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**A study on non-performing assets and pigmy as a solution to minimize the NPA**

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**Abstract:**

Non-performing assets are those assets which cease to generate income for the bank. When loans and advances remain overdue for more than 90 days that asset is classified as non-performing assets. In recent times non-performing assets are the major concern for the cooperative banks. This has an impact on the bank's financial health. The objective of this paper is the study the classification of NPA in the Kolhapur Mahila Sahakari Bank and to create awareness amongst customers regarding the use of pigmy amounts for repayment of their loan instalments. Pigmy is a deposit scheme where customers can save a small amount of money daily. It is a doorstep scheme where the bank agent collects the money from the doorsteps of the customer. The data for the study is collected from the bank and the questionnaire-based survey of the customers. This research paper is the result of data analyses through a questionnaire as well as secondary data collected by the bank.

**Keywords:** Non-performing assets, Pigmy deposit

**Introduction:**

Cooperative banks play a vital role in the Indian banking system. The bank's primary functions are to loan money to its clients and accept a variety of deposits. The bank's biggest challenge is dealing with the non-performing asset issue. Non-Performing Assets are those assets that no longer bring in income for the banks, they are known as Non-Performing Assets (NPAs). When a borrower is unable to repay interest and/or installment payments on a loan, which remain overdue for 90 days that account is considered a non-performing asset by the bank. The committee headed by M. Narasimham introduced the concept of non-performing assets. Narasimham's Committee recommended that classifying assets as performing or non-performing is essential for improving a bank's financial stability. Since non-performing assets (NPAs) negatively impact a bank's financial stability, the management of NPAs has become essential for the bank.

This study is related to the NPA analysis of Kolhapur Maila Sahakari Bank. This paper gives a brief idea about the concept of NPA and attempts to make the customers aware as to how they can use their pigmy amount for repayment of loan instalments which helps to minimize the NPA accounts of the bank. In 1928, the Syndicate Bank of India launched the Pigmy Deposit Scheme, which is a financial deposit scheme. A bank representative can initially deposit money into an account daily, even in a small amount of ten rupees, by the bank's agent collecting it up from the account holder's doorstep.

**Review of literature:**

(Sarkar & Karak, 2018) studied that Non-Performing Assets (NPAs) have been a problem in India's banking sector, particularly among District Central Cooperative Banks (DCCBs). To solve the issue of existing NPAs, the quality of appraisal, supervision, and follow-up must be improved. This study analyses the trend, causes, and impact of nonperforming assets (NPAs) in rural lending structures in general, and the BDCCBL specifically. The overall image of NPA management is not satisfactory for the bank under review.

(Kiran & Jones, 2016) study that Every country's economic progress is dependent on how well its financial system functions. The banking sector provides for a significant portion of the financial system. As a result, the banking sector should now focus primarily on effective NPA management to boost profitability and hence provide as much funding to the business as possible. Banks should establish new loan recovery techniques.

(Tiwari & Sontakke, 2013) study that NPA growth requires the utilization of provisions, reducing overall profitability and shareholder value. Before authorizing loans to clients, branch managers must conduct due diligence and exercise considerable caution. Careful steps such as selecting the right borrowers, possible revenue generation, adequate finance and timely disbursement, correct end use of funds, and timely loan recovery are required preconditions for preventing or reducing the number of new NPAs, which will improve bank creditability and achieve the goal of a well-established financial system.

(Dhawale & Dhore, 2023) found that because of political interference, banks' non-performing assets have increased significantly. Also, government policies such as inflation and GST caused a temporary slowdown in the industries. In addition, the Corona lockdown damaged the industry, increasing bank loan defaults. Because the growth of the Indian economy is dependent on the development of Indian banks. If the Indian Bank continues to function correctly, the Indian economy will be stabilized.

(Matharu, 2021) studied the Trends in NPAs at Himachal Pradesh State Cooperative Bank Ltd. The number of nonperforming assets (NPAs) is improving year after year. However, the bank's NPA level is still high. NPAs are restricting banks' earning capability and lowering earnings. Non-performing assets (NPAs) have been for years a major issue for banks and the economy.

**Objectives:**

1. To study the classification of NPA in a bank.
2. To study and create awareness in customers regarding the use of pigmy amount for repayment of their loan instalments.

**Research Methodology:**

1. Primary data:

The primary data is the data which is used for the first time in the study. However, the data is collected through the questionnaire and discussion with bank managers, employees and customers of Kolhapur Mahila Sahakari Bank Ltd.

2. Secondary data:

The secondary data is the data which is already available in books, journals, reports, magazines etc. However, the secondary data was used for the company profile and theoretical background. Which is collected from bank websites, banking books, banks annual reports etc.

3. Sample size:

The sample size of customers related to the pigmy awareness form is 150 customers of the bank. The method used is the Questionnaire survey method.

**Data Analysis and Interpretation:**

Table No. 4 Classification of NPA in percentage

<b>NPA data of 5years in Percentage</b>					
	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
<b>Standard assets</b>	95.30%	86.49%	90.02%	79.63%	89.26%
<b>Sub-standard assets</b>	2.81%	8.60%	1.70%	9.34%	1.67%
<b>Doubtful-1 assets</b>	0.52%	2.09%	4.75%	5.07%	3.78%
<b>Doubtful-2assets</b>	0.95%	1.58%	1.73%	4.61%	0.93%
<b>Doubtful-3 assets</b>	0.40%	1.21%	1.78%	1.34%	4.34%
<b>Loss assets</b>	0.02%	0.02%	0.02%	0.00%	0.02%
<b>Total loans</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

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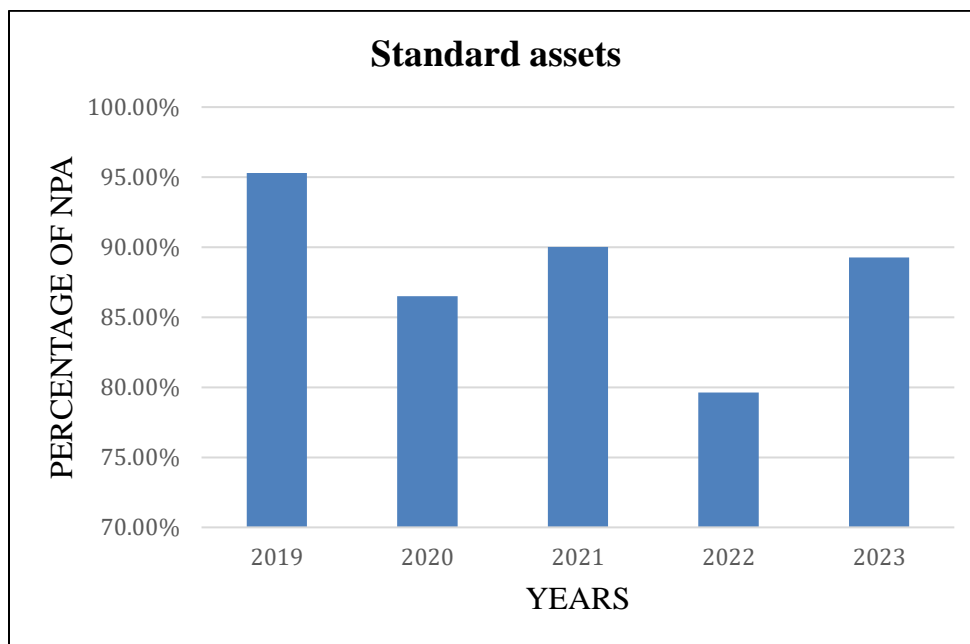
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(Source- Annual Reports of Mahila Sahakari Bank)

1. Standard assets

Table No. 4.1 Standard asset data

	2019	2020	2021	2022	2023
Standard assets	95.30%	86.49%	90.02%	79.63%	89.26%



Graph No. 4.1 Standard asset data

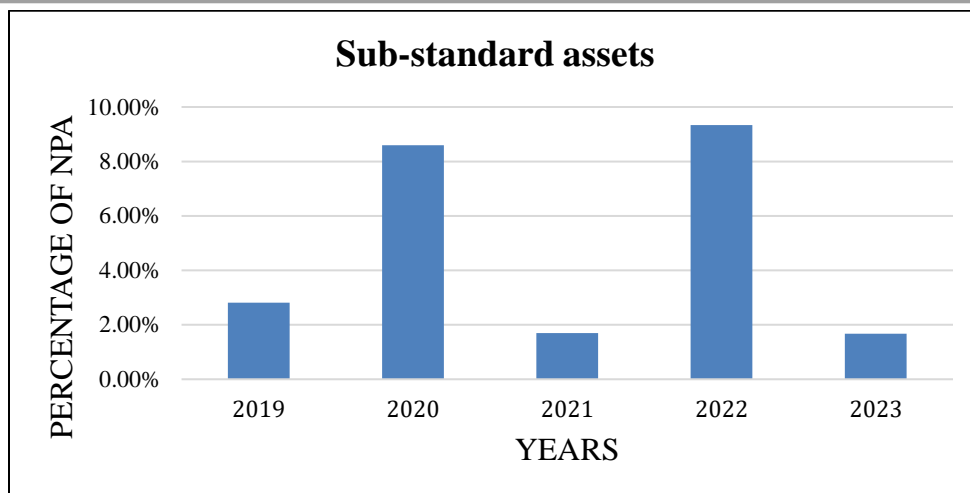
**Interpretation:**

According to the graph, the bank has maintained a standard asset ratio of over 75% every year. In 2019, the bank had 95.30% standard assets, which decreased by 8.81% in 2020. However, there was an increase of 3.53% in 2021, followed by a significant decrease of 79.63% in 2022. The bank then saw an increase of 9.63% in 2023.

2. Sub-standard assets

Table No. 4.2 Sub-standard asset data

	2019	2020	2021	2022	2023
Sub-standard assets	2.81%	8.60%	1.70%	9.34%	1.67%



Graph No. 4.2 Sub-standard asset data

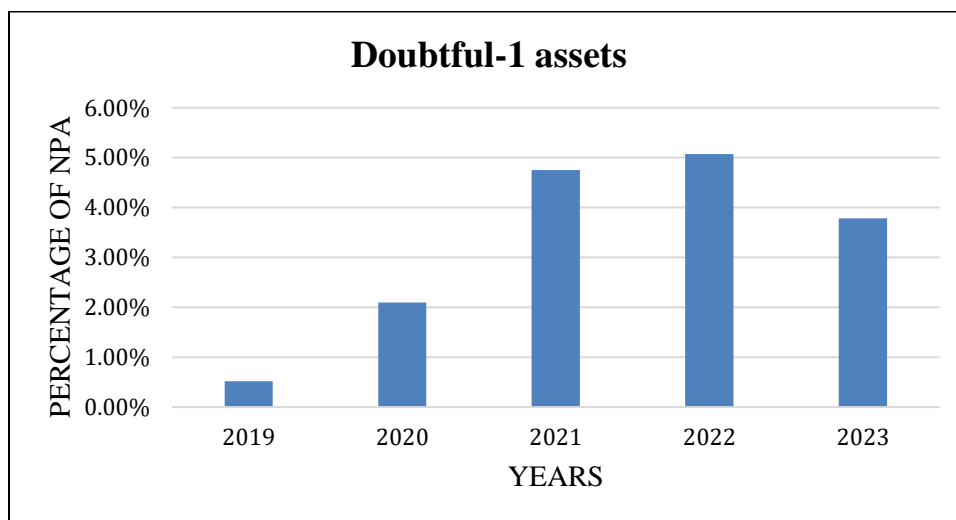
**Interpretation:**

According to the asset graph, in 2019, sub-standard assets were at 2.81%. This percentage increased by 5.79% in 2020 but then decreased by 6.9% the next year. However, in 2022, the percentage of sub-standard assets went up to 9.34% but then decreased by 7.67% in 2023. This indicates that around 8.60% and 9.34% of assets were considered non-performing for less than or equal to 12 months in 2020 and 2022.

3. Doubtful-1 assets:

Table No. 4.3 Doubtful asset data

	2019	2020	2021	2022	2023
Doubtful-1 assets	0.52%	2.09%	4.75%	5.07%	3.78%



Graph No. 4.3 Doubtful asset data

**Interpretation:**

According to the graph, there was a significant increase in the percentage of non-performing assets NPAs in 2022, followed by a slight decrease in 2023. Based on the doubtful-1 asset graph, the percentage of NPAs was only 0.52% in 2019, which increased to 1.52% in 2020 and 2.66% in 2021. In 2022, the percentage of NPAs reached its highest

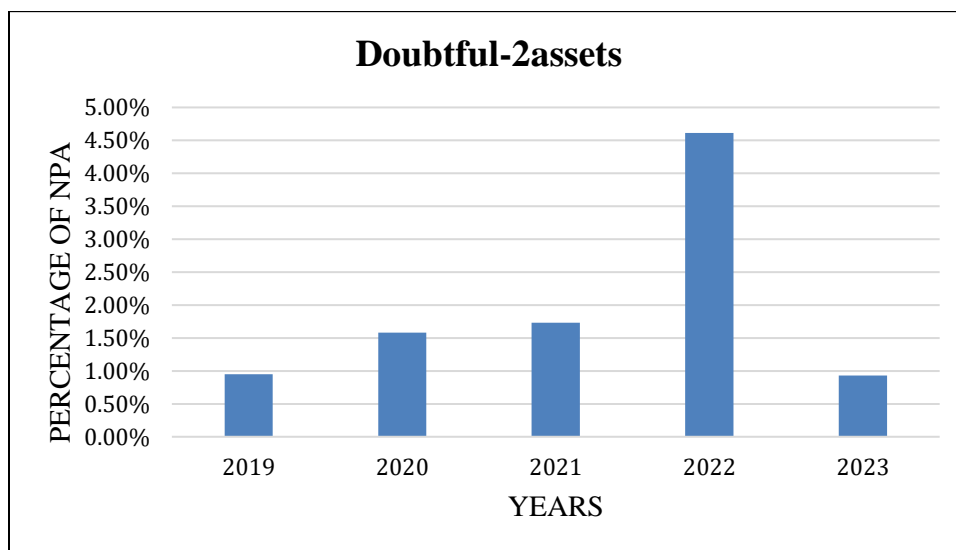


point at 5.07% but then decreased to 3.78% in 2023. This means that after 2020, 5.07% of assets remained as NPAs for more than 12 months but less than 24 months.

4. Doubtful-2 assets:

Table No. 4.4 Doubtful-2 asset data

	2019	2020	2021	2022	2023
Doubtful-2assets	0.95%	1.58%	1.73%	4.61%	0.93%



Graph No. 4.4 Doubtful-2 asset data

**Interpretation:**

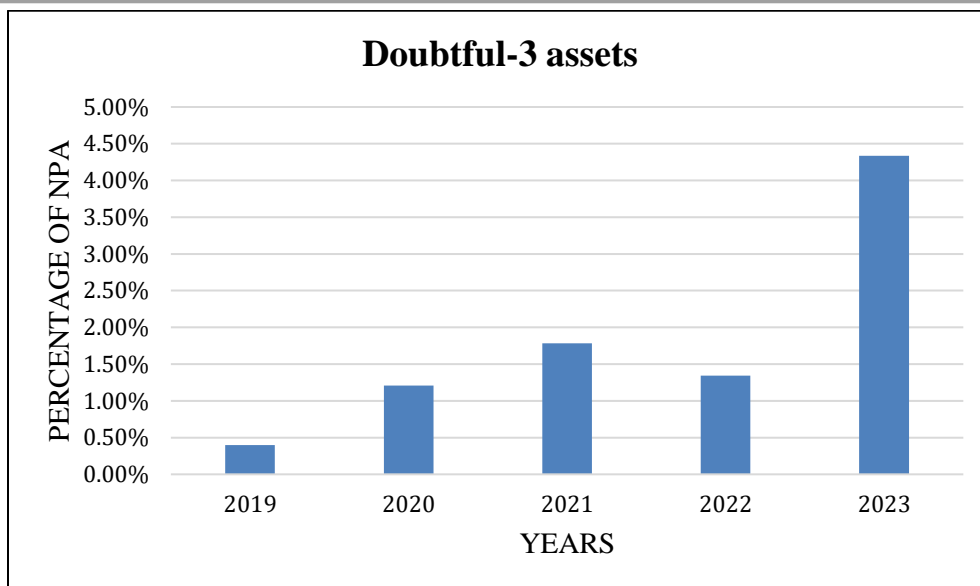
The graph shows that, from 2019 to 2022, Doubtful-2 assets show an increasing trend, with a major increase in 2022. In 2023, there is a major decrease again near the year 2019.

According to the above doubtful-2 asset graph, there is no major increase in doubtful-2 assets in 2019, 2020, or 2021. But, in 2022, it increases by 2.88% which is 4.61%, and in 2023, it decreases by 0.93%. It indicates that around 4.61% of assets in 2022 are between 24 and 48 months.

5. Doubtful-3 assets:

Table No. 4.5 Doubtful-3 asset data

	2019	2020	2021	2022	2023
Doubtful-3 assets	0.40%	1.21%	1.78%	1.34%	4.34%



Graph No. 4.5 Doubtful -3 asset data

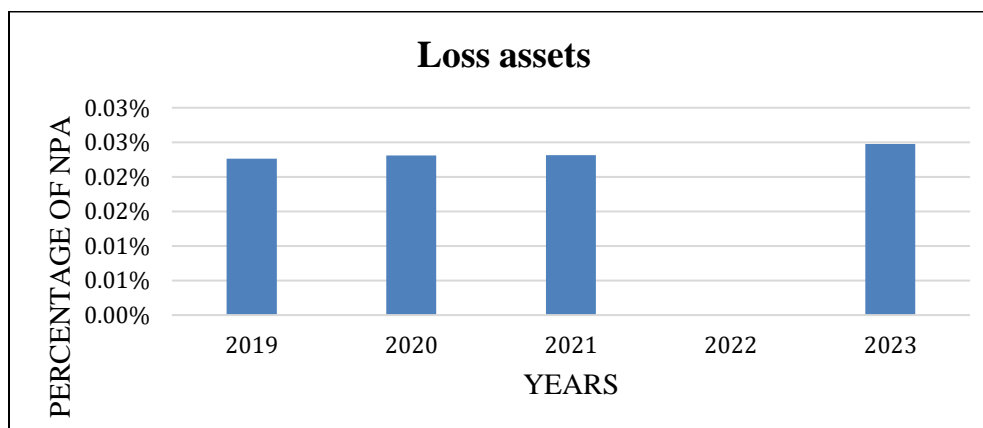
**Interpretation:**

The graph indicates that between 2019 and 2023, the percentage of doubtful-3 assets increased slowly. From the above graph of doubtful-3 assets, we can observe that in 2019 doubtful-3 assets were 0.40%, and that they increased by 0.81% in 2020 and 0.57% in 2021. But, in 2022, it drops by 0.44%. After 2022, doubtful-3 assets had a significant increase of 3%, and it went up to 4.34%. That means in recent years, around 4.34% of the assets have remained NPA for more than 48 months.

6. Loss asset:

Table No. 4.6 Loss asset data

	2019	2020	2021	2022	2023
Loss assets	0.02%	0.02%	0.02%	0.00%	0.02%



Graph No. 4.6 Loss asset data

**Interpretation:**

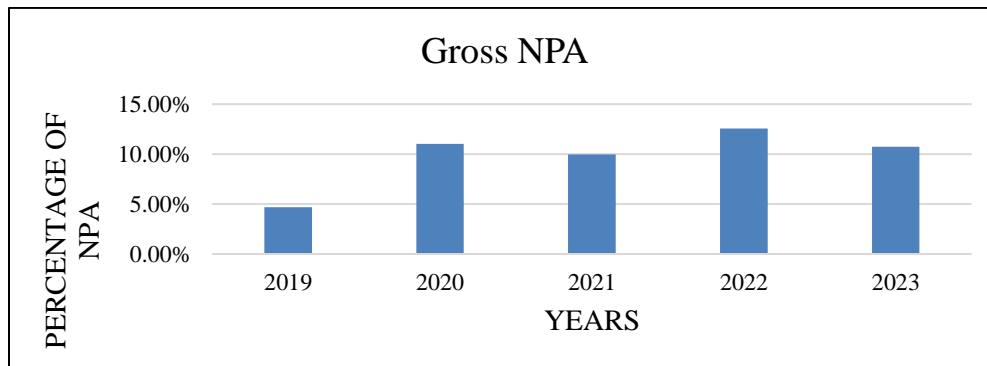
According to the graph, we can see that there is a consistent 0.02% loss asset balance from 2019 to 2023 suggesting a generally stable situation in terms of NPA over these years. A consistent percentage may indicate that the bank has

managed to maintain a low percentage of loss assets during this period in 2022 loss assets are zero, and there is no loss asset in the bank.

7. Gross NPA:

Table No 4.7 Gross NPA data

	2019	2020	2021	2022	2023
Gross Loans	5350.32	5239.5	5439.66	5127.61	5897.11
Gross NPA	251.33	578.18	543.1	643.61	633.34
% of gross NPA	4.70%	11.04%	9.98%	12.55%	10.74%



Graph No. 4.7 Gross NPA data

**Interpretation:**

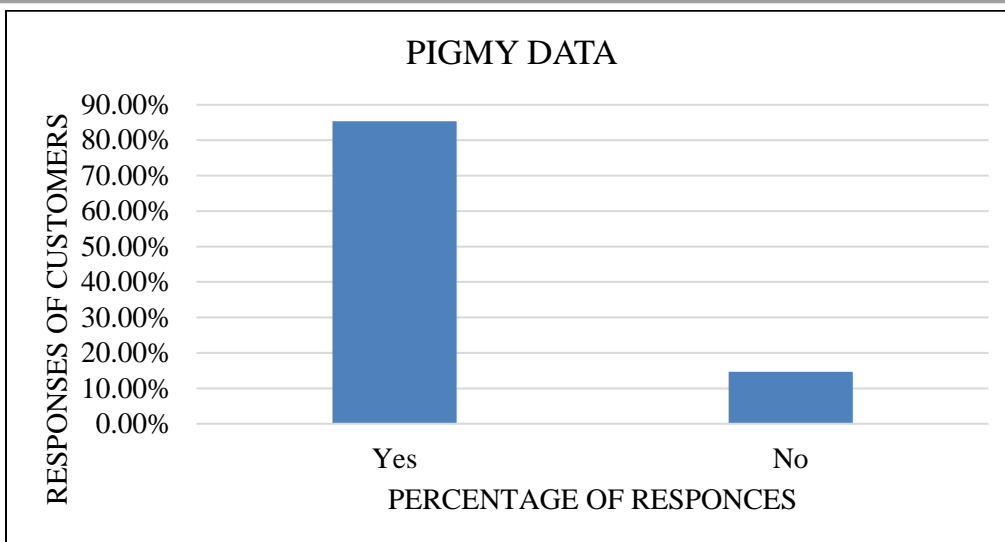
Based on the graph, we can observe that the percentage of gross NPA increased significantly by 6.34% after 2019. In 2021, there was a slight decrease of 9.98% in gross NPA percentage. However, in 2022, the gross NPA percentage increased to 12.55%, which is a significant increase and the highest in the past five years. Even though there is a small decrease of 1.81% in 2023, the gross NPA percentage remains very high.

**Data analysis of the questionnaire on pigmy data:**

1. Knowing about the Shubhalaxmi deposits scheme (Pigmy deposit)

Table No. 4.8 Awareness of Deposit

Responses of customers		Percentage
Yes	128	85.33%
No	22	14.67%
Total	150	100.00%



Graph No. 4.8

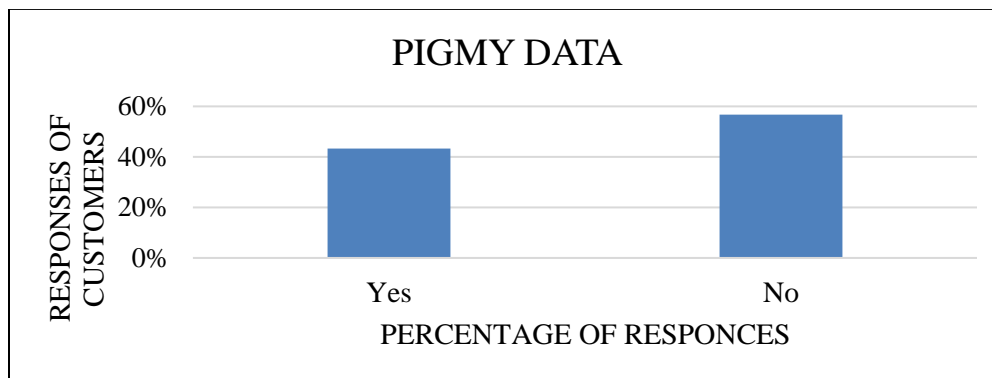
**Interpretation:**

According to the graph above, 128 respondents out of 150 consumers replied that they were aware of the Shubhalaxmi deposit scheme, whereas 22 respondents replied that they were unaware of this scheme.

2. Awareness about the Benefits of the Shubhalaxmi deposit scheme (Pigmy deposits)

Table No. 4.9 Benefits of Deposit

Responses Of Customers		Percentage
Yes	65	43%
No	85	57%
Total	150	100%



Graph No. 4.9 Benefits of Deposit

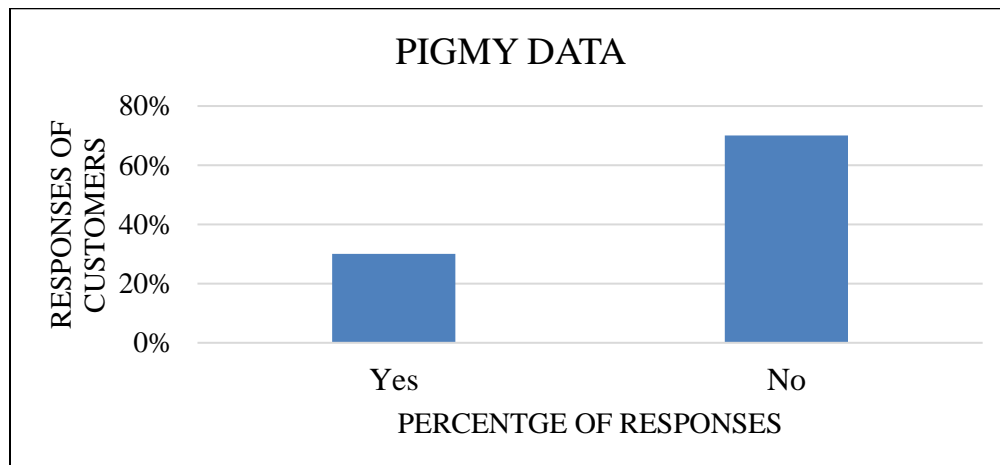
**Interpretation:**

According to the above graph, we can see that out of 150 customers, 65 customers said that, yes they knew about the benefits of the Shubhalaxmi deposit scheme and 85 customers said that, no they didn't know of the benefits of the Shubhalaxmi deposit scheme.

3. Customers open their Shubhalaxmi deposits (pigmy deposits) in the the bank

Table No. 4.10 Number of Deposits

Responses of Customers		Percentage
Yes	45	30%
No	105	70%
Total	150	100%



Graph No 4.10 Number of Deposits

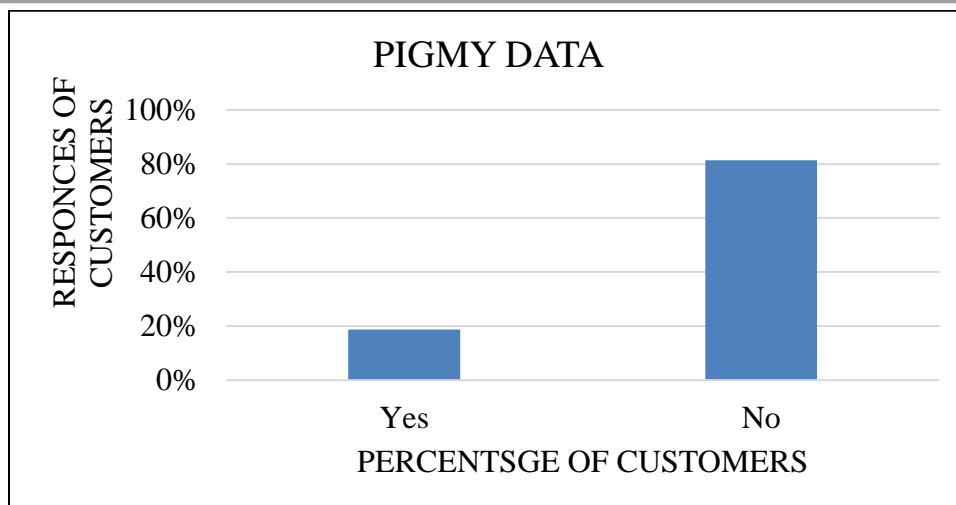
**Interpretation:**

According to the graph, we can see that out of 150 customers, only 45 customers have their Pigmy Deposit Scheme account and 105 customers do not have their pigmy deposit scheme account.

4. Awareness about the use of Shubhalaxmi deposits (pigmy deposits) to repay the loan instalment

Table No. 4.11 Awareness of Deposit

Responses of Customers		Percentage
Yes	28	19%
No	122	81%
Total	150	100%



Graph No 4.11 Awareness of Deposit

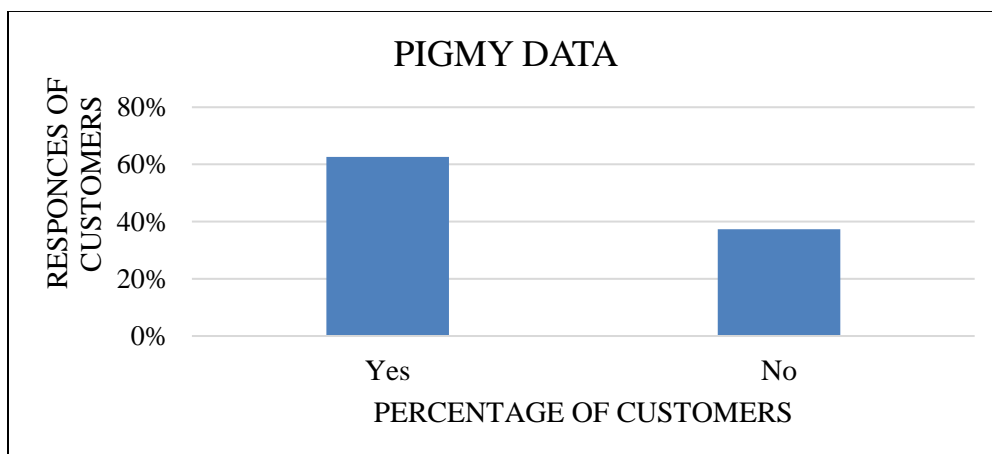
**Interpretation:**

According to the graph, we can see that out of 150 customers, 28 customers are aware that they can repay instalments regularly with the help of the Shubhalaxmi deposit scheme and 122 customers are not aware of the benefits of the Shubhalaxmi deposit scheme.

5. Loan accounts in the bank

Table No. 4.12 Number of Loan Accounts

Responses of Customers		Percentage
Yes	94	63%
No	56	37%
Total	150	100%



Graph No. 4.12 Number of Loan Accounts

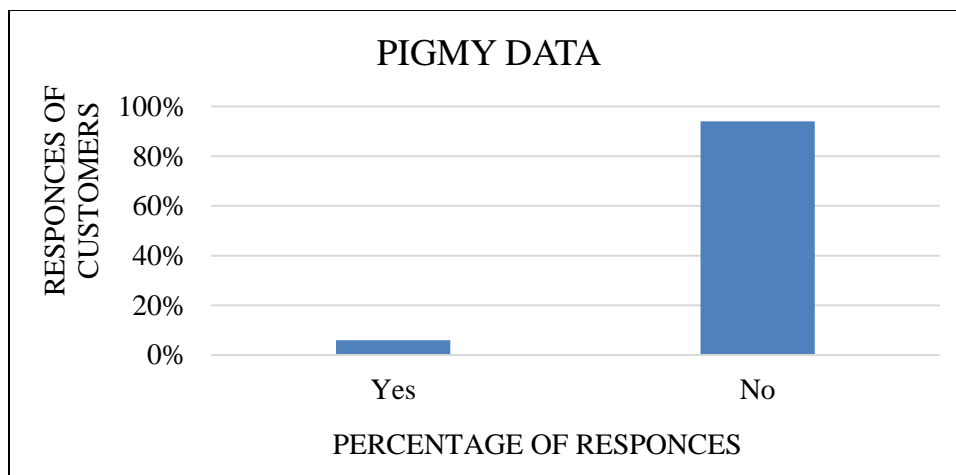
**Interpretation:**

According to the graph, we can see that out of 150 customers, 94 customers have a loan account in the bank and the rest of the 56 customers don't have loan accounts in the bank they enjoy other services provided by the bank.

6. Use of Shubhalaxmi deposit account (pigmy account) to repay your loan instalment.

Table No. 4.13

Responses of Customers		Percentage
Yes	9	6%
No	141	94%
Total	150	100%



Graph No. 4.13

**Interpretation:**

According to the graph, we can see that out of 150 customers, only 9 customers use their Shubhalaxmi deposit account to repay their loan instalment, and 141 customers respond to no as they don't use their Shubhalaxmi deposit account to repay the loan.

**Findings and suggestions:**

1. In the case of substandard assets, the percentage of sub-standard assets shown in the graph fluctuates between 2019 and 2023, which majorly increases in 2020 and 2022 and decreases in 2021 and 2023; which is a result of the 2019 flood and pandemic that spread in 2021. (Table No. 4.2)
2. In the case of doubtful-2 assets, there is an average rise from 2019 to 2021, but a significant increase in assets in 2022 indicates an increased risk to the bank's financial stability. It is because of the pandemic period. However, assets again decreased significantly in 2023, which is a positive sign for the bank. (Table No. 4.4)
3. When it comes to the doubtful-3 assets, we can observe that their percentage increased significantly in 2023 compared past five years, it is because of the high number of doubtful-2 assets in 2022. It indicates a greater chance of default than in previous years. which indicates increasing the possibility of a bank loss as well as affecting the bank's overall performance. (Table No. 4.5)
4. In the case of loss assets, the bank has maintained these assets efficiently, in 2022 it was zero, which indicates the sufficient control of the loss assets. (Table No. 4.6)
5. When it comes to gross NPA, the trend indicates an upward trend that indicates fluctuating amounts of NPA over time. But this percentage generally remains at a troubling level. (Table No. 4.7)
6. Considering the benefits of the Shubhalaxmi deposit scheme, we observe that almost half of the customers are not aware of these benefits. (Table No. 4.9)
7. In the Shubhalaxmi Deposit Scheme, we observe that just a few per cent of customers are opening accounts in the bank under the Pigmy Deposit Scheme. (Table No. 4.10)
8. In the case of the Shubhalaxmi deposit scheme, we can see that 80% of people are not aware that they can use their pigmy account to repay their loan instalments. (Table No.11)

9. Regarding the Shubhalaxmi Deposit Scheme, it is clear that just nine customers use their pigmy amount for loan repayment, which keeps their loan account running smoothly. (Table No. 13)

**Suggestions:**

1. The bank should focus on the reduction of the previous due of the bank.
2. The bank should explain to customers the benefits of opening a Shubhalaxmi deposit account and encourage them to open the account.
3. The bank should inform borrowers that they can repay loan instalments using their Shubhalaxmi deposit account. It can reduce the NPA and help ensure that the payment is received on time.
4. Automated systems for loan monitoring should be implemented by the bank.

**Conclusion:**

The study concludes that the bank is making every attempt to keep non-performing assets at the lowest level that it has reached in the past few years. They have been almost successful in achieving so, but they still need to hold it tighter to decrease it even further. The bank needs to focus especially on managing non-performing assets and take necessary action to prevent the development of new NPAs. The reduction of previous dues should be another priority for the bank. Additionally, by increasing awareness about the Shubhalaxmi deposit and its benefits among the majority of consumers, the bank can increase deposits and encourage customers to use that Shubhalaxmi deposit account for repayment loan instalments, which is useful for the borrower and the bank and helps in automatically reducing the bank's NPAs.

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**A Study on Challenges in Copyright in the Digital World with Special Reference to Kolhapur City:  
A Review**

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**Abstract:**

Copyright is a category of intellectual property rights. Intellectual property rights Petty rights over intellectual creation. In other words, "copyright" means literary, artistic, dramatic, musical, and other rights granted additional functions due to the author's self-intellectual creation. The rapid proliferation of digital technologies has revolutionized the dissemination and consumption of creative works, posing significant challenges to traditional copyright frameworks. This paper investigates the evolving landscape of copyright in the digital realm, focusing on the unique challenges faced within the context of Kolhapur City, India.

Through a comprehensive literature review and empirical analysis, this study examines the impact of digitalization on copyright enforcement, protection, and infringement. It delves into the intricacies of digital rights management, the rise of online piracy, and the implications of emerging technologies such as artificial intelligence and block chain on copyright law.

Furthermore, this research sheds light on the socio-economic implications of copyright challenges in Kolhapur City, exploring the perspectives of content creators, consumers, and policymakers. By identifying the key obstacles and opportunities in safeguarding intellectual property rights in the digital era, this paper aims to provide insights for policymakers, legal practitioners, and stakeholders in Kolhapur City and beyond.

With the dawn of the twentieth century, revolutionary advancements in technical advancement ushered in new opportunities for the exploitation of copyrighted works. However, it also poses a serious threat. Challenges to the copyrighted work's protection In particular, the arrival of the In the second half of the twentieth century, the Internet and digital technology made it possible. Copyrighted work in the digital or virtual world is difficult to secure.

**Keywords:** Copyright, Digital world, Challenges, Intellectual property

**Introduction:**

Intellectual property is related to the ownership of intangible objects. Intangible objects are objects that have no physical form or form as opposed to any physical object. For example goodwill, brands, patents, trademarks, trade names and customer lists. And it also includes designs, ideas, signs, writing and creation. It is also related to digital media such as audio and video clips which are accessible through any electronic medium like computer, mobile etc. Since intellectual property is intangible, it can be difficult to recover if it is stolen or copied.

In today's 21st century, the impact of digital technology on information technology on every generation of society is unprecedented. The present millennium sees a new culture that is cyber culture. The life of today's generation is incomplete without the digital world. Their day begins and ends with the digital world. The invention of digital technology was one of the most important revolutions of the last century.

So, when we talk about copyright protection, it comes to our mind that it is usually given to original literary, musical, dramatic or artistic works. But the rise of new technology has given birth to new concepts such as computer programs, databases, payouts, various works on the web.

Copyright is a right granted by law to creators of literary, dramatic, musical and artistic works and to producers of cinematographic films and sound recordings. Copyright is basically the right to copy or reproduce an existing work.

The twenty-first century is an amazing advancement in computerized innovation that improves our lifestyle. Mankind has now entered an age that requires a state-of-the-art technology called the "digital age", with the advent of the Covid-19 technology and digitization more advanced than in previous years.

In today's world of digitalization, this philosophy has emerged in the nineteenth century with the rise of urbanization and industrialization in the world of globalization. But the downside of digitization is that it has given rise to many problems such as cyber crime, software piracy and many other challenges in the digital world.

The digital world is very useful for India in every respect. Because whether poor or rich, literate or uneducated, employed or unemployed, the digital world can benefit. As urbanization and digitization grow so fast we can see everyone using mobile phones and computers. Today mobile phone is a very important element of human life, it is like food, clothes etc. essential human needs. Mobile phones are an easy weapon for digital crime.

Any literary or artistic work such as audio, video, drawing etc. on every digital platform. Easily available and also easy to access so anyone can use it for their personal benefit. But this affects the rights of the original creator. It also affects his financial rights. The creator must pay a certain amount for each creative work. Just as physical strength is required for any physical work, mental strength is required for any creative work. Therefore, financial benefits are also required.

The research is aimed at understanding copyright law and social responsibility in a real sense and understanding the challenges of copyright in the digital world and trying to find solutions to such crimes. Researchers are also looking at the status of copyright on digital media in Kolhapur. The researcher is of the opinion that every section of the society needs to be aware of copyright. The aim of the research is to raise awareness of copyright awareness among the general public in Kolhapur city as everyone is using or enjoying the digital world.

The aim of the researcher is to spread awareness about copyright laws as everyone knows about the digital world. As information is readily available on information technology platforms, its misuse is also largely possible. The main component of this study is to learn more about copyright and what are the challenges of copyright in the digital world of Kolhapur city. But according to research studies, copyright crimes are lower in Kolhapur city.

In India, because of COVID-19 disaster the spread or use of digital world is increased as compare to previous years. The COVID-19 came to India in Feb-2020. From 2020 to 2021 which is period of two years there were lockdown in India for many times. In lockdown people were at home for 24 hours so there only source of entertainment or to pass the time only instrument was digital world. So the use of digital media and many other digital platforms have been increased. And also many creators used digital world to express their talent and show their creation through digital media. So their creation should be protected for that copyright act is implied. That's why researcher thought of this topic for the research.

Different developments are taking place in the world according to human needs. The Internet is one of the most important human endeavors to date because in today's age the internet is an essential part of human life. And the fact that the internet is also growing so fast also helps to communicate. So we can say that internet is the fastest growing way of communication. There is no one who has control of the internet. Hence it is sometimes called "information technology and communication chaos".

With the advancement of the Internet and the evolution of industry-based knowledge, a new form of property has emerged that comes from human intellect and enterprise. This new form of property is called intellectual property. Intellectual property is related to the creation of the human mind such as imagination, art, design, creativity, applied art, fine art of new technology. It is a package of rights that can be brought or sold or leased. It also includes copyrights, patents, trademarks, geographical indications and designs.

Intellectual property differs from other forms of property because its value and uses are quite uncertain. It cannot be kept in a safe deposit vault or bank or locked up in a house. It is easily and readily available to the general public and is, therefore, easier to steal. It is a product of intellect. So it is difficult to protect. With the arrival of internet and computers, the works of intellectual property are easily traceable. Computer programs are intellectual property. The evolution of the World Wide Web has led to the registration of a large number of domain names which are a kind of intellectual property. In the field of computer there has been emergence of various general rights. The authors have thus made a general study of various intellectual property rights like trademarks and copyright. Computer database have also been accepted as literary works and are protected under the copyright law. Apart from computer database and computer program there may also exist other literary, musical or artistic work on the internet that can be protected under copyright.<sup>1</sup>

Human beings are the unique creation of God, who carries a brain with inquisitiveness, due to this inquisitiveness man always try to do something different & useful things for the society. These creations of human brain are his solo development of his mind & labour. These developments should be protected by the others. In the Indian traditions & mythology there is a concept of gains of learning for those who do these works as a reward. In modern world India becomes a common law nation that's why its legal system is founded on the basis of Common law Doctrines and Frameworks, due to this, the protection of these developments are also based on Common Law. India enacted Indian Copyright Act 1957 in the light of English enactment.<sup>2</sup>

The intellectual property belongs to the class of incorporeal property as it has no corpus i.e., no physical form. Intellectual property refers to those products that are primarily creations of the mind. Black's Law Dictionary defines

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<sup>1</sup><http://hdl.handle.net/10603/100920>

<sup>2</sup><http://hdl.handle.net/10603/45291>

‘intellectual property’ as a ‘category of intangible rights protecting commercially valuable products of the human intellect.’ They may be manifested as inventions, literary and artistic works, symbols, names, images and designs used in commerce, protected in law as patents, copyrights, trademarks, industrial designs and others. The Law of Intellectual Property pertains to the legal mysteries behind this universe of ideas.<sup>3</sup>

There are many issues and problems related to the use of digital information. Creating digital or digital copies of content, including text, images, audio and video, is easy; And this digital information can be distributed worldwide via e-mail, electronic bulletin boards, websites and networks.

The increasing use of primary and secondary mass storage media made it possible to download, store, display and print. Further, the downloaded documents can be modified or forwarded to others without the knowledge of its rightful owner. In comparison to printed information, electronic information is not so permanent; it is open to modifications, additions, deletions, revisions and manipulations without leaving any resemblance and difficult for detection. Unlike the case of printed materials, close monitoring and restriction of usage of electronic documents is difficult. Digital environment makes the issues related to copyright law a difficult task, as only element in knowledge society has not changed with advent of new technologies.

Currently the technologies that are causing problems for copyright law are related to digital storage and the transmission of works. There are several aspects of this technology that affect copyright law, including:

**I) Ease of Reproduction:** Once a work is submitted in digital form, it can be reproduced quickly at low cost and without any loss of quality. Each copy, in turn, can be reproduced without any loss of quality. In this way, a copy of the work in digital format can meet the needs of millions of users. We've seen how compact discs (CDs) with original digital versions of recorded music and sold to consumers in the 80's and 90's have become "masters" with billions of copies being distributed on computers. The Internet in this decade.

**II) Ease of Dissemination:** The rise of the global digital network allows for the rapid, global spread of work in digital form. Similar to broadcasting, digital networks allow broadcasts from a single point to multiple individuals (although, unlike broadcasting, digital content does not have to reach each person at the same time). However, digital networks allow each recipient on the network to engage in further dissemination of work, allowing the work to spread geometrically (sometimes called “viral”) at an increasing rate. This, combined with the ease of reproducing works, means that a digital copy of the work can be multiplied thousands of times in a few hours worldwide. When transmitted through high-speed transmission lines such as coaxial cable networks or even fiber optic lines, the process becomes even faster and the transmission capacity of works also increases.

**III) Ease of Storage:** Digital storage is dense, and it gets denser with each passing year. Ever-increasing quantities of material can be stored in a smaller and smaller amount of space. In the early 1990s, CDs, which can store over 600 megabytes of data, were perhaps the predominant form of digital storage used by commercial pirates for storing entire libraries of computer programs or sound recordings with aggregate retail values in the millions of dollars. Today's popular iPod portable music player can store nearly 70 times that amount (around 10,000 songs) in a device the size of a cigarette pack.

Third and the formidable issue with the current Copyright regime is that Copyright Act provides narrow definition to the copyrighted work. Thus, copyrighted work is not provided with any kind of online protection nor does copyrighted work is being provided online protection through judicial pronouncements. Therefore, if left unresolved, these issues will subvert the intellectual property system.

#### **Digital Technology: An impetus to change:**

Since nothing is concrete and subject to change, technology has come a long way from analog technology to digital technology. Thus, with the advent of the digital age, users of digital technology are being offered more and more options to record download and transmit high quality data in less time than analog systems. Download and transmit data. Thus, the result will be that more and more copyrighted work will incur infringement at a lower cost and it will be more difficult to prevent.

#### **History of technological progress and obstacles in copyright law**

In the 1980's, analog technology was replaced by digital technology. Sales of analog photographic albums began to decline, and sales of compact discs reached record highs. Thus, the digital form of data transmission is becoming more common than the analog logs of transmission in the form of television, radio and fiber optic cable. And the main reason

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<sup>3</sup><http://hdl.handle.net/10603/188175>

for such a drastic change in analog transmission in digital transmission is the improvement in quality, lower cost of transmission and higher speed of data transmission and recording.

Copyright law is considered to be the greatest revolution in intellectual property governance, providing protection to the owner of a creation from a possible copy of creative work.

With the owner of the copyrighted work not only being provided protection against possible copying and but also being provided with compensation in the form of damages, in case of violation, copyright law seems to be comprehensive protection that the owner of the copyrighted work needed. However, when the Copyright Act was being framed by the legislature, technology was not so advanced and we didn't entered the digital era. However, with the advent of the technology, Copyright Act seems to be lacking in addressing the problems being created by new digital data transmission and technology.

### **Issues in digital era with Copyright Act:**

Therefore, with the advent of technology, copyright law faces three major problems and barriers that need to be addressed. The first and foremost problem of copyright law is that in the digital age, online infringement of copyrighted work will become more and more common, and copyright law does not provide effective solutions to deal with such infringement. Violations are difficult to detect online, mainly due to privacy interests and laws, as well as the continued public acceptance of digital copies. Thus, both situations will make copyright law even more difficult to enforce.

Another major problem in the digital age is the proper use of the permissions permitted by copyright law. This law allows copying of work for private use under the rules of fair use. This way, people can copy the copyrighted work for fair use and publish that work online unauthorized; making it even more difficult for copyright law to prevent such unauthorized use.

### **Review of Relevant Literature**

Here discuss about the references to article researched by researchers, books, research papers. The goal of the review to find gap between previous studies and what is needed for current study.

The researcher received input on their prior study, the concept and methodology employed in the study, and the conclusion derived from the previous study when analyzing the previous study. It was also important to ensure that similar and duplicate work hasn't been done before on the same study.

### **Researcher has reviewed following primary literature:**

1. Newspaper, articles, clipping, and reports that have been published in newspapers.

Online news platforms like Times of Express are used while doing this research.

2. Available articles from various referred journals evaluated and approved by the researcher during the research process.

### **For Example:**

a) Copyright in digital era:

This article is by Nehal Wagale. This article gives very good information about the copyright and it's relation with digital world in today's era. The advancement of digital technology is a masterpiece of the human mind. Technology has opened its doors to a wide range of possibilities in various fields such as media, entertainment, communication, advertising and education. However, easy access to content available on the Internet has caused great concern for copyright infringement. Copyright is the most important intellectual property right that represents the rights of creators for literary and artistic works. It includes works from books, pictures, computer programs, movies, databases and maps. Digitization has made it much easier to copy, replicate and sell the copyright owner's work without his permission, and such infringement is difficult to detect. This poses a serious threat to the rights of copyright owners or creators.<sup>4</sup>

b) T. C. James, "Indian Copyright Law and Digital Technology History of Copyright Law":

It describes various improvements made from time to time. The international community has responded to the challenges of digital technology in the form of WIPO Copyright Treaty (WCT) and WIPO Performers and Phonograms Treaty (WPPT). The major copyright issues in the digital age are identified. It was found that many issues

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<sup>4</sup><https://blog.ipleaders.in/copyright-digital-era/> :

in Indian copyright law are still unresolved. Amendments to the law are suggested to make it compatible with WCT.<sup>5</sup>

3. Previous research scholar's thesis and dissertation on the topic relevant to the current research theory. For better study researcher has gone through many research scholars thesis which were available on the internet. Shodhnaga is official website where thesis of scholars are easily available. From this website researcher has taken some thesis for the research.

4. Books and their relevant to the topic relating to the current research study.

Some of the books used while doing this research are as follows:

a) M. K. Sinha, March 2017, Copyright law in the digital world: Challenges and opportunities:

The book addresses key issues, challenges and consequences arising from changes in copyright law and the relevant judicial responses. Using concrete examples, the book assumes no prior knowledge of copyright law, but brings together leading intellectual property researchers to consider the important role of copyright law in meeting the needs of the modern digital world. It provides insights into two different areas: copyright and digital media. The exponential growth in the ability to multiply and disseminate information through digital media has led to numerous copyright-related conflicts - and in turn has prompted legislators to expand the scope of copyright protection in the digital age. Given the new questions that the advent of the digital age has posed on the role and function of copyright, the book presents a collection of papers specifically covering new frontiers and changing horizons in this area. The contributions focus on key issues, including the fatigue principle, copyright and digital media, hosting service providers' responsibility, originality requirements, accessibility of published works for the visually impaired, criminalization of copyright infringement, and software protection under copyright law. Containing 14 dissertations, the book will be of equal interest to researchers, policy makers, scholars and legislators, especially those active in the field of intellectual property rights (IPR).<sup>6</sup>

b) Copyright Act, 1957

[Amended up to Act 7 of 2017 & copyright rules 2013 amend up to G.S.R. 788 (E) dated 10-08-2016 & all 07-12-2020] This bare act contains laws and regulation which were governing laws.

c) Information Technology Act, 2000

Various provisions related to IT are given under this bare act.

d) Intellectual Property Act, 2014

This bare act contains sections of Intellectual Property Act.

e) Law relating to intellectual Property

This book is by Dr. B. L. Wadhera. The author of this book has classified various concepts and sections of intellectual property. This book provides very good information relating to the copyright act which was very helpful to the researcher while doing this research study.

### **Conclusion:**

Although digitalisation has given manufacturers the opportunity to effectively showcase their work and creations, at the same time the concern of violating the rights of owners has also increased. However, despite many efforts, both internationally and nationally, to remove barriers to ensuring copyright protection in the digital sector, much remains to be done. At the national level, there is a need to create awareness among the people, train enforcement agencies and develop appropriate mechanisms to prevent violations. At the international level, it is important to ensure that the provisions and principles enriched under international agreements and conventions are adhered to ensure effective management of copyright protection in the digital world.

In conclusion, this study highlights the multifaceted challenges facing copyright protection and enforcement in the digital landscape, with a specific focus on Kolhapur City. The analysis underscores the need for adaptive legal

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<sup>5</sup>T. C. James, "Indian Copyright Law and Digital Technology History of Copyright Law."Journal of Intellectual Property Rights Vol 7, September 2002, pp 423-435  
<http://docs.manupatra.in/newline/articles/Upload/040BB5AA-DE9A-4895-AA66-C82590E7BFF2.pdf>

<sup>6</sup>[https://www.researchgate.net/publication/320957123\\_Copyright\\_law\\_in\\_the\\_digital\\_world\\_Challenges\\_and\\_opportunities](https://www.researchgate.net/publication/320957123_Copyright_law_in_the_digital_world_Challenges_and_opportunities)

frameworks and technological solutions to address issues such as online piracy, digital rights management, and the impact of emerging technologies on intellectual property rights.

Research emphasizes the importance of collaboration among stakeholders, including content creators, consumers, legal experts, and policymakers, to develop holistic approaches to copyright protection. By understanding the unique socio-economic dynamics of Kolhapur City and leveraging local insights, tailored strategies can be formulated to safeguard intellectual property rights effectively.

This study contributes to the broader discourse on copyright in the digital age, providing valuable insights and recommendations for navigating the complex challenges posed by digitalization. It serves as a foundation for future research and policy development aimed at fostering innovation, creativity, and respect for intellectual property rights in Kolhapur City and beyond.

There is no right answer to the question of the future Copyright because the future of the Internet is still like that Uncertain, of course, will be the choice we make now Subsequent courses will be affected. Copyright does not make sense to give its holders unique control over their work; instead, it is a very specific bundle of designed rights enhancing creativity in the public interest. Another one an interesting option is to interpret reasonable use to avoid large-scale harmful violations, Unprofessional use. No matter the copyright Problems are solved, it is clear that other systems Compensation to authors may co-exist on the Internet. Service providers like VSNL offer 'live' Exhibition, where well-known people visit the chat Interact with rooms and customers. Software Companies provide technical support. Free rationalist Works a lot on the internet with Express Indications of what conditions they may be in Copied or used. For example, this could be a paper Published in any format if properly submitted and not sold for profit. Finally, the new form of Compensation may revoke copyright. Maybe in ultimately, copyright on the Internet could be the future much depends on popular beliefs Restrictive rules. Laws are possibly intended Reflect public opinion, don't control it. People follow They consider the rules reasonable. As John Perry Barlow noted in reference to encryption, 'a social Rather relying more on protection through barricades Vivek will finally turn around and then faint Infiltration and theft in sports rather than crime. The basic concept of what is fair and just May decide the future of copyright at best Cyberspace

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## The Future Accountant: Crucial Competencies for Blockchain Accounting and Its Effect on Auditors

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**ABSTRACT** — It is essential for accountants to improve their current abilities and get market- and technology-ready in this age of rapidly evolving technologies. The field of accounting and auditing is also utilizing the relatively new technology known as blockchain. This article aims to investigate professional and scholarly opinions about the abilities required to operate in a blockchain technology environment and potential changes to the role of auditors. The respondents concurred that they need to improve their knowledge of, legal requirements, smart contracts, consensus mechanisms, etc. They also concurred that the use of blockchain technology would transform the role of auditors from traditional accounting and auditing to auditing of smart contracts, consensus protocol dependability, and assessment of digital assets and liabilities.

**KEYWORDS**— Blockchain Technology, Accountants, Skills, Auditor

### INTRODUCTION

Blockchain accounting is a revolutionary approach to record-keeping and financial management that leverages blockchain technology. Unlike traditional accounting methods that rely on centralized databases and intermediaries, blockchain accounting operates on decentralized networks, offering transparency, security, and immutability. At its core, blockchain accounting utilizes a distributed ledger system where transactions are recorded in a chronological and transparent manner across a network of computers, known as nodes. These transactions are grouped into blocks and linked together in a chain using cryptographic techniques, hence the term blockchain. The term "blockchain accounting" describes the application of blockchain technology to accounting. Blockchain is a distributed, decentralized digital ledger that makes it possible to create a safe, transparent, and impenetrable record of transactions. Accounting data can be safely kept in a distributed ledger utilizing blockchain technology, where every transaction is recorded and validated by several network nodes. Blockchain accounting creates an irreversible and permanent record of all accounting processes by recording transactions as blocks that are added to the blockchain chronologically. The technology makes the accounting process more accurate, transparent, and secure because it makes the data on the blockchain accessible to all parties for verification. All things considered, blockchain accounting has the power to completely transform the accounting sector.

### REVIEW OF LITERATURE

While reviewing prior literature, it was found that not much work has been done using primary data.

**Hashem, Mubarak and Abu-Musa (2023)** conducted an empirical study on a sample of Egyptian banks that use blockchain technology during the period from 2017 to 2021 and found that there is a significant relationship between blockchain and audit quality in the banking sector.

**Chowdhury (2021)** conceptualized the impact of blockchain technology on financial accounting from technical and non-technical perspectives.

**Zheng (2021)** studied the necessity and feasibility of the application of blockchain technology in the accounting industry.

**Tiron-Tudor et. al (2021)** indicated that implementing BT requires some new modus operandi.

**While Pimentel and Boulianne (2020)** made a systematic literature review and found that academics have begun to explore how the accounting profession might change in response to blockchain, this research study is limited primarily to the auditing field.

### RESEARCH METHODOLOGY

#### OBJECTIVES

The study has two objectives:

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1. To investigate what abilities aspiring accountants will require in order to operate with blockchain-based accounting.
2. To explore how the use of blockchain technology could alter the roles of auditors.

**HYPOTHESES**

1. There is no significant difference among the opinion of respondents for various future skills needed for accountants.
2. Demographic factors have no effect on the opinion of respondents for various future skills needed for accountants.

**DATA COLLECTION**

Data for this study consists of primary data. A structured questionnaire was prepared in order to obtain the opinion of academicians and accounting professionals regarding skills needed for blockchain accounting. Apart from basic demographic questions like age, gender, education, experience, country etc., the questionnaire contained some latest skills required to work in the world of changing technology. Respondents were offered with six distinctive skills required by future accountants, to which they had to respond on a five-point Likert Scale ranging from “Strongly Agree” to “Strongly Disagree”. They were also asked about changes this technology will bring in the field of auditing.

**SAMPLING**

Purposive and judgmental sampling method was used to select respondents for the study. Respondents were chosen either from academics i.e. those who are teaching accounting subjects or from accounting professionals i.e. those who are working in the field of accounting. In all 160 responses could be obtained after discarding incomplete responses.

**RESULTS AND DISCUSSION**

**TABLE 1**  
**DEMOGRAPHIC PROFILE OF RESPONDENTS**

Age Group	Frequency	Percent	Gender	Frequency	Percent
< 20	5	3.125	Male	124	77.5
20-40	109	68.125	Female	36	22.5
≥40	46	28.7	TOTAL	160	100
TOTAL	160	100	Education	Frequency	Percent
Work Experience	Frequency	Percent	Accounting	113	66.9
0-5 years	65	40.6	Research	18	10.7
5-10 years	26	16.3	Computer Science	13	7.7
≥ 10	69	43.1	FinTech	10	5.9
TOTAL	160	100	Others	6	3.6
			TOTAL	160	100

**Source: Compiled by Researcher**

Since the study focused on skills needed to work with blockchain technology, the sample was judgmental which is reflected in the demographic characteristics of the respondents. Majority of respondents are male (77.5 per cent), between the age of 20 and 40 years (68 per cent). The respondents having less than 5 years of experience were 40.6 percent; those with 5-10 years were 16.3 percent and those having more than 10 years were 43.1 percent. The respondents had different educational qualifications. Due to diverse degrees they had, they were clubbed into five groups based on similarity of education – accounting, research, computer science, fintech and others. Majority of the responses were received from those who have obtained degrees in accounting field (66.9 per cent), like post-graduation, CA, CS, MBA, ICWA, M. Com. etc. The respondents from research field were 10.7 percent and from computer science field were 7.7 percent. The respondents who had a combination of accounting and computer science have been categorized as fintech and they were 5.9 per cent only.

**TABLE 2**  
**DESCRIPTIVE STATISTICS AND NORMALITY RESULTS**

Required Skills	Mea n	Std. Dev.	C. V.	S-W	df	Sig.
Understanding of principles and functions of blockchain technology	1.68	0.749	44.69%	0.772	159	0.00
Keeping oneself updated with emerging technologies	1.66	0.768	46.19%	0.763	159	0.00
Understanding of triple entry accounting system	1.80	0.815	45.28%	0.806	159	0.00
Knowledge about Government regulations regarding blockchain technology	1.71	0.790	46.29%	0.779	159	0.00
Understanding of smart contract	1.84	0.868	47.23%	0.810	159	0.00
Understanding consensus protocol	1.84	0.892	48.58%	0.797	159	0.00

Changes in Auditors' Function	Mea n	Std. Dev.	C. V.	S-W	df	Sig.
Auditing smart contracts	1.91	0.930	48.80%	0.813	159	0.00
How transactions are recorded and recognized in financial statements	1.81	0.799	44.28%	0.806	159	0.00
Perform arbitration function to settle disputes	2.36	0.981	41.52%	0.887	159	0.00
Examining how judgmental elements have been decided, such as valuation	1.98	0.760	38.49%	0.825	159	0.00
Examining reliability of consensus protocol for the specific blockchain	1.97	0.850	43.17%	0.821	159	0.00
Evaluation of management's accounting policies for digital assets and liabilities	1.76	0.807	45.94%	0.791	159	0.00

**Source: Compiled by Researcher**

For the purpose of the type of tests to be used for hypotheses testing, normality test has been performed using Shapiro-Wilk test. Results show that p values of for all the skills offered along with all statements related to changes in auditors' functions are less than 0.05. This shows that the data is not normally distributed and hence non-parametric tests are to be used.

Table 3 presents the results of Chi-square test for overall opinion. For skills required, it is found that Chi-Square test statistic was significant for all the skills as the p value is less than 0.05. Hence it can be concluded that there is significant difference in the overall opinion of respondents for skills required to work in blockchain technology environment. Majority of respondents are in agreement for all the skills required.

**TABLE 3**  
**CHI-SQUARE TEST RESULTS FOR OVERALL OPINION**

Required Skills	Chi-Square	P Value
Understanding of the principles and functions of blockchain technology	91.950	.000
Keeping oneself updated with emerging technologies	93.650	.000
Understanding of triple entry accounting system	67.700	.000
Knowledge about Government regulations regarding blockchain technology	82.850	.000
Understanding of smart contract	120.750	.000
Understanding consensus protocol	123.862	.000

Changes in Auditors' Functions	Chi-Square	P Value
Auditing smart contracts	112.313	.000
How transactions are recorded and recognized in financial statements	132.478	.000
Perform arbitration function to settle disputes	70.625	.000
Examining how judgmental elements have been decided, such as valuation	140.063	.000
Examining reliability of consensus protocol for the specific blockchain	127.813	.000
Evaluation of management's accounting policies for digital assets and liabilities	140.875	.000

**Source: Compiled by Researcher**

Similarly, for changes that would be brought by blockchain technology in auditors' functions, it was found that Chi-Square statistic was significant for all the changes offered to the respondents. P values for all the changes are less than 0.00 and thus null hypothesis is rejected for all the changes at 5 per cent level of significance. It can be concluded that respondents' opinion differs significantly for all the changes that would occur in blockchain technology environment. Thus, it can be concluded that majority of the respondents agree with all the skill sets offered to respondents and demographic variables are not significantly impacting the opinion of respondents. Accountants need to understand the basics of blockchain technology, smart contracts, consensus mechanism and triple entry accounting. Then effect of demographic factors was tested using non-parametric tests. There were four demographic factors, effect of which could be tested – gender, age, education and experience.

## CONCLUSION

In this study an opinion survey was conducted among accounting academicians and professionals to find the future skills required and potential changes in auditors' function in a blockchain based accounting environment. It was found that understanding of blockchain technology, smart contracts, consensus mechanism, related legislations were considered necessary by respondents. The advent of blockchain technology presents both opportunities and challenges for accountants and auditors. By cultivating the necessary competencies and embracing the transformative potential

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of blockchain, accounting professionals can adapt to the evolving landscape, foster transparency, and elevate the value they deliver to clients and stakeholders in the digital age.

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**The study of Operational Performance Analysis with special reference to Bengaluru  
Metropolitan Transport Corporation (BMTc)**

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**Abstract**

Operating costing plays a pivotal role in effective cost management within any company. Thus, conducting a comprehensive examination of each element within the control system is crucial to assess the sufficiency and optimal level of operating costs for each vehicle. It encompasses an analysis of the operational performance of the corporation. The efficiency and effectiveness of public transport organizations heavily hinge on their operating costs, which are pivotal in ensuring success. Challenges or complications with these costs can pose significant hurdles, potentially compromising operational efficiency. This research endeavours to delve into the operating costs of the Bengaluru Metropolitan Transport Corporation (BMTc), aiming to dissect its various components. Through this study, we seek to gain a comprehensive understanding of these operational elements. Furthermore, the research intends to shed light on the efficiency of each operational component during service provision.

**Key Words:** Cost, Operating Costing, Operational Performance, Transport Service.

**I. Introduction**

Transportation, defined as the intentional movement of humans, animals, and goods from one location to another, plays a crucial role in business for the movement of goods, services, and people. There are various modes of transport available worldwide, each serving specific needs. These modes include airways, roadways, and waterways. Transportation can be broadly categorized into two main types: Public Transport and Private Transport. Public transportation is owned and operated by government authorities or state-owned companies. Funding for public transportation typically comes from a combination of local, state, and federal agencies. In contrast, private transportation is operated by individuals or companies with the primary goal of generating profits. This distinction between public and private transportation underscores the diverse ways in which transportation services are provided to meet the needs of society. In India, buses take up over 90% of public transport in Indian cities, and serve as an important mode of transport. Services are mostly run by state government owned transport corporations. Operating costing is highly relevant to the transport industry. As it involves determining the expenses associated with running transportation services. Performance analysis is crucial in the transport industry for evaluating various aspects of operations to ensure efficiency.

**II. Literature Review**

•Daniels. C., (1974) in his journal "Vehicle operating costs in transport Studies: With special reference to Economist Intelligence Unit" London, London Cost times. In addition to referencing published research findings that relate some of the factors, the report looks at the factors that go into vehicle operating costs, which are split into running and standing costs. Presented and discussed is a wealth of data from African transport studies. In particular, the relative operating costs of vehicles on various types of roads—from good bitumen surfaces to gravel and earth—as well as on various road widths are highlighted. The cost differentials are said to vary significantly between studies, especially in these areas.

•Author: B Gary Barnes, Peter Langworthy (17T" January 2003) "The Per-Mile Costs of Operating Automobiles and Trucks" Magazine from International Journal Academy. A spreadsheet model for figuring out how much it costs to operate cars and trucks is provided in this report. The budget for highway projects will be used to plan this expense. The fact that highway projects change the costs associated with vehicle operations presents one challenge for the researchers. The fixed costs of car ownership were subtracted from the travel cost estimates by the researcher using creative methods based on usage. The study also provides strategies for modifying the expenses to account for various road conditions, such as smooth or uneven surfaces. The report also makes recommendations for how to project future operating costs for a personal car or truck.

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Their analysis of the following specific costs has led them to the conclusion that, in a "baseline" scenario of highway driving on smooth pavement and gasoline prices of \$1.50 per gallon, trucks would typically cost 43.04 cents per mile. City driving conditions: 9 p.m. for trucks, with lots of stops and starts. Extremely uneven pavement results in a 2 cent increase in base cost.

•DYER, RIHA AND WALKER (1995) In order to develop a state transportation vitality strategy that accounts for all financial and non-financial costs to the state, it is stated that this work attempted to fully assess the financial and ecological costs of petroleum use, as well as the financial and natural costs of other transportation powers, including the costs and estimates of natural externalities. Comprises obstruction, accident, maintenance of the foundation, management, and air pollution.

**Objectives of the Study:**

- 1) To identify cost data with respect to operating costing.
- 2) To examine operational performance of the organization.

**III. Research Design:**

The research used Descriptive and Analytical research design for research. The whole study is based on only secondary data. The data is collected from Profit and Loss Statement, Balance Sheet and Operational Performance Statement from Bengaluru Municipal Transport Corporation. Other information is collected from annual report, Internet. This research is done with the data collected from the year 2017-18 to 2021-22.

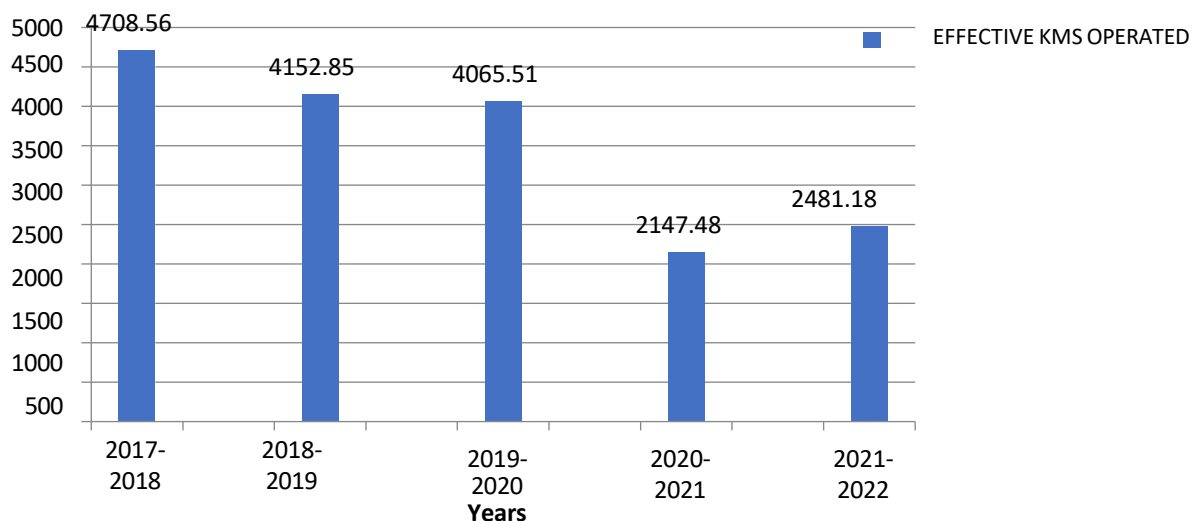
**Data Analysis and Interpretation**

**The Effective Km Operated (Lakhs)**

Year	Effective Kms Operated
2017-2018	4708.56
2018-2019	4152.85
2019-2020	4065.51
2020-2021	2147.48
2021-2022	2481.18

Table No.1

**EFFECTIVE KMS OPERATED**

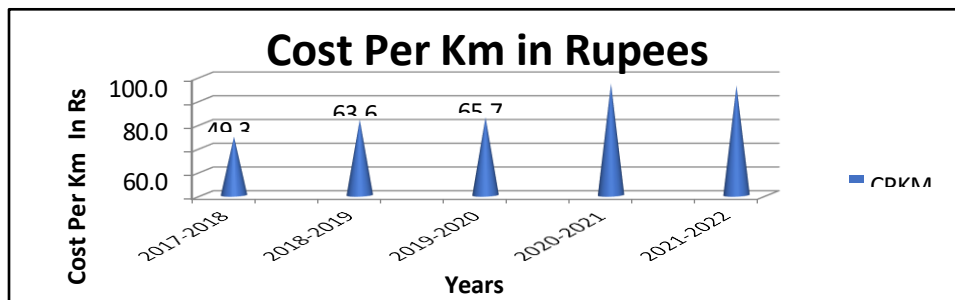


**Interpretation:** The provided data illustrates the effective kilometers (kms) covered by BMTC from 2017-18 to 2021-22, showcasing fluctuations in performance. There were notable changes in the percentage growth rates, with decreases observed from 2017 to 2020 and a momentous increase in 2021-22, rebounding from the previous year's downturn. Specifically, in 2021-22, BMTC operated 2481.18 lakh effective kms, reflecting a positive uptick in performance.

The Cost Per Kilometre

Year	Cost Per Km (in rupees)
2017-2018	49.3
2018-2019	63.6
2019-2020	65.7
2020-2021	93.9
2021-2022	92.3

Source:BMTC Annual & Audit Report Table No: 2



Graph: 2

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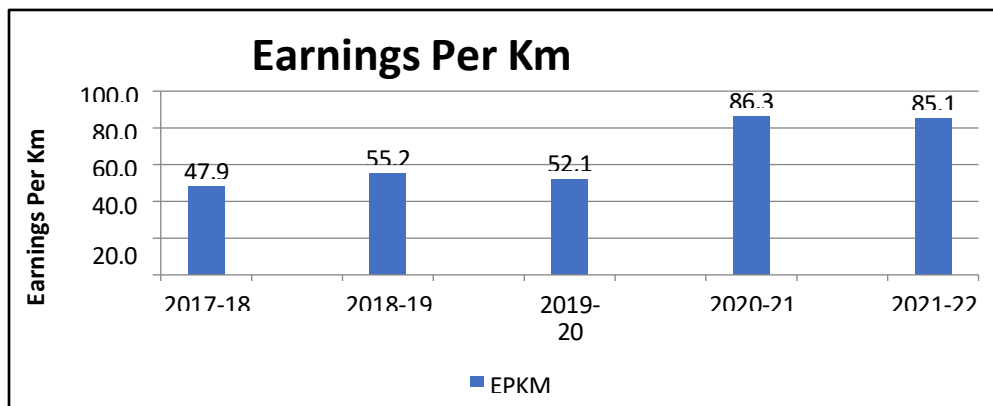
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**The Earnings per Kilometre**

Year	The Earnings Per Km (in rupees)
2017-2018	47.9
2018-2019	55.2
2019-2020	52.1
2020-2021	86.3
2021-2022	85.1

Table No.3 Source: Annual Reports



Graph No.3

**Interpretation:**

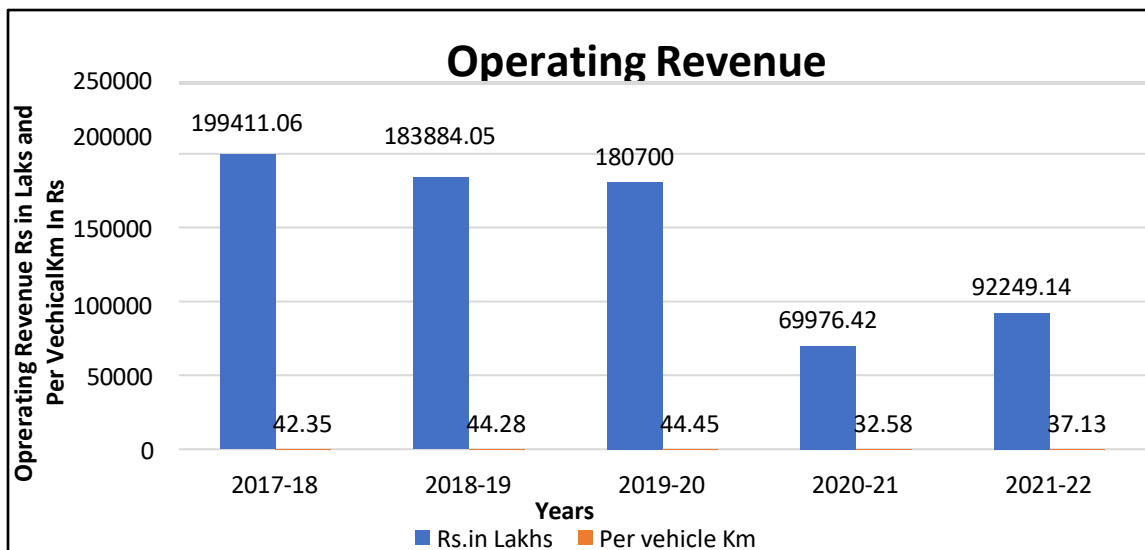
The table illustrates BMTC's earnings per kilometer from 2017 to 2022, with a fluctuating trend depicted in the graph. Notably, earnings per kilometer were 47.9, 55.2, 52.1, 86.3, and 85.1 for the respective years 2017-2018, 2018-19, 2019-20, 2020-21, and 2021-22.

**The Operating Revenue Of BMTC**

Year	Rs.in Lakhs	Per vehicle Km (in rupees)
2017-2018	199411.06	42.35
2018-2019	183884.05	44.28
2019-2020	180700	44.45
2020-2021	69976.42	32.58
2021-2022	92249.14	37.13

Table No.4 Source: Annual Reports





Graph No: 4

**Interpretation:**

The graph depicts operating revenue in lakhs of rupees and per vehicle kilometer (in rupees). Notably, there was a gradual decline in revenue over the first three years (2017-18, 2018-19, 2019-20) with minor fluctuations. However, there was a significant drop from 180,700 lakhs to 69,976.42 lakhs between 2019-20 and 2020-21. Subsequently, there was a slight increase in revenue for the last year.

**The Operating Expenses**

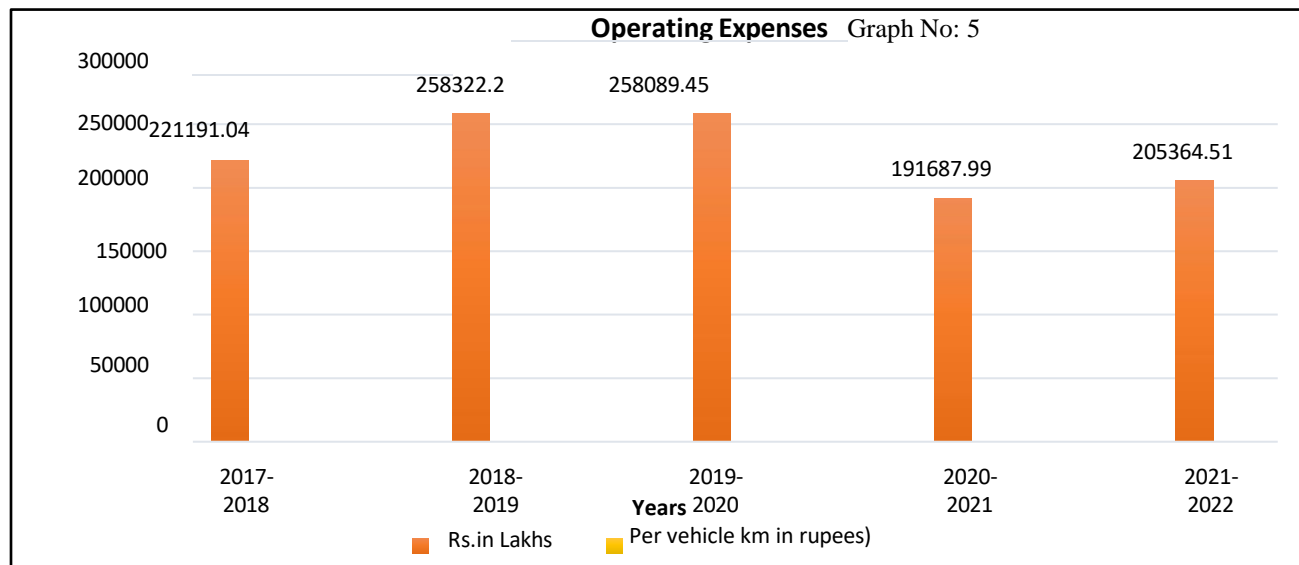
Year	Rs.in Thousand	Per vehicle km (in rupees)
2017-2018	221191.04	46.98
2018-2019	258322.2	62.20
2019-2020	258089.45	63.48
2020-2021	191687.99	89.26
2021-2022	205364.51	82.67

Table No. 5 Source: Annual Reports

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Graph No: 5

**Interpretation:**

The table displays operating expenses incurred by BMTC from 2017-18 to 2021-22. There were increases in expenses for 2017-18 and 2018-19, followed by decreases from 2018 to 2021. Notably, there was a significant decrease from 258,089.45 to 191,687.99 in operating expenses between 2019-20 and 2020-21. Subsequently, a slight increase was observed from 2020-21 to 2021-22.

**The Operational Coverage by BMTC Buses**

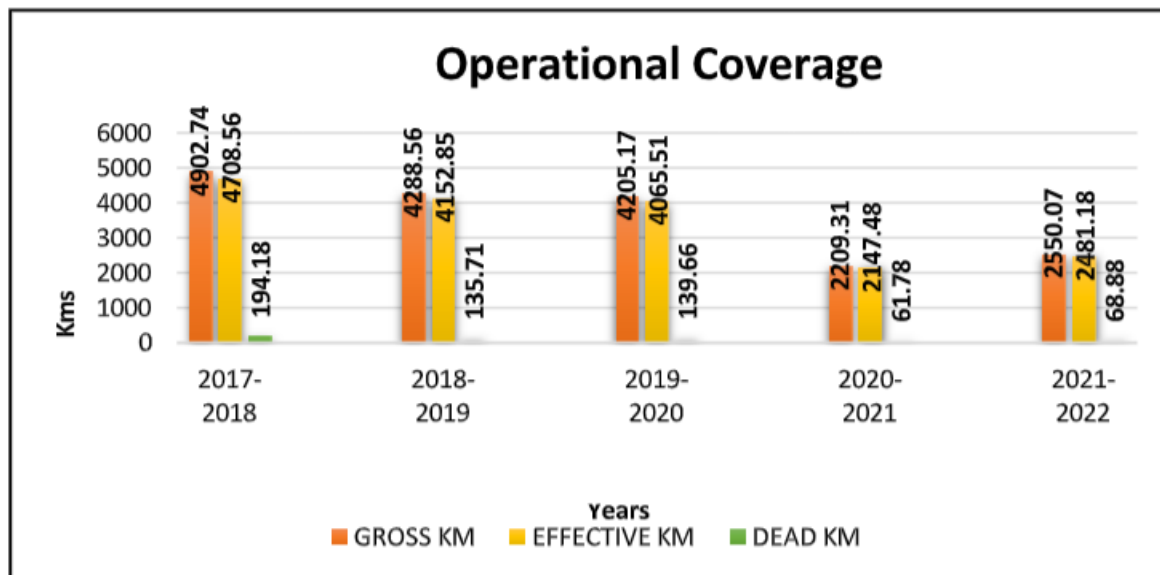
Year	Gross Km	Effective Km	Dead Km
2017-2018	4902.74	4708.56	194.18
2018-2019	4288.56	4152.85	135.71
2019-2020	4205.17	4065.51	139.66
2020-2021	2209.31	2147.48	61.78
2021-2022	2550.07	2481.18	68.88

Table No: 6 Source: Annual Reports

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Graph No: 6

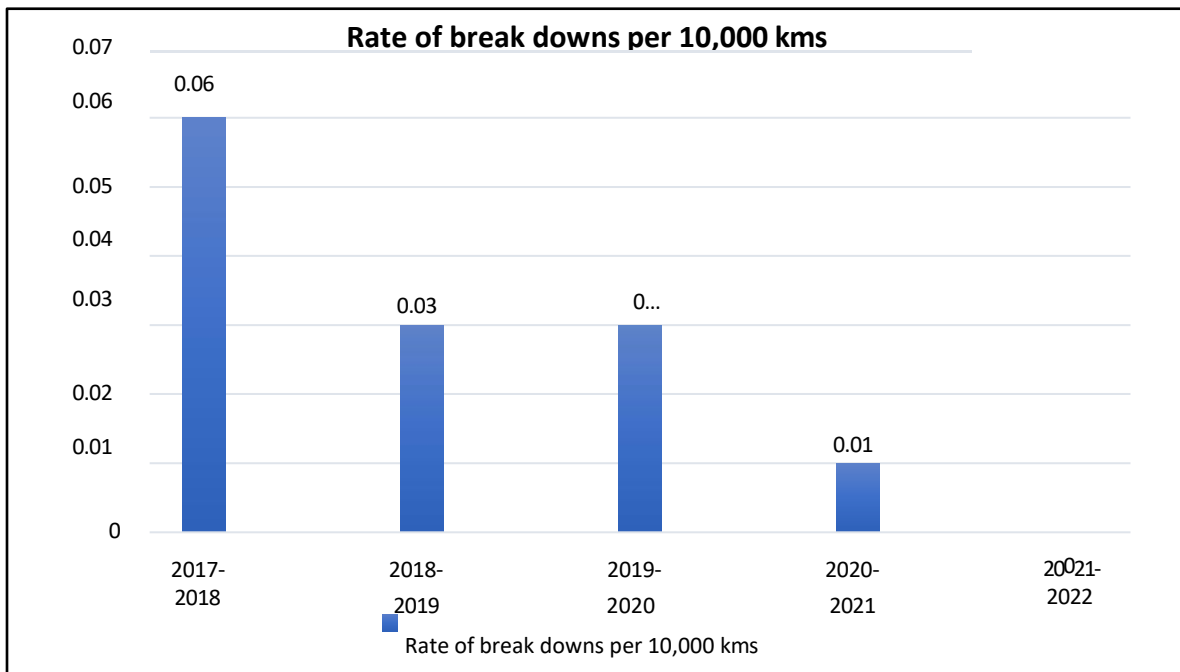
**Interpretation:**

The graph illustrates operational coverage details. Gross kilometers operated experienced a decrease from 2017-18 to 2019-20, with values of 4902.74, 4288.56, and 4205.17 respectively. However, there was an increase in the last two years. Similarly, effective kilometers operated followed a similar trend as gross kilometers. Notably, dead kilometers seen fluctuations till the year 2019-2020. But it shifted downward substantially in the year 2020-2021 i.e., from 139.66 to 61.78 K

**The Rate of Break Downs per 10000 Kms of BMTC Buses**

Year	Rate of break downs per 10,000 kms
2017-2018	0.06
2018-2019	0.03
2019-2020	0.03
2020-2021	0.01
2021-2022	0

Table No.7 Source: Annual Reports



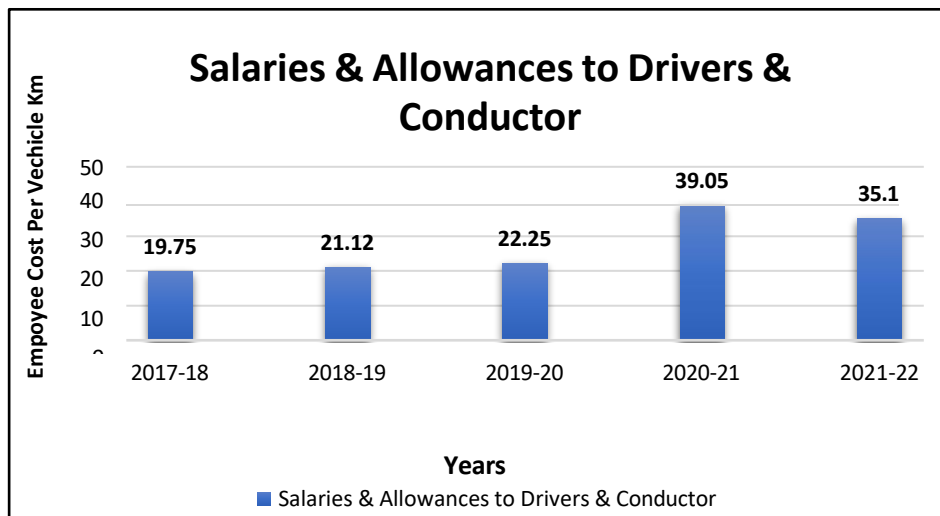
Graph No : 7

The table presents the rate of breakdowns per 10,000 kilometers of BMTC buses. Over the past five years (2017-18 to 2020-21), there has been a consistent decrease in the rate of breakdowns. Specifically, the rates were 0.06, 0.03, 0.03, 0.01, and 0.00 respectively, indicating a continual improvement in operational reliability.

### Employee Cost

Year	Salaries and Allowances to Drivers and Conductors (Per vehicle km in rupees)
2017-2018	19.75
2018-2019	21.12
2019-2020	22.25
2020-2021	39.05
2021-2022	35.1

Table No.8 Source: Annual Report



Graph No : 8

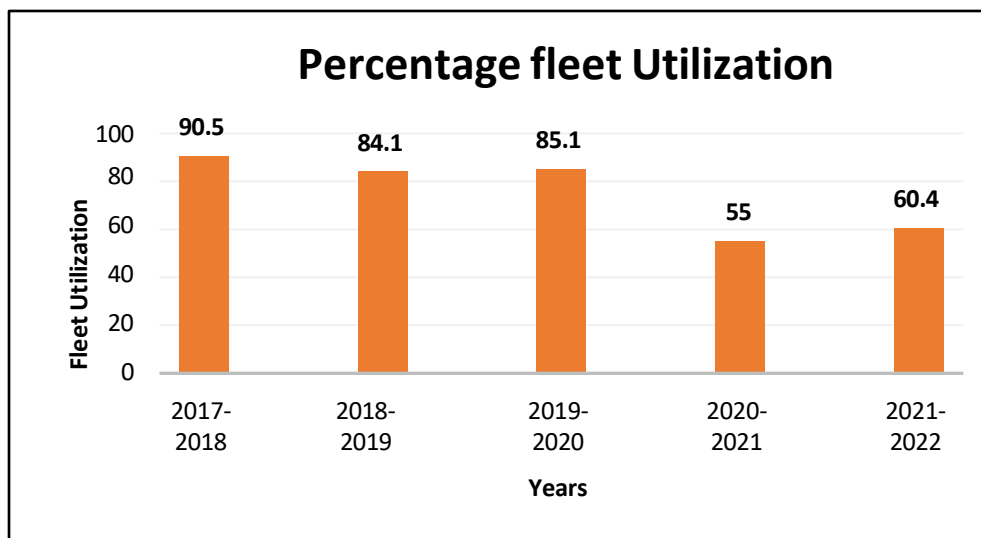
**Interpretation:**

The graph illustrates the salary provided to drivers and conductors per vehicle kilometer. From 2017-21, there was a steady increase in employee costs, with values of 19.75, 21.12, 22.25, and 39.05 rupees respectively. However, in 2021-2022, there was a reduction to 35.1 rupees.

**The Percentage Fleet Utilization of BMTC Buses**

Year	Percentage fleet Utilization
2017-2018	90.5
2018-2019	84.1
2019-2020	85.1
2020-2021	55
2021-2022	60.4

Table No: 9 Source: Annual Reports



Graph No. 9 Source: Annual Reports

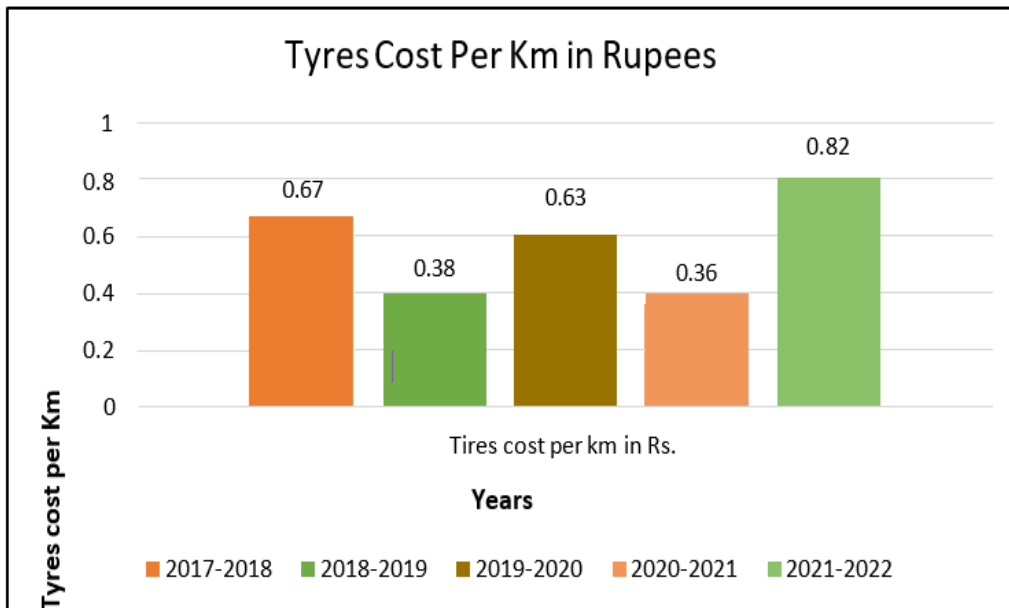
**Interpretation:**

Analysis of the table and graph reveals fluctuations in BMTC's percentage fleet utilization across operating years, with both upward and downward trends observed. Notably, there was a significant drop in percentage fleet utilization during the year 2020-2021.

**The Tyres Cost Per Km in Rupees of BMTC**

Year	Tires cost per km in Rs.
2017-2018	0.67
2018-2019	0.38
2019-2020	0.63
2020-2021	0.36
2021-2022	0.82

Table No: 10 source -Reports



Graph No: 10

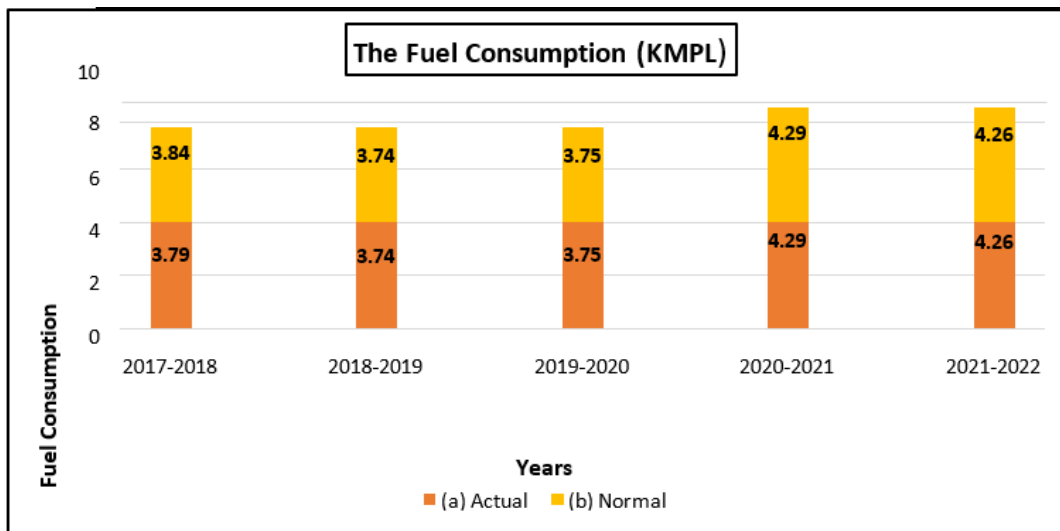
**Interpretation:**

The graph illustrates fluctuating trends in BMTC's tyres cost per kilometer from 2017-18 to 2021-22, displaying both gradual increases and decreases over time. The year 2021-2022 shows highest cost per tyre throughout the years i.e., 0.82.

**The Fuel Consumption (Km per Litre)**

Year	(a) Actual	(b) Normal
2017-2018	3.79	3.84
2018-2019	3.74	3.74
2019-2020	3.75	3.75
2020-2021	4.29	4.29
2021-2022	4.26	4.26

Table No: 11 source -Reports



Graph No: 11

**Interpretation:**

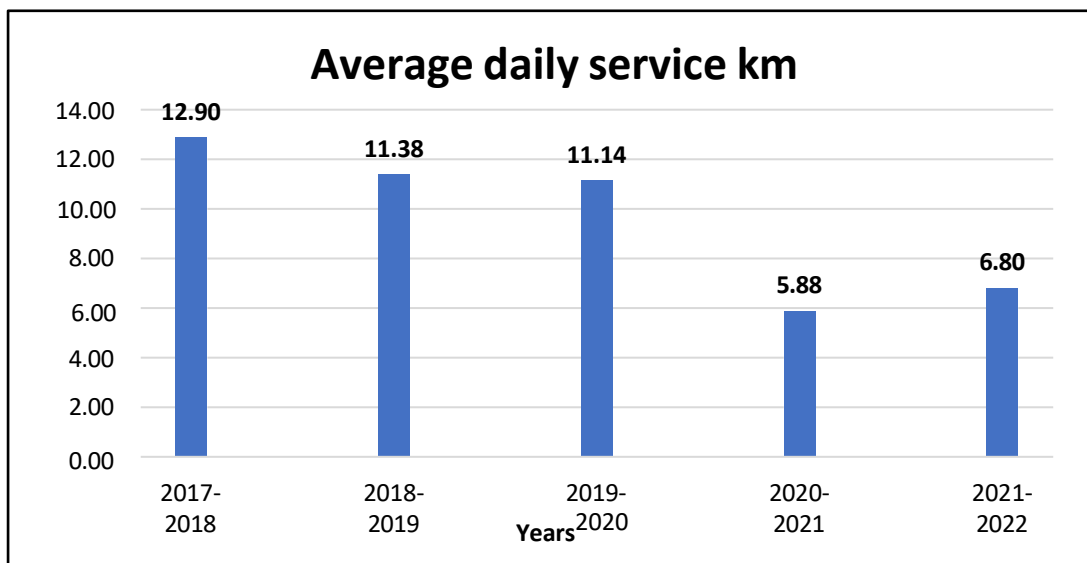
The graph indicates an increase in fuel consumption KMPL (both actual and normal) in BMTC from 2017-18 to 2021-22. Notably, from 2017 to 2021, there was an increase observed in both actual and normal fuel consumption. However, a minor decrease was observed for the last year.

**Average Daily Service km**

Year	Average daily service km
2017-2018	12.90
2018-2019	11.38
2019-2020	11.14
2020-2021	5.88
2021-2022	6.80

Table No 12: Source: Annual Reports





Graph No: 12

**Interpretation:**

The table depicts the average daily service kilometers during the specified years. A declining trend in average daily service kilometers was observed from 2017 to 2021. However, there was an increase noted for the last year, 2021-2022.

**Finding:**

The effective kilometers operated typically indicate the efficiency of bus operations over a specific period. While there was a sudden decrease observed, it has been on the rise since 2021. The cost per kilometer increased between 2017 and 2021 but saw a decrease in 2022. Despite a slight drop in the previous year, there has been a notable increase in earnings per kilometer. Moreover, operating revenue per vehicle kilometer rose by 4.55 rupees in 2021-22, while operating expenses decreased by 6.59 rupees during the same period. This shift is advantageous for the organization as expenses decreased while revenues increased.

Analyzing BMTC's operational coverage, both gross kilometers and effective kilometers have increased compared to 2020-21. However, there has also been an increase in dead kilometers, which need to be minimized. The breakdown rate per 10,000 kilometers notably decreased, reaching 0.00% in 2022. Employee costs reduced by 3.95 rupees. Fleet utilization percentage exhibited a downward trend for the first four years but saw an increase in the fifth year. Tire costs per kilometer showed variability across the years. While there was a continuous reduction in average daily service kilometers from 2017 to 2021, there was an increase of 6.80 kilometers in 2022, up from 5.88 kilometers.

**Conclusion:**

The Bangalore Metropolitan Transport Corporation (BMTC) stands as a pillar of public transport, driven by a vision and mission centered on delivering outstanding service, ensuring passenger comfort, and guaranteeing utmost safety. Since its inception on August 15, 1997, BMTC has consistently provided exemplary transportation services to the community. Renowned for its excellence and efficiency, the corporation has maintained a sterling reputation throughout its years of operation. Ensuring efficient operational performance and maintaining service quality are crucial elements underpinning public transport systems. Research specifies that BMTC needs to prioritize managing escalating operational expenses, which have been on the rise. Additionally, it is imperative for the organization to diligently monitor fluctuations in costs such as cost per kilometer. The report suggests that while there hasn't been a significant rise in the overall cost of BMTC, there has been a notable decrease in the effective kilometers covered

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over the years. Consequently, this decline in effective kilometers has led to a reduction in BMTC's overall revenue over time. Encouragingly, BMTC has made commendable strides in effectively reducing breakdown rates over the years, yielding promising outcomes. Moreover, BMTC has taken proactive steps by introducing electric buses and plans to expand its fleet in the coming years. This strategic move not only helps in reducing fuel consumption costs but also aligns with the organization's commitment to promoting eco-friendly modes of transportation.

**Further Scope of Study:**

Researchers could explore the impact of economic factors and seasonal variations on operating costs. Conducting trend analysis of cost elements may reveal repetitive patterns of fluctuations, providing a deeper understanding of their dynamics. Moreover, considering market conditions, environmental changes, technological advancements, and legal factors could offer further insights into optimizing cost management strategies.

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  2. Introduction to Cost Accounting- Dr.P.C. Tulsian
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## NAVIGATING FINANCIAL CHALLENGES: INSIGHTS FROM SALARIED WORKERS AND WAGE EARNERS AMIDST COVID-19

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### ABSTRACT

This study investigates the financial behaviors of salaried workers and wage earners during the COVID-19 pandemic, aiming to uncover their adaptive responses to economic disruptions. Conducted through an online survey from January to December 2022, the research reflects national and regional demographics in age, gender, and location. Utilizing nonparametric tests such as the U Mann-Whitney test and Kendall's tau correlation analyses, along with logistic regression, the study analyzed primary data supplemented by secondary sources. Significant shifts in spending patterns and payment methods were observed, with wage earners reducing spending by 37.94% while 45.88% of salaried workers reported increased expenditures, particularly in credit card usage. Notably, salaried individuals exhibited higher levels of household savings (90.83%) compared to wage earners. Correlation analyses underscored the importance of long-term financial planning skills, revealing significant relationships between future planning, savings, debt, and financial behavior during the pandemic. Gender and income disparities emerged as influential factors, with higher income linked to proactive financial management and males exhibiting higher savings and future planning propensity. These findings highlight the need for targeted interventions in promoting financial literacy, savings habits, and digital payment adoption to enhance financial resilience across all population segments.

**KEY WORDS:** COVID-19 pandemic, financial behavior, salaried workers, spending patterns, wage earners,

### INTRODUCTION

The COVID-19 pandemic has brought about unprecedented challenges worldwide, affecting various aspects of society, including economic stability and household financial behavior. Kerala, a state in southern India known for its diverse workforce, witnessed significant impacts on its workforce during the pandemic. Among its workforce, both salaried workers and wage earners constitute vital segments, each facing distinct challenges and exhibiting unique financial behaviors in response to the crisis. This comparative analysis aims to delve into the household financial behavior of salaried workers and wage earners in Kerala State during the COVID-19 pandemic. By examining their financial strategies, coping mechanisms, and overall resilience in the face of economic adversity, this study seeks to provide valuable insights into how different segments of the workforce navigated through the unprecedented challenges posed by the pandemic.

Many salaried workers faced job loss, furloughs, or reduced working hours due to business closures, economic downturns, or shifts to remote work. This led to a decrease in income for numerous individuals and families. For those who could transition to remote work, there were challenges such as balancing work and home responsibilities, dealing with isolation, and managing technology-related issues. The uncertainty surrounding job security, financial stability, and the overall state of the world due to the pandemic took a toll on the mental health of many salaried workers. Anxiety, stress, and burnout became prevalent issues. In certain industries, particularly healthcare, essential services, and technology, some salaried workers experienced increased workloads and stress due to the demands of their roles during the pandemic. Daily wage earners, who often work in sectors such as construction, hospitality, retail, and transportation, were disproportionately affected by lockdowns and restrictions. With businesses closed and economic activity reduced, many lost their source of income entirely. Daily wage earners often lack access to social safety nets such as unemployment benefits, sick leave, or health insurance, making them particularly vulnerable during times of

crisis. The loss of income meant that many daily wage earners struggled to afford basic necessities like food and shelter. Food insecurity became a significant issue in many communities, particularly in developing countries. Some daily wage earners faced the difficult choice between risking their health by continuing to work in essential jobs or staying home and losing income. This dilemma was particularly acute for those without access to healthcare or paid sick leave. Both salaried workers and daily wage earners were impacted by the COVID-19 pandemic, the nature and extent of the impact varied depending on factors such as industry, socio-economic status, and access to resources and support systems.

Many low-income earners work in sectors such as hospitality, retail, and services, which were severely impacted by lockdowns and restrictions. As a result, they faced higher rates of job loss, reduced working hours, or temporary layoffs, leading to a significant decrease in income. Low-income earners often have limited savings and financial resources to fall back on during times of crisis. This lack of financial resilience made it difficult for them to cope with sudden income losses or unexpected expenses related to the pandemic. Low-income earners are more likely to live in rental housing or in overcrowded conditions, which increases their vulnerability to housing insecurity. The economic fallout from COVID-19 made it difficult for many low-income individuals and families to afford rent, leading to evictions, housing instability, or homelessness. The loss of income and disruptions to food supply chains during the pandemic exacerbated food insecurity among low-income earners. Many struggled to afford nutritious food, leading to increased reliance on food banks, government assistance programs, and community resources. Low-income earners often have limited access to healthcare services due to barriers such as lack of health insurance, transportation, or proximity to healthcare facilities. The pandemic further strained healthcare systems and exacerbated existing disparities in access to medical care for low-income individuals and families. The shift to remote work, online learning, and telehealth services during the pandemic highlighted the digital divide among low-income earners. Many lacked access to reliable internet connection, computer devices, or digital literacy skills, limiting their ability to participate in remote work or access essential services.

Understanding the differential impacts experienced by salaried workers and wage earners is crucial for policymakers, employers, and financial institutions in formulating targeted interventions and support measures to mitigate the adverse effects of future crises. Through a comprehensive comparative analysis, this research endeavors to shed light on the nuanced dynamics of household financial behavior in Kerala State amidst the COVID-19 pandemic, contributing to the broader discourse on economic resilience and recovery strategies. Financial behavior, encompassing credit, cash management, and savings practices, serves as a critical aspect of individuals' financial well-being, reflecting their ability to navigate economic challenges effectively. The onset of the COVID-19 pandemic has not only disrupted economic sectors but has also exacerbated financial insecurities, particularly in regions like Kerala. The loss of income sources, whether partial or total, has heightened concerns regarding financial stability among a significant portion of Kerala's population. Recent studies have indicated that one in every three individuals in Kerala experienced income loss due to the pandemic, with nearly half expressing heightened apprehensions about their financial situations (González-Ruiz et al., 2021).

Another facet of financial behavior lies in individuals' management of financial resources, including savings, budgeting, insurance, and investments. Effective financial conduct entails responsible practices such as earning income, managing expenditures, investing wisely, and meeting financial obligations promptly (Wang et al., 2022). Amidst the uncertainties induced by COVID-19, the relationship between risk perception and financial tolerance has undergone modulation, influenced by the ambiguity surrounding the pandemic (Çera et al., 2021). Moreover, the pandemic has reshaped consumer preferences and mobile banking behaviors, prompting considerations about the potential for lasting structural changes in financial services.

This paper aims to explore how the COVID-19 pandemic has impacted the financial behavior of Kerala residents, with a specific focus on discerning differences between salaried individuals and other segments of the population. By employing non-parametric tests, this study analyzes the distribution of expenditure pre and post-pandemic, along with comparative assessments using statistical methods such as Mann-Whitney U tests. Furthermore, the investigation delves into the relationship between future financial planning, debt management, savings practices, and financial behavior post-pandemic using Chi-square and Kendall's tests.

Drawing insights from a survey conducted among Kerala state residents, this article bridges a crucial knowledge gap by examining shifts in financial behaviors before and after the COVID-19 outbreak. The findings hold implications for both public and private sector decision-makers, offering valuable insights for future pandemic preparedness and strategies to mitigate economic shocks. The article is structured into four sections: an exploration of individuals'

financial management in the pandemic's aftermath, an overview of the research methodology, a discussion on the implications of the findings, and a presentation of the analysis and results. Through this comprehensive examination, this study contributes to a deeper understanding of the evolving landscape of financial behavior amidst unprecedented global crises.

### **LITERATURE REVIEW**

Hasibuan et al. (2018) underscore the significance of financial behavior and literacy in shaping individuals' financial contentment. They find a positive correlation between financial literacy and satisfaction, particularly among entrepreneurs who exhibit adeptness in financial management. This highlights the pivotal role of financial literacy in fostering financial well-being and satisfaction. Warchlewska & C (2021) categorize consumer behavior into three distinct realms: mental, social, and market economics. They emphasize the influence of psychological factors and overconfidence on financial decision-making, which can often lead to errors in financial planning. Understanding these categories offers insights into the multifaceted nature of consumer behavior and its implications for financial outcomes. Malmendier & Nagel (2011) observe that macroeconomic events significantly influence risk-taking behavior. This suggests that external economic factors play a crucial role in shaping individuals' financial decisions and risk tolerance levels. Understanding these dynamics is essential for comprehending the complexities of financial behavior amidst economic fluctuations. Fan (2020) defines financial health as the state of having a well-managed household budget, encompassing prudent savings, spending, borrowing, and financial planning practices. This emphasizes the importance of responsible money management in achieving financial stability and security, underscoring the need for sound financial behaviors. Evidence from studies such as the Chinese Twins Survey and the Chinese Household Income Project (Fan, 2020) suggests that individuals who are rusticated exhibit more responsible money management behaviors over the long term. This highlights the influence of personal experiences and circumstances on financial behavior and underscores the importance of socio-economic factors in shaping financial outcomes. Sudindra et al. (2018) discuss the interplay between personal and external factors in influencing financial behavior. They highlight the significance of individual characteristics and external circumstances such as social, economic, and environmental factors in shaping financial decisions. Understanding these dynamics is essential for designing effective financial interventions and policies. Mekonen et al. (2022) delineate the four primary components of financial behavior: saving, spending, borrowing, and investing. They underscore the diverse influences on these behaviors, ranging from family guidance and financial literacy to socio-economic status and future outlook. This comprehensive understanding aids in deciphering the complexities of financial decision-making. Poverty encompasses various dimensions, including financial components (Mekonen et al., 2022). Good financial behavior is proposed as a crucial determinant of poverty alleviation, emphasizing the importance of prudent financial planning, savings, and risk management in reducing household poverty. This highlights the need for holistic approaches to poverty reduction that address financial behavior alongside socioeconomic factors. These literature reviews offer valuable insights into the multifaceted nature of financial behavior, highlighting its determinants, impacts, and implications for individuals' financial well-being and broader socio-economic outcomes. Understanding these dynamics is essential for designing effective financial interventions and policies aimed at promoting financial literacy, stability, and inclusion.

### **METHODOLOGY**

The survey was conducted online from January 2020 to December 2020 by a research scholar. This duration allowed for capturing a comprehensive understanding of households' financial behaviors amidst the COVID-19 pandemic. The survey sample demographics were designed to reflect both national and regional breakdowns of the population in terms of age, gender, and location. This ensured a representative sample that accurately represented the diverse population groups within the study area. A research hypothesis was formulated, positing that COVID-19 significantly impacted how households manage their finances, including savings, debt, payments, and shopping habits. The hypothesis suggested varying effects on different categories of workers, indicating potential instability in household finances. Primary data was collected through the online survey, supplemented by relevant secondary sources. The structured format of the questions presented limitations in terms of statistical analysis methods applicable to the data. Nonparametric tests were employed for data analysis due to the structured format of the questions. Specifically, the following strategies were implemented:

U Mann-Whitney Test: Utilized for comparative analyses between wage earners and salaried individuals, providing insights into differences in financial behaviors.

Kendall's Tau Correlation Analyses: Conducted to investigate the relationship between future planning, debt management, savings practices, and financial behavior post-COVID-19 pandemic.

Chi-Square Test of Independence: Employed to determine the association between future planning and metric variables, shedding light on factors influencing financial behavior.

Logistic Regression with Wald Backward Elimination Method: Utilized to assess the impact of future planning and metric factors on savings behavior, providing insights into predictors of savings habits among respondents. Ethical guidelines were followed throughout the research process, ensuring confidentiality, anonymity, and informed consent of participants. Measures were taken to protect participants' privacy and data security. Limitations such as reliance on self-reported data and potential sampling biases were acknowledged. Efforts were made to mitigate these limitations through careful survey design and analysis techniques.

This methodology provided a robust framework for conducting the research, enabling the exploration of the impact of COVID-19 on household financial behaviors and the identification of factors influencing financial stability and planning.

**RESULTS ANALYSIS AND DISCUSSION**

Distribution of current expenses in comparison to the time period before the pandemic, as well as the results of comparative Mann-Whitney U test analyses to compare salaried individuals with other wage earners

**Table 1.Mann-Whitney U test**

Current spending	Less	The same	More	Z	p	r
Salaried	45.88%	35.01%	19.11%			
Wage earners	37.94%	48.75%	13.31%	1.36	0.174	0.03

Source: Primary data Symbols: Z- Mann-Whitney U statistics, p- level of statistical significance, r-strength of the relationship, \*p < 0,05, \*\*p < 0,01, \*\*\*p < 0,001

**DISTRIBUTION OF CURRENT EXPENSES:**

The analysis revealed notable shifts in current spending patterns compared to pre-pandemic levels. While wage earners typically reduced their spending by 37.94% due to the COVID-19 pandemic, salaried individuals were more inclined to increase their spending, with 45.88% reporting higher expenditures. However, the difference in spending behavior between the two groups was not statistically significant (Z = 1.36, p = 0.174), suggesting similar responses to financial challenges despite differing employment types.

**PAYMENT METHODS:**

Cash payments witnessed a decline among both salaried workers and wage earners during the pandemic. Approximately 64% of wage earners reported reduced cash payments. Interestingly, salaried workers were significantly more likely to use credit cards for purchases post-pandemic, with 65.74% indicating increased card usage compared to pre-pandemic levels (Z = [Insert Z-value], p = [Insert p-value]). This highlights a distinct shift towards electronic payment methods among salaried individuals.

**SAVINGS AND DEBT BEHAVIOR:**

The analysis found no significant difference between salaried workers and wage earners in terms of the total amount of money saved after the pandemic began. However, there were differences in debt profiles, with wage earners more likely to have credit card debt and loans from family members. Salaried workers exhibited higher levels of household savings, with 90.83% of households having savings, compared to wage earners.

**CORRELATION ANALYSES:**

Correlation analyses using Kendall's tau revealed significant relationships between future planning, savings, debt, and financial behavior during the pandemic. Planning for the future was associated with lower spending, reduced cash payments, and increased online purchases. Having savings correlated with prudent financial behavior, including lower spending and increased card payments.

**GENDER AND INCOME EFFECTS:**

Gender and income emerged as significant factors influencing financial behavior among salaried individuals. Higher income was associated with increased frequency of card payments, online shopping, and greater savings. Additionally, males were more likely to plan for the future and had higher savings compared to females.

**LOGISTIC REGRESSION ANALYSIS:**

Logistic regression analysis, employing the Wald backward elimination method, identified several variables influencing the ability of salaried individuals to save money for the future. Factors such as gender, age, income, education, and employment status played significant roles in determining savings behavior, with higher income and education levels positively impacting savings propensity.

Overall, the results highlight nuanced differences in financial behaviors between salaried workers and wage earners in response to the COVID-19 pandemic. While both groups experienced shifts in spending and payment methods, distinct patterns emerged in savings and debt management. Understanding these dynamics is essential for designing targeted interventions to promote financial resilience and stability amidst economic uncertainties.

### **B.DISCUSSION**

The findings of this study offer valuable insights into the nuanced financial behaviors of salaried workers and wage earners in Kerala State amidst the COVID-19 pandemic. The discussion below delves into the implications of these findings and their broader significance: The observed shifts in spending patterns and payment methods underscore the adaptability of individuals in response to economic disruptions. While wage earners reduced their spending, salaried workers exhibited a tendency to increase spending, possibly reflecting varying levels of financial security and stability between the two groups. The significant increase in credit card usage among salaried individuals highlights a notable trend towards digital payment methods, potentially driven by convenience and safety concerns during the pandemic. The analysis revealed differences in savings and debt profiles between salaried workers and wage earners. Salaried workers demonstrated higher levels of household savings, indicating greater financial preparedness and resilience. In contrast, wage earners were more likely to rely on credit card debt and loans from family members, suggesting potential vulnerabilities in their financial health. These findings underscore the importance of promoting savings habits and financial literacy among all segments of the population, particularly among wage earners. The significant correlations between future planning, savings, debt, and financial behavior during the pandemic highlight the interconnected nature of financial decisions. Planning for the future emerged as a key determinant of prudent financial behavior, including reduced spending and increased savings. These findings emphasize the importance of fostering long-term financial planning skills and strategies to enhance financial resilience and stability, especially during periods of economic uncertainty. Gender and income disparities were evident in financial behaviors among salaried individuals. Higher income was associated with more proactive financial management practices, such as increased savings and online purchases. Additionally, males exhibited higher levels of savings and were more likely to plan for the future compared to females. Addressing gender and income inequalities is essential for promoting equitable access to financial resources and opportunities for all individuals. The study findings have important policy implications for policymakers, employers, and financial institutions. Targeted interventions aimed at promoting financial literacy, savings habits, and digital payment adoption can enhance the financial resilience of both salaried workers and wage earners. Additionally, policies addressing gender and income disparities in financial behaviors are crucial for fostering inclusive economic growth and development. It is essential to acknowledge the limitations of the study, including potential sampling biases and reliance on self-reported data.

Future research could explore additional factors influencing financial behaviors, such as cultural norms, socio-economic status, and psychological factors. Longitudinal studies tracking financial behaviors over time could provide deeper insights into the dynamics of financial resilience and adaptation in response to economic shocks. This study contributes to our understanding of how salaried workers and wage earners in Kerala State navigate financial challenges during the COVID-19 pandemic. By identifying key determinants of financial behavior and highlighting disparities across demographic groups, this research informs targeted interventions and policy initiatives aimed at promoting financial well-being and resilience in the face of future uncertainties.

### **CONCLUSIONS**

Study provides valuable insights into the financial behaviors of salaried workers and wage earners in Kerala State amidst the COVID-19 pandemic. The findings shed light on the adaptive responses of individuals to economic disruptions and highlight the interconnected nature of financial decisions. The observed shifts in spending patterns, payment methods, savings, and debt behaviors underscore the importance of financial resilience and preparedness, particularly during times of uncertainty. While salaried workers exhibited higher levels of household savings and increased credit card usage, wage earners demonstrated reliance on credit card debt and loans from family members. Moreover, significant correlations between future planning, savings, debt, and financial behavior during the pandemic emphasize the need for fostering long-term financial planning skills and strategies. Addressing gender and

income disparities in financial behaviors is crucial for promoting equitable access to financial resources and opportunities. The study findings have important implications for policymakers, employers, and financial institutions in designing targeted interventions to promote financial literacy, savings habits, and digital payment adoption. By addressing these factors, policymakers can enhance financial resilience and stability among all segments of the population.

However, it is essential to acknowledge the study's limitations, including potential sampling biases and reliance on self-reported data. Future research could explore additional factors influencing financial behaviors and conduct longitudinal studies to track changes over time. Overall, this study contributes to our understanding of how individuals navigate financial challenges during crises and informs strategies to promote financial well-being and resilience in the face of future uncertainties. By addressing these challenges and disparities, policymakers can work towards building a more inclusive and sustainable financial system for all.

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**“Study on Quality Management Practices adopted by Steel Furniture Manufacturing Industries.”**

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**ABSTRACT:**

India is famous largest developing economies in the world. Speedy urbanization, large number of young population and growing desires of middle-class society has contributed to a vivacious home furnishing market in India. The home furnishing industry manufactures and sells furniture, textile, and home furnishing accessories for homes, offices, hotels and others in the commercial space. In this study we are going to discuss how the quality management practices are done in the furniture manufacturing industries in India. In the study, we have taken a few Quality management practices which are adopted by every furniture manufacturing industry to maintain their product Quality. Quality control in the furniture manufacturing industry is crucial to ensure the production of durable, safe. Implementation of a comprehensive quality control system will help to maintain the reputation of the business and provide customers with high quality and reliable products. This study is based on previous studies carried out by scholars and published data by some furniture manufacturing industry in India.

**KEYWORDS-** Quality Management, Cause and defects, Flow chart.

**I. INTRODUCTION:**

The market is moving more towards organized segments. This is indicated by a growing trend among consumers towards already assembled, branded furniture. High-end, quickly installable, low-maintenance devices with customization options are preferred. India ranks fourth in the world for furniture consumption and fifth in terms of production. In 2022, India's furniture market is valued at around US\$ 23.12 billion and it is further expected to grow at a CAGR of 10.9% (2023-28) to reach US\$ 32.7 billion by 2026.

In the steel furniture market, the situation is not better. Steel furniture, as a product, is getting the status of essential commodity inviting compliances and uncertainties. The steel furniture market is also experiencing a unique problem. A shift from rural sector to urban sector is continuously on. Residential areas in metros, mini metros, cities, towns and small towns are growing at a fast rate. Industrialisation, infrastructure development, and extension of areas are creating a huge scope for further market growth.

The attributes and variables of the product being created can be one or more of the quality standards. Performance, dependability, appearance, dedication to delivery time, and other qualities will be among the criteria. Some measurement variables may be included, such as diameter, length, width, height, and surface finish. The term "quality" refers to more than just the standard of manufactured goods. It could be referring to the level of management as well as the process's (i.e., people, materials, and machinery) quality.

Where the quality manufactured product is referred to or defined as "Quality of product as the degree in which it fulfils the requirement of the customer. It is not absolute but it is judged or realized by comparing it with some standards". In this research we have seen the overall Quality Management practices which are adopted by the furniture manufacturing industry.

**Objective of the study:**

1. To examine the variations in the Furniture manufacturing process.
2. To identify the Causes which affect the Product Quality.

**II. LITERATURE REVIEW:**

Jane Bourke, Stephen Roper (2017) revealed that Quality-orientated management change and innovation are central strategies for firms. Implementing both quality improvement and innovation causes significant managerial, organizational and technical challenges, and may also involve notable lags before benefits are realized.

Gendao Li, Marc Reimann, Weihua Zhang (2018) revealed that the biggest factor of product quality enhancement and remanufacturing is contradicting results is the change in manufacturing costs caused by improving product quality. When introducing a new product, a significant increase in manufacturing costs as a result of improved product quality may lead the company to start re manufacturing.

Suresh Chandra et al. (2002) there have been a lot of research interest lately in the relationship between consumer

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satisfaction and service quality. However the nature of the precise association between service quality and customer satisfaction is still doubted with uncertainty. The two constructs are independent just strongly connected, according to the data, suggesting that rise in one is likely to result in rise in other.

Das et al. (2000) Much of the research on quality practices and performance reflects a resource-based perspective of the firm, dealing primarily with internal issues of managerial and technological competence in developing and executing an effective TQM strategy. It was found that the relationship between customer satisfaction and high-quality practices is influenced by international competitiveness.

Prekratetal. (2009) established a comprehensive set of furniture quality requirements that may be applied throughout the design process to ensure high-quality finished items. Author has focused on the significance of considering all these yardsticks during the design phase to ensure that the final product meets the needs and expectations of customers. The authors proposed a proposed quality criteria evaluation method that allows designers and manufacturers to appraise their products and recognize areas for enhancement.

### **III. RESEARCH METHODOLOGY:**

The present study followed both exploratory and descriptive research approaches. Exploratory research is carried out via review of existing literature in the formation of Hypothesis. Further descriptive research approach is used to test the hypotheses and present conclusions from data analysis. The present study uses a quantitative approach to problemsolving. The Data used is secondary. Secondary data was collected from various sources, including the adapted quality management system in industry, ideal sizes and dimensions of the manufactured products.

### **IV. DATA ANALYSIS AND INTERPRETATION:**

**Quality Control Aspects which are used by the furniture industry.**

#### **1. Raw Material Inspection**

The steel used for furniture production meets the specified quality standard in terms of composition, thickness, and strength.

#### **2. Welding Quality**

Proper welding techniques and inspections are essential to avoid structural issues in the furniture. Welding should be free from defects like cracks or weak joints.

#### **3. Dimensional Accuracy**

Check the dimension of the raw materials to ensure they match the design specification. Accurate measurements are crucial for precise assembly and fit.

#### **4. Surface finish**

Inspecting the surface of the steel for imperfections such as scratches, dents or rust. A smooth and clean surface is important for the final appearance of the furniture.

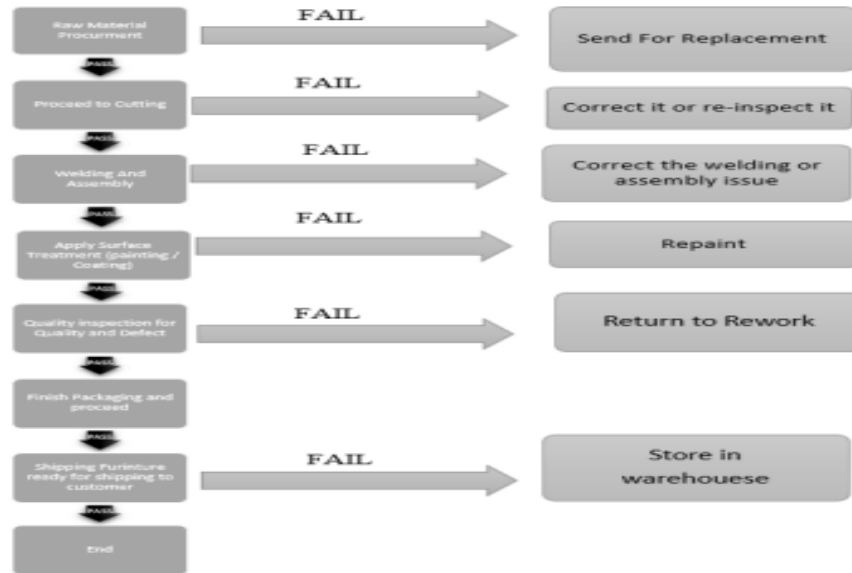
#### **5. Safety Standards**

Verifying that the furniture meets safety standards. Ensure there are no sharp edges or potential hazards.

#### **6. Strength and Stability Testing -**

Strength and Stability testing is very essential to ensure product quality and safety.

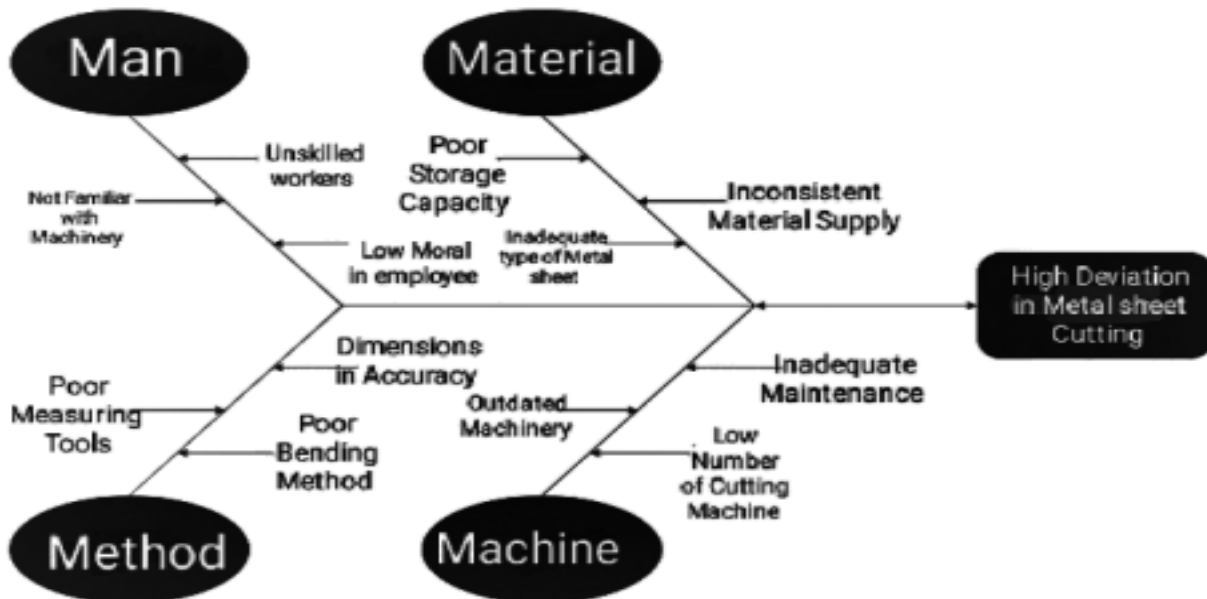
Flow Chart –



**Interpretation**

AS given in the chart provide us a breakdown of the essential steps to solving the problems which faced by the industry. As, from outsourcing of raw material to dispatching the finished goods which types of problem faced by the industry and solution for each step is given. The overall production process is discussed in the flow chart. For e.g. in the quality inspection is done to assure that the product is produced with good quality raw material with perfect measurement and for finding if there is any defect the quality inspection is used. If there is any defect in the quality inspection the product is returned to rework.

Cause and Effect Diagram:-





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- A Quality Control Application in a Furniture Company Mehmet Savsar Kuwait University Industrial Engineering Department, Kuwait and Üsküdar University Industrial Engineering Department, Istanbul, Turkey msavsar@gmail.com Hazza Alotaibi Kuwait University Industrial Engineering Department, Kuwait [hazza.alotaibi@eng.ku.edu.kw](mailto:hazza.alotaibi@eng.ku.edu.kw).
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