# How Digital Finance and Fintech Can Improve Financial Inclusion?

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**Abstract***: Introduction: The research aims to discuss the effect of digital payments and financial solutions on improving financial inclusion in the present world. It has been observed that the significance of fintech solutions is increasing in the present so it helps improve financial inclusion.*
*Literature Review: The fintech solution is considered significant for improving financial inclusion and it also faces challenges such as lack of expertise, lack of data security, and government interference.*
*Methodology: The paper uses "primary quantitative data" to understand the improvement of financial inclusion using fintech solutions. It uses data from 55 users of fintech solutions gathered through survey questionnaires from the respondents of the research.*
*Findings: The study found a positive and significant impact of fintech solutions and digital payment on financial inclusion.*
*Discussion: The results of the research portrayed a positive impact of fintech solutions and digital payment on financial inclusion and no impact of technological advancement on financial inclusion.*
*Conclusion: The research concluded that fintech solutions and digital payments are significant for financial inclusion.*

**Keywords:** Fintech Solutions, Digital Payments, Money Banking, E-Wallets, Data security

## I. INTRODUCTION

Fintech companies help increase the competition within the industries and accelerate financial inclusion by reducing costs and improving access to financial services for individuals belonging to the groups earning lower income. It also involves individuals belonging to rural areas and other served regions of the economy (Zveryakov et al., 2019). The fintech often helps in financial inclusion by utilisation of AI which helps in analysing the risk of the clients with little to know history of credit by utilisation of factors such as income patterns and spending patterns of the individuals (Bömer, 2020). Digital platforms are often utilised for making transactions that help in yielding better benefits for financial inclusion that also help in providing access to additional services for finances which involves credit investment products, interest-bearing savings, and insurance.

Technologies such as machine learning, cloud computing, blockchain technology, and artificial intelligence have helped banks and financial institutions to make use of automatic operations for making payments and making decisions based on the data achieved by these institutions. Financial inclusion is observed to increase with the use of fintech solutions across the world (Baber, 2020). The digital payments made by several individuals also helped in proving the government's finances. It also permitted the users of fintech solutions to consolidate their information regarding finance from several financial institutions and banks which helped in facilitating better financial planning and promoted transparency.
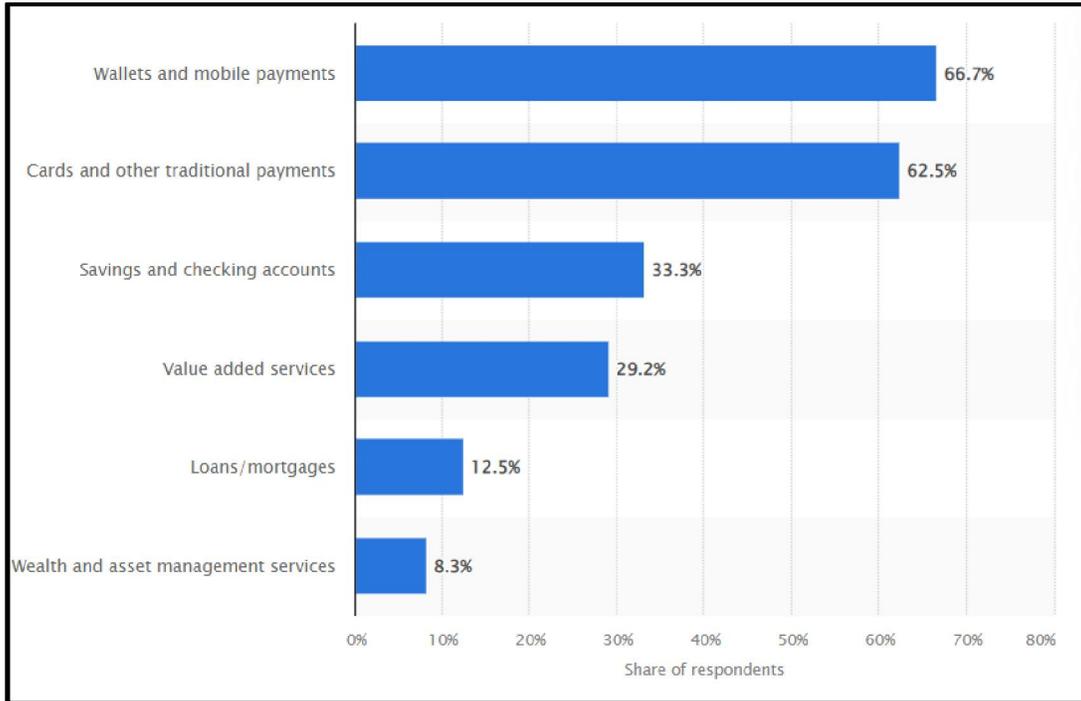
**Figure 1: Impact of fintech on banking products**
(Source: Statista, 2022)

The above figure describes the impact of fintech on banking products for the year 2018. It has been observed that wallets and mobile payments affected 66.7% of banking products. This was the highest impact, which was followed by the cards and other traditional payments, which contributed an effect of 62.5% (Statista, 2022). The savings and checking accounts impacted by 33.3% and the value-added services affected the banking products by 29.2%. The lowest effect was created by the wealth and asset management services which was recorded as 8.3% on the banking products. Therefore, the diagram portrays that the fintech solutions adopted in the present world have a great impact on banking products.

**Aim**
This study aims to discuss the way digital finance and fintech solutions can help in improving financial inclusion.

**Research Objectives**
- **RO1:** To analyse the significance of fintech solutions in improving the financial inclusion
- **RO2:** To evaluate the challenges faced in adopting fintech solutions
- **RO3:** To discuss the most used fintech solution for improving financial inclusion
- **RO4:** To understand the strategies that can be adopted for mitigating the challenges of fintech solutions

**Research Questions**
- **RQ1:** What is the significance of fintech solutions in improving financial inclusion?
- **RQ2:** What are the challenges faced in adopting fintech solutions?
- **RQ3:** Which is the most used fintech solution for improving financial inclusion?
- **RQ4:** What are the strategies that can be adopted for mitigating the challenges of fintech solutions?

**Hypothesis**
- **H1:** Fintech solutions have a significant and positive influence on financial inclusion
- **H2:** Digital payments have a significant and positive influence on financial inclusion
- **H3:** Advancements in technology have a significant and positive influence on financial inclusion

## II. LITERATURE REVIEW

### *Significance of fintech solutions and digital payments for improving financial inclusion*

Financial inclusion is considered a primary objective that is shared by almost all the central banks across the globe. It has been witnessed that digital payment is a great revolution in the region of finance. As per the opinion of Tombini (2023), it has been armed with big data and technology along with new entrants that bring greater rivals to payments. The fintech solutions have helped reshape the landscape of financial institutions and have made interaction with financial services and money more easy and transparent (Dow, 2019). The central banks built their role of providing the foundation for the economy by issuing money and supervising the system of payments.
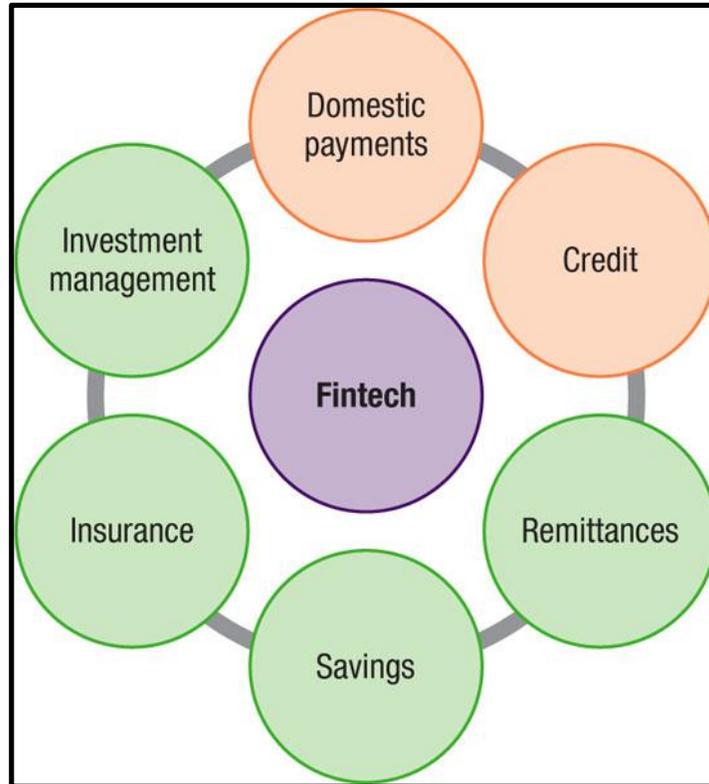


**Figure 2: Significance of Fintech Solutions**
(Source: Sahay et al., 2020)

The central banks also were able to harness this digital revolution to the extent of the benefits of financial inclusion. Digital payments were also believed to support the growth of the economy and the development of the country by encouraging financial inclusion and improving credit access (Tay, Tai & Tan, 2022). The widespread use of digital payments also helps in encouraging households to open bank accounts. It also provides it greater access to formal sectors of finance that facilitated borrowing that was done by the previous actors that were credit-constrained.

Digital payments were also observed to be related to a 0.06% decline in the share of informal employment and provided greater access to credit availability. The widespread utilisation of digital payments created a trail of data that helped in formalising the informal firms. This also supported investment and scale with credit access. According to Atiyas & Dutz (2021), the utilisation of the digital payments for pay role also helps in formalising the informal workers which further increases and promotes the productivity of the firms. It also increases the profitability of the firm and is considered to be of significant potential.

**Challenges faced by fintech solutions in improving financial inclusions**

**Lack of Data Security**

The lack of data security is one of the significant challenges that has been witnessed by mobile banking and the payment apps used for Fintech solutions. The traditional systems of banking were confident since they had security guards and CCTV. It also involved walls and doors that were heavy and bulletproof to keep the data of the individuals safe and secure (Mehrotra, 2019). However, security in the virtual world is almost vulnerable and it is extremely difficult for individuals to maintain this security. It might affect the consumer's potential and their money might be at stake as well as their data.



**Figure 3: Challenges of Fintech Solutions**
(Source: Cherednichenko, 2023)

**Government Interference**

Finance is considered one of the most significant sectors that is regulated by the government. Therefore, there is always interference from the government even if the individuals use traditional software of Fintech that does not make use of any advanced and complex technology or any blockchain technology. Hollanders (2020), states that this is also one of the significant challenges that is faced by the users of Fintech solutions.

**Lack of Expertise**

The Fintech industry also witnesses challenges such as a lack of technical expertise or mobile expertise. They do not have convenient services of mobile banking and some of the banks even try to duplicate their websites but in the digital world, none of the individuals prefer mobile applications. Therefore, every user of these services desires to make use of a convenient and seamless option for usage (Popescu, 2019). Therefore, the lack of expertise in the "fintech mobile app development services" causes a rise of nonfriendly applications which does not make use of mobile devices to their entire potential.

## III. METHODOLOGY

The methodology is the section that discusses the steps and techniques undertaken by the study to be developed logically. The method that is utilised for this specific research is considered to make use of essential elements that are utilised for an empirical analysis which supports the research to be conducted with the consistent development of fintech solutions (Sileyew, 2019). The study has made use of a "primary quantitative technique" which has been utilised for analysing the impact of the fintech solutions on financial inclusion within the economy.

The study for obtaining accurate and pertinent data for the research has made use of raw data that has been collected from the primary sources that is the respondents of the research. The review has utilized 50 respondents for social event data through a study. It included 13 polls applicable to the exploration subject, which were connected with the fintech arrangements used by the respondents of the examination.

The review has utilized positivism reasoning since the review utilized the convictions of the past analysts that are pertinent to the effect of the fintech arrangements in working on monetary consideration. The "quantitative analysing method" has also been helpful in the study's analysis of the respondents' data (Stern et al., 2021). It likewise has helped in thinking about the relationship between the factors of fintech arrangements that have been utilised for the exploration. It has additionally depicted the relationship between the headway of fintech arrangements and monetary incorporation inside the economy, which was analysed utilizing "quantitative investigation".

Regression analysis was used in the study, which was carried out on the data set with the help of IBM SPSS software. The tests attempted for this review incorporated the engaging and the measurable connection with the tables of coefficient, model rundown, and ANOVA. The informational collection and the reactions of the members were impacted by the segment highlights (Braun et al., 2021). The quantitative system of examination was viewed as analysed involving the rate and recurrence of segment data for appreciating the highlights and conduct of the informational collection.

The study has used a survey questionnaire because it was thought to be the easiest way to get information from fintech solution users. Since they are the most common people who would be able to describe the advantages and disadvantages of using fintech solutions, fintech solution users were chosen as the study's sample (Dawadi, Shrestha, & Giri, 2021). The example was chosen for the review utilizing the basic irregular testing method. This procedure was used for the exploration since it helped every client by furnishing them with equivalent chances to be chosen as an example for the examination.

The use of primary data was accurate for the study since it helped to maintain the authenticity and integrity of the research and ensured the obtaining of valid and reliable data after completion of the study. The study also has followed all the ethical terms and conditions while being conducted. It has also not hurt the sentiments of any individuals or respondents while being conducted.
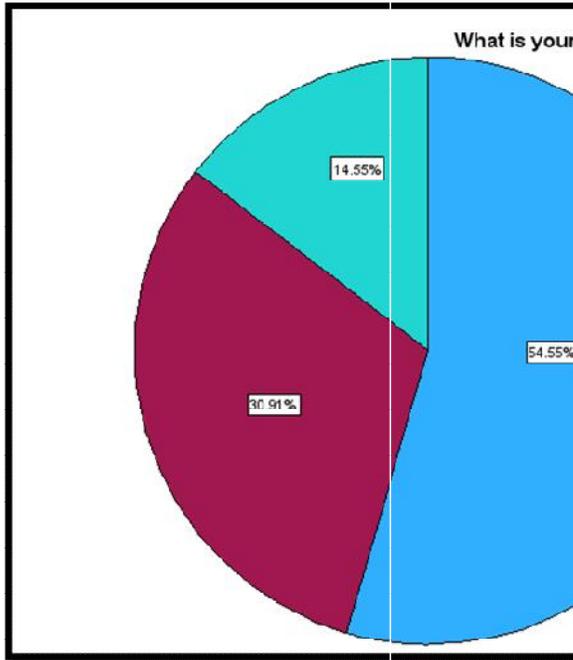
## IV. FINDING AND ANALYSIS

**Demographic Analysis**
**Gender Analysis**

| Gender | | | | |
|---|---|---|---|---|
| Valid | | Frequency | Percent | Valid Pe |
| | Male | 34 | 68.0 | 68.0 |
| | Female | 12 | 24.0 | 24.0 |
| | Prefer not to say | 4 | 8.0 | 8.0 |
| | Total | 50 | 100.0 | 100. |

**Table 1: Gender Analysis** (Quantitative Analysis)

**Figure 4: Gender Analysis**

The researcher has gathered data regarding the gender of the respondents utilised for the research. It has been observed by the researcher that 34 respondents that is 68% of 55 respondents were male and only 12 of them that is 24% of them were female. 4 of the total respondents preferred not to answer this question and they did not prefer to reveal their gender while participating in the survey (as per survey results). Therefore, it is noted that the respondents taking part in the survey are mostly male, and therefore the responses are male-driven. This means that male respondents provide the responses regarding the Fintech solutions that are mostly used in the present time.

**Age Analysis**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | | | Age | | |
| Valid | 20 to 25 years | 21 | 40.0 | 50.0 | 40.0 |
| | 26 to 30 years | 15 | 46.0 | 46.0 | 46.0 |
| | 31 to 50 years | 15 | 12.0 | 12.0 | 12.0 |
| | Above 35 | 5 | 3.5 | 62.2 | 3.5 |
| | Total | 55 | 100.0 | 100.0 | |

**Table 2: Age Analysis** (Quantitative Analysis)
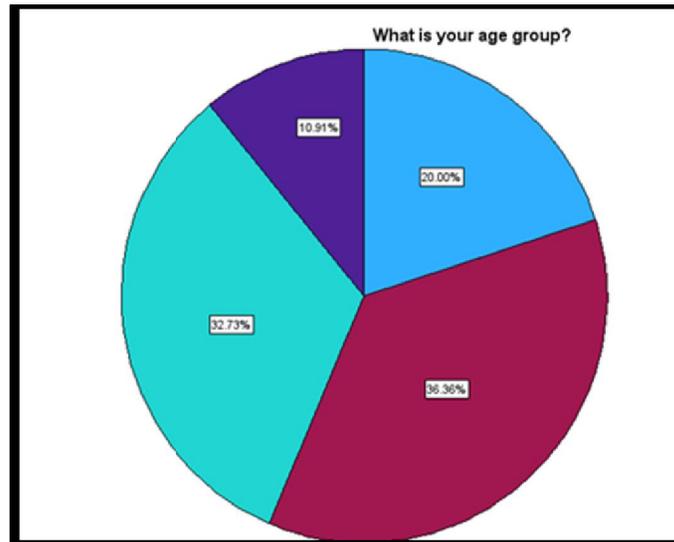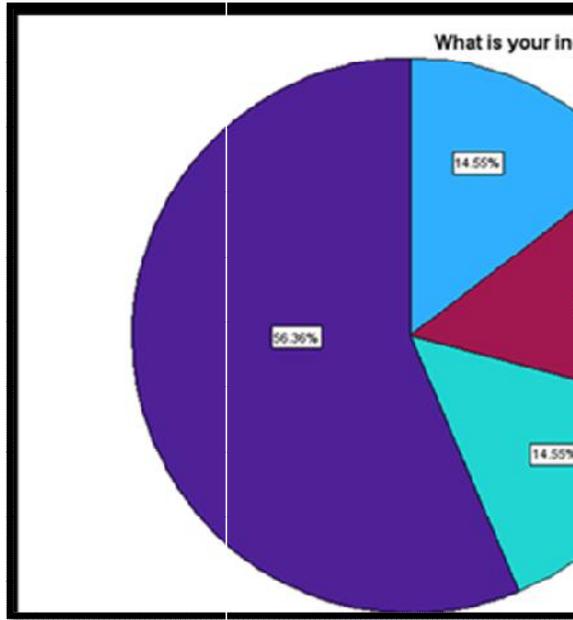
**Figure 5: Age Analysis**

The researcher has also gathered information regarding the age of the respondents utilised for the study. The researcher has observed that the maximum of the respondents for the study, 21 of 55 respondents belong to the age group of 20 to 25 years (as per survey results). It has been observed in the research that 46% of the individuals belong to the age group of 26 to 30 years and only 12% of them belong to the age group of 31 to 50 years. 5 of the respondents belong to the age group above 35 years.

Therefore, it was clear that the individuals selected for the research were young adults and were extremely engrossed in using the fintech solutions for making payments in their daily lives. The young individuals were able to make use of fintech solutions and they were selected as the sample for this research since they will be able to provide greater knowledge regarding the benefits and challenges related to fintech solutions.

**Income Analysis**

| | Income Range | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 10,000-20,000 | 14 | 46.1 | 28.1 | 28.1 |
| | 21,000-30,000 | 28 | 26.0 | 36.0 | 36.0 |
| | 31,000-40,000 | 3 | 1.3 | 28.0 | 28.0 |
| | Above 40,000 | 10 | 6.6 | 6.6 | 6.6 |
| | Total | 147 | 100.0 | 100.0 | |

**Table 3: Income Analysis** (Quantitative Analysis)

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**Figure 6: Income Analysis**

The researcher has also gathered information regarding the range of income of the respondents for the study. It has been observed by the researcher that a maximum of the respondents that is 28 of them earn a monthly income of 21000 to 30000. It has also been observed that 14 of them earn a monthly salary of 10000 to 20000 and the least of them that is 3 of the respondents earn a monthly income of 31000 to 40000. 10 of the respondents earn a monthly income of above 40000 (as per survey results). Therefore, it can be stated that the respondents used for the research earned a proper amount of money monthly and were able to afford a healthy living. Therefore, they were enough educated to understand and use fintech solutions for their daily life activities.

**Statistical Analysis**
**Descriptive Analysis**



| | N | Minimum | Maximum | Mean | St |
|---|---|---|---|---|---|
| | Statistic | Statistic | Statistic | Statistic | |
| DV | 55 | 4.00 | 9.00 | 7.2000 | |
| IV1 | 55 | 3.00 | 9.00 | 7.4364 | |
| IV 2 | 55 | 3 | 5 | 4.04 | |
| IV 3 | 55 | 2 | 5 | 4.20 | |
| IV 4 | 55 | 3 | 5 | 4.09 | |
| Valid N (listwise) | 55 | | | | |

**Table 4: Descriptive Analysis**
(Quantitative Analysis)

Table 4 portrays the descriptive statistics for the data set collected for the study. Descriptive analysis is considered to be extremely useful in determining the behaviour and the distribution of the set of data. It also provides the outliers in the

data set, which is obtained by examining the data from the descriptive statistics (as per survey results). The standard deviation of the dependent variable is observed to be 1.32497 while the mean of the variable is observed to be 7.2000. The mean and standard deviation for the first independence variable are 7.4364 and 1.38462 respectively.

The mean and standard deviation for the second independent variable is 4.04 and 0.693. The third independent variable is also portrayed in the table whose mean value is 4.20 and standard deviation is 0.779. The 4th variable shows a mean value of 4.09 and a standard deviation of 0.674 (as per survey results). It has been observed that the mean value of each variable is greater than the value of the standard deviation, which recommends that the data collected for the study, be clustered around the mean. Therefore, it has few outlines and is contemplated with the speed of data.

**Hypothesis 1**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square |
|---|---|---|---|
| 1 | .321[a] | .103 | .086 |

a. Predictors: (Constant), IV1

b. Dependent Variable: DV

**ANOVA[a]**

| Model | | Sum of Squares | df |
|---|---|---|---|
| 1 | Regression | 9.768 | 1 |
| | Residual | 85.032 | 53 |
| | Total | 94.800 | 54 |

a. Dependent Variable: DV

b. Predictors: (Constant), IV1

**Coefficients**

| Model | | Unstandardized Coefficients | |
|---|---|---|---|
| | | B | Std. Error |
| 1 | (Constant) | 9.484 | .941 |
| | IV1 | -.307 | .124 |

a. Dependent Variable: DV

**Table 5: Hypothesis 1**

(Quantitative Analysis)

The initial research hypothesis stated that the fintech solutions have a significant and positive influence on financial inclusion. In this hypothesis, the fintech solutions are the independent variable and the financial inclusion is the dependent variable. Table 5 indicates that the significant value for the independent variable is 0.017 which is below 0.05. It also shows a positive relationship which means that the first hypothesis is satisfied by the results obtained from the research (as per survey results). The ANOVA table also shows a significant value of 0.017 and the R-value is 0.321 which means that the market volatility accounts for 32% of the variation in the adoption of fintech solutions. The R-square value is 0.103 which means that there is a 100% possibility of the independent variable to affect the dependent variable.

**Hypothesis 2**

**Model Summary**

| Model | R | R Square | Adjusted R Square |
|---|---|---|---|
| 1 | .371[a] | .138 | .121 |

a. Predictors: (Constant), IV 2

b. Dependent Variable: DV

**ANOVA**

| Model | | Sum of Squares | df |
|---|---|---|---|
| 1 | Regression | 13.058 | |
| | Residual | 81.742 | 5 |
| | Total | 94.800 | 5 |

a. Dependent Variable: DV

b. Predictors: (Constant), IV 2

**Coefficient**

| Model | | Unstandardized Coefficient | |
|---|---|---|---|
| | | B | Std. Erro |
| 1 | (Constant) | 10.065 | .9! |
| | IV 2 | -.710 | .2 |

a. Dependent Variable: DV

**Table 6: Hypothesis 2**

(Quantitative Analysis)

The second hypothesis that was formulated in the research was that there is a significant and positive influence of digital payments on financial inclusion. In this hypothesis, digital payment is the independent variable, and financial inclusion is considered the dependent variable. Table 6 shows that the significant value for the independent variable is 0.005. This means that the second hypothesis is also satisfied by the results obtained by the research (as per survey results). The Annova table displays the F-statistic to be 8.467, which suggests that there is a little possibility of this information being adopted with fintech solutions. The significant value in the Annova table is observed to be less than 0.005, which means that the null hypothesis can be rejected and the alternative is accepted. The R square value is 0.138 which means that the market volatility accounts for a 100% possibility of the fact that the IV affects the DV.

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**Hypothesis 3**

**Model Summary**

| Model | R | R Square | Adjusted R Square |
|---|---|---|---|
| 1 | .014[a] | .000 | -.019 |

a. Predictors: (Constant), IV 3
b. Dependent Variable: DV

**ANOVA**

| Model | | Sum of Squares | df |
|---|---|---|---|
| 1 | Regression | .020 | |
| | Residual | 94.780 | 5 |
| | Total | 94.800 | 5 |

a. Dependent Variable: DV
b. Predictors: (Constant), IV 3

**Coefficie**

| Model | | Unstandardized Coefficier | |
|---|---|---|---|
| | | B | Std. Erro |
| 1 | (Constant) | 7.098 | .9 |
| | IV 3 | .024 | .2 |

a. Dependent Variable: DV

**Table 7: Hypothesis 3**
(Quantitative Analysis)

The third hypothesis that was framed in the study was that advancements in technology have a significant and positive impact on financial inclusion. However, table 7 shows a significant value of 0.917 which is much greater than 0.005. This means that the third hypothesis is not satisfied by the results of the research (as per survey results). The F-statistic obtained from the research result represents the values to be 0.011, which means that the null hypothesis cannot be rejected and the alternative cannot be accepted. It has also been observed that the value for R-square is 0.0000, which means that there is no possibility of this independent variable to affect the dependent variable.

**Correlation Test**

|  |  | Correlati... |
|---|---|---|
|  |  | DV |
| DV | Pearson Correlation | 1 |
|  | Sig. (2-tailed) |  |
|  | N | 55 |
| IV1 | Pearson Correlation | .321 |
|  | Sig. (2-tailed) | .017 |
|  | N | 55 |
| IV 2 | Pearson Correlation | .371** |
|  | Sig. (2-tailed) | .005 |
|  | N | 55 |
| IV 4 | Pearson Correlation | .290 |
|  | Sig. (2-tailed) | .032 |
|  | N | 55 |
| IV 3 | Pearson Correlation | .014 |
|  | Sig. (2-tailed) | .917 |
|  | N | 55 |

**Table 8: Correlation Table**

(Quantitative Analysis)

Table 8 of this section is related to the correlation values for the variables utilised for the research. It is useful for displaying the correlation matrix which helps in recognising whether there is a negative or a positive relationship between variables. The data of correlation from the research study can be utilised for the interpretation of the changing effects. From the data shown above, it can be observed that all the variables used for the research portray a positive correlation with each other (as per survey results). However, the Pearson's correlation value of none of the independent variables is observed to be greater than 0.5 with the DV. Therefore, the correlation between the variables and not considered to be strong. However, there is a positive impact of adopting the fintech solution in improving financial inclusion, which can be observed by the positive correlation that exists between the independent and the dependent variable used for the research. However, since none of the correlation coefficients is near one the correlation is not considered strong.

## V. DISCUSSION

The study has discussed the significance of fintech solutions and their contributions to improving financial inclusion. The research has studied the effect of fintech on banking products which involves the contribution of mobile payments and wallets as well as the cards and other payment methods. The research has studied the importance of digital payments to improve financial inclusion as well as the challenges witnessed by the fintech solutions to improve financial inclusion. It has been identified that the fintech solutions witness issues such as lack of data security, government interference, and lack of expertise to be used by the users (Ozili, 2021). The research has made use of "primary quantitative data" collecting information through a survey questionnaire from the users of fintech solutions. It has been observed that 55 respondents have been utilised for this research where a maximum of the respondents were male. The maximum respondents also belong to the age group of 20 to 25 years and a maximum monthly income of 21000 to 30000.

The results of the research obtained after completion of the data analysis portray that most of the variables had a mean value that exceeded the standard deviation value which meant that the data collected for the research were in a clustered form around the mean of the data. The hypothesis testing was done through regression analysis where it was observed that the first two hypotheses that were structured for the research were satisfied by the results of the study (Chang et al., 2020). However, the third hypothesis was not satisfied since the significant value obtained by the research was greater than 0.05 for this hypothesis. It was observed that the fintech solution and digital payments had a significant and positive impact on financial inclusion. However, the advancements in technology do not influence financial inclusion.

It could be represented from the results of the study that the fintech solutions helped in improving the financial inclusions despite several challenges witnessed by these solutions. It was studied in the research that fintech solutions were used increasingly in the present world. It has been observed by the researcher that the present generation of young individuals prefers using fintech solutions more than traditional payment methods (Harvey, 2019). It was found that digital payment procedures make it secure and easy to pay for the items that they purchase from the source.

## VI. CONCLUSION

The research has discussed the impact of fintech solutions and digital payments in improving financial inclusions. It has been observed that fintech solutions are gaining hearts in the present world. Young individuals are using it increasingly across the globe. The study has also observed that individuals have increasingly used fintech solutions and digital payments like mobile banking, e-wallets, and other fintech solutions across the globe. However, the advancements in technology not only have a positive impact but also hurt the society. Therefore, there are several challenges such as lack of expertise and lack of data security for the individuals using the fintech solutions.

The research has made use of "quantitative data" which has been collected using a survey questionnaire that has been asked to the users of fintech solutions for understanding its impact on financial inclusion. It has been understood that these solutions have benefits on financial inclusions and help the economy to grow and develop further. The study has made use of 55 respondents for the research and has helped in understanding the benefits of using fintech solutions as payment methods for the present world. The literature however fails to discuss the strategies adopted by the fintech institutions to mitigate the challenges faced by them, which can be termed as the gap of the study.

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## APPENDICES

**Appendix 1: Survey Questionnaire**
Response
Link: https://docs.google.com/forms/d/e/1FAIpQLSd0BYINBCXw6rJcnDsCl-o0xjmECTOkWkEgHN3H4Qdj4045zA/viewform?usp=sf_link

**1. What is your gender?**
- Male
- Female
- Prefer not to say

**2. What is your age?**
- 20-25 years
- 26-30 years
- 31-35 years
- Above 35 years

**3. What is your monthly income?**
- 10,000-20,000
- 21,000-30,000
- 31,000-40,000
- Above 40,000

**4. Access to smartphones can help improve fintech solution**
- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

**5. Fintech can help improve financial inclusion**
- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

**6. E-wallet is the most used fintech solution**
- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

**7. Fintech helps in providing easy access to mobile banking**
- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

**8. Lack of digital literacy is one of the significant challenges of using fintech solution**
- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

**9. Mobile money platforms are the most used fintech solutions in the present world**
- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

**10. Trust in financial providers is significant for fintech inclusion**
- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

**11. Digital finance can help in improving poverty and inequality conditions in the economy**
- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

**12. Digital finance is significant in the present living of individuals**
- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

**13. Fintech has made the lives of individuals extremely easy**
- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree