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From Training to Transformation: Examining the Impact of DAMEN's Vocational Programs on the Socioeconomic Dynamics of Women

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Abstract: To improve the socioeconomic status of households, especially, in the rural areas of Punjab in Pakistan, there have been numerous attempts by various non-profit organizations. The outreach of these programs has been restricted to some of the renowned locations. However, Damen has intervened by introducing vocational trainings in 2015 to develop skill sets in women residing in the remote areas of Lahore, Kasur and Sheikhupura (in Punjab, Pakistan). This study is an attempt to examine the impact of these vocational training for women on the socio-economic status of their households. For in-depth insights, Multidimensional Poverty Index (MPI) has been computed and used as an impact evaluation tool. Results of the study show that the incidence of multidimensional poverty is 36.6% for the sample of households from which the females have undergone the vocational trainings and 75.7% for other nearest-neighbor households without trainings. We have also explored the impact evaluation through Propensity Scoring Method (PSM). According to PSM, the results indicate a decline of 25% in the multidimensional poverty for the households whose women participated in the vocational training programs. Unlike micro credit programmes, women are most likely to increase the socioeconomic status of the household by acquiring proper vocational trainings.

Keywords: Impact Evaluation; Vocational Trainings; Women Empowerment; Multidimensional Poverty Index (MPI); Propensity Score Model (PSM)

1. Introduction

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Improving the socioeconomic status of a locality requires tremendous efforts to design a project and experiment with it in order to find the outcome of that project. In Pakistan, we find few projects including transfer payments from private and public sectors which merely increases the income or proceeding micro credits to initiate businesses on small scale. However, among the stated projects, providing education or vocational trainings has been considered as the most viable projects which not only increases human capital but is also a source of overall character building (Nilsson, 2010). For an adult, when seeking education is not beneficial, vocational trainings are evident to provide reasonable opportunities (Tukundane et al., 2015). In this study we are focused to examine the effect of vocational trainings being provided to women in the rural areas of Lahore, Kasur and Sheikhupura. As in these regions women are already employed in agricultural sector in which their physical and mental healths are compromised and the work either does not compensate because of family business or may compensate negligibly. Therefore, different vocational trainings can be a source to help them as an additional source of income (Aldashev et al., 2010). Globally, such vocational skill development trainings act as twofold. Firstly, a positive improvement in their quality of life in terms of diet patterns, health status, children education, household assets and income level (Selvamani & Singh, 2018). Secondly, such trainings act as a backbone in the social and economic development process of the country (Blakely & Leigh, 2013). Vocational trainings help to boost the morale of women by putting a positive impact on career progression, an increase in monthly income and employability of individuals (Awang et al., 2011). More than half of the world's adult population comprises women who have a significant and positive contribution in the society. According to Karl (1995), it is not possible to achieve goals of development without accomplishing the involvement of women, as development can last for generations if women are educated. Successful completion of women vocational training and capacity building particularly in rural areas are a key ingredient in uplifting skill knowledge and vocational skills of women groups. As a result of hard work and dedication toward their vocational trainings, it helps to change

their daily life routine from household chores to social, independent and headship role in the society (Rai & Waylen, 2013).

In recent years, Vocational Education and Training (VET) have experienced a renaissance in both academic research and political ground. With connection to developing countries, bilateral aid agencies, World Bank and United Nations Educational, Scientific and Cultural Organization (UNESO) have promoted vocational training programs in order to reduce poverty and thereby boost a country's economic growth and increase competitiveness (Popescu & Roman, 2018). Nilsson (2010) argued that "*It might be more fruitful to encourage small-scale vocational training schemes closely associated with the actual ongoing developments and quite divorced from the formal educational system*".

In Punjab, the TVET[1] system is jointly operated by various agencies such as Technical Education and Vocational Training Authority (TEVTA[2]), Punjab Skill Development Foundation (PSDF[3]), Punjab Vocational and Training Council (PVTC[4]) and numerous private institutions. There are numerous public as well as private institutions that provide vocational training and education to both the genders i.e. male and female. Vocational training for financial stability started in 2015 to empower women in fashion design course that includes tailoring, embroidery, and entrepreneurship within their school premises. There are almost twelve training centers spread across eleven districts. Hashoo Foundation also offers various vocational trainings such as baking and pastry, hotel management, Montessori teaching etc.

A renowned private sector non-profit organization, Development Action for Mobilization and Emancipation (DAMEN) is another renowned institution that offers trainings exclusively to women. These support programmes motivate women by providing these vocational trainings without any financial obligations. However, the effects of these vocational

[1] Technical Vocational Education and Training
[2] http://www.tevta.gop.pk/
[3] https://www.psdf.org.pk/
[4] https://www.pvtc.gop.pk/

trainings have not been evaluated yet. Based on these facts, the primary objective of the study is to assess the extent to which vocational training programs improve the households with women. We have not found considerable literature identifying the potentials of Damen in the rural areas of Lahore, Sheikhupura and Kasur. This study is also unique in a sense that it computes Multidimensional Poverty Index (MPI) to assess the socioeconomic status of households. This study does not only employ propensity score matching (PSM) for impact evaluation but also uses Multidimensional Poverty Index (MPI) to serve the purpose effectively with in-depth insights. The Multidimensional Poverty Index (MPI) is a robust tool for evaluating poverty beyond income measures. It captures various dimensions such as health, education, and living standards, offering a comprehensive understanding of the socioeconomic effects of vocational training. By using MPI, this study aims to quantify how these programs influence multiple aspects of household welfare. On the other hand, Propensity Score Matching (PSM) helps establish causal relationships in impact evaluation by addressing selection bias. By matching participants of DAMEN's vocational training programs with non-participants who share similar observable characteristics, this study ensures that the differences in outcomes are attributable to the training programs rather than other factors. Together, MPI and PSM provide an in-depth and rigorous analysis of the impact of vocational training initiatives.

The remaining structure of this paper includes literature review after introduction; Section 3 briefly discusses about the projects of Damen, Section 4 will present the methodology adopted to collect data and the methodology of analyzing the impact of vocational training for women on the socioeconomic status of their households, whereas Section 5 includes descriptive analysis of respondents. Section 5 provides the estimated results and discusses the results and, finally Section 6 concludes the study.

2. Literature Review

Socioeconomic status (SES) is characterized as a measure of two combined components, that is, economic and social status (House 2002; Galobardes et al. 2006). According to Mirowsky & Ross (2017), SES can be widely described as access to political, social, cultural and human capital resources for individuals and communities. SES acts as a significant determinant for evaluating the quality of life at personal, household and regional level (Cowan, 2013). It is a dynamic evaluation calculated in several ways that take into account the job experience of an individual and their economic and social status in relation to others, based on income, education and jobs. It also helps to sustain and establish their own human and financial resources in order to improve their social services and institutions in the form of its own community and political system. Most of the authors have included following traditional indicators of SES which are as described below.

The household income in the gross terms is the most common indicator used in SES calculations. Instead of reporting an individual's salary as a continuous variable, most researchers identify small, medium and high-income groups, mostly using the official Federal poverty line as a benchmark (McLaughlin et al., 2012). It can be calculated at the individual level, but in literature most of the studies generally prefer to measure at the household or family level, which include total income of all members of the household or family. Income may also be extended to include various sources of income such as earnings from investment, family and friend monetary transfers or money earned from social programs (Herd et al, 2007).

Education is an important variable in measuring SES and has its roots in Weberian theory (Galobardes et al. 2006). As education is a chief indicator of SES, it is being regarded as the first marker of social status that is the primary avenue of upward mobility and precedes and significantly affects other SES variables such as career, wealth and income (Mirowsky and Ross, 2003).

Occupation, regardless of an individual's salary, is a conventional SES indicator because it is believed to convey knowledge about the capacity, income and educational requirements of a person in relation to different

positions in the occupational structure (Mirowsky & Ross, 2017). Higher social status is correlated with occupations as it gives a maximum sense of control and flexibility and ingenuity. During adulthood time period, one often tends to change employment opportunities thus making it difficult to decide which occupation should be taken for the measurement of SES (Galobardes et al. 2006).

Education also plays an important role in measuring socioeconomic status. Education was used as a single socioeconomic status indicator as it is often easier to quantify than income or occupation in a survey (Shavers, 2007). Javed et. al (2008) and Chesters and Daly (2016) highlighted the importance of education on socioeconomic status. Primary education play an insignificant role on rural's life because educational system in Pakistan is inadequate to reach its goals. It has, however, some significance in the agricultural sector. Basic education till primary level helps to increase the income of the farmer which reduces poverty. An important conclusion drawn from this research is that only ten years of education have a positive and meaningful effect on variables such as daily diet, sanitation facilities, source of communication, income and size of family. On the other hand, the socioeconomic status, neighborhood surroundings, society's environment and school attended is positively related with higher academic grades and attainment. Children who have highly educated and skilled parents tend to reach high levels of achievement at schools than their class fellows with less educated parents. Students with lower grades are less likely to complete year 12 than their high peers and are more likely to encounter adverse post-school outcomes. Educated women and income are directly related to each other as explained by Karl (1995). Education helps to empower women by enhancing their skills and abilities in order to earn an independent income, raise their status in society or neighborhood, make them aware about their basic rights and increases their involvement into family and group decision-making.

Multidimensional Poverty Index (MPI) aims to determine the non-income variables that measure poverty in different aspects, in order to provide a more detailed measurement of poverty and deprivation (Wang, 2016). MPI is issued by the Human Development Study Office of the United

Nations Development Program (UNDP) and Oxford Poverty and Human Development Initiative (OPHI) which monitors three-dimensional inequality and ten indicators that are health (nourishment, child mortality), education (child enrolment, number of years of schooling) and living standards (main source of drinking and non-drinking water, sanitation facility, electricity supplied, fuel used for cooking, household assets, present status of house) (UNDP, 2013). Such indicators help to determine the socioeconomic status of households and label households as disadvantaged if they suffer poverty across one-third. The definition of poverty has expanded beyond monetary characteristics that have a direct impact on the socioeconomic status of individuals. Based on this methodological advancement, Robson (2002) and Niazi (2012) examined the incidence of MPI not just on income but taking into account three other dimensions, that is. education, health and housing facilities. Findings of both studies from Punjab as well as Sindh revealed that the frequency of MPI was higher in rural areas in comparison to urban areas. The occurrence of multidimensional poverty and less schooling is mainly due to poor quality and quantity of education, inadequate facilities of clean drinking water and toiletry and lack of poor housing environment especially in rural areas (Preece, 2006; Naveed and Islam, 2010). Similar findings were depicted in research done by Padda and Hameed (2018). It was concluded that 44 percent of rural Pakistan's households live at the lowest and poor levels, experiencing a safe drinking water, insufficient sanitation facilities, worst housing conditions and energy sources resulting in pollution. Thatta, Sangher and Hyderabad were being regarded as poorest according to district level analysis.

The MPI is an interesting and important attempt to provide a multidimensional measure of poverty that competes in depth and scope with the commonly used $ 1.25 a day predictor of income poverty (Dotter and Klasen, 2014). From the above studies reviewed, it can be concluded that MPI is a far more actionable and policy-relevant predictor for countries and agencies through its household survey data base than Human Development Index (HDI). While using MPI, it can be split by region, various groups and by indicators that allow countries to determine which groups are lacking the most and their deprivation level in different proportions. MPI is a useful tool to measure socioeconomic status because

MPI looks beyond income to consider how people encounter deprivation or poverty in many ways at same time. It discusses how people are left behind in three main dimensions i.e. health, employment and living standards. Individuals who suffer poverty in at least one third of these weighted metrics fall into the multidimensional disadvantaged group.

In order to assess impact evaluation of any project, several studies in literature have focused on evaluating the impact of vocational training programs on individual's income and employment, however vast number of studies depends on non-randomized cases. Propensity Score Matching (PSM) method as introduced by Rosenbaum and Rubin (1983) was proposed in the evaluation problems, that is, a bias reduction method for estimating the effects of treatment with observational data sets. Roman and Popescu (2015) focused on assessing the effects of training on the income of Romanian migrants through a matching approach to the propensity score. This method helps to define the treated and controlled migrants along with some observable characteristics that affect both the groups. The PSM approach requires a reasonable difference between the distribution of the propensity scores for the treated and untreated migrants which implies overlapping in the allocation of examined characteristics. Thus, attending vocational training programs lead to higher incomes which in result help to raise the living standards of migrants. Benus, et al. (2004) showed similar findings related to Romanian economy in comparison to Russia. Treated Labor Market Programs (ALMP). By using the propensity scoring method approach, it became easier to generate a sample from control group that is closely being matched with treatment group. In general, PSM produced a comparison sample that closely resembles the demographic and other characteristics of the participant group. Aldashev et al. (2010) made a comparison by using PSM model in his study for citizens and immigrants in Germany for participants who took training for aptitude test and skill provision by the government. It was concluded that immigrants took benefit of training more than natives. Schreinemachers et al. (2016) in his study examined trainings that are given to farmers during off-season in Bangladesh for vegetables production methods. Vocational training programs tend to achieve a

positive and significant long- and medium-term impact than in the short run (Arellano, 2010). Similar results were found by McGuinness et al. (2014) using PSM method. This methodology has been utilized in various empirical studies to compare two groups in case of non-random observations.

In this study, we aim to address the impact of vocational training programs on socioeconomic status of women in Lahore. Be sufficient to note, none of the studies examined the above for Damen in Lahore, Kasur and Sheikhupura, hence the study intends to target the women who took vocational training program from Damen considering as a target group by comparing these with the control group women with observable characteristics. To make this study more authentic and informative, we have computed MPI and evaluated the impact of vocational training provided by Damen on various poverty indicators. We have also evaluated this impact through Propensity Score Matching (PSM).

3. Data and Methodology

3.1 Sample

The objective of this study is to analyze the impact of vocational training provided to women in the rural areas of Lahore, Kasur, and Sheikhupura. The data for the treated group, comprising women who successfully completed vocational training in 2017/2018, was obtained from DAMEN. Households of these women were identified, and data was collected from them. For the control group, households with similar socioeconomic characteristics were identified using the nearest-neighbour sampling technique, as recommended by Borg and Gall (1989). This allowed for meaningful comparisons between the two groups.

3.2 Sampling Technique

During the pilot phase, random sampling was tested but proved ineffective due to issues such as incomplete information and biased responses from participants. To ensure complete and accurate data collection, a strategy based on building references, links, and recommendations was adopted. This led to the use of non-probability sampling, which is better suited for reaching specific populations under similar socioeconomic conditions.

Two methods of non-probability sampling were employed:

1. Snowball Sampling: This approach relies on referrals from initial respondents to identify additional participants. Snowball sampling was chosen because it is particularly effective in reaching women in rural areas who may not be easily accessible or willing to participate without prior recommendations.
2. Convenience Sampling: This method involves selecting participants who are readily available and willing to provide the necessary data. Convenience sampling was used to ensure timely data collection in areas where building a network was feasible.

These methods were chosen due to logistical constraints and the sensitive nature of collecting data in rural settings. However, the limitations of non-probability sampling must be acknowledged. These include potential selection bias, reduced generalizability of findings, and overrepresentation of specific subgroups within the sample. Despite these limitations, this approach was deemed the most practical for achieving the study's objectives.

3.3 Questionnaire Design

Given the study's aim of examining the impact of vocational training on the socioeconomic status of households, a quantitative research design was selected as the most appropriate methodology. A structured, self-administered questionnaire was developed to collect data on key variables such as education, health facilities, household expenditure, sanitation facilities, household assets, and vocational training experience (for treated females). The process of constructing the instruments in the questionnaire was based on the dimensions, indicators and the cutoffs identified from the global MPI measure. The questionnaire ensured participant anonymity, encouraging respondents to provide honest and adequate responses.

The questionnaire design process involved several steps to enhance validity and reliability:

1. Pretesting: A pilot study was conducted to test the clarity and relevance of questions. Based on feedback, adjustments were made to simplify language and improve question flow.
2. Expert Consultation: Inputs from field experts and researchers familiar with rural contexts were incorporated to ensure comprehensiveness and cultural appropriateness.
3. Variable Selection: Variables were chosen based on their relevance to measuring multidimensional poverty and the socioeconomic impact of vocational training.
4. Final Review and Translation: The questionnaire was finalized and translated into local languages to ensure accessibility for respondents in rural areas.

To increase reproducibility, the questionnaire has been included in Appendix-1. The sample consists of 124 households of treated females and 106 households of controlled females from three districts. The controlled group was selected to closely match the treated group in terms of socioeconomic characteristics, allowing for robust comparative analysis.

By combining structured questionnaire design with tailored sampling methods, this study aims to provide reliable insights into the impact of vocational training on women's socioeconomic status. The number of participants according to the district and vocational center are presented in Table 1.

Table 1 Number of Participants - district wise

	Location	**No. of Respondents**	**Total**
Treated Females	Lahore	34	
	Sheikhupura	55	
	Kasur	35	
			124
Controlled Females	Lahore	39	
	Sheikhupura	27	
	Kasur	40	
			106
			230

Source: Author's own collected data

3.4 Descriptive Analysis

The total number of respondents interviewed were 230.The distribution of respondents in Table 2 reveals that out of this 124 are treated females who took vocational training from DAMEN and 106 are controlled females who did not participate in any vocational training. Of the total sample size, more than 95% of females either treated or controlled were helpful and co-operative in providing accurate and useful information. However, 5% of the females especially in Sheikhupura refused and were hesitated to fill in the questionnaire. 27% of the treated females are Lahore dwellers, 44% are Sheikhupura residents and 29% of females are residing in Kasur. On the other hand, 37% of controlled females are currently living in Lahore, 25% are Sheikhupura dwellers and 38% of controlled females reside in Kasur.

Table 2 Respondents' location

Location	Treated Females (Treatment Group)	Controlled Females (Control Group)	Total
Lahore	34	39	73
Sheikhupura	55	27	82
Kasur	35	40	75
Total	**124**	**106**	**230**

Source: Author's own collected data

Table 3 gives in-depth detail profiles of the treated and control female respondents in the study. Majority of the households of treated as well as controlled females had male members as being head of the household. About 2.4% of females that took vocational training and 1.9% of controlled females who filled the questionnaire are household heads. 60% of females are single, 39% are married and 1% of females are separated/divorced who actively participated in vocational training and education as provided by Damen Support Programme. A major chunk of controlled females is married i.e., 60% who did not take vocational training program.

Table 3 Profiles of Treated and Controlled females

Description	Category	Treated Females	Controlled

		(Treatment Group)	Females (Control Group)
Gender	Male	-	-
	Female	124	106
Household head	Male	100	81
	Female	24	25
Respondents' relation to the household	Sister	10	8
	Daughter	68	17
	Daughter in law	8	31
	Wife	35	48
	Self	3	2
Marital Status	Single	74	13
	Married	48	74
	Separated/Divorced	2	5
	Widowed	-	14

Source: Author's own collected data

The educational profile of respondents can be seen in Table 4. From the total sample of females either treated or controlled, 18 (7.8%) are illiterate, 144 (62.6%) of females have done proper schooling till matric and 45 (19.6%) are intermediate passed. Most of the females that actively participated in vocational training have minimum education till secondary school i.e., 45 (36.3%), 26 (20.97%) have passed intermediate and same number of females have done schooling till middle. A small proportionate percentage of treated females i.e., 4 (3.2%) are highly educated as they have done baccalaureate or masters. Out of the total sample in controlled females, 10 (9.4%) are illiterate, 38 (35.9%) are matric passed, 30 (28.3%) are in the range of middle i.e., grade 6 – 8, 19 (17.9%) have successfully passed intermediate and 6 (5.7%) have passed baccalaureate.

Table 4 Educational Profile of females

Educational Level	Type of respondents		Total
	Treated Females	Controlled Females	
Illiterate	8	10	18
Primary	2	3	5
Middle	26	30	56
Secondary	45	38	83
Intermediate	26	19	45
Baccalaureate	13	6	19
Masters	4	0	4

Source: Author's own collected data

A major chunk of respondents lies in the range of 21 and 40. From the total number of respondents, 97 (42.2%) are in the range of 21 – 30 while 74 (32.2%) are in the age bracket of 31 – 40. The distribution can be seen in below given Table 5.

Table 5 Sample Respondents by Age

Age Bracket	Type of respondents		Total
	Treated Females	Controlled Females	
15-20	42	9	51
21-30	58	39	97
31-40	21	53	74
41-50	3	5	8

Source: Author's own collected data

4. Results

4.1 Results of Multidimensional Poverty Index for Treated and Controlled Groups

MPI monitors three-dimensional inequality and ten indicators that are health (nourishment, child mortality), education (child enrolment, number of years of schooling) and living standards (main source of drinking and non-drinking water, sanitation facility, electricity supplied, fuel used for cooking, household assets, present status of house) as per the global MPI (UNDP, 2013). Such indicators help to determine the socioeconomic status of households and label households as MPI poor if they suffer poverty across one-third.

The identification unit refers to the person or household classified as poor or non-poor. The unit of identification for this study is household. Information on household members, all of whom earn the same deprivation score, are considered equally deprived. The structure of Pakistan's MPI maintains the same three core dimensions as of global MPI i.e. education, health and living standards. In this study we have used

14 indicators of which 7 indicators are same as being used in global MPI. After assigning equal weights to the three dimensions and all the indicators, below Table 6 gives an in-depth detail of dimensions and indicators.

Table 6 Dimensions, Indicators, Deprivation Cut-offs and Percentage Deprivation

Dimension	Indicator	Deprivation Cutoff	Deprived % (Treatment Group)	Deprived % (Control Group)
Education	Out of School	Household is deprived if children are not currently attending school	12.195%	54.054%
	Education level	Household is deprived off in schooling if no member has completed 5+ years of schooling	36.585%	54.054%
Health	Health Facility	Household deprived in Health/Not going hospital because of a reason	7.317%	18.919%
	Childbirth	Household deprived in assisted delivery	48.780%	72.973%
	Antenatal Care	Household deprived in Antenatal care	36.585%	64.865%
	Vaccination	Household deprived in vaccination	7.317%	5.405%
Standard of Living	Electricity	Household deprived in electricity	29.268%	43.243%
	Cooking	Household deprived in cooking fuel	34.146%	56.757%
	Over-crowding	Household deprived in over-crowding	58.537%	75.676%
	Small Assets	Household deprived in small assets	0.000%	0.000%
	Large Assets	Household deprived in large	0.000%	

	Land	assets	0.000%
	Water	Household deprived as no productive land	14.634% 59.459%
	Sanitation		
		Household deprived in safe water	7.317% 2.703%
		Household deprived in toilet/sanitation facility	80.488% 64.865%

Source: Author's own computation

The above table shows that households who did not attend vocational training were deprived in education sector. In health sector, treated and controlled females both were deprived during childbirth and antenatal care. Most of the controlled females were deprived with basic infrastructure facilities such as electricity, cooking fuel and toilet/sanitation facility.

Table 7 Multidimensional Poverty by Treated/Controlled females

Index	Value	Confidence Interval (95%)	
Households of Treated Females			
MPI	0.157	0.090	0.223
Incidence (H)	36.6%	21.7%	51.5%
Intensity (A)	42.8%	37.9%	47.7%
Households of Controlled Females			
MPI	0.385	0.308	0.462
Incidence (H)	75.7%	61.7%	89.7%
Intensity (A)	50.9%	47.1%	54.7%

Source: Authors' own collected data

Table 7 shows MPI for households of treated and controlled females, as well as its partial indices: the frequency of poverty (or poverty percentage: the number of people listed as poor multi-dimensionally, H) and the strength of poverty (or average percentage of weighted indicators where poor people are deprived, A). The occurrence of multidimensional poverty is 36.6% for treated females and 75.7% for controlled females. As the 95% confidence level can be clearly seen in the table. One can conclude

that, with 95% confidence the true multidimensional poverty headcount ratio range between 21.7% and 51.5% of the households that participated in vocational training whereas for controlled females the real headcount set for multidimensional deprivation is between 61.7% and 89.7%.

The estimated poverty rate, representing the total share of deprivations faced by each poor person, is 42.8% for treated females and 50.9% for controlled females. This means that each underprivileged individual on average, deprived in 43% of the weighted indicators as of treated females. The MPI, which is calculated by multiplying H and A is 0.157 for treated females and 0.385 for controlled females. This means that in Lahore, Sheikhupura and Kasur; multidimensionally disadvantaged treated as well as controlled females face 15.7% and 38.5% of the overall deprivations that would be endured if all people were deprived in all indicators. The MPI is used as the official national statistics to determine whether poverty has dropped or increased overtime in Lahore, Sheikhupura and Kasur, as it takes into consideration the progress of both H and A.

Next we disaggregate our data by district level i.e. Lahore, Sheikhupura and Kasur. In Table 8, the MPI, incidence and intensity of poverty are shown for treated and controlled females of all three districts. From the table, one can conclude that poverty headcount ratio of households for controlled females is much higher than for treated females – 75.0% and 30.8% for Lahore, 62.5% and 37.5% for Sheikhupura and 84.6% and 41.7% for Kasur. Kasur has the highest level of multidimensional poverty as well as incidence of poverty with roughly half of their population as under privileged for both households' i.e. treated and controlled females. Sheikhupura has lowest MPI for controlled females whereas Lahore has lowest MPI for treated females.

Table 8 Multidimensional Poverty by Districts, 2019/2020

District	Value (Treated Females)			Value (Controlled Females)		
	MPI	Incidence(H)	Intensity(A)	MPI	Incidence(H)	Intensity(A)
Lahore	0.135	0.308	0.438	0.388	0.750	0.517
Sheikhupura	0.159	0.375	0.424	0.292	0.625	0.467
Kasur	0.17	0.417	0.424	0.43	0.846	0.518

	7			9		

Source: Author's own collected data

4.2 Results from Propensity Scoring for Treated and Controlled Groups

In order to estimate the propensity score, researchers use matching as a tool for evaluation which is the most important step. Different approaches were adopted to choose an acceptable specification of the equation for participation (Dehejia and Wahba 1998; Heckman et al. 1998). A probit function is being used for estimation of propensity scores given that the treatment variable i.e., Damen is dichotomous (i.e., D=1 for the females who took vocational training programs and D=0 for controlled females). The population of interest in this research study is defined by those females who took various vocational training programs given by Damen while living in their surrounding and they were constituted as the treatment group. Once the treatment group, control group and outcome variable are defined, the propensity of receiving treatment or the propensity of taking different vocational training programs is estimated based on various observable characteristics that will affect both the groups i.e.,treated as well as controlled females (Caliendo and Kopeing, 2008). While developing the model, the main challenge researcher's face was to find those observable characteristics.

The first step in PSM is to select the variables that will be used to estimate propensity score and assure the balancing property. Table 9 presents the result of probit regression output, propensity scores, number of blocks and stratification using propensity scores and balancing property experiment. These propensity scores within the spectrum of the lowest and highest predicted values for households in the treatment group are in the region of common support.

Table 9 The results of the Probit regression model

DAMEN	Coef.	Std. Err.	Z	P>|z|
D_OutofSchool	-1.068413*	.5115021	-2.09	0.037

D_AdultEducation	-.0769705	.4067047	-0.19	0.850
D_HealthFacility	-.9161821	.7967536	-1.15	0.250
D_Childbirth	-.864021*	.4383645	-1.97	0.049
D_AntenatalCare	-.6765691	.3882344	-1.74	0.081
D_Vaccination	-.0247144	.860348	-0.03	0.977
D_Electricity	-.0105049	.4085591	-0.03	0.979
D_CookingFuel	-.8173723*	.4063079	-2.01	0.044
D_Overcrowding	.7144663	.4740104	1.51	0.132
D_Land	-1.315363**	.4559218	-2.89	0.004
D_SafeWater	.3086529	.8887445	0.35	0.728
D_SafeSanitation	.5709549	.422517	1.35	0.177
_cons	1.331125	.5663959	2.35	0.019
Number of obs. 78 Log likelihood = -32.527814 Pseudo R2 = 0.3972 LR chi2(12)= 42.87Prob>chi2= 0.0000				

Source: Author's own collected data

*, **, *** denotes statistical significance at 0.05, 0.01 and 0.001 levels

Table 9 shows the probit regression results that are used to estimate the propensity scores. The variable D_OutofSchool is described as 'household is deprived if children are not currently attending school' which shows that deprivation in out of school is negatively related with treatment group. D_AdultEducation has been defined as "Household is deprived off in schooling if no member has completed 5+ years of schooling which tells us that deprivation is negatively related with those households that took vocational training from DAMEN. Variable tagged as D_HealthFacility is defined as "Household deprived in Health/Not going hospital because of a reason". This variable is negatively related with the treatment group. The variable labeled as D_Childbirthis defined as "Household deprived in assisted delivery" which explains that deprivation has a negative relationship with households that undertook vocational training through DAMEN. Another variable of health i.e. D_AntenatalCare labeled as "Household deprived in Antenatal care" which tells us that deprivation in

antenatal care is negatively related with treatment group. Variable labeled as D_Vaccination is described as 'household is deprived if children did not receive vaccination' which tell us that deprivation in vaccination is negatively related with treatment group i.e. DAMEN. The variable D_Electricity is described as "Household deprived in electricity". This variable shows that deprivation is negatively related with those households that took vocational training from DAMEN. Another variable that comes under the domain of standard of living is D_CookingFuel which is defined as "Household deprived in cooking fuel". This variable is negatively related with treatment group. Another important variable D_Land labeled as "Household deprived as no productive land" which shows us that deprivation is negatively related with the households that took vocational training from DAMEN.

Rest of the three variables i.e. D_Overcrowd, D_SafeWater and D_SafeSanitation is positively related. One of the most important variable D_SafeWater is described as 'Household is deprived if drinking and non-drinking water is same' which indicates that deprivation in drinking water is positively related to the treatment group. Another variable D_SafeSanitation defined as "Household deprived in toilet/sanitation facility" is also positively related with households that took vocational training from Damen. According to the World Bank report (2018[5]) it suggests that focus must be moved from improving access to sanitation to improving the quality and protection of wash facilities and the safe management of human waste. The last variable i.e. D_Overcrowd is defined as "Household deprived in over-crowding" which shows that deprivation in overcrowding is positively related to our treatment group. All the covariates properly contribute to /construct the counterfactual group of units that have been matched with the observed units by means of the PSM estimator.

Prior to the implementation of matching algorithms, balancing property of the model was satisfied. (Becker and Ichino, 2002). To evaluate the set of

[5] https://documents1.worldbank.org/curated/en/630671538158537244/pdf/The-World-Bank-Annual-Report-2018.pdf

possibilities containing the findings with the most common features to be considered, the region of common support computed was [.08305823, .99555878] and observations beyond interval were not included in the study. Table 10 gives a detail description in percentile form of the estimated propensity score that lie in the range of common support.

Table 10 Estimated propensity score

	Percentiles	**Smallest**
1%	.0830582	.0830582
5%	.145306	.0830582
10%	.1595973	.0917527
25%	.4053948	.145306
50%	.665047	
		Largest
75%	.8738945	.9714196
90%	.969766	.9714196
95%	.9714196	.9850593
99%	.9955588	.9955588

Source: Author's own collected data

In order to calculate the PS estimation, a total number of 65 valid units were identified and selected as valid observations to see the impact of vocational training on households. All these 65 units lie within common support region while 165 are discarded due to the fact that they do not help in ensuring the mandatory balancing property which guarantees the balance among PS blocks. The final number of blocks for propensity score is 5, which ensures that the mean propensity score is similar for treatment as well as control group in each block. The balancing property is satisfied and Table 11 shows the inferior bound, the number of treated and the number of controls for each block.

Table 11 Propensity score by blocks

Inferior of block of pscore	**DAMEN 0**	**DAMEN 1**	**Total**
.0830582	6	1	7
.2	6	1	7
.4	5	9	14
.6	4	9	13
.8	3	21	24
Total	**24**	**41**	**65**

Source: Author's own collected data

Different matching algorithms were tested in order to ensure that the most appropriate identification strategy between the treated and control groups is applied. The estimated average treatment effect of the vocational training programs provided by DAMEN upon the treated (ATT), three and a half year after the training had taken place, are summarized in Table 12, along with their statistical significance and the number of units chosen for both the groups. The differences in the estimated average income of treated as well as controlled females are statistically significant, as it is shown by the t-statistics values in the below table. The results derived with nearest neighbor matching method shows the highest significance and also provide the highest magnitude of the effect.

Table 12 Average treatment effects on the treated

Matching Method	n. treat.	n. contr.	ATT	Std Err.	T
ATT estimation with Nearest Matching method	41	12	0.049	0.227	0.215
ATT estimation with the Stratification method	41	24	0.073	-	-

Source: Author's own collected data

The above table shows that women vocational training provided by DAMEN has a significant impact on socioeconomic status of households with the nearest matching method (t=0.215). The average treatment of the treated (ATT) on the socioeconomic status of households for vocational training program is 4.9 percent. Under the stratification matching method, results show that multidimensional poverty have declined by 7.3% due to the participation in vocational training programs given by DAMEN.

4.3 Important Insights from MPI and PSM

The impact of women vocational training on socioeconomic status of households has been investigated in this study. This research aims to find the impact of vocational training provided by DAMEN on socioeconomic status of households. This study has used descriptive analysis, impact evaluation approach using MPI and PSM to carry out results. The important results of the study are as follows

- Vocational training helps to alleviate poverty as discussed in literature review. DAMEN aims to uplift the socioeconomic steps for under-privileged individuals especially focusing women. Results of the study show that the occurrence of multidimensional poverty is 36.6% for treated females and 75.7% for controlled females.
- With 95% confidence the true multidimensional poverty headcount ratio range between 21.7% and 51.5% of the households that participated in vocational training whereas for controlled females the real headcount set for multidimensional deprivation is between 61.7% and 89.7%.
- The estimated poverty rate, representing the total share of deprivations faced by each poor person, is 42.8% for treated females and 50.9% for controlled females. This means that each underprivileged individual on average, deprived in 43% of the weighted indicators as of treated females.
- The MPI, which is calculated by multiplying H and A is 0.157 for treated females and 0.385 for controlled females. This means that in Lahore, Sheikhupura and Kasur; multidimensionally disadvantaged treated as well as controlled females face 15.7% and 38.5% of the overall deprivations that would be endured if all people were deprived in all indicators.
- Kasur has the highest level of multidimensional poverty as well as incidence of poverty with roughly half of their population is being regarded as underprivileged for both the households' i.e. treated as well as controlled females. Lahore has the lowest MPI and incidence of poverty at a rough estimate of 13.5% and 30.8% of households that actively participated in vocational training and education. On the other hand, Sheikhupura has the lowest MPI and incidence of poverty for controlled females.

As a result of the vocational training provided by DAMEN, women feel that they are more valuable and worthy stakeholders in development and are becoming socially and economically empowered in changing their social and economic setup. Women are now willing to invest in their child education and playing a good parenting role. In

general, results are consistent with the theory of human capital as discussed above which argues that vocational training leads to a positive impact on employment especially in long term.

5 Limitations and Future Prospects

- Vocational trainings provided by DAMEN are geographically dispersed and it entails heavy expenses when visiting them. Even if females reside in the same neighborhood or locality, still the distance between the clients approximately takes to 1-5 kilometers. As a result, the cost of carrying out interviews is very high in rural areas in comparison to urban areas. The cost includes visiting the field, transportation cost, photocopying the survey forms etc.

- While conducting interviews, representatives of DAMEN were present at certain localities, which can make the filling out questionnaires bias.
- Vocational training centers are available nationwide i.e. public as well as private training institutions. Data collected for this current study was based on Lahore, Sheikhupura and Kasur due to time as well as resource constraint. Other researchers can extend the study by taking samples from other cities.
- Vocational training females recommended that the duration and time period of training was too less. Thus, better opportunities could have been arise if trainees have more time to explore and learn.

5.1 Future Research

- Results of the current study will be helpful in determining future research regarding people, cultures and time. This research can widen into cross cultural settings. The findings may vary because there is a difference in the macroeconomic environment and the entrepreneurial spirit of people.

- Differences among different vocational training centers can be extensively studied and compared.

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Annexture A1

Questionnaire

ENTIAL information collected in this survey trictly confidential and will be used for academic purpose only.		Household ID: **1.1)** Year of Course _____ **1.2)** Age of the Respondent_____

IMPACT OF WOMEN VOCATIONAL TRAINING ON SOCIO-ECONOMIC STATUS OF HOUSEHOLDS: A CASE STUDY OF DAMEN (LAHORE)

GENERAL INFORMATION			
1.3) District		**1.9)** Vocational Training Course Taken (Stitching/Embroidery = 1, Beautician = 2 Handicraft = 3, Cooking = 4 & Financial Literacy = 5)	
1.4) Educatio respondent		**1.10)** Are you currently practicing your Vocational training course? (No =0, Yes =	
1.5) Gender of the Head of Hous (Female=0, Male=1)		**1.11)** If "No" can you tell me the reason	
1.6) Age of the Head of Househo		**1.12)** Household Size	
1.7) Relationship with Househol (Sister = 1, Daughter = 2, Daughter in law = Wife = 4)		**1.13)** Number of Children below age 5	

1.8) Marital Status (Single =1, M = 2, Separated/Divorced = 3, Widow		**1.14)** Number of Dependents	
		1.15) Number of Employed or Businessm	
EDUCATION			
2.1) Any child between (6 – 11 years) not going to school? (No = 0, Yes N/A = 2)			
2.2) Any adult (below 30) not attended school/institution? (No = 0, Yes = N/A = 2)			
2.3) After receiving vocational training, the number of children or sibling attending school (Increased = 0, Decreased = 1, Did not change = 2 and N/A = 3)			
HEALTH STATUS			
3.1) Have the household membe suffered from any the of the following disease? (Ph disability =1, Hyper tension = 2, Diabetes Heart Problem = 4 & Other = 5)		**3.4)** In the last 3 years, where do women usua give birth? (Home = 1, private clinic/hospital government BSU/clinic/hospital = 4, Homeopathic = 5, Hakim=6, Dai = 7 and Oth	
3.2) If "YES", what kind of heal facility was availed (Government Basic Health Unit/Clinic/Hospital = 1, Private Clinic/ Hospital = 2, & N availed any health facility = 3)		**3.5)** Is there any women in the household who given birth in the last 3 years and did not rece antenatal check-up? (No = 0, Yes = 1 and N/A	
3.3) If "NO", why did they not s medical help when Sick? (Costly = 1, Far away/Dist 2, Not		**3.6)** Have the children (under 5 years of age) household are receiving or had received any vaccination/drops according to a standard cale	

Suitable = 3, Lack of tools/staff = Not enough Facilities = 5)		(No = 0, Yes = 1)	
HOUSEHOLD CHARACTERISTICS & EXPENDITURES			
4.1) What was the monthly total household income before doing course?	_____ Rs.	**4.5)** How many rooms you have in your house?	
4.2) What is the current household income?	_____ Rs.	**4.6)** How is electricity supplied? (Interconnected to grid = 1, Off-grid/met Sharing = 2, Electricity producing device = 3 & No facility at all = 4)	
4.3) What is the current household expenditure?	_____ Rs.	**4.7)** What is the main fuel used for cooki (Firewood = 1, piped gas = 2, electricity gas cylinder = 4 & Other = 5)	
4.4) What is the present status o house? (Owner occupied/self-hired= 1, 2, Others = 3)			
ASSETS IN POSSESSION			
5.1) Does the household possess any productive/agricultural land? (No = 0, Yes = 1)		**5.2)** If "YES" do they receive rent? (No = 0, Yes = 1)	
5.3) Does the household own any two of the following ***small assets***		**5.4)** Does the household own any of the following ***large assets***	
TV (1)		Air Cooler		Refrigerator (1)		Tractor trolley (5)	

		(6)					
Radio (2)		Fan (7)		Air conditioner (2)		Autorickshaw/ chingchi/ loader (6)	
Sewing Machine (3)		Iron (8)		Motorcycle/scooter (3)		Desktop/laptop/tablet (7)	
Chair (4)		Video cassette Player (9)		Car/truck/bus/van (4)		Mobile phone (8)	
Watch (5)		Bicycle (10)					

6) WATER AND SANITATION	
6.1) Is the main source of drinking and non-drinking water same? (No = 0, Yes = 1)	
6.2) If "NO", then what is the main source of drinking Water? (Piped water = 1, hand p 2, bore hole = 3, protected dug well = 4, filtration plant = 5, Protected spring = 6, rain water collection = Unprotected well/spring/river/pond = 8, Vendor provided water/Tanker = 9 & Other =	
6.3) If "YES", then do they usually do something to make water safe to drink? (Boil = strain it through a cloth = 2, water filter = 3, let it stand and settle = 4, add bleach/chlorine or any other = 5 & other	
6.4) What kind of toilet facility does their household use? (Connected to public sewera connection to septic System = 2, pour-flush latrine = 3, simple pit latrine = 4, ventilated pit latrine = 5, public/shared latrine = 6, Open pit latrine = 7 & bucket latrine = 8)	

VOCATIONAL TRAINING
7.1) Apart from above mentioned vocational training courses, which other courses you would like to be offered by DAMEN? _____

7.2) To what extent do you agree or disagree with each of the following statements? (Please tick one)

	Strongly Disagree	Disagree	Neutral	Agree	Stron
Vocational training offers high quality learning	1	2	3	4	
The level of satisfaction with the content of vocational training	1	2	3	4	
Access to usage of modern equipments (sewing machine, laptop)	1	2	3	4	
The vocational training provided by DAMEN was helpful	1	2	3	4	
Training was shorter than expected.	1	2	3	4	
Training was technical than I expected.	1	2	3	4	
Trainer was helpful during the course of training	1	2	3	4	
Overall, I am satisfied with training provided	1	2	3	4	