



# ROLE OF MUDRA YOJANA AND PMMY SCHEME IN SUPPORTING WOMEN MSMES IN INDIA

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**Abstract:** This study has been undertaken to investigate the role of Mudra Yojana and PMMY schemes in supporting women MSMEs in India pre and post pandemic era. The study uses secondary data to calculate regression values. For the purpose of the study the data is taken from the year 2015 to 2022 from Mudra Annual Reports and other sources. The analytical framework helps to test the objectives of the study and Linest function in Ms Excel is used to calculate relationship between variables. The results show that the values are highly significant and the data is also appropriate for study. The study concludes that Mudra yojana and PMMY schemes have significantly provided financial assistance to women MSMEs in the pandemic times, reskilled them and helped them survive and grow.

**Index Terms** – MSME, women, Entrepreneur, Mudra, PMMY, Linest, RBI, SIDBI,

## Introduction

Prime minister of India in his inaugural statement @ MUDRA in 2015 said that only 12.5 million people are employed by big corporate houses, against 120 million by the MSME sector and this energy at the bottom of the pyramid must be harnessed for the upliftment of this sector. According to the MSME Ministry's Annual Report 2020-21, 20% of the 63 million MSMEs in India are owned by women. Women entrepreneurship in India, has been recognized during the last decade as an important untapped potential reserve. According to the Ministry of MSMEs 8.59 lakh women-led MSMEs registered in up to March 28, 2022 in various schemes and platforms by the government of India. Government of India launched MUDRA (Micro Units Development and Refinance Agency Ltd.) in April 2015 to provide refinance support to Banks, NBFCs and MFIs against their loans under the PMMY, thereby extending funding support to women MSMEs.

MUDRA is a wholly owned subsidiary of Small Industries Development Bank of India (SIDBI) and was inaugurated as a public limited in April 2015. It was registered as a non-banking finance institution (NBFI) with Reserve Bank of India (RBI) and inaugurated by the Hon'ble Prime Minister of India to support the micro enterprises sector in the country. Pradhan Mantri Mudra Yojana (PMMY) is aimed at funding the micro enterprises and small businesses. The scheme sanctioned 12,313 crore rupees and disbursed 12,303 crore rupees to women MSMEs. The reason behind starting MUDRA and the Pradhan Mantri Mudra Yojana (PMMY) was to provide microfinance opportunity and fill the credit gaps for all the small and micro enterprises. The PMMY was started to aid small and micro enterprises for fulfilling loan requirements so that they can start or expand their business activities. Up to March 31, 2016, an aggregate credit of 1,32,954 crore rupees was extended to 34.88 million loan applicants.

According to RBI and Government of India Gazette Notification S.O. 2119 (E) dated June 26, 2020 the definition of micro, small and medium enterprises is as under (*According to the earlier criterion under MSME Act of 2006, the classification was based upon investment in plant and machinery / equipment. As the economy has undergone significant changes. a revision in MSME criteria of classification was done*):

- (i) A micro enterprise is an enterprise where the investment in plant and machinery or equipment does not exceed ₹1 crore and turnover does not exceed ₹5 crore;
- (ii) A small enterprise is an enterprise where the investment in plant and machinery or equipment does not exceed ₹10 crore and turnover does not exceed ₹50 crore; and
- (iii) A medium enterprise is an enterprise where the investment in plant and machinery or equipment does not exceed ₹50 crore and turnover does not exceed ₹250 crore.

As per a report the contribution of MSME sector has been 30.27% in all India GDP and 49.7 in all India export. In the figure 1 below, we can observe the GDP during the pandemic periods (union-budget-fy-2022-2023). The dip in GDP was due to impact of Covid virus on business activities all over the world. Every country had to understand the impact and effect of virus, make plans to control the situation and restart business activities during the period. It was also a learning period for the entire human race, to understand the power of nature and rethink about creating a more sustainable business structure and plan crisis management. Commerce and trade came to a complete halt for several days and it caused many financial management issues for women MSMEs. The pandemic made us realize that a contingency plan is essential for every organization during the stressed period with no sales / services and therefore no income. The business especially MSMEs have to evolve toward a growth path as the paradigm of doing business has changed. The pandemic has caused women MSME members to change, revise and skill-up their business outlook. Micro & small enterprises are collectively referred to as the non-corporate small business sector (NCSBS).

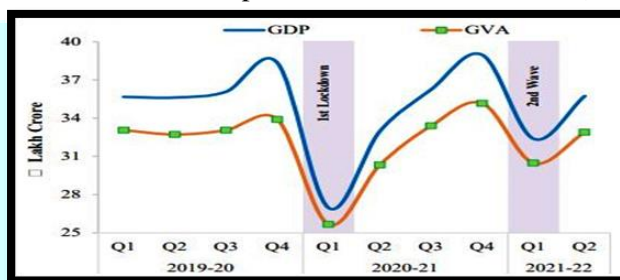


Fig 1: GDP of India Covid Period 2019 to 2022  
<https://www.india.gov.in/spotlight/union-budget-fy-2022-2023>

Financial management is the most essential aspect for stability and running of any micro, small and medium enterprise. Under this, the management of working capital is crucial for any MSME to survive from the external shock. The reasons why many MSME’s are not able to run for a long period of time is the improper management of funds. Lack of funds and inability to raise finds especially during the pandemic times resulted in severe existential crisis. According to a survey by SIDBI 67% MSMEs were temporarily shut and profits dipped for 66% in FY21 – 22. MSMEs in the service sector, the tour and travel industry, hotel and restaurants sector, entertainment, and services like gym, spa, etc, were deeply impacted due to Covid-19. SIDBI study said that around 65% of the MSMEs that were surveyed had availed the Emergency Credit Line Guarantee Scheme (ECLGS) for MSMEs. During the year 2019 – 2020, the revenue from operations of MUDRA recorded a decrease resulting in the decrease in revenue. This decrease can be seen in the figure 2 below

**Average loan size**  
 The average size of loans extended under PMMY in different categories of loan is analysed and given below:

	Amount sanctioned (₹ in crore)		No. of loan accounts		Average loan size (₹ in crore)	
	2019-20	2020-2021	2019-20	2020-2021	2019-20	2020-2021
<b>Total</b>	<b>3,37,496</b>	<b>3,21,722</b>	<b>6,22,47,606</b>	<b>5,07,35,046</b>	<b>54,218.31</b>	<b>63,412.18</b>

Fig 2: Annual Report Mudra FY 2020 – 2021

Skill India Mission, Antmanirbhar Bharat and many other such government schemes have started to promote and encourage MSME entrepreneurs. The high percentage of women in terms of the number of accounts is mainly due to the high share of Micro Finance Institutions in Shishu loans, where women Borrowers mostly make up the clientele. According to the Annual Report 2021 – 22 The share of women borrowers stands at 66% by the number of accounts and 41% by sanction amount. To empower the micro and small women borrowers to effectively avail the working capital funds at affordable rates, a debit card on RuPay platform named Mudra Card is issued to PMMY borrowers. MUDRA loans are classified into three categories:

1. Shishu for loan up to 50,000 Rupees
2. Kishor for loan from 50,000 Rupees upto 5 lakh Rupees, and
3. Tarun for loan from 5 lakh rupees upto 10 lakh Rupees.

This paper examines the role of women MSMEs in India's economy, challenges and way ahead. More precisely the paper explores the potential of Mudra Yojna for encouraging women to start small business for economic growth. The paper also observes major challenge faced by women MSMEs in management of finance. This study aims to understand the role of PMMY scheme in providing easy and quick financial assistance through shishu, kishor and tarun loan schemes to women MSMEs for their growth and survival.

## Review of Literature

The GOI MSME website states that women empowerment in ancient India was equitable where men and women had equal rights. The need and thought of empowerment were realized in 1950 and few sections and clauses in our constitution were amended for this adoption. Oxford Dictionaries declared "Nari Shakti" as Hindi word of the year 2018 it was evident that the women in India and their contribution is being recognized. The National Planning Committee emphasized that the MSMEs would play a crucial role in an economy and therefore there is need to protect, develop and assist this sector for sustainable growth (Das, 2008). The growth of the MSMEs sector is a precondition for the growth of a developing economy like India as it comprises more than 50% of the manufacturing output of the economy (Ali & Husain, 2014; Eniola & Entebang, 2015). MSMEs are susceptible to changes in the business environment especially supply chain change. Pandemic resulted in global demand reduction for many products and services, out of them a few sectors found heavy demand (related to medical products and services) whereas a few had to close down (related to tourism, food and other related services).

This impact caused huge financial shock and made few have shifted their existing business outlook (OECD Policy Responses to Coronavirus (COVID-19), July 2020). To provide respite to the MSME sector, the government came forward with supportive programmes such as repo-rate reduction, emergency credit line guarantee scheme, PF and EPF support, e-market linkages, e-marketplace (GeM) to enable businesses to improve work efficiency, foster product development, and reduce costs (TataCapitalBlog Feb 2022). As per SIDBI annual report 2021, 3.97 lakh MSMEs have obtained in-principle approvals of about 3.15 lakh loan as on March 31, 2021.

According to the MSME Ministry's Annual Report 2020-21, 20% of the 63 million MSMEs in India are owned by women. Women entrepreneurs have been impacted more than their male counterparts because of gender bias, as per a recent analysis by the McKinsey Global Institute cited in the IWWAGE report. In India, 90% female entrepreneurs reported a significant decrease in their sales revenues post-lockdown which will result in slow recovery for women-led MSMEs said the report. As per a report published by Google and Bain & Company in 2020 titled 'Women Entrepreneurship In India', Women business-owners will create 150-170 million jobs in India by 2030. This indicates that the GOI must reach out to the women MSME owners to help them recover and start the journey back post pandemic. As per a 2019 report, 'Powering The Economy With Her' which emphasizes that Female entrepreneurship is particularly critical for India because it catalyzes women's participation in the labour force, at a time when India's Female Labour Force Participation Rate (FLFPR) is at a low. The following figure shows the situation of women owned MSME as per 31/12/2021.

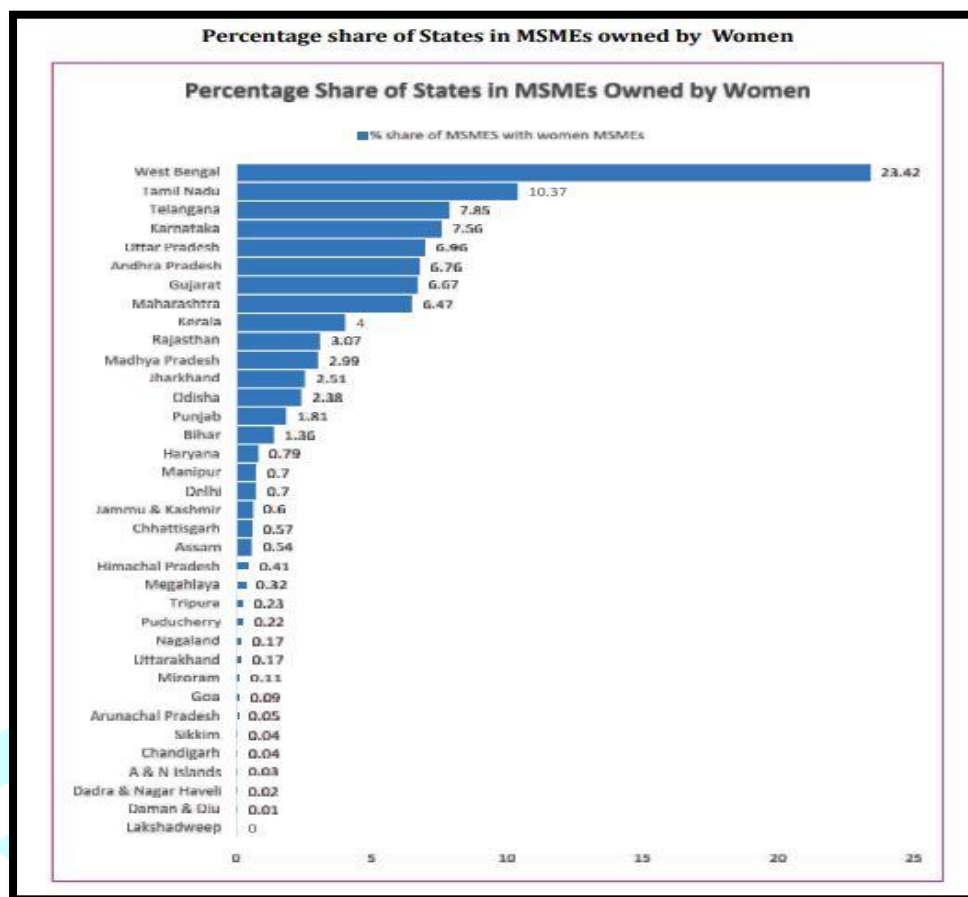


Fig 3 : MSME Report published by GOI 2021 – 22

<https://msme.gov.in/sites/default/files/MSMEENGLISHANNUALREPORT2021-22.pdf>

Government of India has come up with several initiatives to boost the number of women entrepreneur but only seven of 100 entrepreneurs in India are women and out of them nearly half (49.9%) get into business out of necessity rather than aspiration as per a November 2020 report by IWWAGE. GOI has many schemes to extend affordable finance between `0.50 lakh to `5 lakh to budding micro-entrepreneurs and nearly 88% beneficiaries from rural areas have revived their business through this scheme. SIDBI in a report stated that till March 31, 2021, 975 crores has been released to 62 eligible lending institutions, benefiting 22.71 lakh MSMEs of which 18.94% are women-led. SAMPARK - 1,000-plus enterprises (36% women-led) set up in FY 2021. Ministry of MSME has designed COWE Mart for digital connect one-click Buyer-Seller connect, through WhatsApp and nearly 98 women entrepreneurs onboarded on the same. Swavalamban Livelihood Enhancement and Awareness Programme in Leh, West Bengal for revival of units, SWAS/শ্বাস - Breathing Entrepreneurial Energy struggling after Amphan cyclone and pandemic are efforts towards reviving the MSMEs in different regions. . On the occasion of International Women's Day 2022, Union Minister for MSME, launched a Special Entrepreneurship Promotion Drive for Women - "SAMARTH".

In the report by ADB (Dec 2021) discusses a case in Maharashtra under the Maharashtra State Grape Growers Association where a group of 25 grape producers were able to secure a common credit line for its cluster Mahagrapes in 1961 to finance value-chain improvements. Due to this cluster financing model, Mahagrapes has become a global leader in grapes export. Local women also benefited from this model as they were able to secure cluster-based employment as sorters, grape handler. Amazon's Saheli is another innovative program to facilitate market access for women entrepreneurs. Under this program, Amazon offers a subsidized referral fee, an entrepreneurship training program as well marketing support, and a product photoshoot to support women-led MSMEs transition to digital marketing.


Start-up India an initiative by GOI aims to build a strong ecosystem for nurturing innovation and startups in the country. It has some funds specially reserved for women led start-ups. Ministry of MSME has launched a portal "Udyam Sakhi" for encouraging women entrepreneurs and to aid, counsel, assist and protect their interests. It helps Indian women to start, build and grow businesses and creating business models revolving around low-cost products and services to resolve social inequities. Similarly, Prime Minister's Employment Generation Programme (PMEGP), is a major credit-linked subsidy scheme to promote and set up micro, small and medium enterprises and to generate employment in rural and urban areas of the country. All the entrepreneurs including women are eligible for 2 weeks Entrepreneurship

Development Programme (EDP) after the sanction of their projects from banks for financial assistance to setup their unit. Resilience is an essential concept in entrepreneurial crisis management that describes an organization's ability to continue functioning throughout a disruptive event (Dahles & Susilowati, 2015; Kuckertz et al., 2020). Crises affect entrepreneurial ventures by leading to resource constraints, business contraction, or even closure (Thorgren & Williams, 2020). The COVID-19 pandemic has had an uncertain impact on entrepreneurial ventures that have suffered significant consequences. Decision making by women entrepreneurs often comes with errors and misjudgments because the information available is either ambiguous or incomplete. One method of managing capital in this pandemic was to reduce the variable cost, manage cash outflows and focus on fixed costs. A mission for MSMEs in the pandemic was to strike a balance between profitability and liquidity.

**MINISTRY OF FINANCE**


## Schemes under Ministry of Finance

which have benefitted the women in India



**STAND-UP INDIA**

- promotes entrepreneurship at grass root level for economic empowerment and job creation
- facilitate bank loans between Rs.10 lakh and Rs.1 crore to at least one Scheduled Caste (SC) or Scheduled Tribe (ST) borrower and at least one woman borrower per bank branch of SCBs for setting up a Greenfield enterprise.
- more than 81% account holders are women (As on 25.02.2021)



**PMJDY**

- It envisages universal access to banking facilities with at least one basic banking account for every household, financial literacy, access to credit, insurance and pension.
- 23.21 cr accounts out of the total 41.93 crore accounts opened under the scheme belong to women account holders. (As on 24.02.2021)



**MUDRA**

- providing loans up to 10 lakh to the non-corporate, non-farm small/micro enterprises
- MUDRA has created three products namely 'Shishu', 'Kishore' and 'Tarun' to signify the stage of growth / development and funding needs of the beneficiary micro unit / entrepreneur and also provide a reference point for the next phase of graduation / growth
- About 68% i.e., 19.04 crore accounts with an amount of Rs. 6.36 lakh crore have been sanctioned to women entrepreneurs under MUDRA scheme since inception (As on 26.02.2021)




 FinMinIndia    
  @Finminn.goi    
  www.finmin.nic.in

Fig 4: Posted On: 08 MAR 2021 9:06AM by PIB Delhi

This study aims to understand the impact of Mudra Yojna scheme on women MSMEs in India. This study is the first on this subject with context to women MSMEs in India. This work also contributes to the general literature. MSMEs in India, like several other developing countries, are facing many challenges in accessing finance from the traditional financial markets. A report by FCI talks about the problems faced by women entrepreneurs to get finance from many sources available and the reliance on short-term financing avenues. The barriers for funding / financial aid are amplified for women-led enterprises and a report states that despite having higher profit margins than male-owned enterprises (31% vs. 19%), they face double the rejection rate (19% vs. 8%) and receive only 5% of total MSME lending from public sector banks (2018 data). As formal institutions rely on credit history and collateral to assess creditworthiness, women entrepreneurs are disadvantaged due to limited landownership and noncredit banking relationships. As stated earlier women MSMEs are important economic growth of Indian economy. Mudra Yojna portal provides information regarding financial schemes, policies and programmes of the Ministry of Micro, Small and Medium Enterprises to existing/prospective women entrepreneurs in the MSME sector. The portal helps women to start, build and grow their businesses. A total of 3152 women have registered on the portal so far.

The vision of Mudra is to be an integrated financial and support services provider for the bottom of the pyramid for their economic and social development. The mission is to create an inclusive, sustainable and value based entrepreneurial culture. Mudra and PMMY have completed 7 years of operations in March 2022. The objective is to help the micro and small enterprises in hand-holding and capacity building. In the pandemic times many schemes were adopted for mitigating the hardships of the micro-enterprises & small business segment to ensure that finance facility was available to them even in the lockdown conditions. During FY 2020-2021, under PMMY, 3.22 lakh crore rupees was sanctioned to help the poor entrepreneurs from the weaker sections. MUDRA provides refinance support to such Banks, NBFCs and MFIs against their loans under the PMMY, thereby extending funding support to this sector at affordable cost. During FY 2020-21, MUDRA sanctioned 12,313 crore rupees and disbursed 12,303 crore rupees. To provide relief to the borrowers under the Shishu category of PMMY, the Govt. of India, under Aatamanirbhar Bharat Package aimed to mitigate the impact of COVID-19, launched the “2% Interest Subvention Scheme for MUDRA–Shishu loans” wherein an interest subvention of 2% is provided to all the MUDRA–Shishu loan borrowers. MUDRA is planning to initiate new measures with a focus on digitalisation of its operations with the ultimate objective of extending its outreach in catering to the target segment especially in the credit deficient districts. In 2020 -2021 Out of the total amount sanctioned, 41% went to the women borrowers. 66% of the accounts in Shishu category belonged to women who were sanctioned 69% of the amount in the Shishu category. The reason for high share of women in Shishu category is lending of micro-loans by the MFIs primarily to women. The Minister stated that as per data uploaded by MLIs on Mudra portal, as on 26.11.2021, the details of loans availed by Women entrepreneurs under the Scheme is as follows: -

	No. of A/Cs (in crore)	Sanctioned Amount (in Rs. Lakh crore)
<b>All India</b>	32.11	17.00
<b>Out of which</b>		
<b>Women Entrepreneurs</b>	21.73	7.42
<b>% share of Women Entrepreneurs</b>	<b>68%</b>	<b>44%</b>

Table 1: 2021 -22 Annual Report Mudra

The high percentage of women in terms of the number of accounts is mainly due to the high share of Micro Finance Institutions in Shishu loans, where women Borrowers mostly make up the clientele. The share of special categories of borrowers – SC, ST, OBC, women, and minority – under different schemes of PMMY continues to be significant in FY 2020-21. The share of women borrowers stands at 66% by the number of accounts and 41% by sanction amount. Achievements of this Scheme (As on 25.03.2022). More than 34.42 crore loans for an amount of Rs 18.60 lakh crore have been sanctioned since launch of the scheme (as on 25.03.2022). Approximately 22% of the total loans have been sanctioned to New Entrepreneurs. 4.86 crore PMMY loans accounts with sanctioned amount of Rs. 3.07 lakh crore extended in current FY (As on 25.03.2022) Approximate 68% loans of the total number of loans have been sanctioned to Women Entrepreneurs The average ticket size of the loans is about Rs 54,000/- 86% of the loans are of ‘SHISHU’ category Almost 22% of the loans have been given to New Entrepreneurs About 23% of the loans have been given to SCs and STs borrowers; About 28% of the loans have been given to OBCs borrowers (Total 51% loans have been sanctioned to SC/ST/OBC categories of borrowers) About 11% of the loans have been given to Minority community borrowers. The funding support from MUDRA are of two types: Micro Credit Scheme (MCS) for loans up to 1 lakh finance through MFIs. Refinance Scheme for Commercial Banks / Regional Rural Banks (RRBs) / Small Finance Banks / Non-Banking Financial Companies (NBFCs).

According to a study, Special measures were announced by the government as relief measures for MSMEs in the form of collateral-free loans, equity support through mother–daughter funds, changing the definition of MSME, promoting fintech services for the MSMEs.

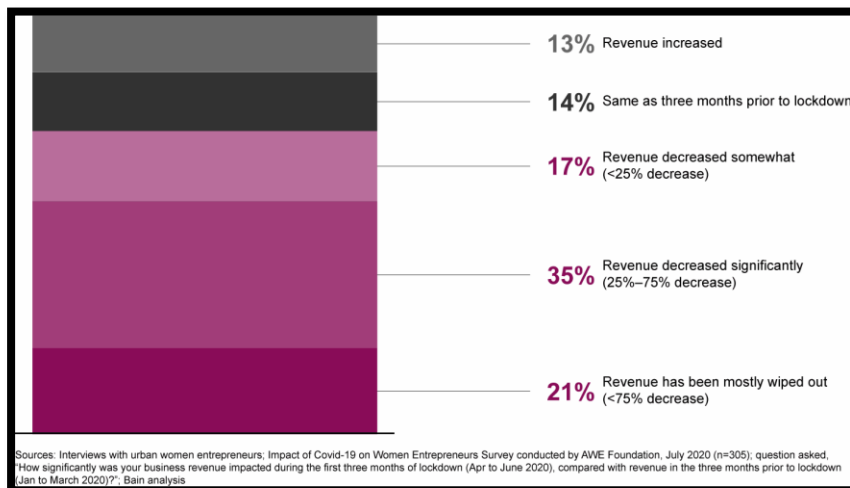


Fig 5: AWE Foundation study 2020

As per the study by AWE foundation, more than 70% women agree that their revenues declined during the pandemic. The reasons given by the surveyed women entrepreneurs have given the reasons shown in table below. A few women who could shift their business models could recover their revenue whereas many had to close down. As per the study, change in business model included new products or services, online sales, new delivery channels and reskilling.

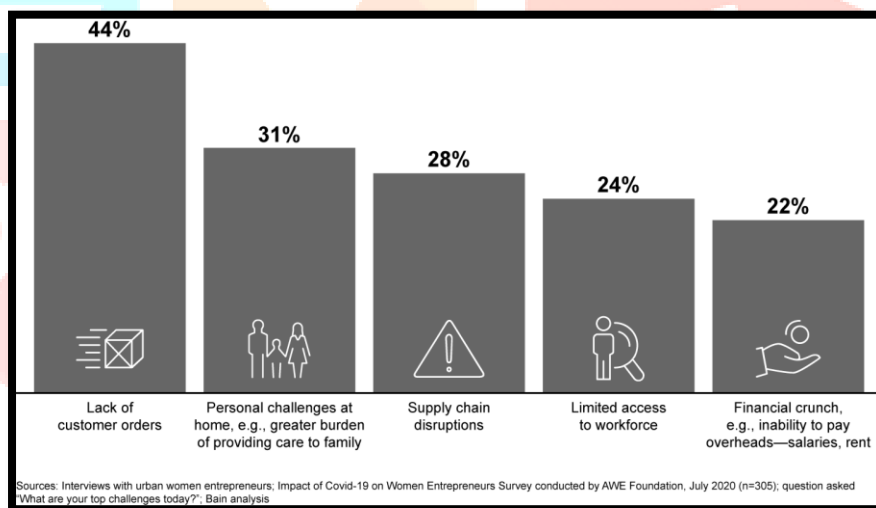


Fig 6: AWE Foundation study 2020

## Objectives

1. The contribution of women MSMEs sector to the Indian economy wrt Mudra Yojana.
2. The challenges encountered by the women MSMEs pre and post pandemic era with respect to Financial Management
3. The policy initiatives to revive the women MSMEs sector by the government with respect to Mudra Yojana.

## Data and Methodology

The paper is research oriented, analytical and based upon secondary data. The data has been collected and studied from secondary sources, including the published sources such as the annual report of Ministry of MSMEs, Mudra, SIDBI, Ministry of Statistics and Programme Implementation, RBI, and various news agency. The variables used in the paper to find the proposed linkage between the number of women MSMEs 2015 to 2022 who have registered with Mudra,

funds sanctioned and disbursed from the period 2015 to 2022 for financing women MSMEs under Mudra and PMMY schemes (Shishu, Kishor and Tarun). The table below shows number of accounts in the 3 schemes owned by women.

Category	Shishu		Kishor		Tarun		Total		
	No. of A/c	Amount Sanctioned	No. of A/c	Amount Sanctioned	No. of A/c	Amount Sanctioned	No. of A/c	Amount Sanctioned	Amount Disbursed
<b>FY 2020-21</b>	2,77,53,288	74,490	54,68,211	50,731	82,105	6,082	3,33,03,604	1,31,303	1,28,370
<b>FY 2019-20</b>	3,57,17,217	1,09,660	29,88,307	26477	3,97,825	9045	3,91,03,349	1,45,182	1,42,846
<b>FY 2018-19</b>	3,34,03,579	96253.15	28,75,392	26741.23	7,83,591	10039.23	3,70,62,562	1,33,033.62	1,29,153.23
<b>FY 2017-18</b>	3,21,44,132	8,03,71.59	13,35,192	16586.84	78914	6295.7	3,35,58,238	1,03,254.12	100170.55
<b>FY 2016-17</b>	28,47,200	66997.91	6,25,000	9541.63	5000	37500	1,32,91,470	80289.68	63190.43
<b>FY 2015-16</b>	25,59,700	49002.12	16,34,000	32447	3230	23584.66	2,76,280	63190	15059.78

Table 2 : Annual Report Mudra from 2015 -16 to 2020 - 21

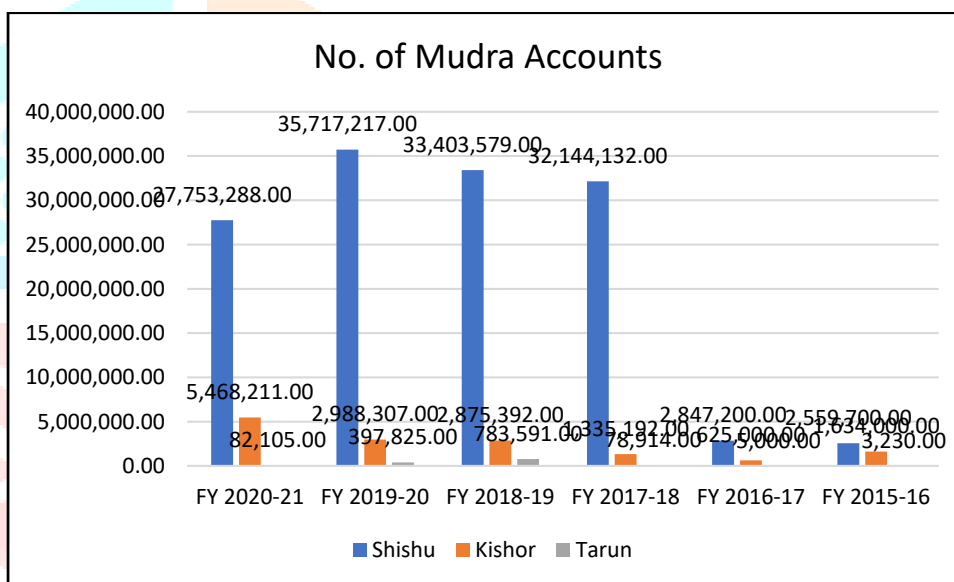


Fig 7: Chart using total number of mudra accounts in Shishu, Kishor and Tarun values from table 2

The percentage of shishu loan accounts is 79% more than the other two kishor and tarun as the government offered 2% Interest Subvention Scheme for shishu loan borrowers. The account shishu holders reduced by 33% due to covid and nearly aggregate amount of 379.40 crore has been sanctioned to the Shishu loan beneficiaries from many lending institutions. The reason for high share of women in Shishu category is lending of micro-loans by the MFIs primarily to women. The Mahila loan yojana or shishu scheme is designed uniquely for budding women entrepreneurs and they need to meet a certain set of criteria. The loans are mostly given to female entrepreneurs heading production and manufacturing or Women entrepreneurs aiming to start, expand or modernize businesses offering services.



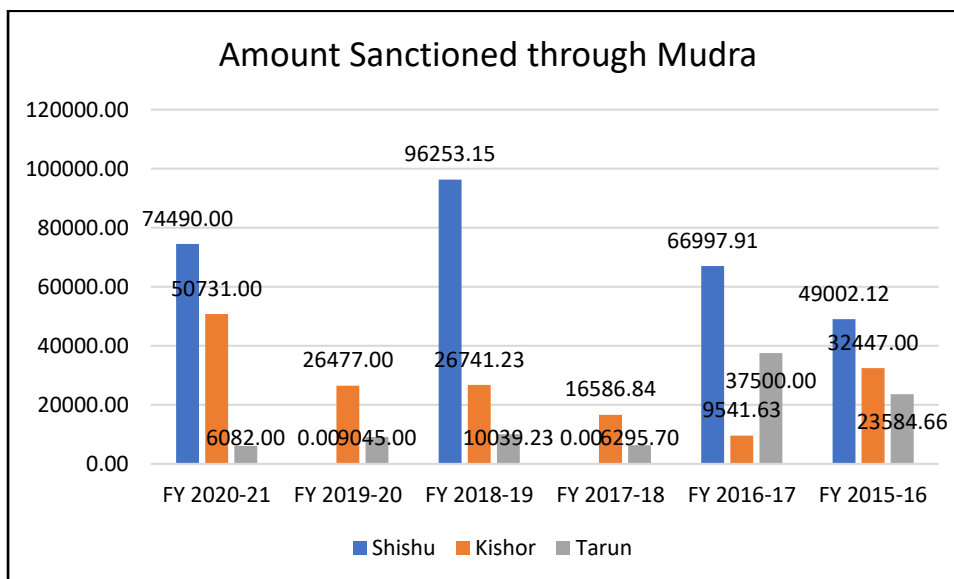


Fig 8: Chart using total amount sanctioned in Shishu, Kishor and Tarun values from table 2

The data used for calculation has been gathered from Annual Reports available on Mudra website (<https://www.mudra.org.in/>) from the year 2015 -16 to 2020 – 21. The values of year 2021 – 22 have been taken from PIB Delhi. The table shows total women accounts under Mudra which is used for data analysis. It is cumulative of all the accounts under PMMY scheme including shishu, kishor and tarun.

Years	No. of Accounts (In Lakh)	Amount Sanctioned	Amount Disbursed
<b>n</b>	<b>x1</b>	<b>x2</b>	<b>y</b>
FY 2021-22	4.86	3,00,000	3,07,000
FY 2020-21	5.07	3,50,000	3,21,759
FY 2019-20	6.22	3,25,000	3,37,465
FY 2018-19	5.98	3,00,000	3,21,723
FY 2017-18	4.81	2,44,000	2,53,677
FY 2016-17	3.97	1,80,000	1,80,529
FY 2015-16	3.49	1,22,188	1,37,449

Table 3 : Data collected from secondary sources

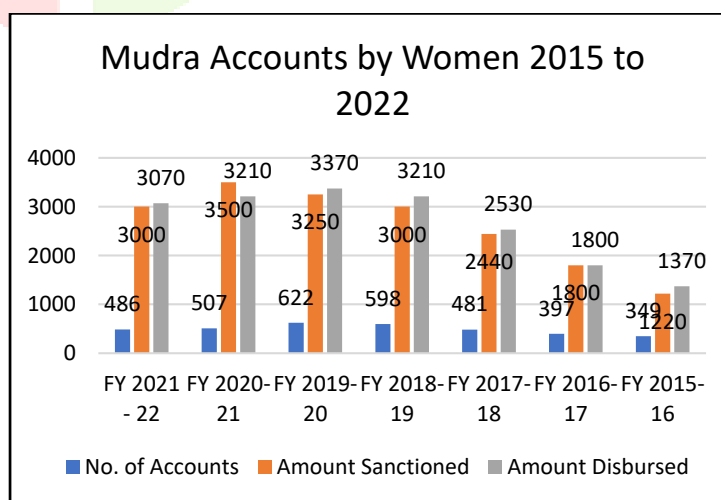


Fig 9: Chart using total cumulative accounts, amount sanctioned and disbursed to women account holders from table 3

The study has made use of 2 independent variables ( $x_1$  = No. of mudra accounts owned by women and  $x_2$  = Loan amount sanctioned to the account). The dependent variable ( $y$ ) is the amount of loan disbursed. To check the relationship between variables multiple regression is done in MS Excel using the Linest function. Linest function in Microsoft Excel was used to calculate Slope, Standard deviation, Standard Error, R square value, Sum of Squares, Degree of Freedom and T value. The number of observations are 5 (Number of years – independent variables) (7-2). The accuracy of the line calculated by the LINEST function depends on the degree of scatter in the data. The more linear the data, the more accurate the LINEST model. LINEST uses the method of least squares for determining the best fit for the data.

The Linest function calculates the statistics for a line by using the "least squares" method. The line should be the best fit for data and will return an array that describes the line. The function also returns the values as stated in table above. The equation for the line for the study is:  $y = m_1x_1 + m_2x_2 + b$

For the study we have multiple ranges of  $x$  values ( $x_1$  = number of mudra accounts and  $x_2$  is loan amount sanctioned) and the dependent  $y$  value is loan amount disbursed. The  $m$  values are coefficients corresponding to each  $x$ -value which is given in the table above, and  $b$  is slope of  $y$  or  $y$  intercept. The additional regression statistics are returned in this order by linest function

	<b>x2</b>	<b>x1</b>	<b>y</b>
<b>1</b>	m2	m1	b
<b>2</b>	se1	se2	seb
<b>3</b>	r <sup>2</sup>	sey	
<b>4</b>	df	F	
<b>5</b>	ssreg	ssresid	

Table 4 : Linest Function values details and description below

Where

Statistic	Description
se	The standard error values for the coefficients $m_1$ and $m_2$
seb	The standard error value for the constant $b$ ( $y$ intercept)
r <sup>2</sup>	The coefficient of determination.
sey	The standard error for the $y$ estimate.
F	The F statistic, or the F-observed value.
df	The degrees of freedom.
ssreg	The regression sum of squares.
ssresid	The residual sum of squares.

Table 5: Description and details of each value in the above Table 4

The Linest equation {LINEST(L2:L8,J2:K8,0,TRUE)} was used for calculation if data given in table above. The findings from the linest function in excel and other values are shown below in the table. The error messages are not shown in the table. In the first line or row we see the slope values calculated by linest function in excel ( $m$ ), thus the slope of the line  $y = mx_1 + mx_2 + b$  becomes  $y = 0.52 x_1 + 0.74 x_2 + 0$  when we input the values in the equation. The value of  $y$  intercept is 0 therefore the line cuts  $y$  axis on 0 value.

	Amount Sanctioned	No. of A/c	Amount Disbursed
Findings	x2	x1	y
Slope (m)	0.74	0.52	0
Standard Error (se)	0.09	0.52	0
r <sup>2</sup>	0.99	112.64	← Standard Error
Degree of Freedom (df)	2082.32	5	← No. of observations
Sum of Squares	52844356.04	63443.96	
T Value *	7.637149768	2.907266349	

Table 6: Linest Values as calculated in Ms Excel

\*T value is calculated separately for  $x_1$  and  $x_2$ . Formula is  $m/se$

The next row gives the standard deviation and standard error for the multiple regression and this also helps us to derive the t value which is m/se, values shown in the last row. The coefficient of determination ( $r^2$ ) values are shown in the third row which is usually interpreted as % therefore for this the value is 99%.

Scatter graph was also made to understand the linear regression relationship between number of accounts Vs amount sanctioned and number of accounts vs amount disbursed. The graphs are shown below. Each graph shows a polynomial curved line and equation of line with the  $r^2$  value.

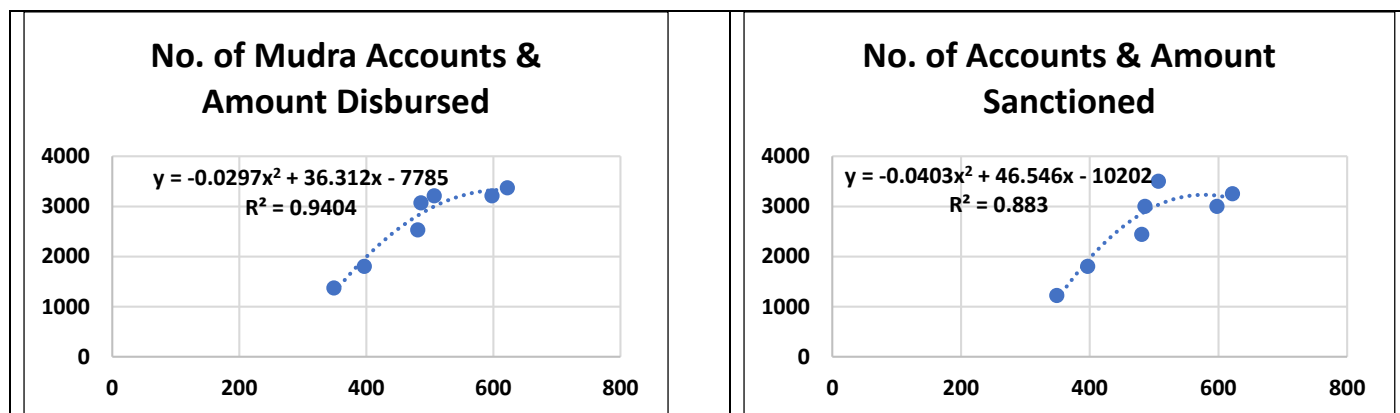


Table 7: 2 polynomial lines using scatter plot with line equation and  $r^2$  value. The values 94% and 88% are significant.

### Findings:

1. The contribution of women MSMEs sector to the Indian economy wrt Mudra Yojana is evident from the table as total number of accounts in PMMY scheme under Shishu, Kishor and Tarun are increasing over the years from 276280 accounts in 2015 -16 to 33303604 in 2020 – 21. There was a decrease in the number of accounts during the pandemic period 2019 to 2022 but new schemes by the government is helping the women MSMEs to revive.
2. The challenges encountered by the women MSMEs pre and post pandemic era due to disruptions in supply chains, other working capital issues and economic shocks have also been studied in the paper. 72% women-led enterprises faced cash shortage, many women could not repay the loans, many had to shut down their enterprises. The women MSMEs that could survive had to reskill, change business type and start selling online. Fig 5 and Fig 6 show the challenges faced by women MSMEs during covid. The government schemes such as skill workshops, emergency credit scheme, interest subsidy etc has helped many to revive and restart their businesses,
3. The t value is greater than 2.447, therefore all the variables used in the regression equation are useful in predicting the assessed value of amount disbursed to women mudra loan account holders from 2015 till 2022. The amount disbursed under PMMY is mostly for shishu accounts i.e microfinance facility upto 50,000 which has the maximum account holders. The table and figures show that the number of accounts has increased over the years (2015 to 2022) with some decline in covid period. The scatter plot also shows a significant relationship between the variables.

### Conclusion

The role of Mudra and PMMY schemes has been positive in the pandemic for revival of women MSMEs from economic shock. Many schemes for providing financial support such as emergency credit scheme, interest subsidy etc have helped them to restart or sustain their business activities in the pandemic. Many workshops and trainings for skilling have been organized to help them understand the new type of business requirement, supply chain changes in businesses today. The schemes have helped to bridge the gap and help women MSME members with financial solutions. It is a formal financial assistance scheme to provide funds at the lowest cost regardless of the women's status in society like education, skill and background. It has encouraged women entrepreneurs to finance their ideas / goals and dreams using legal financial option or refinance the business plan at very low rate of interest to contribute to overall growth of our economy.

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