless and many information sources and versatile interaction. Usage of technology in accounting has increased as a result of developments concerning with usage of computer technologies so as to produce administrative-purpose information on the basis of integrate information system of accounting information of enterprises and at the same time usage of e-accounting in enterprises has started to become widespread. Along with usage of computers in accounting, information was transferred to electronic media. Existing in electronic media of accounting information has made carrying out of supervision of electronic information environments in question indispensable. Legal infrastructure transferring all transactions to electronic environment completely through electronic signature, electronic declaration and other arrangements in our country recently has been being generated. Appearing in electronic media of accounting makes carrying out supervision in the same environment obligatory

REVIEW OF LITERATURE

1 Nicholas Mc Guigan, Thomas Kern, (2016), in their research study titled "*CreActive Accounting Education: Visioning Future-Oriented Accounting Programs through a Reflective Unlearning of Current Practice*" focused on creativity and innovation and a need to reinterpret the teaching philosophies, content and processes. In this paper they argued that, by exploring the Bauhaus pedagogical process of "unlearning" in accounting curricula, a dynamic, engaging, and creative space can be opened up for learners and educators alike. They also added that "Unlearning" can support a critical and reflective culture for both students and teachers that nurture a deeper understanding of the "ways of thinking" as business professionals.

2. Dr. Gurdip Singh, (2004), in his research paper titled "*Emerging Dimensions of Accounting Education and Research in India*" has discussed emerging issues in accounting education keeping in view the changing economic environment of the Indian business and industry. He said that accounting education needs to be given due attention in light of WTO reforms, Information technology, Globalization of Markets, varied economic systems of various regions of the world. The outmoded model of accounting teaching based on theoretical knowledge and numerical problems needs to be replaced by conceptual knowledge linked with the E-commerce and computer software was his major concern.

3. Sam H. Jebeile, Indra Abeysekera, (2010), evaluate in their study titled “The spread of ICT innovation in accounting education” the initiation of an interactive online computer-assisted learning module, called WEBLEARN, in an undergraduate introductory accounting course at an Australian university. The purpose was to aid students in the preparation of cash flow statements, a topic that, from the student perspective, is usually considered fairly difficult. Diffusion of innovations theory was utilized as a framework for assessing student responses and to guide further development of modules in other topics within the accounting unit. Their finding indicates that the majority of students formed favourable perceptions regarding the relative advantage.

4. Kamala Raghavan, Esther R. Thomas (2014), stated in their research work, “*Instability, Innovation and Accounting Education*” that financial prosperity and technological advances in the U.S. have resulted in long periods of stability for accounting education. They emphasised that accounting educators must play a significant role in sustaining the profession’s social contract through practice related research and innovative student education involving cognition, knowledge acquisition, and accounting skills along with ethical standards.

5. K. V. Achalapathi M., Janakiram, (2016), in his research paper titled “*Accounting Education in India: a Comparative Analysis*”, advocates that the curriculum of accounting has to undergo certain changes from descriptive model to a prescriptive model. This paper attempted to examine the relevance of the accounting curriculum in different Universities in the context of changing dimensions of stake holders and technology, the pedagogy and evaluation system planned in State as well as Private Universities in the light of Choice Based Credit System (CBCS).

6. J. P. Fouche,(2013), in their paper titled, “*A Renewed Call for Change in Accounting Education Practices*” highlighted that focus in accounting education is still on subject content and that teaching methodologies are mainly content driven, although various elements of effective teaching methodologies are present. Study reveals that the new Competency Framework of SAICA (2008) focuses on pervasive qualities and skills including Ethics and Professionalism, Personal Attributes and Professional skills as well as specific competencies including Strategy, Risk Management and Governance, Accounting and External Reporting, Auditing and Assurance, Financial Management, Management Decision Making and Control and Taxation

7. Rabia,et. al. (2014), in their study- “*A comparative analysis of accounting education’s effectiveness with the balanced scorecard method: A case study of KMU*” , have identified the strength and weakness of the accounting education and efficiency in accounting education is measured by using BSC which is one of the performance measuring methods. The results of the study are evaluated in the four dimensions of BSC. Similarly, a model which can be used as science-based in the state universities is suggested in the study.

8. Ravi Seetha M Raju, (2010), in is paper, “*Information Technologies in Accounting Education*” brings out that information technology tools that are relevant, appropriate and at industry standard level need to be embedded in the accounting context and taught with the help of modern pedagogy. Instead of adding additional content in separate information systems/technology based units in the already crowded curriculum, it is necessary to embed relevant IT tools and concepts into the existing accounting units by ensuring deep learning, contextual understanding and appreciation of the IT/IS issues in accounting context.

9. **Aysel Guney, (2014)**, in her study, “*Role of Technology in Accounting and E- accounting*” suggested E-accounting is perception of enabling management of all activities more efficiently, affordably, flexibly than before through facilities of internet. All parties of the activity (employee-manager-customer-public body-business partner-supplier) are real-time users of the system and those sharing up-to-date information instantly. Accounting staffs that can apply this structure in enterprises through accounting education and establish this system in enterprises are needed.

10. **Sharon Burnett, (2003)**, surveyed in her study, “*The Future of Accounting Education: A Regional Perspective*”, the employers of their university's accounting graduates and members of a local CPA chapter to ascertain which skills are important for new graduates and which educational innovations are effective. The top-rated four professional skills were analytical/critical thinking, written communication, oral communication, and decision-making. The top three technology skills included spreadsheet software, Windows, and word-processing software. The top education innovation was internships. These results agree with a national survey completed in 1999

11. **Sudhir Chandra Das ,Raj Kumar Singh, (2018)** in his paper titled, “*Accounting Education In India And USA: A Comparative Study*” presented an analysis of accounting education in India and America, and revealed that accounting education in India emphasizes on financial accounting and cost accounting while the emphasis is on cost and management accounting in America. Accounting education needs reform to be more effective in reducing unemployment and to face the present challenges of global economy in the field of business and industry.

12. **Awwad Alnesafi, (2018)**, “*Blended Learning and Accounting Education in Kuwait: An Analysis of Social Construction of Technology*” This paper was aimed at studying the prospects and challenges of blended learning as a “new” teaching and learning methodology based on the interpretive flexibility of the relevant social groups in higher educational institutions (HEIs) in Kuwait and their perception of the technological frame of blended learning with particular focus on accounting education.

PROBLEM

From the above review it is clear that there has been a paradigm shift in the present accounting system in the dynamic business world but change in accounting education system is not in the same pace. The problems identified are rapid growth in ICT based accounting needs in the corporate which is not able to provide employment to the present graduates lacking E-accounting skills and use of traditional methods of accounting teaching in classrooms for Gen-4 students who should be enabled to learn accounting in digitalised method.

SIGNIFICANCE

This study is imperative as it provides one solution to many problems raised by the authors in the form of Digital Accounting Notebook (DAN). The present generation is highly exposed to digitalised environment but they are not enabled to use their ICT skills in learning at HEIs. Thus this one student one notebook concept will bring a paradigm shift in digitalised accounting pedagogy.

OBJECTIVES

1. To find the digital tools available for teaching accountancy in HEIs
2. To investigate the need of digital aids in present accounting education system at UG level.
3. To suggest the changes required in the accounting pedagogy

RESEARCH METHODOLOGY

This is a formulative research conducted to provide student-centric learning-driven model of education DAN- Digital Accounting Notebook as a part of teaching learning methodology. To know the need of digital accounting notebooks in educational institutions, a sample of 155 students of Higher Education was studied through Snowball sampling technique by circulating questionnaire through Google forms to 9 UG Students of NAAC ‘A’ Grade Accredited colleges of Bhopal and Indore who passed it on to other UG level students. Chi-square test will be applied to test the independence of the variables.

DATA ANALYSIS

Digital classrooms are a modern-day pedagogy that brings the concept of “Show me and I understand” closer to home. The innovative and meaningful use of technology is transforming the way teachers teach and students learn in schools. Smart classroom Tools are a success because visually attractive methods of teaching engage the audio-visual senses and are proven to be more appealing to the students. This method of teaching helps students to break out of their shells and become good analyst. With how rapidly classrooms are changing, it is best to unlearn the traditional and relearn newer teaching and learning techniques based on digital learning tools and technologies. Listed below are a few classroom tools/websites that are essential for a transformational learning experience.

S.No.	Basic Tools	Websites that optimize learning and teaching
1	Desktop or Laptop	Lynda
2	Document Camera/Visualisers	Udemy
3	Interactive Whiteboard	Khan Academy
4	Interactive Projector	Coursera. ...
5	Simple Projector	Alison. ...
6	Digital Camera	edX. ...
7	Graphic Tablets	Futurelearn. ...
8	Big Interactive LED/LCD Panels	Udacity
9	Multimedia Pens/Stylus	MOOCs
10	Wireless Microphone for Convenience	Skype
11	Speakers	iThoughts
12	Student Response System	Kahoot
13	Feedback Assessment Tools	Google Knowledge Graph
14	Educational Software	Empressr
15	Digital Podium	Socratic

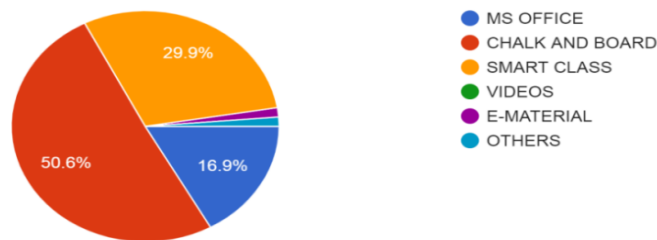
16	Printer	Present.me Edu
17	OMR (Optical Mark Reader) Scanner	Wikispaces
18	Cloud-Based Communication Systems	HaikuLearning
19		Cacoo (cacoo.com)
20		Yammer

Keeping in view the above available technologies for teaching, which can also be used for accounting teaching as well and review of literature on innovative pedagogies, use of ICT and strengthening syllabi, status of accounting teaching & learning in India as compared to other countries, a need analysis was conducted to find the whether students at higher education are willing to shift from traditional method of learning accounting to digital mode of accounting with the help of DAN- Digital Accounting Notebook. The study was conducted in the selected NAAC Accredited 'A' grade colleges of Bhopal and Indore (Madhya Pradesh) only, as such colleges are found more ready to adopt innovative practices. The results are summarised below:

Chart No. 1

Which of the following mode of accounting teaching is used in your classroom.

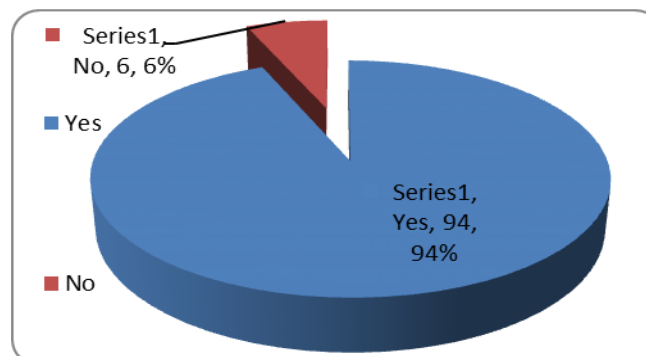
154 responses



Out of 155 respondents 154 only responded for the mode of teaching accounting presently in their classrooms and it found that Chalk and Board method is more in use (50.6%) but a combination of other digital modes of education are also in practice, which includes use of MS Office, Smart class, Videos, e-materials and many others. A gradual shift in accounting teaching towards ICT based methodology is observed which the need of the hour is.

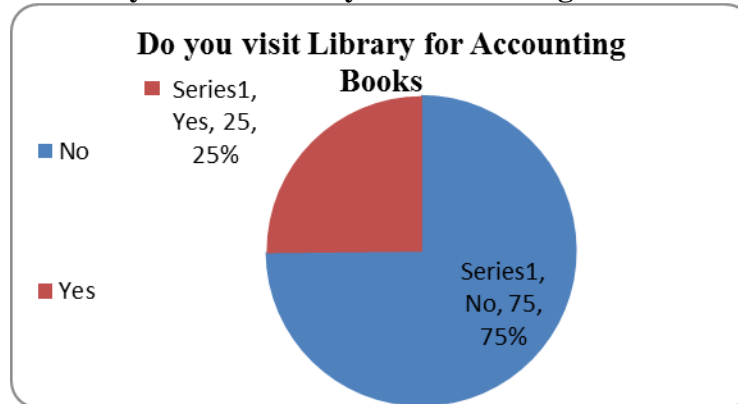
Chart No. 2

Liking for use of innovative practices in teaching & learning



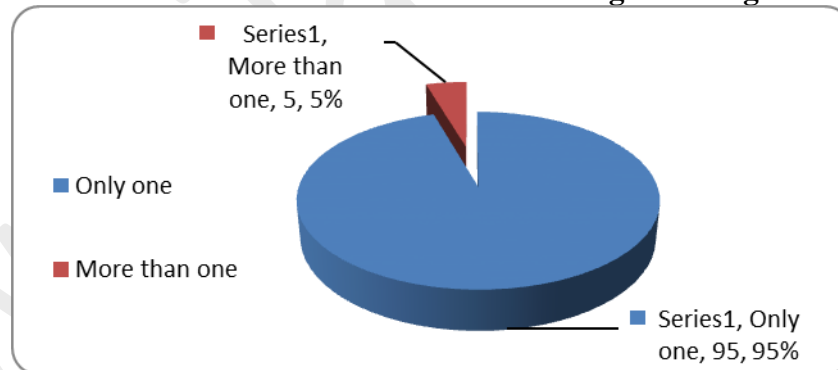
It was found necessary to know the inclination and interest of students to learn through innovative learning practices. The chart above makes it clear that most of the students at higher education like to study through innovative practices in teaching and learning.

Chart No. 3
Do you visit Library for Accounting Books?



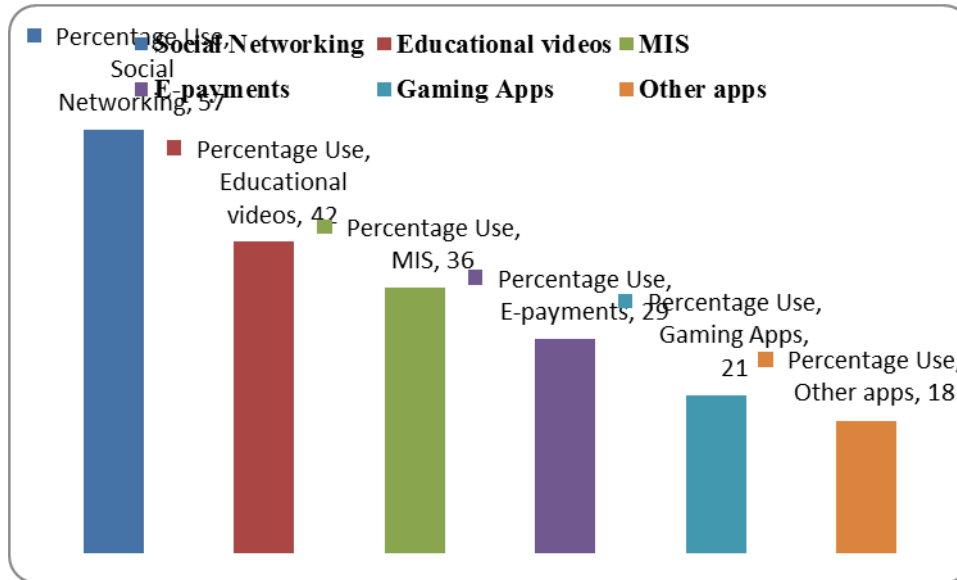
It was sad to know that students these days are not so willing to visit library to read /issue books of their subjects. They are going far from books possibly because of their closeness with advanced digital technologies.

Chart No. 4
Number of books used for Accounting Learning



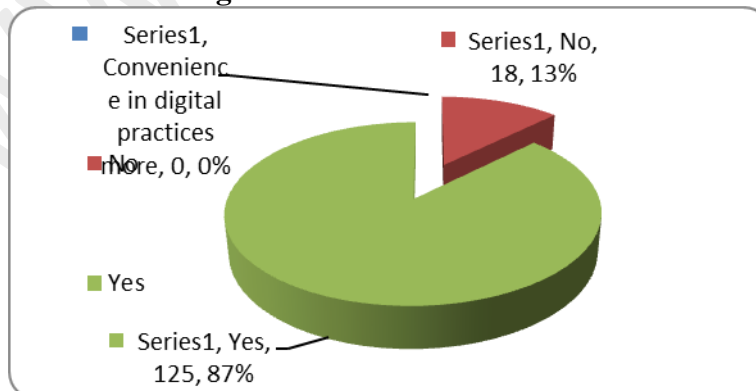
It is important for the students of accounting to practice accounting by referring various books for better understanding. The question regarding the number of books referred was administered from the respondents, but only 5% of the students are referring more than one book but the rest 95% are referring just one book as suggested by the teacher as text book for the learning accounting. This is a serious concern for the accounting fraternity as the kind of accounting learning that must be developed for future, is jeopardized.

Chart No. 5
Commonly used digital practices



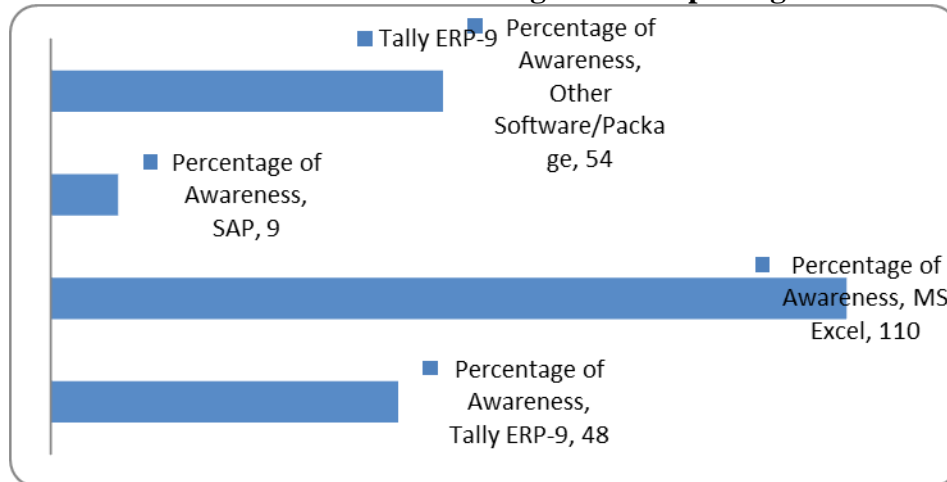
As it was felt that the usage of books among students has drastically declined because of the increasing use and availability of digital practices, thus a question of commonly used digital practices among students has been administered. The response shows that the highest use of digital practices among students is of social networking (57%), followed by the use of Educational videos (42%), MIS, e-payments, gaming apps and others. The responses are indicator that the accounting teaching must be according to the trend the students are following so that the involvement of students can be ensured. If accounting teaching can also be done through the use of digital practices possibly the students digital use will shift from social media towards learning accounting.

Chart No. 6
Are Digital Practices More Convenient



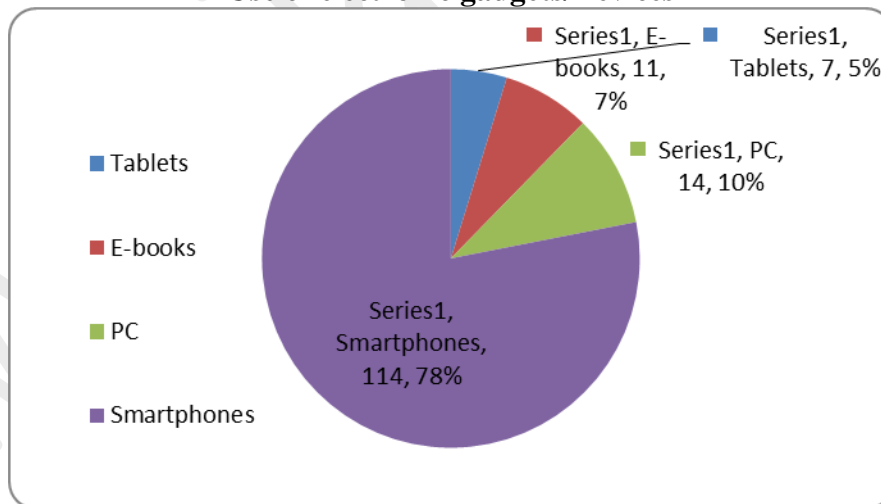
To check the reason for the inclination towards digital practice, a question related to convenience in using the digital modes of learning was asked and the response made it clear that most (87%) of the student find it more convenient to use digital practices as compared to manual.

Chart No. 7
Awareness of the accounting software /packages



Once we have known the extent of usage of digital practices among students further there was need to understand their familiarity with the accounting software and packages available these days. The most familiar digital use for accounting is MS Excel (110%), followed by other software/packages (54%) and Tally ERP9 (48%). The present generation is quite techno savvy but are not well aware of the specific technologies being used for accounting. To make the accounting students industry ready it is the need of the hour to enable them with the accounting softwares/packages currently used in the industries.

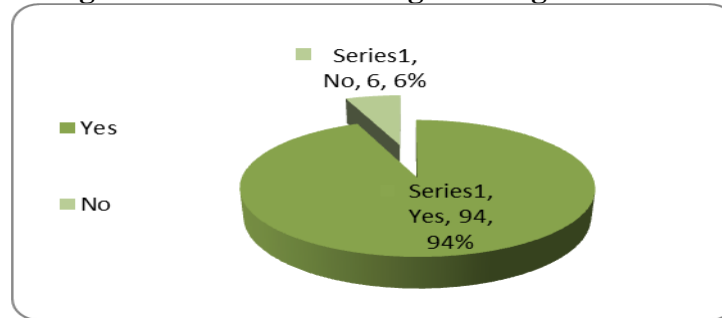
Chart No. 8
Use of electronic gadgets/Devices



The type of gadgets being used by the students was to be understood to know their preference. It was found that 78% students prefer to use smart phones and just 10% are using tablets, followed by e-books (7%) and PC (5%). The reason for the high use of Smartphone is quite obviously the high use of social networking. If the students can be taught accounting using a gadget (Smartphone) which they are preferably using, the learning could become better.

Chart No. 9

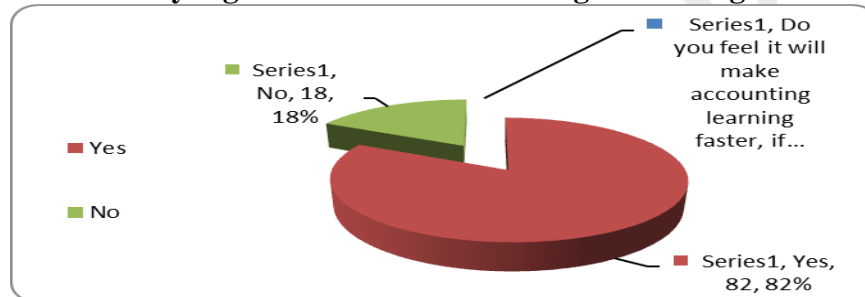
Need of digitalization of accounting teaching for better learning



As the final consumer of accounting education is the student only, it was found necessary to know their need and readiness for digitalisation of accounting teaching for better learning. The responses were in support of digitalisation of accounting teaching and learning methodology (94%)

Chart No. 10

Provision of ready digital formats of accounting facilitating faster learning

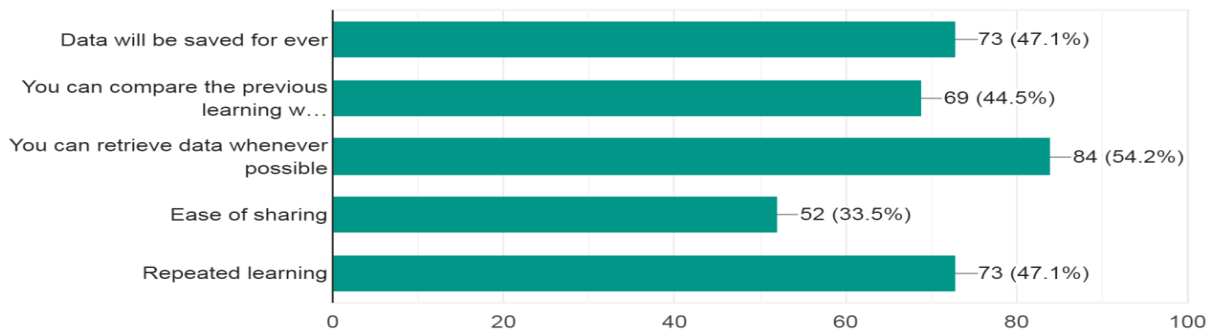


To know one of the reason to shift from manual accounting teaching learning process to digital accounting process was the preparation of lengthy formats in accountancy, which many times are not easy to remember. So a question of providing readymade formats for different accountancy learning was asked to the students, the response of which was quite positive (82%). the provision of ready formats will be possible digitally and that requires a customised device.

Chart No.10

Would you support the use of digital notebooks for accounting learning for the following reasons:

155 responses



Keeping in mind the need of industry for ready and well trained accounting practitioners and the responses of students towards digital mode of accounting teaching and learning it was felt to know the various reasons for their acceptance of a digital accounting notebook as one solution to many problems. Most of the students (54%) find the digital accounting notebook advantageous as one can retrieve data whenever possible, 47% responded that data will be saved for ever and Repeated learning could occur whereas 45% are of opinion that we can compare previous learning with the current one and understand the similarity and difference in various accounting procedures. 33.5% believe that it will become easy to share data that may lead to better supply of knowledge to each and every one.

Test of hypothesis

H₀1: There is no significant relation between use of electronic devices and liking for innovative teaching learning practices

H_a1: There is a significant relation between use of electronic devices and liking for innovative teaching learning practices

Chi-Square Test Results					
Liking for Innovative teaching & Learning practices	Use of electronic devices				
	Tablets	E-books	PC	Smart phones	Row Totals
Yes	20 (21.45) [0.10]	42 (41.19) [0.02]	13 (16.30) [0.67]	58 (54.06) [0.29]	133
No	5 (3.55) [0.59]	6 (6.81) [0.10]	6 (2.70) [4.05]	5 (8.94) [1.74]	22
Column Totals	25	48	19	63	155 (Grand Total)

The chi-square statistic is 7.5456. The *p*-value is .056397. The result is *not* significant at $p < .05$.

Thus the null hypothesis is accepted and we can say that there is no significant relation between use of electronic devices and liking for innovative teaching learning practices and these two variables are independent of each other. We can conclude out of this that no matter what type of electronic gadgets students use, their liking for innovative teaching practices doesn't affect.

H₀2: There is no significant relation between students visit to library for accounting books and digitalisation of accounting teaching

H_a2: There is a significant relation between students visit to library for accounting books and digitalisation of accounting teaching

Chi-Square Test Results			
Visit to library for Accounting Books	Digitalization of Accounting teaching		
	Needed	Not Needed	Row Totals
Yes	8 (24.77) [11.36]	22 (5.23) [53.84]	30
No	120 (103.23) [2.73]	5 (21.77) [12.92]	125
Column Totals	128	27	155 (Grand Total)

The chi-square statistic is 80.8488. The p -value is $< .00001$. The result is significant at $p < .05$.

Thus the null hypothesis is rejected and we can say that there is a significant relation between students visit to library for accounting books and digitalisation of accounting teaching and these two variables are dependent on each other. We can conclude out of this that the students who visit library for accounting books do not need digitalisation of accounting teaching practices and those who need and show interest in digitalisation of accounting teaching usually do not visit library in search of accounting books.

Arguments in support of DAN- Digital Accounting Notebook

“E-learning environments” that is one of the main education and communication means of today present many new facilities to practitioners and learners in every field of accounting education. Our era when most of the students at higher education level are adorned with smart gizmos and are highly techno-savvy, with the availability of ready learning material on internet and rising need of technically sound officials with dynamic knowledge of ICT in corporate, requires being educated in a manner being equipped with characteristics to evaluate, interpret information, to draw attention to issues and determine information necessary for manager and present it and to be able to use information and communication technologies well of individuals to operate as accountant. In front of new formations that information and communication technologies caused and facilities created by such technologies, “a strategic alteration” in accounting education and applications became indispensable. E-accounting became an important need in educational system because it enables those learning and to learn accounting limitless and many information sources and versatile interaction. Use of DAN is expected to bring a revolutionary change in accounting teaching and learning pedagogy being a part of student-centric learning-driven model of education. DAN will facilitate smart, innovative, interactive, faster and sustainable learning with its following unique features and advantages:

1. **Ease of handling:** DAN can be a smart way of learning as “one child, one notebook” because it will carry all the required features of a digital notebook. The features would include MS Office, office automation, various accounting software/packages, e-materials etc., along with most of

the features of Smartphone/tablets. It can be used not only for accounting but for all other subjects as well.

2. **Replacement of paper notebooks:** This is the time when we are advocating less use of paper, Digital Accounting Notebook shall be a better replacement of paper notebooks (long books) that are heavy and cannot be stored for long and are a reason of deforestation too. Moreover the same notebook can for many years of learning without spending on paper notebooks every year.
3. **Faster and better learning with readymade formats:** Comprehensive accounting formats can be made available in Digital notebook in the form of templates to be filled in by the students for Journal, Ledger, Financial Statements etc. This can facilitate rigorous practice and better understanding of the various formats, also saving preparation time of the formats.
4. **Availability of large number of accounting books:** As the students are not making use of library for accounting learning, DAN can be seen as a solution to it with the availability of e-library and e-book reader facility that will make thousands of reference books on accounting available for the students online.
5. **Strong understanding of accounting concepts:** Accounting concepts once taught in the classroom can be stored in the digital notebook for lifetime. Whenever the student learns a step ahead in accounting he can easy refer to basic premise on which he is developing further concepts. For instance if bookkeeping of a proprietorship business has been once learned and stored in the device, the bookkeeping for other forms of organisation viz. Partnership or Joint stock company can easily be learned with few changes and advancements in the later. This would surely develop a wider understanding.
6. **Innovative pedagogies:** The concepts of accounting can be made clear through various innovative pedagogies like accounting animations and accounting games etc. the students can be taught real documentations very easily like generating invoice filing IT/GST returns, billing, banking transactions, payments etc.
7. **Perpetual learning:** With this device, learning would not end in the classrooms but the student will remain connected to the teacher/mentors constantly through virtual learning modules, MIS, LMS. Accounting learning can be planned as per the need of the student whenever possible beyond the classroom. Moreover the data and lectures being stored in the device , repeated learning is possible for slow learners which is not possible in the classroom
8. **Storage of information:** DAN with internet facility and huge memory card can save information on Google drive or in the device drives itself. It becomes easy and faster to retrieve data/information whenever required.
9. **Digital evaluation:** as the student at higher education level graduates has to face online exams which is never practiced during regular class. Thus with the help of DAN easy online evaluation is possible whenever needed and also as per requirement of different students as many times wanted as that student can see the progress report automatically and reattempt the exams.
10. **Shift from unproductive digital activities to constructive learning:** The innovative features in DAN will enable students to shift their social media interaction to interesting educational interaction as it will have details of usage of data for various reasons. That may keep a check on the students.
11. **Independent learning:** The e-material and learning video available in DAN would ensure that it leads to more independent learning, which would facilitate better discussion during class time rather than focusing on reiterating the basic technical aspects of the topic.

CONCLUSION

The qualitative results have provided us with greater insight into each of the attributes pertinent to the use of DAN from the students' perspectives. The findings of this study indicate that smart technology used by teachers will not complete the teaching- learning process unless students are made available fully ICT equipped device that will cater to their need of learning accounting at a broader level. It is high time we must mind the gap between the ways accounting is traditionally taught and the advanced requirement in the modern and dynamic business environment.

Scope of Future Studies

- This study provides a rich and potentially prolific area for further research and has practical implications for teachers, educational institutions, and DAN vendors concerned with the spread of e-learning in traditional educational institutions.
- Research can also be done to investigate other applications of technology in accounting or other educational settings, such as the perceptions of teachers regarding the use of a particular e-learning tool.
- investigation can be done regarding, does the use of digital tool encourage students to focus on achieving more in-depth understanding of the underlying concepts related to accounting during class time, instead of spending most of the time focusing on the basic technical aspects?
- Finally, studies incorporating a longitudinal design may provide deeper insight into the complex underlying interactions involved during the e-learning spread process.

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