Adaptive clothing is really adaptive? A lens view of 'awareness towards adaptive clothing in Hyderabad

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Abstract: 'Real style is never right or wrong, it is a matter of being yourself on purpose' – G.Bruce Boyer. This statement by Bruce Boyer is not only apt to the younger generation, or the so-called fashion freaks or style lovers, but applicable to everyone who wish to dress themselves the best. The dilemma is, how many are able to wear (clothes) according to their needs? We have exclusive wear for new-borns, and occasions, but have we ever thought of having exclusive designs for specially abled and aged people as their needs are totally different. This paper is aimed at understanding the issues and challenges of clothing of geriatric citizens and their awareness towards the concept of adaptive clothing. The study was carried out using convenient sampling where paid old age homes in Hyderabad were considered for the study. The researchers made an attempt to contact the managers/care takers of these paid old age homes. Initially dialogues were exchanged to sensitize the managers/care takers towards adaptive clothing followed by focused group discussions with the geriatric citizens. These discussions revealed that majority of the geriatric people are not aware of adaptive clothing and they would love to try adaptive clothing and this would enhance their life style and build confidence in them. The researchers tried to identify the factors which promote the adoption of adaptive clothing among old age people. The study revealed that the major factor is lack of awareness. Other factors which contribute for the adoption of adaptive clothing are cost, ease of availability, customization, size availability and fabric type. Though this is a niche study, this study will have major implications on the society and their perceptions towards clothing needs for geriatric people. The textile industry can draw inferences from this study and try to create a new product and penetrate into new market.

Keywords: Adaptive clothing, Geriatric citizens, Market penetration, Textile industry.

1. Introduction

Clothing is considered as most important element in the human evolution. It is a mechanism to express ourselves to the outer world. Our moods, emotions, occasion, everything can be understood the way one dress themselves. Worldwide the textile market is booming and is a great contributor for the GDP of any nation. Not only textile industry but its ancillary industries have also seen major employment. Clothing is a basic need for someone and a luxury for someone. It is estimated that in India by 2030, the market size of the textile industry would be around 250 US Billion Dollars.

Textile industry caters to needs of various segments. One such segment is Adaptive clothing. A segment of people like geriatric, accident victims, kids, specially-abled have specific needs of clothing. But this segment is not much explored due to various reasons. This is high time for textile manufacturers and retailers to tap this opportunity of venturing into 'Adaptive Clothing' and reap profits as well as serve the needy.

2. Review of literature

(Bhandari, 2024) Attempted to understand and debate the word disability, as well as the issues and clothing needs of such persons. The researchers investigated. The brands that provide distinct adaptive clothing lines are included, together with their key features on a national and international scale. (Ha-yeon Yang, 2022) did a systematic literature review on adaptive clothing for the disabled people in Korea and analysed that adaptive clothing in Korea is developed in terms of body type, considerations, improvement points, and design. (Milan Shahani, 2022) opined that the production of reasonably priced adaptive clothing was the need of the hour and offered suggestions for future uses. The researchers even expressed the opinion that seminars for people with disabilities and their families or caregivers may be started through academic internships in association with disability organizations. The authors believed that teachers may prepare their students for the clothing needs of people with disabilities who have low disposable income by including sustainable adaptive design into their curriculum. (Neenu Poonia, 2020) examined that adaptive clothing is designed to meet the specific needs of people with disabilities by having special features, functions, and qualities. These characteristics include the capacity to effectively control moisture, fire resistance, waterproofing, durability against wear and cleaning, and antibacterial qualities. (Jeffrey Yeung, 2020) The author looked at the importance of adaptive clothing, the issues that older people with disabilities faced when wearing it, an analysis of Hong Kong's public policy over the previous ten years regarding older people with disabilities and adaptive clothing, as well as the implications and potential future directions for the industry in Hong Kong. The demand for adaptive apparel has grown significantly in Hong Kong over the past ten years, according to the experts, and in fifty years, it is expected to double from its current level. Nevertheless, the non-profit clothing services center was established to offer tailoring services to fulfill their demands because Hong Kong government policy has not yet completely supported their clothing needs. (Park S. J., 2019), examined the design criteria and considerations for adaptive clothing that improves independence and functionality for people with visual impairments, with a focus on the visually impaired population. (Keiderling, 2018), examined how adapted clothing designers prioritise utility and aesthetics to meet the demands of those with impairments.(Matchar, 2018), examined the efforts of different Companies which have been constantly striving on solving issues of clothing of people with physical and mental disabilities. In order to guide the design process in the early stages, (Sumin Helen Koo, 2018) studied individuals with autism spectrum disorder and their parents in order to identify key design aspects, preferred functionality, and design qualities for wearable technology. (Kim, 2016), examined that adaptive clothing for people with disabilities is developed and tailor made considering different approaches for designing, challenges encountered and plethora of advancements in the field. (Curteza Antonela, 2014), presented the key features of creating and producing textile products for persons with disabilities.

The researcher believed that garments expressly developed for people with disabilities should: allow for more flexibility and independence when worn, adhere to aesthetic standards, provide psychological advantages, and aid in the social integration of the individual who wears it. Moreover, garments should not impede the individual's movement and should enable optimal utilization of the chest and upper limbs. They should possess durability, minimal electrostatic charge, absorbency, and comfort, along with what is known as "rehabilitation functions." Lastly, they should offer benefits to the wearer, promoting both physical and psychological well-being. (Earley, 2010), discussed ideas for enhancing the design of adapted clothes to better meet the requirements of handicapped persons, emphasising the necessity of taking user feedback and adopting universal design principles. (Wei-Min Chang, 2009) proposed that People with disabilities have the right to live life with dignity and tried to pull out inferences on designing Clothing Structure for People with Limb Disabilities
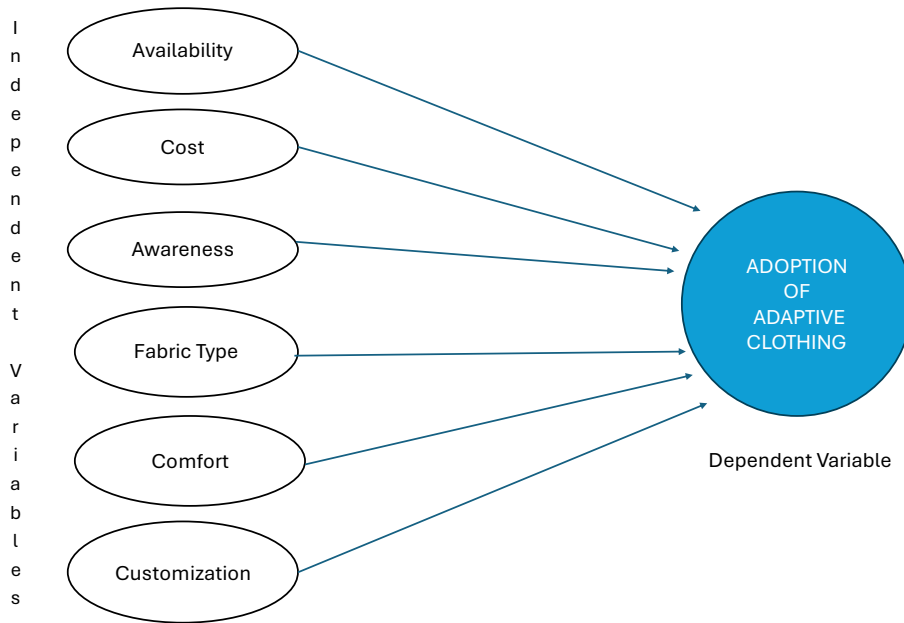
Figure 1.
Proposed model of the study.

2.1. Objectives of the Study
- To study whether the target respondents (geriatric citizens of paid old age homes and their care takers) is aware about the availability of Adaptive Clothing.
- To study the factors influencing the adoption of Adaptive Clothing among the target respondents.
- To propose recommendations to the online platforms and aggregators to design a inclusive strategy in promoting Adaptive Clothing

2.2. Scope of the Study
This study is limited to Hyderabad, Telangana. Geriatric citizens of paid old age homes of Hyderabad and their care takers were part of the study.

2.3. Hypotheses of the Study
H_1 - *There is a positive relationship between Availability of Adaptive Clothing and its Adoption*
H_2 - *There is a positive relationship between Cost of Adaptive Clothing and its Adoption*
H_3 - *There is a positive relationship between Awareness of Adaptive Clothing and its Adoption*
H_4 - *There is a positive relationship between Fabric Type of Adaptive Clothing and its Adoption*
H_5 - *There is a positive relationship between Comfort of Adaptive Clothing and its Adoption*
H_6 - *There is a positive relationship between Customization of Adaptive Clothing and its Adoption*

3. Methodology
The research is exploratory and descriptive in nature. Population of the study is geriatric citizens of paid old age homes in Hyderabad, Telangana. Using convenient sampling method the researchers reached the mangers and caretakers of Ten (10) paid old age homes in Telangana. Initial discussions were held with them to understand their awareness level regarding Adaptive Clothing. Later discussions were held with the geriatric citizens of these selected paid old age homes to sensitize them regarding 'Adaptive Clothing'. Data was collected by enumeration method. Structured questionnaire and discussions were adopted to get the requisite information. A total of 150 responses have been received which are part of the study. Corelation, regression and Structural Equation Modelling (SEM)

was used to achieve the objectives of the study. The results are discussed, and the recommendations were made accordingly.

4. Results

Awareness and adoption: There is a positive correlation (0.058) between awareness and adoption, but it is weak, indicating that higher awareness of adaptive clothing may slightly increase the likelihood of adaption, but the relationship is not strong.

Cost and adoption: There is a positive correlation (0.667) between cost and adoption, indicating that higher costs of adaptive clothing may be associated with increased adoption. This correlation is moderately strong.

Availability and adoption: There is a positive correlation (0.302) between availability and adoption, suggesting that greater availability of adaptive clothing options may be associated with higher adoption rates, but the relationship is relatively weak.

Customization and adoption: There is a positive correlation (0.447) between customization and adoption, indicating that increased customization options for adaptive clothing may lead to higher adoption rates. This correlation is moderately strong.

Size, fabric type, and adoption: The correlations between size, fabric type, and adoption are relatively weak (0.104 and 0.603, respectively), suggesting that these factors may have limited influence on adoption compared to other factors like cost and customization.

Comfort and adoption: There is a weak positive correlation (0.040) between comfort and adoption, suggesting that higher comfort levels of adaptive clothing may slightly increase adoption rates, but the relationship is not strong.

Table 1.
Correlation among the various determinants and adoption (Care takers survey).

	Care taker	Awareness	cost	Availability	Customistion	size	Fabric type	Comfort	Adoption
Care taker	1								
Awareness	0.058026	1							
Cost	0.367405	0.201008	1						
Availability	–0.44115	0	–0.22473	1					
Customistion	0.516541	0.104116	0.282529	–0.81484	1				
Size	0.104973	0.703526	0.318182	0	–0.18835	1			
Fabric type	0.367405	0.703526	0.545455	–0.44947	0.282529	0.772727	1		
Comfort	0.744387	–0.35635	0.241747	–0.39841	0.333914	–0.16116	0.040291	1	
Adoption	0.104447	0.666667	0.301511	0.447214	–0.15617	0.603023	0.301511	–0.26726	1

Table 2.
Regression analysis summary (Geriatric citizens adoption and its determinants).

Regression statistics									
Multiple R	**1**								
R Square	1								
Adjusted R square	1								
Standard error	4.04E-16								
Observations	149								
ANOVA									
	df	SS	MS	F	Significance F				
Regression	7	40.94918504	5.849884	3.59E+31	0				
Residual	141	2.29864E-29	1.63E-31						
Total	148	40.94918504							
	Coefficients	Standard error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%	
Intercept	8.88E-16	1.91E-16	4.650701	7.54E-06	5.11E-16	1.27E-15	5.11E-16	1.27E-15	
3	0.142857	2.43565E-17	5.87E+15	0	0.142857	0.142857	0.142857	0.142857	
2	0.142857	2.44281E-17	5.85E+15	0	0.142857	0.142857	0.142857	0.142857	
2	0.142857	2.42658E-17	5.89E+15	0	0.142857	0.142857	0.142857	0.142857	
4	0.142857	2.56916E-17	5.56E+15	0	0.142857	0.142857	0.142857	0.142857	
5	0.142857	2.38401E-17	5.99E+15	0	0.142857	0.142857	0.142857	0.142857	
5	0.142857	2.4851E-17	5.75E+15	0	0.142857	0.142857	0.142857	0.142857	
4	0.142857	2.3722E-17	6.02E+15	0	0.142857	0.142857	0.142857	0.142857	

The regression analysis results indicate a perfect fit for the model, with an R Square value of 1, indicating that the independent variable (Availability, comfort customisation ……) explain 100% of the variation in adoption. The coefficients for the predictors (3, 2, 2, 4, 5, 5, and 4) are all 0.142857143, with extremely small standard errors, indicating high precision. The t-statistics for all predictors are extremely large, with values on the order of 10^{15}, indicating highly significant relationships. The p-values for all predictors are effectively zero, confirming their significance.

Overall, the regression analysis suggests a perfect fit of the model to the data, with all predictors significantly contributing to the dependent variable.

4.1. Structural Equation Modelling (SEM)

The FEA theory and TAM theory was combined through to empirically show how the various factors could affect consumers' attitude towards adoption. Data was collected from 150 elderly residents of paid old age homes who are in need of Adaptive Clothing. The majority of the participants were female (53%), male (47%). If is observed that there is no difference between the gender and adoption of Adaptive Clothing.
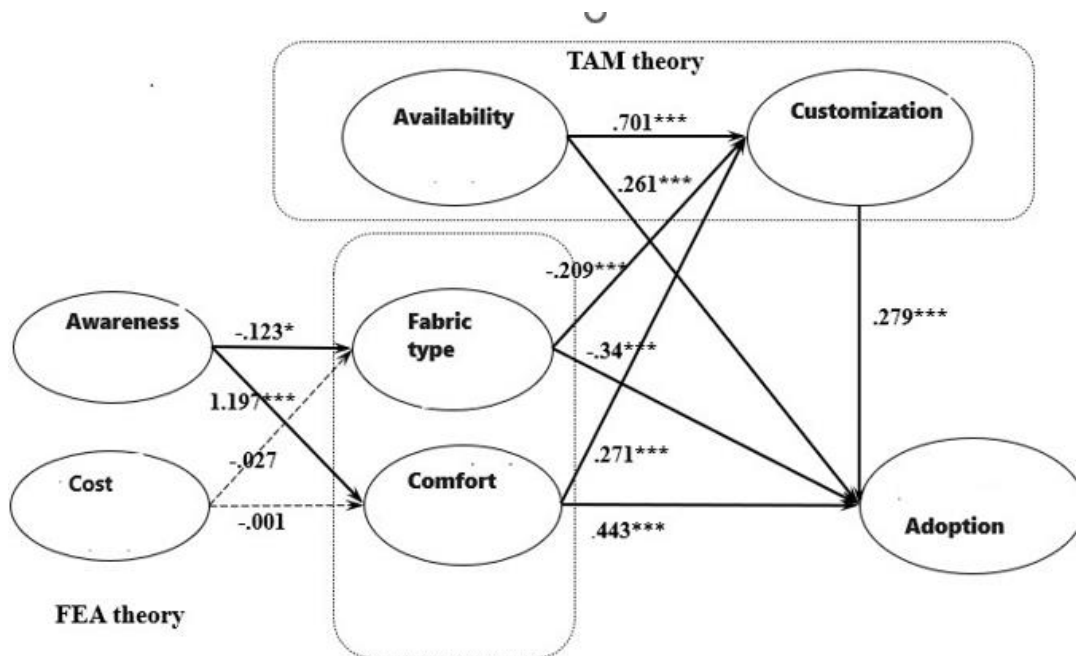

Figure 2.
SEM output.

5. Results and Discussion

Both the measurement model ($\chi2=382.907$, df=204, p=.000, SRMR=.039, TLI=.946, CFI=.957) and the structural model ($\chi2=404.414$, df=211, p=.000, SRMR=.044, TLI=.944, CFI=.953) showed acceptable fit.

The SEM result (Figure 2) suggests positive influence of awareness ($\beta=1.197$, P<.001) on comfort and negative influence of awareness ($\beta =-.123$, P=.011) on fabric type.

It also suggested that there is significant effect of availability of Product ($\beta=.701$, P<.001) and comfort ($\beta=.271$, P<.001) on customization. At last, availability of the product ($\beta=.261$, P<.001), customization ($\beta=.279$, P<.001), comfort ($\beta=.443$, P<.001) all have significant influence on consumers' attitude of adoption. Cost did not show significant influence on comfort and fabric type.

6. Conclusion

This study combined FEA theory and TAM theory to reveal the key factors that influence the attitude of adaptive clothing consumers toward adoption. Even though consumers mentioned that they desire more colors/patterns and fashion styles in adaptive clothing in their customer reviews (Li et al., 2023), the findings suggest that the perceived comfort of adaptive clothing plays a vital role in enhancing perceived benefit through adoption. And perceived comfort acts as a mediator between awareness and adoption. This study also shed light on how to improve the usage of adaptive clothing by elderly residents in old age homes.

7. Recommendations

Aggressive awareness and promotion activities are immediately required for Adaptive Clothing, because leading a comfortable and hygiene life is everyone's prerogative. geriatric citizens of these paid old age homes are ready to pay for their comfort. Customization and availability of Adaptive clothing by the retailers is the need of the hour. Retailers could provide virtual try-on, introductory videos, and high-resolution images to show the fabric texture and present the comfort features of the clothing. Future study would include the adaptive clothing customers' perception of web features/navigation to further understand the effect of web design on their online experience. Managers/ care takers of the paid old age homes should be trained on use of the Adaptive Clothing. The textile manufacturers and retailers may see this 'Adaptive Clothing' as a Blue Ocean Strategy and develop a new product and explore the new markets.

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