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MODERNIZING PATTERN CUTTING TO ENABLE TRADITIONAL SAUDI DESIGNS TO BE MADE FOR NEW CONSUMERS

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ABSTRACT

Traditional costumes are important to cultural identities and display a sense of heritage design developed over generations. The types, shapes, colours and functions of traditional garments demonstrate cultural heritage, status and skill, though are often time-consuming to produce. The structure of traditional designs is often less simple than modern flat drafting approaches methods of creating patterns and garment shape and require draping and direct engagement with the wearer throughout the process. This research identifies the key components of the pattern cutting system for Sawwan garments and how it has evolved with respect to Saudi dress and how this influences the traditional Sawwan garment designs. Through observation analyses, comparing the traditional sawwan method to modern and practical work identified features can provide a framework for using modern technology to develop these traditional garments. This paper documents the methods for creating a modern technology enabled approach to embed traditional Saudi styles into a garment which is functional and can be worn in a modern context retaining elements of traditional styling and cut.

Keywords: Garment shape, Sawwan approach and Modern pattern making approach.

INTRODUCTION

Humans have been wearing clothing since ancient times (Onuma, 2009). Traditional Saudi dress is one of the fields of folk art that preserves its personality, represents its ancient world, and preserves its effects. Saudi women have emerged in the field of traditional costumes in a way that has demonstrated their ability to make good use of what is available in their environment (Nader and Maglan, 2010). Clothing is referred to as traditional dress if it incorporates elements of past traditions and reflect what is typically worn by a particular group of people, thereby helping to preserve their cultural heritage (Eicher and Sumberg, 1995). Importantly, wearers of traditional dress are not only signalling their ethnicity and cultural roots but are also indicating their cultural values to others (Forney and Rabolt, 1997). (Momen and Gerges, 2004) reported that the culture of dress in any state reveals the zeitgeist from different areas such as economic, social issues, cultural activities and intellectual aspects. For example, the traditional dress in different regions of Saudi Arabia has

unique designs, shapes, fabrics and motifs that reflect their environment. Nevertheless, the discovery of oil in the Kingdom of Saudi Arabia led to great developments in all fields of cultural, economic and social life. Consequently, development, technical progress and lifestyles have changed and the personality of the individual has been influenced by Western civilization (Mimny, 1996). One result of this development is that Saudi women's clothing has been influenced by Western clothes. This has also impacted on the versatility in performance and accuracy of manufacturing witnessed in the garment industry and has resulted in a wide variety of fashion designs being made available globally (Almalki, 2017). Saudi women desire a luxurious lifestyle and this is apparent from their clothing. For example, Al Jassim is a Saudi Arabian fashion designer who was interviewed by Siraj Wahab from Arab News magazine (2009:3) and reported that: "It is no hyperbole to say that fashion Amina Al-Jassim illustrates the innovative spirit of Saudi businesswomen today". She has improved the traditional designs of Saudi formal outfits and transformed them into ready-to-wear clothes and goods. She trades at her Alkhobar-based Dar Breesam Couture Establishment.



Figure 1 Amina Al-Jassim whose collection and work are based around heritage. Her work shows a very sophisticated style and haute couture collections and meets the demands of modern society. The image offered by <https://www.facebook.com/darbreesam.aminaalja>

However, this study will focus on a traditional women's garment (Sawwan, 1958) in the Bani Malik area of Saudi Arabia. Although the empirical literature does not contain documentation of the process for making the garment, what does exist are the details of how the garment appears, either as images or as a text-based description (Albasam, 1985; Mimny, 1996; Ajaji, 2005; Iskandarani, 2006; AlMalki, 2017). Therefore, we have to understand the method of manufacture to establish how the garment may have been made in the past.

Old civilisations have tried to create different pieces of clothing around the body (Bukhari, 2009). (Abdeen, 2001) indicates that the clothing was made out without taking measurements and the method of preparation affects the overall body. However, people who lived at that time tried to find different methods of pattern making to create their chosen design. Beazley and Bond (2003) demonstrated that to structure a pattern, measurements of the body are a prerequisite. Generally, men and women have similar outdoor garments. In Saudi society a woman would be the main clothes maker for their family and would shape the pattern directly from the body, considering the units to take the required measurement and construct a loose, simple garment while ignoring the requirements of the body size systems. Women had many pieces of clothing to wear in Bani Malik, including garments that were worn in private at home and those that were worn in public: undergarments such as pantaloons worn under the thawb; overgarments such as the thawb, of which there are two varieties (one that is worn at home and another that is worn only for special events including weddings which is known as a Sawwan). All costumes were made by local women and exhibit the geometric forms that were used to decorate women's dress in Bani Malik

AlHijaz with various motifs and colours (see Figure 2) (Almalki, 2017).



Figure 2 traditional Sawwan garment tubular shape, the garment display by heritage museum in Bani Malik, 1938

Those who create garments must take a flat piece of cloth and fit it to the 3D form of the human body (Onuma, 2009). Therefore, it is necessary to consider the pattern design when creating garments and this requires an appreciation of how a 2D flat pattern can become a 3D garment (An ASBCI Technical Handbook, 2015). Nevertheless, the tailors in Bani Malik overlooked the dimensions of the human body when they structured the Sawwan pattern and did not consider the differences in bodyshape. They made the Sawwan garment in the style they had learned. Therefore, this paper will utilise modern pattern making methods to incorporate traditional Sawwan designs into a modern dress to explore the opportunities for integrating traditional Saudi designs into modern clothing patterns and better accommodating the wearers shape. The purpose is to demonstrate ways in which traditional dress can be fused with modern fashion trends in a manner that remains respectful of regional heritage.

Aim of the study

This study aims to reveal the construction system that has been used to

create the traditional women's costumes (Sawwan garment, 1958) of Bani Malik and the ability of an existing method to enhance the Sawwan garment to ensure that the wearer gets a well-fitted and functioning garment.

LITERATURE REVIEW

Making of the pattern

(Abdul Ghaffar, 2016) indicates that if some people were able to cut clothes without using a pattern and while using only simple measurements, it is possible to familiarize the shape and measurements to cut patterns based on their practice. However, they cannot make multiple models and different styles and it does not give the exact adjustment or a good fitting to the body. Tailors in Bani Malik used their knowledge to find their own systems and measurements to design Sawwan garments. Therefore, studying and understanding the pattern is important to produce a comfortable garment that fits well and that is what this study attempts to do by enhancing the sawwan pattern. The making of a pattern is the process of shaping a flat piece of the paper or fabric to conform to the average body figure (Bukhari, 2009). Therefore, to generate a basic pattern for the garment, there are two methods. The first is the flat pattern which represents the two-dimensional components of a garment (Beazley and Bond, 2003).

(Gill, 2011). Indicate that the other is a draping method known as three-dimensional (3D) whereby a flat fabric is directly formed into a garment on a dress form Abdul Ghaffar (2016) explained that a commercial pattern is a paper pattern prepared according to standard measurements of a normal body that conforms to different types of objects. For example, you can create a pattern for

women with a short waist and long waist but they may not all be identical.

The construction of the pattern

The process of garment production includes all related activities including the construction of the pattern and product development (Beazley and Bond, 2003). Constructing a pattern provides the most accurate, structured method for achieving the best fit possible (Gill, 2009). In addition, the wearer of the garment must truly reflect the body's appearance if the result is to look good and be a thing of beauty (Fan, Yu and Hunter, 2004). Some garments are designed purely to be fashionable, whereas others are required to perform a particular purpose but all must fit well and serve their function. If this is not the case, the garments may be uncomfortable and in some cases may pose a danger to the wearer; for example, by impeding their movement (Gill, 2009).

Body measurement

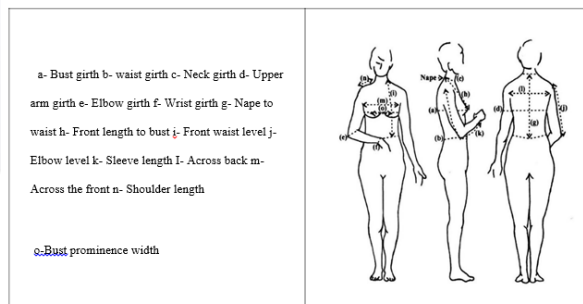
To structure a pattern, taking measurements of the body is a prerequisite (Beazley and Bond, 2003; Abdul Ghaffar, 2016). Measuring the body by hand is time-consuming and requires the person measuring to demonstrate a high degree of skill (Beazley, 1997). However, today it is possible to automate the measuring process and this supports the existing manual methods to achieve accurate measurements (Beazley and Bond, 2003). Below are the details of the manual and computerised measuring processes:

Measuring the body manually

Preparing for measuring is important to achieve accurate results (Abdul Ghaffar, 2016). Beazley and Bond (2003) indicate that before taking measurements of the body, there are certain techniques that

should be taken into account. For example, the person being measured should stand normally on the feet and relax their shoulders. Also, they should only wear under clothes, if possible. Finally, the measurer should stand to one side and not move.

Table 1 The position of the measurement for body and sleeve in the most modern methods The image offered by (Beazley and Bond, 2003)



Measuring by computerized means

Body scanning is a process whereby technology is used to create a 3D impression of the human form (Gill, 2015). This typically involves the projection of light and the use of image capture technology to create an electronic impression. Aldrich (2015) states that 3D body scans can be produced in a matter of seconds by stepping into a body scanner that automatically takes more than one hundred measurements.

3D body scanners use a combination of cameras, lasers and audio waves and because it measures the body from all angles, it is considered to be the most accurate body measuring system (Page, 2013). Beazley and Bond (2003) state that 3D scanners that can produce anthropometrics data provide a direct link to 3D design and pattern making.

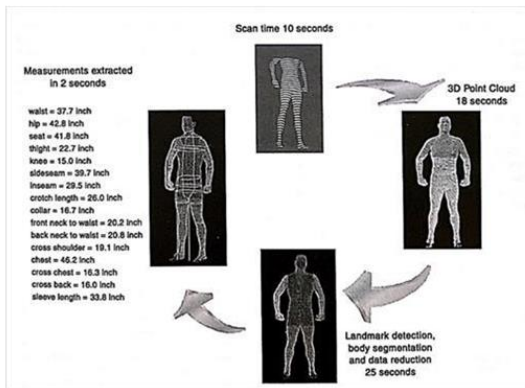


Figure 3 illustrate the measurements and data of a virtual model by 3D body scan by (Beazley and Bond, 2003)

Review of computer aid design (CAD)

The ideal pattern draws upon both modern technology and traditional manual methods (Bloomsbury Visual Art, 2019). In the current study, a traditional manual pattern produced for sawwan garments has been amended using the Lectra's Modaris software into CAD, as set out in the methodology section. Lectra's Modaris was released during 1984 and offers various pattern modification tools for use in industry (Bloomsbury Visual Art, 2019). In addition, digital pattern cutting not only improves accuracy but also speeds up the process, thereby helping to reduce costs (Bloomsbury Visual Art, 2019). Furthermore, Beazley and Bond (2003) note that CAD technology has made the cutting of patterns and the construction of garments more systematic and structured.

The value of a traditional garment

The features of traditional costumes have been somewhat lost as a result of globalisation and, therefore, that reflects on the way people dress today. However, there are some studies that value and attempt to integrate the character of traditional style into a modern brand. Lee's

(2017) study provides a new style and brand of traditional Korean fashion that echoes domestic Korean features via a reinterpretation of hanbok shapes and employs traditional methods to effectively build a bridge between global and local styles. Furthermore, Tawfiq and Marcketti (2017) investigated historical AlHijazi bridal costumes and revealed that there are four themes, the most important of which are how the garment looks on the wearer, the beliefs that lie behind the different elements of the costume, the motivation agreed within families, and the choice of occasion when such garments are to be worn. The current study reflects opinions of those who value traditional garments. Reviewing the historical style of British fashion between 1740 and 1830, Cambble (2016) and Quinton (2017) show how the costumes present themselves in a new mood in each decade, influenced by location and social life.

Enhance traditional garment pattern

To date, however, there has been little discussion about traditional pattern construction in the empirical literature (Sadiq, and Albassam, 1996; Khoqair, 2005; Maqlan, 2007; Khar and Ayachit, 2013). Sadiq and Albassam (1996) focused on the Maqtaa garment in the Najd region of Saudi Arabia and followed the traditional measuring system based on the width of the shoulder. Khoqair (2005) considered the Masdah garment in the western region of Saudi Arabia but study fails to clearly demonstrate the process of constructing the garment. Furthermore, Maqlan (2007) examined the Maqtaa garment and employed modern methods to design an improved basic pattern for the garment. However, this study overlooked the role that technology could play in designing the pattern (i.e. CAD), whereas the current study has utilised technology to create a traditional Sawwan pattern.

Another study by (Khar and Ayachit, 2013) study attempted to merge traditional Indian garments with modern styles using draping and metric methods, while also following traditional measurement techniques.

Trending style in Saudi Arabia a

The way in which women dress today in Saudi Arabia is somewhat different from how they used to dress in the past. It is now relatively common to see women wearing jeans and long skirts on a day-to-day basis. Indeed, some women will wear Western-style coats and jackets over their clothes wore less try This paper explores the trending lifestyle in Saudi Arabia and how the notion of luxury influences how young people think. This is very apparent in the Saudi market. Rabolt and Forney (1989) indicated that the buying power of individuals is considerable and they have a preference for convenience and luxury items. Wages in Saudi Arabia are among the highest in the world and this is reflected in the choice of clothing (Tuncalp and Yavas, 1986). However, unlike many other markets for clothing, Saudi Arabia has unique traditions and is devoutly religious and these elements are reflected in the choice of clothing and the patterns used, especially in women's garments. Gaining an appreciation of what influences the choice of clothing in Saudi Arabia is of interest because the domestic manufacture of garments is generally restricted only to native dress. Any Western styles are imported and there is a shortage of children's and women's clothing in the country (Dawson, 1986). Trade between Saudi Arabia and the West has influenced the dress of Saudi women. When Christian Dior opened a concession in Riyadh and Yves Saint Laurent opened one in Jiddah, the first consignments of high-fashion items sold out in just a few weeks (Azzi, 1980). Indeed, the influence of Western design can now be seen in traditional forms of

dress in Saudi Arabia with women's veils and cloaks now adorning designer logos and emblems (Alireza, 1987).

In 2011, the Reuters news agency reported that women in Arab countries were the largest source of demand for haute couture collections in the world (Almalki, 2017). Noha Al-Sedawi reported in the Saudi-published Sayidaty magazine in August 2017 that the Saudi fashion expert and business woman Maryam Musli has been active in empowering and promoting Saudi women in the fashion industry in Los Angeles. This included a discussion of the changing trends and growing sophistication of Saudi fashion. For instance, the styles worn in Saudi Arabia have been influenced by a range of factors including travel, education, work and socioeconomic status (Rabolt and Forney, 1989). The picture below has been taken from a Saudi shop in 2019 and this an evidence of the fashion tastes of contemporary Saudi women and how their desires have changed as a result of globalisation. However, the images illustrate how modern style has replaced traditional dress as a result of the rapid growth and modernisation of the Saudi market. Saudi women aspire to sophistication and that makes the researcher aware of the need to understand what this study can adopt to propose a method for utilising Sawwan garments.



Figure 4 the growth of the modernization has impacted the Saudi Arabia market

METHODOLOGY

The following methods will be applied in the current study: Comparison of modern methods and the Sawwan method and analysis each approach. A variety of modern methods have been used to draft patterns but this research has selected the Profili method due to the familiarity of the researcher with this method and also because it has been used for educational purposes in Saudi Arabia. In addition, the Aldrich method is a commonly used method in the UK and is used when learning how to draft patterns. Moreover, modern methods are known to be used for academic purposes and in industry (Profili, 1949; Aldrich, 2015), whereas the traditional Sawwan methods are used for crafts and for the purpose of special occasions (Almalki, 2017). Nevertheless, a variety of modern methods have been used to create flat pattern drafting, mainly from direct measurements. Analysis of existing methods reveals that traditional Sawwan garments have used various approaches similar to the draping method whereby the pattern is shaped directly from the body onto the fabric to give a loose, simple garment. Profili (1949) presented a clear pattern making method consisting of visual descriptions of the pattern draft. Aldrich (2015) built upon prior editions and included easy-to-follow instructions as well. The following analysis provides systematic measurements for three methods that are used in this study, including the ease of each method. Moreover, all methods use direct measurements and a proportion system to draft the pattern and this can be found in Table 2.

Table 2 the systematic measurements of three methods

Usage measurements	TSM		PRO		ALD	
	Direct measurements	Proportion measurements	Direct measurements	Proportion measurements	Direct measurements	Proportion measurements
Bust circumference	Y		Y	6 cm	Y	10 cm
Waist circumference	Y		Y	4cm	Y	6 cm
Hips	Y		Y	The ease has been added through measuring	Y	5 cm
Across Chest	Y		Y		Y	
Shoulder	Y		Y		Y	
Neck depth (front)	Y		Y		Y	
Neck width (front)	Y		Y		Y	
Neck depth (back)	Y		Y		Y	
Neck width (back)	Y		Y		Y	
Shoulder width	Y		Y		Y	
Back width	Y		Y		Y	5cm
Waist to waist	Y		Y		Y	
Front shoulder to waist	Y		Y		Y	
Armhole depth	Y		Y		Y	
Pattern length	Y		Y		Y	
Waist to hip	Y		Y		Y	
Waist	Y		Y		Y	
Sleeve length	Y		Y		Y	
				The ease has been added through the measuring		The ease has been added through the measuring
						The ease has been added through the measuring

Theory of measuring and drafting in each method

Accordingly, the key elements of traditional women's dress patterns are very simple, flat and straight lines that demonstrate the capability and knowledge of the tailors in Bani Malik. Traditional pattern theory is based on a physical system whereby a woman would use her hand as a scale to measure the body and create a pattern for their family (see Figure 5). Analysis of this method used by

women shows that they had not developed any advanced methods for measuring the body. They used the width of the shoulder as the basis for constructing their patterns. Therefore, all of the members of the family would have the same size because they would follow the same system of measuring, especially the width of the neck based on the width of the maker. Clearly, it is not right to use the same size for all body shapes. This opinion is supported by (An ASBCI Technical Handbook, 2015) because no two people have the same shape and size of body in reality

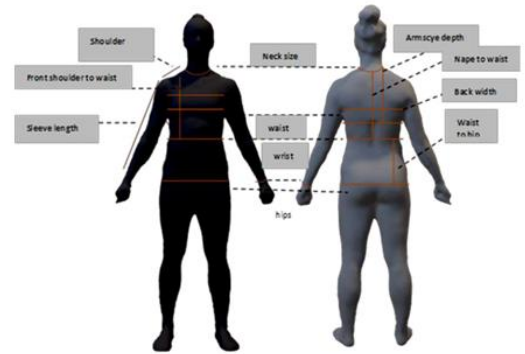


Figure 6 required measurements for modern methods, profili, 1949 and Alarich, 2015

(The images offer by size stream studio v5 2 8)



Figure 5 illustrated positions of the required measurements for body and sleeve by hand

(The images offer by size stream studio v5 2 8)

Current methods recognise the importance of using the body shape and measurements when drafting patterns and creating approaches based on individual body sizes using a tape measure as a unit of measurement and they define the body well (Profili, 1949; Aldrich, 2004). Gill (2011) indicated that existing methods have clearly defined ways of determining body dimensions. Therefore, the existing methods describe the dimensions of the body by numeric means (see Figure 6) and represent the pattern in 2D. Gill (2011: 228) also highlighted that pattern construction is the element that exerts the greatest influence over the dimensions of a garment.

Process of the proposed Sawwan pattern method

The pattern construction for the proposed method for the Sawwan garment is based on the previously analysed methods. This will provide a well-fitting garment for the wearer while respecting the original pattern makers of Sawwan garments. The suggested method for the Sawwan garment is the manual flat pattern modern theory to draft the Sawwan block and take measurements. Consequently, the elements of the Sawwan garment that have been focused on at this stage are:

1- Shaping the shoulder to match the slope line of the shoulder. Historically, people valued textiles because of their cost. Therefore, they did not cut their garments in ways to include too many details but today fabric is relatively cheap.

2- Added ease in the bust area to improve comfort because this part is tight in the Sawwan garment. Previously, makers would ignore the need for ease of movement in this area. Due to the Sawwan garment not being closely fitted, we do not need to add ease in this area.

3- Take the actual measurement of the neck size rather than using the hand width of the dressmakers.

4- Follow the Aldrich method to measure the length of the sleeve to achieve comfortable movement because the Sawwan method and Profili method take the sleeve measurement in a stretched hand and this affects the length and fit of the sleeve.

Therefore, this process ran in three phases (see Figure 7). First, take the required measurements manually from a size 12 Alvanon dress form using metric centimetres, as with other studies (Gill and Chadwick, 2009; McKinney et al., 2017). Manually draft and have it checked by an experienced pattern technician. The procedure involves amending any errors in the draft that may occur, signing off to correct it and taking steps to achieve the right result. Secondly, use a computer-aided design system (CAD) known as Lectra with a 2D pattern draft that was proposed for the Sawwan garment. Moreover, the CAD method was used to translate the draft and ensure that it achieved the same result as the manual approach. This stage required both an appreciation of how to draft patterns and how the system operates (Beazley and Bond, 2003). However, the pattern was constructed in a rectangular shape and the pattern in this block will be a half pattern for the front and back together. The rectangle is divided into two sections: the big part for the bodn and the other for the side. The curves are achieved by selecting useful curved lines such as the neck and are placed within a rectangular pattern. The sleeve is a rectangle as well because the sleeve head of the Sawwan pattern is a straight line to match the armhole line. Finally, comparison was made between the manual draft and digital version by printing the electronic draft using a plotter device and matching against the manual draft for accuracy. If the two drafts do not differ by more than 2mm at any point, they will be accepted. If the discrepancy is larger, the digital draft will be amended to

match the original process of the proposed method for a sawwn garment

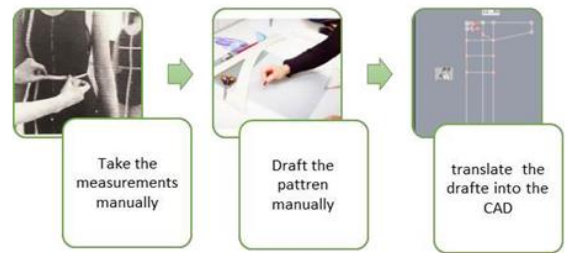


Figure 7 process of the proposed method of sawwn garment

RESULTS AND DISCUSSION

Sawwan garment approach

It is possible for the researcher to observe an expert with more than 25 years of experience throughout the process of making a sawwan garment. This clearly shows that Saudi women use few measures such as the span to take body measurements and construct patterns. It also explains how women drew the pattern for a traditional Saudi Sawwan garment directly onto the fabric to create the shape of the body. When putting the fabric against the body, the person being measured should stand normally and evenly on both feet.

ANALYSIS OF AN EXISTING TRADITIONAL SAWWAN PATTERN

Bani Malik's climate is moderate in summer and cool in winter when there is also considerable rainfall (Almalki, 2017). Therefore, this is reflected in the style of Sawwan garments. Furthermore, traditional women's costumes (Sawwan garment) were conservative because of the role that religion played in influencing their style. Examining the traditional

sawwan garment and the garments in the Bani Malik Hijaz region of Saudi Arabia reveals that they have a narrow neck with a slit, a bracelet sleeve to show jewellery, four panels, a floaty shape and are ankle length. The key components of the pattern cutting system for Sawwan garments are the budn, side, sleeves and gussets (see Figure 8).

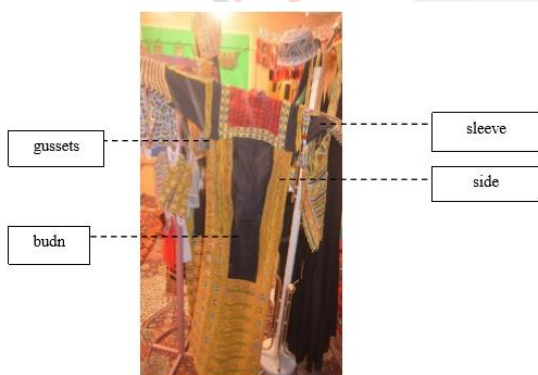


Figure 8 the image illustrates the key elements of Sawwan garment, the garment display by heritage museum in Bani Malik, 1958

1- Budn: This is defined as a sleeveless dress (Maqlan, 2007) and in this context is a section in the middle of the Sawwan covering the front and back. It is composed of rectangular pieces of fabric and is fitted at the shoulder but then falls straight to the ankle at the same width.

2- Side: Forms the side of the Sawwan, starting at the armpit and widening towards the end of the garment. Its shape varies from one region of Saudi Arabia to another.

3- Sleeves: Loose-fitting long sleeves attach to the underarm area by means of a Tekhrasa but narrow towards the wrist. There is a small hole that can be closed using a button fastening. In some cases, the sleeve may be mid-length if the wearer wishes to display jewellery.

4- Tekrasa (gussets): A piece under the armpit to provide comfort and movement.

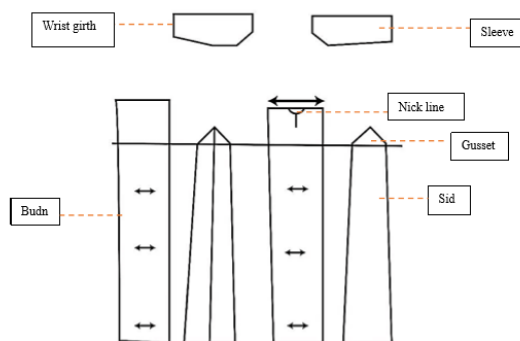












Figure 9 the scheme illustrates the pieces of traditional Sawwan pattern, 1958

The required measurements for the Sawwan garment draft process

Flat pattern making requires an accurate measurement to draft the form and the process must be approached carefully to produce a fitted garment. Modern methods were followed to determine the required measurements, position and to construct the garment pattern to draft the Sawwan garment.

Table 3 The table below shows the approach for the measurements required to draft a Sawwan garment and sleeve and also shows the position for the body and sleeve that could not be found in the traditional Sawwan measuring system and how this study replace study replaces the physical approach with a modern method (images sourced from Beazley, 1997)

Measurement	Illustrations
1-circumferences	
Front neck rise	
Back neck rise	
Front neck width	
bust circumference	
waist circumference	
hip circumference	
2-length	
Front shoulder to waist	
Nape to waist	
shoulder length	
Total length	

3-sleeve	
Top Arm	
sleeve length	
wrist girth	

Construction of the garment block in Lectra Modaris

This section demonstrates the instruction guide for the proposed Sawwan garment method using CAD to enhance the traditional Sawwan pattern to achieve a fashionable style that is acceptable to modern Saudi women.

Table 4 CAD and measurement data used to draft a Sawwan garment pattern

Sawwan garment draft (CAD)	A Iva 12 Manual	Case	Measurements to use in Draft
Front neck depth	7.56	0	7.56
Back neck depth	1.5	0	1.5
Front & Back neck width	7.5	0	7.5
Bust circumference	89.8	3	92.8
waist circumference	71.8	0	71.8
Hip circumference	98	2.5	100.5
Waist to hip	20	0	
A mscopy depth	21	0	21
Front shoulder to waist	40.5	0	40.5
Nape to waist	41	0	41
shoulder length	12.5	0	12.5
Total length	100	0	100
Top Arm	33.8	0	33.8
sleeve length	59	0	59
wrist girth	16	4	20
Garment front & back		Calculated Measurement	Calculations in draft
create rectangular Horizontal Length = 1/4 total BC-rise.			
Vertical Length= actual length		89.8/4=22.45+4	26.45
Back & Front Neck Depth= Actual measurement		F 7.56 B 1.5	
Back & Front Neck width =actual measurement		7.6	7.6
Shoulder Length=actual length create point >F1			
>relative point far horizontal input the value of the actual length		12.5	12.5

Side panel draw line from shoulder point just created F1>lines >parallel A mscye depth= F1 > lines>parallel click on the back neck depth then input value a mscye depth+ease	21+2.5	23.5
Create waistline: Select the tool=F1> Lines > Parallel > then under back-neck depth point input the value for nape to waist measurement.		41
Hipline: Select the tool: F1 > Lines > Parallel		20
Create gus sets line F1> relative point then input the 1/3 armscye depth into the dy box.	21/3	7
Create cuff size F1> straight then square down from the end of the sleeve point 1/2 measurement of the wrist then press enter. Then complete the sleeve.	16/2=8+4	12

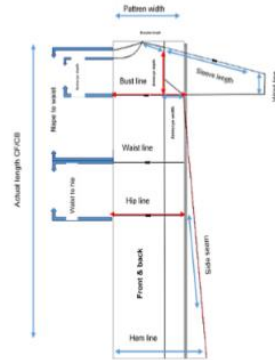


Figure 10 the Sawwan pattern that has been adopted to enhance the traditional Sawwan garment and the area that has been improved

Method adopted for Sawwan garment

- ❖ The measurements used to draft the Sawwan pattern have been taken using the Alva 12 dress form as an example.
- ❖ The ease allowances used in this method are the average amount applied in a modern method; e.g. Aldric and Profili.

The illustration below demonstrates the proposed Sawwan method and defines the area that creates added ease. The red lines show the area of ease which is the bust, hip and armscye circumference. Meanwhile, the blue lines show the key instruction for the draft such as the actual length front and back, the hemline, side seam and wrist line.

CONCLUSION

This investigation into the traditional Sawwan garment has revealed that it is part of the identity of the Bani Malik people and it narrates a myth inherited by generations. It is a source of pride for these people because of the values and implications it carries. Therefore, reviving heritage must be one of the objectives of developed societies. (Almalki, 2017) pointed out that studying the traditional costumes of nations helps to preserve them and spread them throughout the world by mixing their design with modern creative ideas and innovations that are compatible with the current world of fashion. The lifestyles of modern Saudis are far-removed from those of their parents and grandparents and, consequently, many women prefer readymade clothing instead of traditional handmade garments. This is a notable change in regions such as Bani Malik where clothes have traditionally been handed down from one generation to the next (Almalki, 2017). There is no formal documentation of clothes being inherited but it is widely acknowledged that this practice was commonplace (Almalki, 2017). Forney and Rabolt

(1997) state that the introduction of innovative technology often triggers a cultural response because modernization brings change. This paper is striving to achieve a new technique to enhance the Sawwan garment approach and ensure their design can be merged with modern offerings. However, this study has demonstrated the power of the contemporary and luxury lifestyles of Saudi women today and how modern style is finding a way to replace traditional garments.

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REFERENCE

- Abdul Ghaffar, S. (2016) *Comprehensive Encyclopedia Design Patrons Women Clothing*. First Edit. Cairo:Arab Thought House.
- Ajaji, T. (2005) *Traditional Women's Costumes in the northern region of Saudi Arabia*. College of Education for Home Economics,Riyadh,Saudi Arabia.
- Albasam, L. (1985) *Traditional heritage of women's clothing in Najd. (1st ed)*. Qatar: Center for Folklore of the Arab Gulf States.
- Aldrich, W. (2015) *Metric Pattern Cutting for Women's Wear. (6th ed)*. NJ,USA:Wiley.
- Alireza, M. (1987) 'Women of Saudi Arabia.', *National Geographic*, (423–453)
- Almalki, F. (2017) *Remaking the Past: Fashion Heritage Futures in Bani Malik Al Hijaz, Saudi Arabia*. Master Thesis,University of Wolverhampton.
- Apparel Size and Fit-A Definitive Guide*. (2015).
- Beazley,A. and Bond, T. (2003) *Computer Aided Pattern Design &Product Development*. Blackwell Science,Oxford.
- Beazley, A. (1997) 'Size and fit:Perception a survey of body measurments-part1', *Journal of Fashion Marketing and Management*, 2(1), pp. 55–85.
- Bloomsbury Visual Art (2019) *Digital Pattern Cutting for Fashion with Lectra Modaris*. First. Great Britain: Bloomsbury Publishing Plc.
- Bukhari, A. (2009) *Designing Models Suitable for Ready-Made Garments for Pregnant Women in Saudi Arabia*. Master Thesis, Faculty of Home Economics, Umm Al Qura University.
- Dawson, W. (1986) 'U.S. exhibitors find that apparel continues to show well to customers in Middle East. *Business America*', (19-20.).
- Eicher, J & Sumberg, B. (1995) 'World fashion, ethnic, and national dress. Berg Publishing, Oxford, U.K.', in In J.B. Eicher (Ed.), *Dress and ethnicity*. in In J.B. Eicher (Ed.), *Dress and ethnicity* ., pp. 295–306.
- Fan, J., Yu, W. and Hunter, L. (2004) *Clothing appearance and fit: Science and Technology*, Woodhead Publishing in Textiles. Woodhead.
- Forney, J. C. and Rabolt, N. J. (1997) 'Contemporary outer dress and clothing market source use of Middle Eastern women', pp. 55–73.
- Gill, S. (2009) *Determination of Functional Ease Allowances using anthropometric measurement for application in pattern construction*. Manchester Metropolitan University.
- Gill, S. (2011) 'Improving garment fit and function through ease quantification', *Journal of Fashion Marketing and Management*, 15(2), pp. 228–241. doi: 10.1108/13612021111132654.
- Gill, S. (2015) 'A review of research and innovation in garment sizing, prototyping and fitting', *Textile Progress*. Taylor & Francis, 47(1), pp. 1–85. doi: 10.1080/00405167.2015.1023512.
- Gill, S. and Chadwick, N. (2009) 'Determination of ease allowances included in pattern construction methods', *International Journal of Fashion Design, Technology and Education*, 2(1), pp. 23–31. doi: 10.1080/17543260903018990.
- Iskandarani, B. (2006) *Traditional Clothing for Women and Bride Clothes in Medina*.

Scientific algorithm for publication and distribution.

Khar, S. S. and Ayachit, S. M. (2013) 'Looking backwards to go forward – use of traditional Indian pattern making to develop contemporary methods for global fashion', 3266. doi: 10.1080/17543266.2013.815808.

Khoqair, R. (2005) *Studying the Traditional Costumes of Women of the Harb tribe in the Western Region of Saudi Arabia*. Master Thesis, Umm Al Qura University, Jeddah.

Lee, Y. (2017) 'Fashioning tradition in contemporary Korean fashion', *International Journal of Fashion Studies*. doi: 10.1386/inf.4.2.241_1.

Maqlan, S. (2007) *Pattern Design for Traditional Garments in Saudi Arabia*. Master Thesis, Umm Al Qura University Makkah Al Mukarramah.

McKinney, E. et al. (2017) 'Body-to-Pattern Relationships in Women's Trouser Drafting Methods: Implications for Apparel Mass Customization', *Clothing and Textiles Research Journal*, 35(1), pp. 16–32. doi: 10.1177/0887302X16664406.

Mimny, E. (1996) *Study the Development of Traditional Clothing inherited and Accessorise for Saudi Women in Taif Region*. Umm AlQura University, Meccah, The Kingdom of Saudi Arabia.

Nader, K. and Maqlan, S. (2010) *Traditional dress in Saudi Arabia*. King Fahad. Makkah.

Onuma, S. (2009) *Bunka Fashion Series Garment Design Textbook Fundamentals of Garment Design*. Edited by B. P. B. F. G. Bureau. Japan.

Page, A. (2013) 'Creative Pattern Technology', *International Journal of Fashion Design, Technology and Education*, 6(2), pp. 89–98.

Profili (1949) *Profili Method for teaching sewing*. (1st ed). Shindler Press Cairo.

Quinton, R. (2017) 'Historical Style: Fashion and the New Mode of History, 1740–1830',

Textile History. doi: 10.1080/00404969.2017.1379767.

Rabolt, N. J. and Forney, J. C. (no date) 'Contemporary Saudi Arabian Women's Dress'.

Sadiq, M and Albassam, L. (1996) 'A study to develop modern techniques for some traditional clothing in the Arab society',

Egyptian Journal of Home Economics, (12), p. 1996.

Tawfiq, W. and Marcketti, S. (2017) 'Meaning and Symbolism in Bridal Costumes in Western Saudi Arabia', 35(3), pp. 215–230. doi: 10.1177/0887302X17704718.

Tuncalp, S., & Yavas, U. (1986) 'Strategies for U.S. marketers in Saudi Arabia'. *Business*, 36(2), 56–59', 36(2), pp. 56–59.

Online resources

Al-Sedawi, N. (2017) A Saudi fashion expert who shares the experience of American society. [Online] Available at <http://www.sayidaty.net/node/> (accessed 6/9/09).

Wahab, S. and Al Jassim A. (2009). *Passion for fashion*. URL: [online] Available at www.arabnews.com/node/324782 (accessed 15/7/09).

<https://www.facebook.com/darbreesam.ami> naaljassim Heritage museum. Bani Malik Al-Hijaz