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Utilitarian Attributes of Functional Apparel Product Developed for Cosmetologists: Users' and Beholders' Assessment

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Abstract

This study determined the utilitarian attributes of functional apparel developed for cosmetologists in Lagos, Nigeria. Specifically it examined the mean ratings of small, medium and large sized consumers on the utilitarian attributes of functional apparel and that of the beholders (judges) on the same parameter. Three research questions and two hypotheses guided the study. The study area was Lagos, Nigeria. The study design was descriptive and exploratory. Population comprised 3,820 cosmetologists and 151 judges. Functional Apparel Design Assessment questionnaire was used for the study. Descriptive statistics, and t-test and one-way ANOVA were used for data analysis. Major findings showed that there were slight differences in the mean ratings of cosmetologists and judges on all indicators on the general utilitarian attributes scale. It was recommended among others that findings of the study be made available to beauty academia.

Keywords: Utilitarian Attributes, Functional Apparel, Cosmetologists, Assessment

Introduction

There are many persons working in the cosmetology industry all over the world. In the United States alone, according to the United States Board of Labour Statistics (2008), over 825,000 people are registered as workers in the cosmetology industry either as barbers, skin care specialists or nail technicians. In Nigeria, the National Directorate of Employment (NDE) in collaboration with Ministry of Labour and Productivity reported an estimated 24,020 registered cosmetologists. Out of this number, Lagos State alone registered 3,820

cosmetologists (Thompson & Anyakoha, 2012). With an ever increasing demand for quality beauty and cosmetic services, cosmetology remains a huge enterprise in large, densely populated cities and states. Even the smallest towns can have at least one barber shop or salon. As cosmetologists continue to encounter challenges with the demand of new techniques in beauty care, their services are considered important by many members of the society.

It has been observed that cosmetologists in Nigeria in addition to their professional tasks maintain clean work areas and sanitize all work implements. They work for extended periods including evenings and into the night. In urban centres, beauty salons are busy during weekends and public holidays. Due to these long hours of operation, many of them go to work with packed meals. Cosmetologists constantly get exposed to hair, nails, body and other chemicals in their practice. In addition they encounter problems in the practice which include minor discomfort with regular clothing, water and chemical splash on body and clothes, problems with handling of tools, repeated movements around the workroom, standing for long periods, lifting of buckets of water, and general cleaning of the work areas. This constitutes a major challenge in apparel selection and usage. Special care must be taken to select and use apparel that reduces workers' exposure to the hazardous chemicals and also address these challenges. This implies using functional apparel. Functional apparel is apparel designed to meet the needs of persons in various occupations and in physical, environmental and socio-psychological conditions.

According to Barker (2007), functional apparel or garment (clothing) serves as protection for the wearer from environmental conditions as well as work or task-related conditions that expose wearers to certain risks in operation. Task-related protection requires a wide variety of clothing, each designed for a specific end use. Shishoo (2002) asserts that protective clothing specifications often pose additional challenges to the designers and textile scientists. In order to achieve both protection and portability in apparel design several factors are taken into consideration. These include, issues relating to existing clothing form, human body itself, and the environment. The relationship among the factors poses a big challenge to the apparel design researcher who aims at designing apparel that meets the complexity of clothing needs facing an individual in a specific situation (Alexander, 1998).

The development or design of prototype functional apparel requires more than just creativity. Prototype apparel here refers to the first design of an apparel product from which other forms can be copied. It is cut and sewn from the first pattern obtained for the product to evaluate the styling and fit (Glock & Kunz, 2000). Frings (2003), refers to it as simply a trial garment or sample. A designer should

also seek out, absorb and apply information regarding the wearer's needs and expectations (Fowler, 2003). A systematic approach or process is often used in functional clothing research to help designers incorporate all aspects of design development. This process is the design process. The process takes the designer step-by-step from the initial idea through an evaluation of the final idea (Dejonge, 1984).

With the increase in the number of practitioners of cosmetology in Lagos, Nigeria, there is a need to ensure that occupational hazards are controlled and that practitioners become aware of their identity and the usage of appropriate clothing to enhance performance and safety on-the-job. This will ultimately promote productivity within the cosmetology occupation.

The advent of the television and the film industry has resulted in the current trend towards fashion and beauty care regardless of gender or profession. Consequently, there is a high demand in cosmetology related services globally. In Nigeria, cosmetologists both male and female are making tremendous entry into the cosmetology occupation and actually staying in it.

Within this work environment, manufacturers are required to make accommodations that are compliant with user needs and technological interfaces that are helpful in allowing an individual to function better on the job. Most times these accommodations are centred on buildings and furniture and not on clothing. Thus, clothing is another and often overlooked facet of the work environment despite the fact that it is believed to be the most important artefact in proximity to the body and it has potential impact on a person's immediate bodily comfort. This informed the research into the development of functional apparel for cosmetologists in Lagos, the biggest commercial city of Nigeria.

In Lagos State alone there are about 3,820 registered cosmetology practitioners. They operate in a free market situation where laws and regulations guiding the industry operations are not enforced. As a result, this industrial sub-sector is flooded with all kinds of workers; both formally and informally trained who are exposed to various environmental hazards that may impede job performance. There is therefore a need for a corporate identity in the choice of apparel for workers in this industrial sub-sector to address occupational identity and functionality of clothing. The functionality indices of such clothing includes comfort, safety, fit, suspension of tools, easy accessibility, aesthetics, facilitation of motion and activities, adjustability and other needs which should be provided for optimum performance.

In a typical working day, a cosmetologist performs such duties and tasks of shampooing, cutting, colouring and styling of hair, lightening and darkening of hair colour, manicures, pedicures, scalp and facial treatments. These tasks and

duties expose the worker to chemicals used for the hair, nails and other parts of the body. This may cause serious irritation and injuries to the workers when appropriate safety measures are not taken to handle chemicals and tools properly. Other problems encountered in the practice include water splash on the body and clothes, problems with handling of tools, discomfort with regular clothing and repeated movements around the workroom, standing for long periods, chemical spills on clothes and body, as well as lifting of buckets of water. In addition, they are responsible for the general cleaning of the work areas. Protective measures, including functional apparel, should be capable of maximizing protection from these hazards as well as minimizing metabolic heat stress, which causes discomfort.

Providing protection against chemical hazard is a unique problem and also incorporating other needs into apparel ensemble poses another major challenge in research. The emphasis on research concerning functional apparel for different groups of people or occupations requires that the apparel design researcher either looks at a clothing problem from the standpoint of evaluation of an existing clothing form for possible modification, or the development of a prototype based on overall user needs (Shaw, Cohen and Wicke, 2000). Observation shows that the occupation of cosmetology as practised in Lagos does not lay emphasis on dress code to cater for the activities and professional image of the trade. Consequently, cosmetologists in Lagos lack existing functional apparel for their operations. To meet this challenge, there is a need to develop functional apparel for this occupation using the different activities in the cosmetology workroom as reference point. This will project a corporate identity for this workforce as well as maintaining safety, performance, comfort and heightened productivity.

Development of functional apparel for cosmetologists in Lagos, Nigeria, derived its foundation from the integration of clothing theories in realization of the fact that apparel products are developed based on a complex set of motives, all of which are interdependent and arise out of varied physical, socio-psychological and environmental conditions to meet user needs.

The findings of the study will however be used to design new functional apparel products for apparel manufacturing companies within the industrial garment sub-sector. These products will then be systematically field-tested, evaluated and refined until they meet specified criteria of effectiveness, quality, or similar standards. This study therefore sought to examine general utilitarian attributes of functional apparel developed for cosmetologist which include such attributes as: Care – Cleaning and storage, Cost, Durability, Quality, Accessibility – Availability of product to potential consumers, Production – Mass production, mass-

customisation, or custom made, Performance – Product enhances or hinders performance, Ease of donning and doffing. The final design and production of functional apparel for cosmetologists anchored on these criteria.

Purpose of the Study

The major purpose of the study was to find out the utilitarian attributes of functional apparel product developed for cosmetologists in Lagos, Nigeria. Specifically the study:

- examined the mean ratings of small, medium and large sized consumers on the utilitarian attributes of functional apparel.
- determined the mean ratings of judges on the utilitarian attributes of functional apparel.

Research Questions

1) What are the mean ratings of cosmetologists on general utilitarian attributes of the prototype apparel?
2) What are the mean ratings of judges on general utilitarian attributes of the prototype apparel?
3) What are the differences between the mean ratings of cosmetologists and judges on general utilitarian attributes of the functional apparel?

Hypotheses(HOs)

HO_1: There is no significant difference in the mean ratings of small, medium and large size-based users on general utilitarian qualities of the functional apparel.

HO_2:There is no significant difference between the mean ratings of cosmetologists and judges on the general utilitarian qualities of the functional apparel.

Methodology

The study design was descriptive and exploratory and was carried out in Lagos, Nigeria.

***Population for the Study*:** Two sets of population were used in the study. This comprised 3,820 cosmetologists and 151 judges consisting of Home Economics lecturers, cosmetology instructors, apparel producers and students.

***Sample for the study*:** Purposive sampling technique was utilized to select 22 judges and 24 cosmetology models to assess the functional apparel products based on the utilitarian variables outlined for the study.

***Instrument for data collection*:** The Functional Apparel Design Assessment instruments (FADAC and FADAJ) which were a 5 point semantic differential rating scales made up of 12 items each were used by cosmetologists and judges to assess the general utilitarian variables of the functional apparel. Cronbach alpha coefficient was used to determine reliability for the rating scale.

***Data collection and analysis techniques*:** Each of the 24 cosmetologists' models and 22 judges were given the FADAC and FADAJ instrument to go through before completion. After the interview session, subjects were allowed

independent time to rate the functional apparel product on the general utilitarian qualities in a laboratory and field setting on the parameters outlined for evaluation. All copies of the instruments were given back to the researcher after the two rating sessions. The responses from the cosmetologists and the judges were collated and the average score was used for the analysis.

Method of data analysis: Descriptive statistics made up of mean and standard deviation was used to analyse the data obtained from the research questions and t-test and one-way ANOVA were used to test the two hypotheses at .05 level of significance.

Findings of the Study

Mean ratings on general utilitarian attributes show that 9 items received scores ranging from 4.00 – 4.33 while 3 received scores ranging from 3.70 – 3.92. This shows that the functional apparel design is somewhat successful, but could be subjected to further improvements to elicit a higher satisfaction rate (Refer to table 1). Judges' mean ratings showed higher values than the cosmetologists with values ranging from 4.32 – 5.00. Judges' mean score on item 3 "easy to put on/hard to put on" had the maximum mean rating of 5.00 indicating that the functional apparel was perceived to be easy to put on and of a high quality ($\bar{x}$ = 4.77). This shows general acceptability.

Table 1: Mean Ratings of Cosmetologists on General Utilitarian Apparel Attributes

S/n	General utilitarian apparel attributes	$\overline{X}$	SD	Remarks
1	High quality/Low quality	4.08	.776	Positive
2	Enhance performance/Not enhance performance	4.25	.737	"
3	Easy to put on/Hard to put on	3.92	1.139	"
4	Easy to take off/Hard to take off	4.33	.637	"
5	Durable/Not durable	4.17	.381	"
6	Adjustable/Not adjustable	4.00	.417	"
7	Ease of production/Difficulty in production	4.00	.834	"
8	Easy to care for/Difficult to care for	3.75	.737	"
9	Affordable/Not affordable	4.00	.722	"
10	Fits well/Does not fit well	4.17	.565	"
11	Overall satisfied/Overall dissatisfied	4.17	.702	"
12	Acceptable/Unacceptable	3.42	.654	"

Note: Variables were rated on a 5-point semantic differential scale where "5" was very positive and "1" very negative.

Table 1 indicate that 12 adjective sets were used to assess the general functional apparel attributes on a 5-point semantic differential scale ("5" = very positive, "1" = very negative). The bipolar adjective sets included:

"high quality/low quality" which was rated with a mean value of 4.08. SD = .776, "enhance performance/not enhance performance ($\bar{x}$ =4.25, SD = .737), "easy to put on/hard to put on" ($\bar{x}$ =3.92, SD = 1.139), "easy to take off/hard to take off" ($\bar{x}$ 4.33, SD=.637) "durable/not durable" ($\bar{x}$ =4.17, SD = .381), "adjustable/not adjustable" ($\bar{x}$ =4.00, SD =.417). Other items on the scale include "ease of production/difficulty in production" ($\bar{x}$ = 4.00, SD = .834); "easy to care for/difficult to care for" ($\bar{x}$ = 3.75, SD = .737), "affordable/not affordable" ($\bar{x}$ = 4.00, SD = .722), "fits well/does not fit well" ($\bar{x}$ = 4.12, SD = .565), "overall satisfied/dissatisfied" ($\bar{x}$ 4.17, SD = .702), "acceptable/unacceptable" ($\bar{x}$ = 3.70, SD = .654). Since the functional apparel was rated with a mean value of 3.70 in the "acceptable/unacceptable" item, it illustrates that overall the functional apparel design is somewhat successful, but could be subjected to further improvements to elicit a higher satisfaction rate.

Table 2: Mean Ratings of Judges on General Utilitarian Apparel Attributes

S/n	General utilitarian apparel attributes	$\bar{X}$	SD	Remarks
1	High quality/Low quality	4.77	.528	Positive
2	Enhance performance/Not enhance performance	4.59	.666	"
3	Easy to put on/Hard to put on	5.00	.000	"
4	Easy to take off/Hard to take off	4.55	.739	"
5	Durable/Not durable	4.32	.716	"
6	Adjustable/Not adjustable	4.45	.739	"
7	Ease of production/Difficult in production	4.32	.716	"
8	Easy to care for/Difficult to care for	4.55	.671	"
9	Affordable/Not affordable	4.32	.746	"
10	Fits well/Does not fit well	4.77	.429	"
11	Overall satisfied/Overall dissatisfied	4.50	.740	"
12	Acceptable/Unacceptable	4.55	.739	"

Note: Variables were rated on a 5-point semantic differential scale where "5" was very positive and "1" very negative.

Table 2 shows the mean ratings of judges on general prototype apparel function. The table also shows that the 12 variables measured were very positively scored. The table further indicates that the judges perceived the apparel product "very easy to put on" with the maximum mean rating of 5.00. Other items presented had mean scores ranging from 4.32 to 4.77 with low variance on all items. This indicates that the functional apparel was generally accepted, but could be improved. Again, the rating was done on a 5-point semantic differential scale where "5" = very positive and "1" = very negative.

Table 3: Mean Ratings of Cosmetologists and Judges on General Utilitarian Apparel Attributes

S/n	General Utilitarian Apparel Attributes	$\overline{X}_1$	SD_1	$\overline{X}_2$	SD_2	Remarks
1	High quality/Low quality	4.08	.776	4.77	.528	Positive
2	Enhance performance/Not enhance performance	4.25	.737	4.59	.666	"
3	Easy to put on/Hard to put on	3.92	1.139	5.00	.000	"
4	Easy to take off/Hard to take off	4.33	.637	4.55	.739	"
5	Durable/Not durable	4.17	.381	4.32	.716	"
6	Adjustable/Not adjustable	4.00	.417	4.45	.739	"
7	Ease of production/Difficult in production	4.00	.834	4.32	.716	"
8	Easy to care for/Difficult to care for	3.75	.737	4.55	.671	"
9	Affordable/Not affordable	4.00	.722	4.32	.746	"
10	Fits well/Does not fit well	4.17	.565	4.77	.429	"
11	Overall satisfied/Overall dissatisfied	4.17	.702	4.50	.740	"
12	Acceptable/Unacceptable	3.70	.654	4.55	.739	"

Note: $\overline{X}_1$ = Mean ratings of cosmetologists on general prototype apparel attributes
$\overline{X}_2$ = Mean ratings of judges on general prototype apparel attributes

Table 3, shows there were differences in the mean ratings of the cosmetologists and judges on all the items on the general utilitarian attributes scale. Item 3 had the greatest variability with the cosmetologists scoring a mean value of 3.92 while the judges got the maximum mean value of 5.00. Other differences noticed were on item 8 with mean value of 3.75 for cosmetologists and 4.55 for judges. Item 12 further shows a noticeable difference between the cosmetologists' mean rating and that of the judges with mean values of 3.70 and 4.55 respectively.

HO_1: No significant difference was identified in seven items on the general utilitarian scale in the ANOVA results. The null hypothesis was therefore accepted at P > .05. However, for the remaining five measured variables, there was an indication of a statistically significant difference between the variables with p-values < .05. Null hypothesis 7 was therefore rejected in these variables (Table 4).

Table 4: Result of one-way ANOVA of Cosmetologists' Rating on General Utilitarian Qualities of the Functional Apparel

S/n	Source of variation	Sum of Squares	Df	Mean Square	f-cal	Sig. .05	Decision

1	High quality/Low quality	Between Groups	.333	2	.167	.259	.774	A
			13.500	21	.643			
		Within Groups	13.833	23				
		Total						
2	Enhance performance/No enhance performance	Between Groups	7.000	2	3.500	13.364	.000	R
			5.500	21	.262			
		Within Groups	12.500	23				
		Total						
3	Easy to put on/Hard to put on	Between Groups	.583	2	.292	.209	.813	A
			29.250	21	1.393			
		Within Groups	29.833	23				
		Total						
4	Easy to take off/Hard to take off	Between Groups	1.333	2	.667	1.750	.198	A
			8.000	21	.381			
		Within Groups	9.333	23				
		Total						
5	Durable/Not durable	Between Groups	.333	2	.167	1.167	.331	A
			3.000	21	.143			
		Within Groups	3.333	23				
		Total						
6	Adjustable/Not adjustable	Between Groups	1.000	2	.500	3.500	.049	R
			3.000	21	.143			
		Within Groups	4.000	23				
		Total						
7	Ease of production/Difficulty in production	Between Groups	1.000	2	.500	.700	.508	A
			15.000	21	.714			
		Within Groups	16.000	23				
		Total						
8	Easy to care for/Difficult to care for	Between Groups	9.000	2	4.500	27.000	.000	R
			3.500	21	.167			
		Within Groups	12.500	23				
		Total						
9	Affordable/Not affordable	Between Groups	7.000	2	3.500	14.700	.000	R
			5.000	21	.238			
		Within Groups	12.000	23				
		Total						
10	Fits well/Does not fit well	Between	4.333	2	2.167	15.167	.000	R

		Groups	3.000	21	.143			
		Within Groups	7.333	23				
		Total						
11	Overall satisfied/Overal dissatisfied	Between Groups	2.333	2	1.167	2.722	.089	A
		Within Groups	9.000	21	.429			
		Total	11.333	23				
12	Acceptable/Unacceptable	Between Groups	.333	2	.167	.368	.696	A
		Within Groups	9.500	21	.452			
		Total	9.833	23				

Table 4 shows that twelve items make up the general utilitarian scale. Out of these 12 items, 7 have the P-values >.05 while 5 have the P-values <.05. The items on the table that have the P-values >.05 include "high quality/low quality", "easy to put on/hard to put on", "easy to take off/hard to take off", "durable/not durable", "ease of production/difficulty in production". Others include "overall satisfied/overall dissatisfied", "acceptable/ unacceptable". This implies no significant difference. Therefore the null hypothesis was accepted in these seven variables. However, five of the variables – "enhance performance/not enhance performance", "adjustable/not adjustable", "easy to care for/difficult to care for", "affordable/not affordable", "fits well/does not fit well" – have the P-value <.05. This shows that there was significant difference; therefore the null hypothesis was rejected.

HO_2 : There were no significant differences found in six items while there were significant differences found in the other six items on the general utilitarian scale. The significant differences (t-cal > t-tab) were found in such items like "high quality/low quality", "adjustable/not adjustable". The null hypothesis was rejected and accepted in the remaining six variables which had t-cal. < t-tab (Refer to Table 5).

Table 5: Result of t-test Analysis showing the differences between Cosmetologists' and Judges' Mean Ratings on the General Utilitarian Attributes of Functional Apparel

S/n	General utilitarian attributes	n_1	n_2	$\overline{X}1$	Std.D_1	$\overline{X}2$	Std. D_2	:- cal	Df	Sig. 2-ailed) .05	Decision
1	High quality/Low quality	24	22	4.08	.776	4.77	.528	-3.491	44	0001	R
2	Enhance performance/Not enhance performance	24	22	4.25	.737	4.59	.666	-1.640	44	.108	A
3	Easy to put on/Hard to put on	24	22	3.92	1.139	5.00	.000	-4.457	44	.000	R
4	Easy to take off/Hard to take off	24	22	4.33	.637	4.55	.739	-1.046	44	.301	A
5	Durable/Not durable	24	22	4.17	.381	4.32	.716	-.907	44	.370	A
6	Adjustable/Not adjustable	24	22	4.00	.417	4.45	.739	-2.598	44	.013	R
7	Ease of production/Difficulty in production	24	22	4.00	.834	4.32	.716	-1.382	44	.174	A
8	Easy to care for/Difficult to care for	24	22	3.75	.737	4.55	.671	-3.815	44	.000	R
9	Affordable/Not affordable	24	22	4.00	.722	4.32	.746	-1.569	44	.124	A
10	Fits well/Does not fit well	24	22	4.17	.565	4.77	.429	-4.070	44	.000	R
11	Overall satisfied/Overall dissatisfied	24	22	4.17	.702	4.50	.740	-1.568	44	.124	A
12	Acceptable/Unacceptable	24	22	3.70	.654	4.55	.739	-5.498	44	.000	R

Note: n_1 = mean ratings of cosmetologists, n_2 = mean ratings of judges, Std. D_1 = Standard deviation for cosmetologists, Std. D_2 = Standard deviation for judges

Table 5 shows 12 items were assessed on the general utilitarian rating scale. Out of the 12 items, there were significant differences in six items. These items include "High quality/low quality", "easy to put on/hard to put on", "adjustable/not adjustable", "easy to care for/difficult to care for", "fits well/does not fit well", "acceptable/unacceptable". In these cases the t-calculated was > t-tabulated, therefore the null hypothesis was rejected. Items 2, 4, 5, 7, 9, 11 had t-calculated values <t-tabulated values. The null hypothesis was therefore not rejected in these variables.

Discussion

The general utilitarian attribute scale received positive ratings from both the cosmetologists and judges with mean scores > 3.70 on a 5-point semantic differential scale (Table 1, 2, & 3). Three of the items "easy to put on/hard to put on", "easy to care for/hard to care for" and "acceptable/unacceptable" received positive scores < 4.00. No significant difference was identified in seven items on the general utilitarian scale in the ANOVA result. The null hypothesis was therefore accepted at P>.05. However, there was an indication of a statistically significant difference observed in five variables with p-values <.05 (table 4). This may be attributable to the modular composition of the functional apparel which was strange to the study participants. They perceived that since the functional apparel parts are detachable, they may experience difficulty in putting on the apparel which may result in an apparel product that is difficult to care for and therefore unacceptable. This was very surprising because wearer preference assessment results revealed that the majority of the cosmetologists had actually preferred modular design (a design in which separate elements can be linked in different configuration to achieve a different function or appearance). A total of 102 (52.3%) had chosen a combination of long/short sleeve shirt and 162 (83.1%) opted for ankle/below knee length pants. To address these issues, the researcher simply dealt with the fragmentation and styling using a fastening system (separating zipper) to support Armstrong's (2000) and Watkins' (1995) claim that fastenings are used to address the issues of opening and closing a garment to enhance ease of donning and doffing, converting a garment into a multipurpose outfit or it could be used to fit a garment closely to the body. Issues of extra ease at the pants' waistline were also tackled using elastic and button/tab to fit the size ranges of cosmetologists' population. This again supports the finding of Ashdown (2001) and Aldrich (2002) on size categorization based on fastening system to satisfy a large population of consumers.

Conclusion/Recommendation

Cosmetologists require functional apparel to address the complexities of needs in their occupation. Mean ratings of both cosmetologists and judges indicated that the criteria established for a meaningful and promising product for this population was actualized and therefore product accepted. However, since some of the variables received a little above neutrality rating, there is room for improvement in the styling and fabrication of the functional apparel product.

Since many of the subjects, both from the cosmetologists and judges population, expressed satisfaction with the functional apparel attributes, there is need to make available the findings of the study to beauty academia and other cosmetology organisations to create awareness

about current research in the cosmetology workforce.

The findings of this study should be made available to apparel manufacturing industries in Nigeria to encourage the production of functional apparel products in other occupations.

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