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Digital Literacy and Digital Empowerment: A Study of Weavers and Artisans in Pochampally Village, Telangana

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Abstract

This study examines the levels of digital literacy and empowerment among weavers and artisans in Pochampally village, Telangana. With the advent of technology, digital literacy has become essential for artisans to enhance their skills, market their products, and improve their socio-economic conditions. This paper presents the findings of a survey conducted among selected weavers and artisans, analysing their digital skills, access to technology, and the impact of digital empowerment on their livelihoods.

Keywords: Digital Literacy, Digital Empowerment, Weavers, Artisans, Pochampally, Telangana

1. Introduction

In today's rapidly evolving global economy, digital literacy has emerged as a critical factor for individual and community development, particularly in rural and semi-urban sectors. Digital literacy encompasses the ability to use digital tools and technologies, such as computers, smartphones, and the internet, to access information, communicate, and participate in economic activities. In the context of artisans and weavers, digital literacy represents a gateway to unlocking new market opportunities, enhancing business practices, and improving socio-economic status. Traditionally, artisans and weavers in rural areas, such as Pochampally village in Telangana, have relied on local markets and intermediaries to sell their products. This dependence often limits their income potential, reduces direct consumer engagement, and restricts their ability to scale their businesses. With the increasing digitization of economies and the growing relevance of e-commerce, digital skills can empower these artisans to reach wider audiences, engage in direct sales, and even participate in global markets. Moreover, digital literacy can facilitate access to training, online resources, and government schemes, further enabling artisans to improve their craft, reduce production costs, and innovate in design and marketing.

The importance of digital literacy for weavers and artisans is particularly relevant in regions like Pochampally, famous for its intricate and world-renowned Ikat weaving. Despite the rich cultural and artistic heritage, the weavers in Pochampally often face challenges in terms of low profitability, limited market access, and declining interest among younger generations in pursuing traditional crafts. Introducing digital literacy in such communities has the potential to not only preserve these age-old crafts but also create new economic pathways for these artisans, ensuring sustainable livelihoods. By embracing digital platforms, weavers and artisans can expand their market reach, promote their products through social media and e-commerce platforms, and directly connect with buyers, thereby eliminating middlemen and enhancing profit margins. Additionally, digital tools can be used to streamline operations, manage inventory, track sales, and foster greater efficiency in their business practices. Therefore, digital empowerment through digital literacy is essential for bridging the gap between traditional artisan communities and the modern economy, offering them a chance to thrive in an increasingly competitive global market.

This study focuses on assessing the digital literacy levels and the subsequent digital empowerment of a select group of weavers and artisans from Pochampally village, Telangana. By examining how digital skills affect their economic well-being, the study seeks to understand the broader impact of digital literacy on rural artisans' ability to engage in the modern

economy and improve their quality of life. The findings of this study aim to contribute to ongoing discussions around rural development, digital inclusion, and the preservation of traditional crafts in a rapidly digitizing world.

Objectives:

- To assess the level of digital literacy among weavers and artisans in Pochampally.
- To evaluate the impact of digital empowerment on their socio-economic status.
- To provide recommendations for improving digital literacy programs in rural areas.

2. Literature Review

Digital Literacy and Empowerment in Rural Settings

Digital literacy, defined as the ability to use digital technologies effectively, is increasingly recognized as a catalyst for socio-economic development in rural communities. For rural populations, particularly artisans and weavers, digital literacy offers opportunities for market expansion, access to services, and social inclusion. According to **Hussain et al. (2021)**, digital literacy enables marginalized groups to overcome geographical constraints and access critical information related to their craft, market trends, and e-commerce opportunities. This is crucial for areas like Pochampally, where traditional weaving is both a cultural and economic activity.

Awasthi and Garg (2018) emphasize the importance of digital inclusion in bridging the rural-urban divide. Their study demonstrates that rural artisans who participate in digital literacy programs are better positioned to engage with e-commerce platforms, access government schemes, and improve their economic standing. Additionally, **Prasad et al. (2020)** highlight that digital literacy not only empowers rural individuals economically but also promotes community cohesion by fostering digital communities where artisans share knowledge and skills.

While the benefits of digital literacy in rural settings are evident, challenges such as lack of infrastructure and low literacy levels remain. **Kumar and Sharma (2019)** argue that rural digital literacy initiatives must address these barriers through tailored approaches that cater to the specific needs of rural populations, such as user-friendly technologies and localized training programs.

Impact of Digital Tools on the Livelihoods of Artisans and Weavers

The adoption of digital tools has transformed the traditional livelihoods of artisans and weavers. Digital platforms such as e-commerce websites, social media, and online marketplaces provide a global audience for rural artisans, increasing their visibility and sales potential. **Singh and Patel (2020)** found that artisans who engage with digital platforms experience an uplift in revenue, market access, and customer engagement. This is particularly relevant for weavers in Pochampally, where the craft is often restricted to local markets due to limited outreach.

Similarly, **Verma and Joshi (2019)** emphasize that digital literacy allows artisans to bypass middlemen, leading to higher profit margins and direct communication with buyers. This increased transparency in transactions also fosters trust between artisans and consumers, improving the overall business ecosystem. **Chakraborty et al. (2020)** conducted a study on the role of digital tools in rural artisanal sectors and concluded that integrating technology with traditional craftsmanship can preserve cultural heritage while driving economic growth.

Socio-Economic Impact of Digital Empowerment

Digital empowerment significantly impacts the socio-economic status of rural artisans by enabling them to access new markets, financial services, and government schemes. **Pandey and Roy (2021)** found that digital literacy among rural artisans enhances not only income levels but also their ability to make informed financial decisions. Their research showed that artisans with access to mobile banking and e-wallets had better financial security and lower dependency on informal lending practices.

Sahoo et al. (2022) examined the broader social impact of digital empowerment, noting that it fosters gender inclusivity by allowing women artisans to participate in the digital economy from the confines of their homes. For example, digital tools such as WhatsApp and Instagram enable women weavers in Pochampally to showcase their work and generate income without the need for physical mobility. Similarly, **Deshmukh and Jain (2019)** found that digital empowerment in rural

areas enhances access to educational resources, healthcare information, and social welfare schemes, thereby improving the overall quality of life.

Challenges and Recommendations for Digital Literacy Programs

Despite the clear benefits of digital literacy for rural artisans, there are considerable challenges to implementing effective digital literacy programs. **Reddy et al. (2019)** point to infrastructural issues such as inconsistent electricity supply, lack of internet connectivity, and limited access to affordable smartphones as major obstacles. Furthermore, **Kumari and Srivastava (2021)** emphasize that digital literacy programs often fail to consider the specific socio-cultural context of rural communities, leading to low adoption rates.

To address these challenges, several scholars have proposed targeted interventions. **Basu and Bhattacharya (2020)** recommend that digital literacy programs be integrated into existing educational frameworks and government schemes to ensure that they reach the most marginalized communities. They also suggest the use of local languages and culturally relevant content to make digital literacy training more accessible. **Sen and Gupta (2021)** advocate for public-private partnerships to improve digital infrastructure in rural areas, ensuring that artisans have the tools and resources necessary to fully participate in the digital economy.

3. Methodology

The research design for this study adopts a descriptive approach, utilizing quantitative methods to assess the level of digital literacy among weavers and artisans in Pochampally and to evaluate the impact of digital empowerment on their socio-economic status. A structured process was followed for sample selection, focusing on participants who are active weavers and artisans within Pochampally village. Purposive sampling was employed to ensure that participants represent a cross-section of different age groups, genders, and experience levels in weaving, providing a comprehensive view of the community's digital literacy and empowerment.

Data collection was carried out using of surveys. Surveys were designed to capture quantitative data related to participants' digital literacy levels, usage of digital tools, and the perceived impact of these tools on their livelihoods. The primary instrument used for data collection was a structured questionnaire, developed to assess various aspects of digital literacy, including access to digital tools, frequency of usage, and familiarity with digital platforms like e-commerce websites. The questionnaire also included sections measuring the socio-economic impact of digital literacy, such as changes in income, market reach, and overall quality of life. It comprised both closed-ended and Likert-scale questions to quantify the participants' responses, ensuring reliable and objective data collection.

4. Data Analysis

For data analysis, statistical techniques were applied using software tools like SPSS. Descriptive statistics, such as mean, median, mode, and standard deviation, were utilized to summarize and interpret the participants' responses. To analyse relationships between variables—such as digital literacy levels and socio-economic outcomes—correlation analysis and regression models were employed. Additionally, chi-square tests were conducted to examine the association between demographic factors and the level of digital literacy. These methods provided a comprehensive understanding of the patterns and trends emerging from the data.

This section provides a comprehensive analysis of the survey data collected from weavers and artisans in Pochampally village, Telangana. The analysis employs both descriptive and inferential statistical techniques to assess the levels of digital literacy and the impact of digital empowerment on the socio-economic status of the participants.

4.1 Demographics of Participants

The survey collected data from **100** weavers and artisans in Pochampally. The demographic characteristics of the participants are summarized below:

Table 1: Demographic Profile of Participants

Demographic Variable	Frequency	Percentage
Gender		
Female	177	60%
Male	118	40%
Age Group		
18-29 years	59	20%
30-45 years	133	45%
46-60 years	74	25%
61 years and above	30	10%
Education Level		
No formal education	44	15%
Primary education	89	30%
Secondary education	103	35%
Higher education	59	20%

Source: Primary data

Table 1 presents the demographic profile of the 295 participants in the study. The gender distribution reveals a higher representation of females, with 60% (177 participants), compared to 40% (118 participants) who were male. The age group breakdown shows that nearly half of the participants (45%) fall within the 30-45 years age range, indicating a substantial proportion of middle-aged individuals. Participants aged 46-60 years make up 25% of the sample, while 20% are younger adults aged 18-29 years, and the remaining 10% are 61 years and above.

In terms of education level, the majority of participants have completed secondary education (35%), followed by 30% with primary education. A notable 20% of participants have achieved higher education, while 15% reported having no formal education. These figures suggest a diverse educational background among the participants, with a significant portion attaining at least secondary education.

4.2 Level of Digital Literacy

Participants were asked to rate their digital skills on a scale of 1 to 5, where 1 is "no skills" and 5 is "advanced skills." The results are categorized into three levels: basic (1-2), intermediate (3), and advanced (4-5).

Table 2: Levels of Digital Literacy among Participants

Digital Literacy Level	*Rating Scale*	*Number of Participants*	*Percentage*
Basic	*1-2*	*153*	*51.8%*
Intermediate	*3*	*98*	*33.2%*
Advanced	*4-5*	*44*	*15%*
Total		*295*	*100%*

The data presented in Table 2 reveals the distribution of digital literacy levels among the participants from Pochampally village. A majority of the respondents, 51.8%, fall under the "Basic" category, indicating limited familiarity with digital tools and technologies. This suggests that more than half of the weavers and artisans have only a rudimentary understanding of digital platforms, which may restrict their ability to fully benefit from digital opportunities such as e-commerce or online financial services. Meanwhile, 33.2% of participants are classified at the "Intermediate" level, showing moderate digital skills that allow them to engage more actively with digital technologies, although they may still face challenges in advanced tasks. Only 15% of respondents possess "Advanced" digital literacy, demonstrating a high level of competence in using digital tools for complex functions like marketing their products or managing finances online. This distribution highlights the need for targeted digital literacy programs, especially focused on raising those with basic skills to more advanced levels, to improve their socio-economic prospects.

4.3 Access to Technology

The analysis of access to technology shows that:

Table 3: Access to Technology

Technology	**Frequency**	**Percentage**
Smartphone Ownership		
Yes	221	75%
No	74	25%
Internet Usage		
Daily	118	40%
Weekly	89	30%
Rarely	59	20%
Never	29	10%

Source: Primary data

Among the participants, with 75% of them owning a smartphone. This indicates that a significant portion of weavers and artisans in Pochampally have access to mobile technology, which can serve as a gateway to digital literacy and economic opportunities. However, 25% of the respondents do not own a smartphone, highlighting a gap in access that may limit their ability to engage in digital activities.

In terms of internet usage, the frequency varies widely. While 40% of the participants use the internet daily, suggesting regular engagement with online platforms, 30% report using it on a weekly basis, indicating moderate but consistent usage. Another 20% use the internet only rarely, which may reflect limited digital skills or access issues, while 10% never use the internet at all. These findings suggest that while smartphone ownership is common, there are varying levels of internet usage, pointing to a need for improving both digital access and literacy to ensure more consistent and meaningful use of technology among the community.

4.4 Impact of Digital Empowerment

To assess the impact of digital empowerment, participants were asked about their monthly income before and after receiving digital literacy training.

Using a paired t-test to compare the means of the two groups:

- **Null Hypothesis (H0)**: There is no significant difference in income before and after training.
- **Alternative Hypothesis (H1)**: There is a significant difference in income before and after training.

Statistical Analysis

Regression Analysis

Dependent: Income after training

Independent: digital literacy, access to resources, training

Table 4 ANOVA table

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	90.307	3	30.102	101.133	.000
	Residual	86.914	292	.298		
	Total	177.221	295			

The statistical analysis explores the relationship between digital literacy, access to resources, and training on income after training. The regression analysis results demonstrate that the model is significant overall, as indicated by the ANOVA results ($F = 101.133$, $p < 0.001$), showing a strong model fit. The R-Square value of 0.510 suggests that approximately 51% of the variance in income after training can be explained by the independent variables (digital literacy, training, and access to resources).

Table 5: Regression coefficients

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.563	.160		3.526	.000
	Digital literacy	.136	.056	.142	2.438	.015
	Training	.367	.063	.372	5.814	.000
	Access to resources	.277	.060	.282	4.592	.000

From the coefficients table, all independent variables significantly contribute to the model. Training has the highest impact on post-training income ($\beta = 0.372$, $p < 0.001$), followed by access to resources ($\beta = 0.282$, $p < 0.001$), and digital literacy ($\beta = 0.142$, $p = 0.015$). This indicates that training plays the most significant role in improving income, but access to resources and digital literacy also positively affect income after training.

Table 6: Model

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.714	.510	.505	.54557

The model summary provides key insights into the strength and explanatory power of the regression model. The R value of 0.714 indicates a strong positive correlation between the independent variables (digital literacy, training, and access to resources) and the dependent variable (income after training). The R Square value of 0.510 suggests that 51% of the variance in income after training can be explained by the model, which highlights a substantial impact of the independent variables on income outcomes.

The Adjusted R Square of 0.505, slightly lower than the R Square, accounts for the number of predictors in the model and indicates that the model remains robust even when adjusted for additional variables. Lastly, the standard error of the estimate (0.54557) reflects the average distance that the observed values fall from the regression line. A lower value would indicate a more accurate prediction, but the current value suggests a reasonably good fit of the model.

Table 7: Pre and Post training Income (post mean is high)

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Training Income (INR)	18069.1680	50	3846.18341	543.93247
	Post-Training Income (INR)	23151.5006	50	3809.13207	538.69262

This table shows the comparison of mean incomes before and after training. The average pre-training income is INR 18,069.17, with a standard deviation of INR 3,846.18, indicating moderate variation in participants' income levels before training. After training, the average income significantly increases to INR 23,151.50, with a slightly lower standard deviation of INR 3,809.13. The standard errors of the mean are 543.93 for pre-training and 538.69 for post-training, suggesting relatively stable estimates of the mean for both periods. Overall, this data indicates a substantial increase in participants' income following the training program.

Table 8: Paired Samples Correlations

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Pre-Training Income (INR) & Post-Training Income (INR)	50	.690	.000

This table shows the correlation between pre-training and post-training income. The correlation coefficient ($r = 0.690$) is significant ($p < 0.001$), indicating a strong positive relationship between the two income measures. This suggests that participants with higher incomes before training are more likely to have higher incomes after training, but there is still considerable improvement across the board.

Table 9: Paired sample test

Paired Samples Test								
	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			

Pair 1	Pre-Training Income (INR) - Post-Training Income (INR)	-5082.33260	3014.47449	426.31107	-5939.03677	-4225.62843	-11.922	49	.000

This table provides a detailed statistical analysis of the difference between pre- and post-training income. The mean difference is INR 5,082.33, with a standard deviation of INR 3,014.47, showing considerable variation in income change among participants. The t-value (-11.922) is highly significant ($p < 0.001$), meaning that the increase in income after training is statistically significant. The 95% confidence interval of the difference ranges from INR -5,939.04 to INR -4,225.63, confirming that the income increase is not due to random variation and is highly reliable.

5.Discussion & Implications

The study reveals a significant impact of digital literacy and empowerment on the socio-economic status of weavers and artisans in Pochampally. The analysis shows that 53% of participants possess only basic digital literacy, which highlights a gap in their ability to fully engage with digital tools. However, access to smartphones is relatively high at 75%, and 40% of respondents use the internet daily. The regression analysis demonstrates that training, digital literacy, and access to resources significantly influence post-training income, with training having the most substantial effect. The paired t-test further confirms a significant increase in income, with post-training income rising by an average of INR 5,082.33 compared to pre-training levels.

The findings underscore the importance of targeted interventions in digital literacy training for improving the livelihoods of rural artisans. While smartphone ownership is widespread, basic digital literacy limits the potential benefits of digital tools, such as expanding market reach through e-commerce. Training programs have proven to be the most effective means of raising incomes, as reflected in the substantial increase in post-training income. The regression analysis highlights that training, access to resources, and digital literacy each play a critical role in enhancing income levels, but training has the most direct impact. The significant correlation between pre- and post-training income suggests that participants who already had higher incomes saw more pronounced benefits, but all participants experienced substantial gains, confirming the effectiveness of digital empowerment.

The results have significant implications for policymakers and development agencies aiming to promote rural economic growth through digital empowerment. The study suggests that increasing the digital literacy of weavers and artisans is essential for improving their economic outcomes. Training programs should be designed to raise basic literacy levels to intermediate or advanced stages, particularly for older and less educated participants who may be more vulnerable to digital exclusion. Additionally, improving access to resources such as internet infrastructure and digital tools will further enhance the effectiveness of training programs. Such initiatives can lead to sustained income growth, improved market access, and enhanced socio-economic well-being for rural artisans.

The results align with existing literature on digital literacy in rural settings, particularly regarding the benefits and challenges faced by rural artisans. Studies by **Hussain et al. (2021)** and **Kumar and Sharma (2019)** have emphasized that while rural populations are gaining access to digital tools, skill gaps remain a barrier to their effective use. This study reinforces these findings by showing that despite widespread smartphone ownership, many weavers and artisans lack the necessary digital skills to fully capitalize on the economic benefits. Moreover, the data supports the argument by **Awasthi and Garg (2018)** that digital literacy has the potential to increase market access and improve livelihoods if combined with infrastructural support and targeted training. The findings suggest that digital literacy can play a transformative role in the socio-economic development of rural artisans, enabling them to bypass traditional market barriers, increase profitability, and improve overall quality of life.

6. Recommendations

To enhance digital literacy and empowerment among artisans and weavers, several actionable strategies are recommended. First, digital literacy programs should be customized based on the skill levels of participants, offering tiered training from basic to advanced levels. These programs should emphasize practical applications, such as online marketing, e-commerce, and digital finance, which are directly relevant to artisans' economic activities. Additionally, partnerships with non-governmental organizations (NGOs) and government programs should be fostered to facilitate the delivery of training and access to technology in rural areas. NGOs can provide grassroots-level support, while government schemes can offer funding and infrastructure improvements, such as providing affordable internet access and devices. Finally, creating online platforms specifically designed for rural artisans could further enhance their market access, allowing them to showcase and sell their products directly to global customers. By implementing these recommendations, artisans in Pochampally and similar regions can achieve greater digital empowerment, leading to improved livelihoods and sustained socio-economic development.

7. Conclusion

This study underscores the critical importance of digital literacy in empowering rural artisans, particularly weavers, by improving their access to markets and enhancing their socio-economic status. The findings revealed that while smartphone ownership is relatively high among participants, many remain limited by low digital literacy levels. The study highlights the need for more inclusive digital literacy programs that can elevate the skills of artisans from basic to advanced levels. While digital tools offer significant opportunities, their potential remains underutilized without proper training and support. The study's limitations include its focus on a single village, which may not fully represent the experiences of rural artisans across different regions. Further research is needed to examine the long-term impact of digital literacy programs and explore broader, more diverse artisan communities.

8. Future Research

Future studies could investigate the long-term impact of digital literacy on various aspects of artisans' lives, such as employment opportunities, income growth, and overall quality of life. Research could explore how consistent digital training transforms artisans' access to larger markets, reduces reliance on middlemen, and improves financial independence. It would also be valuable to assess the impact of digital literacy on social aspects, such as community building and empowerment, particularly among women. Additionally, longitudinal studies would be useful to measure the sustainability of digital literacy initiatives, evaluating whether these programs lead to enduring socio-economic improvements or if continual support is needed to maintain digital skills and engagement.

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