KNOWLEDGE AND TECHNOLOGICAL DIMENSIONS OF ECONOMIC DEVELOPMENT

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Knowledge and Technological Dimensions of Economic Development

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edited by Dr. A Saravanan & Dr. B Chithirairajan

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Preface

Knowledge and Technology are the engines of economic growth for a nation. It is the technological progress that allows a country to produce more efficiently and produce better goods and services, as well as its delivery system, on which the prosperity of a country depends. Moreover, due to the technology and know-how, society has acquired a significant amount of knowledge to improve their living conditions, while the innovation that has resulted from the technology has further increased the flow of knowledge across institutions and businesses. However, technology is advanced, transferred, adopted, and used in production in ways that are very complex and have yet to pay off across countries.

The edited volume of the book is a collection of research papers from eminent scholars and academicians presented at the National seminar on "Knowledge and Technological Dimensions of Economic Development". This book explores the application of Digitalization and its benefits, opportunities, and challenges, Artificial Intelligence in agricultural and industrial sectors for sustainable production, Digital Payment systems and cashless transactions, the impact of the rupee on the Indian Economy, the problems and Prospects of Rural Women entrepreneurs, and the impact of Electronic Technology on entrepreneurs.

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Contents

	Preface	*v*
1.	An Analytical Study of Digitalization in India and Its Impact on Growth in Indian Economy *- Dr. C. Krishnaveni*	1
2.	Impact of Digitalization on Indian Economy *- Dr. G. Thenmozhi & Mrs. R. Nandhinieeswari*	7
3.	Digital Economy: Impact and Challenges in Indian Economy *- Mrs. G. Manimekala*	12
4.	Application of Digitalization for Rural Development in India *- Dr. S. Gokila & Dr. M. Boovathi*	19
5.	Artificial Intelligence in the Agriculture Sector *- Dr. V. P. Jayalakshmi & Dr. A. Palanisami*	22
6.	Digitalization and its Impact on Indian Economy *- Dr. R. Ganesan & Dr. R. Gangatharan*	25
7.	Unleashing the Knowledge Dimension of Economic Development *- Ms. M. S. Nanthigha and Ms. M. Indhuja*	31
8.	Perceived reasons for preferences and risks associated with digital payment modes during and post covid-19 *- Mrs. Nandini Jagannarayan & Dr. R. Uma*	39
9.	Artificial Intelligence and Sustainable Production *- Dr. S. Venkatesan, Dr. S. Munusamy & Dr. K. Marimuthu*	57
10.	Customer Willingness to use the Digital Payment System: A comparative study on Thiruvarur and Chennai Districts *- Maj Dr. R. Shanthini & Sathiya Sivakumar*	60

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11. A Study on the Impact of Cash-Less Transactions on Small-Scale Businesses 67

- Kevin Rozario & Meena E

12. An Epitome of E-Rupee on Indian Economy 72

- Dr. K. Anandan

13. Students and Teachers Perception towards Digitalization in Education Sector 76

- Mala Goplani, Jewel Sabhani & Bharti Khemani

14. Artificial Intelligence in Agricultural Sector: Opportunities and Challenges 84

- Dr. A. Aprose & Mr. S. Karthik

15. Impact of digital Marketing and Current scenario in India 88

- Dr. S. Sathyasundari

16. Problems and Prospects of Rural Women Entrepreneur in Salem District of Tamil Nadu 93

- Dr. D. Jayamma & Mr. K. Balakrishnan

17. Artificial Intelligence in Industrial Sector 98

- Dr. M. Sankar & Dr. R. Muthu Subramanian

18. Digitalization and Its Impact on the Economic Evolution of Retailing 103

- Dr. S. Birundha & Dr. S. Nandhini

19. Technology Transfer in Agriculture 111

- Dr. C. Malliga

20. Impact of Technology on Entrepreneurial Activity 118

- Dr. C. Gomathi

21. Green Technologies and Smart Mobilities 125

- Dr. K. Anitha

22. Artificial Intelligence in Future Agriculture 132

- Dr. V. Usharani & Dr. L. Mothi

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23. Pests and Diseases Detection of Cotton Farm Using Artificial Intelligence Technologies: A Review 136

- Mr. D. Prakash

24. A study on Recent Technological Advancements in Agriculture Contributing to Economic Development 140

- Dr. Maria Priya P & A. Monicka Shalu

25. An Economic Analysis of Telecommunication industry in Coimbatore: A Special Reference with to Vodafone 145

- Dr. A. N. Krithika & Dr. E. Shanmugha Priya

26. Evaluation of the Impact of Electronic Technology on Entrepreneurial Perspective in Urban Region of Chennai 151

- Nishali Balasingh

27. An Impact of Technology in Agriculture Sector 157

- Dr. R. Muthu Meenal

28. A Future of Computer Assisted Education 164

- Dr. P. Natesh & Dr. S. Saravanan

29. Customers' Opinion on the Risks in Using E-Banking Services in Erode District of Tamil Nadu 169

- Mr. S. Sathish & Dr. Chi. Nanjappa

30. Digitalization in Travel and Tourism Industry 174

- Dr. C. Aruljothi

31. A Study on Role of Health Care Management Streams 179

- Mr. S. Perumal & Dr. S. Dhanasekaran

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Chapter

13 Students and Teachers Perception towards Digitalization in Education Sector

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Introduction

India has come across major changes in innovation and technology in every sector in the last few months, especially during Covid-19 Pandemic. Technology has made everything much easier and faster, leaving no alternative but to change or discontinue. As it requires a person to update and equip oneself with the skills required for the usage of technology. Digital skills mean the need to implement technological innovations, as well as it helps people to prepare them to face various emerging social challenges like privacy issues, mental and physical health related issues, etc. Across the world, Covid-19 Pandemic had a great impact on the life of human beings in different ways, wherein the most affected area was the educational sector. To ensure the smooth conduct of teaching, learning, and assessment process, Digitalization is embedded in the educational sector, too, on a large scale which resulted in an increase in the usage of digital tools in the Indian educational system. While learning in the classroom cannot be replaced by digital or online education, it does have some advantages. Learners have an access to personalized learning via online study material at their own pace and one can continuously enhance the content through various digital means. Also, rapid increase of the usage of the internet and various initiatives by the Educational Institutions have encouraged the Educational sectors to adopt innovative strategies to step towards digital education.

Literature Review

Hassan (2020), has conducted a qualitative survey on 408 students to know their perspective on online teaching-learning during the lockdown imposed during pandemic, noted that online teaching is a potential tool to support students' learning. To ensure smooth education at all levels, educational institutions in India and around the world have switched to the online mode of teaching-learning process. Practical use of platforms like WebEx, Zoom, Google Meet, Say Namaste as well as Learning Management Systems (LMS) like Moodle, Blackboard, and more, were

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encouraged to support students' learning in every possible way during the lockdown. However, this sudden and unexpected change in the online mode of teaching in India, where a vast digital divide still exists and where a large number of learners still belong to disadvantaged groups, has caused a greater need for learning beyond the reach of internet access and ineffective technology. However, to make learning accessible to learners of all ages and stages in this pandemic situation was the biggest challenge. Instead of introducing unplanned and hasty online learning, understanding students' preferences and challenges during online learning will help align technology and pedagogy in line with students' interests and learning preferences, the author said.

Khan MA and et al. (2020), who conducted a research study on 184 students to know their attitude towards online learning during the COVID-19 pandemic in India. Their study revealed that e-learning helps them connect with their teachers, classmates, and college friends and provides a lot of freedom to interact. The students are made available with the study material in the comforts of their homes. Their study also indicates that students and teachers have gained insights to e-learning technology which helps them have an easy access to information, thereby building a positive attitude. The finding is based on usability, self-efficacy, ease to use and students' behavior in relation to e-learning. The study indicates the usefulness of e-learning such as the reach of education to any geographic location unlike traditional face-to-face teaching-learning process.

Ritimoni Bordoloi & et al. (2021), who used an academic analysis approach to research teachers and learners' perceptions regarding the use of online/blended learning methods in teaching-learning transactions. The study revealed that providing education in India, blended education can be one of the best outcomes. The study also indicated that the widespread use of open educational resources, massive open online courses, social media and meeting apps during the COVID-19 pandemic have opened the minds of people who are active in grasping the knowledge, enabling them to get the necessary educational inputs. Training and skilling even during the current pandemic situation will have a major impact on the educational transactions or techniques in the coming days.

Muthuprasad T. & et al. (2021), who analyzed students' perception and preference for online education in India during COVID -19 pandemic. The results of the study indicated that majority students possessed a positive attitude towards the online courses made available to them. Online learning is flexible and convenient to students and teachers as well as it saves a lot of time and resources. Students are also made available with well-structured content with recorded videos uploaded to college websites, social media, etc. It also indicates that to optimize the learning experience, there is the need for interactive sessions with quizzes and homework at the end of each lesson. However, most students also reported that online classes can

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be more difficult than traditional ones due to technology constraints, the inability of instructors to effectively deal with communication technologies.

Objectives

The Primary Objective is to evaluate the perception of teachers and students towards digitalization in education in terms of quality. The Secondary Objectives is to ascertain the major challenges faced by instructor/learners in digital mode of education, to analyze an appropriate digital mode for teaching- learning process as well as assessment, and to determine the preferred mode of education by learners and instructors.

Methodology

To get the data from Teachers & Students, the Survey method was used. The data has been collected from 382 respondents by using a Convenience Random Sampling method to fetch the results from the teachers and students in Mumbai with the help of a structured questionnaire. The data has been also collected from research articles, journals, writ-up theses and web sources. The present study is analytical and descriptive. The study highlights the Perception towards Digitalization in the Education Sector. It also indicates the challenges faced by the students and teachers in digital mode of education.

Sampling Plan:

Sample Unit: Teachers and Students from Mumbai
Sample Size: 382
Sample Selection: Convenience Random Sampling Method
Sampling Techniques: Non probability
Sampling Instruments: Structured Questionnaire
Tool for Analysis: chi-square test

Limitations

1) Maximum data has been collected from the teachers and students belonging to Mumbai region situated in Maharashtra, India.
2) The age group of below 15 years of students is not considered for this study.
3) The data is fetched from a small sample population, so the results may not be applied to the whole population.

Hypothesis

Following Null Hypothesis are tested in the study:

1) There is no significant relationship between gender and preferred mode of education.

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2) There is no significant relationship between respondents' profile and challenges faced in digital education.
3) There is no significant relationship between respondents' profile and preferred mode of examination during online education.

Results and Discussions

1. Does 'Digitalization' exist in the Educational Sector? Gender Wise analysis:

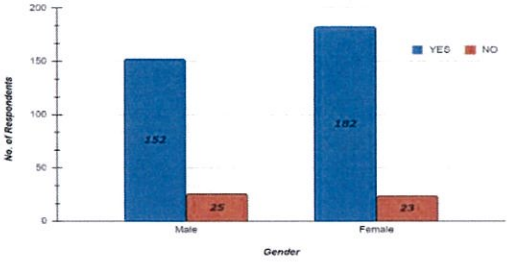

Figure 1: Perception of students on existence of digitization in education sector

Out of 382 respondents, 177 belong to Male category whereas 205 belong to Female category. 152 (85.80%) of male respondents and 182 (88.78%) female respondents have witnessed digitalization in the educational sector whereas 25 (14.20%) male respondents and 23(11.2%) among females have not witnessed digitalization in the educational sector yet.

2. Most appropriate digital mode in the teaching-learning process:

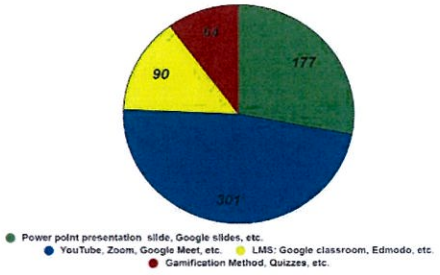

Figure 2; appropriate mode in teaching learning process

It has been observed that out of 382 respondents, 301 agreed to have YouTube, Zoom, Google Meet, etc. to be the most appropriate digital modes followed by 177 respondents preferring PPT, Google slides, etc. as a suitable digital mode. 90 of them chose Google Classroom, Edmodo, etc. and only 64 respondents being very less in number prefered Gamification Method, Quizzes, etc. as digital modes in the teaching-learning process.

3. Respondents' profile wise perception towards digitalization in education:

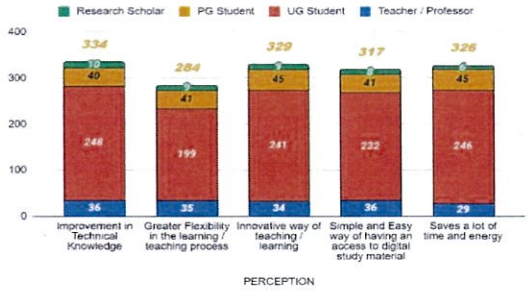

Figure 3: Profile wise perception towards digitization in education

From the Figure-3, it can be predicted that due to digitalization in the educational sector the maximum respondents i.e 334 (the highest 248 being the UG students) have improved their technical knowledge followed by

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329 respondents (the highest 241 being the UG students) who found digital mode as an innovative way of teaching/Learning. 284 respondents (Teachers- 35; UG- 199; PG- 41 & Research Scholar- 9) believed to have digitalization that provides great flexibility in the learning/teaching process, 317 of them agreed that it is simple and easy way of having an access to digital study material and 326 reported that it saves a lot of time and energy. (Where, Total UG students 286, PG students 49, Research Scholars 10, Teachers 37)

4. Challenges faced by the respondents:

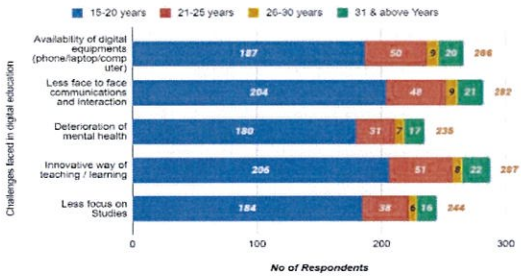

Figure 4: Challenges faced by students and teachers

It is clear from the Figure-4 maximum people i.e., 287 Respondents (15-20 years- 206; 21-25 years- 51; 26-30 years- 8 & 31 & above- 22 Respondents) faced the challenge of bringing innovations / new techniques in teaching / learning process of digital education followed by 282 respondents (15-20 years- 204; 21-25 years- 48; 26-30 years- 9 & 31 & above years- 21 Respondents) felt that face to face communications and interaction is pretty difficult. A few of them i.e., 235 (15-20 years- 180; 21-25 years- 31; 26-30 years- 7 & 31 & above 17 Respondents) reported that their mental health is deteriorating. 266 respondents (187 belonged to 15-20 years of age, 50 belonged to 21-25 years, 9 fell in the category of 26-30 years and 20 in 31 & above category) faced the problem of unavailability of required digital equipment like laptop, computer, etc. and 244 of them mentioned that it reduces their focus on studies.

5. Gender wise preference to digital mode of education:

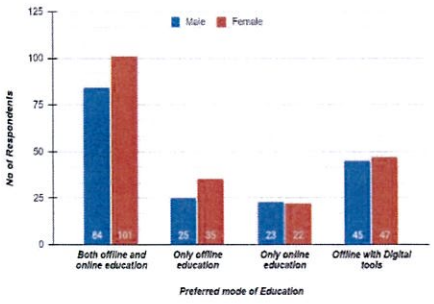

Figure 5: Gender wise preference to digital to mode of education

From the Figure-5 it is clear that the maximum sample i.e. 84 males and 101 females prefer Both Offline and Online mode of Education which is referred to as 'Blended Teaching-Learning' followed by 45 males and 47 females prefer to have Offline education with digital tools like PPTs, Overhead Projectors, etc. Still 25 males and 35 females prefer to have only Offline mode of education in this digital era whereas 23 males and 22 females prefer only online mode of education.

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6. Respondents Profile wise preference to the mode of Examination:

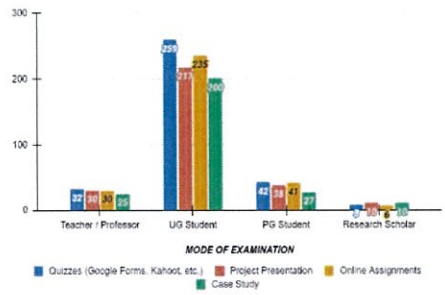

Figure 6: Respondents profile with reference to the mode of examination

It is clear from the Figure-6 that the UG students - being highest in number among the student category, 259 of them preferred to have Quizzes, 235 of them chose Online Assignments, 217 chose Project Presentations and 200 chose Case studies as a preferred mode of examination. Whereas among the teachers/ professors 32 of them preferred Quizzes, 30 chose Project Presentations and Online Assignments and 25 of them chose Case study as a preferred mode of examination.

Hypothesis Testing:

1) There is no significant relationship between gender and prefer mode of education:

	Both offline and online	Only offline	Only online	Offline with digital tools	Row Total
Male	84 (85.72)	25 (27.80)	23 (20.85)	45 (42.63)	177
Female	101 (99.28)	35 (32.20)	22 (24.15)	47 (49.37)	205
Column Total	185	60	45	92	382

Table 1: relationship between gender and prefer mode of education

The chi-square statistic is 1.2489. The p-value is .741306. The result is not significant at $p < .05$.

Result: Accepted the null hypothesis

2) There is no significant relationship between respondents' profile and challenges faced in digital education:

	Availability of Digital Equipment	Less face to face communication and interaction	Deterioration of Mental Health	Innovative way of teaching /learning	Less focus on studies	Row Total
Research Scholars	7 (6.88)	7 (7.29)	7 (6.10)	7 (7.42)	6 (6.31)	34
Postgraduates	37 (35.40)	38 (37.53)	26 (31.41)	40 (38.19)	34 (32.47)	175
Undergraduates	27 (26.30)	29 (27.88)	22 (23.33)	31 (28.37)	21 (24.12)	130
Teachers	195 (197.43)	208 (209.30)	181 (175.16)	209 (213.01)	183 (181.10)	976
Column Total	266	282	236	287	244	1315

Table 2: relationship between respondents profile and challenges faced in digital education

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The chi-square statistic is 2.4667. The p-value is .99828. The result is not significant at $p < .05$.
Result: Accepted the null hypothesis

3) There is no significant relationship between respondents' profile and preferred mode of examination during online education:

	Quizzes	Project Presentation	Online Assignment	Case Study	Row Total
Research Scholars	8 (9.58)	10 (8.29)	6 (8.77)	10 (7.36)	34
Postgraduates	42 (41.71)	38 (36.08)	41 (38.16)	27 (32.05)	148
Undergraduates	259 (259.74)	217 (222.10)	235 (234.90)	200 (197.26)	911
Teachers	32 (32.97)	32 (28.52)	30 (30.17)	25 (25.33)	117
Column Total	341	295	312	262	1210

Table 3: relationship between respondents profile and preferred mode of education
The chi-square statistic is 3.8281. The p-value is .92236. The result is not significant at $p < .05$.
Result: Accepted the null hypothesis

Suggestions

1) More digital modes should be included and it should not be restricted to online mode only.
2) Proper Training for using different online teaching-learning apps should be provided to the students and the teachers for smooth functioning of the Class.
3) Evaluation mode should be done in such a way that students should not be able to do any unethical practices and the one which helps to examine their actual knowledge.
4) The Education Institution should come up with new methods of teaching for enhancing digitalization in education.
5) Having been well equipped with the technology due to this pandemic, it's a good time for the universities and colleges to take corrective actions that will help continuing the online techniques of teaching-learning process even inside the classrooms (offline lectures) .

Conclusion

Online education became the primary mode of education during COVID-19. Teachers and students (hereinafter referred to as stakeholders) embraced online learning to complement the teaching-learning process. The findings of the study showed that the percentage of digitization in education is high. It is observed that there is a positive perception of the stakeholders towards the adoption of digitization such as they found it improved technical knowledge, flexibility in teaching learning

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process, teaching learning in an innovative way, easiest way of access to the digital equipment, and also time & energy saving. Despite the positive sentiment, some challenges were also faced by the stakeholders. The study also indicated that most stakeholders prefer quizzes, project presentations, online assignments and case studies as the preferred mode of assessment. However, it can be concluded from the study that stakeholders prefer both online as well as offline mode of teaching-learning activities, which shows that still full-fledged online teaching-learning is not in demand.

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