

## THE EFFECTS OF ICT ON STUDENTS' LEARNING AND ACADEMIC ACHIEVEMENT: A STUDY OF ACCESS TO INFORMATION

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### ABSTRACT

The study focused on the effects of information and communication technology (ICT) on students at the Devi Ahilya Vishwavidyalaya(DAVV) in Indore, Madhya Pradesh, India, and their access to information. 50 respondents (students) were chosen as a sample from various departments of DAVV University. However, related literatures from textbooks, journals, and earlier studies were reviewed. The study tools were questionnaires that were statistically analysed with contingency tables, and the mean statistic was used to assess the hypotheses. According to the study's findings, students had a variety of opinions about how ICTs affected their access to knowledge and their learning ability.

**Key Words:** information and communication technology, learning, performance.

### 1. INTRODUCTION

Information and communication technology (ICT). Information and communication technologies enable communications-based information access. "However, it emphasises communication technology largely. Internet, wireless networks, mobile devices, and other forms of communication are included. Information and communication technology have given society a wide range of new communication possibilities during the last few decades. "Users of social networking websites like Facebook, LinkedIn, Twitter, and others can keep in touch and communicate frequently with users from all over the world using technologies such as instant messaging, voice over IP, and video conferencing." individuals may now speak with individuals around the world as if they were neighbours because to modern information and communication technologies. ICT is frequently researched in the context of how contemporary communication technologies have impacted society because of this (tech factor, January 4, 2010). Information and communications technology is a broad term that refers to any form of communication, including radio, television, cell phones, computer and network hardware, satellite systems, etc. It also includes the various services and applications that are associated with these technologies, such as video conferencing and distance learning. ICTs are frequently discussed with respect to a specific context, such as ICTs in libraries, healthcare, or education (Abe & Adu, 2007). The need to provide educational possibilities for those who are most at risk as a result of globalisation in developing countries, including low-income groups, girls and women, and unskilled workers in particular, coexists with worries about educational quality and importance. All groups are under pressure to continually learn and use new abilities as a result of global developments. According to the International Labour Organisation, everyone

must have access to "basic education for all," "core work skills for all," and "lifelong learning for all" in order to be prepared for the demands of the new global economy.

### **1.1 Detailed Description of The Issues**

With the development of ICTs, students now have another source of knowledge in addition to the university libraries, which is important for their academic achievement. This study investigates how ICTs affect students' access to information. Students are dealing with issues including English language barriers, hearing issues, and information access issues.

### **1.2 Objectives of the Study**

1. To investigate the information-access methods used by students.
2. Emphasises the appropriateness of ICTs as a method of information gathering.
3. What proportion of schedule uses ICTs to gather information?
4. Investigation of what challenges students have in finding information.

### **1.3 Importance of the Research**

1. The importance of the current work may be attributed to the fact that information and communication technologies have an impact on both the social and economic spheres.
2. The core reason of students' academic failure in access to information will be revealed by the current effort. In this research, researcher look for unidentified obstacles that are acting as the hero in students' inability to acquire knowledge.
3. The current effort will examine and provide the aspect of bettering students' access to academic-level information.
4. The results of research will be used to address the academic issues that students are now experiencing.

### **1.4 Hypothesis**

Information and communication technology significantly affects how easily students may obtain information. The students level of information may increase or decrease depending on the ICT. Determining and assessing the precise role of ICT involves certain technological challenges. What level of student access to information is there at Devi Ahilya University, according to this study? How do they feel about the information-gathering function played by ICT?

## **2. Literature Review**

The introduction, organising aspects, and learning continuum of the ICT competence have been established on the basis of the empirical foundation that is summarised in this context. It is based on current research from throughout the globe and in the developed countries, as well as initiatives and programmes that emphasise ICT in all subject areas. A collection of pertinent knowledge, skills, behaviours, and attitudes form the foundation of ICT competency.

Papert (1980) and Turkle (1984), two pioneers in the field of ICT in education, believed that students created their own world based on their experiences and past knowledge. The student interacts with the environment and, creates a conceptual framework to describe the interaction in order to survive in it. Even as technologies advance and give rise to the collection of

structures that serve as the foundation for ICT competence, more modern theorists, like Dede (2009), continue to support these earlier ideas. Particular attention is paid to the personal, social, and cultural dimensions given by theorists like Papert and Turkle in the overarching theme Applying social and ethical rules and practises when utilising ICT.

## **2.1 ICTs in Education: Types and Uses**

Information and communication technologies, or ICTs, are defined, for the purposes of this primer, as a broad range of technical tools and resources used to communicate as well as to produce, transmit, store, and manage information. Computers, Internet, radio and television transmission, and telephone are some examples of this technology.

### **2.1.1 E-Learning**

E-learning includes learning at all levels, formal and informal, that uses an information network—the Internet, an intranet (LAN), or extranet (WAN)—whether completely or in some way, for course delivery, interaction, evaluation, and/or facilitation. It is most frequently associated with higher education and corporate training. "Some people like the phrase online learning. The term "web-based learning" refers to learning that takes place primarily via the use of a browser (such as Chrome, Firefox, or Internet Explorer) on the internet. It may also be thought of as education facilitated by technology.

### **2.1.2 Mixed Education**

Blended learning is a different phrase that is gaining use. This is a reference to learning models that integrate conventional classroom instruction with technological advances. For instance, in a typical class, students may get both print-based and online assignments, participate in online mentorship sessions with their teachers through chat, and join a class email list. Or a periodic face-to-face lesson can improve a Web-based training course. The idea of blending emerged from the realisation that not all learning is best accomplished in a setting mediated by technology, particularly one that does not include a live teacher at all. In order to choose the best combination of instructional and delivery techniques, consideration must be given to the subject matter, the learning objectives and outcomes, the characteristics of the learners, and the context for learning (Asiabeka, 2010).

### **2.1.3 Open And Distance Learning**

The Commonwealth of Learning defines open and distance learning as a method used to provide learning opportunities that is characterised by the separation of teacher and student in time or place, or both, learning that is accredited in some way by an organisation or agency, the use of a variety of media, including print and electronic, two-way communications that allow students and tutors to interact, the possibility of sporadic face-to-face meetings, and as well as a specialised division of labour for the creation and delivery of courses.

## **2.2 Benefits of ICT**

Recently, interest in information and communication technologies has exploded. For several academics all across the world, it is an important subject of research. "Over the past few decades, their nature has significantly altered the face of education. The use of ICT in education and training has elevated to a priority in the majority of European nations during the past ten years. "On the other hand, relatively few have made progress. In fact, a tiny proportion of

schools in some nations have achieved highly successful ICT use to assist and transform the teaching and learning process across a wide range of subject areas. Others are still adopting information and communication technologies at a very early stage. Many teachers support traditional teaching strategies with ICT, such as information retrieval, where students are "passive consumers of knowledge rather than active producers who can participate in the learning process." Galea (2002) outlines how ICT might advance teaching and learning in a document titled "teaching and learning with ICT." She claims that there are two primary factors driving greater ICT usage in UK schools. First, ICT might alter the pace of the teachings. According to her, students in contemporary society need to grow in both potential and skill in order to fully benefit from the new chances that ICT offers. "Second, academic scholars in the UK are becoming increasingly interested in how technology tools may improve the quality. First, ICT might alter the pace of the teachings. According to her, children in contemporary society need to grow in both potential and skill in order to fully benefit from the new chances that ICT offers. "Second, academic researchers in the UK are becoming increasingly interested in how technological tools can improve the standard of teaching and learning in schools, thereby assisting students in achieving better results." Additionally, new technologies have been shown to benefit students greatly (Lawsent & Vincent, 1995).

### **2.3 Effects of ICTs on Academic Performance and Learning**

1. There is a pervasive belief that ICTs can and will empower both educators and learners by changing the focus of teaching and learning from being heavily teacher-dominated to student-centred, and that this change will increase learning gains for students by creating and enabling opportunities for them to develop their creativity, problem-solving skills, informational reasoning abilities, communication skills, and other higher-order thinking abilities. However, there is currently a dearth of indubitably compelling data to back up this assertion.
2. The role of ICTs in the whole learning process is little ever highlighted. Even in the most modern schools in OECD (Organization for Economic Cooperation and Development) nations, ICTs aren't typically viewed as being essential to the process of teaching and learning. Many ICT in education initiatives in LDCs (Least developed countries) aim to make ICTs the centre of teaching and learning, at least in their rhetoric.
3. Putting technology above education is a persistent issue. The fact that educational planners and technology supporters consider the technology first and then subsequently look into the educational uses of this technology is one of the on-going challenges of technology usage in education.

#### **2.3.1 Effect of ICT on Students' Achievement**

1. The benefits of ICT use in education have not been demonstrated. "Generally speaking, and despite thousands of research investigations, the effect of ICT use on students' achievement remains challenging to measure and open to much debatable discussion."
2. A positive influence that is connected to pedagogy is more probable. It is claimed that some applications of ICT can boost students' academic performance when they are applied properly to supplement a teacher's pre-existing pedagogical philosophy.
3. "Computer Assisted Instruction" has been presented to marginally "develop student performance on multiple choice, standardised assessments in some areas Computer Assisted Instruction (CAI)", which generally refers to student self-study or tutorials on PCs, has been

shown to marginally improve student test scores on some reading and math skills, though whether such improvement correlates to real improvement in student learning is disputed.

4. The requirement for clearly defined objectives When the purposes for using ICTs are unclear, they are perceived as being less (or ineffectual) effective. The exact objectives for ICT usage in education are sometimes only very generally or fairly loosely stated in practise, despite the fact that such a statement would seem self-evident.

5. New v/s traditional' pedagogies and standardised testing are in significant conflict. Traditional, transmission-style pedagogies are seen to be more successful than more "constructivist" pedagogical approaches in preparing students for standardised testing, which frequently measures the outcomes of such teaching practises.

#### **2.4 How ICTs Affect Students' Academic Performance**

The current study's goal is to investigate the connection between higher education student performance and the usage of information and communication technology (ICT). The impact of ICT investments on students' accomplishment hasn't been the subject of strong consensus in economic studies up to this point. The primary conclusions of the literature will be outlined in our study, along with two supplementary interpretations. The indirect impacts of ICT on traditional explanatory factors are the main focus of the explanation. ICT may have an influence on these factors and, as a result, the outcome of education since a student's performance is mostly determined by their traits, the educational environment, and their instructors' characteristics. As a result, the variations in student performance are more closely linked to the varied effects of ICT on traditional explanatory factors. "While the European Union's ICT equipment and use rates are expanding quickly, the adoption of complementary organisational designs is very slow and varies from institution to institution." This might account for the observed variations in pupils' academic performance.

#### **2.5 Technological Development**

Most information was spread via word of mouth, letters, broadcasters, or newspaper and book publishers during the 20th century. "Today, the line separating information creators and information receivers has become hazier due to technical advancement and the expansion of the internet. Today's information flows are extensive, varied, reversible, and available. There have been significant changes in the media as a result of nearly anybody being able to create a website and start publishing or broadcasting information. Businesses and people may publish anything utilising high-speed, wide-bandwidth digital technologies, including text, photos, and videos. Then, they may instantly transmit them to PCs or mobile devices throughout the world in 2014.

### **3. RESEARCH METHODOLOGY**

#### **3.1 Survey Approach**

Surveys are a useful tool for managers to get primary data utilising questionnaires and interviews regarding the perspectives and attitudes of the respondents, according to an examination of social research methodology. Because surveys are supposedly effective tools for gauging sentiments across sizable populations, it has been highlighted that the questionnaire technique is the "most frequently used mode of observation in the social sciences" (Sekaran, 2003:257).

#### **3.2 Sample and Population**

The totality of the objects in which the researcher is concerned and intends to make generalisations is known as the universe or population (Boyd et al., 1977:302-303). All of the students' at the Devi Ahilya Vishwavidyalaya of various departments made up the population of interest for this research study, and 50 of these students were randomly chosen as a sample.

### 3.3 Data Gathering Techniques

- **Secondary Sources:** Utilising library books, pamphlets, periodicals, and documentary sources is a necessary component of every research. A detailed evaluation of the published and unpublished work from secondary sources of data in the areas of the researcher's particular interest is documented as a literature review (Goode & Hatt, 1952:103).

- **Primary Sources:** After a thorough literature review, variables and the traits that go with them were first taken out and put into a structured questionnaire. Research and demographic information were provided in the questionnaire. While the research variables were violence and voting behaviour, there were just two demographic factors.

### 3.4 Data Analysis Tools

The descriptive tools were used in a similar way by displaying the frequencies, means, and other information on the study variables.

## 4. Results and Discussions

Table 4.1: Frequency Distribution by Gender

Valid	Gender	Frequency	Percentage	Valid Percentage	Cumulative Percentage
	Female	15	30%	30%	30%
	Male	35	70%	70%	100%
	Total	50	100%	100%	

Table 4.1 shows the frequencies regarding the respondents on gender basis. It indicates that there are 50 responders in total, from which 15 (or 30%) are female and 35 (or 70%) are male.

Table 4.2: Frequency Distribution by Income

Valid	Income	Frequency	Percentage	Valid Percentage	Cumulative Percentage
	Less than 15000	7	14%	14%	14%
	Less than 25000	17	34%	34%	48%
	More than 25000	26	52%	52%	100%
	Total	50	100%	100%	

Table 4.2 shows the frequencies regarding the respondents on income basis. It indicates that 7 (or 14%) of the respondents had incomes below 15000. Similarly, 17 (34%) respondents' income is less than 25,000, and 26 (52%) respondents reported incomes of above 25,000.

Table 4.3 Frequencies distribution by Education

Valid	Faculty	Frequency	Percentage	Valid Percentage	Cumulative Percentage
	Management	1	2%	2%	2%
	Computer Application	49	98%	98%	100%
	Total	50	100%	100%	

Table 4.3 displays the respondents' frequency distributions based on their level of education. A single responder is a member of management, according to the data. 49 respondents (98%) who answered the same question fall within the category of computer applications. The researcher obtained the data from the department of computer science since the current work is a case study of that department.

Table 4.4 Frequency Distribution by Region of Residence

Valid	Region	Frequency	Percentage	Valid Percentage	Cumulative Percentage
	Urban	22	44%	44%	44%
	Rural	28	56%	56%	100%
	Total	50	100%	100%	

Table 4.4 shows the frequencies regarding the respondents on the region of residence basis. It indicates that 22 respondents (44%) are from urban regions whereas the remaining 28 respondents (56%) are from rural areas.

Table 4.5 Frequency Distribution by Language

Valid	Language	Frequency	Percentage	Valid Percentage	Cumulative Percentage
	Hindi	38	76%	76%	76%
	English	9	18%	18%	94%
	Other	3	6%	6%	100%
	Total	50	100%	100%	

Table 4.5 displays the respondents' tongue-based frequency distributions. It indicates that 3 (6%) of the respondents speak different language means neither Hindi nor English, 38 (76%) speak Hindi and 9 (18%) speak English.

Table 4.6 Frequency Distribution by Computer Availability

Valid	Computer Availability	Frequency	Percentage	Valid Percentage	Cumulative Percentage
	Yes	39	78%	78%	78%
	No	11	22%	22%	100%
	Total	50	100%	100%	

Table 4.6 displays the respondents' frequencies regarding the question that: do you have a computer at your home? From the respondents 39(78%) have replied yes while 11 (22%) of the respondents have no computers at their homes.

Table 4.7 Frequency Distribution by availability of Internet while they have Computer

Valid	Internet Availability	Frequency	Percentage	Valid Percentage	Cumulative Percentage
	Yes	28	56%	56%	56%
	No	22	44%	44%	100%
	Total	50	100%	100%	

Table 4.7 displays the respondents' frequencies regarding the question that: if you have computer then is there any facility of internet available? From the respondents 28(56%) have replied yes while 22 (44%) of the respondents have no internet facility.

Table 4.8 Frequency Distribution by availability of Internet while they don't have Computer

Valid	Internet Availability	Frequency	Percentage	Valid Percentage	Cumulative Percentage
	Yes	21	42%	42%	42%
	No	29	58%	58%	100%
Total		50	100%	100%	

Table 4.8 displays the respondents' frequencies regarding the question that: the availability of internet is difficult for you? From the respondents 21(42%) have replied yes while 29 (58%) of the respondents have no internet at their homes.

Table 4.9 Frequency Distribution by Cell Phone Net

Valid	Internet Availability on Cell Phone	Frequency	Percentage	Valid Percentage	Cumulative Percentage
	Yes	46	92%	92%	92%
	No	4	8%	8%	100%
Total		50	100%	100%	

Table 4.9 displays the respondents' frequencies regarding the question that: you also used cell phone for internet in routine? From the respondents 46(92%) have replied yes while 4 (8%) of the respondents have no internet at their cell phones.

Table 4.10 Frequency Distribution by ICT in Devi Ahilya University

Valid	Availability of ICT	Frequency	Percentage	Valid Percentage	Cumulative Percentage
	Yes	19	38%	38%	38%
	No	31	62%	62%	100%
Total		50	100%	100%	

Table 4.10 displays the respondents' frequencies regarding the question that: in Devi Ahilya University ICT's easily available or not? From the respondents 19(38%) have replied yes while 31 (62%) of the respondents have no because they have no access to ICT.

Table 4.11 Frequency Distribution by the funding for ICT

Valid	Funding Availability for ICT	Frequency	Percentage	Valid Percentage	Cumulative Percentage
	Yes	11	22%	22%	22%
	No	39	78%	78%	100%
Total		50	100%	100%	

Table 4.11 displays the respondents' frequencies regarding the question that: in Devi Ahilya University any type of funding available for ICT's? From the respondents 11(22%) have



replied yes while 39 (78%) of the respondents have no because they have feel that there is no funding for ICT.

Table 4.12 Frequency Distribution by Use of Books for Information

Valid	Books Availability for Information	Frequency	Percentage	Valid Percentage	Cumulative Percentage
	Yes	42	84%	84%	84%
	No	8	16%	16%	100%
Total		50	100	100%	

Table 4.12 displays the respondents' frequencies regarding the question that: you use books for getting information? From the respondents 42(84%) have replied yes while 8 (16%) of the respondents have no because they have never used the books for getting information.

Table 4.13 Frequency Distribution by Use of Internet for Educational Purpose

Valid	Use of Internet for Educational Purpose	Frequency	Percentage	Valid Percentage	Cumulative Percentage
	Yes	45	90%	90%	90%
	No	5	10%	10%	100%
Total		50	100%	100%	

Table 4.13 displays the respondents' frequencies regarding the question that: how much time you have used internet for your educational purposes? From the respondents 45(90%) have replied yes while 5 (10%) of the respondents have no because they have never used the books for getting information.

Table 4.14 Frequency Distribution by Social Movies

Valid	Duration to Watch Social Movies	Frequency	Percentage	Valid Percentage	Cumulative Percentage
	1-3hrs	43	86%	86%	86%
	1-5hrs	7	14%	14%	100%
Total		50	100%	100%	

Table 4.14 displays the respondents' frequencies regarding the question that: how much time you have spent to watch social movies on your device? From the respondents 43(86%) have replied not more than 3hrs. while 7(14%) of the respondents 4-5 hrs.

Table 4.15 Frequency Distribution by the belonging of Class in Society

Valid	Class in Society	Frequency	Percentage	Valid Percentage	Cumulative Percentage
	Upper	3	6%	6%	6%
	Middle	45	90%	90%	96%
	Poor	2	4%	4%	100%
Total		50	100%	100%	

Table 4.15 displays the respondents' frequencies of regarding the question that: you belong from which type of class in the society? From the respondents 3(6%) have replied to upper class, 45(90%) of the respondents belong to middle class while the rest of 2(4%) of the respondents belong to poor class.

Table 4.16 Frequency Distribution by English language is a barrier to use of Cell Phone Net

	English language is a Barrier	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Agree	23	46%	46%	46%
	Disagree	5	10%	10%	56%
	Neutral	8	16%	16%	72%
	Strongly Agree	12	24%	24%	96%
	Strongly Disagree	2	4%	4%	100%
Total		50	100%	100%	

Table 4.16 displays the respondents' frequencies regarding the question that: English language is a barrier when student use technologies? From the respondents 23(46%) have agreed, 5(10%) of the respondents disagreed, 8 (16%) of the respondents were neutral, 12(24%) of the respondents strongly agreed and 2(4%) of the respondents were strongly disagreed.

Table 4.17 Frequency Distribution by different Level of Education

	Opinion	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Agree	26	52%	52%	52%
	Disagree	10	20%	20%	72%
	Neutral	2	4%	4%	76%
	Strongly Agree	10	20%	20%	96%
	Strongly Disagree	2	4%	4%	100%
Total		50	100%	100%	

Table 4.17 displays the respondents' frequencies regarding the question that: un-equal educational system is also cause of hindrance for students in gaining information? From the respondents 26(52%) have agreed, 10(20%) of the respondents disagreed, 2 (4%) of the respondents were neutral, 10(20%) of the respondents strongly agreed and 2(4%) of the respondents were strongly disagreed.

Table 4.18 Frequency Distribution by Students of Urban Areas Watching TV

	Opinion	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Agree	6	12%	12%	12%
	Disagree	22	44%	44%	56%
	Neutral	10	20%	20%	76%
	Strongly Agree	7	14%	14%	90%
	Strongly Disagree	5	10%	10%	100%
Total		50	100%	100%	

Table 4.18 displays the respondents' frequencies regarding the question that: does daily watching TV enough for student belongs to urban area in getting information? From the respondents 6(12%) have agreed, 22(44%) of the respondents disagreed, 10 (20%) of the respondents were neutral, 7(14%) of the respondents strongly agreed and 5(10%) of the respondents were strongly disagreed.

Table 4.19 Frequency Distribution by Students of Rural Areas Watching TV

	Opinion	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Agree	11	22%	22%	22%
	Disagree	5	10%	10%	32%
	Neutral	5	10%	10%	42%
	Strongly Agree	23	46%	46%	88%
	Strongly Disagree	6	12%	12%	100%
Total		50	100%	100%	

Table 4.19 displays the respondents' frequencies regarding the question that: does daily watching TV enough for student belongs to rural area in getting information? From the respondents 11(22%) have agreed, 5(10%) of the respondents disagreed, 5 (10%) of the respondents were neutral, 23(46%) of the respondents strongly agreed and 6(12%) of the respondents were strongly disagreed.

Table 4.20 Frequency Distribution by difference in information race among students who belong to different region

	Opinion	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	Agree	5	10%	10%	10%
	Disagree	11	22%	22%	32%
	Neutral	12	24%	24%	56%
	Strongly Agree	3	6%	6%	62%
	Strongly Disagree	19	38%	38%	100%
Total		50	100%	100%	

Table 4.20 shows the frequencies of the respondents regarding the question that: rural students are backward in information race than the urban students? From the respondents 5(10%) have agreed, 11(22%) of the respondents disagreed, 12 (24%) of the respondents were neutral, 3(6%) of the respondents strongly agreed and 19(38%) of the respondents were strongly disagreed.

## 5. CONCLUSION AND RECOMMENDATIONS

Many students believe that using ICT tools are extremely helpful to complete assignments or any educational works . In fact, a resounding majority of Devi Ahilya University students claim to use ICT for duties like organising class activities and preparing assignments. Students are organised their lessons more effectively as a result. Students can collaborate in groups and exchange curriculum-related ideas with the use of ICT. Teachers observe how ICT benefits students with disabilities or special needs. Since students collaborate in teams to complete a task, it also aids in lowering social divides among students. When students utilise ICT to

arrange their work through digital portfolios or projects, they also take on additional obligations. The study also demonstrated that ICT significantly affects pupils and learning processes. ICT tools encourage students as a result of university administration and training seminars set up in this regard. There is also proof that interactive whiteboards and broadband play a key role in promoting student communication and boosting educator's cooperation. After analysing results of the study, it was determined that information and communications technology significantly affects students' access to information. Students were shown to be particularly affected by ICT's ability to solve specific curriculum issues and its enhancement of both qualitative and quantitative data.

### 5.1 Recommendations

Based on the study's findings, the following recommendations were made:

1. Management of the institution has to act quickly to provide additional ICT resources and technology to address particular curriculum issues.
2. The institution's administration needs to understand how ICT may improve qualitative and quantitative decision-making for effective academic performance.
3. The top management should make the ICT facilities' compliance more important to promote students' competence and skill development.
4. To successfully supervise the learning processes of students, administrators need to show more interest in using ICT technologies.
5. The administrators should have more faith in the ability of ICT tools to manage and analyse data at the fastest feasible flow.

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