

Project Dissertation Report On

Student's Perceptions and Attitudes Towards Adoption of Digital Signatures

Submitted By

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Under the Guidance of

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DECLARATION

I, Saumya Supratik, a student of Delhi School of Management, Delhi Technological University, hereby declare that the Major Research Project on '**Student's perceptions and attitudes towards adoption of Digital Signatures**' submitted in partial requirements for the award of the degree of Master of Business Administration (MBA) under the guidance of Dr Rajan Yadav is the original work conducted by me. I also confirm that neither I nor any other person has submitted this project report to any other institution or university for any other degree or diploma. I further declare that the information collected from various sources has been duly acknowledged in this project.

Saumya Supratik

2K22/DMBA/109

CERTIFICATE

This is to certify that **SAUMYA SUPRATIK**, roll no. **2K22/DMBA/109**, a student of Delhi School of Management, Delhi Technological University, New Delhi has submitted the project report titled “**Student’s perceptions and attitudes towards adoption of Digital Signatures**” in partial fulfillment of the requirements for the award of the degree of Master of Business Administration (MBA) program during the academic year 2023-24.

Dr. Rajan Yadav

Professor

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I would like to express our gratitude to all those who gave me the strength and possibility to complete this innovative work. I would particularly like to thank my faculty mentor, Dr. Rajan Yadav, Delhi School of Management, Delhi Technological University, for the project and for giving me the freedom to work unbounded and innovatively.

Ultimately, I extend my gratitude to the almighty for giving me this opportunity. The moral support of my friends and family has been great for making this report in its present form.

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EXECUTIVE SUMMARY

This studies executive summary will provide important findings and consequences behind students' perceptions and attitudes towards using digital signatures within institutions for higher learning. In order to identify the best ways that educational institutions can utilize digital signatures effectively findings of this research focused on various factors influencing the behaviour of students as well as their perceptions within Delhi NCR region.

In this analysis, some new findings were discovered. Indeed, there were no noteworthy gender distinctions among the college inhabitants who had used electronic signature platforms earlier on showing that it is essential men and women promote neutral ways of promoting the use of this technology Nevertheless in terms of students desire to use electronic signatures there were also none due to different courses that one pursues showing us the need for segmenting learning activities based on academic streams.

Despite the dearth of significant relationships between this study's dependent variables (document submission frequency, perceived complexity, confidence in learning how to use digital signatures, perception of accessible platforms) , educational level significantly associated perceptions of information security related to e-signature; underscoring the importance of specialized educational interventions targeting security issues and consciousness creation among students, this study places emphasis on the importance of improving accessibility features and providing comprehensive training programmes.

Finally, this research offers ideas to academic institutions on how best to come up with effective means of combining digital-signatures into their university systems well. If the suggestions presented here are followed, then the universities situated within Delhi-National Capital Region (NCR) will be able to create safe and speedy digital learning platforms which cater to students' wide-ranging demands across various academic fields/ courses as well as classes.

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CHAPTER 01: INTRODUCTION

1.1 BACKGROUND

In Public Key Cryptography (PKC), digital signatures require each user to have two keys; the first one is open(key that is open to everyone), while the other is private(secret key). Their main purposes are data authentication non-repudiation i.e., once document is signed signer can't deny it.

In business and finance, digital signatures are commonly employed to confirm the accuracy of documents like purchase orders, contracts, and reports. They work much the same way as standard signatures do, thereby validating the content of a given document and identifying its author.

In 1976, Diffie and Hellman first talk about digital signatures. It was on June 19th, 1977 when Rivest, Shamir and Adleman came up with RSA encryption which allowed people to sign documents securely. During the 1980s new methods appeared; among them were ones by Lamport, Merkle and Rabin. In 1988 Goldwasser, Micali & others laid down definitions for really secure schemes while one year later Lotus Notes 1st edition came onto the market with its use of RSA authentication keys commercially available at that point onwards, finally in 2000 we got USA's E-SIGN Act which allowed for its more wide use.

Current Applications of Digital Signatures in Real World Scenarios:

Different kinds of areas have digital signatures such as secure email, software signing as well as digital rights management. They are made possible by standardization hence they can work across multiple devices.

1.2 PERCEPTIONS OF DIGITAL SIGNATURES

Advantages:

Safety: Guarantees genuinity and integrity of documents.

Saves time: Simplifies the workflow through replacement of hard copies.

Preservation of the Environment: Limited use of paper.

Accessibility: Operable from any device connected to the web. Accessibility: Usable from any internet-connected device.

Challenges:

Unaccustomed: Certain users may see the digital marks as new and hard to fathom.

Technological Hurdles: These are often too technical to grasp.

Legitimacy Fears: Queries on its lawfulness and enforceability.

Factors that make an impact: Younger, tech-savvy individuals are more receptive compared to their older counterparts because they have prior knowledge with regards to such matters. There is need for security literacy as a majority of people today value digitally signed messages for their security. It has been found out that young people who are conversant with technology are keener on such matters than older people who are not much into these technologies.

1.3 PROBLEM STATEMENT

Digital signatures are a new thing that can totally change the way students, teachers prove who they are when they attend schools. For now, students are simply not using this kind of technology for anything else other than signing up for classes online because they don't know about it or there's no reason to use it yet in everyday life. Although efficiency, security and convenience make its use necessary in many areas such as banking, doctors' consultations etc., there will be no popularization among pupils all this time long. Demonstrating global impact reflecting its intention, e.g., how digital signatures spread into different areas like finance sector, medicine sector as well as others. Although academia has been relatively slow in adopting them. It still remains unanswered why students oppose using this innovative and secure platform for security and authenticity.

The necessity for a thorough understanding of student perceptions and attitudes toward technology in educational contexts is highlighted by the fact that digital signatures have yet to be fully embraced despite their significant potential benefits. Some reasons why students are reluctant or resistant to using them include worries with regard to their ease of adoption, credibility issues, likeness to old school pen on paper signatures etc. In addition, the intricacy

of digital signature systems aside from absence of information or knowledge about the benefits and uses could help in making students fearful about accepting the technology.

Moreover, digital signatures are harder to adopt in schools because students are diverse and have different levels of technology knowledge and because other school policies exist. Students' acceptance and use of this technology are greatly affected by their feelings on technology, whichever experiences they have with digital tools and digital signing expressed compatibility to date into the current workflows or activities.

It is very important to bridge the knowledge gap of digital signatures among students. This is for a number of reasons. One of the reason is that they have the capacity to smoothen administrative procedures in schools. Encouraging the acceptance of digital signatures is consistent with other efforts that seek to carry out academic processes digitally and create a culture of inventiveness and digital knowledge in learners. In conclusion, this study has shed light on what may act as stumbling blocks or enablers when it comes to embracing e-signatures; hence, helping design strategies tailored towards increasing their use amongst students which would unlock all possibilities they come with in education.

1.4 OBJECTIVES

1. To find out how much the university students know about digital signatures
2. To identify both pros and cons that students have towards integrating digital signatures into education systems
3. Factors that will lead to students' acceptance of digital signatures should be identified before making any conclusion
4. To share the real picture with centers of learning

1.5 SCOPE

The main aim of the present research is to find out how students perceive digital signatures use at tertiary education institutions. The research includes both graduate and undergraduate students from diverse fields of study, while taking into consideration probable changes in adoption behavior that may occur because they differ by year of study, by study field or by level of technical understanding of the students. The main aim of this research is to understand what students think about digital signatures regarding its usability, security, trust, and workflow compatibility.

This research isn't confined to assessing student thoughts on digital signatures; it takes into consideration certain factors that determine the way these patterns of acceptance go. This research work takes into consideration how personal traits interact with surrounding circumstances, as well as technological make-up so as to identify which factors enable or impede young peoples' uptake of digital signature technologies. The research investigates how college students think about digital signatures and discusses what it means for higher education as a whole; including colleges' heads of departments professors, lecturers, students themselves, all university staff such as janitors or technical support workers etcetera. It shows us some strategies one could use so that this form of encryption becomes more understandable or commonplace around campuses, nationwide at least. This work also attempts at making these tools easier to use in university systems through increased awareness among stakeholders thereby contributing ideas towards turning schools into digital institutions with better accessibilities than before. through a detailed examination of students' attitudes and perspectives.

CHAPTER 02: LITERATURE REVIEW

Digital signature is made up of an algorithm that is used to verify the authenticity of digital documents or messages. Utilizing PKC, it generates an unique and secured sign for every document, therefore enabling recipients to authenticate its integrity and ascertain its origin from a trusted source. Widely embraced across various sectors, including finance, healthcare, and government, digital signatures serve as a cornerstone for instilling trust and security in electronic transactions. They offer the potential to mitigate fraud risks, enhance operational efficiency, and furnish a secure method for verifying the identity of the signer.

The TAM framework has played an important role in empirical studies on digital signature adoption. Previous research has repeatedly shown that perceived utility and simplicity of use have a major effect on consumers' adoption behaviour. Perceived usefulness refers to how much technology is considered to help with work activities, whereas ease of use refers to how simple it is to understand and utilise technology. Similar findings have been reported in research studying digital signature acceptance in many contexts, emphasising the importance of perceived utility and convenience of use as main drivers of adoption. Recent research reveals that the standard TAM model may not completely represent the complexity of technology adoption, particularly in terms of digital signatures, causing academics to urge for the incorporation of other elements like the facilitating conditions as discussed in brief below

Use Behaviour: This idea relates to how students really utilise digital signatures. Students' use of digital signatures over time can be tracked in this study to determine actual system use. The study thoroughly investigated the elements impacting students' acceptance of digital signatures by integrating these ideas into the research framework. The information presented here can be used to establish strategies for increasing the acceptance and use of digital signatures in universities. Students' attitudes, intents, perceived utility, and perceived simplicity of use will all influence how the digital signature system is actually employed.

Behaviour Intention: This idea relates to the student's future intentions towards the use of digital signatures. In this study, students' intentions to embrace and use digital signatures can be gauged by questioning them about it. There is a strong correlation between behaviour intention and perceived usefulness, which means that using a certain technology has a big influence on someone's behaviour intention.

Attitude: Measuring student attitudes towards digital signatures involves questioning them about their general thoughts and feelings towards the technology. This students's perception of the advantages and hazards of digital signatures. Student's intentions will be positively impacted by their attitude towards using digital signatures. According to this theory, students are more likely to use digital signatures if they have a good attitude towards using them. The perceived security and cost-savings benefits of digital signatures.

Perceived Utility: This concept refers to the extent to which students believe that using digital signatures would increase their productivity and create better outcomes. How people see the importance of digital signatures will influence how they feel about being accepted by specific government universities and organisations. According to this notion, pupils are more inclined to use digital signatures if they feel they are useful. Some of the factors that may influence perceived usefulness include the simplicity and speed with which digital signatures may be utilised, the security and authentication they provide, and the potential cost savings they bring.

Perceived Ease of utilise: How easy it is to utilise digital signatures will have a favourable effect on students' opinions of their usefulness. According to this theory, students are more likely to find digital signatures helpful if they believe them to be user-friendly. The perceived ease of use of digital signatures can be impacted by various aspects, including the ease of use of the process itself, the accessibility of training and assistance, and how well it can be incorporated into the existing processes and systems. Students' perceptions on the usability of digital signatures will be positively impacted. According to this theory, students are more likely to change their attitude towards adoption of digital signatures if they believe they are easy to use. A few examples of the elements that may impact perceived usefulness are the ease and speed with which digital signatures can be used.

Facilitating Conditions: It describes the outside variables that may have an impact on the adoption of digital signatures. Asking students about the tools and support—like technical help and training—available for adopting digital signatures is one way to gauge the study's facilitating conditions.

CHAPTER 03: RESEARCH METHODOLOGY

3.1 RESEARCH OBJECTIVE:

The main objective of this study is to investigate Student's perceptions and attitudes towards adoption of Digital Signatures within universities. This warrants examining and analyzing the factors that contribute to the perceptions and attitudes of students towards digital signature adoptions. Additionally, the research's aim is to determine the level of awareness among students regarding the factors that benefit their academic or professional life through the adoption of digital signatures. Using empirical analysis, the study provides awareness about the dynamics of student's behaviour in response to social media influence and to identify potential regulatory and educational interventions to mitigate manipulation risks.

3.2 RESEARCH DESIGN:

Descriptive research method was used in this research study and quantitative research methodologies were applied in this study. This enables the acquisition of detailed data analysis utilizing IBM SPSS, which allows for a more comprehensive examination of students perceptions and attitudes.

3.3 DATA COLLECTION METHODS:

Structured Questionnaire: A carefully crafted structured questionnaire has a sequence of questions intended at quantifying various components of investment behaviour such as awareness, preferences, ability and sources. This method offers uniformity in the process of data collection and simplifies statistical analysis.

3.4 QUESTIONNAIRE COMPOSITION:

- Gender (Male/Female)
- +2 Stream (Arts/Commerce/Science)
- Higher Studies Degree Currently Pursuing (Bachelors/Masters/PhD Doctorate)
- I have heard of digital signatures before. (Yes/No)
- Have you ever used any digital signature software or platforms? (Yes/No)
- Are you personally inclined to use digital signatures in your academic or professional life? (Yes/No/Unsure)

- Digital signatures are a secure way to authenticate electronic documents. (1 – “Strongly Disagree”, 5 – “Strongly Agree”)
- Using digital signatures would be easier than using traditional handwritten signatures. (1 – “Strongly Disagree”, 5 – “Strongly Agree”)
- I would trust a document signed with a digital signature as much as a document with a handwritten signature. (1 – “Strongly Disagree”, 5 – “Strongly Agree”)
- Signing a document with a digital signature seems like a complex process. (1 – “Strongly Disagree”, 5 – “Strongly Agree”)
- I am confident that I could learn to use digital signatures easily. (1 – “Strongly Disagree”, 5 – “Strongly Agree”)
- The technology for using digital signatures would be accessible to all students at my university, regardless of their technical skills. (1 – “Strongly Disagree”, 5 – “Strongly Agree”)
- Digital signatures would be a valuable addition to the way documents are signed at my university. (1 – “Strongly Disagree”, 5 – “Strongly Agree”)
- I would feel comfortable signing academic documents (e.g., assignments, research papers) with a digital signature. (1 – “Strongly Disagree”, 5 – “Strongly Agree”)
- I would feel comfortable using a digital signature for administrative purposes at my university (e.g., registering for courses, applying for financial aid). (1 – “Strongly Disagree”, 5 – “Strongly Agree”)

Figure 3.4.1. Composition of the floated Questionnaire

The screenshot shows a questionnaire interface with the following sections:

- Title:** Student's perception and attitude towards adoption of Digital Signatures.
- User Info:** saumya_2k22dmba109@dtu.ac.in (Switch account), Not shared.
- Required Questions:**
 - Sex:** Radio buttons for Female and Male.
 - +2 stream:** Radio buttons for Commerce, Science, and Arts.
 - Currently pursuing:** Radio buttons for Bachelor's Degree, Master's Degree, and Ph.D or Doctorate.
- Survey Questions:**
 - Q1:** I have heard of digital signatures before. * (Radio buttons for Yes and No).
 - Q2:** Have you ever used any digital signature software or platforms? * (Radio buttons for Yes and No).
 - Q3:** Are you personally inclined to use digital signatures in your academic or professional life? * (Radio buttons for Yes, No, and Maybe).
 - Q4:** What factors would most influence your willingness to use digital signatures? * (Checkboxes for Security of the digital signature system, Ease of use of the technology, Integration with existing university systems, and Trustworthiness of the university's implementation of digital signatures).
 - Q5:** Frequency of submitting assignments/papers digitally. * (A 5-point Likert scale from Rarely to Frequently).

<p>Frequency of submitting university documents/government documents digitally. *</p> <p>1 2 3 4 5</p> <p>Rarely <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> Frequently</p>	<p>I am confident that I could learn to use digital signatures easily. *</p> <p>1 2 3 4 5</p> <p>Strongly Disagree <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> Strongly Agree</p>
<p>Digital signatures are a secure way to authenticate electronic documents. *</p> <p>1 2 3 4 5</p> <p>Strongly Disagree <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> Strongly Agree</p>	<p>The platforms/applications for using digital signatures should be accessible to all students at my university. *</p> <p>1 2 3 4 5</p> <p>Strongly Disagree <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> Strongly Agree</p>
<p>Using digital signatures would be easier than using traditional handwritten signatures. *</p> <p>1 2 3 4 5</p> <p>Strongly Disagree <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> Strongly Agree</p>	<p>I feel the implementation of digital signatures would significantly enhance the authenticity and trustworthiness of document signing processes at my university. *</p> <p>1 2 3 4 5</p> <p>Strongly Disagree <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> Strongly Agree</p>
<p>I would trust a document signed with a digital signature as much as a document with a handwritten signature. *</p> <p>1 2 3 4 5</p> <p>Strongly Disagree <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> Strongly Agree</p>	<p>I would feel comfortable signing academic documents (e.g., assignments, research papers) with a digital signature. *</p> <p>1 2 3 4 5</p> <p>Strongly Disagree <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> Strongly Agree</p>
<p>Signing a document with a digital signature seems like a complex process. *</p> <p>1 2 3 4 5</p> <p>Strongly Disagree <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> Strongly Agree</p>	<p>I would feel comfortable using a digital signature for administrative purposes at my university (e.g., registering for courses, applying for financial aid). *</p> <p>1 2 3 4 5</p> <p>Strongly Disagree <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> Strongly Agree</p>

Source: Primary Data

3.5 SAMPLING PLAN:

- **Sample Size:** We chose a sample size of 103 people based on practicality, available resources, and the need for statistical significance, while also assuring diversity in the sample size.
- **Sampling Technique:** We used stratified sampling to provide appropriate representation of various students demographics within Delhi NCR. This strategy increases the likelihood of producing a population-representative sample.
- **Sampling Frame:** The sampling frame includes public and private universities around the Delhi NCR in order to gather a diverse range of student viewpoints and perspectives.

3.6 DATA COLLECTION PROCEDURE:

- **Survey Method:** The selected participants were given structured questionnaires. Depending on the convenience of the participants, the distribution will take place in

person, via email, or through online mode. To ensure consistent responses, a clear and direct set of instructions will be supplied to them.

Figure 3.6.1. Response Data.

B	C	D	E	F	G	H	I	J	K	L	M
Sex	+2 stream	Currently pursuing	I have heard of digital signatures before.	Have you ever used any digital signature software or platforms?	Are you personally inclined to use digital signatures in your academic or professional life?	What factors would most influence your willingness to use digital signatures?	Frequency of submitting assignments/papers digitally.	Frequency of submitting university documents/government documents digitally.	Digital signatures are a secure way to authenticate electronic documents.	Using digital signatures would be easier than using traditional handwritten signatures.	I would trust a document signed with a digital signature as much as a document with a handwritten signature.
Female	Commerce	Master's Degree	Yes	Yes	Maybe	Security of the digital signature system, Ease of use of the technology, Integration with existing	4	3	3	3	1
Female	Science	Master's Degree	Yes	Yes	Yes	Security of the digital signature system, Ease of use of the technology	5	5	5	5	5
Male	Science	Master's Degree	Yes	Yes	Yes	Security of the digital signature system, Ease of use of the technology	4	4	4	4	4
Female	Commerce	Master's Degree	Yes	Yes	Yes	Security of the digital signature system, Ease of use of the technology	4	4	4	4	4
Male	Commerce	Master's Degree	Yes	Yes	Maybe	Ease of use of the technology, Integration with existing university systems	4	4	3	4	2
Female	Commerce	Ph.D or Doctorate	Yes	Yes	Yes	Security of the digital signature system, Ease of use of the technology, Integration with existing university systems, Trustworthiness of the university's implementation of digital signatures	3	3	3	3	3
		N	O	P	Q	R	S	T			
		Signing a document with a digital signature seems like a complex process.	I'm concerned that mandatory digital signatures could potentially complicate the online assignment/paper	I am confident that I could learn to use digital signatures easily.	The platforms/applications for using digital signatures should be accessible to all students at my	I feel the implementation of digital signatures would significantly enhance the authenticity and trustworthiness of	I would feel comfortable signing academic documents (e.g., assignments, research papers) with a digital signature.	I would feel comfortable using a digital signature for administrative purposes at my university (e.g., registering for courses).			
		3	3	5	5	3	2	3			
		5	5	5	5	5	5	5			
		4	4	4	4	4	4	4			
		4	4	3	4	3	4	3			
		3	2	4	2	2	3	3			
		3	3	3	3	3	3	3			

Source: Primary Data

3.7 DATA ANALYSIS:

- Quantitative Data Analysis:** The quantitative data acquired through structured questionnaires was analysed statistically. To uncover trends, correlations, and patterns in the data, descriptive statistics, frequency distribution, and chi-square test analysis were used.

CHAPTER 04: FINDINGS AND ANALYSIS

4.1 DEMOGRAPHIC DISTRIBUTION

4.1.1. Sex:

Table 4.1.1. Sex

Gender	No. of Respondents	Percentage of Total
Male	47	45.6%
Female	56	54.4%
Total	103	100%

Source: Primary Data

4.1.2. +2 Stream:

Table 4.1.2. +Stream

Stream	No. of Respondents	Percentage of Total
Commerce	42	40.8%
Science	50	48.5%
Arts	11	10.7%
Total	103	100%

Source: Primary Data

4.1.3. Higher Studies Degree Currently Being Pursued:

Table 4.1.3. Higher Studies Degree Currently Being Pursued

Gender	No. of Respondents	Percentage of Total
Bachelors	30	29.1%
Masters	61	59.2%
Ph.D or Doctorate	12	11.7%
Total	103	100%

Source: Primary Data

4.2. STUDENT KNOWLEDGE OF DIGITAL SIGNATURES

4.2.1. Have heard of digital signatures before

Table 4.2.1. Knowledge of Digital Signatures

Time	No. of Respondents	Percentage of Total
Yes	94	91.3%

No	9	8.7%
Total	103	100%

Source: Primary Data

4.2.2. Previous usage of digital signatures platforms

Table 4.2.2. Previous Usage of Digital Signatures Platforms

Previous Usage	No. of Respondents	Percentage of Total
Yes	65	63.1%
No	38	36.9%
Total	103	100%

Source: Primary Data

4.2.3. Inclination to use digital signatures in academic and professional life.

Table 4.2.3. Inclination to use digital signatures in academic and professional life:

Category	No. of Respondents	Percentage of Total
Yes	59	57.3%
No	16	15.5%
Maybe	28	27.2%
Total	103	100%

Source: Primary Data

4.2.4. Factors Influencing Willingness to use Digital Signatures

Table 4.2.4. Factors Influencing Willingness to use Digital Signatures

Factors	No. of Respondents	Percentage of Total
Security of the Digital Signature System	56	54.4%
Ease of use of the Technology	81	78.6%
Integration with existing University Systems	44	42.7%
Trustworthiness of the University's implementation of digital signatures	31	30.1%

Source: Primary Data

4.3 STUDENT PERCEPTIONS AND HABITS

4.3.1 Frequency of submitting Assignment/Papers digitally

Table 4.3.1 Frequency of submitting paper digitally

Frequency	No. of Respondents	Percentage of Total
Very Rarely (1)	6	5.8%
Rarely (2)	17	16.5%
Moderately (3)	30	29.1%
Frequently (4)	33	32%
Very Frequently (5)	17	16.5%
Total	103	100%

Source: Primary Data

4. 3.2 Frequency of submitting University documents online

Table 4.3.2 Frequency of submitting University Documents Online

Frequency	No. of Respondents	Percentage of Total
Very Rarely (1)	3	2.9%
Rarely (2)	7	6.8%
Moderately (3)	26	25.2%
Frequently (4)	42	40.8%
Very Frequently (5)	25	24.3%
Total	103	100%

Source: Primary Data

4.3.3 Digital Signatures are secure way to authenticate documents

Table 4.3.3 Digital Signatures are secure way to authenticate

Agreeableness	No. of Respondents	Percentage of Total
Strongly Disagree (1)	3	2.9%
Disagree (2)	22	21.4%
Neutral (3)	37	35.9%
Agree (4)	32	31.1%
Strongly Agree (5)	9	8.7%
Total	103	100%

Source: Primary Data

4.3.4 Using digital signatures would be easier than using traditional handwritten signatures.

Table 4.3.4 Using digital signatures would be easier than using traditional handwritten signatures.

Agreeableness	No. of Respondents	Percentage of Total
Strongly Disagree (1)	5	4.9%
Disagree (2)	25	24.3%
Neutral (3)	27	26.2%
Agree (4)	30	29.1%
Strongly Agree (5)	18	15.5%
Total	103	100%

Source: Primary Data

4.3.5 I would trust a document signed with a digital signature as much as a document with a handwritten signature.

Table 4.3.5 I would trust a document signed with a digital signature as much as a document with a handwritten signature.

Agreeableness	No. of Respondents	Percentage of Total
Strongly Disagree (1)	11	10.7%
Disagree (2)	27	26.2%
Neutral (3)	28	27.2%
Agree (4)	27	26.2%
Strongly Agree (5)	10	9.7%
Total	103	100%

Source: Primary Data

4.3.6 Signing a document with a digital signature seems like a complex process.

Table 4.3.6 Signing a document with a digital signature seems like a complex process.

Agreeableness	No. of Respondents	Percentage of Total
Strongly Disagree (1)	2	1.9%
Disagree (2)	22	21.4%
Neutral (3)	29	28.2%
Agree (4)	38	36.9%

Strongly Agree (5)	12	11.7%
Total	103	100%

Source: Primary Data

4.3.7 I'm concerned that mandatory digital signatures could potentially complicate the online assignment/paper submission process.

Table 4.3.7 I'm concerned that mandatory digital signatures could potentially complicate the online assignment/paper submission process.

Agreeableness	No. of Respondents	Percentage of Total
Strongly Disagree (1)	3	2.9%
Disagree (2)	5	4.9%
Neutral (3)	28	27.2%
Agree (4)	36	35%
Strongly Agree (5)	31	30.1%
Total	103	100%

Source: Primary Data

4.3.8 I am confident that I could learn to use digital signatures easily.

Table 4.3.8 I am confident that I could learn to use digital signatures easily.

Agreeableness	No. of Respondents	Percentage of Total
Strongly Disagree (1)	9	8.7%
Disagree (2)	27	26.2%
Neutral (3)	29	28.2%
Agree (4)	29	28.2%
Strongly Agree (5)	9	8.7%
Total	103	100%

Source: Primary Data

4.3.9 The platforms/applications for using digital signatures should be accessible to all students at my university.

Table 4.3.9 The platforms/applications for using digital signatures should be accessible to all students at my university.

Agreeableness	No. of Respondents	Percentage of Total
Strongly Disagree (1)	0	0%
Disagree (2)	3	2.9%
Neutral (3)	22	21.4%
Agree (4)	50	48.5%
Strongly Agree (5)	28	27.2%
Total	103	100%

Source: Primary Data

4.3.10 I feel the implementation of digital signatures would significantly enhance the authenticity and trustworthiness of document signing processes at my university.

Table 4.3.10 I feel the implementation of digital signatures would significantly enhance the authenticity and trustworthiness of document signing processes at my university.

Agreeableness	No. of Respondents	Percentage of Total
Strongly Disagree (1)	0	0%
Disagree (2)	11	10.7%
Neutral (3)	38	36.9%
Agree (4)	40	38.8%
Strongly Agree (5)	14	13.6%
Total	103	100%

Source: Primary Data

4.3.11 I would feel comfortable signing academic documents (e.g., assignments, research papers) with a digital signature.

Table 4.3.11 I would feel comfortable signing academic documents (e.g., assignments, research papers) with a digital signature.

Agreeableness	No. of Respondents	Percentage of Total
Strongly Disagree (1)	0	0%
Disagree (2)	5	4.9%
Neutral (3)	36	35%
Agree (4)	45	43.7%
Strongly Agree (5)	17	16.5%
Total	103	100%

4.3.12 I would feel comfortable using a digital signature for administrative purposes at my university (e.g., registering for courses, applying for financial aid).

Table 4.3.12 I would feel comfortable using a digital signature for administrative purposes at my university (e.g., registering for courses, applying for financial aid).

Agreeableness	No. of Respondents	Percentage of Total
Strongly Disagree (1)	3	2.9%
Disagree (2)	10	9.7%
Neutral (3)	38	36.9%
Agree (4)	37	35.9%
Strongly Agree (5)	15	14.6%
Total	103	100%

Source: Primary Data

4.4. ANALYSIS

Data collected from the responses has been analysed using IBM SPSS 25 software using various appropriate testing methods for each of the Hypothesis being tested.

4.4.1. Hypothesis: Gender Differences in Usage of Digital Signatures Softwares or Platforms

1. Null Hypothesis (H0): “There is no significant relationship” in the usage of digital signatures platforms between male and female students.
2. Alternative Hypothesis (H1): “There is a significant relationship” in the usage of digital signatures platform between male and female students.

From the above Chi-Square test between the two variables “Gender” and “Have you ever used any digital signature software or platforms?” we can see 25 males have responded yes, 22 males responded no while 40 females responded yes and 16 females responded no.

The p-value for Pearson's chi-square is 0.056, which is borderline significant however the Fisher's Exact Test provides a p-value of .67. This means there is a borderline significant difference in the past usage of digital platforms signatures between male and female students as the p-value is near .005. Hence the **Null Hypothesis (H0)** “There is no significant relationship in the usage of digital signatures platforms between male and female students” **is accepted.**

Gender * Have you ever used any digital signature software or platforms? Crosstabulation

		Have you ever used any digital signature software or platforms?		Total	
		1	0		
Gender	1	Count	16	40	56
		Expected Count	20.7	35.3	56.0
	0	Count	22	25	47
		Expected Count	17.3	29.7	47.0
Total		Count	38	65	103
		Expected Count	38.0	65.0	103.0

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.650 ^a	1	.056		
Continuity Correction ^b	2.909	1	.088		
Likelihood Ratio	3.657	1	.056		
Fisher's Exact Test				.067	.044
N of Valid Cases	103				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 17.34.
b. Computed only for a 2x2 table

Figure 4.4.1. Chi-Square Test for Gender Differences in Usage of Digital Signatures Softwares or Platforms.

4.4.2. Hypothesis: Stream of Study and Willingness to Use Digital Signatures

1. Null Hypothesis (H0): “There is no significant relationship” between the stream of study and the willingness to use digital signatures.
2. Alternative Hypothesis (H1): “There is a significant relationship” between the stream of study and the willingness to use digital signatures.

+2 stream * Are you personally inclined to use digital signatures in your academic or professional life? Crosstabulation

		Are you personally inclined to use digital signatures in your academic or professional life?				
			2	1	0	Total
+2 stream	2	Count	3	3	5	11
		Expected Count	3.0	1.7	6.3	11.0
	1	Count	14	5	23	42
		Expected Count	11.4	6.5	24.1	42.0
	0	Count	11	8	31	50
		Expected Count	13.6	7.8	28.6	50.0
Total		Count	28	16	59	103
		Expected Count	28.0	16.0	59.0	103.0

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.927 ^a	4	.570
Likelihood Ratio	2.789	4	.594
N of Valid Cases	103		

a. 2 cells (22.2%) have expected count less than 5. The minimum expected count is 1.71.

Figure 4.4.2. Chi-Square Test for Stream of Study and Willingness to use digital signatures

From the above Chi-Square test between the 2 variables “+2 Stream” and “Are you personally inclined to use digital signatures in your academic or professional life?” there is a .570 p-value given as output this means there is no significant difference 12th Stream of Students and Personal Inclination to use Digital Signatures. Hence the **Null Hypothesis (H0)** “There is no significant relationship between the stream of study and the willingness to use digital signatures” is **accepted**.

4.4.3. Hypothesis: Educational Level and Perception of Digital Signature Security

1. Null Hypothesis (H0): “There is no significant relationship” between educational level and the perception of digital signature security.
2. Alternative Hypothesis (H1): “There is a significant relationship” between educational level and the perception of digital signature security.

A mean of 3 variables ‘Digital signatures are a secure way to authenticate electronic documents’, ‘I would trust a document signed with a digital signature as much as a document with a handwritten signature’ and ‘I feel the implementation of digital signatures would

significantly enhance the authenticity and trustworthiness of document signing processes at my university’ was taken to give a mean ‘Perception of Security and Authenticity’ which is the dependent variable and then analysed with “Currently Pursuing” which is the factor in the One-Way ANOVA test. As the significant of the One Way ANOVA Test is coming out to be **.00001** due to which from the analysis the **alternate hypothesis (H1)** ie ‘There is a significant relationship between educational level and perception of digital signature technology’ is **accepted**.

Oneway

ANOVA					
PerceptionOfSecurityAndAuthenticityVAR00001					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	15.766	2	7.883	15.506	.000
Within Groups	50.838	100	.508		
Total	66.604	102			

Figure 4.4.3. One-Way ANOVA Test for Educational Level and Perception of Digital Signature Security.

4.4.4. Hypothesis: Frequency of Digital Document Submission and Perception of Digital Signature Complexity

1. Null Hypothesis (H0): There is no significant relationship between the frequency of digital document submission and the perception of digital signature complexity.
2. Alternative Hypothesis (H1): There is a significant relationship between the frequency of digital document submission and the perception of digital signature complexity.

A mean of 3 variables ‘Using digital signatures would be easier than using traditional handwritten signatures’, ‘Signing a document with a digital signature seems like a complex process’ and ‘I’m concerned that mandatory digital signatures could potentially complicate the online assignment/paper submission process.’ was taken to give a mean variable ‘Digital Signature Complexity’. The ‘Digital Signature Complexity’ and ‘Frequency of submitting college documents digitally’ were then analysed using Kruskal-Wallis Test, from the test the Kruskal-Wallis asymptomatic significance is found out to be **.580** which is more than .05

hence the **null hypothesis (H0)** ie ‘There is no significant difference between frequency of digital document submission and perception of digital signature complexity’ is **accepted**.

Kruskal-Wallis Test

	Ranks		
	DigitalSignatureComplexityVAR00002	N	Mean Rank
Frequency of submitting university documents/government documents digitally.	1.00	3	49.50
	2.00	29	54.76
	3.00	53	49.63
	4.00	17	52.59
	5.00	1	95.00
Total		103	

Test Statistics^{a,b}

	Frequency of submitting university documents/government documents digitally.
Kruskal-Wallis H	2.871
df	4
Asymp. Sig.	.580

a. Kruskal Wallis Test
 b. Grouping Variable: DigitalSignatureComplexityVAR00002

Figure 4.4.4. Kruskal-Wallis Test for Frequency of Digital Document Submission and Perception of Digital Signature Complexity.

4.4.5. Hypothesis: Confidence in Learning to Use Digital Signatures and Perception of Accessible Platforms

1. Null Hypothesis (H0): “There is no significant relationship” between confidence in learning to use digital signatures and the perception of accessible platforms.
2. Alternative Hypothesis (H1): “There is a significant relationship” between confidence in learning to use digital signatures and the perception of accessible platforms.

Correlation between two independent variables namely ‘I am confident that I could learn to use digital signatures easily’ and ‘The platforms/applications for using digital signatures should be accessible to all students at my university’ was tested through Pearson Correlation Testing, the testing gave a correlation test value of .473 which leads to **accept the Null Hypothesis (H0)** ie There is no significant relationship between confidence in learning to use digital signatures and the perception of accessible platforms.

		I am confident that I could learn to use digital signatures easily.	The platforms/applications for using digital signatures should be accessible to all students at my university.
I am confident that I could learn to use digital signatures easily.	Pearson Correlation	1	.474**
	Sig. (2-tailed)		.000
	N	103	103
The platforms/applications for using digital signatures should be accessible to all students at my university.	Pearson Correlation	.474**	1
	Sig. (2-tailed)	.000	
	N	103	103

** . Correlation is significant at the 0.01 level (2-tailed).

Figure 4.4.5. Pearson Correlation Test for Confidence in Learning to Use Digital Signatures and Perception of Accessible Platform.

4.4.6. Hypothesis: Implementation of Digital Signatures and Perception of Document Authenticity

1. Null Hypothesis (H0): “There is no significant relationship” between the implementation of digital signatures and the perception of document authenticity.
2. Alternative Hypothesis (H1): “There is a significant relationship” between the implementation of digital signatures and the perception of document authenticity.

Mann-Whitney test on ‘Perception of Security and Authenticity’ variable which is a mean of three variables ‘Digital signatures are a secure way to authenticate electronic documents’, ‘I would trust a document signed with a digital signature as much as a document with a handwritten signature’ and ‘I feel the implementation of digital signatures would significantly enhance the authenticity and trustworthiness of document signing processes at my university’ was used as the testing variable, ‘Implementation’ grouping variable which is a mean of two variables namely ‘The platforms/applications for using digital signatures should be

accessible to all students at my university’ and ‘I feel the implementation of digital signatures would significantly enhance the authenticity and trustworthiness of document signing processes at my university’ was recoded from the mean values to 0 and 1 which stand for Yes and No respectively. From the Mann-Whitney test we get an asymptomatic significance of **.000146** which is less than **.05** due to which we **accept the Alternate Hypothesis (H1)** ie “There is a significant relationship between implementation of digital signatures and perception of document authenticity”.

Mann-Whitney Test

	Ranks			
	ImplementationYesNo	N	Mean Rank	Sum of Ranks
PerceptionOfSecurityAnd AuthenticityVAR00001	.00	96	54.99	5279.50
	1.00	7	10.93	76.50
	Total	103		

Test Statistics^a

	PerceptionOf SecurityAndAuthenticityVAR00001
Mann-Whitney U	48.500
Wilcoxon W	76.500
Z	-3.798
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable:
ImplementationYesNo

Figure 4.4.6. Mann Whitney Test for Implementation of Digital Signatures and Perception of Document and Authenticity.

4.5. FINDINGS & RECOMMENDATIONS

Gender Differences in Past Usage of Digital Signatures Software:

It was found that there is no significant difference in past usage of digital signatures platforms between male and female students. It is recommended to Consider gender-neutral approaches in promoting and facilitating the adoption of digital signatures platforms among students.

Stream of Study and Willingness to Use Digital Signatures:

Findings: There is no significant association between the stream of study and the willingness to use digital signatures.

Recommendations: Provide tailored educational initiatives to enhance digital literacy and promote the benefits of using digital signatures across all streams of study.

Educational Level and Perception of Digital Signature Security:

It was found that the relationship between educational level and the perception of digital signature security is significant among university students.

Recommendations: Develop educational programs to address security concerns and increase awareness of the benefits of digital signatures among students at different educational levels.

Frequency of Digital Document Submission and Perception of Digital Signature Complexity:

It was found from this study that the relationship between the frequency of digital document submission and the perception of digital signature complexity is significant among university students. It is recommended to Streamline digital document submission processes and provide user-friendly training resources to mitigate perceived complexities associated with digital signatures.

Confidence in Learning to Use Digital Signatures and Perception of Accessible Platforms:

It was found that the relationship between confidence in learning to use digital signatures and the perception of accessible platforms is insignificant. It is recommended to enhance accessibility features of digital signature platforms and offer training programs to boost confidence and proficiency in digital signature usage.

Implementation of Digital Signatures and Perception of Document Authenticity:

It was found that the relationship between the implementation of digital signatures and the perception of document authenticity is significant amongst university students. It is recommended to strengthen the implementation of digital signatures across university processes to enhance document authenticity and foster trust among stakeholders.

4.6. LIMITATIONS

- 1. Sample Size:** The study's reliance on a sample size of 103 respondents is a limitation because it may not adequately represent the diversity and complexity of the Indian University Students. A small sample size may not capture these variations accurately.
- 2. Geographic Variation:** This researcher did not consider that the student attitudes and behaviors towards electronic signatures would be different from one place to the other. The level of understanding of the technology among the various states and regional universities could differ too. Consequently, this geographic variation undermines the capacity of the study to fully grasp the student perceptions and adoptions of digital signatures.

CHAPTER 05: CONCLUSION

This research has explored in detail the attitudes and actions of students regarding the implementation of electronic signatures in higher educational establishments. Several aims were pursued through investigating systematically the factors that affect students' opinions – from acquaintance and understanding with regard to digital signature comprehension up to assessing its pros and cons as well as willingness towards embracing it. The structured surveys and statistical analysis help was needed so that it could be understood what student's perceptions of digital signatures are and how educational institutions can incorporate them in their day to day functioning efficiently.

One of the key discoveries revealed that while the gender of the students had no significant influence on their previous use of digital signature platforms, it was essential to look for more neutral methods to encourage and enhance wider adoption of digital signatures amongst students. Moreover, findings from other tested hypothesis still indicate that there was no significant relationship between backgrounds of academic streams of variety of students in schools to their likelihood to start using digital-signatures thus indicating that use could be implemented to variety of students with different academic backgrounds.

A significant connection was found when the relationship between the perception of security of digital signatures and one's educational level was analysed. This underscores the necessity for custom-made educational programs targeted towards solving security problems related to digital-signatures among university students in any educational institution. Devoid of significant relationships between the frequency of document submission and perceived complexity, confidence in learning digital signatures use, and perceptions of accessible platforms, it is advisable that institutions concentrate on the necessity of enhancing accessibility features and delivering holistic training programs to develop proficiency and ease.

In conclusion, the discoveries impart significant understanding into the way university students think of and behave towards digital signatures at the tertiary level. In order for educational establishments come up with better measures for introducing digital signatures, it is necessary that they answer any identified recommendations which would make it possible for them to integrate digital signatures; thereby developing secure and efficient digital learning environment for students from the varying fields and levels of academics.

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