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# A Study on Impact of Disposable Face Mask Market on Small Scale Industries in Selected Cities of Andhra Pradesh

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***Abstract:*** ***Small scale industries are major contribution on GDP. Due to COVID-19 global economy was affected and their impact on textile industries. In present scenario many countries are facing shortage of face mask due to shutdown of industries due to COVID-19 and lack of raw materials due to closing of borders and complete lockdowns throughout the world. Due to lack of face mask the people are wearing homemade face masks. This study helps us to examine how face masks market impact on small scale industries and problems faced by small scale industries due to pandemic. The main objective of the study was to understand why face mask got such huge demand and due to pandemic how small-scale industries got impacted and challenges faced by industries on manufacturing face masks and it was found that textile industries get benefited through face masks and benefits in form of relief funds provided by the government to small scale sectors, growth and performance of small-scale industries in pandemic situation. This research will further facilitate to small-scale industries in order to frame sustainable practices in the COVID situation.***

***Keywords: Covid-19, Face Mask, Impact, Manufacturing, Small Scale Industries.***

## I. INTRODUCTION

A novel strain of coronavirus had been first detected in December 2019 in Wuhan, China popularly known as COVID-19, mostly transmitted by the air. Since its outbreak, the virus affected the lives of the people and changed the way business runs causing chaos in everybody's life. Most countries started closing borders and implemented the lockdowns to contain the spread of the lockdown and able to buy some time to understand the virus as well as scale up the medical infrastructure especially in populous and developing countries like India. Although several vaccine companies trying hard to find a vaccine for a year, even leading vaccines not promising 100% efficacy as not certain about side effects caused by the vaccine. It is clear that the past normal not possible and the new normal will be taking more time till then taking precautions will be a good idea.[1] After the COVID cases found in India the Indian government announced the lockdown.

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Because of these pandemic large number of SMEs get shutdown and many people lose their jobs.so on that time due to these corona viruses the face mask got popular and the availability of face masks are very low because many numbers of industries got shutdown due to lockdown and availability of workers as well as lack of availability of raw materials due to worldwide lockdown.

### *A. SMSE before COVID*

70 million traders in India majority of them are MSME and 99.5% of the SMEs are fall in to the micro category wherein Andhra Pradesh constitutes total 3,954 SME. In this total number of SMES majority of them are not registered anywhere. The SMES are reeling huge distress because demonetization in India on 2016 and secondly due to the Indian government implemented GST. By implementing GST; small and medium industries got hit and prolonged due to the economic slowdown. Majority of industries fall into micro industries. So, these industries unable to effort the GST and also the SMEs struggling with lack of financing. By every time the SMEs are facing these kinds of problem.

### *B. SMSE after COVID*

SMEs are facing lot of struggles like demonetization and GST before the COVID. Currently India has 75 million MSMEs and due to pandemic lockdown 25 percent of MSMEs were closed. It was the worst hit for SMEs. Due to lockdown thousands of migrant workers stranded across the country. Due to lack of availability of raw materials India got scare city in face masks. Due to this the government announced the package called Garib Kalyan Yojana which was primarily focus on SMEs. [2] As per guidelines shared by the World Health Organization (WHO) to contain the spread includes regular washing of hands, maintain social distance, and wearing masks are popular. Since it is airborne, wearing masks proven to be very efficient in containing spread by various research institutes, thus forcing governments to make it mandatory till finding of cure, and also created a huge demand for the masks.

### *C. Usage of face mask*

The usage of a face mask is not a new one, commonly used by health care personnel during sensitive surgeries to contain the bacteria cum viruses mainly omitted from the patient. The other places of face mask include industry workers to safeguard themselves from dust and air pollution. Now the usage of the facemask has become a common practice among people owing COVID-19 pandemic.

[3] To meet the sudden demand for the masks, the government allowed Public sector undertaking units as well as small scale industries in addition to existing manufactures. Apart from that people started manufacturing masks at homes owing to financial constraints. Irrespective of the type of material used, every mask should cover the mouth and nose properly such that external air cannot be circulated from corners of a mask, thus only allowing breathe through the mask. The main important thing is material used in the manufacturing of the mask should contain the virus that is transmitted through the air. As per the recommendation by the WHO, the mask should contain viruses ranging from 2-300nm range.

### *D. Small Scale Industries*

Small-scale industries are industries where processing, production, and delivery of services are taken on the basis of micro or small scale. Such industries make one-time investment in equipment, facilities, and factories, but not exceeding the limit of Rs. 20 Crores. Small-scale industries are playing key role in economic development of the country like India by providing various employment opportunities. Poverty and unemployment are two major concerns in the country today. Small scale industries help in decreasing these problems by providing more employment opportunities, with low investments. Dr. Manmohan Singh said that "The key to our success lies in the success of manufacturing sector in small-scale industries". The economic development of any country primarily depends on setting up industries, which require sufficient investment. In a country like India, where capital is scarce and unemployment is big issue, growth of small-scale industries is very important in order to attain balanced economic growth. The small-scale industries depend on the wide spread dispersal in rural, semi-urban and urban areas, developing entrepreneurial base, shorter gestation period, and equitable distribution of income and wealth. The Government of India has set up various agencies and institutions at central, state and local, and offered support for their promotion and in development. India's export industry majorly depends on the small industries as nearly half of the goods exported from India are manufactured or produced by small scale industries. [4] Recently government of India came up with "Make in India" initiative for welfare of smse that aims to manufacture and invest in india and sells products all over world. This to create demand all over the world. Small scale industries do not have much advantages as compared to that of large scale industries because of their size and nature .although they are making significant contribution to development of country they haven't realized there true full potential and they are facing many problems in functioning and resulting in not performing well because of this government has come with lots of certain instruction that helps small industries to produce the products exclusively by not allowing the large scale industries to produce items that are reserved for small scale industries. small scale has to counter the competition from Indian large-scale industries as well as foreign competitors, in order to sustain and to promote the sales of products government need to provide more subsidies These small-scale industries account for close to **40% of the total Indian product** and service production. The government has come up with lots of loan guarantee scheme for micro, small and medium enterprises in the pandemic. Though Government has introducing relief measures still small-scale industries are lacking behind. The COVID-19 crisis has shown huge impact on almost all smaller units, which mostly depends on migrant workers. Because of this Small Size industries have faced some challenges in maintaining production and addressing the need for protective clothing to coping up with the deficit due to lockdown and retain migrant labours. [3] Demand for Face masks has increased from nowhere to almost everywhere all on sudden. the entrepreneurs, businesses are attempted to leverage the situation with increased production. To support the production government of India, has relaxed norms for manufacturing and supported companies with permissions, facilities to produce face masks. So, all on sudden most of the industries started manufacturing the face mask. This paper focused on to know how disposable face mask helped small size sectors and also to determine whether the textile and handloom got any benefit through the face mask. India has become the world's second largest PPE kits producing country by producing more than 450,000 PPE a daily. We have seen this big growth/jump in a span of three months. production of this kits includes permissions and certifications are recommended which includes:

1) CE Marking (86/686/EEC & 89/686/EEC Category)
2) ISO 16603 Class 3
3) ISO 22609
4) SITRA Certification
5) DRDE Certification

### *E. Background of the Industry*

Small scale industries form major part of state economy. it contributes nearly around 6% of gross domestic product and provides employment opportunities for about 2.5 lakhs people with policies that encourages the entrepreneurship, women development etc keeping in mind of vision 2020 to grow at 11% a year and it really need a complete investment of nearly Rs11,65,000 cr. This investment will be raised through private entities, resource-based industries, including mining, construction, Agroindustry etc, ths are considered growth engines which will be helping in faster development of small-scale industries. For example, now Face Mask manufacturing and pharmaceuticals are expected to grant rise to several opportunities for the small industry. It's expected that by 2020 state will have many profitable small-scale industries.From past few decades governments have focused on the industrial sector and helped for their rapid development by various policies and initiatives that supports these industries in timely manner which includes reservations, investment ceilings, fiscal incentives etc, Small scale industries are classified into two parts one was traditional small-scale industries which are home based, using simple tools and works on family man power and includes industries that completely runs on man power and other was modern small-scale industries which will be having separate work place, and employees man power from out-side, and will be using all machines, power and technologies.

Almost all traditional industries and large amount of modern small-scale industries falls under unregistered category, so that the GDP of this industries equals the roughly the GDP of unregistered sector from past few years (2018-19 and 2019-20) the modern small-scale industries have transformed greatly in production as well as man power. It increases their production capacity by about 35 to 40% and in employment by about 15%. [5] Manufacturing units are combined of two sectors one was registered and other was unregistered. Register sectors are those factories that use power supply and having minimum of 10 employees or more or those factories won't use electricity and having minimum 20 employees or more. whereas un registered are smaller units that are having employees below 10. These two sectors have almost used to have equal share, and gradually registered sectors share got inclined by two-third whereas unregistered sectors share got declined by one-third because of poor awareness of people on small industries.

According to a study committed by All India Manufacturers Organisation (AIMO), In India there are nearly 75 million MSMEs, out of those 25 percent of industries will be shutting down if lockdown imposed due to the COVID-19 go on beyond four weeks, and nearly 43 per cent will shut down if lockdown extends beyond eight weeks. MSME are the backbone of the Indian economy and these segments helps the economy grow by leap, provides employment opportunities to nearly 114 million people and add up to 30 per cent and above of the GDP is going through the difficult segments, so actions have to be taken immediately. According to the Confederation of All India Traders (CAIT), The trade impact for India is estimated to be around Rs. 380 lakhs. Micro small and medium enterprise are been through lots of hurdles from past few years firstly because of demonetization, then because of no proper implementation GST, followed by economic slowdown and then the biggest of all the COVID-19 which is goes to aggravate the crisis during this specific sector further

## II. REVIEW OF LITERATURE

In their study the objectives are to identify the key barriers to internationalization in various ways and to identify the factors affecting the internationalization process are both internal and external to an enterprise. The findings indicate that the motives affecting SME internationalization is grouped as: a) motives associated with the firm's knowledge, b) motives reflecting socialites, network and provide supply chain relations, and c) motives associated with the domestic or foreign market. It was expected to contribute to the creation of a more focused approach toward growth of SMEs in the newly formed state, Andhra Pradesh, being a newly formed state, requires rapid development and generation of employment opportunities. **[6]** the objectives of their study are to develop the optimal technical solution that best meets the concrete expression of the customers' need, at minimum cost. This research also provides designs for additive manufacturing of face shields through advanced engineering design, simulation and additive manufacturing approaches is the best way to fight with coronavirus. The findings indicate that the face shield which is lighter weight, more appropriate, easy to use and can be assembled without extra components was designed. The face shield was produced in a shorter production time by AM. **[7]** in their study they provided the face masks Performance, possible way of FFRs for reuse purposes etc., to give readers a broad-view understanding of masks from the perspective of public health to the domains of material development, there research comprises of secondary research sources that are typically involved journals and conferences, internal proprietary databases, news articles, press releases. The findings suggest that the wearing masks was the single most important protective measure in reducing the chance of getting infected, and the people who wore either surgical masks or N95 masks were not among the infected staff in a survey. The review further also discussed about the research advances in the development of materials with improved filtering capacity and antimicrobial activity, they also suggested the methods to decontaminate used masks were introduced and elaborated to overcome the issue of mask shortage.**[8]**in their study found the problems existing in the way of infusing relief measures to the MSME sector, also evaluated and proposed A framework for the revival of the MSMEs. Research comprises of secondary research sources that are typically involved journals and conferences, internal proprietary databases, news articles, press releases. The findings suggest that the large number of distracted entrepreneurs have started manufacturing PPE and masks. Many companies are working in the chemical sector have switched over to sanitizer. Also, there are MSMEs who are creating clusters to produce component parts of ventilators and producing reagents in volumes for use in COVID 19 testing kits. This kind of forming clusters is a good move as it will make the mechanism of government easier to provide support to them.**[9]** in their study face masks can provide effective protection against respiratory infections in the community and to encourage to use reusable face masks and to identify the risk of infection by improper use of face masks and not changing disposable masks frequently. They found that recommendations on face masks vary across countries and they have seen that the use of masks increases substantially once local epidemics begin, including the use of N95 respirators in community settings. It will be rational to recommend that people in quarantine wear face masks if they need to leave home for any reasons, to prevent potential transmission. vulnerable populations, such as older adults and those with underlying medical conditions, should wear face masks compulsory to reduce the risk of infection.**[10]** the objectives of their study companies are reacting in several ways to make sure business continuity, improve the resilience of their supply chain or pivot to innovative ways to get revenue. Companies are repurposing their production lines to join the fight against COVID-19, from producing perfume to making hand sanitizer, industrial companies are making hygienic masks, luxury hotels are getting quarantine centres, distilleries are creating disinfecting alcohol, and automotive companies are evaluating options to producing urgently needed medical devices like ventilators.

Thus, Repurposing helping them to stay production lines up and running in times of low demand, generate moderate revenues, and positively impact their reputation. **[11]** In their study they found that 79% of MSMEs reported a decrease in the volume of sales by a median of 50% leading to reducing their reduced operating hours by half, because of Supply chains are being disrupted, they resulted in an increase in prices, Forty-five percent of enterprises that sell essential products reported an increase in the price because of increased value of supply because of high demand and scarcity of certain products in the market. The loss of business has affected 116 million workers and forced MSMEs to adopt ecommerce. Seventy percent of textile and textile product companies faced permanent closure or halted operations temporarily while facing cashflow issues.[**12]** the objectives of their study got the evidence based on the efficacy and acceptability of the different types of face mask in preventing respiratory infections during the pandemic and to encourage the people to wear face masks on the grounds everywhere they go to make safety measurements. The findings indicate thatthe people are unlikely to wear them properly or consistently, which is important since prevention depends on people not repeatedly touching their masks, and on all or most people wearing them most of the time and the people are highly motivated to learn techniques for most effective mask use.**[13]**in their study the objectives are a universal facemask wearing policy implementation altogether regions of mainland China; a universal facemask wearing policy implementation only in the epicentre (Hubei province, China) and No implementation of a universal facemask wearing policy. They found that facemask shortage, particularly for N95 facemasks, occur regardless of implementation of a universal mask wearing policy. However, the facemask shortage more severe if a universal facemask wearing policy was implemented in the whole of China**.[14]** In their study the growing need for PPE kits, Indian producers and exporters have started to manufacture them on a large scale at the global level. And also suggested that in coming days, not only will companies start manufacturing PPE kits as per the requirement of the country but can also become the hub of PPE kits globally **[15]** in their study identified new ideas to sustain in covid-19 situation crisis and to explore the issues in different fields occurred in this covid situations. The findings suggests that people can tackle the situations according to the happenings is proved again. Government of MSME has encouraged these enterprises to start production to meet the demands of 130 billion Indian people, by providing loans to these enterprises to start production of face masks, sanitizers and medical equipment to fight with this pandemic situation and also noticed some innovative ideas during these tough times of covid19 pandemic that helped common man in many ways to deal with problems of daily living.**[16]**in their study people have changed their behavior voluntarily in response to perceived health risks from the corona virus pandemic. In addition, most felt more comfortable when employees and other shoppers were wearing masks **[17]** in their study found out how to reduce bulk packaging, Pyxis-like controlled distribution, nongovernment regional coordination of PPE distribution and to acquire PPE from the supplies in non–health care sectors such as construction, research laboratories, nail salons, dentists, veterinarians, or government mandate. The findings suggest that when facemasks are unavailable, the CDC recommends use of face shields without masks, taking clinicians at high risk for clinical service, staffing services. Suspending practices that consume large amounts of PPE are of uncertain effectiveness, such as contact precautions for some infectious diseases, to free up supplies.**[18]** in their study had find out that the use of masks before the covid situations, and what are the changes need to be made in mask usage. The findings indicates that masks in health care settings is best, the firm recommendation against masks in community settings appears to be incompatible with the available evidence (the WHO recommended the use of masks for symptomatic patients and health care professionals as effective means of preventing transmission). The results further shown that classification of masks in public areas may directly help the economy with transitioning into the post-COVID world. **[19]** in their study determined to use masks for protection, making according to people preferences in socio-economic settings and to identify even more effective, safe, available, affordable, and community level solutions and to prevent the spread of the virus through droplets, the new challenge becomes providing masks to everybody. The result is low-middle income countries, because of the scarce capacity of national industrial production or import, the utilization of masks produced at community level may become the sole viable optionLimited use of disposable PPE will accompany a further with further burden to national systems, because of the need to eliminate of it adequately.**[20]** in their study the objectives are to identify the strategies to reduce disinfections and usage of non-certified disposable masks. The findings suggests that the effectiveness of surgical masks compared to PPE; it is slightly less effective than PPE. As for other sort of masks homemade or non-certified masks effectiveness is extremely low. Improvised homemade or non-certified masks are the worst alternative of those studies, although it seems better than using nothing at all. There may be a chance to increase the risk of virus due to humidity which would facilitate self-infection.**[21]**in their study found that because of the outbreak how small-scale industries getting help in order to reduce the business losses and survive in the crisis. They found that most of the MSMEs have been severely affected in terms of income and employment; therefore, they must focus on restructuring their strategies to reduce economic burden**.[22]** in their study it aimed to supply the way to wear a cloth face covering publicly settings where social-physical distancing measures are difficult to care of, especially in areas of serious community-based transmission and also, to reduce viral particle transmission by up to 50% due to the breathability, fit factor. The findings indicate that a DIY face mask will not completely eliminate the possibility of infection with COVID-19, particularly given that there are multiple routes of transmission.

In overview this research suggests that DIY cloth facemasks are better than nothing at all.**[23]**in their study find out how to reduce the risk of cross-infection via respiratory droplets and to identify different types of masks for respiratory jets. The findings shows that the homemade masks with multiple layers of fabric and off-the-shelf cone styles masks, were tested effective in reducing droplet dispersal. it will help healthcare professionals, medical researchers, and manufacturers in assessing the effectiveness of face masks and other personal protective equipment qualitatively.
The stitched mask made from quilting cotton was observed to be the foremost effective, followed by the commercial mask, the folded handkerchief, and eventually, the bandana. The bandana covering, which has the highest thread count among all the cloth mask tested, turned out to be the least effective.**[24]** in their study find out howto investigate the filtration efficiency (FE) of home-made masks that could be used as alternatives for community mitigation of COVID-19 and how to moderate the amounts and counter-balance the limitations of the home-made masks. The findings suggest that the suitable alternative with a none inferior FE to medical masks. The home-made masks were not tested and effective, which was out of the study's scope. The acceptance of home-made masks regarding comfortability and breathability were not assessed.[25]

## III. NEED OF THE STUDY

Due to COVID-19, the total world has shut down and there is a huge demand of masks, gloves, PPE kits and shortages of workers. Small Size industries also faces some challenges such as maintaining production and addressing the need for protective clothing to coping up with the deficit due of lockdown and retain migrant labours. The aim of the study is to examine factors that drive growth in small scale industries, impact of disposable face mask market and various measures taken by government in order to help small scale industries.

## IV. OBJECTIVES OF STUDY

- To examine factors driving growth in small scale industries in select cities of Andhra Pradesh.
- To identify impact of disposable face mask market on small scale industries in select cities of Andhra Pradesh.
- To identify various measures taken by government in order to help MSME'S.

## V. METHODS

The term research methodology is defined as the systematic way to solve the problem and it also helps us to how the study is going on and also helps researcher describe the research.
*Types of research*: There are two types to collect the data collected from this study namely primary and secondary data
Primary data involves the data collection from people associated with mask making through questionnaire and Semi Structured interviews. secondary data involves data collection various from journals, conferences, internal proprietary.

### *F. Research Design*

Research design is the aligning of conditions for collection of data and analysing the data in a manner that aims to achieve the research purpose in a effective manner.
In this study we are going to use descriptive research design. Descriptive research accurately and systematically describes a population, situation or phenomenon. Here we will do a demographic survey through questionnaire in selected cities of Andhra Pradesh. The selected cities of Andhra Pradesh include Tirupati and Renigunta.
*Descriptive research method:* Descriptive research method mainly involves surveys and studies that aim to achieve the facts,

### *G. Research Population*

According to this study, the targeted population in this research are industries which are working closely with disposable mask manufacturing in Andhra Pradesh and has minimum turnover of 20 Lakhs and number of employees are minimum 20.
The population consisted nearly 30 companies listed on IndiaMart and Trade India web sites and we took only 3 companies for our research paper.

| NAME OF THE COMPANY | REGISTERED OFFICE | LINKS OF THE COMPANY |
|---|---|---|
| Srivari Industries | 81/2,Guruvarajupalli,Srikalahasti road, Renigunta, Andhra Pradesh 517520 | https://www.indiamart.com/srivariindustries-tirupati/ |
| Dora Group of Companies | Plot no.31 & 36 Renigunta Road Behind Andhra Jyothi Settipalli, Industrial Estate, Tirupati, Andhra Pradesh 517506 | https://www.indiamart.com/dora-group/aboutus.html |
| Sthreesakthi readymade garments | Rama chandranagar street, ,srinivasanagar, Tirupati, Andhra Pradesh | https://www.indiamart.com/sthree-sakthi-readymade-garment/sitenavigation.html |

**Fig.1: Details of the companies in Tirupati**

### *H. Methods of collecting Data :*

Collecting data in this study by using the primary method as Survey *method*: the purpose of survey method can be explained as questioning about the topic and having their responses. Data is collected through google forms by questioning through questionnaire and semi- structured interviews. Secondary data by using journals, conferences, internal proprietary databases, news articles, press releases.

### *I. Research Income*

In this study the instrument we will be using is a Self-structured Questionnaire and Semi structured interviews to gather the needed data. The draft of questionnaire was drawn out based on factors such as income, raw materials cost, supply chain logistic, face mask policies, variety, buying behaviour of consumers, working population, working hours, demand, risk perception, availability, comfort etc.,

from our research design, previous studies and published information in related to our study.

*J. Sampling Technique*

In this study we are going to use Purposive sampling technique. Here the population is very small and specific involving the employees of face mask industries available at locationTirupati and Renigunta which are in Andhra Pradesh. It is used here because we want to know the how face mask industries helping small scale industries, so we purposefully selected the face mask industries with different supportive needs in order to get a varied range of data on their experiences with face masks manufacturing and various benefits they are getting from government.

*Scaling technique:* scaling technique says that which type of scale should be used according to our research. In this we have three types of techniques: single item scales, multiple item scales and continuous scales.

*Single item scale: single item scales are those which only one item is measured. In this we have: multiple choice questions, constant sum scale.*

*Multiple choice questions:* in this study we used multiple choice questions in a form of a scale that is used in which members are asked to select the best answer from it.

*Likert scale:* A Likert scale is a psychological measurement device that is used to gauge attitudes, values and opinions.

*K. Tools for analysis*

Factor analysis will be applied on factors such as income, supply chain logistic, face mask policies, variety, buying behaviour of consumers, working population, demand, risk perception, availability, functionality, comfort, etc., "To examine factors driving growth in small scale industries in select cities of Andhra Pradesh".

Excel offers a wide range of statistical functions you can use to calculate a single value or an array of values in your Excel worksheets.

## VI. DATA ANALYSIS AND INTERPRETATION:

*L. Cronbach's Alpha Analysis*

**Fig.1: Cronbach's Alpha**

**RELIABILITY STATISTICS**

| Cronbach's Alpha | N of items |
|---|---|
| .725 | 15 |

Cronbach's alpha analysis is a measure of internal consistency that is how closely related a set of items are as a group. It measures the reliability of set of scale items or test items, higher the value higher the items reliable. Alpha value anything above 0.7 is good or considered. for us the value is 0.725 which is good to rely on the data/items.

*M. Factor Analysis*

Factor analysis is a method used for identifying which underlying factors are measured by a much large number of observed variables.

**Table 3: KMO and Bartlett's Test**

| | | |
|---|---|---|
| Kaiser-meyer-olkin measure of sampling Adequacy | | .606 |
| Bartlett's Test of | Approx. Chi-square | 128.614 |
| Sphericity | df | 66 |
| | Sig | .000 |

Kaiser -Meyer-Olkin measure of sampling adequacy measure usually varies between 0 and 1, closer the value to 1 it will be better, anything above 0.6 will be satisfied and we got around 0.606. Bartlett's Test of Sphericity tests null hypothesis. we need reject null hypothesis.

0.606. Bartlett's Test of Sphericity tests null hypothesis. we need reject null hypothesis.

These tests provide us a minimum standard which should be passed before factor analysis should be conducted.

Eigen values shows the variance of the factors, first factor will always be having high eigen value so it shows more variance and next successive factors will be having lesser variances, % of variance shows the total percent of variance given to each factor, cumulative% shows the cumulative percentage of variance accounting for current factor and all preceding factors, here first four factors account for 62.476% of total variance. Extraction sums of squared loadings shows the number of factors retained, whereas rotation sums of squared loadings represent the distribution of variance after the varimax rotation.

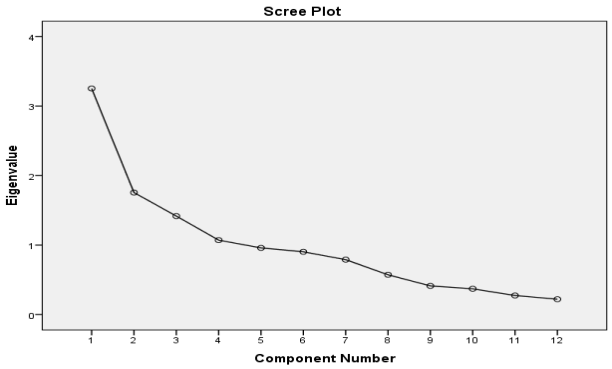


**Fig.2: Scree Plot**

The scree plot shows the graph of Eigen values against the factor number, here you can see that the values of three columns of table are immediately above, and from forth factor on wards you can see the line is almost flat, it means that each successive factor accounts for lesser and lesser amount of the total variance.

| | Component | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Does Repurposing helped company to keep production lines up and generate moderate revenue? | | -.706 | | |
| Does your industry encompass skilled employees when face mask is in demand? | .589 | .595 | | |
| Does your industry mainly focus on quality of raw materials in mask making? | | -.563 | | |
| Changing production lines helped you to generate moderate revenue and positively impacted your reputation? (if you shifted your business to face mask production) | | | -.786 | |
| How do you rate the support you got from government through loans and changes in policies during hard time? | | | | |
| It is easy to access information and get benefits from government COVID-related SME assistance program? | ,634 | | | |
| Do you think rapid development and generation of employment opportunities is easy for the MSME's in Andhra Pradesh after the covid-19 pandemic? | .708 | | | |
| Do you believe that the prices of the face masks in markets are really affordable to the common people? | .776 | | | |
| Do you believe that availability of face mask in the market aid in growth of the small-scale industries to restart their business? | | | | |
| Are you satisfied with the subsidies provided by the government? | | | | .708 |
| Do you think textile industry is a competitor to your industry? | .608 | | | |
| Do you agree that your business faced competition by new face mask production entrants in the market? | .668 | | .504 | |

Extraction method Principal Component Analysis

a. 4 Components extracted.

The factors above are un rotated and have extracted four factors by using principal component analysis.

**Table 4: Component Matrix**

| | Component | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Does Repurposing helped company to keep production lines up and generate moderate revenue? | | .708 | | |
| Does your industry encompass skilled employees when face mask is in demand? | .847 | | | |
| Does your industry mainly focus on quality of raw materials in mask making? | | .841 | | |
| Changing production lines helped you to generate moderate revenue and positively impacted your reputation? (if you shifted your business to face mask production) | | | .772 | |
| How do you rate the support you got from government through loans and changes in policies during hard time? | | | | |
| It is easy to access information and get benefits from government COVID-related SME assistance program? | .672 | .577 | | |
| Do you think rapid development and generation of employment opportunities is easy for the MSME's in Andhra Pradesh after the covid-19 pandemic? | .560 | | | |
| Do you believe that the prices of the face masks in markets are really affordable to the common people? | | .526 | | |
| Do you believe that availability of face mask in the market aid in growth of the small-scale industries to restart their business? | .642 | | | |
| Are you satisfied with the subsidies provided by the government? | | | | .798 |
| Do you think textile industry is a competitor to your industry? | | | | |
| Do you agree that your business faced competition by new face mask production entrants in the market? | .774 | | -.605 | |

Extraction method Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

b. Rotation converged in 6 iterations.

**Table 5: Rotated Component Matrix**

| Component | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1 | **0.802** | 0.451 | 0.176 | 0.349 |
| 2 | | | | |
| 3 | 0.556 | -0.725 | -0.377 | -0.152 |
| 4 | | | | |
| | -0.054 | 0.422 | -0.904 | 0.035 |
| | 0.21 | 0.305 | 0.094 | -0.924 |

This table will be having rotated component loadings, which shows how the variables are weighted for each factor but also the correlation between the variables and factors. This makes the output easier to read by removing the low correlation which is not meaningful.
Extraction method:principal component Analaysis
Rotation method: Varimax with kaiser Normalization.
Fig.8: Component Transformation Matrix
The above matrix is multiplied with unrotated component matrix to get rotated component matrix.
From this above analysis my suggestions for the names of the factors are:
Price.
Quality.
Support from the government.
Skilled employees.
These above-mentioned factors can be important to improve the growth in small scale industries. Thus, the growth of small industries can be more effective.

*O. Graph Analysis*

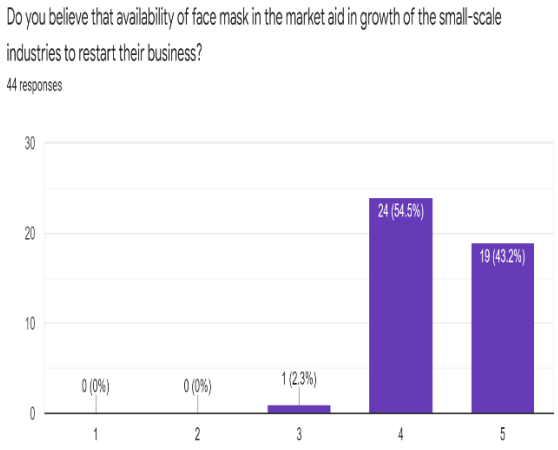


**Fig.3: Availability of masks in three companies**

In the above graph, 54.5%(24) employees agreed that the availability of face mask in the market aid growth of the small scale industries to restart their business. 43.2%(19) employees they are strongly agreeing to the statement. Overall nearly 97% of the employees said that the availability of face mask in the market small scale industries to restart their business. Therefore, the three companies which was listed in the above are having benefits and oppurtunities with the covid-19 because of face mask demand in the market.

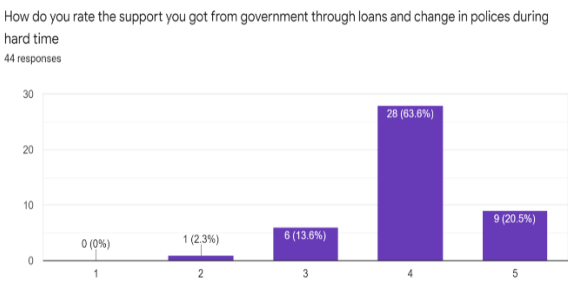


**Fig.4: support from government**

By above graphs it is clear that,63.6% (28) of the respondents agreed that they got good support from the government through loans and changes in policies during the covid-19. 20.5% (9) respondents are strongly agreed to the statement. 13.6% (6) of the respondents are in neutral and 2.3% (1) respondents are disagreed to the statement mentioned above. Therefore, nearly 84% said that they got support from Government through loans and change in policies in the covid situation. The three companies got support from government through loans and change in policies and the employees got support and work in the pandemic.

| | Initial | Extraction |
|---|---|---|
| Does Repurposing helped company to keep production lines up and generate moderate revenue? | 1.000 | .750 |
| Do you agree that your industry faced any lack in skilled employees when face mask is in demand? | 1.000 | .762 |
| Do you think textile industry is a competitor to your industry? | 1.000 | .623 |
| Does your industry mainly focus on quality of raw materials in mask making? | 1.000 | .647 |
| Do you agree that your business faced competition by new face mask production entrants in the market? | 1.000 | .435 |
| Changing production lines helped you to generate moderate revenue and positively impacted your reputation? (if you shifted your business to face mask production)? | 1.000 | .737 |
| How you rate the support you got from government through loans and change in policies during hard time? | 1.000 | .652 |
| Do you satisfy with the subsidies provided by the government? | 1.000 | .405 |
| Do you think that prices of the face masks in market are really affordable to the common people? | 1.000 | .652 |
| It is easy to access information and get benefits from government COVID-related SME assistance program? | 1.000 | .693 |
| Do you think rapid development and generation of employment opportunities is easy for the MSME in Andhra Pradesh after the COVID-19 pandemic? | 1.000 | .667 |
| Do you think that the limited availability of face mask will help the small-scale industries to restart their business? | 1.000 | .474 |

**Fig.5: Benefits from Government**

By above graph, 56.8% (25) of the respondents agreed that it is easy to access the information and benefits from the government. 20.5% (9) of the employees agreed in a neutral way. 15.9% (7) of the employees are strongly agreed to the statement and 6.8% (3) of the employees are not agreed to the statement. Therefore, nearly 71% of the employees in three companies got benefits and information from government through SME-assistance program. Because of this employee got benefits and survived in the pandemic.

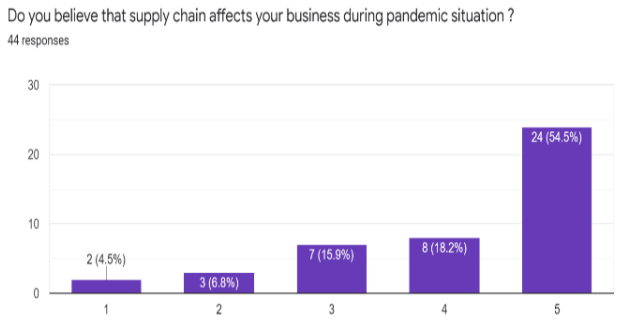


**Fig.6: affecting supply chain**

By above graph, 54.5% (24) of the respondents are strongly agreed that they have faced a problem with supply chain in the covid-19. 18.2% (8) of the respondents agreed to the statement. 15.9% (7) of the respondents are agreed in a neutral way. 6.8% (3) of the respondents are not agreed to the statement and 4.5% (2) of the respondents are strongly dis-agreed to the statement. Therefore, 72% of the employees working in the three companies are faced challenges regarding supply chain due to continuous lockdowns through outs the world. Because of this, raw materials are in demand and the finished products got shortage. Some of the industries used fabrics as raw materials.

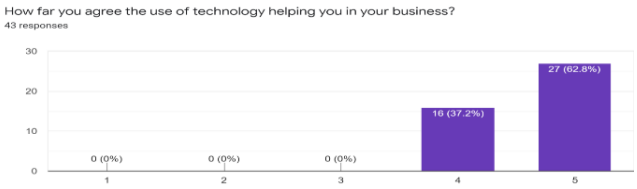


**Fig.7: Use of technology**

In the above graph, 62.8% (27) of respondents are strongly agreed that the technology helped them a lot in the business. 37.2% (16) of the respondents are agreed to the statement. Therefore, 100% of the employees in the three companies said that the use of technology helped them very much in the pandemic. Because of this, the companies sold masks through online, advertising and marketing takes place though online only.

## VII. LIMITATIONS

Due to Covid-19, there is huge demand for masks so, small scale industries ready to manufacture the masks and there are continuous lockdowns because of this lack of raw materials, low skilled workers and usage of outdated technology. The employees are getting low income and the support from government is less. There is a lack of respondents for filling the questionnaire and there is a lack of information provided in the report.

## VIII. FUTURE SCOPE

There is a lot of scope for this report we made this on the basis of will small scale industries survived in the covid situation because of demand in masks. If some researchers who want to study about small-scaleindustriesmanufacturing masks this research paper will help them a lot. in the future, who wants to know about the how small-scale sectors survived in the covid this paper will be useful.

## IX. FINDINGS

Through this Research study we found:

i. How face mask making industries survived during the pandemic.
ii. The factors that determine the growth of small-scale face mask manufacturing industries.
iii. How disposable face mask market helped small scale industries to grow in select cities of Andhra Pradesh.
iv. Impact of supportive measure taken by government through face mask policies, loans, subsides etc.
v. How far technology helped their business.

## X. CONCLUSION

We conclude that majority of respondents stated that because of limited availability of face masks in market helped their industries to restart their business and generating moderate revenue and along with the use of technology and support from government through loans, changing policies etc., helped them to sustain in hard times. These factors can be important to improve the growth in small scale industries. Thus, the growth of small industries can be more effective and helps employees in the covid-19.

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