WOMEN'S LONG-TERM SAVINGS ON CRYPTOCURRENCY - A TOOL FOR THEIR DIGITAL FINANCIAL INCLUSION

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Abstract

Women explicitly showed lower rates of financial inclusion than men in many developing nations like India earlier due to variety of factors, such as physical and cultural constraints and lack of access to financial services. But now, digital financial services can help close this gap by giving women the access to financial services from the convenience of their own homes. Women can manage their own accounts, conduct transactions, and save money by gaining access to financial services through digital methods without depending on males or middlemen. Increased financial control and independence are important effects of this digital financial inclusion on women's long-term savings. Thus, "Digital financial inclusion" can be defined broadly as digital access to and use of financial services by excluded and underserved populations. In this paper we explore the seven socio demographic characteristics like age, education, stream of education, income, place of education both school and college and nature of employment of the women, more precisely the women teaching fraternity, for their investment on digital virtual currency. The study reveals that, only 5% of the women teachers have invested in cryptocurrency. The majority of the women teachers who have invested in cryptocurrency are between the age group of 31-40 and their nature of employment is only from Private Institutions and none from Government or Government-Aided Institutions. Most notably women teachers who earn more than 40k and above show zero crypto-asset ownership, while teachers whose salary in less than 10k have invested in cryptocurrency comprises 14.28%. Statistical significance test using Chi-Square test of intendency concludes that place of school Education show the significant relationship with the cryptocurrency ownership of the women teachers.

Keywords: Digital financial inclusion, Women, long-Term savings, Cryptocurrency.

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1. Introduction

Women's long-term savings and their digital financial inclusion are interlinked, with digital financial inclusion having the potential to positively impact women's ability to save and manage their money digitally. Digital financial inclusion refers to the use of digital technology, such as mobile phones and the internet, to provide financial services to individuals who are traditionally excluded from access to traditional banking services. Especially, this can have a significant impact on women's long-term savings, by providing them with new and convenient ways to save and manage their money. Digital assets can be particularly useful for women who may face barriers to traditional banking and financial services, such as access to credit or a lack of control over their own financial assets and can be particularly for women in developing countries where access to financial services may be limited and financial independence can be a challenge. For example, the digital / virtual currency such as cryptocurrency wallets can be set up quickly and easily, and transactions can be made without the need for intermediaries, this allows women to take control of their financial assets and manage their savings in a way that is secure, transparent, and accessible. Additionally, many cryptocurrencies offer high levels of security and privacy, which can be important for women who may be concerned about financial abuse or exploitation. While there are certainly challenges to overcome, such as high volatility in some cases, the potential benefits of especially cryptocurrency for women's financial inclusion are substantial. By providing women, access to a digital and decentralized financial system, with greater control over their own financial assets and enabling them to save and invest for the long-term, cryptocurrency shows the potential to play a key role in promoting financial equality and empowering women to achieve their financial goals. Thus, in this paper we study on the women's long-term savings on cryptocurrency as a tool for their digital financial inclusion.

Need for Study:

A recent article titled "Why 'India going digital' means 'India going inclusive'", published in 'The Economic Times' newspaper in the year 2022 by Bhagwat Karad, Minister of state for Finance, Government of India, summarizes that, focus on enabling the digital payments had paid its dividends during the pandemic, as it effectively reached citizens living in remote areas by reducing the number of those financially excluded and explains how digital technologies are making a positive impact on livelihood of citizens bringing socio-economic behavioral changes towards the financial inclusion space. Pragmatically, the time period after demonetization had shown a phenomenal growth of digital financial inclusion in India; Meaning, the number of financial transactions performed digitally, both in terms of volume and on the number of users had grown higher in number with the help of FinTech products such as GPay, PhonePay, PayTm, BharatPay etc. Hence, digitalization, is no longer a luxury, existing as an add-on feature to functions like banking, saving, shopping, traveling and others but has now percolated to almost all walks of life. Due to this digital inclusion, the country's digital payment value is expected to grow more than double to $135.2 billion by 2023, according to an ASSOCHAM – PwC study. On the other hand, women who are natural savers and make up almost half of the 1.3 billion Indian population, show 12 percentage difference in the financial inclusion gender divide, much higher than the global average of a five-percentage point gap. Hence, Women with these cynical challenges in bringing them under digital financial inclusion umbrella is a need of the hour and a necessary task. Given that, Digital technology presents powerful opportunities to close the overall financial inclusion gap, this study shall explore on the ways that encourages women to become digitally financial inclusive by investing in cryptocurrency.

Review of Literature:

(Mundi, H.S. and Kumar, D., 2023) Investments in cryptocurrencies are an emerging area in the research on alternative investments. Alternative investments provide diversification benefits and play a critical role in portfolio construction, and the research on alternative investments has gained momentum in recent times.

(Yang, Xiaolan et al., 2022) This study results show that digital financial inclusion significantly promotes women's entrepreneurial behavior. Furthermore, it has a greater effect on entrepreneurship among vulnerable women, such as those with less education or a lack of financial autonomy and those living in areas with high gender inequality, which supports the idea that digital financial inclusion can empower women.

(Di Vaio, Assunta et al., 2022) This study emphasized the implementation of blockchain technology to manage gender equality and inclusion processes by orienting corporate governance models towards social and sustainable values through the lens of new technology-orientation.

(M. E., Uduak and N. E., Christopher, 2022) It is found that digital currency development are positive derivatives for financial inclusion in Nigeria. Cumulatively, the effect of digital finances

on financial inclusion in Nigeria is positive. Findings suggest that a unit rise in the usage of automated teller machines (ATM) by citizens spontaneously raised financial inclusion in a quarter and were statistically significant.

(Y.T., Lee et al., 2022) This research finds that improving digital financial inclusion helps to reduce poverty. They recommend, focus on improving digital infrastructure, simplifying the complicated banking procedures, and stressing the importance of financial education, will reduce the persistent divide that exists between gender, the wealthy and the poor, and urban and rural areas.

(Mpofu, F. Y., and M. David., 2022) the study discovered that digital financial inclusion is driving financial inclusion on the African continent. The study also found that, despite several negative consequences associated with the growth of the digital economy, most African economic activities are informal and are being aided by various digital financial services.

(Losada, J.G., et al., 2022) Information and communication technologies have shown a major potential to contribute to financial inclusion, giving birth to digital financial inclusion and has often been considered one of the cornerstones of social development, as it can contribute to poverty reduction, narrow the income gap, lead to wiser financial decisions, help to enlarge savings, increase the productive investment and foster a greater gender equality.

(Chrančoková, Martina et al, 2022) study concluded that those who actively invest in cryptocurrencies rate the possibility of quick earnings as the main reason for investing in cryptocurrencies. Further, the study reports that, with increasing age, the number of investors in this type of asset decreases and most investors come from the city; the negative experience of investing in cryptocurrencies had very little influence on the future reinvesting.

(Carlos Sakyi-Nyarko et al, 2022) this paper finds that the financial inclusion significantly improves household financial resilience in the Ghanaian households. Results from different measures of financial inclusion show that savings and formal account ownership yield more pronounced resilience effect, with mobile money (m-money) exerting the least impact; with generally stronger effects in rural than in urban areas, especially for females.

(Ozili, P.K. et al, 2022) The authors used a thematic literature review methodology and affirm that most studies report a positive impact of financial inclusion on economic growth by enabling greater access to financial products and services offered by financial institutions that increases financial intermediation and translates to positive economic growth. It has the potential to have a positive impact on women's long-term savings by increasing their financial control, independence, and access to savings products and services.

(Mouna, A. and Jarboui, A. 2022), This study identified the determinants of financial inclusion and digital payment services by investigating the effects of age, gender, education, income and being in the workforce on changes and found that poorer people (and, by association, less educated people) and the young (but less so the elderly) are disproportionately excluded from the financial system. Results confirm that better collaboration between the government and the financial sector can help to develop digital financial inclusion through the technology adoption channels.

(Ertürk, Ismail et al, 2022) Study identified the definitions of digital financial inclusion, the instruments for digital financial inclusion, the benefits of digital financial inclusion, the risks of digital financial inclusion, and the regulatory issues associated with digital financial inclusion.

(Antonijević, Marija et al 2022) This paper aims to examine the differences between men and women in 7 segments related to financial inclusion: 1) owning an account with a financial institution; 2) savings at a financial institution; 3) borrowing from a financial institution; 4) owning a credit card, 5) using a mobile phone or the Internet to access an account; 6) using the Internet to pay bills or to buy something online; 7) making or receiving digital payments. The Wilcoxon Signed-Ranks test showed statistically significant differences between men and women in all segments related to financial inclusion.

(Hiroshi Fujiki, 2021) This study compares the key characteristics of Japanese crypto asset owners with those of nonowners suggest that financial regulators should not treat crypto asset owners as a homogenous group of financially literate investors who are inherently good at internet transactions. It also determined novel heterogeneities to their investment experience with conventional risky financial assets in terms of cash hoarding and financial literacy.

(Peterson K. Ozili, 2021) This paper draw attention as how financial inclusion can transmit systemic risks to the formal financial sector; and the key findings in this review indicate that financial inclusion affects, and is influenced by, the

level of financial innovation, poverty-levels, the stability of the financial sector, the state of the economy, financial literacy, and regulatory frameworks.

(Senkardes, C.G. and Akadur, O., 2021) study elucidated the factors over demographic and psychological factors that affect the financial investment decisions of individuals is gender. Age-related cryptocurrency investment preferences do not differ by gender. It has been observed that women prefer different investment tools primarily due to lower income and lower level of knowledge about cryptocurrencies.

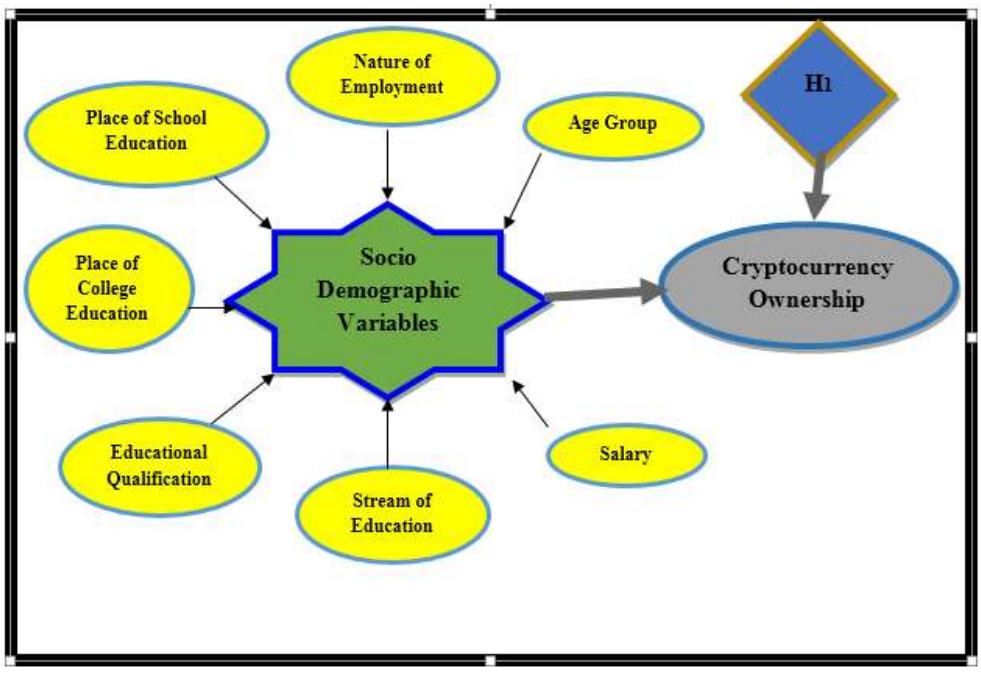
(Roberto and Roberta, 2020) study confirms that the Blockchain technology, born as a tool to support cryptocurrency has set itself in a very short time as a disruptive technology able to increase the financial inclusion in Africa, Validated by the Global Findex 2017 data, the World Bank Survey on financial inclusion. The empirical analysis discusses the potential blockchain solutions to reduce the current level of financial exclusion.

(Durai, Tabitha and Stella. G., 2019) summarized that the digital financial inclusion is a win-win situation, achieved through digital finance ensuring access to financial services and adequate credit. It provides greater control of customer personal finance, quick financial decision making, and the ability to make and receive payments, needed by vulnerable groups such as weaker sections and low income at an affordable cost.

Research Gap:
The available research literature on digital financial inclusion reads us that it has a positive impact on reducing the gender divide in digital financial services and has positive impact in improving women's long term savings amidst different sect of populations like Ghana (Carlos Sakyi-Nyarko et al, 2022), Nigeria (M. E., Uduak and N. E., Christopher, 2022) and African continent (Mpofu, F. Y., and M. David., 2022) and analyzed various factors for them such as age, gender, education, income (Mouna, A. and Jarboui, A. 2022), (Chrančoková, Martina et al, 2022) and (Yang, Xiaolan et al., 2022), the different forms of Socio demographic variables and their usefulness in improving the digital financial inclusion. Hence, for our study we have taken cross-pollination on this gap in the existing literature and wanted to study on the significant relationship of socio demographic factors on the women's crypto assets ownership, in the city of Chennai, as a means for their digital financial inclusion.

Objective:
To study the relationship between women's long-term savings on cryptocurrency and their socio demographic variables.

Research Framework:



Hypotheses:
H0: There is no significant relationship between the Socio Demographic factors of the women teachers and with the Cryptocurrency Ownership [Null Hypothesis].
H1: There is significant relationship between the Socio Demographic factors of the women teachers

and with the Cryptocurrency Ownership [Alternative Hypothesis
.

2. Research Methodology

This Research is designed based on the Descriptive Research method. To facilitate this, a structured survey questionnaire was created keeping in view of demographic, conceptual and perception related 24 questions and tested for intercorrelations reliability among its test items and found the value for Cronbach's Alpha $\alpha = 0.72$ which is within an acceptable ($0.7 \leq \alpha < 0.8$) standard of internal consistency. Secondary Data were also collected from the various research papers and web-based articles and research studies.
The research sample is based on primary data collection techniques based solely on survey questionnaires distributed to women teachers via online internet survey (https://freeonlinesurveys.com/s/DtqfJZzA).

Following the pandemic restrictions and guidelines, the research survey was administered online with the help of internet online adhering the Non-Probability Sampling method spanning from 30th Dec 2022 till 11th Jan 2023 for the duration of 13 days to the participants from the Chennai region. Total responses received are seventy-eight. The sampling frame considers women teachers either from school or college including both government and private educational institutions limiting only to the city of Chennai.

3. Analysis and Results

SPSS (Statistics Package for Social Sciences), version V29.0.0.0 (241) is used for this research study data analysis. Using the descriptive statistics findings on the survey inputs, the frequency details of the socio demographic variables are given in [Table 1].

Table 1: Frequency Table for Socio Demographic variables generated through SPSS

Age Group	**N**	**%**	**Educational Qualification**	**N**	**%**
21-30	13	16.7%	UG	18	23.1%
31-40	35	44.9%	PG	37	47.4%
41-50	20	25.6%	MPhil	11	14.1%
51-60	10	12.8%	PhD	12	15.4%
Employment Type	**N**	**%**	**Monthly Net Salary**	**N**	**%**
Govt Institution	13	16.7%	Less than 10K	7	9.0%
Govt Aided	2	2.6%	10-20K	16	20.5%
Pvt Inst	63	80.8%	20-30K	12	15.4%
Educational Stream	**N**	**%**	30-40K	11	14.1%
Arts	26	33.3%	40-50K	8	10.3%
Science	27	34.6%	50-60	6	7.7%
Commerce	10	12.8%	60k-1L	7	9.0%
Computer	6	7.7%	1-1.5L	9	11.5%
others	9	11.5%	above 1.5L	2	2.6%
Schooling Place	**N**	**%**	**College education place**	**N**	**%**
Rural	18	23.1%	Rural	13	16.7%
Urban	60	76.9%	Urban	65	83.3%

The study reveals that, only 5% of the women teachers have invested in cryptocurrency and the remaining 95% of them do not own crypto currency in any form. Based on the crosstab correlation analysis in SPSS, it is inferred that, the primary age group of the women teachers who have the most ownership on cryptocurrency than their peers in the survey are, the age group of 31-40 with 100% from the total sample; and the women teachers who did their schooling in rural area with 75% and women teachers whose net monthly income is between 10k-20k are 50% of the crypto owners. Remarkably, 100% of those who works in Private institutions have crypto ownership and none from Government or Government-Aided schools or colleges. Further 50% of the women teachers whose educational qualification is PG possess the cryptocurrency ownership and 50% of whose educational stream is Arts and Science possess equally of cryptocurrency ownership and finally 75% of the women teachers who did their college education in Urban area show crypto ownership.

Some of the important findings, in addition to these are, only 11.43% of the women teachers in the age group of 31-40 and none from other age group show more of crypto-ownership than their peers.16.67% of their schooling from Urban area; 6.35% works in Private institutions; None from Govt & Aided Institutions; 8.33% of teachers' educational qualification is PhD. None from M.Phil.; 7.69 % of educational stream is Arts and interestingly none from Commerce and Computers streams of education. In continuation, 7.69% of the women teachers whose college education in Urban area and 14.28% of teachers' who earn less than 10k and importantly teachers who earn above 40k we see no crypto-Owners.

Following are the pictorial analysis using the cross-table bar chart using SPSS on the right side and descriptive data classification in the form of pie chart on the left side, for all seven socio demographic variables, given one by one.

Fig 1: Chi Square Test Bar Graph and Descriptive Pie Chart – [Age]

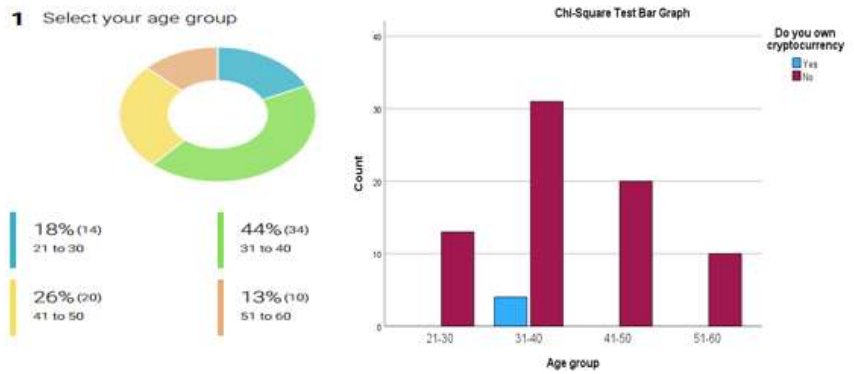


Fig 2: Chi Square Test Bar Graph and Descriptive Pie Chart – [Employment Type]

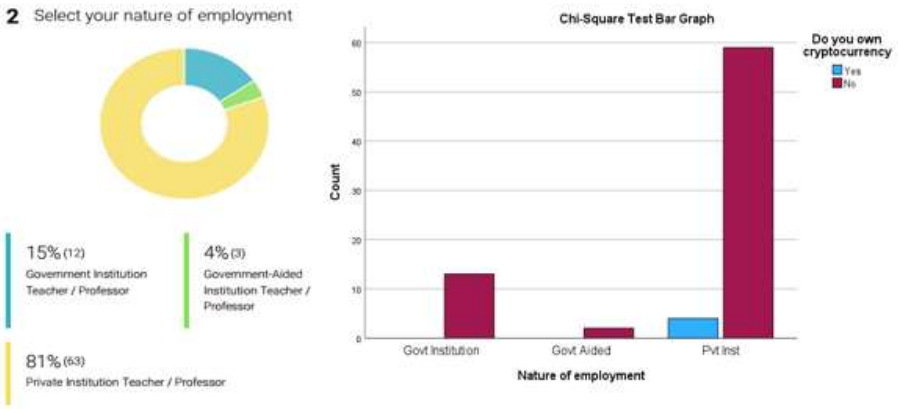


Fig 3: Chi Square Test Bar Graph and Descriptive Pie Chart – [Place of Schooling]

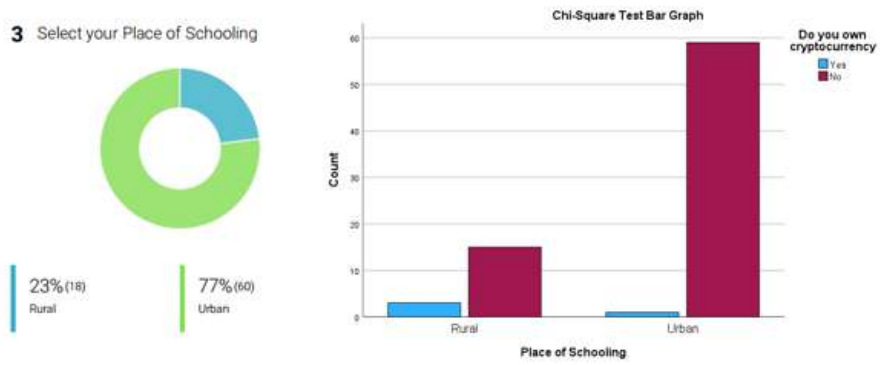


Fig 4: Chi Square Test Bar Graph and Descriptive Pie Chart – [Educational Qualification]

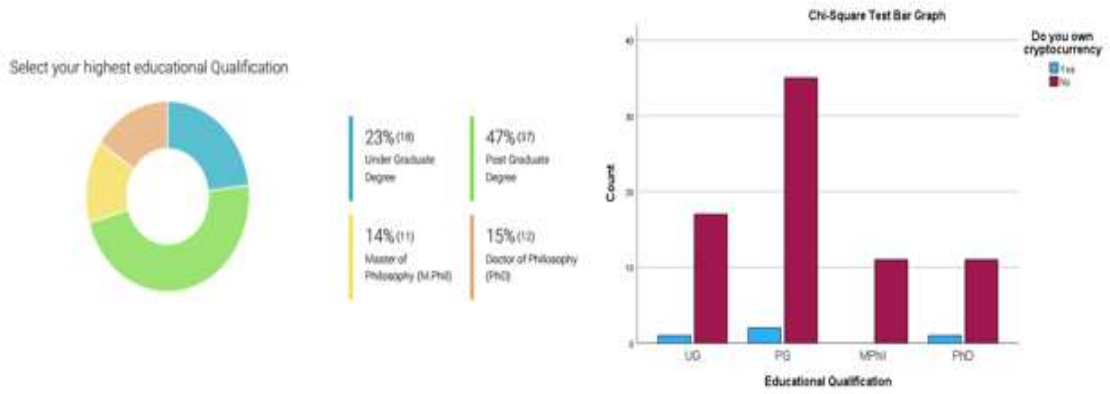


Fig 5: Chi Square Test Bar Graph and Descriptive Pie Chart – [Educational Stream]

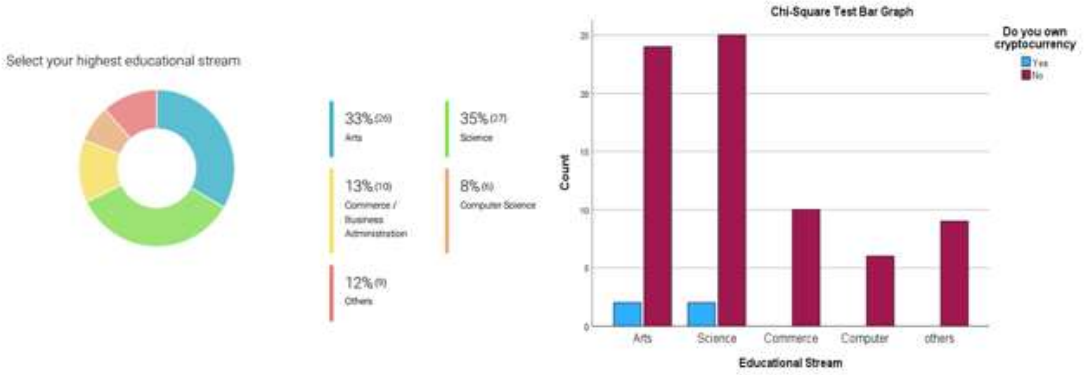


Fig 6: Chi Square Test Bar Graph and Descriptive Pie Chart – [College Education Place]

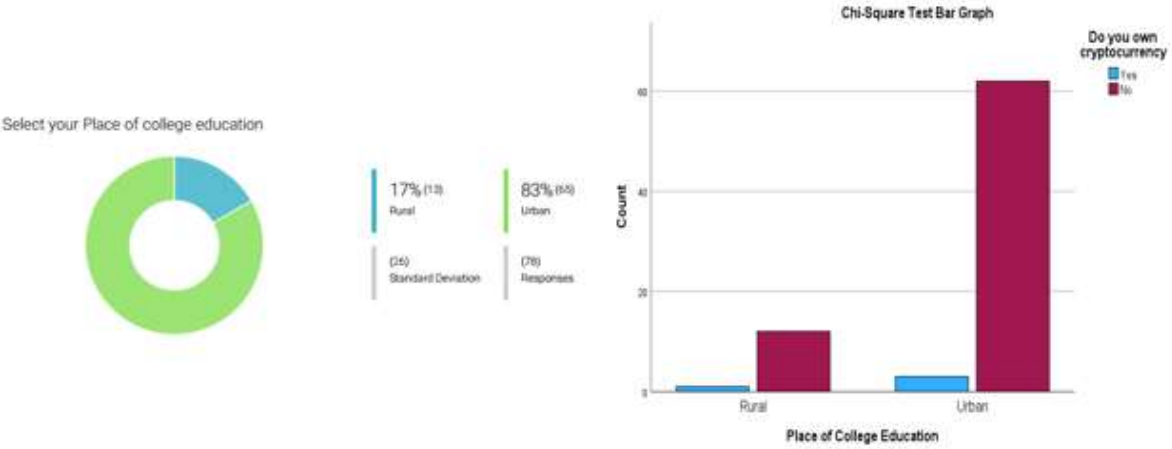
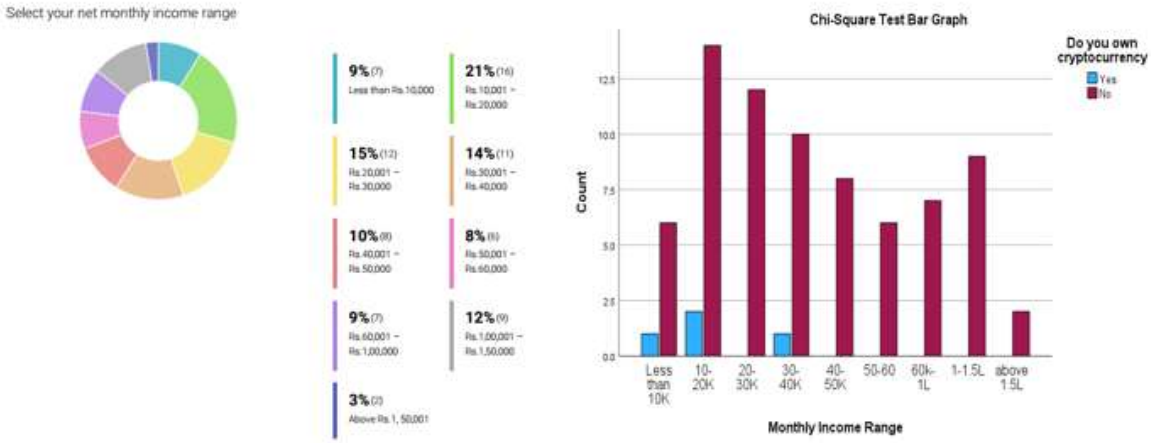


Fig 7: Chi Square Test Bar Graph and Descriptive Pie Chart – [Salary]



The inferential statistics analysis summary are as follows, the cryptocurrency Ownership was tested between the seven variables of Socio Demography using Chi-Square Test of Independence to assess the relationship between the two and the results are tabulated below,

Table 2: Chi Square Test of Independence results summary

Serial Number	Independent Variable (IDV)	Dependent Variable (DV)	Chi-Square p value
1	Age Group	Cryptocurrency Ownership	.159
2	Nature of Employment		.605
3	Place of School Education		.011
4	Place of College Education		.646
5	Educational Qualification		.835
6	Stream of Education		.737
7	Net Salary		.678

In summary, the relationship is established for one socio demographic independent variables which is Place of School Education whose p-value is smaller than the standard alpha value, rejecting null hypothesis and shows the significant relationship with the cryptocurrency ownership level of the women teachers' long-term savings.

Limitations:

The primary limitation of this study may be the quantum of data collected as 78 and from the only city i.e., Chennai alone. Moreover, the respondents were higher in numbers from Private Institutions; Perhaps, equal stratifications amongst Government, Government-Aided and Private Institutions may give us different revelations in this digital financial arena. On the lighter note, Lack of prior research on this specific topic of Digital financial inclusion on women teachers can also be considered as a limitation.

Practical Implications:

This research study provides an insight into the possible socio-demographic factors triaged to the cryptocurrency ownership among the women teaching fraternity, as a means for digital financial inclusion. These results can be used to those who are working on the digital financial inclusion of women and teachers in particular, in devising a strategy to elucidate the socio demographic variables and their long-term savings on cryptocurrency. Talking about their substantial relationship level, it may suggest to the development of educational resources and training programs for teachers on the topic of cryptocurrency. The population, particularly, Government and Government-Aided Institutional women teachers, who still remain aloof and yet to have digital financial inclusion on the crypto investment, can be taken as a potential target by crypto-minters, crypto brokers, government or non-governmental agencies in their policy formulation.

4. Conclusion

Bringing a large number of women under the ambit of the financial sector needs a more gender-inclusive financial system which can address the demand and supply side obstacles faced by them. India, as one of the fastest growing economies in the world, has made significant progress in financial inclusion in the last few years, with many

government initiatives and new financial service players reaching the un- and under-reached. This should be continued, as the gender agnostic approach has gone on for too long and that needs to change towards designing women specific tailor made digital financial products and creating access to affordable financial services to result in the country's poverty reduction and economic growth. Financial exclusion affects the middle class, not only the poor and digital financial inclusion offers a transformational solution to this persistent problem of women exclusion in finance. For poor people, access to and use of basic financial services can improve incomes, increase resilience and improve their lives. In simple, one of the most effective accelerators of economic participation is financial inclusion and using technology enhances the pace of this digital financial inclusion and women can leverage this technology tools to come under the digital financial inclusion. Thus, bringing women inside the digital financial inclusion through their long-term savings on digital currency by means of spillover effect in the economy is the order of the day.

Scope for Future Research:

In continuance of this, future study can be taken up primarily alluding if there are any other tangible outcomes due to this Digital financial inclusion of the women teachers; either from the existing same population or from diverse occupations or from other geographical regions. Moreover, the cryptocurrency ownership level of women teachers for their long-Term savings, be compared against the men counterpart on their correspondence significance level, so that the factors can be listed and identified as gender neutral or gender aligned. In addition, the impact of educational training on cryptocurrency and their subsequent investment changes in cryptocurrency ownership and its efficacy with the suitable procedures can be studied.

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