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FIT ANALYSIS AND IMPROVISATION IN THE MEN'S FORMAL SHIRT

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Abstract:

A very important aspect of men's wardrobe, men's formal shirt has shown promising growth in the form of various brands entering the market.

The big players have their own size guidelines however the small players seem struggling with the sizes and fit related issues. The paper reveals the sizes and newly developed patterns which can be of great help to the newly emerging/ existing small size brands. The research has compared three selected brands from Maharashtra for related data collection and experimentation.

Index Terms - Formal shirt sizes, Fit related issues, Analysis in men's formal shirt patterns.

INTRODUCTION

Indian Formal shirt Industry contributes majorly to the Men's wear Fashion Business and has provided opportunities for small and medium-size players to create brands, especially in Formal Shirts.

The lack of research backup due to limited financial support makes it imperative to follow renowned brands for Formal Shirt Designs, Patterns and Sizing.

Indian market differs predominantly for its demographics, psychographics and anthropometry. Because of this reason creates a challenge for Formal Shirt Brands, especially for achieving the required 'Fit Criteria'.

The prominent industry players have achieved their specifications of sizes and patterns; however, the small players are still in the stage of struggle.

The present research aimed to provide pattern solutions to the selected brands with better-fit criteria for the region of Maharashtra.

The research outcome compared the present available formal shirt patterns for size 40 regular fit of selected brands against newly developed paper patterns for the selected samples.

RESEARCH OBJECTIVE

- To analyse the fit problem in Formal Shirts size 40 in regular fit and suggest the solution for the same.
- To assess the performance of newly developed samples for their fit.

REVIEW OF LITERATURE

One could find a dynamic evolution in Men's wear so as one can observe in women's wear. A carelessly dressed man is now compared to someone dressed carefully and elegantly, which one can consider a gentleman with power and confidence! Fashion

possesses immense visual power and projects an image for a person. Antonio Centeno, president of A Tailored Suit mentions that, 'even before you speak, you have already been profiled, based solely on your appearance'. Fashion can make you look and feel more confident. A well-dressed man commands respect and inspires beauty in others. If a man wants to look more professional in an important business meeting, show wealth and status, or receive better customer service, it is essential to wear the right clothes. (1)

The formal shirt is a crucial element in almost every man's wardrobe and adds to every man's personality.

A shirt is more specifically a garment with a collar, sleeves with cuffs and a full vertical opening with buttons or snaps. A shirt is often found to be worn along with Neck Tie under the shirt collar. It's a garment with full length opening at the front from the collar to the hem, and sleeves with cuff as shown in the figure. The front opening is fastened using buttons or studs, and the cuffs close with buttons or cuff links. Shirts are normally made from woven cloth. (2)

In ready to wear it is observed that the verity of fitting groups is available due to the variation in height and silhouettes. As the product may suitably fit one or more of these posture and figure types, it is important that one has to recognized these versions and accordingly manipulate the patterns to get best fit and the satisfying level of the customers. (3)

Many brands are seen in the market offering formal shirt categories, but their standard sizes vary, making the consumer's selection of that specific product more complicated. (4)

METHODOLOGY

- The review research conducted for 218 consumers has revealed that consumers often do not select the appropriate shirt as he is not aware of its details. Non Probability (random) Sampling method was convenient as the selected product was precise and used by almost all probable populations with the most negligible risk factor of non-representatives.
- 218 Samples were selected to conduct the general perception and size analysis survey.
- The entire sample was assessed for their perception about fit, and further Probable Sample sizes 40 and 42 were selected out of it.
- Three Formal Shirt Brands from the region of Maharashtra were selected for the research purpose.
- 'Product Improvisation' in specific regards with 'Men's Formal Shirt' for selected formal shirt brands from Maharashtra region was experimented along with prior grooming of consumer to understand the concept of appropriate Fit in Formal Shirt.
- An 'Experimental Research' was conducted to address fit issues by giving solutions through sizes and patterns. For achieving so the Formal shirt patterns of existing brand shirt size 40 were created for slim and regular fit.
- New Patterns for Formal Shirt size 40, slim fit and regular fit were developed.
- Neck Round size 15.5 Inch was considered as standard with tolerance, and the standard sleeve length considered as standard was 34.5 inches with tolerance for size 40 Regular & Slim Fit.
- Out of 218 samples, for size 40, the total 55 number of samples were found appropriate for size 40 (having standard chest size 40) and the same were compared against the product measurements for neck round and chest measurement for the fit identification of selected brand and for newly developed patterns.
- The newly developed patterns and existing patterns were compared for its fit.

RESULT AND DISCUSSION –

Comparison of measurements of the samples against the measurements of selected brand product's actual measurements. The analysis conducted by finding out information through questionnaire was a mean to get direction to reach towards the next steps that is actual comparison of measurements of the samples against the measurements of selected brand product's actual measurements for the size 40 regular fit.

For achieving so a specific measurement such as chest neck and sleeve length were categorised as shown in the table for selected brand sizes –

Table I: Existing Measurements Of Size 40 (M) Regular Fit

Existing Measurements of Size 40 (M) Regular Fit	
Measurements of	Measurements In Inches
Cotton King (Brand -1)	
Chest circumference with ease	45.5
Sleeve length include cuff height and half across shoulder	$25 + 9.5 = 34.5$
Neck round	15.5
Greenbow (Brand -2)	
Chest circumference with ease	46
Sleeve length include cuff height	$24.25 + 9.25$
Neck round	15.75
Bluarc (Brand- 3)	
Chest circumference with ease	44
Sleeve length include cuff height	24.5
Neck round	15.5

MEASUREMENT ANALYSIS BRAND COTTONKING

Present Comparison Neck Round size 15.5 Inch with tolerance, for Brand Cottonking size 40 Regular Fit. Out of 218 samples selected 55 for testing, and the same were compared with the product measurements for neck round against actual measurement of each person. The result shows that 3 samples were in correct category, little loose to neck round were 3 and little tight to neck round were 5 samples. All together 11 samples were found appropriate for the neck round measurement out of 55 samples.

The summary of neck round analysis is shown in the table given below-

Table II: Summary of Neck Round Analysis for Cottonking Brand, size 40 Regular Fit

No	Neck Round	Samples Quantity	Percentage
1	Correct Neck Round	3	5.45
2	Little loose to Neck Round	3	5.45
3	Little tight to Neck Round	5	9.09
4	Reject Neck Round	44	80.00
	Total	55	100.00

Cottonking brand neck measurement is 15.50 inches, for regular fit. Considering the tolerance we have accommodated samples with the size between 15.25 to 15.75 inches.

Total samples' correct fit and in tolerance range are approximately 20%. This conforms the rejection of shirt against fit of neck round is 80%.

After this crosscheck of the neck round measurement which is suggested to increase by one inch to get best possible numbers in this range of 15.75 to 16.25 inches

The above table shows that the correct neck round measurement numbers is 19 and in tolerance limit 12 samples are accommodated so all together has adjusted 31 samples out of 55 samples. The bellow table shows that, the count of success and reject ratio.

Table II: Success And Rejection Ratio Of Neck Round Size 16 Inches, Size 40 For Cottonking Brand

No	Neck Measurement	Samples Quantity	Percentage
1	Correct	19	34.55
2	Little loose	5	9.09
3	Little tight	7	12.73
4	Reject Neck Round	24	43.64
	Total	55	100.00

After the change in the neck round it shows the drastic reduction in the rejection percentage, it was 80% earlier which is come down to 44% and ultimately increases in success percentage including tolerance to 56%.Below tables shows the statistical interpretation of percentage of success and rejection.

Table III: Summary Of Sleeve Length Analysis For Cottonking Brand Size 40 Regular Fit

No	Sleeve Length	Samples Quantity	Percentage
1	Sleeve Length Correct	5	9.09
2	Sleeve Length Little Long	5	9.09
3	Sleeve Length Little Short	4	7.27
4	Sleeve Length Reject	41	74.55
	Total	55	100.00

It shows that the present rejection of measurement in sleeve length is 75% and the acceptance percentage is 25%. After crosschecking of the present sleeve length it is suggested that, the decrees in the length of sleeve by one inch can accommodate maximum numbers, and shows the best possible option. Below table interpret the success and reject percentage for Cottonking Brand.

Table IV: Success And Rejection Percentage With Suggestive Measurements For Sleeve Length Of Cottonking Brand, Size 40.

No	Sleeve Length	Samples Quantity	Percentage
1	Sleeve Length Correct	15	27.27
2	Sleeve Length Little Short	5	9.09
3	Sleeve Length Little Long	11	20.00
4	Sleeve Length Reject	24	43.64
	Total	55	100.00

MEASUREMENT ANALYSIS BRAND GREENBOW

Present Comparison Neck Round size 15.5 Inch with tolerance, for Brand Greenbow size 40 Regular Fit. The total numbers of samples tested were 55 and the same were compared with the product measurements for neck round against actual measurement of each size.

The result shows that 5 samples were in correct category, little loose to neck round were 3 and little tight to neck round were 19 samples. All together 27 samples were found appropriate for the neck round measurement out of 55 samples.

The bellow table shows that, the count of success and reject ratio.

Table V: Summary Of Neck Round Analysis For Greenbow Brand, Size 40.

No	Neck Round	Samples Quantity	Percentage
1	Correct	5	9.09
2	Little loose	3	5.45
3	Little tight	19	34.55
4	Reject	28	50.91
	Total	55	100.00

The Greenbow brand neck measurement is 15.75 inches for the same for regular fit and slim fit. Considering the tolerance we can accommodate samples with the size between 15.50 to 16 inches. Total samples' correct fit and in tolerance range are approximately 49%. This confirms the rejection of shirt against fit of neck round is 51%.

Whereas when this range is shifted between 15.75 to 16.25 inches, the acceptance percentage increases to a great extent.

The bellow table shows that, the count of success and reject ratio.

Table VI: Summary Of Count Of Success And Reject Ratio Greenbow Brand, Size 40.

No	Neck Round	Samples Quantity	Percentage
1	Correct	5	9.09
2	Little loose	19	34.55
3	Little tight	7	12.73
4	Reject	24	43.64
	Total	55	100.00

After the change in the neck round it shows the reduction in the rejection percentage, it was 51% it came down to 44% and ultimately increases in success percentage including tolerance to 56% against 49%.

Out of 218 samples 55 samples found appropriate for size 40, for testing of sleeve length measurement. The present measurement of sleeve length is 33.5 inches which accommodate 15 Samples length for correct measurement and within tolerance limit were 16 samples, all together 31 samples were found appropriate for fit against sleeve length out of 55 samples.

Below tables shows the statistical interpretation of percentage of success and rejection.

Table VII: Summary Of Sleeve Length Analysis For Greenbow Brand, Size 40 Regular Fit

No	Sleeve Length Status	Samples Quantity	Percentage
1	Correct	15	27.27
2	Little Long	11	20.00
3	Little Short	5	9.09
4	Reject	24	43.64
	Total	55	100.00

It shows that the present rejection of measurement in sleeve length is 44% and the acceptance percentage is 56%

The graphical interpretation shows that the rejection in sleeve length is 44% and altogether of the correct sleeve length and within the tolerance limit is 56%.

After crosschecking of the present sleeve length it is suggested that, the decrees in the length of sleeve by 0.50 inch can accommodate maximum numbers, and shows the best possible option. Below table interpret the success and reject percentage –

Table VIII: Success And Rejection Percentage With Suggestive Measurements For Sleeve Length Of Greenbow Brand, Size 40 For Regular Fit.

No	Sleeve Length	Samples Quantity	Percentage
1	Correct	11	20.00
2	Little Long	6	10.91
3	Little Short	15	27.27
4	Reject	23	41.82
	Total	55	100.00

After reduction in the sleeve length by 0.50 inch, it shows the drastic decline in the rejection percentage, it came down to 42% from 44% in which it increases in the percentage from 56% to 58%.

Measurement analysis Brand Bluarce

Out of 218 samples selected 55 for testing, and the same were compared with the product measurements for neck round against actual measurement of each size.

The result shows that 3 samples were in correct category, little loose to neck round were 3 and little tight to neck round were 5 samples. All together 11 samples were found appropriate for the neck round measurement out of 55 samples. The summary of neck round analysis is shown in the table given below-

Table IX: Summary Of Neck Round Analysis For Bluearc Brand Size 40 Regular Fit

No	Neck Round Status	Samples Quantity	Percentage
1	Correct	3	5.45
2	Little loose	3	5.45
3	Little tight	5	9.09
4	Reject	44	80.00
	Total	55	100.00

It shows that the present rejection of measurement in sleeve length is 80% and the acceptance percentage is 20%

The Bluearc brand neck measurement is 15.50 inches for the same for regular fit and slim fit. Considering the tolerance we can accommodate samples with the size between 15.25 to 15.75 inches. Total samples' correct fit and in tolerance range are approximately 20%. This conforms the rejection of shirt against fit of neck round is 80%.

Whereas when this range is shifted between 15.75 to 16.25 inches, the acceptance percentage increases to a great extent.

The Bluearc neck round was 15.50 with the rejection of 80% and 20% was success percentage

After this crosscheck of the neck round measurement suggested to increase by half inch to get best possible numbers in this range of 15.75 to 16.25 inches.

The above table shows that the correct neck round measurement numbers is 19 and in tolerance limit 12 samples is adjusted so all together has adjusted 31 samples out of 55 samples. The bellow table shows that, the count of success and reject ratio-

Table X: Success and Rejection Percentage with Suggestive Measurements of Round Neck for Brand Bluearc size 40 Regular fit

No	Neck Measurement	Samples Quantity	Percentage
1	Correct	19	34.55
2	Little loose	5	9.09
3	Little tight	7	12.73
4	Reject	24	43.64
	Total	55	100.00

It shows that the present rejection of measurement in neck round is 43.64% and the acceptance percentage is 56.36% Bluearc size 40 Regular and Slim Fit.

After the change in the neck round it shows the drastic reduction in the rejection percentage, it was 80% it came down to 44% and ultimately increases in success percentage including tolerance from 49 to 56% .

Out of 218 samples selected 55 samples for testing of sleeve length measurement. The present measurement of sleeve length is 34 inches which accommodate 5 Samples length for correct measurement and within tolerance limit were 20 samples, all together 25 samples were found appropriate for fit against sleeve length out of 55 samples.

Below tables shows the statistical interpretation of percentage of success and rejection.

Table XI: Summary Of Sleeve Length Analysis For Bluearc Brand Size 40 Regular Fit

No	Sleeve Length Status	Samples Quantity	Percentage
1	Correct	5	9.09
2	Little Long	15	27.27
3	Little Short	5	9.09
4	Reject	30	54.55
	Total	55	100.00

It shows that the present rejection of measurement in sleeve length is 55% and the acceptance percentage is 45%

After crosschecking of the present sleeve length it is suggested that, the decrees in the length of sleeve by one inch can accommodate maximum numbers, and shows the best possible option. Below table interpret the success and reject percentage-

Table XII: Graphical Representation of suggestive measurement's success and rejection ratio of Sleeve Length for Bluearc Brand size 40, Regular Fit

No	Sleeve Length status	Samples Quantity	Percentage
1	Correct	11	20.00
2	Little Long	6	10.91
3	Little Short	15	27.27
4	Reject	23	41.82
	Total	55	100.00

After reduction in the sleeve length by one inch, it shows the drastic decline in the rejection percentage, it came down to 42% from 55%, in which it increases the acceptance percentage from 45% to 58%.

Table XIII: Best Possible Options Of Devising New Shirt Patterns Using Measurements With Maximum Success - Size # 40 Regular Fit

Best Possible Options of Size # 40 Regular Fit					
		Cottonking	Greenbow	Bluarc	
Neck Round	Little Tight	15.75	15.75	15.75	
	Correct	16	16	16	16
	Little Loose	16.25	16.25	16.25	
Sleeve length	Little Short	33	32.5	32.5	
	Correct	33.5	33	33	33.5
	Little long	34	33.5	33.5	

Using the derived measurements showcasing maximum success ratio, new shirt patterns for size 40 & 42 were developed for regular and slim fit using Metric Pattern Making Method.

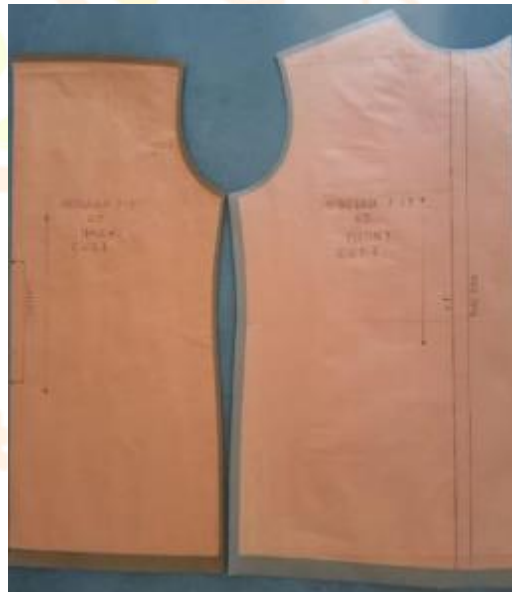


Figure I: Newly Developed Pattern for Regular Fit, Size 40



Figure II: Pattern Yoke and Sleeve Regular Fit, Size 40



Figure III: Pattern Collar and Cuff Regular Fit Size 40

These newly developed patterns were compared with the original patterns of the selected brands. Photographs of Random Samples with each selected brand shirt that is Cottonking, Greenbow and Bluarc and Newly developed Shirt Patterns using measurements with maximum success in specific with Round Chest, Round Neck and Sleeve Length –

Photo Analysis of Random Sample 1

Random Sample 1-

Name: Amol Veer

Age Group: 31-35

Division of Maharashtra: Pune & Kolhapur

Chest Group 39.50-41 Inch

Neck Size: 15 Inch

Body Height: 64-66 Inch

Sleeve Length: 31 Inch

Chest photo

Research Through Innovation



Figure IV: Confirmation of Chest Measurement 40'' Sample 1

- Photo analysis of Fit for Brand: Cottonking, Size: 40, Regular Fit
The below photograph confirms that the Cottonking Shirt size 40 regular fit is loose for selected sample for chest.



A - Front



B - Back

Figure V: Photo analysis of Fit for Brand: Cottonking, Size: 40, Regular Fit for Chest

- Photo analysis of Fit for Brand: Cottonking, Size: 40, Regular Fit for Round Neck for Collar Fit - It is found perfect.

Research Through Innovation



Figure VI: Photo analysis of Fit for Brand: Cottonking, Size: 40, Regular Fit for Round Neck for Collar Fit

- Photo analysis of Fit for Brand: Cottonking, Size: 40, Regular Fit for Sleeve Length – It is found longer



Figure VII: Photo analysis of Fit for Brand: Cottonking, Size: 40, Regular Fit for Sleeve Length\

- Photo analysis of Fit for Brand: Greenbow, Size: 40, Regular Fit for Round Chest
The below photograph confirms that the Greenbow Shirt size 40 Regular fit is loose for selected sample for chest.



Figure VIII: Photo analysis of Fit for Brand: Greenbow, Size: 40, Regular Fit for Chest.

- Photo analysis of Fit for Brand: Greenbow, Size: 40, Regular Fit for Round Neck for Collar Fit
The Collar Fit was found loose



Figure IX: Photo analysis of Fit for Brand: Greenbow, Size: 40, Regular Fit for Round Neck for Collar Fit

- Photo analysis of Fit for Brand: Greenbow, Size: 40, Regular Fit for Sleeve Length
The Sleeve Length was found longer.



Figure X: Photo analysis of Fit for Brand: Greenbow, Size: 40, Regular Fit for Sleeve Length

- Photo analysis of Fit for Brand: Bluearc, Size: 40, Regular Fit for Round Chest
The below photograph confirms that the Bluearc Shirt size 40 Regular fit is loose for selected sample for chest.



A - Front



B – Back

Figure XI: Photo analysis of Fit for Brand: Bluearc, Size: 40, Regular Fit for Chest.

Research Through Innovation

- Photo analysis of Fit for Brand: Bluearc, Size: 40, Regular Fit for Round Neck for Collar Fit
The Collar Fit was found perfect.



Figure XII: Photo analysis of Fit for Brand: Bluearc, Size: 40, Regular Fit for Round Neck for Collar Fit

- Photo analysis of Fit for Brand: Bluearc, Size: 40, Regular Fit for Sleeve Length
The Sleeve length was found longer.



Figure XIII: Photo analysis of Fit for Brand: Bluearc, Size: 40, Regular Fit for Sleeve Length

- Photo analysis of Fit for Newly Developed Pattern Size: 40, Regular Fit for Round Chest

The below photograph confirms that the Newly developed Pattern of size 40 Regular fit is closer to perfect for selected sample for chest measurement.



A - Front

B – Back

Figure XIV: Photo analysis of Fit for Newly Developed Pattern of, Size: 40, Regular Fit for Chest

- Photo analysis of Fit for Newly Developed Sample, Size: 40, Regular Fit for Round Neck for Collar Fit

The collar fit was found correct.



Figure XV: Photo analysis of Fit for Newly Developed Pattern, Size: 40, Regular Fit for Round Neck for Collar Fit

- Photo analysis of Fit for Newly Developed Pattern, Size: 40, Regular Fit for Sleeve Length
The Sleeve Length is found within tolerance limit.

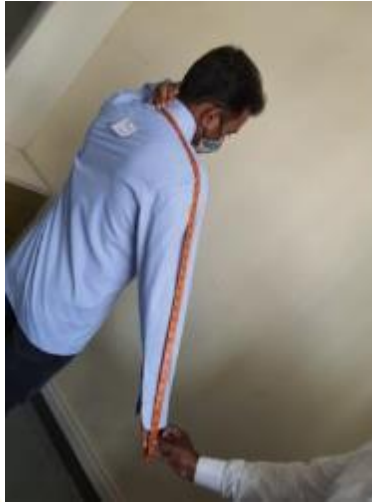


Figure XVI: Photo analysis of Fit for Newly Developed Pattern, Size: 40, Regular Fit for Sleeve Length

Paper Patterns of selected brands and its comparison with newly developed patterns.

Pattern Comparison

Brand: Cottonking # 40 Regular Fit

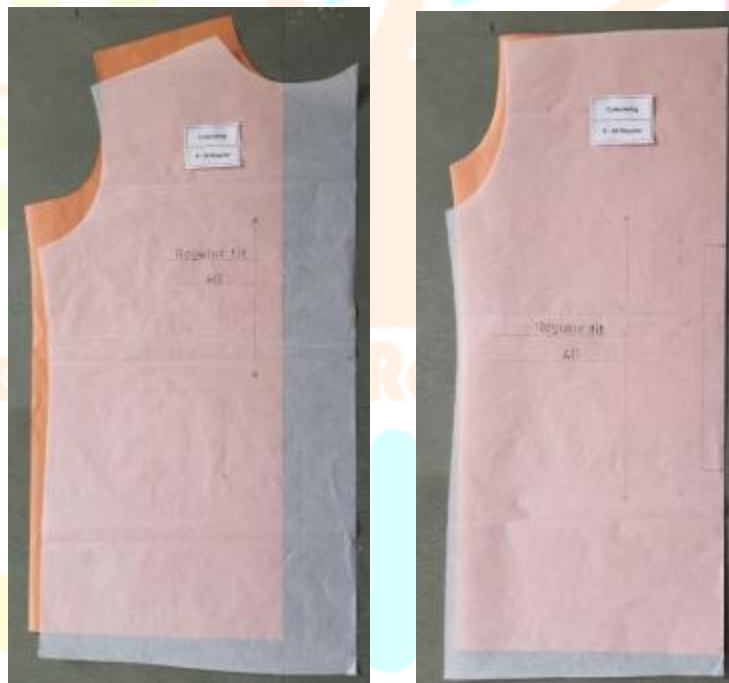


Figure XVII: Pattern Comparison of front and back for Cottonking



Figure XVIII:

Pattern Comparison
Brand: Greenbow # 40 Regular Fit



Figure XIX:

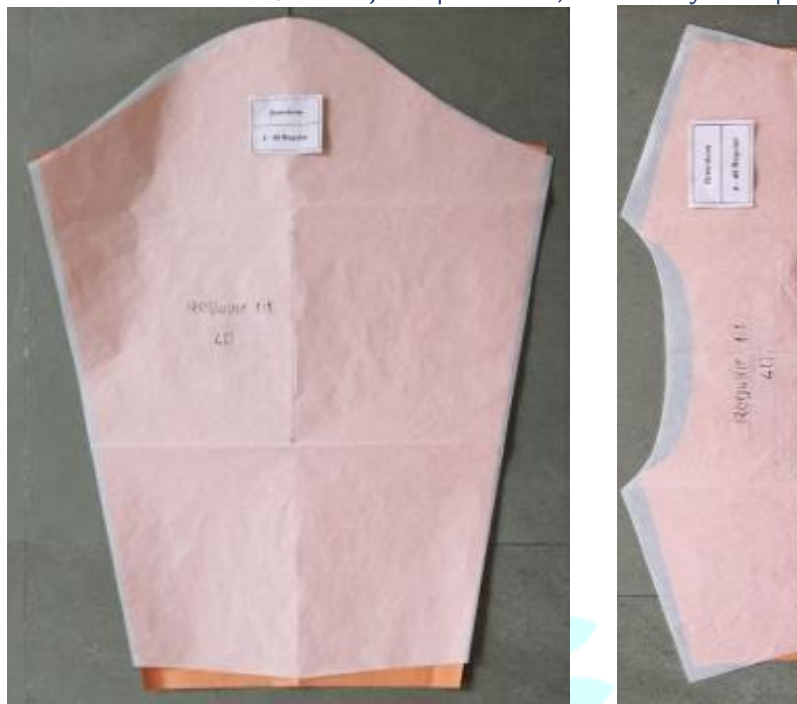


Figure XX:

Brand: Bluarc # 40 Regular Fit



Figure XXI:

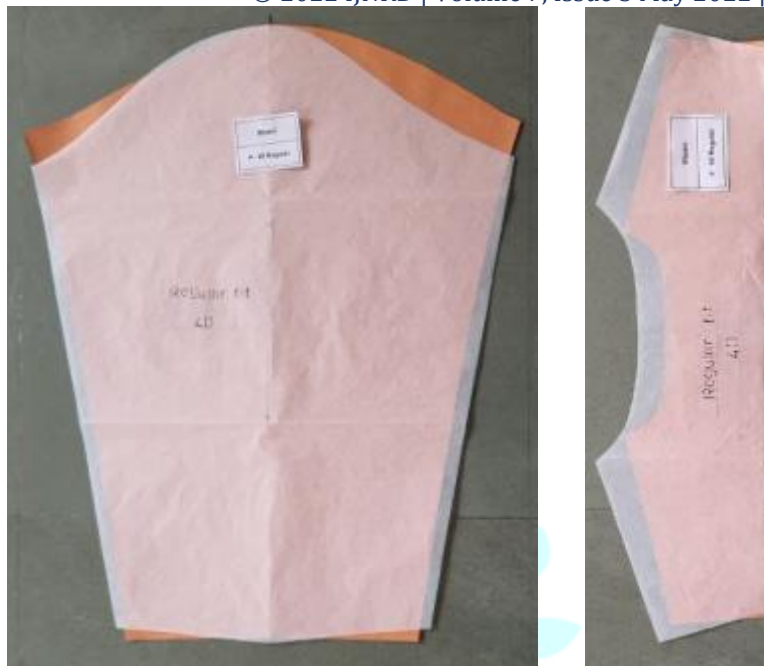


Figure XXII:

CONCLUSION

In the case of formal shirts, three main measurements were found to have a significant impact on the fit of the shirt those are chest measurement, collar measurement and sleeve length and hence only these were considered for checking the quality of the shirts in terms of fit.

Out of the total sample size of 218, 55 samples were found of Size 40, which were then taken forward for further experimentations and analysis.

It was also evident that the success ratio of each selected Brand can be enhanced with necessary modifications in the patterns of the shirts.

The measurement analysis was used as a foundation to formulate new measurements for selected sizes.

The New patterns developed were checked against the existing measurement gaps, and also actual checking of patterns on randomly selected samples ensured the success of the newly developed patterns.

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