

TABLE II
ARMC MODEL CONSTRUCT'S DEFINITION

Construct	Definition
Monetary Value	The value of package and service as seen by the customers/potential customers
Convenience Value	Time and effort convenience/value
Emotional Value	The product/service that stimulates feelings
Social Value	The sense of acceptance in society from the social connective value
Utilitarian Performance Expectancy	The feeling of trust that a technological solution could assist the users in performing their task effectively
Hedonic Performance Expectancy	The belief that user effectiveness when performing a task is attributed to an enjoyable experience from using technological solutions

An empirical study of the ARMC Model revealed a negative relationship between Usage Intention and Social Value, Emotional Value, Monetary Value, and Convenience Value. Furthermore, a positive relationship was discovered between Usage Intention and Utilitarian Performance Expectancy.

B. Online Virtual Fitting Room Model

The UTAUT (Unified Theory of Acceptance and Use of Technology) model and the perceived risks of an e-commerce transaction model were used to develop the Online Virtual Fitting Room model [45], [46]. The constructs, which were introduced to understand the model's relationship with usage intention, are Perceived Risk, Security Concerns, Facilitating Condition, Performance Expectancy, Effort Expectancy, Social Influence, and Privacy Concerns. An illustration of the Online Virtual Fitting Room Model and its definition are explained in Figure 2 and Table III, respectively.

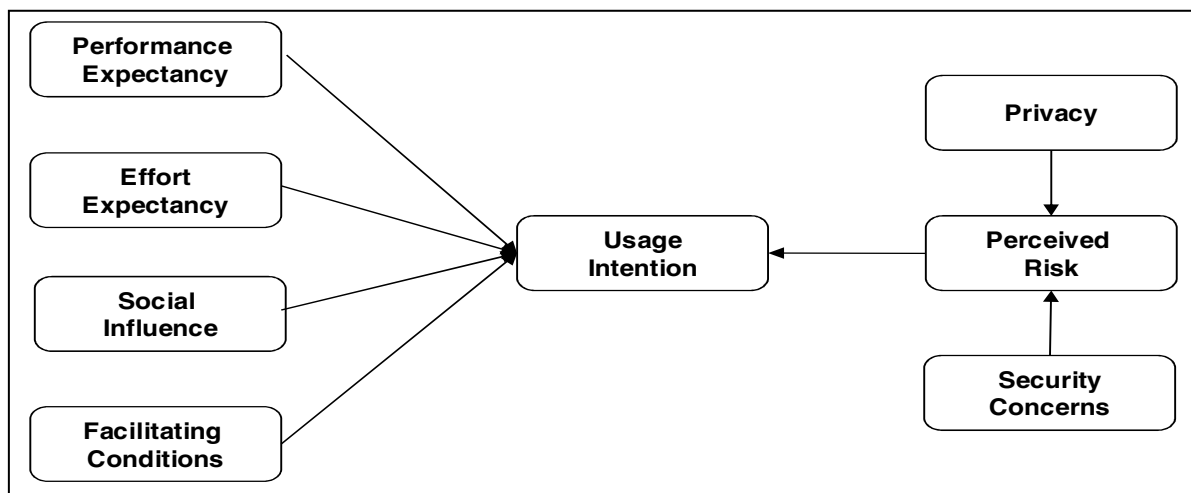


Fig. 2. Online VFR Model

TABLE III
THE DEFINITION OF ONLINE VFR MODEL CONSTRUCTS

Construct	Definition
Performance Expectancy	The expectation that online VFR usage would translate to enhanced business performance and improvement in service quality while saving cost, time, and effort
Effort Expectancy	A construct that indicates the online VFR's ease of use
Social Influence	The opinions and recommendations of third parties, which will influence whether or not the user will adopt the VFR and purchase from the online retailer
Facilitating Condition	A construct that indicates whether or not the user received support, resources, or knowledge when using the online VFR
Perceived Risk	The risks and uncertainty that the online VFR usage poses such as possible monetary or data loss
Privacy Concern	The user's concern or fear of how the VFR application will handle and use their data
Security Concern	The user's concern about security when conducting transactions online.

The empirical study shows that six constructs—Perceived Risk, Performance Expectancy, Effort Expectancy, Social Influence, Privacy Concerns, and Security Concerns—influence user intention when using the online VFR. The foremost construct with the most influence on user intention is the perceived risk construct, which comprises privacy, information safety, and security [45].

C. Augmenting Purchase Intent Model

Schwartz developed an Augmenting Purchase Intent Model to understand the impact of Image Interactivity Technology (IIT) implementation on user attitude and Purchase Intent [47]. The constructs of this model are clearly explained in Figure 3 and Table IV.

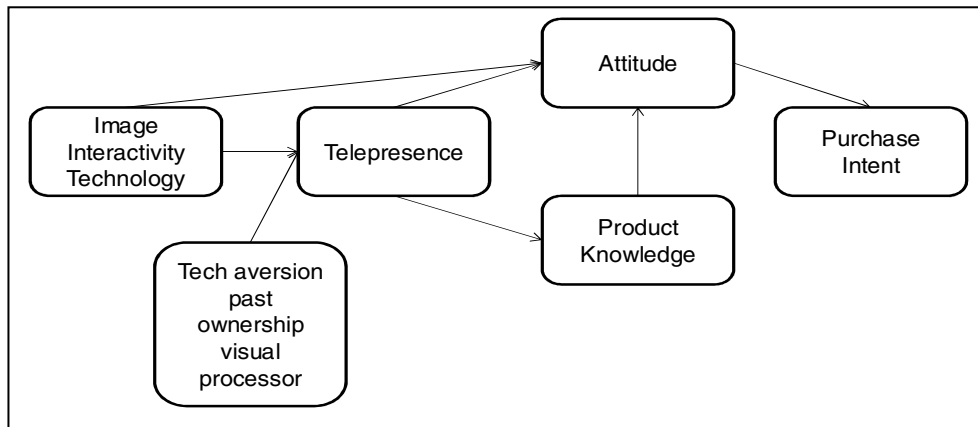


Fig. 3. Augmenting Purchase Intent Model

TABLE IV
THE DEFINITION OF AUGMENTING PURCHASE INTENT MODEL CONSTRUCTS

Construct	Definition
Image Interactivity Technology (IIT)	The use of augmented reality in an online retail environment
Telepresence	A feeling of being elsewhere created by the use of augmented reality technology.
Attitude	The feeling towards a particular product or service
Product Knowledge	Understanding that particular product or service

The empirical result of this model study shows that customer purchase intention influenced by the use of IIT is strongly correlated to customer attitude. However, the correlation between product knowledge and purchase

intention was found to be irrelevant even when using the same stimulant (augmented reality).

D. Virtual Product Experience Model

The Technology Acceptance Model (TAM) and Perceived Risk Theory were the main references for developing the Virtual Product Experience (VPE) in a previous work [48]. The developers of this model aimed to understand the relationship between body satisfaction and attitude and its correlation with other online purchase intentions or otherwise. Body Satisfaction and Attitude towards Product, Perceived Enjoyment of VPE, Perceived Usefulness of VPE, and Product Performance Risks are some of the VPE constructs. The VPE model and its constructs are explained in Figure 4 and Table V.

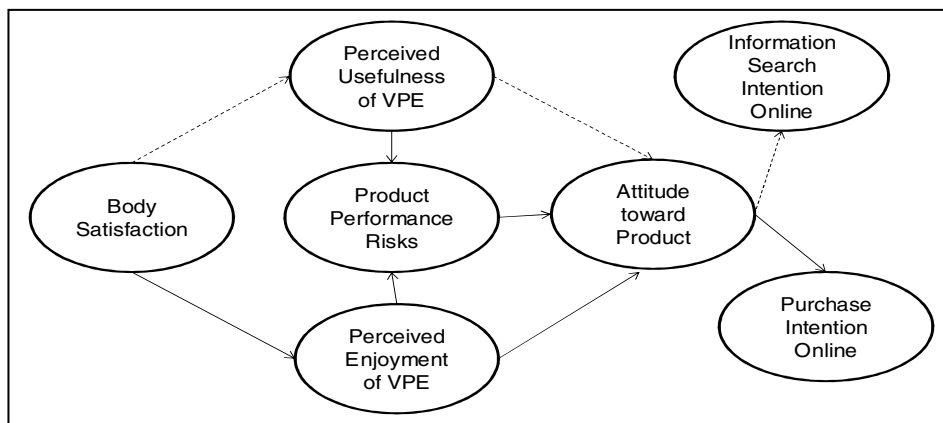


Fig. 4. VPE Model

TABLE V
THE DEFINITION OF VPE MODEL CONSTRUCTS

Construct	Definition
Body Satisfaction	The user's feeling regarding his or her appearance such as body shape and size
Perceived Usefulness of VPE	The condition where a person believes that using a specific system would boost his or her job performance
Perceived Enjoyment of VPE	The condition where a person believes that a system does not require effort and is enjoyable to use
Product Performance Risks	Feelings of doubt and uncertainty that could yield negative outcomes
Attitude towards Product	Reaction towards a product or brand, either positive or negative

From the experimental results, it is found that body satisfaction plays a significant role in influencing the purchase intention of online customers. Apart from that, the VPE empirical result also signifies that user enjoyment also has a positive impact on purchase intention. To maximize the impact of a virtual product, the researcher suggests the use of interactive and hedonic features to reduce the weight age of body satisfaction [48].

E. Online Shopping Acceptance Model

An Online Shopping Acceptance Model (OSAM) was developed based on various possible theoretical models, but finally, only the Technology Acceptance Model (TAM) and traditional retail and marketing theories were taken into consideration [49]. The OSAM model intends to understand the level of acceptance of customers when shopping online. All OSAM constructs are explained in Figure 5 and Table VI.

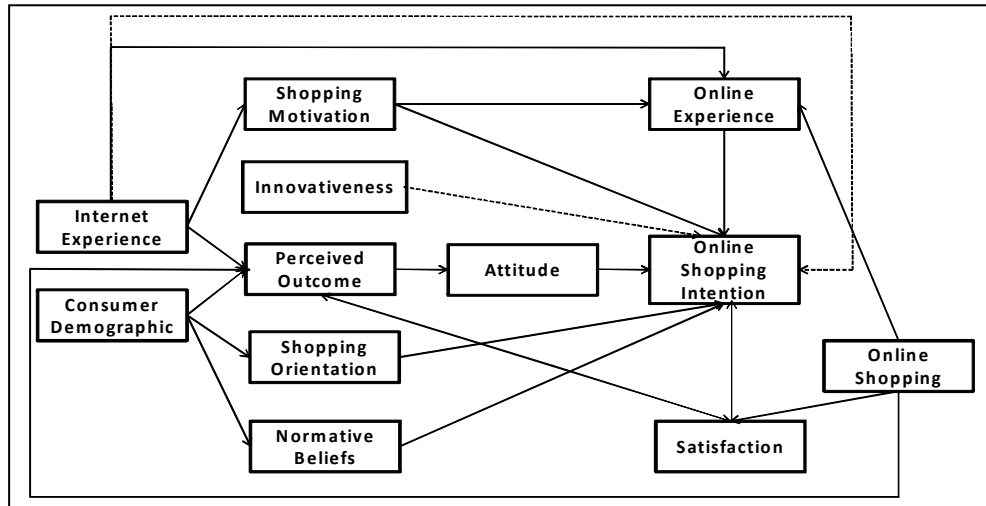


Fig. 5 OSAM Model VPE Model

TABLE VI
THE DEFINITION OF OSAM MODEL CONSTRUCTS

Construct	Definition
Perceived Outcome	Possible outcome perceptions taking the form of negative or positive behavior
Shopping Orientation	One element of the lifestyle of the consumer affected by gender and individual belief
Online Experience	User experience as a result of using a system, which has a strong relationship with interface design and the system overall
Shopping Motivation	This motivation is driven from the user's perception of a system's usefulness.
Satisfaction	The feelings that the user felt from previously shopping online
Consumer Demographic	The background of consumers that will affect their online shopping intention such as Internet experience, age, and education.

The construct relationship within the OSAM model is reported based on previously done research, which shows that all constructs have a significant correlation with the usage intention of users. From this study, it is also found that the stimulation made through all constructs is an effective way to attract purchase transaction.

F. Results Discussion

As mentioned earlier, current VFR solutions face issues of profound emotion from the user's perspective, as well as usability issues. Therefore, this section discusses these issues in more depth with a focus on existing models. Based on the

literature on VFR-related models, it can be observed that usability was only touched on superficially, while profound user emotions were not addressed at all. Only one study on the OSAM model, which listed the satisfaction construct, discussed the aspect of usability [49].

Nevertheless, the study did not correctly use satisfaction from a usability point of view. ISO 9241-11:1998 defines satisfaction as having a positive attitude towards a product and having freedom from discomfort [23], i.e. the pleasure that a user gets from using a system or product is called satisfaction. Therefore, when usability is considered, the bare minimum aspects that should be discussed are satisfaction, effectiveness, and efficiency. Also, for developing a model in future works, accessibility, learnability, operability, recognizability, user error protection, appropriateness, and user interface aesthetics, which are six other aspects of usability, should also be considered as factors in the usability construct. The ARMC model provided the best attempt at including an emotional element out of all the five models discussed, with the introduction of the 'Emotional Value' construct.

However, this construct only focused on the current state of user emotion either after or while using a product, which is not even close to the true objective of profound emotion. The actual definition of profound emotion arises from a much more comprehensive state, which is a combination of emotional, social, behavioral, sensing, intellectual/cognitive, and spiritual experiences [37]. A profound feeling is defined as the harmony between various aspects of the mental state: sentiment, emotion, and knowledge [37]. Therefore, taken

simply, a profound emotion is the feeling a user has when perceiving, seeing or using a product for the first time.

The VFR-related model would greatly benefit from applying usability and profound emotion, as each has its own strength to add to the advantages of the model. The solution provider and the users would benefit from applying usability, which is an increase in value and monetary gains [50]. Various works have also pointed towards a system gaining strong continuous usage and purchase intention as a result of good perceived usability, as it is one of the main factors influencing user satisfaction [51], [54]. Once a buyer is emotionally engaged, the probability of the user purchasing a product would be higher, which is the aim of profound emotion [55]. Moreover, studies have also found that customers make decisions based on emotions, especially when shopping online [4], [56], [62]. Therefore, future developments of the VFR model would strongly benefit from including profound emotion and usability as part of the model constructs.

G. A Proposed Virtual Fitting Room Model

Based on the previous findings and discussions, it is important to integrate the elements of usability and profound emotion in future VFR models. The proposed model is based on the Online Virtual Fitting Room Model, which was

introduced by Huang and Qin [45]. This model was selected as the reference model for this study based on the following rationalizations:

The reference model is used in the same context of the application, which is the virtual fitting room. It is suitable for online use and introduces new technology to encourage usage intention. This should be a critical consideration as online clothing customers are not very familiar with the VFR solution. The Unified Theory of Acceptance and Use of Technology (UTAUT)—an improvement from the Technology Acceptance Model (TAM)—was used to develop the reference model. Besides that, the UTAUT also includes seven other theories, which are the Theory of Reasoned Action (TRA), the Socio-Cognitive Theory (SCT), the Model of PC Utilization (MPCU), Theory of Planned Behavior (C-TAM-TPB) Model, Combined TAM and the Innovation Diffusion (ID) theory, Theory of Planned Behavior (TPB), and the Motivational Model. The empirical result of the reference model found that six out of the seven constructs positively influenced the usage intention among users. It also shows that the constructs of the reference model are valid and must be retained in the newly introduced VFR model.

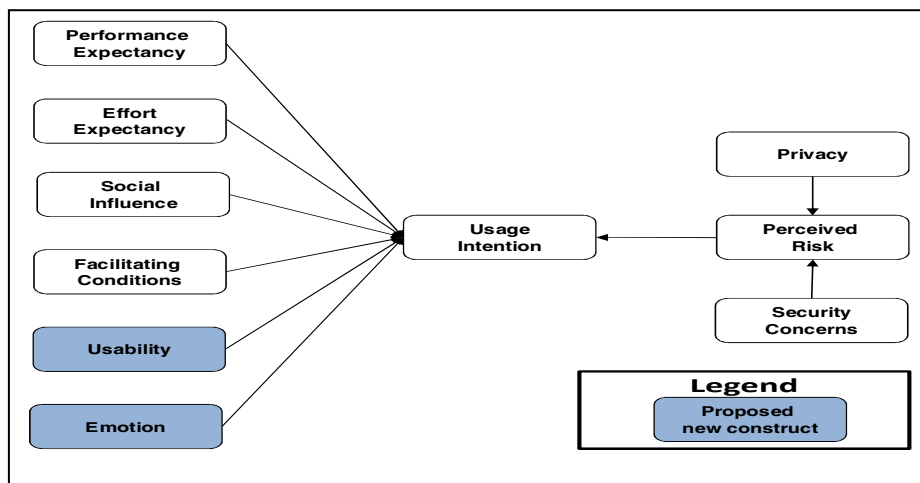


Fig. 6. The proposed VFR model

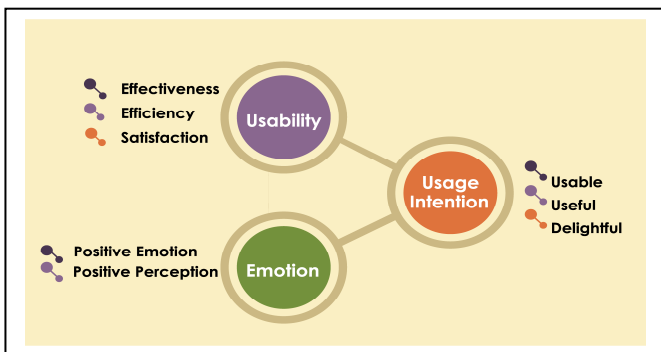


Fig. 7 Usability and Emotion constructs of the proposed VFR model

Referring to Figure 7, the usability construct comes with three determinants, which are effectiveness, efficiency, and

satisfaction, while the emotional construct relates to positive emotion as well as positive perception. The definitions of both constructs are explained in Table VII.

TABLE VII
PROPOSED USABILITY AND EMOTION CONSTRUCT DEFINITION

Construct	Definition
Usability	The aspect of the system that prioritizes the user's best experience regarding effectiveness, efficiency, and satisfaction. The application must emphasize learnability, error prevention, recognizability, accessibility, aesthetic interface, and system operability.
Emotion	The perceived emotional feeling as the user looks at and sees the VFR application. The application must be able to stimulate the user's positive emotion and perception towards the application.

These two constructs are expected to positively influence the usage intention of the VFR application, which then stimulates the user's feeling that the application is usable, useful, and delightful apart from the existing factors contributed by the other constructs.

IV. CONCLUSION

Fitting issues in the online clothing industry have negatively affected both business owners and customers in monetary or non-monetary ways. Even though there is a technological solution that addresses this issue, namely the Virtual Fitting Room, it will not be able to prevent misfit cases if the online customers are reluctant to use the application. Therefore, the issues and limitations of existing VFR applications must be solved comprehensively, and improvements to the model's usability and profound emotional constructs undertaken. For future work, the proposed VFR model must be tested and verified to ensure that it is attractive enough to influence usage intention and most importantly is usable and emotionally satisfying for users.

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