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A Socio-Cultural Analysis of Users' Intentions to Use Facemasks in the Post Covid-19 Era in Nigeria

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Abstract

This paper investigates individuals' intention to use facemasks in the post-COVID-19 era using the extended unified theory of acceptance and use of technology. The intention to use the facemask during the COVID-19 pandemic was more compelling through enforcement rather than the individual's will. In the post-COVID-19 era, the effects of facilitating condition, social influence, price value, performance expectancy, effort expectancy, hedonic motivation, experience and habit on the intention to use the facemask were investigated using the regressions analyses. A total of 417 respondents took part in the selection from government organisations, including higher institutions and public offices in South-West Nigeria and the Federal Capital Territory (Abuja). The result shows that facilitating conditions and hedonic motivation positively influenced the intention to use the facemask, while price value, experience and habit have negative impacts. Findings from this study suggest that facemask manufacturers and distributors must suitably define their products and strategies to suit the value perception of the user and beliefs that trigger social status and hedonic motivations in conjunction with the primary health benefits of the facemasks.

Keywords: Technology Acceptance, Facemask, Behavioural intention, regressions analyses

Introduction

The use of the facemask has been part of our history notably in performing certain activities or the prevention of diseases. At some points in the man's endeavours long before the COVID-19 pandemic, protective equipment has been incorporated as part of the requirements for safety, be it the use of a gas mask, scuba mask, face shield, *etc.* (Matuschek *et. al*., 2020). Measuring the continuous usage of facemasks using the extended unified theory of acceptance and use of technology is directed towards gaining insights into users' intention for using the mask. Understanding the individual's acceptance and use of the facemask is a complex phenomenon, owing to various multidimensional factors involved in its adoption as a utility or necessity for protection.

The intention to use the facemask during the COVID-19 pandemic was more compelling through enforcement, rather than the individual's will. The rapidly increasing number of cases from the COVID-19 outbreak forced governments of different nations to impose lockdowns and propose the use of facemasks (de Sousa Neto & de Freitas, 2020; Wang et al., 2021). During this period, more than 130 million confirmed cases were reported, resulting in the death of more than 2.8 million people globally (Carbon, 2021). To curb the spread of the virus, the World Health Organization (WHO) placed substantial emphasis on the use of protective equipment, in addition to distancing and handwashing to prevent individuals from contracting the virus. Health professionals and the general public were forced to use some of these equipment in public places, including wearing: Protective Face Masks (PFMs), Surgical Face Masks (SFM), Filtering FacepieceRrespirators (FFRs), and Elastomeric Air-Purifying Respirators (EAPRs) (Monini *et al*., 2021). Besides the global lockdown, wearing the facemask, social distancing and regular washing of hands were considered precautionary measures to reduce the likelihood of human-to-human transmission. To enforce the use of these regulations, non-essential workers were forced to stay at home, while the use of facemasks was made mandatory as a type of personal protective equipment in all public offices, schools, *etc*. At the onset of the COVID-19 pandemic, WHO issued a directive instructing the public on the proper use of the facemask for maximum protection, as well as safe procedures for its disposal. WHO advocated for the universal use of face masks in epidemic prevention, as a means of personal protection and source control; for healthy people, wearing masks can protect them by allowing fewer coronavirus particles to be inhaled when in close contact with an infected person, while for infected people, the use of masks can prevent onward transmission. In Nigeria, the use of the facemask was widely accepted at the early stages of the outbreak with little public resistance. Most of the people were enlightened on the significance of the facemask in preventing the

transmission of COVID-19 among the general public (Ogunsola *et. al*., 2023).

Findings from a study conducted by Gunasekaran *et. a*l. (2020) showed the prevalence of the use of facemasks by people visiting a wet market; 99.7% of the respondents were observed to be wearing a facemask, out of which only 4.3% were observed to engage in unacceptable facemask practices. This indicates that the procedure for proper usage of the facemask is quite simple for majority of its users. The difficulty of using a mask is far lower than that of the technologies employed, and the correlation between perceived ease of use and attitude towards mask-wearing is assumed to be insignificant (Zhang et. al., 2021). Globally, the use of the facemask was made mandatory in all public spaces, in addition to regular washing of the hands with soap and water, social distancing, sneezing or coughing into tissue paper or elbow, and the use of alcohol-based sanitisers. The emphasis was on the ability of the facemask to prevent transmission of the virus to non-carriers. Countries worldwide adopted wearing the facemask as a universal preventive technology to combat the spread of the COVID-19 virus, enforcing their citizens to use face coverings in public, particularly in densely populated areas like markets, schools, churches, social gatherings, *etc*., in addition to regular hand washing, use of hand sanitisers, temperature monitoring and social distancing. These measures were reported to be effective in slowing down the spread of the virus.

Facemasks might be worn in some places based on the prevailing environmental conditions which may include: local social habits, religion, and personal preferences for displays or disguises (Ogunsola *et. al*., 2023). Popular amongst the use of facemasks are the renowned Venice carnival masks used for their decorative and attractive nature, and the most memorable costume worn by mediaeval 'Plague Doctors' for protection against the Black Death while treating patients suffering from the plague (Matuschek *et. al*., 2020). Empirical findings reveal that people continue to use facemasks after the COVID-19 pandemic. Although, most countries of the world have lifted all restrictions and enforcements enacted during the lockdown; people are free to travel, gather or attend schools or other social gatherings, but the use of the facemask in public is still common. The use of the facemask may be construed as solely driven by the intentions of the user, since there is no public enforcement to the use of the facemask in public places. Since the extended unified theory of acceptance and use of technology (UTAUT2) examines users' behaviour in the acceptance of technology based on perceived effects of performance, effort, social influence and facilitating conditions and moderated by age, gender, and experience, the model provides a basis to study users' behavioural intention and technology use of the facemask (Venkatesh *et. al*., 2012). Therefore, the

objective of this study was based on unearthing the critical factors that influence users' intentions to continuously use the facemask in the post-COVID-19 era.

Methods

Hypothesis Development

Performance expectancy: Performance Expectancy (PE) addresses the individual's belief in the utility to be derived. The expected usefulness of face masks is the consideration as the first means of curtailing the spread of the COVID-19 virus.

H1: Expected performance of the facemask influences its continuous use

Effort expectancy: This measures the relative ease of using the facemask. The procedures of use and design of the facemask are less complicated.

H2: The relative use of the facemask positively influences its continuous use

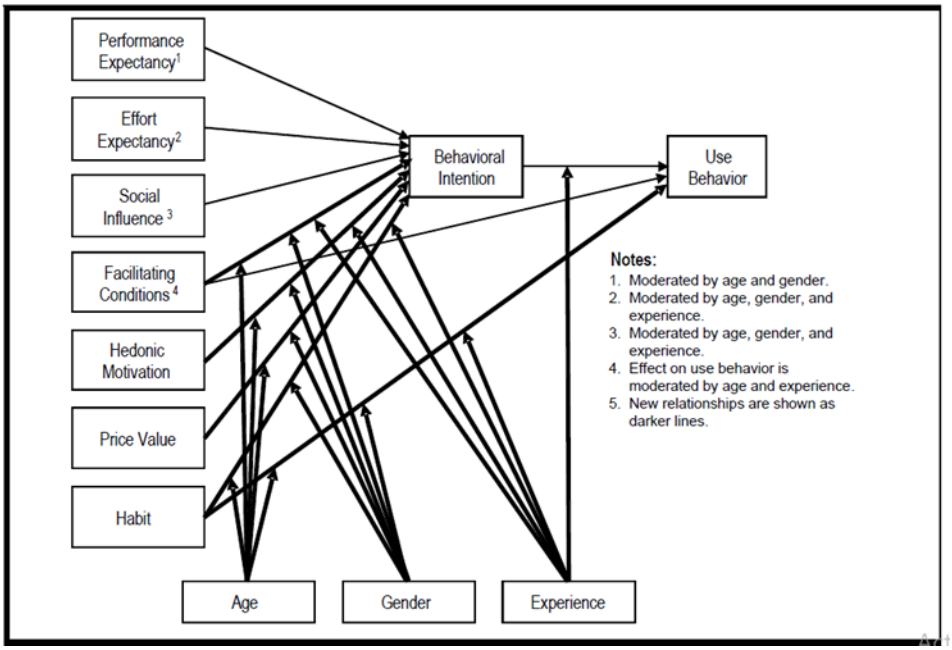

Figure 1: The UTAUT2 model (Venkatesh et al., 2012)

Social influence: The introduction of the facemask at the early stages of the pandemic was perceived as strange and unfamiliar. This perception fundamentally evolved due to the everyday usage of such masksinfluenced by users' beliefs and behavioural intention to use the mask.

H3: Social factors influence the behavioural perception and use of facemasks.

Facilitating Conditions: Use conditions were grouped into factors of pain or discomfort when wearing the mask. Despite some reported cases of discomfort, findings showed that a high proportion of the respondents were willing to wear facemasks viewed as an effective preventive measure against COVID-19 (Ogunsola et al., 2023).

H4: the comfort of wearing the mask is positively related to the continuous use of the mask.

Price Value: The cost of purchasing the facemask is relatively cheap which is as low. The users' expectation that the cost of the facemask is lower than the risk associated with infectious diseases represents good value or their perception of positive impact value influencing its intention to use.

H5: Price value influences users' intentions to use the facemask

Hedonic Motivation: It may also be asserted that users may derive fun and pleasure from using the facemask which influences their intention to use it. Wearing a mask couldpromote other individuals' imagination about the outlook of the face hidden behind the mask.

H6: The perceived hedonic function of the mask to improve one's appearance influences the user's intention to wear the facemask

Experience and Habit: Users' prior experience in technology could be positive or negative based on performance. Positive experience controlled by performance expectation may subject the user to a greater desire to replicate such experience resulting in continuous usage while negative experience results in the opposite.

H7: the perceived and intended use of the facemask is influenced by the user's habit and experience

Data Source and Survey Administration

Data were collected online from participants in seven states of Nigeria comprising Lagos, Ekiti, Ondo, Oyo, Ogun, Edo, and FCT Abuja using the quantitative research approach in 2022. During this period, all restrictions imposed during the COVID-19 lockdown have been lifted even though there were few cases reported around the world. Wearing of the mask was no longer enforced for use in public while the fear of contracting the virus has lessened. A total of 417 respondents took part in this study. The respondents were randomly selected from government organisations,

including higher institutions and public offices from the selected states in South-West Nigeria and the Federal Capital Territory.

Research Design

The first section of the survey questionnaire includes items that measure the demographic variables of the respondents; this includes age, gender, and marital status. The second section is composed of factors relating to the intentions of using the facemasks using the Likert Scale (LS) ranging from "strongly disagree" to "strongly agree". Items for each of the eight variables for the hypothesis testing were developed to measure the respondents' perceptions of these variables. Performance expectancy was considered to be the individual's belief in the utility to be derived or the expected usefulness of the facemasks to prevent and curtail the spread of other viruses and other benefits of wearing the facemask. The survey measured their views on whether they agree or disagree on the ability of the facemask to protect them from contracting diseases. Facilitating conditions are conceived as conditions described relating to the simplicity in the design of the technology and procedure involved in wearing the mask. The procedure involved in using the mask is easily understood by the general public. The price value is measured as the amount the individual pays to acquire the facemask based on the perceived utility to be derived from using the facemask. The question was asked based on the respondent's perceived ability to purchase the facemask. The respondents were asked how they felt using the facemask. The social influence is derived from the perceived feelings of the respondents based on feelings of shame in public, pride, misconfiguration, or concealing of identity (e.g., *'I sometimes feel embarrassed, shy or misconfigured when using the facemask in public'*).

Experience and habit were measured as the user's prior experience in the use of the facemask based on their perceived performance of the item. The respondents were asked about their desire to replicate such an experience with the potential for continuous usage based on the user's derived positive outcome. The hedonic motivation of the respondents to use the facemask measures the fun they derive from wearing the facemask. The respondents were asked to specify the degree to which their level of pleasure/fun derived from using the facemask influences their intention to continue using the facemask. Effort expectancy is measured by the relative ease of wearing the facemask. This represents the required energy to use the facemask. The respondents were asked to indicate the level of difficulty and complexity in wearing the facemask.

Data Analysis

The data collected was analysed statistically using descriptive statistics for the respondents' demography and regression analysis. SPSS 15 was used to perform the statistical analyses: collinearity testing and regression analyses.

Results

Respondents Demographics

Table 2 shows a that total number of 417 questionnaires were distributed at 417 locations to 417 people of different genders. Only 415 participants indicated their ages and 416 participants indicated their marital status. The table shows the distribution of the questionnaire among the different age groups of 17 or under, 18 to 24, 25 to 34, 35 to 44, 45 to 54, 55 to 64 and 65 or older years with frequencies of 20, 149, 142, 52, 29, 16, and 7, respectively. The ages of a majority of the respondents ranged from 18 to 34 years. Amongst the participants, 54.7% were males while 45.3% were females. In terms of their marital statuses, the number of singles, married, and separated/divorced was 246, 160, and 10, respectively at 59%, 38.40% and 2.40%.

Table 2: Respondents Demographics

Item	Frequency	Per cent
Gender		
Male	228	54.7
Female	189	45.3
Age		
17 or under	20	4.8
18 to 24	149	35.7
25 to 34	142	34.1
35 to 44	52	12.5
45 to 54	29	7
55 to 64	16	3.8
65 or older	7	1.7
Marital Status		
Single	246	59
Married	160	38.4
Separate/divorce	10	2.4

Regression Analysis

The result of the regression analyses for testing the hypotheses of the factors of the UTAUT2 model is shown in Table 3. The result shows that both facilitating conditions and hedonic motivation have a positive contribution to the dependent variable ($\beta = 0.146$ and 0.127 at $p < 0.05$

respectively) while effort expectancy (β = 0.009, p = 0.888) is not significant at 95% CI. Factors of facilitating conditions, hedonic motivation and effort expectancy positively affect the intention to use the facemask (Hypotheses H4 and H6 supported).

Table 3: Regression Analysis of Users' Intentions

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Result
		B	Std. Error	Beta	Lower Bound	Upper Bound	B	Std. Error	
1	(Constant)	4.556	.244		18.681	0.000	4.076	5.035	
	Performance_expectancy	-.041	0.049	-0.046	-0.828	0.408	-0.137	0.056	Reject
	Facilitating_Conditions	0.127	.047	0.146	2.674	0.008	0.034	0.220	Reject
	Price_Value	-0.142	.049	-0.157	-2.907	0.004	-0.238	-0.046	Reject
	Social_Influence	-0.077	.051	-0.086	-1.521	0.129	-0.177	0.023	Reject
	Experience_Habit	-0.207	.082	-0.179	-2.540	0.011	-0.368	-0.047	Accept
	Hedonic_Motivation	0.104	.049	0.127	2.102	0.036	0.007	0.201	Accept
	Effort_Expectancy	0.008	.054	0.009	0.141	0.888	-0.098	0.113	Reject

a Dependent Variable: Intention_to_use

The result also shows that factors of price value (β = -0.157, p = 0.004), and experience and habit (β = -0.179, p = 0.011) have a negative contribution to the intention to use the facemask (Hypotheses H5 and H7 supported). However, performance expectancy (β = -0.046, p = 0.408) and social influence (β = -0.086, p = 0.129) equally have negative contributions to the intention to use the facemask but are not significant at 95% CI. Therefore, hypotheses H1, H2, and H3 are not significant at 95% CI.

Data Validity and Collinearity Testing

The collinearity diagnostics test was performed on the regression model to measure the degree of linear intercorrelation between explanatory variables in the regression which may lead to incorrect results of the regression analyses. Diagnostic tools utilised include the condition index and variance decomposition proportion (VDP). The values of the VDPs obtained show the extent of the inflation of the variance in *e*ach of the condition indexes. In Table 4, no two or more VDPs corresponding to a common condition index greater than the range 10 - 30, are more than 0.8 to 0.9, indicating that the explanatory variables are not collinear based on the recommendation by Kim (2019). Hence, this indicates that the explanatory variables are sufficiently stable in the regression models.

Table 4: Collinearity Diagnostics Test

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions								
		(Constant)	Performance_expectancy	Facilitating_Conditions	Price_Value	Social_Influence	Experience_Habit	Hedonic_Motivation	Effort_Expectancy	(Constant)	Performance_expectancy	VIF
1	1	7.304	1.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.843
	2	0.196	6.105	0.00	0.14	0.00	0.34	0.00	0.03	0.07	0.08	.072
	3	0.148	7.021	0.01	0.01	0.16	0.22	0.03	0.00	0.33	0.01	.204
	4	0.110	8.137	0.00	0.47	0.00	0.41	0.01	0.00	0.16	0.14	-.062
	5	0.090	9.032	0.03	0.35	0.22	0.01	0.01	0.00	0.07	0.46	.041
	6	0.068	10.354	0.00	0.00	0.33	0.01	0.80	0.01	0.00	0.03	-.023
	7	0.047	12.510	0.69	0.00	0.29	0.01	0.13	0.10	0.16	0.03	.183
	8	0.037	14.018	0.27	0.03	0.00	0.01	0.02	0.85**	0.21	0.25	.090

a Dependent Variable: Intention_to_use

Discussion

Wearing facemasks during the COVID-19 pandemic was sternly enforced by relevant authorities against the will of the public, but was regarded as one of the techniques to slow down the spread of the virus. After the pandemic, the use of facemasks is still being used based on intention, even though it has never been part of the natural man's habit (Carbon, 2021). For the general public, the intention to continue using the facemask after the COVID-19 era is influenced by the cumulative stimulus of social habit and memory of the past era of the pandemic. During this period, almost everybody is reported to have had an experience of wearing the facemask in public, which signifies the wide acceptance and effectiveness of the mask in the fight against the virus.

The study objective was to provide insight into the factors responsible for the use of the facemask and intentions to use the facemask in some selected states in Nigeria. Adopting factors from the UTAUT2 model, this study explored eight potential determinants for the explanation of future intentions and facemask-wearing prediction in Nigeria considering; Social Influence, Facilitating Condition, Price Value, Performance Expectancy, Effort Expectancy, Hedonic Motivation, Experience and Habit. Results of the regression analyses showed that facilitating conditions of the facemask such as simplicity to wear, and the hedonic motivation such as derived fun and pleasure have positive contributions towards intentions to use the facemask. Indications from the result reveal that, among all the factors considered, facilitating conditions better predict individuals' intention to use the facemasks. The design and procedure for wearing the facemask have been as simple as possible requiring little or no experience to use. The general perception of the people, most especially Nigerians, is that the harder the procedures involved in the use of a technology, the less likely it would be

adopted for use. In line with the findings of Zhang et al., (2021), designing the facemask to be very easy to use significantly contributes to its intention to use. The hedonic motivation shows that the facemasks are becoming a part of the everyday accessories of the public which appeals more to the individual as both part of the person and the social environment. Common designs of the facemask are being tailored to appeal to the tastes and preferences of individuals at both collective and personal levels. Manufacturers produce the facemask in different designs, colours and shapes that are appealing to the user or situation while offering them more options to pick from. The facemask oftentimes has been transformed into extraordinary objects with a deeper meaning to the user boosting both attractiveness and achievement. Wearing the facemask tends to make the face beautiful and compact improving the status of the user.

Price value, experience and habit have a negative contribution to the intention to use the facemask. The majority of Nigerians live below the poverty line despite being an oil-producing country. Most people believe that the cost of purchasing the facemask was relatively higher than the risk associated with contracting infectious diseases representing a negative influence of perception to use the facemask. This is supported by the prevalence of cheap homemade designs of the facemask which were relatively cheap and washable, even though they were less effective in preventing the virus. In addition, the price of the facemask varies significantly based on the type, design and location. Based on users' experience and habit, prior experience and habit of the use of the facemask negatively influence the intention to use the facemask compared to the perceived performance. Negative experiences and habits influenced by non-performance expectations afford the user a lesser desire to replicate an experience. Those who saw the use of the facemask as a burden are more likely to discontinue its use except when they are compelled to.

Performance expectancy of the public relating to the individual's belief in the utility derived from using the facemask is observed to have diminished. The expected usefulness of face masks for preventing the spread of infectious disease appears to have waded off. In Nigeria, the intention to use the facemask could largely be attributed to the activities of the law enforcement agencies who arrest and prosecute defaulters rather than the individual's belief in the capability of the facemask for protection. Not everyone wore the facemask for health purposes. The social influence of an individual by other users remains low and unaffected by their behavioural intention to use the facemask. Rather, factors such as feelings of shame or misconfiguration of the individual for wearing the facemask. The intention to use the facemask is a contention between the perceived benefit and the barriers to the conscious actions to use the item. Protection from the spread

of infectious diseases, hedonic motivation and facilitating conditions favourable influence the individual's intentions to use the facemask. On the other hand, obstacle encountered exists in price value, experience and habit, and effort expectancy act as hindrances to intentions of using the facemask. These factors play significant roles in the continuous and future use of the facemask as the need arises.

Conclusions

This study provided insight into users' behavioural intention to continue wearing the facemask during the post-COVID-19 era. Even after the COVID-19 pandemic era, the use of facemasks is common. During the pandemic, individual's behaviour and government enforcement played significant roles in curbing the spread of the virus and improving the general public's health. The study shows that facilitating conditions, hedonic motivation, price value, and experience and habit influence the individual's intention to use the facemask. While facilitating conditions and hedonic motivation positively influence the intention to use the facemask; price value, experience and habit have negative impacts. Other factors of social influence, performance expectancy, and effort expectancy have no significant influence. Users are to a large extent influenced by the monetary value, perceived value and facilitating conditions to use the facemask. The attached value of the product influences the utilisation of the facemask. Therefore, for continuous production, facemask manufacturers and distributors must be able to suitably define their products and marketing communication strategies to suit the user's value perception and beliefs that trigger social status and hedonic motivations in conjunction with the mask's primary health benefits. By this, manufacturers can produce scintillating products that appeal to the general public of all ages by enhancing the hedonic value that appeals to the individual's preferences. Lastly, the effects of social factors and the moderating effects of gender and age can aid facemask designers in identifying market segments to focus on to augment the experience, habits and cultural perception of the users to boost its existing hedonic value to ensure the users of more value in their product.

Conflict of Interest: The author reported no conflict of interest.

Data Availability: All data are included in the content of the paper.

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