

## SUSTAINABLE KIDS FASHION: DESIGNERS' VIEWPOINT TOWARD MULTIFUNCTIONAL CHILDREN'S WEAR DESIGN

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### ABSTRACT

*Fast-fashion products encourage parents to spend more on their children's necessities. Children's clothing is one of the vast parts of post-consumer waste due to the children's growing fast. This study is intended to investigate multifunctional childrenswear among clothing designers to reduce children's clothing waste by the following sustainability. According to the multifunctional design concept, children's clothing is used for multifunctional purposes and recycled and decomposed at the end of the clothing's lifespan. This research is adapted to a mix-method strategy. An in-depth interview was accepted to analyse the multifunctional children's clothing. Moreover, a survey was conducted to collect data on designers' viewpoints to design multifunctional children's clothing. It was found that the sustainable practice, environmental knowledge, social and market environment, and multifunctional clothing properties significantly affected the designer's viewpoint to design such clothes. However, health issues influence the designer's standpoint. The finding showed that giving awareness of multifunctional children's clothing products among designers would help to improve the acceptance of such clothes. The consequences of this study can be analysed from an educational and managerial standpoint to establish an effective strategy for increasing the rate of sustainability in children's clothing and developing policies to promote multifunctional clothing design.*

## 1. INTRODUCTION

In the sector of children's clothing, the volume is expected to amount to 69,682.59 million pieces by 2023, where the average price per unit in the segment for children's clothing is calculated at US \$ 4.60 in 2020 (Statista, 2020). Indeed, to meet the children's changing needs and growing fast, parents follow to prepare their wants. On the plus side, with the demand for children's products from traditional practicality aesthetics to flexibility, safety, environmental protection, researchers and enterprises have introduced creativity in sustainable design concepts into the product. Moreover, increasing people's concerns and improving their environmental knowledge create the business. Sustainable design is a natural, ecological and expandable design approach under the influence of fashion and clothing contents, especially children's products (Zhang, 2018). Multifunctional design is one of the concepts which supports sustainability in clothing products. This is coupled with ergonomic principles and a detailed analysis of the children's beautiful and functional characteristics to promote sustainability in the children's clothing market. Previous

literature has shown that environmentally consciousness among designers will encourage them to design in sustainable ways for children, and likewise, they are willing to pay attention a little more to eco-friendly products (Jalil & Shaharuddin, 2020a); however, in the particular multifunctional design for children, clothing is not any investigation. As a result, researchers believed that higher price, limited choice and colour combinations, and lack of access to sustainable clothes might lead to making barriers to the availability of eco-friendly children's products in the market, especially clothing (Jalil & Shaharuddin, 2019; Meyer, 2001; Rahman & Gong, 2016).

Regarding making eco-friendly clothing, particularly a new concept as multifunctional clothing in the fashion market, further research to understand which variables are necessary to influence designers' decisions concerning eco-friendly childrenswear. Besides, knowledge of the designer's viewpoint toward eco-friendly children's clothing, especially multifunctional types, a marketing

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strategy for a specific target group is essential for the clothing industry. Moreover, functional clothing has played an indispensable role in the clothing market, but the primary aim of the adult group is that of functional products for children (Shen, Jiang, & Chen, 2011). Following these, children's multifunctional organic clothing prototypes were selected as sustainable apparel for the authors' design study. Hence, this study aims to evaluate and investigate multifunctional children's clothing among designers to reduce clothing waste and increase sustainability. Current research mainly focuses on evaluating and developing the strategies of children's multifunctional apparel from the expert designer's perspective and the designer's viewpoint. This research aims to identify essential factors affecting the designer's design viewpoint towards children's multifunctional clothing. It gives effective techniques and proposals to support the minimisation via the multifunctional design of garment waste by using the results of this empirical investigation and studying sustainable outcomes by focusing on innovative multifunctional children's clothing among designers and manufacturers. Hence, to achieve the objectives mentioned above, the study uses a sequential exploratory method, a semi-structured interview, and a questionnaire survey. In the first stage, a questionnaire survey was used to identify factors influencing the designer's design of multifunctional clothing. In the second stage, an in-depth interview study was employed to enhance the information obtained from the questionnaire. Therefore, semi-structured interviews assess the soundness and significance of influencing factors.

## 2. LITERATURE REVIEW

Based on the reviewing of the literature, six potential influencing factors has been identified: sustainable practice, market environment, health issues, environmental knowledge, multifunctional children's clothing properties (design, function, quality, and price) as shown in Figure 1. The research framework has been developed based on the previous theoretical frameworks in domains of designer's involvement with sustainable clothing and childrenswear (Gam et al., 2010; Jalil & Shaharuddin, 2020a) and will be discussed following.

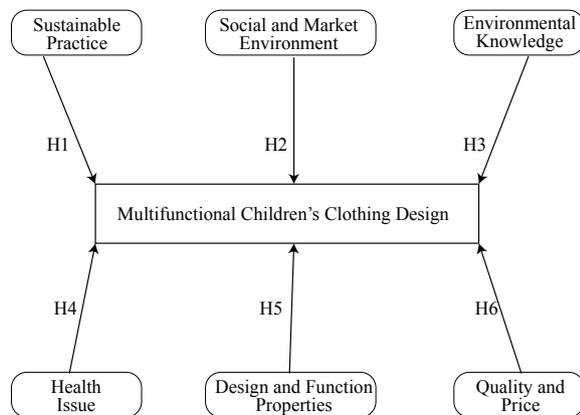


Figure 1: A research framework

Sustainable practices are characterised by environmentally friendly practices in each sector or industry. In the emerging sustainability, the children's clothing design process necessitated a different set of design criteria that respect the green environment basically (Jalil & Shaharuddin, 2020a). A sustainable fashion and clothing designer, particularly in childrenswear, must have various skills, mainly in sustainable design, which falls into two categories: creative and technical skills. The designer should create a unique and sustainable concept to demonstrate his creative ability or interpret trend data in a new design idea regarding preserving the environment that produces innovative designs such as multifunctional properties (Jackson & Shaw, 2004). The designer should create a unique and sustainable concept to demonstrate creative ability, or interpret trend data in a new design that produces innovative designs such as multifunctional properties. (Jackson & Shaw, 2004). The design and application of ergonomic principles combine the design of functional clothing with a detailed analysis of children's beautiful and functional characteristics to achieve the objectives of safeguarding children from outside and promoting the harmonious development of society. Multifunctional clothes can perform multiple functions apart from just their aesthetics and essential protection of the wearer (Cunha & Broega, 2009); therefore, they can be worn in more than one way or serve multiple purposes (Shaharuddin & Jalil, 2021a). If a clothing designer is conscious and works with only one type of fibre, they are using a mono-material (Black, 2008); it becomes possible to use a design for disassembly strategy. The fashion designer can choose to work with recovered materials, which can help reduce textile waste, even while materials are typically chosen for aesthetic and functional reasons.

Research implies that the designer could more reflect on their personal consumer experience and take this information into the creative process (Gwilt & Rissanen, 2012). Jalil and Shaharuddin (2019) indicated that sustainable clothing disposal as a sustainable activity could make more eco-friendly clothing design. Therefore, understanding designers' viewpoints based on their practices toward multifunctional design as a creative idea is vital to developing marketing strategies. However, measuring a designer's viewpoint to design is a complex issue (Gam, Cao, Farr, & Kang, 2010). Therefore, hypothesis number one was proposed:

H<sub>1</sub>. Sustainable practice affects the designer's viewpoint toward multifunctional clothing.

Zhang (2018) believed that children are happy, healthy, and simple in children's growth, while industrial clothing designers and enterprises in the market environment overemphasises adults' products, affecting children's values and consumption concept. Previous research focuses primarily on design strategies of multifunctional clothing concerning sustainable development in the fashion market (Cao, Chang, Kallal, Manalo, McCord, Shaw, & Stamer, 2014; Koo, Dunne, & Bye, 2014; Rahman & Gong, 2016). Social and market conditions refer to society's pressures and obstacles and the massively producing multifunctional children's clothing. Social pressure is a significant recycling factor behaviour and viewpoint to design toward sustainability (Jalil & Shaharuddin,

2019; Ramayah, Lee, & Lim, 2012). Critical factors include the social and cultural environment, public opinion and market demands that affect the designer's viewpoint towards sustainable activities (Jalil & Shaharuddin, 2020a). Therefore, hypothesis number two was proposed:

H<sub>2</sub>. Social and market environment affects designers' viewpoint toward multifunctional clothing.

Due to sharp concern about the health effects on children's wear from pesticide residues and toxic dyes, manufacturers (Naz, 2019), parents (Gam et al., 2010) and designers (Jalil & Shaharuddin, 2020a; Shaharuddin & Jalil, 2021b) are interested in applying and following organic cotton fabrics in such clothes, since children are more vulnerable to possible contaminants, including residues of pesticides and unsafe dyes used in apparel. Gam et al. (2010) investigated using organic cotton fabrics in children's wear by using C2CAD model for young children's knitwear. The results show that preparing materials for consumers for environmental education and producing organic cotton clothes for children with high quality and good performance would help develop sustainability issues in the children's product market. Preparation of consumer environmental education materials, designers and producing organic cotton clothing with high quality and good performance would assist in improving the acceptance of such clothes (Jalil & Shaharuddin, 2020b; Jin Gam, Cao, Farr, & Heine, 2009). Therefore, based on the previous research, hypotheses number three and four were proposed:

H<sub>3</sub>. Environmental knowledge affects a designer's viewpoint toward multifunctional clothing.

H<sub>4</sub>. Health issue affects designers' viewpoint toward multifunctional children's clothing.

Indeed, with the demand for children's products, from traditional practicality aesthetics to flexibility, safety, environmental protection, researchers and enterprises have introduced the sustainable design concept into the development and children's products. According to Zhang (2018), it is a natural, ecological and expandable design approach under the influence of children's products among designers. Therefore, sustainable design is a method based on the consciousness of the environmental environment to meet the function, quality, life and cost of the product, to the environmental attributes, resource property and energy property priority in the product lifecycle (Kassahun, Saminathan, & Sekutowski, 1995). On the plus side, clothing quality is directly related to children's quality of life and physical and mental health, especially in sustainable development (Jalil & Shaharuddin, 2020a). However, product quality problems are forbidden repeatedly among the market of children's products by focusing on the "children exclusive" label (Zhang, 2018). Indeed, the price of these products are much higher than similar products with less functionality, but the psychological effect of labels is more substantial than another thing (Jalil & Shaharuddin, 2020a). Therefore, children's consumption behaviour begins to change from beauty to luxury. Henceforth, some designers are looking to boost sustainable products at high prices, promoting quality, safety, comfort, and other concerns (Gam et al., 2010). Vedhakshayini and Archana (2017) have found a positive acceptance rate of sustainable

apparel, remarkably multifunctional cases, indicating that most participants would like the innovative alternative to multifunctional clothing. However, functional clothing has played a significant role in the clothing market, but the main target for an adult group is applicable clothing products for young children (Shen et al., 2011).

Moreover, Rahman and Gong (2016) conducted in-depth interviews and distributed a questionnaire to explore different transformable design, which results showed that many informants supported the concept of transformable clothing. However, many experts were concerned about the cost of production, practicality, adaptability, and saleability of these clothing. Therefore, hypotheses number five and six were proposed:

H<sub>5</sub>. Design and function properties affect the designer's viewpoint toward multifunctional children's clothing.

H<sub>6</sub>. Quality and price affect the designer's viewpoint toward multifunctional children's clothing.

### 3. METHODOLOGY

Different data types, including quantitative surveys and qualitative interviews, are necessary due to the goals of this project and many research topics. This study has developed a workplace to evaluate and investigate multifunctional children's clothing among designers regarding developing a strategy toward sustainable design in the children's clothing market.

#### 3.1 First Phase – Survey

A survey is a suitable method for collecting the sample data needed for an empirical study used in previous studies to test the hypotheses. In order to ensure the quality of the survey, it was muddled and determined following a pilot survey, which was initially done to junior designers within a limited range. The questionnaire was divided into two sections: (1) socio-demographics for the respondent including gender, age, work experience, level of education and employment; and (2) measurement items based on a five-point Likert scale for influencing factors of designer's viewpoint towards multifunctional children's clothing and their opinion. Respondents could indicate their attitudes by selecting "strongly disagree," "disagree," or "indifferent," "agree," or "strongly agree" for each measurement item, which was computed as 1, 2, 3, 4, and 5 separately. The survey was conducted between August and September of 2020. In this study, two types of investigations collected 288 questionnaires (face-to-face survey and e-mailed survey) at an effective rate of 84.6 per cent. This study was accepted four multifunctional children's clothes designed by the author in the previous research (Shaharuddin & Jalil, 2021a) (Figure 2) as the physical multifunctional prototypes to show the multifunctional clothing's abilities. The authors explained the eco-friendly materials used in such clothes, the skills of these clothes, which can be a bag and their multifunctionality to designers before they start to respond to the questions.

This questionnaire requires 5 minutes for each respondent to complete the entire survey. Henceforth, the finding of this questionnaire assists in understanding what factors can influence designers' viewpoint toward designing multifunctional clothes and evaluating multifunctional children's clothes.



Figure 2: Four sustainable children's clothes with multifunction ability

### 3.2 Second Phase – Interview

Kennedy and Vargus (2001) suggested that information obtained from the in-depth interview is able to support and boost enhanced data from the questionnaire. Many modes are also helpful when measurements from a specific group and the population are required for a research task. As mentioned before, critical factors influencing designers' viewpoint to create multifunctional children's clothing were initially gathered through literature retrieval in various databases such as Web of Science, EI, ASCE, Science Direct, etc. Four-person involved in childrenswear design and production were then invited to a semi-structured interview to complement the exhaustive nature of these factors from November 2020 to January 2021. In order to improve the findings of this study, the researchers conducted a follow-up semi-structured interview study with people in children's clothing design and its production with more than five years' experience in this industry. Four interviewees were recruited in textile and clothing design production, including two children's clothing designers (a lecturer) and two entrepreneurs. Researchers believe that people in the in-depth interview have more knowledge about sustainable children's clothing. The interview questions consisted of four main questions:

- (1) The first section dealt with informants' opinions about sustainable practice and awareness: 'How knowledgeable are producers in the sustainable sector?' 'How willing are clothing producers to spend money and resources on sustainable development,' and 'How well do consumers understand the concept of sustainable mode?'

- (2) In the second section, the attitude and experience of informants in sustainable fashion was focused: 'Have you ever created a clothing/course sustainable/multifunctional?'
- (3) The third section concerned their visual stimulus opinions, observations, and perceptions. The respondents were asked about the acceptance, sales ability, and practicality of the four multifunctional designs of children's clothing used in this study.
- (4) In the last section, the age, occupation, location of their employer, size of their company and the university and number of years of work experience with their current organisation have been used to obtain demographic information. The audio was recorded with the permission of the interviewee every 30-minute interview. The interviews have been transcribed. The researcher reviewed interview transcripts periodically to ensure validity for consistency in analysis.

### 3.3 Third Phase: Data analysis

The data analysis in this study includes descriptive properties, reliability analysis and factor analysis confirmatory. Gender, age, work experience, and educational level were described first in terms of frequency, percentage, and cumulative percentage. The reliability of the collected sample data determines the quality of the questionnaire, which affects the credibility of the research results. In order to achieve the results and recognise the relationships, descriptive statistics, reliabilities and correlations using SPSS 23 were calculated for each variable. A 95 per cent meaning level was defined. It resulted in an initial reliability analysis using Cronbach's alpha and SPSS 19. This study aims to identify whether the proposed model meets the reliability and validity standards through confirmatory factor analysis (CFA). Composite reliability (CR) and alpha Cronbach ( $\alpha$ ) with more than 0.70 were tested for their reliability. This study has found the support of combining the items under each measure into the desired multi-item scale, with high reliability ( $\alpha \geq 0.7$ ) for all variables, according to George and Mallery (George, 2011).

## 4. RESULTS

### 4.1 Finding of Survey

Table 1 summarises the demographic features of the respondents. The data of this survey have been collected mainly from the designer's convenience sample involved in children's clothing design, whether in the course's university or market. 288 were collected, including 46 males (23%) and 242 females (84%). Respondents were all involved in fashion and clothing design, especially in children's clothing, including designers (47.2%), fashion and clothing students (college or universities) (36.8%), and others (16%). Most received a diploma, undergraduate or higher education (73.6%), and more than three years of working experience (80.2%).

**Table 1: Demographic profile of respondents (N=288)**

Variable		Frequency	Percent
Gender	Female	242	84.0
	Male	46	16.0
Age	Under 25 years old	86	29.9
	25-35 years old	146	50.7
	36-45 years old	48	16.7
	Over 45 years old	8	2.8
What is the highest level of education you have completed?	College graduate	112	38.9
	High school graduate	80	27.8
	Less than high school	76	26.4
	Professional degree	20	6.9
Occupation	Fashion designer (ONLY)	136	47.2
	Trainer and fashion designer	14	4.9
	Lecturer and fashion designer	32	11.1
	Fashion student	106	36.8
Work experience	Less than 3 years	60	20.8
	3-5 years	136	47.2
	6-10 years	40	13.9
	11-15 years	26	9.0
	More than 15 years	26	9.0

The majority of participants were between the ages of 18 and 35. 62.2 per cent of participants said they were employed and working in an education-related profession, such as clothing and fashion designer, trainer-designer, or lecturer-designer. At the same time, the rest were full-time students in college, university and fashion institutions (junior designers). Employed participants have had seven years of experience in clothing design, training, or teaching role. The largest group of respondents (49.3%) do not have design experience in sustainable or eco-friendly clothing due to a lack of knowledge. On the other side, 25% of respondents have had experience in sustainable children’s clothing design that health issues, quality and new trends were reasons for designing such clothes (91.6%, 77.7% and 55.5%, respectively). Interestingly, most respondents (68.75%) were interested in multifunctional children’s clothing design. Table 2 summarises the output.

**Table 2: The empirical results of reliability and validity (N=288)**

Variables	Factor loading (≥0.7)	α (≥0.7)	CR (≥0.7)	AVE (≥0.5)
Sustainable practice		0.78	0.75	0.63
Sustainable disposal clothing	0.81			
Sustainable design experience	0.73			
Redesign clothes/vintage dress	0.91			
Social and market environment		0.72	0.76	0.66
Market needs	0.76			
society perception	0.73			
Environmental knowledge: using sustainable fashion ...		0.79	0.85	0.65
reduce clothing waste	0.81			
reduce carbon impact	0.91			
conserve natural resources	0.75			
Health issue: multifunctional clothing...		0.71	0.82	0.64
should support children’s health	0.73			
using eco-material	0.70			
Designer’s opinion about colour and design		0.77	0.84	0.69
some limitations in the multifunctional design	0.87			
creativity	0.91			
may design in various colours	0.72			

Variables	Factor loading (≥0.7)	α (≥0.7)	CR (≥0.7)	AVE (≥0.5)
Designer’s opinion about quality and price				
may produce at a higher price	0.91	0.89	0.88	0.71
an acceptable quality	0.84			
Designer’s viewpoint				
going to plan a multifunctional clothing design	0.72	0.73	0.81	0.61
I would like to join a multifunctional design team	0.76			

Analysis of variance was used to test the hypothesis of this study. Reliability coefficients indicated appropriate internal consistency for sustainable practices ( $\alpha=0.78$ ), social and market environment ( $\alpha=0.72$ ), environmental knowledge ( $\alpha=0.79$ ), health issue ( $\alpha=0.71$ ), product properties (design, colour) ( $\alpha=0.77$ ) and quality and price ( $\alpha=0.89$ ) that significant at the level 0.001. In factor loadings and Average Variance Eliminated (AVE), both larger than 0.50, have been evaluated for their validity. The values of factor loading on their respective variables were high. The loading factor of more than 0.50 is generally classified as a “strong” item (George, 2011). Secondly, the AVE for the 4 measures is more significant than 0.5, with variable level convergent validity.

Based on the results regarding designing multifunctional children’s clothing, the participants’ responses were divided into three groups; yes, no, and do not know. The variables tested for each hypothesis were sustainable practices ( $H_1$ ), social and market environment ( $H_2$ ), environmental knowledge ( $H_3$ ), health issue ( $H_4$ ) and product properties (design, colour, quality, and price) for multifunctional children’s clothing ( $H_5$  and  $H_6$ ). The results in Table 3 show that the designers who were willing to design multifunctional children’s clothing had a significantly higher measured sustainable clothing design for multifunctional clothing rather than the other two groups. Hence,  $H_1$  and  $H_2$  were accepted ( $p=0.000$ ). Also, there were significant in environmental knowledge product properties (design, quality, and price) among the three designer groups, so  $H_3$ ,  $H_5$  and  $H_6$  were accepted ( $p<0.01$ ) as shown in Figure 3.

**Table 3: Analysis of clothing variance table for hypothesis,  $p<0.05^*$ ,  $p<0.01^{**}$ ,  $p<0.000^{***}$**

Variable to test	Viewpoint to Design Multifunctional Children Clothing	n	mean	Std	F value	P-value	Fisher’s Least Significant Difference
$H_1$ Sustainable practice	Yes	198	2.61	0.615	21.491	0.000***	1
	No	28	1.57	0.852			
	I don’t know	62	1.76	0.656			
$H_2$ Social and market environment	Yes	198	3.10	0.514	20.720	0.000***	
	No	28	1.43	0.923			
	I don’t know	62	1.86	0.870			
$H_3$ Environmental knowledge	Yes	198	2.65	0.469	5.977	0.003**	
	No	28	1.71	0.898			
	I don’t know	62	1.92	0.877			
$H_4$ Health issue	Yes	198	2.28	0.538	3.777	0.015*	
	No	28	1.29	0.726			
	I don’t know	62	1.81	0.867			
$H_5$ Designer’s opinion about colour and design	Yes	198	3.29	0.626	4.357	0.004**	
	No	28	1.72	0.914			
	I don’t know	62	2.06	0.980			
$H_6$ Designer’s opinion about quality and price	Yes	198	3.05	0.415	5.598	0.005**	
	No	28	1.89	0.933			
	I don’t know	62	2.03	0.847			

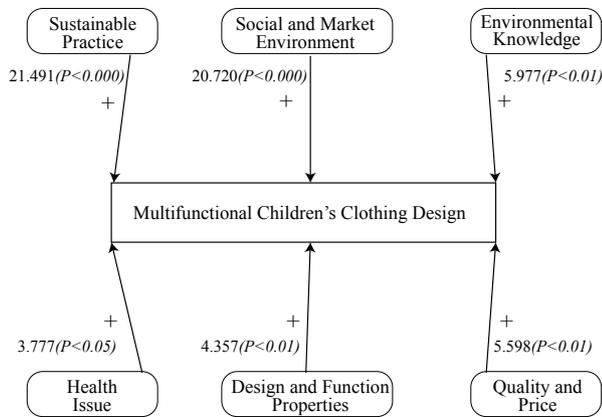


Figure 3: Measurement model

## 4.2 Finding of In-depth Interview

The authors expected to obtain information about the possible manufacture and sale of children's sustainable clothes, emphasising convertible clothes through individual interviews. The main aim was to understand the positive and negative perceptions to design. Table 4 shows the demographic of interviewees. The authors intended the samples, and four multifunctional children's clothing is used to generate the viewpoints of the informants. The interviews were recorded in audio and transcribed, lasting between 45 and 60 minutes. By open coding and microanalysis, the authors analysed interview data. The interview transcripts were read in several ways, labelled code data, and made news reports. A first categorisation was created, and then, together, the authors examined the coded data, discussed interpretative possibilities, and agreed on the organisation and display of data.

Table 4: Demographic information interviewees

	Age	Career	Expertise	Experience	Sex
E1	48	Owner	childrenswear Production	10 years	Male
D1	36	Designer/ Lecturer	Fashion design (children wears)	7 years	Female
E2	44	Owner	children wear Production	12 years	Male
D2	39	Designer	Fashion design (children wear)	5 years	Female

**Sustainable practices and environmental knowledge.** The participants were asked to give their views and opinions on sustainable practices. D1 and D2 believed ethical acceptance was linked to the educational level of the consumer and economic issues. D1 stated, "In my opinion, the producers and manufacturers in clothing children production are also alien to this concept and have not been advised. I think it would be welcomed if it became a trend." D2 believed business mindsets are not permanent and will change in the future because parents are becoming more aware of environmental issues, and the old minds are switching to the developed idea. She indicated that "Educated students, manufacturers and customers were more willing to purchase eco-friendly products when they knew the value in long-term investments". E1 showed that environmental concerns are driven by the government, particularly those related to

the fashion industry. He believed all manufacturers would follow specific policies if the government set out them. Therefore, he said, "All manufacturers follow such procedures; they need to focus on sustainable designs in children's clothes and accept designs and novel ideas from academic institutions and universities."

Henceforth, companies must spend extra resources to support the protocol; however, the government should subsidise financial assistance issues. Table 5 shows the informants' responses to four multifunctional children's clothing designs. Another entrepreneur, E2, also believed that consumers are undergoing drastic economic growth, so producers focus more on cutting costs and maximising profit. He stated, "If producers can be convinced that sustainable practices guide them on this achievement. I don't think that children clothing manufacturers are planned to harm children, but they want to maximise profit and offer a lower or affordable attractive product". Environmental sensitivity and awareness among clothing manufacturers are relatively poor. Nevertheless, D2 believed this perception would change, and most manufacturers support long-term sustainable practices. **Transformable design concepts (sustainable clothing properties).** Regarding their experiences and engagements in multifunctional design, two informants (D2 and E2) stated that they had experience in multifunctional design in the past. D2 said, "However, all my clients are regular customers and trust my designs, so I do not have any experience in mass-production; perhaps it is risky to design. I am not very sure about their marketability and saleability". Nevertheless, all informants suggested that multifunctional children's clothing design will be practical. D1 emphasised that "It must be cultured, and the people get to know. Besides, we should explain to them about their benefits.

All in all, this concept and promotion in the community is a big step in children's clothing production". E2 reported that he had experience producing a bag that could be used in various styles. He realised that many people purchased multifunctional products. He believed that "Uniqueness, distinctive character and style in today's consumer culture are important buying factors. However, the level of education and economic level are affected parent's perception to decide". Moreover, D2 had a positive experience with multifunctional clothing and stated that it appealed to her customers. E1 believed children's clothes could be designed according to a consistent multifunctionality structure because clothing styles for children are not closely linked to current trends in fashion compared with women's and men's wear. He said that "It is a significant point so that clothes can be support children's wants during a long-time is necessary, due to those children, clothing is not trendy". All interviewees liked and believed they could address specific environmental concerns with the multifunctional children's clothing concept. However, many consumers have stated that this concept is still too new despite these positive prospects.

**Multifunctional children's clothing (multifunctional clothing properties).** The basic information of our four respondents showed that all designs are acceptable and only some of the parts in the design should be changed; therefore, experts are interested in seeing the multifunctional design in clothing production. D1 presented an excellent reaction, and she said that "All designs are great when they are created through zero waste and good quality materials, so it

makes it less expensive to produce, it is very effective because of the children's growth and some issues during consumption and cleaning. Also, the different price is very noticeable if such clothes can support this point, attention should have followed them because children's clothes are costly". E1 had a unique opinion that designers should not sacrifice aesthetic attributes for sustainability issues, children's clothing needed to be simplified. He was worried about the price of such clothes, as he said that "I like such designs, but I still stress that cost plays an important role in consumer purchasing. If these clothes have low-price at least the same price as other products, it can positively affect parents' attitude and intention to purchase."

**Table 5:** Informants' responses to four multifunctional children clothing design

Interviewee	Drawbacks/ disadvantages	Benefits/ advantages	Suggestions
E1- Entrepreneur	<ul style="list-style-type: none"> <li>high labour production cost in the sewing process.</li> <li>few parents will accept such clothes.</li> <li>too many zippers.</li> </ul>	<ul style="list-style-type: none"> <li>innovative concept</li> <li>reduction of fabric waste.</li> <li>children would be challenged in the multifunctional style.</li> <li>love the design so cute.</li> </ul>	<ul style="list-style-type: none"> <li>use the invisible zipper.</li> <li>the design is very attractive and modern. If the price becomes affordable, demands will be increased.</li> </ul>
D1- Designer/ Lecturer	<ul style="list-style-type: none"> <li>a bit complicated in making bag toy purpose.</li> <li>the cartoon character is attractive only for children, not parents.</li> <li>hard to convince people about environmental awareness in countries.</li> </ul>	<ul style="list-style-type: none"> <li>adaptability is a good selling point.</li> <li>all combinations and designs look good.</li> <li>great ideas of multifunctional clothes for children.</li> </ul>	<ul style="list-style-type: none"> <li>a plain or abstract pattern or simple wording shirt converted into a bag would be nice.</li> <li>perhaps adding some colour variation will be good.</li> </ul>
E2- Entrepreneur	<ul style="list-style-type: none"> <li>high production cost</li> <li>environmental awareness is low; it is hard to explain and sell them.</li> <li>the combination of zipper and fabric does not work for other fabrics.</li> </ul>	<ul style="list-style-type: none"> <li>the design concept is excellent, especially for children who can learn sustainable consumption from early childhood.</li> <li>easy for grading due to zero-waste design.</li> </ul>	<ul style="list-style-type: none"> <li>the zipper is not an ideal fastener so try another clasp.</li> <li>using a more casual appearance.</li> </ul>
D2-Designer	<ul style="list-style-type: none"> <li>high production time.</li> </ul>	<ul style="list-style-type: none"> <li>versatility is good.</li> <li>styles look very lovely.</li> <li>practical (convenient for children).</li> <li>great investment.</li> </ul>	<ul style="list-style-type: none"> <li>simplify the design.</li> <li>creative, but the versatility property may affect the lifespan of clothing, therefore using other durable fabrics.</li> </ul>

Moreover, E2 stated the same opinion: both (E1 and E2) are manufacturers and are concerned about social and economic issues. E2 believed that "It is difficult to introduce and sell multifunctional children clothing in the Asian market because China produces most of the children clothing at a low price. Hence, the price of clothes should be defined precisely. In addition, many people are unconscious, unwilling to spend more money on a long-term child product as children grow. Maybe parents can be persuaded to buy a bag toy". However, D2 was an optimist due to the multifunctional abilities that can cover the production process cost. As she said, "Parents will keep this type of clothing for a long time because it is not measured based on the body shape and after usage, it can be a bag toy, where all kids are interested in having a bag toy when they are going to go anywhere. The bag toy is a genius idea". E1 indicated the multifunctional design concept is too new; they are looking for low-price instead of zero-waste. Therefore, he always thinks about economic issues. He expressed, "I don't know if people would accept this kind of children's clothing. Therefore, they are looking for a nice garment at an affordable price; parents will purchase them to convince the manufacturer to produce such clothes at low prices. I believe this concept is more suitable for a niche market". Table 5 shows the informants' responses to four multifunctional children's clothing designs.

It is noted that multifunctional children's clothing is a topic that people, especially designers and manufacturers, will talk about or give comments to improve them once they hear it. The process of making multifunctional clothing is time-consuming; however, the extension of the lifecycle of such clothes is considerable. The innovation concept of multifunctional in children's clothing and digital grading is an excellent investment for educators and manufacturers. Due to the zero-waste technique, manufacturers can apply it to their design process without waste, as well as educators are able to understand and learn, even if they did not involve with the pattern-making procedure in the design process. The design properties of each multifunctional clothing are up to standards; however, it can be done for recent fashion trends in children's clothing based on the designer's creativity. For example, using a zipper is one of the suggestions in applying functional properties in supporting children's health and easy to use application. Moreover, multifunctional properties are applied for different occasions; for this study, casual clothing was the goal for making such clothes. Generally, children's clothing is slightly higher than women's and men's outfits due to fabric materials, pattern making, and construction, so the price increases typically due to multifunctional purposes.

## 5. DISCUSSION

The growing textile and clothing industry's emissions are essential in production, consumption, and disposal. Therefore, this research has investigated the viewpoints of designers in children's clothing design based on the concept of sustainable and multifunctional properties. Multifunctional clothing is considered a novel idea in children's clothing design, which helps prevent clothing consumption problems and reduce clothing waste. Indeed, the concept of multifunctional

clothes can help society reduce the disposal of clothes because children grow fast and can be converted to other functions such as a bag for more usage. Hence, this study offers important insights into the children's clothing industry and government organisations about the factors that influence sustainable development. This study's results show that most designers (84.65%) would like to design multifunctional children's clothes for the clothing market to protect the environment with some respective criteria. The data which refer to the questionnaire demonstrate that children's clothing is a significant issue among designers; therefore, multifunctional clothing would be one of the solutions in a sustainable way.

The results show that the essential factor in developing a designer's viewpoint toward multifunctional children's clothing is in sequence; *sustainable activities (practices), social and market environment, followed by the designer's opinion about clothing properties (structure of multifunctional design, colour, quality and price) and environmental knowledge*. In contrast, *children's health issues* make minuscule contributions.

The *sustainable practices, social and market environment* are two of the most critical aspects identified, as not only does it exert the most significant direct effect on designer's viewpoint towards multifunctional children's clothing, which is consistent with findings in the research Jalil and Shaharuddin (2020a). From the results of the questionnaire survey, social and market environment mainly refers to the general awareness regarding environment conservation and clothing waste reduction. As a result, the following strategies will increase the designer's viewpoint to create multifunctional children's clothing. Moreover, it is recommended that comprehensive cultural, educational, and sustainable development activities are carried out to raise public awareness of environmental conservation by reducing clothing waste to create an excellent social and market environment in the community. On the other hand, multifunctional children's products would help increase the clothing market's sustainability image; however, if they should be recognised by society in the market; therefore, public knowledge of such children's clothes needs to be enhanced.

Based on the *clothing properties*, the results showed that designers believed that multifunctional children's clothing are able to be designed in fashionable looks for the functional purpose, and there is no conflict with new trends, which this result is in line with Koo et al. (2014). Moreover, it was fascinating for them when they figured out that these clothes are easily disassembled and recycled after usage, which was in agreement with findings of previous research (Jin Gam et al., 2009). This study showed that the designers agree that price is one of the most critical factors when parents buy children's clothing; therefore, manufacturers and designers are interested in investing in multifunctional children's clothing produced at a low price, at least the same price as conventional children's clothes suggested and seen in previous research findings (Rahman & Gong, 2016). All interviewees involved in children's clothing design have given some suggestions to improve the design of multifunctional clothes, and they have not mentioned any recommendation for the improvement to the quality of the fabric or rejected the concept of this idea. In

addition, multifunctional clothing design usually follows technical standards and specifications related to sustainable design. Therefore, revising and improving standards and specifications may be more practical for multifunctional purposes in clothing children's design.

However, due to *environmental knowledge*, in the results of the interview has been noted that environmental sensitivity and awareness among clothing manufacturers are relatively low than that of designers, especially new generations. The results indicated that enhancing designers' attitudes toward sustainable thinking can increase designers' viewpoints towards multifunctional children's clothing. Hence, how to improve designers' attitudes and opinions becomes more critical. Educating designers is an effective method on sustainable techniques in the clothing design subject to further realise the importance of multifunctional properties and participate actively. Moreover, modern lifestyle has trended to nature more and more. Hence, in accordance with the results of this study, educated designers can understand sustainability issues such as choosing eco-materials and comprehend the concept of zero-waste design, design for disassembly and multifunctional design, which is an essential step in promoting multifunctional children's clothing to society and industry.

In addition, manufacturers and managers in clothing companies ignore such sustainable design, which means designers are not driven by the interest, which is in line with Jalil and Shaharuddin (2020a). However, findings showed that despite the positive perspectives of multifunctional children's clothing among four experts, this concept is still too new for many countries. Therefore, it is necessary for the children's clothing industry to regularly organise designers and managers to participate in knowledge and skill training related to sustainable design for clothing waste minimisation. Furthermore, the clothing industry should improve the functionality and quality factors to encourage designers. The results confirm that multifunctional mass-market clothing can be challenging to design, as many personal preferences meet the aesthetic, function, and economic demands. The clothing industry must develop sustainable products, where the constant reassessment of the expectations of environmentally friendly clothing is essential. Therefore, it is necessary to investigate sustainable children's design concepts. These give business decision-makers a clearer understanding of how effective strategies can be built for competitive advantages in the children's apparel industry's rising product markets.

**Implication and Recommendation.** Overall, the findings showed that designers and manufacturers are interested in producing multifunctional children's clothing designs. Moreover, those involved in sustainable activities and aware of preserving the environment are more excited about multifunctional clothing design in the children's market as a fresh idea. Boosting environmental knowledge quality and establishing some strategies for a fair price in multifunctional clothing are challenges those designers face and take a risk to design toward sustainability. Therefore, the practical purpose of children's clothing should be developed to promote a highly sustainable clothing design. It is suggested to expand public involvement (designers and people), the government, the entrepreneur, and the marketers, which

shows how multifunctional clothing can help to reduce adverse environmental impacts. Training and organising workshops should educate junior designers into sustainable clothing programs. It indicates that the designer wishing to design with eco-materials and multifunctional purposes should take great care to ensure that the sustainable clothes are designed according to an acceptable quality, fair price, and stylish. Tremendous potential exists for a blended learning approach to children's wear. Designers may think more holistically and creatively when using the experience in a sustainable context. In addition, research into the development of styles and accessories for versatile clothes would be advantageous. Similar to other research, this study suffers from some limitations. Firstly, the variety of choosing fashionable designs are limited, so the authors used four available multifunctional children's clothes. Only four people were interviewed due to the lack of expertise in children's clothing interested in sustainable ways. More informant interviews or repeated interviews with the same informants may have produced more insight. This study has attempted to investigate the designer's viewpoint toward sustainable children's clothing, especially for multifunctional purposes, although it has sampling limitations. Hence, more studies with a larger sample population would be more sufficient for the survey.

## 6. CONCLUSION

An innovative technique was used in this study to investigate why designers use multifunctional clothing design and the factors that influence their views on sustainable children's clothing design. As a result, the statistically relevant components were investigated. The findings demonstrate that sustainable practices and the social and market context significantly impact the designer's point of view. Designers can make environmentally friendly options to reduce clothing waste during the design process for children's apparel to protect the environment. In conjunction with theories of sustainable children's apparel and the designer's role, this research produced a research framework that can check other constructs of the designer's viewpoint and better comprehend the designer's action in greater depth. The findings of the study are significant because they demonstrate that sustainable activities (practises), the social and market environment, followed by the designer's opinion about clothing properties (structure of multifunctional design, colour, quality, and price), and environmental knowledge are the factors that influence the designer's views on multifunctional children's clothing design. A critical component of the literature on sustainable children's design and the designer's role in this field is the findings of this study.

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