# Product Development System in Pattern Construction System, Standard Body Measurement and Suitable Fitting Allowance for Thai Ladies Brand in Fashion Industry

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## ABSTRACT

Concept of the brand, theme of the design is the spirit of the collection in the fashion branding. But the Pattern Construction System, standard body measurement and suitable fitting allowance are the sustainable part for the branding in the market.

The study found that most brands in Thailand did not correct and less detailed, about body measurement, standard sizing with appropriate fitting allowance for pattern construction and the pattern construction system.

The objectives of this research, firstly the author used the Germany Pattern System and appropriate German standard body measurements to make pattern construction. The results showed that humans with different figures (and it does not matter in which country), the body type selected and the size range of body measurement are almost similar.

Secondary, German Standard fitting allowance was applied to the Thai fashion industry. The results showed that the tight fit should be used for the first or second step (of fitting allowance) and the blouse item in second or third step of fitting allowance, etc.

Additionally, the study found that through systemization, productivity increased and the cost of the product development was reduced.

**Key words:** pattern construction, body measurement, fitting, fashion brand, fashion industry

## INTRODUCTION

The fashion business is an exciting, stimulating, fascinating, ever changing, never the same. In fashion, as in everything else, there are always ups and downs, stops and starts. The movement of fashion is always forward, never backward. Its movements depend on the environment. From the designer to the consumer, everyone involved in the movement of fashion.

As a business, fashion was once considered an art form controlled by designers who dictated its content. But fashion has now evolved into a science that can be measured and evaluated. Modern fashion manufacturing was born during the industrial revolution and has matured in the age of technology. Without machines, clothing could never be mass-produced. Technology has revolutionized the way fashion is made. Almost all stages of clothing production from design to delivery rely to same extent on technology. (Stone, 1990)

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A fashion retailer is in the business of selling fashion products and not art. The modem merchandiser is able to plan to supply very unique local demand patterns. For example, people in different sized, immigration into local areas can often fundamentally change the sizing patterns required in a local shop.

For this reasons, the product development process needs to have fitting sample. The fitting sample is checked on models that are the "base size" (a medium or a size 12 in women's wear). Most fashion retailers have a limit to the number of fit sample amendments they will accept, the comment being up to three. After this, the style is at risk of being cancelled. (Jackson *et al.*, 2001)

The first pattern is important in the process and has to be carefully and methodically produced. And pieces need to match in the right places. (Shreeve *et al.*, 2004)

Bangkok Fashion city project guide the Thai Fashion Industry into the global market. The global market is highly competitive and needs really professional and knowledgeable team.

As the experience in the global fashion business , business will suffer, no matter how good the design is or the accountants in the back office, without the right goods they will be not be able to generate enough sales, and ultimately enough profit . That means, fashion business needs the whole, healthy team and the product development is part of it.

In the Fashion Industry, product development covers the material and sampling. It needs very strong knowledge about apparel technology and management. And for the sampling, it needs detail of styles with correct information about fitting allowance from designer and request standards body measurement from the item for the first sample.

Thailand has limited information about the standard body measurement and sizing. The fitting allowance for pattern construction system is mostly by experience but not methodical

workers. So, how and what can the fashion brands in Thailand fashion industry do?

In this research, the standard body measurement used was from Hohenstein Institue Germany; the fitting step and pattern methodology used was from University of Applied Science Niederrhein Germany; applied to Thai Fashion Industry. Through this research, the most appropriate body measurement, sizing, fitting allowance and suitable pattern system for the Thai fashion industry was found especially for ODM (Original Design Manufacture) in Ladies Fashion.

## MATERIALS AND METHODS

### Document and samples data

Hohenstein Institute made the research about body measurement and sizing for the Germany and EU people, and set up standards for body measurements in different figure groups. This basic data is used by us as reference in standard body measurement. The fitting step and pattern methodology used as reference came from the document of University of Applied Science Niederrhein Germany.

The target group for this case study is from companies in the fashion industry with local ladies in Thai market. All together, 25 companies with 28 Ladies outwear brandings joined the research as a case study. For full scale period of the fashion collection and market feed back, a long term study is needed to repeat the process and get the correct result. So the 25 companies were divided into three groups and three phases, each phase running for one year and the process of each group was the same. The first phase: 5 companies as pilot group, second phase: 10 companies repeated the process and the third phase: 10 companies repeated the process and to get confirmation of the results, it was done by the first two phases.

### The process design

As the 25 companies were divided into three phases for the case study, each group followed the process and the methodology to get the data and the result as standardized and systemized. We analyzed the problems of the existing products by fitting samples in the body measurement, fitting allowance and pattern construction system from the 28 brands and design process for this study.

Firstly, we analyzed the suitable sample size and tried the standard size 38 and size19 for medium size.

Secondly, as this is the rainy season in Thailand we used the fitting steps 1-5 as reference for the fitting allowance in different items of product. As the standards: step 1-2 for the tight fit or tank top, step 2-3 for the blouse and step 3-5 for jacket, all the fitting allowance data are with percentage by calculation instead of by experience data.

Thirdly, we took the medium size body measurement with suitable fitting step to calculate and apply it to the pattern construction in German methodically system.

All three processes were transferred to the product development and made the samples by each brand, then we did the sample fitting to analysis the data and the methodology. After first sample fitting, we corrected or adjusted the reference data necessary, we remade the samples and rechecked it again to fix the standards body measurement, fitting step and construction methodology for each brand.

As soon as the standard body measurement, sizing, fitting step and pattern construction methodology is confirmed, the product development section of the brand done in the collection will be put into market for sale. When the feed back from market are good that means the system is going in the correct direction then the standardization of the product development system is fixed and each brand can set up the standard basic block of pattern for each

season following the fashion trend.

## RESULTS AND DISCUSSION

After three years study, we grouped the problems from 28 different Thai Ladies Brands as found out in this research and divided them into three parts to show the result and for discussion

1.  Standard body measurement and sizing
2.  Fitting allowance in different steps
3.  Pattern construction system

**Standard body measurement and sizing**

After three years study, we grouped the 28 different Thai Ladies Brands by market segment and items of product, and then found out the results: the young generation group is mostly fixed, the sample size or medium size in size 38 and the older generations mostly are in size 19. This also shows the human body development of the different generations and the development of the social environment.

Thailand has very limited information about body measurement; in cases there are some but still not the full scale of body measurement for the pattern construction.

In Germany, research of standard body size specification is made every 10 years and divided size group as the figure in normal high group around 168 cm, short group around 160 cm and extra high group around 176 cm. (Mungtavesinsuk, 2005) As the grouping compared to Thai peoples figure we can use the normal and short group to apply in the Thailand market.

Group, in normal high will take size 38 as standard medium size for sample fitting and in short group will take size 19 as standard medium size for sample fitting. After the size is selected, detail of the body measurement placed in the size table will be used for pattern construction. Through all three phases as market segment for carrier

women will be in normal group and is fixed with the Germany body size, in old generation group will be in German size 19 but need shorter in back waist length and in young attitude will be in German size 18. As soon as the results come up, all the sample making will follow the standards body measurement and sizing for branding.

**Fitting allowance in different step**

Most in the local brand during product development has not fixed the standard fitting allowance by percentage but with experience data added into the finishing garment measurement. Those experience data to make the samples, can be good for this sample and this size but not sure for next sample. That means the reprocess in product development are uncountable and the cost of product development is higher. In the study, we were gave the fitting allowance in German system as reference for the pattern construction to made the first sample. After the first fitting, maybe some have a bit adjustment but mostly almost fix as request. Through the try out, we set up the suitable fitting step for each item and each brand to make the pattern construction and then get the standard basic block for whole collection. It means, during the product development, there should be the standards medium size and the fitting allowance should be fixed in same level for the same item in same collection and it depends on market request and fashion trend too.

For Thai local market we have only summer item, so the fitting allowance do not need the whole range from step 1 to step 7. We just need the fitting allowance from step 1 to step 5. That means the garment is more fit on bodies.

**Pattern construction system**

In the fashion industry, the first sample is very important. But it needs the most correct information for pattern construction. As the standards body measurement, sizing, and the step of fitting allowance are fixed, it should get the best fit sample. But why it still has problems in the sample fitting?

Using the German pattern construction system, formula is calculated methodically. All formula is based on the standard body measurement with fitting allowance step to calculate in percentage. The pattern construction actually needs very strong mathematical back ground especially nowadays with the computer.

**Table 1**  The German standard sizes 38 as medium size apply into Thai local market in medium size as 38, 19, or 18.

| Group | S | M | L | XL |
|---|---|---|---|---|
| Normal – carrier women | 36 | 38 | 40 | 42 |
| Short – old generation | 18 | 19 | 20 | 21 |
| Short – young generation | 17 | 18 | 19 | 20 |

Note: S = Small size; M = Medium size; L= Large size; XL = Extra large

**Table 2**  Fitting allowance for different items such as body suit, blouse, jacket, etc.

| Fitting allowance in step (add % in chest) | Standard German allowance | Thailand and new fashion trend |
|---|---|---|
| 1st step  (6%) | For body suit | For tight fit knit wear |
| 2nd step (9%) | For tight fit knit wear | For tight fit blouse or with elasticity |
| 3rd step (12%) | For blouse and shirt | For lose blouse |
| 4th step (15%) | For tight fit jacket or suit | For suit  some with $3\frac{1}{2}$ step |
| 5th step (18%) | For lose fit jacket or suit | For Jacket  some with 4th step |

All the data comes up with informative system. But before computerizing the correct pattern construction system is needed otherwise the sample making still has problems.

During research it was found that all points which happen frequently is mostly from basic pattern construction problems. This means the fundamental pattern construction system has problems.

During the study most problems in trousers were with wrinkles in the crotch position and leg twist. The top items: center front rides up and center backs are too loose. Those problems are all from the basic pattern construction system,

which the pattern for samples are by experienced but not systemized.

**Wrinkle in crotch of trousers**

In Figure 1: the sample piece is in "A" and the standard one is in "B". We can see the width in crotch position especially in part "A" is too narrow as part "B". That means the proportion in crotch position in back rise should be 1/8 of Hip circumference of body measurement.

**Leg twist in trousers**

In Figure 2 the standard piece is in "A" and the sample piece is in "B". The middle line
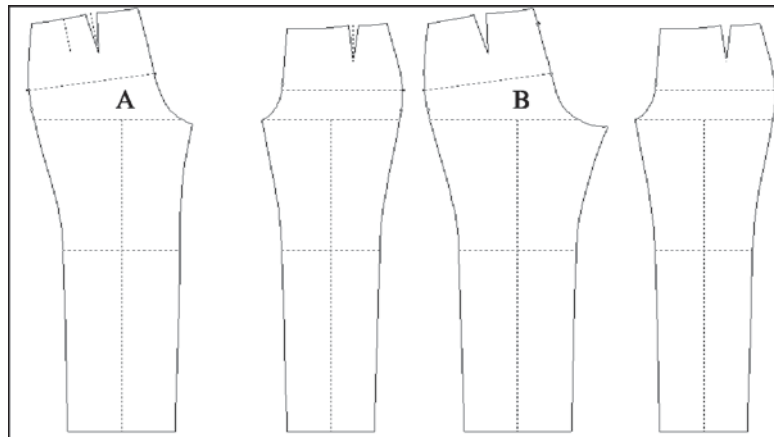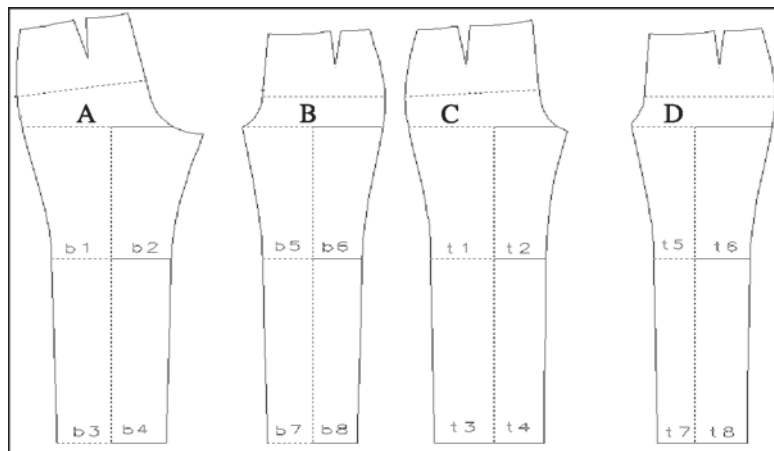


**Figure 1**  The problem of crotch in trousers.



**Figure 2**  The problem with leg twist.

for the trousers must be in the middle, like back piece "A" the width of leg must be b1=b2, b3=b4 and front piece"B"b5=b6, b7=b8, but in back piece "C" t1>t2, t3>t4 and front piece "D" t5<t6, t7<t8. That means the back piece "C" and front piece "D" this leg is going to twist due to the unbalance leg construction.

**Center front rides up in top**

     In figure 3, the standard piece is in "A" and the sample piece is in"B". We can see the

center front in piece "B" be shortened that is the reason cause the central front hop up. Or some make front waist length and back waist length in same length, but actually the front waist length and back waist length in body measurement is different due to the bust length concern.

**Center back too loose in top**

     In Figure 4, the standard pieces are in "A" & "C" and the sample pieces are in "B" & "D". As body figure center back should be in curve
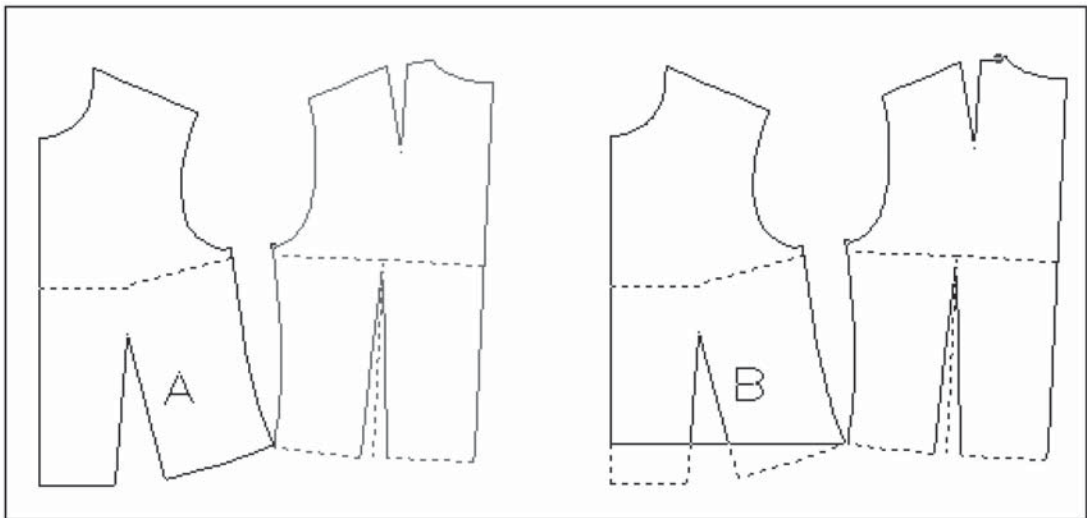


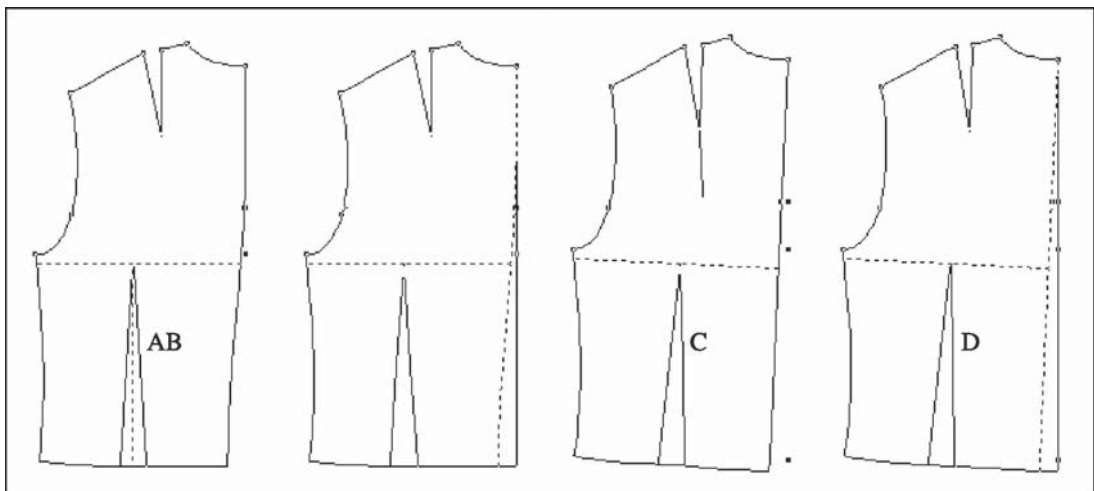**Figure 3**  Problem with center front rides up.



**Figure 4**  Problem with back part too lose.

as piece "A" or straight as piece "C". We can see the center part in pieces "B" & "D" that the center back line is not straight in follow the body figure like piece "C" but in straight down like pieces "B" & "D". That means the pieces "B" & "D" are wider then pieces "A" & "C", this cause too loose in center back.

## CONCLUSION

Systemization is the successful key for the fashion industry, it does not matter in which section, even the product development. As the result we found through this research that we need to have a standard body measurement, standard fitting allowance step and systemization of pattern construction. The human figure actually can be dividing into different groups and different sizes. As soon as the data base is there, that can be applied to almost everybody's figure. Thailand does not have the standard body measurement. But the competitiveness and the chance would not wait. The best solution for the Thai ladies fashion brands is to follow the German Pattern construction system as base to get the best of the technology for product development. Through this research we also confirm the system from Germany is workable for Thailand too. Everyone who is concerned about product development for the fashion industry must follow this format to running the fashion business.

Additionally, as soon as the product development systems are running smoothly, then quick response and cost goes down which is happening for the fashion business too, because everyone is working in the same direction and speaks the same language. The high technology is introduced to the fashion industry. With strong fundamental knowledge will bring high quality through high technology.

## ACKNOWLEDGEMENT

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