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Socioeconomic Status of Ready-Made Garments Industry Workforce of Bangladesh and Human Assets

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Abstract

This study aims to construct a composite Socioeconomic Development Index (SDI) based on core human assets to measure the socioeconomic status of Ready-Made Garment (RMG) industry workers in Bangladesh. The study employs a quantitative survey design using primary data from 400 RMG workers selected through two-stage sampling from factory clusters in Dhaka, Savar, Narayanganj, and Gazipur. Eight binary-coded human asset variables, namely education, job experience, capacity development training, job security, improved work environment, access to healthcare for the family, maintenance of work-related legal rights, and a discrimination-free workplace, were analysed using Principal Component Analysis (PCA) following the household asset index approach. The results show four principal components with eigenvalues above one, explaining 63.03% of the cumulative variance (KMO = 0.552; Bartlett's test significant at $p < 0.001$). Weights from the first component were used to compute standardised index scores, which classified the workers into three strata: 40% "Poor", 40% "Middle-Income", and 20% "Rich/Non-poor". The index ranking was strongly correlated with the socioeconomic status classification (Spearman's rho = 0.934, $p < 0.01$), and weighting the index by national literacy levels changed the distribution only marginally. The findings suggest that the possession of human assets provides a robust proxy for the socioeconomic status of RMG workers beyond income-based and conventional welfare indices.

Keywords: Socioeconomic development index; Human assets; Principal component analysis; Ready-made garments; Bangladesh.

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1. Introduction

1.1. Statement of the Problem

Bangladesh gained remarkable economic development in the last few decades and the Readymade Garments (RMG) industry has become a key enabler in this development journey. Trade globalisation has positioned the RMG business of Bangladesh across the world. The relocation of labour-intensive manufacturing businesses from the USA and Europe became a trend in the 1990s. The RMG industry has experienced a major shift in terms of productivity, upgradation and employment later 1990s, and this momentum persisted later 2000s.

This industry has evolved as the lifeline of our emerging economy and manufacturing industry, expanding the industrial base and enhancing export to USD 46.99 billion. The industry shared 84.58% of total export in FY2023, with 10.37% export to GDP ratio (BGMEA, 2023; EPB, 2023). This industry has grown to 5,400 factories with 4.1 million workforces, dominated by 70% female workforces (BGMEA report, 2013-14). With the consistent development of the export-oriented RMG industry, Bangladesh has emerged as the second largest exporting nation having 7.9% share in the global apparel export market of USD 652.94 billion in 2022 (World Trade Statistical Review, 2023).

Globalization in Bangladesh broadly started with changing political plot in 1975. After the political plot, government withdrew from his predecessors' affinity with the Soviet bloc, developing closer relations with the United States, Western Europe, Africa, the Middle East, the People's Republic of China and other Islamic nations. Bangladesh

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opened for world and the process of privatization started after 1975. The RMG industry in Bangladesh has developed from outside pressure rather than emerging to meet local demands. The increasing wages in the clothing producing countries paved the way to establish RMG industry in Bangladesh, as the countries started looking for low-wage situation of factories. The industry is the most prominent export-oriented industry of the country which has achieved very significant growth during last 25 years. 1950 was the beginning of RMG in the Western world. In order to control the level of imported RMG products from developing countries into developed countries, the Mutli-Fibre Agreement (MFA) was made in 1974. The MFA agreement imposed an export rate 6 % increase every year from a developing country to a developed country. In the early 1980s Bangladesh started receiving investment in the RMG sector. Some Bangladeshis received free training from the Korean Company Daewoo. After these workers came back to Bangladesh, many of them broke ties with the factory they were working for and started their own factories. In 1980, there were 50 garment factories in the country and they employed a few thousand. At present there are 5,600 factories in the country and almost four Million workers, of whom 85% are women. For this reason, the sector is called the single largest employer of women in the country. The New Industrial Policy (NIP) declared by the government in June 1982, played an effective role in important policy reforms in the industry sector. At that time the government opened up duty-free import of machineries, accelerating the growth in the number of factories. In 1986, industry development and market expansion by private initiative accelerated even further. The industrial policy adopted in1991 maintained the objectives of the previous policy and the government provided various incentive packages to move towards a competitive market economy. With the establishment of SAARC in 1985 the pace of globalisation in Bangladesh became stronger. Bangladesh became member of WTO in 2005 and global trade and transit was facilitated after the

The export-oriented RMG sector gained momentum due to export quota facility of WTO Multi-Fibre Arrangement (MFA) which continued till end of 2004. After withdrawal of MFA quota, the RMG industry continued to perform in the global export market, while other main RMG exporting economies like Pakistan, Sri Lanka, Turkey, Korea and Mexico struggled to sustain the export share.

The momentum of RMG industry development in Bangladesh continued due to WTO MFA facility until 2004. The Duty-free Quota Free (DFQF) facility to developed countries along with the GSP facility to the USA and EU markets, have enriched our RMG business. The number of RMG factories also increased to 4621 by 2019 as a result of these growing export market share (BGMEA Sustainability report, 2020). RMG has become the unrivalled export sector earning USD 47 billion from exports in FY2023. The EU including the UK has become the largest export destination with USD28.6 billion export followed by USD8.27 billion to the USA (BGMEA, 2023). This sector is believed to have contributed to economic growth, with cascading effects on society and living condition of workers and their dependents.

The consistent wage income of the workforce has brought various multifaceted socioeconomic implications in poverty reduction, living standard, social status, social recognition as well as rural and urban economy. Overall poverty has substantially reduced to 18.7% in 2022 (BBS, 2019), which was 44.2% in 1991. The Ministry of Finance (2022) reported improvement in some social indicators nationally including life expectancy and maternal mortality rate. HIES (2022) reported an increase in urban household expenditure of TK. 41,424 against income of TK. 45,757. However, the average income of an RMG worker is lower than these benchmarks. The report does not guarantee people of all segments in advanced socioeconomic state.

Globally recognised human development measurement tools like the Physical Quality of Life Index (PQLI), Human Development Index (HDI), Human Poverty Index (HPI), and Multidimensional Poverty Index (MPI) have been criticised for various limitations. The Physical Quality of Life Index (PQLI) for the poor and aid-dependent countries featured by child mortality, life expectancy and basic literacy checked if minimum level of human needs were met (Stanton, 2007). HDI has become the much-known yardstick since pre-millennium to 21st century time but failed to ensure wide-ranging application. Later, the UNDP designed inequality-adjusted HDI. The HDI, GDI are based on three dimensions: health, expected year of education and average year of education, as well as standard of living. With limitations of these tools, MPI was developed to learn the poverty. Though MPI addresses some household assets but HDI, MPI do not address the level of unemployment, empowerment, working condition inequality, housing, work environment factors. None of them are relevant to present actual socioeconomic status of labours in the RMG sector. The HDI deals with only 3 dimensions including health, education and income though there are many human variables pertinent to portray the socioeconomic state.

Since socioeconomic indicators were recorded positive, implications on the blue-collar employees are likely to happen. The ILO (2022) observed that each RMG worker in Bangladesh gained an average of 5% plus annual growth

in real gross value in work between 2010 to 2017 and were ranked as the second highest among the South Asian apparel-exporting economies. Conventional income and expenditure metric measure have largely failed to measure socioeconomic position of working-class people. The diversified works have preferred some physical assets to determine the social and household improvement of employees. The overall socioeconomic development featured by household quality, education, fiscal, healthcare and other factors were attempted to see if RMG workforce experienced it positively.

The HDI or any socioeconomic assessment technique has not been found in China, India, Vietnam, Sri Lanka and Pakistan despite having their rich heritage of textiles.

Sahn and Stifel (2000) stated that in the developing world, there are some issues in the application of household income or expenditure as a money metric tool for measuring socioeconomic positions. The quality of income and expenditure data is unreliable and very diverse in low and middle-income countries where inflation and purchasing power parity are unmanageable. The application of asset indices in welfare and poverty assessment is growing especially where expenditure data are unavailable, and data required for asset indices are simple and available. Regarding an asset-based proxy, Woolard et al. (2021) social scientists advanced some asset-based indices to measure and target socioeconomic imbalance for health, environmental matter and other avenues. Researchers started using the asset index since 1998 enlisting domestic assets to represent household welfare instead of household income and expenditure information (Filmer & Pritchett, 1998; Morris et al., 2000).

Difference in working, living atmosphere, income status and social recognition demand identification of standard of living. This industry workers require a separate proxy tool for measurement of overall socioeconomic condition using the core human assets. The durable asset condition shows steady household condition and justifies the wealth status of any household. However, no intensive study has been done yet to show socioeconomic status of RMG labours using a comprehensive human asset-based measure to the best of our knowledge. There is no denying that a human asset-based aggregate socioeconomic index is needed to ascertain the improved socioeconomic position of the RMG labours.

1.2. Overview of RMG Industry of Bangladesh

The history of RMG industry in Bangladesh spans over four decades. Remarkable changes took place late 1990s with further changes over the last two decades from 2000. Developing countries were target destinations for the relocation of manufacturing units of MNCs during this period in response to international division of labour and manufacturing style.

Some developing countries turned into producers and exporters, creating global challenges for large manufacturers (Tager, 2016). The domestic labour market in developed countries face difficulties for high labour cost and chronic labour shortage. Thus, labour-intensive industries relocated in developing countries (Lim, 1983, 1997). Consequently, world market factories developed on a global scale. American-funded apparel production became part a worldwide industry that has changed over the last five decades (Hayashi, 1992). This relocation process of labour-intensive production and implementation of structural adjustment programmes facilitated privatisation, investment and liberalisation of foreign trade (Hoogvelt, 1997). Most MNCs invested in developing countries which also eased development of EPZs in almost all developing countries including in Bangladesh. Bashar and Khan (2009) stated that economic liberalisation started in the mid-1980s in Bangladesh. The process began with trade liberalization. Unprecedented growth was noticed with 3,000 factories and 1.8 million workers by 2000 from 50 factories and a few thousand workers in the early 1980s (Bhattacharya & Rahman, 1999). RMG sector contributed hugely in formal employment in Bangladesh. WTO's membership of Bangladesh in 1995 was another landmark achievement in both the RMG industry and trade growth. Despite concerns about the end of the ATC quota system in 2004, the sector sustained growth in the post-MFA regime (Chadha et al., 2015). Bangladesh turned around and continued consistent RMG export growth. The RMG export contribution has never fallen below 75% except the FY2004-05 with the highest growth recorded 84.58% in FY2023 (EPB, 2023).The growth was moderate after 2014 after Rana Plaza disaster in Dhaka.

1.3. Research Question

There is no specific and aggregate socioeconomic development measure for employees in RMG sector. For consistent growth and socioeconomic development of employees in this sector, the literature and scholarly academic works have

determined asset based proxy measure to assess social, economic position and difference using PCA statistical technique.

Considering the research problem, the core research question emerged based on the literature gap on socioeconomic development techniques of the RMG industry workforce. The research investigates the following question:

- Can socioeconomic status of RMG industry workers be measured using the human assets?

1.4. Objective of the Study

Overall objective of this study is to critically assess the socioeconomic development of RMG workers through a set of human assets of RMG workers. The specific objective is below:

- To construct the composite Socioeconomic Development Index (SDI) using the core human assets of RMG employees.

1.5. Significance of the Study

The assessment of socioeconomic development is indispensable for any community, especially for working-class people in the country. This segment of people is least addressed in terms of their socioeconomic advancement aligning with national socioeconomic indicators.

However, there is a lack of relevant literature on the design of an effective and aggregate index depending on human assets or soft assets of workers. The importance of these employees demands a study on the construction of a comprehensive socioeconomic development assessment tool. Outcome of this study can enrich stakeholders with a new measurement tool about the state of RMG employees. The index may share a representative picture of workers.

2. Literature Review

Review of literature helps about core analytical findings, epitome of the previous research works in related fields of socioeconomic development criteria, implication above all socioeconomic status and welfare assessment of RMG sector labours. The literature review ranges from socioeconomic development indicators, variables, their impact in socioeconomic state upon RMG sector jobs and socioeconomic development to identify the knowledge gap.

2.1. Studies on Socioeconomic Development Condition of RMG and Textile Labours

Kibria (1995) addressed the income experiences of female workers in RMG sector of Bangladesh. The work reported the positive impact of employment on Bangladeshi women and the self-esteem of households has changed and enhanced due to income. Hewett and Amin (2000) assessed across a broad range of indicators including living conditions, health, and patterns of income and savings. Faridi et al. (2009) highlighted that female played a crucial role in the labour market. The study utilised cross-sectional data collected through a field survey of the female workforce aged 15-64 years from both urban and rural areas of Bahawalpure district in Pakistan. The study found female labour force participation increased with higher level of education. Nahar et al. (2010) studied the types and extent of occupational health hazards affecting workers and analysed the relationship of various health hazards with the age and length of RMG workers.

Chowdhury and Ullah (2010) investigated the social and economic conditions of RMG labours in Chattogram, focusing on the living standards of female employees. They identified factors affecting these conditions using frequency distribution, based on surveys of female workers from various factories in the Chattogram Metropolitan area.

Islam and Zahid (2012) analysed the socioeconomic deprivation and garment worker movement in Bangladesh. The research stated that most RMG workers earn below the minimum wage, cannot save money, work long hours with limited access to sanitation facility.

Islam (2014) aimed to identify the socioeconomic factors of the RMG workers of Bangladesh based on a survey of female workers in Dhaka Division. This study highlighted key socioeconomic factors of the RMG workers are housing, water and sanitation facilities, medical facilities and first aid treatment, wage and productivity, social status, adaptation with the cultural values and norms, attachment with labour unions, leave with pay and overtime.

Sarker and Afroze (2014) explored whether the HRM practices can enhance job satisfaction among RMG workers aiming to mitigate labour unrest. Akterujjaman and Ahmad (2016) evaluated satisfaction of the RMG workers. The study determined key factors that significantly impact on their satisfaction through survey of 150 workers in Dhaka and Gazipur.

Hossain et al. (2016) highlighted RMG sector regarding more importance to the social factors rather than economic factors including the process to reduce gender discrimination by empowering woman, balanced distribution of social power management by reducing socioeconomic inequalities etc. Sharmin and Khanam (2017) found that women could ensure the sustainable livelihood, after getting employment in the garment industry. This research examined sustainable livelihood by analysing indicators of socioeconomic condition, which are income, health, education and decision-making power using the secondary sources of data from various research reports on the livelihood approach. Sen et al. (2020) conducted the research to understand the impact of COVID19 on RMG workers. The study has used secondary data and information and found that the workers had a vulnerable situation.

Uddin et al. (2021) well-being of the workers is one of the most vital issues in worldwide. Thet found that gender discrimination has been significantly reduced through fire, building and other workplace safety measures and labour union has impact on the RMG workers' welfare.

2.2. Studies on Socioeconomic Development Condition of Other Sectors

Kraus et al. (1980) assessed the risk of coronary heart disease (CHD) in California. Socioeconomic Status (SES) was measured by the modified Hollingshead Index. The study found an inverse relationship between SES and risk of CHD across the different ethnic groups.

Filmer and Pritchett (2001) developed an aggregate index to rank households based on consumer durable assets and housing characteristics. The study analysed the relationship between household economic status and school enrolment using data from the NFHS survey, covering about 88,000 households and one-half million individuals.

Zimmer et al. (2004) considered the socioeconomic status as one of the most important demographics and social determinants of older adult health. The study explored how two common indicators of socioeconomic status, education and income, relate to the physical functioning of older adults in Taiwan, Thailand, and the Philippines.

Salway et al. (2005) conducted empirical research on the influence of work participation on the lives of impoverished women in urban area. Verick (2014) explored the connection between female labour force participation and economic advancement. Baker (2014) Socioeconomic Status (SES) is clarified as a measure stick associated with better health. Hasan and Neela (2015) studied the SES of the crane-based furniture industry of Sylhet city to appraise socioeconomic conditions and business policy of cane-based furniture in the Sylhet city. Pal et al. (2017) dealt with the socioeconomic status of Manipuri and Khasian community in Sylhet in Bangladesh. Their socioeconomic status was identified using socioeconomic index combining social, health, demographic, educational and economic items. Duong (2022) highlighted that many garment factories in Vietnam have relocated to rural areas, employing mostly women over 25 with children. This research examined how women's experiences of moving from family agriculture to the formal workforce create cultural changes.

2.3. Research Gap of the Study

The aforesaid wide-ranging literature described traditional social and economic items and variables, that impact welfare of RMG workers. We found both living and working conditions of workers are largely impoverished in RMG clusters. The research works have some common factors like income, wage and working conditions related to measurement of household poverty, social inequality. Almost all works focused on income and common living condition and social variables to check the socioeconomic development.

We have not seen any work on comprehensive proxy to assess the actual socioeconomic state of RMG workers using human assets. It can be derived that working, living and health and fiscal condition of workers have improved requiring a methodical assessment tool.

2.4. Theoretical Aspects of Socioeconomic Development and Change

Livelihood comprises the capabilities, assets and activities as means of living to recover from stress and shocks, enhances assets and offers sustainable livelihood opportunities. The multiplicity of assets that people use when make

their livelihood approach including physical, natural, social and human capital is important to the poor. Sustainable Livelihood Approach highlights five key assets as the cardinal part of sustainable livelihood framework.

Different indices referred different variables, determinants like economic, household, health capital and human capital including education. The variables are included from all relevant human development, household physical and non-physical assets and these assets helped to frame the conceptual framework. The development of index has reflected a handful concepts emerged from the past diverse literature analysis. Chambers and Conway (1992) pitched and described that "livelihood in simplest sense is a means of gaining a living". The transformation of sustainable livelihoods from an approach into a framework was held by (Scoones, 1998). Regarding the asset-based wealth index, Krantz (2001) specified the Sustainable Livelihood Approach for multiplicity of assets that people use. SLA was developed based on idea of poverty reduction, the way the poor maintain their lives and need of structural and institutional issues. In 1998, the SLA was first changed into a framework. Later, the SLF was reframed by DFID (Ashley & Carney,1999). People require different assets to realise positive livelihood outcomes (Scoones, 1998).

Sustainable Livelihood Framework has become a timely basis of asset-based classification of 5 principal assets-natural, physical, human, social and financial together (Udoh et al ., 2017). This SLA was pitched and progressed by Olivier Serrat in 2008 in a work of ADB. Thus, the multiple empirical, descriptive asset items and SLA facilitate understanding of socioeconomic status multidimensionally. Considering these summarised variables, the conceptual farmwork shows association of key variables and desired outcome which was tested empirically.

Table 1. Types of assets

Asset Type	Explanation	Example/Variable
Human Asset	Asset or capital that define the soft competence or strength of people	Skills, Knowledge, Education, Professional experience, Good health, Capacity development, work-related legal rights.

Source: Udoh et al. (2017)

Considering all pertinent factors of SLA, other theories, asset-based indices and human development indices, the given research shows how these factors or elements can explain socioeconomic condition improvement. From the SLA, we extracted only human assets.

3. Research Method and Materials

The study assesses socioeconomic development status of RMG industry workers in Bangladesh through designing a composite index measure. It has been measured based on primary data of the characteristics of socioeconomic status representative variables including household condition and non-material asset variables. This study is exploratory by design and quantitative research by strategy and approach. Survey method has been used as it is well suited for research studies which have individual person as the unit of analysis.

3.1. Research Design (Philosophy, Approach, Strategy and Technique)

Research process referred to a blueprint of relevant activities to include satisfactory answer of the research questions specified in exploration phase. This involved selection of research method, operationalisation of constructs and effective sampling strategy. The research chronology has been presented as 'research onion' (Saunders et al.,2008); (De Vaus, 2001).

Social research dealt with exploring, describing and explaining human behaviour in social phenomena (Sufian, 2015, 1998:3). The positivism provides authentic knowledge based on actual sense of experience. In the quantitative research, post and positivism paradigms are more appropriate (Maksimović & Evtimov, 2023). The thought links both inductive and deductive reasoning to modern research. Sumner and Tribe (2004) epistemology provided philosophical assumption of the study underpinning credibility of research findings. The given research also follows epistemological view in the research approach.

The inductive research approach makes limited generalisation about patterns among observed variables and features of people and social activities. It began with a specific statement and finished with general or universal perspective. Human asset variables were identified to explore new technique. However, quantitative research method is used. In inductive approach, this study used some relevant variables and data related to socioeconomic development index.

The survey research method enabled the researcher to collect quantitative data analysed quantitatively. The surveyed data could suggest possible relationship between variables and models (Saunders et al., 2008). In the quantitative research strategy, the statistical data are collected through questionnaire survey. That is why, it tends to be used in exploratory research.

Secondary data and information were sourced from the publications of Chamber of Commerce, reports of UN agencies, BGMEA, EPB, BBS, BDHS, HIES, ILO, CPD, MoF, GoB and local research publications. The secondary data on RMG export earning, GDP and social indicators including poverty, employment, demographic factors including gender, migration, household condition, female employment were referred. Here, socioeconomic state of RMG workforce featured by human assets including skills, training capacity, experience of employees, working rights as the determining variables were taken into account. The livelihood framework guided the asset variables (Krantz, 2001).

3.2. Sampling Technique and Sample Size Determination

To find the optimum sample size or sample units from total population, the following formula has been used. RMG industry has around 4 million workforces. The population size is finite. Using the formula of Yamane (1967:86), the sample size has been determined like n = $\frac{N}{1+Ne^2}$ = 399.6 = 400. e is the precision rate/standard margin error which is 5% with minimum level of variability within the population size. This study followed 95% level of confidence.

Two stage sampling technique has been used as population size of RMG sector is large and they are concentrated into some regions. Sample frames are sourced from RMG clusters of Dhaka including Savar, Narayanganj and Gazipur and sample units are both males and females. The two-stage cluster sampling technique, probability sampling technique, is used for data collection. The number of factories were chosen from the given clusters then identified 400 workers as samples from the shortlisted factories using random sampling.

25 factories were considered. Each factory is considered as sample frame. 224 samples were sourced from Dhaka, 96 samples from Narayanganj and 80 samples from Gazipur were selected randomly. Dhaka included Savar, another intense RMG hub. 400 individual respondents represent 400 households. Around 80% factories are SMEs and 20% are large factories. The industrial clusters were determined based on the RMG factory database of BGMEA.

3.3. Variable Selection, Data Collection, Variable Identification and Analysis Technique

The socioeconomic factors to assess socioeconomic development are key considerable factors of independent predictor variables. Other factors like job security, level of education, discrimination-free work condition, access to healthcare facility, work related legal rights, Training for capacity development have been directed by livelihood framework (Krantz, 2001).

Structured questionnaire was designed. Almost all questions had close-ended response choice so it is largely a structured interview. For data collection, techniques like face-to-face survey interview, telephonic interview, group interview were used with the target respondents. The questionnaire was prepared for data collection. Prior to visits, questionnaire with expression of interest was sent to factory management.

To make the study representative, small, medium and large-sized factories were chosen using the database of BGMEA and all major grades of workers as per national minimum wage.

Findings of primary data analysis of demographic variables like percentage of male and female, percentage of literacy/education, age group, gender-wise scenario, marital status, migration status, household size and condition were presented using descriptive statistics like mean, simple percentage, frequency distribution, bar. Besides, human assets allocation to different group of employees have been presented using descriptive statistics cross-tabulation, bar (Bhattacherjee, 2012). PCA was used to separate and specify the factors regarding socioeconomic status of the RMG workers with reduced dimensions to construct the socioeconomic development Index. The collected data were processed, recoded and analysed to report the findings both logically and objectively using SPSS 21 software.

The considerable assets were assessed by questioning respondents to mention the assets which were coded as 1 for “Yes” or 0 for “No”. The responses were categorical. Binary scale 1 is coded for “Yes”, “Improved” and “True”, “Non-discriminated” and 0 for “No”, “Unimproved”, “Discriminated” “False” or other relevant one. With application of binary scale, survey responses were recorded and transformed.

3.4. Designing the Socioeconomic Development Index Equation

The asset-based approach generates composite score for socioeconomic status index summing weights of all asset items which reflect the possession of every asset item for individual household. Principle Component Analysis (PCA) is used for identification of cluster variables. This technique is mainly used to understand the structure of variables, structure of latent variable, construct a questionnaire to measure variables and reduce data set to a manageable size while retaining maximum original information (e.g., factor analysis can solve multicollinearity problem). PCA analyses quantitative data to reduce dimensionality, irrelevant variables from large amount of data. In the PCA, the data are recorded in binary dichotomous format. Standardisation guarantees that all variables are transformed into similar units converting into binary format. The component with large variance and eigen value was checked to extract the principal component leading index formation. The principal component begins by specifying all relevant variables through normalisation. The following expression indicated an index of each household:

$$A_{1j} = \sum_{i=1}^{n} \frac{f_{1i}\left(a_{ij}^{*} - a_{i}^{*}\right)}{s_{i}^{*}} \tag{1}$$

Where, a_i^* is the mean of a_{ij}^* across households, s_i^* is its standard deviation and f_{1i} is the weight (factor score) from the first principal component. And, n= 8 variables, nj = 8th asset variable.

$$A_{1j} = f_{11}a_{1j} + f_{12}a_{2j} + f_{13}\,a_{3j} + \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots + f_{1n}a_{nj} \tag{2}$$

Where, $a_{1j} = \frac{a_{ij}^{*} - a_{i}^{*}}{s_{i}^{*}}$

$$A_{1j} = f_{11}a_{1j} + f_{12}a_{2j} + f_{13}a_{3j} + f_{14}a_{4j} + f_{15}a_{5j} + f_{16}a_{6j} + f_{17}a_{7j} + f_{18}a_{8j}. \tag{3}$$

The first principal component, expressed in terms of original (unnormalised) variables, for jth household is as follows:

$$A_{1j} = f_{11}\,X\,\frac{a_{1j}^{*} - a_{1}^{*}}{s_{1}^{*}} + f_{12}\,X\,\frac{a_{2j}^{*} - a_{2}^{*}}{s_{2}^{*}} + \cdots + f_{1\,8}\,X\,\frac{a_{8j}^{*} - a_{8}^{*}}{s_{8}^{*}} \tag{4}$$

This Index equation has been used for all households of 400 employees.

Where $a_{1j} = Industry\ job\ experience$

$$a_{12j} = Level\ of\ education$$
$$a_{13j} = Training\ for\ capacity\ building$$
$$a_{14j} = JobSecurity$$
$$a_{15j} = Improved\ and\ equipped\ workplace$$
$$a_{16j} = Access\ to\ affordable\ healthcare\ facility\ for\ family$$
$$a_{17j} = Work\ related\ legal\ rights\ are\ maintained$$
$$a_{18j} = Discrimination - free\ workplace$$

Principal components began specifying each variable normalised or standardised by Z score form-mean and standard deviation, Z=$\frac{X-\mu}{\sigma}$. For instance, $a_{1j} = \frac{a_{1j}^{*} - a_{1}^{*}}{s_{1}^{*}}$, where, a_1^* is the mean and s_1^* is standard deviation of a_{1j}^* variable across households, a_{1j}^* is the value of variable and f_{11} is the weight (factor score) of that particular variable from the first principal component of score coefficient matrix table. This is SPSS generated score. For calculation of standardised asset item weight, the score of each standardised asset variable item is multiplied by its weight extracted from the first component of score coefficient matrix then aggregated to make index score for each household. (8 variables are shortlisted after PCA run extraction). PCA loading on the first component matrix calculated standardised indices of relative wealth ownership.

3.5. Social Stratification of RMG Employees

The natural variance in status between individuals is defined as social stratification. The social stratification definition has often varied depending on the term and their relative time period. The main principle that defines the

term and explains how a society can be stratified. Stratification in the broad sense is the arrangement of something into different groups. The most common stratification includes three broad layers-the "Upper", "Middle" and "Lower" classes. Anthony Gidden referred these 3 types of social classes. This 3-tiered stratification like "Upper", "Middle" and "Lower" class is tantamount to "Rich", "Middle-Income" and "Poor" stated by Deon Filmer and Lan Pritchett. 3 different working people strata have been synonymously referred in their work.

4. Results and Discussion

Prior to elaboration of descriptive results, the socioeconomic profile featured by key characteristics of the RMG workers orient personal and demographic specification to large extent. Later, the sub-section narrated the first objective-construction of the socioeconomic development index with descriptive and inferential assessment of surveyed data.

4.1. Socioeconomic Profile of RMG Workers

4.1.1. Gender

Regarding the gender distribution, it was found that 320 employees (80%) are females, while 80 employees (20%) are male workers out of 400 samples. Women workforce demonstrates their strength and effort to the continuous competitiveness and development of this industry. Large number of females migrated from rural to urban area for waged work and addressed rural distress (Mohiuddin,2004). 383 employees (95.8%) are migrant workers while 17 employees (4.2%) are non-migrant workers. The mean of the migrant workers is .96 and standard deviation is .202. Since this employment is the game-changer of their personal lives, the tendency of migration to urban area is high. Of the sample workforces, 17 labours (4.2%) are non-migrants who are local descendants. Of migrants, 306 are females and 77 are males.

4.1.2. RMG Workers' Age and Marital Status

The age of sample respondents ranges from minimum 16 years to maximum age 65 years. The mean age is 25.25 years and standard deviation is 5.68 years. The employees have been classed into five groups based on their age. We found 5 employees (1.35%) belong to age group below 18 years. Most of the sample workforces, 333 (83.25%) belong to between 18 to 30 years age. The second highest number of employees belonging to age group between 31 to 40 years is 54 (13.5%). 6 employees (1.5%) fall within age group between 41 and 50 years. 2 employees (0.5%) fall within age group 51 years and above.

According to gender-wise age group distribution, the highest number of workers, 275 females and 58 males belong to age range of "18-30 years" followed by 39 female and 15 male workers of age group "31 to 40 years". There are 2 male employees belonged to "51 years and above" age group, the lowest number of male and female workers.

It was found 336 are married (84%), 45 are unmarried (11.3%) followed by 18 are divorced (4.5%) and 1 (.3%) is widow. Of the unmarried workers, female accounts for 60% while male shares 40%. It was found 81.8% are married female workers and 18.2% are male married workers. Of all-divorced employees, 94.4% are females and 5.6% are males.

4.1.3. Household Size of RMG Employees

Household condition is another determinant for socioeconomic status of the workforce. Usually, low-income-group workers possess small household assets due to subsistent income. The hygienic housing condition is one of the pre-requisites of good living condition. There are 5 different types of housing conditions. And, the survey reported almost 83.7% employees live in unimproved housing while 16.3% employees live in improved housing. Almost large number of labours are living in substandard housing condition.

4.1.4. Household Utility Condition of RMG Employees

Of the core household utilities, access to electricity, water supply system and cooking fuel were considered as key utility facilities. 100% households of employees have electricity at their houses. "Supply piped water", limited use of "Deep-Well" and "Tube-Well" are available sources of water for employees. 86.3% houses have the supply water, 13.3% houses have "Deep-well" and .5% houses use "Tube-well" for water source and use. The housing in industrial areas and allied places mostly have improved supply water access. In the survey, we have not found any household

use water from "open source". "Cooking utility facility" is another important household condition feature. Most households in industrial areas have access to "supply gas" and "cylinder gas" as the easy cooking fuel. In some cases, the household use the "Electric heater" and very few use "Firewood". 78% households use "Supply gas" and 18% households use "Cylinder gas" in their households and rest 4% household use the firewood. Supply piped gas, Cylinder and heater sourced fuels are improved fuel sources whereas firewood is termed as "unimproved" cooking fuel.

4.2. Construction of Socioeconomic Development Index for RMG Workers

In line with the objective of this research study-construction of the socioeconomic development index, the multidimensional composite measurement index has been developed to check the socioeconomic status of RMG workers. The sum of standardised assets weights corresponding to all households has been presented into different socioeconomic quintiles.

4.2.1. Human Assets Possession Status of RMG Employees

Malagi and Chachadi (2013) remarked that textile industry does not only contribute towards boosting economy of the country, it also gives opportunity to women to become empowered and sustain their families. In line with same thought, Banoo (2002) reported a society cannot be developed until and unless women equally participate in all national economic activities. In Asian countries, women have always inferior position in labour market but women are the most important human capital for a family and development of a nation.

The index contains the commonly used position of human assets. These assets include capacity development training, job-security of workers, work-environment or condition, access to healthcare facility for family, legal protection at workplace, level of education, discrimination-free workplace and job experience. Due to common and similar nature of responses, the frequency distribution on possession of 3 core human assets is defined below:

Table 2. Frequency of education, discrimination-free workplace and job experience

Variable Name	Total Number	Number of Educated	Percentage	Number of Uneducated	Percentage
Education level	400	351	87.8	49	12.2

Variable Name	Total Number	Number of Non-Discriminated	Percentage	Number of Discriminated	Percentage
Discrimination-free workplace	400	368	92	32	8

Variable Name	Total Number	Number of Experienced	Percentage	Number of Inexperienced	Percentage
Job Experience	400	54	13.5	346	86.5

Source: Survey work (2023)

Education develops wide-ranging skills and human potentials, capabilities and strengths to perform in occupational and professional life. Education helps to achieve physical, mental and non-material assets prioritising our human development. Though education is not necessary for the employment in RMG sector, education helps to sustain their smooth living condition with access to advanced living amenities.

It is seen from the given table that 351 (87.8%) employees are educated while 49 employees (12.2%) are uneducated. "Uneducated" is defined employees who never went to school and lack both basic literacy and numeracy skills and "Educated" is defined employees who have minimum school level education. 49 workers (12.3%) have never been to School.

Discrimination-free workplace is an important asset that all employees expect at their workplace. The work environment secures motivation of employees and enhances productivity to the large extent keeping lower the level of

inappropriate behaviour. Discrimination-free work place is highly encouraging for work commitment and an important human asset. Since discrimination is a critical element in the modern workplace related to staff development and efficiency, employees have been asked if they are discriminated in the workplace. The first responses recorded "Yes" or "No" has been recoded for getting right answer on number of non-discriminated employees. 368 respondents (92%) replied they are non-discriminated.

There are diverse group of workers with diverse work experiences. Since this industry changes the living condition of many people, the researcher has found workforces with mixed range of work experience. About 86.5% employees are termed "inexperienced" having job experience upto 6 years and 13.5% employees are "experienced" having job experience from 6 to 25 years.

4.2.2. Frequency of Human Assets Possession Position

The responses recorded most of these human asset variables in addition previous three variables. The frequency of 5 asset variables of respondents have been shown below.

Table 3. Frequency of human assets possession status

Name of variable	Total	Number(Yes)	Percent	Number(No)	Percent
Capacity development Training	400	364	91	36	9
Job Security	400	374	93.5	26	6.5
Improved Work-environment	400	377	94.25	23	5.75
Access to imp. Healthcare facility	400	299	74.8	111	25.2
Work-related legal rights	400	75	18.75	325	81.25

Source: Surveyed data analysis (2023)

Training for skills and capacity development is instrumental in any work. Workforce in any occupation always require continuous development to be skilled. In the RMG sector, fire safety, occupation health and safety, production enhancement related training and functional support training are fundamental and given to ensure safe work-place and labour productivity since they are driving force of industries. In this regard, this focused training and capacity development are considered as human asset that increases human skills, productivity and innovation of employees to the large extent. The table reported that the larger number of employees-364 workers (91%) replied they have received work-related required training.

The job safety is a soft human capital that all people regardless "Blue" and "White-collar" employees' demand for. The more secure any job is the better recognition is realised. Ensuing "job security" for working-class employees in industries always elevates the personal status and social recognition. Sarker and Afroze (2014) mentioned that non-financial items like training, job security, good work environment and fiscal elements can enhance workers' satisfaction. The survey reported 374 employees (93.5%) have found their jobs secure.

Equipped and safe work environment in terms of infrastructure is essential to enhance dedication to workplace and scale up professional development of employees. Conventionally, the industrial area is featured by operational risks, limited health, structural safety, hygiene factors that make work environment sometimes unfriendly. In this regard, the question of whether the work environment had improved indicated that 377 (94.2%) reported "Yes" while 23 employees (5.8%) reported "No" or unimproved,' out of total of 400 respondents.

Ensuing healthcare facility is one of the fundamental aspects of human development. In our socioeconomic context, everybody does not have equal access to healthcare as healthcare facility is unaffordable and inaccessible to some people in the society. Regarding the improved and affordable healthcare facility for RMG employees, the survey recorded that larger number workers 299 employees (74.8%) responded positively in terms of getting affordable healthcare facility. Workers' legal right includes getting right of trade union, ensuring labour-rights, minimum working hour rights, break and leave and employment related rights and other fundamental facilities. However, United Nations Guiding Principles (UNGPs) on Business and Human Rights recognised the responsibilities of a state and business community to protect, respect the human rights in work places (Moazzem et al., 2022). This survey reported 325 employees (81.3%) replied negatively regarding work- related legal rights at work places.

4.2.3. Relation of Gender and Human Asset Variables

The human asset variables like capacity development training, job security, work-environment, access to improved healthcare facility for family, legal rights at workplace, education level, discrimination-free work and job experience were analysed from the Gender.

Table 4. Relation of gender and human asset variables

Asset Variable	Response Type	Gender		Total
		Female	Male	
Capacity development training	No	28 8.8%	8 10%	36 9%
	Yes	292 91.2%	72 90%	364 91%
Job security	No	22 6.87%	4 5%	26 6.5%
	Yes	298 93.13%	76 95%	374 93.5
Improved Work-environment	No	20 6.2%	3 3.8%	23 5.75%
	Yes	300 93.8%	77 96.2%	377 94.25%
Access to improved healthcare facility for family	No	81 25.3	20 25%	101 25.25%
	Yes	239 74.7	60 75%	299 74.75%
Work-related legal Rights	No	286 89.4%	39 48.8%	325 81.2%
	Yes	34 10.6%	41 51.2%	75 18.8%
Education level	Uneducated	42 13.1%	7 8.8%	49 12.2%
	Educated	278 86.9%	73 91.2%	351 87.8%
Discrimination-free work environment	Discriminated	23 7.2%	9 11.2%	32 8.0%
	Non-Discriminated	297 92.8%	71 88.8%	368 92.0%
Job-experience	Inexperienced	273 85.3%	73 91.2%	346 86.5%
	Experienced	47 14.7%	7 8.8%	54 13.5%

Source: Surveyed data analysis (2023)

Regarding gender-based distribution for training for capacity development, it has been found that number of female employees are more than male employees, 292 female employees (91.25%) receive capacity development training in workplace. Regarding the job security variable, the number of female employees is more than male employees. 298 women employees (93.1%) have responded positively regarding their job safety.

The number and rate of female employees are more than that of male employees. 300 female employees (93.1%) have responded positively that their work environments are more improved. Most of the factories were seen following health and occupational safety standards to support the essential compliance in RMG industry. “Access to affordable healthcare facility of family of workers” has been reported that the number female employees are more than male

employees, 239 female employees (74.7%) responded positively. Though ratio of male and female workers is not same, the female workers can afford their family healthcare more.

Maintaining "work-related legal rights" variable has been defined from gender-perspective to know gender-wise responses. Accordingly, it can be reported from the table that number and rate of female employees are more than that of male employees. 286 female employees (93.1%) regretted as they do not experience all core work-related legal rights including gender balance, occupational safety, wage and leave in work-place. The gender-wise level of education distribution reported that number of female employees are more educated than that of male employees, 278 female employees (86.9%). However, percentage of "Male" employees is larger than "Female" employees in terms of educated labours but percentage of female uneducated workers is larger than that of male workers. The "Discriminated" work condition from the gender-perspective reported that number female non-discriminated employees are more than that of male employees, with 286 female employees (93.1%).

The gender-based position of level of experience of employees reported women are more experienced in this sector as women work longer in this sector. It was found 273 female "inexperienced" employees (85.3%) whereas 47 female "experienced" employees (14.7%).

4.2.4. Principal Component Analysis Based Inferential Analysis

From this section onwards, the inferential analysis of primary data of the study and index construction and allied avenues are discussed. PCA gives maximum total variance in a correlation matrix by transforming original variables into linear components. PCA is sensitive to outliers and can lead to misleading results if outliers exist. In line with this, Sapra (2010) stated that PCA is a data simplification and generalisation technique by lowering dimensions and minimising multidimensional data for useful analysis. PCA produces uncorrelated variables as principal components. This process led to dimension reduction and retention of some data characteristics to contribute by keeping principal components with largest variance.

Table 5. Descriptive statistics of all index variables

SL	Name of Variable	N	Sum	Mean	SD
	Industry job experience	400	54	.13	.342
	Level of Education recoded	400	351	.88	.328
	Training for capacity building	400	364	.91	.287
	Security of Job	400	374	.94	.247
	If workplace is improved and equipped	400	377	.94	.233
	If Work related legal rights are maintained	400	75	.19	.391
	Discrimination-free workplace	400	368	.92	.272
	Access to safe healthcare facility	400	299	.74	.301

Source; Researcher's Findings (2023)

The PCA was run using SPSS software. Significance level and KMO and Bartlett's test of Sphericity were selected in the "Descriptives". The PCA was operated with 8 variables:

1. Job experience, 2. Training for capacity building, 3. Affordable access to healthcare facility for family, 4. If work-related legal rights are maintained, 5. Decision-making skills improved or not, 6. Discrimination-free workplace, 7. Education level recoded, 8. Job security.

4.2.5. Standardisation and Determination of Asset Index

The principal component, elicited in form of original (unnormalised) variables, is an index for each household.

$A_{1j} = f_{11} \times a_{1j} + f_{12} \times a_{2j} + \cdots + f_{1n} \times a_{nj}$ (8 components have been shortlisted and equation with these variables have been formed). These were standardised to keep them all in uniform format. The principal component equation-based index is expressed as:

$A_{1j} = f_{11} \times \frac{a_{1j}^* - a_1^*}{s_1^*} + f_{12} \times \frac{a_{2j}^* - a_2^*}{s_2^*} + \cdots + f_{1n} \times \frac{a_{nj}^* - a_n^*}{s_n^*}$. The main assumption of our analysis is that long-term household wealth explains the maximum variance in asset variables. The summed value of all assets from

the aforesaid equation for each respondent has been normalised. This technique has been applied for all respondents in the work.

4.2.6. Application of Principal Component Analysis (PCA)

Varimax rotation maximise the dispersion of loadings within factors. Therefore, it loaded a smaller number of variables highly on each factor (Tabachnick & Fidell, 2012). Here, varimax rotation style has been used as this approach simplified interpretation of factors.

Bartlett's test specified whether the correlation matrix was significantly different from an identity matrix. Significant result of Bartlett's test 0 means that correlation of all shortlisted variables is significantly different from zero. Bartlett's test always results significant even the correlation score between variables is very small with large samples in factor analysis.

MacCallum et al. (1999) showed that if communalities are lower, the importance of sample size increases. In this work, the average communality is 0.438 found dividing total value of communalities by number of variables (Total Score/Number of variables) (3.504/8 = .438). According to Field (2013) it is to be noted that most variables load largely on the first factor. Higher KMO removes the multicollinearity. The factors are extracted from SPSS.

In the given PCA correlation matrix of this work, the score of correlation ranged from minimum .002 to maximum 0.482. 0.002 has been determined at "If the work-related legal rights are maintained" and "Access to affordable healthcare facility". The lowest negative correlation is -.003 at "Improved workplace" and "Training Capacity". Most of the correlated values are within the positive range of results. So, the correlation among the most of the variables look good and moderate across the variables.

Table 6. KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.552
Bartlett's Test of Sphericity	Approx. Chi-Square	150.258
	df	28
	Sig.	.000

In the result of PCA run factor analysis, the Kaiser-Meyer-Olkin (KMO) index is 0. 552 and Bartlett's test of Sphericity resulted statistical significance (Chi-Square= 150.258, p is 0.000 less than <0.05) indicating that data were suitable for PCA.

Table 7. Total variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %
1	1.611	20.142	20.142	1.611	20.142	20.142	1.596	19.954	19.954
2	1.326	16.575	36.717	1.326	16.575	36.717	1.237	15.459	35.413
3	1.100	13.750	50.467	1.100	13.750	50.467	1.112	13.906	49.319
4	1.005	12.560	63.027	1.005	12.560	63.027	1.097	13.708	63.027
5	.912	11.399	74.426						
6	.754	9.429	83.855						
7	.696	8.696	92.551						
8	.596	7.449	100.000						

Extraction Method: Principal Component Analysis

According to the table of variance, these are typically ordered in a descending order from the largest variance level (the first principal component) to the least variance level. However, the interpretation is that economic status can be explained with the maximum variance (and covariance) of the different indicators. The highest variance is 20.14% and cumulative variance is 19.95% under the rotated sum of squared loading and initial Eigen value is 1.611. The results revealed 4 principal components with Eigenvalues over 1 explaining 63.02% cumulative variance of the total variance in the rotated sum of square value. The first component has been chosen. The 4 components loaded among 8 variables in Component Matrix below.

Table 8. Component matrix

	Component			
	1	2	3	4
Level of Education recoded	-.023	-.487	-.046	.763
Training for capacity building	.749	.217	-.036	-.095
Security of Job	.603	.345	-.125	-.013
Access to affordable healthcare facility for family	.705	-.162	.271	.116
Discrimination free workplace	.043	.579	-.248	.604
If Work related legal rights are maintained	.303	-.671	.033	-.069
Industry job experience	-.300	.320	.487	.007
If workplace is improved and equipped	.068	.098	.841	.174

Extraction Method: Principal Component Analysis.

The component matrix relates the loading of all variables against the shortlisted factors in the column in the PCA. This matrix is also alternatively termed as factor matrix. This matrix shows correlation of variables with chosen factors. Since the most variables load against the first component with good score, the rotated component is often conducted.

Table 9. Component score coefficient matrix

	Component			
	1	2	3	4
Level of Education recoded	-.087	.104	-.009	.834
Training for capacity building	.487	.008	-.051	-.115
Security of Job	.418	.165	-.088	-.105
Access to affordable healthcare facility for family	.410	-.185	.189	.207
Discrimination free workplace	.123	.709	-.039	.290
If Work related legal rights are maintained	.070	-.481	-.107	.222
Industry job experience	-.111	.110	.495	-.139
If workplace is improved and equipped	.088	-.068	.773	.113

Source: PCA output

Extraction Method: Principal Component Analysis, Rotation Method: Varimax.

The first component and loaded item weight scores from the component score coefficient matrix table above have been used. From a set of 8 correlated variables, PCA created uncorrelated indices or components, where each component is a linear weighted combination of the initial variables.

For example, from a set of variables x_1 through to x_n ,

$$PC1 = a_{11}x_1 + a_{12}x_2 + a_{13}x_3 \ldots\ldots\ldots\ldots\ldots\ldots\ldots + a_{18}x_8 \quad (5)$$

$$\vdots$$

$$PC4 = a_{41}x_1 + a_{42}x_2 + a_{43}x_3 \ldots\ldots\ldots\ldots\ldots\ldots\ldots + a_{88}x_8 \quad (6)$$

Where, PC represents principal components and a indicates weight/score coefficient for the principal component for the nth variable.

$$A_{1j} = f_{11}a_{1j} + f_{12}a_{2j} + f_{13}a_{3j} + \ldots\ldots\ldots\ldots\ldots\ldots\ldots + f_{1n}a_{nj} \quad (7)$$

Where, f_{1n} represents the weights or factor loading for the 8 variables and a_{nj} represents the standardised assets for j[th] household. Here, n= 8 variables. Around 4 principal components and their linear combination with all 8 variables in the study.

Table above reported the scoring factors from the 8 variables using the principal components analysis. All asset variables took value 0 or 1, the weights have an easy interpretation: a move from 0 to 1 changes the index by f1i /s*i. The asset index functions as the proxy socioeconomic development status indicator of workforce of the industry.

4.2.7. Quintiles of Asset Index Value and Socioeconomic Status of RMG Workers

The score of each standardised variable is multiplied by its weight or factor loading then aggregated to make index score for each household. We have received total factor score of all households which is called index score. The maximum cut-off index point score is between .98125 score to score .53670. This cut-off point of index score is grouped "Rich" employees. Index score of the "Middle-Income" grouped workers range from Between .53670 to.21264 and "Poor" ranked employees' range between .21264 to -4.57586. The index scores were collected from the first component of the index and used to rank all employees later.

Table 10. Cut-off point range of socioeconomic status of RMG workers

Socioeconomic Status	SES Asset Index Score Range	Frequency of Workers
Rich	Between .98125 to .53670	80
Middle-Income	Between .53670 to .21264	160
Poor	Between .21264 to -4.57586	160

Source: Researcher's Analysis on Index score, 2023.

This score range of employees' households has been realised from the SPSS run PCA outcome. Three different quintiles with total employees have been segmented. The SPSS run PCA backed index scores of employees were ranked based on descending order. Top 80 high scoring workers were termed "Rich" followed by 160 "Middle-income" socioeconomic status ranked employees and 160 employees with "Poor" socioeconomic status.

Table 11. Classes of socioeconomic status based on Filmer and Pritchett's standard

Socioeconomic Status Rank	Frequency	Percent
Poor	160	40.0
Middle-Income	160	40.0
Rich	80	20.0
Total	400	100.0

Source: Researcher's calculation from Survey data (2023)

All the RMG workers have been allocated following the Filmer & Pritchett's work, with the standard and preferred allocation benchmark set at 40% "Poor", 40% "Middle-Income/Class" and 20% "Rich" respectively in the given table. They may be alternatively called "Upper", "Middle and "Lower" class. The result of the socioeconomic index score has been represented into 3 ranks based on the possession status of personal assets and items considered in this work. It is natural that society is structured into 3 types of social classes like "Upper", "Middle" and "Lower" class referred by Anthony Gidden. Three quintiles were denoted by "3- Rich", "2- Middle-Income/Class" and "1- Poor". The "Rich" quintile with normalised score between 100 to 81 covers 80 workers. The "Middle-Income" rank with the score between 81 to 64 addresses 160 workers and 3[rd] quintile allows 160 employees as "Poor" with score between 64 to 0. These data were extracted from SPSS. This 3-tiered benchmark was followed for social condition assessment in Nigeria, Thailand, Pakistan and other places.

4.2.8. Analysis of Socioeconomic Status Index Rank with Key Variables

Socioeconomic index outcome of three ranks has been analysed using different variables or perspectives. The analysis of Filmer and Pritchett led 3 ranks of socioeconomic status from the gender perspective has shown gender based socioeconomic position of employees.

Table 12. Relation of gender of respondents and SES index

Socioeconomic Status	Gender of Respondent		
	Female	Male	Total
Poor	129	31	160
	80.6%	19.4%	100.0%
Middle-Income	140	20	160
	87.5%	12.5%	100.0%
Rich	51	29	80
	63.8%	36.2%	100.0%
Total	320	80	400
	80.0%	20.0%	100.0%

Source: Researcher's Analysis,2025

The gender-based socioeconomic status. The socioeconomic status of female employees shows 129 are "Poor" (80.6%), 140 are "Middle-income/class" (87.5%) and 51 are "Rich" (63.8%) ranked. Of the 80 male employees, 31 are "Poor" (19.4%), 20 are "Middle-Income" (12.5%) and 29 are "Rich" (36.2%) segmented or ranked. The highest number of female employees are 140 "Middle-income" ranked and male employees are 31 "Poor" ranked respectively. The lowest number of SES status of female employees are 51 "Rich" (63.8%) and male employees are 29 "Rich" (36.2%) ranked respectively.

4.2.9. Robustness of Data Analysis

Percentage of employees of three categories are shown and Spearman rank correlation has been done based on asset possession. All variables are turned into a group on commonalities.

Variables and group of Human Assets include Job Security, Work-environment, Access to Healthcare service for family, Legal Protection at work place, Education level, Discrimination-free workplace. Industry Job Experience, Training for capacity development. The Spearman correlation of employees' index score and rank of all employees have been conducted. The findings of correlation are brought in the following table:

Table 13. Correlation coefficient

			Socioeconomic Status	Rank of FAC1_4
Spearman's rho	Socioeconomic Status	Correlation Coefficient	1.000	.934**
		Sig. (2-tailed)	.	.000
	Rank of FAC1_4	Correlation Coefficient	.934**	1.000
		Sig. (2-tailed)	.000	.
		N	400	400

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation is significant at the 0.01 level (2-tailed). The correlation score is .934 for all human variables and index is significant.

4.3. Relating the Socioeconomic Development Index with National Indicators

The relating, checking the gap of socioeconomic status of 3 ranks of RMG workers against national level socioeconomic indicator can justify the index-based result. The empirical goal finds the effect of this index with socioeconomic status of industrial workers. The validity of the framework was assessed based on three distribution of workers and their weighted results.

Socioeconomic progress and macroeconomic development report of GoB mentioned that Bangladesh has made strides in important social development parameters (Finance Division, 2022). Ministry of Finance, GoB, also reported that the decline of hardcore poverty to 10.5% in 2019 from 24.2% in 2006, improvement of literacy to 74.7% in 2022 from 52.5% in 2006.

Filmer and Pritchett (2001) also reported that the survey used in their work has been conducted under the Demographic and Health Surveys (DHS) and this survey also was conducted in more than 40 countries. It is termed as National Family Health Survey(NHFS), in India. The primary Filmer and Pritchett modelled index based socioeconomic status rank of employees are weighted on variable "Education level" of national level survey "Household Income and Expenditure Survey (HIES) 2022. The HIES 2022 reported that the literacy rate is 74% and Illiteracy is 26%. According to the survey, Illiterate or uneducated rate is 12.2% and literate is 87.8%. Weight created for illiterate is 26/12.2=2.114 and weight is =74/87.8=0.843 if literate. The frequency of weighted socioeconomic ranks of workers is as follows:

Table 14. Socioeconomic rank based on literacy/education (weight 1)

Socioeconomic Status Rank	Frequency	Percent
Poor	159	39.8
Middle-Income	162	40.4
Rich	79	19.7
Total	399	100.0

Source: Researcher's calculation from Survey data (2023)

The weighted Filmer and Pritchett modelled socioeconomic status distribution table shows the new rate of "Poor" is 39.8%, "Middle-Income" grouped employees are 40.4% and "Rich" ranked employees are 19.7% based on the weight of "level of education/ literacy". The table shows total sample units around 399 due to weighted value. The rate of "Poor" employee has declined to 39.8% while it was 40% before weighting. Though education rate of RMG employees is higher than national literacy rate but both have recorded larger and higher educated rates. It has slightly impacted the SES ranks of RMG workers.

The reduction in the poverty rate is minimal, with negligible changes in the "Poor" and "Middle-Income" ranked employees. The number of "Rich" employees has declined to 19.7%. Education level does not correlate with social status in this sector, as high education is not a requirement for RMG employment. A lower poverty rate corresponds to a higher number of "Rich" and "Middle-Income" employees. According to HIES and BBS, the overall poverty rate is 18.7%, whereas the RMG industry poverty rate stands at 39.8% marking a huge gap.

4.4. Findings of Research Analysis

The findings both descriptive and inferential analyses on primary data are largely related to core objective of the study like construction of the socioeconomic development index. Among 400 workers, about 383 (95.8%) have migrated from different districts whereas 4.2% of workers are local descendants. Of the migrants, 306 are females and 77 are males. Dhaka division has the highest number of migrants followed by Khulna, Rajshahi and Rangpur. And, the lowest number of migrants recorded come from the Sylhet division.

4.4.1. Key Findings of Inferential Statistics of Primary Data

The study has reported the application of data and dimension reducing technique PCA of factor analysis. The PCA was operated using 8 variables including Job experience, Training for capacity building, Job Security, Improved and equipped workplace, Affordable access to healthcare facility for family, Maintaining work-related legal rights, Discrimination- free workplace, Level of Education recoded.

The results revealed 4 principal components with Eigenvalue over 1, explaining 63.04% cumulative variance of total variance under the rotated sum of square value which are loaded against all 8 variables given in component matrix. All households have been ranked based on total Index score. A cut-off score range was given to segment or classify all sample households of employees based on their aggregate index score.

4.4.2. Quintiles of Socioeconomic Development Index and Socioeconomic Status

After summing the standardised value of all variables of survey respondents, the aggregate resulting value (i.e. the aggregate standardised asset Index score) was normalised.

The maximum cut-off index score is 1.73353 while the lowest cut-off point is -2.70936. The cut-off points of index score for "Rich" grouped employees ranged from 1.73353 to .90553. The index score for the "Middle-Income/class"

grouped workers ranged from .90553 to .11194 and index score for employees ranked as "Poor" ranged from .11194 to -2.70936.

400 labours have been categorised into the bottom 40% as "Poor", the next 40% as "Middle Class" and the top 20% as "Rich" following the benchmark threshold from the work (Filmer & Pritchett, 1998). This benchmark was followed in other relevant studies in other countries for assessment of socioeconomic condition of different communities. The socioeconomic status of households was weighed against few key social and economic elements if the study findings on SES are nationally aligned. The gap of national statistics and RMG workers' statistics are checked from socioeconomic development indexed ranks weighted with Education.

Table 15. Socioeconomic status

Socioeconomic Status	Frequency	Percent	Cumulative Percent
Poor	158	39.5	39.5
Middle-Income	144	36.0	75.5
Rich	98	24.5	100.0
Total	399	100.0	

When the frequency of socioeconomic status was run using the literacy or education level weight, the researcher has found that "Poor" class reduced to 39.5%, the "Middle-income" reduced to 36% and "Rich" group increased to 24.5%. Due to higher national level of literacy level and recorded literate rate in this work, the weighted result shows higher "Rich" workers.

4.5. Contribution of the Study

This research may contribute to RMG industry, relationship of RMG industry and improvement of socioeconomic condition in Bangladesh. Both descriptive and inferential research findings have been extracted, which may keep several roles in enabling the environment for socioeconomic development and workers' friendly industrial development. The descriptive research findings shared many demographic elements of employees.

As 95.8% employees have migrated to urban areas to secure livelihoods, RMG industry catered huge migrant workers who are largely low and un-skilled. The rate of literate employees is 87.8% featured by largest share of school level education. The industry workers can be made skilled with advanced industrial training.

This study has included new set of variables like work-related legal rights of employees, discrimination-free workplace, capacity development, decision-making capacity, social recognition has given a broad-based spectrum for socioeconomic status assessment of industrial labours. 81.25% employees are reported not experiencing work-related legal rights which indicate higher rate of legal rights violation. These findings may help policy makers to enforce laour law for the labour welfare. The socioeconomic status index may result in some contribution to the sustainable RMG industrialisation.

The socioeconomic development index could be used as a base to overcome the sustainability challenge of this sector. This composite index may enable policy makers to know the policy reforms aligning with RMG sector welfare, compliant productivity to keep the industry competitive later LDC graduation in 2026.

According to the Bangladesh Labour Act 2006, the socioeconomic condition of industry workers is one of the 12 core criteria for minimum wage determination. The index results can outline required reforms in Industrial and SME policies, Labour Act, Labour force survey for industrial employment, wage index, and socioeconomic development planning in the 8th five-year plan and appropriate national budget allocation.

4.6. Methodological Contribution

This study has used non-material assets. The soft assets play pivotal roles for assessment of socioeconomic stratification to some extent. Human welfare tools HDI, AHDI, HPI are almost similar natured and criticised as they failed to assess true socioeconomic state of labours. PCA-based index always prescribes a robust measure, which can moderately affect with visible change in the socioeconomic context of targeted people. PCA has been applied to reduce irrelevant factors. Considering the importance of human assets, the socioeconomic development index is designed. The index score combined all relevant assets and represented a unique position of all employees. This

socioeconomic status of 400 workers into three quintiles- 20% “Rich”, 40% “Middle-income/class” and 40% “Poor” ventilate significant difference of RMG labours in terms of their socioeconomic status.

4.7. Limitations of the Study

Obtaining reliable primary data was a major challenge in this research. Factory management, employers had reluctance to allow and visit factories. Employees in different factories were also found reluctant to provide data related to human and financial assets as definition of these assets’ information seemed unusual for them. Issues on health care, legal rights at workplace and job security, discrimination at work place are confidential and most of the employees look biased. In structured questionnaire, clarification scope is limited as answers are close-ended.

5. Conclusion and Recommendations

RMG sector has become the lifeline of Bangladesh’s export-led economy (Zhang et al., 2015). Development of a comprehensive index to measure the socioeconomic development of labour force in the RMG industry using human assets was achieved.

Various international human development measurement indicators like HDI, PQLI, MPI and GNI per capita and other recognised tools were unable to separately measure actual socioeconomic welfare as these tools are built on limited number of variables excluding many human variables. On the other hand, there are limitations of sector specific income, expenditure and household expenditure reliable data and trend to evaluate their household poverty, family condition and proper sector specific customised yardstick to measure poverty. The standardised PCA backed index determines socioeconomic status of individual worker.

The cumulative asset items score of 400 RMG households is ranked into 3 different quintiles based on cut-off points into 160 (40%) “Poor”, 160 (40%) “Middle-Income/Class” and 80 (20%) “Rich”/Non-poor” following the work of Deon Filmer and Lant H. Pritchett (1998, 2001). These 3 ranks are synonymous as “Lower”, “Middle” and “Upper” class.

The difference was noticed between the rank of firstly constructed socioeconomic index and socioeconomic variable weighted index socioeconomic ranks. “Education level” weight made minor positive change across “Poor” and “Middle-Income” except “Rich” ranked employees.

The socioeconomic development index is a new and focused measurement technique to demonstrate the socioeconomic position of RMG workers. The Industrial policy 2022 could be amended adding core needs of employees’ development with training and development needs. The five-year development plan may guide resource allocation especially training and skills development budget for socioeconomic development.

Maintaining the legal rights is essential for employees’ professional development. The minimum legal rights are least attended and over 80% RMG employees are deprived of work-related legal rights, highlighting the need for labour law reforms and their strict enforcement.

Decent work offers productive and fair income, workplace safety and social protection, freedom for people and decision making. SDG 8- promotes inclusive and sustainable economic growth, employment and decent work for all (UN SDG 2030, n.d.). The index can play roles and provide insights into actual socioeconomic status and working conditions of RMG workers.

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