# The Relationship between Sustainable Business Model Innovation and Customer's Stigma
## (An Empirical study at 5-Stars Hotels in Egypt)
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**ABSTRACT**

This research aims to investigate the relationship between Sustainable Business Model Innovation and Customer's Stigma ,this relationship in the field of hospitality which is applied at 5-Stars Hotels in Egypt.

The Research adopted the philosophy of positivism, the deductive approach, and the method of quantitative analysis as the research methodology. The instrument utilized for data collection was the questionnaire. Consequently, 384 usable questionnaires were collected electronically through social media channels from customers of 5-Stars Hotels in Egypt. In addition, analyzing the characteristics of the respondents and then the measurement model and structural model are also

discussed. Finally, structure equation modeling with AMOS 26 is used to examine the hypothesized causal relationships.

The findings reveal that there is significant positive relationship between the research variables (sustainable business model innovation and Customer's Stigma). In addition, this research also has significant practical implications and guidelines for managers, employees and customer of 5-star hotels, and theoretical implications for researchers who are interested in research variables.

**Keywords:** 5-star hotel Customers, Sustainable Business Model Innovation, Customer's Stigma.

### Introduction

Empirical study indicates that chief executive officers (CEOs) think that if a business wants to succeed in the long run, its operations and strategy must address sustainability concerns completely. To solve this, drastic and comprehensive reforms are needed. By reevaluating their mission and value-creation process, companies can boost their environmental and social sustainability through a process known as sustainable business model innovation, or SBMI (Pan et al., 2022).

In addition, the spread of viruses like COVID-19 has led to discriminatory practices and societal stigma against those who are thought to have come into contact with the illness. These kinds of pandemics are far more than biological events. Longer-lasting psychological effects are produced by them than by the sickness itself. In addition to the immediate psychological effects of stress, anxiety,

dread, and mass panic, viruses have significantly increased prejudice, blame, stigma, and "othering," which have strained both international and interregional ties (Bhattacharya et al., 2020).

Additionally, many people who first became infected with the virus were stigmatised for engaging in activities that could have unintentionally exposed others to the virus (Brigden, 2020; Kirk & Rifkin, 2020). Meanwhile, some people resorted to "pandemic shaming" by "virus vigilantes," who called out friends, neighbours, and other people they suspected of not taking the necessary precautions by making negative social media posts and spreading negative word-of-mouth (Belkin, 2020). Due of the possibility of spreading infection, even adultery offences were made public (Lemon, 2020).

This study aims at investigating the relationship between sustainable business model innovation and Customer's Stigma.

## 1. Literature Review

### 1/1 Sustainable business model innovation definition

Goni et al., (2021) referred to sustainable business model innovation as looking for solutions to deal with unanticipated larger societal shifts and sustainability challenges. It is defined as innovations that change how an organization and its valuenetwork produce, deliver, and capture value (i.e., create economic value) or change their value propositions in a way that has a major positive or significantly reduced negative impact on the environment and/or society (Velter et al.,2020).

1/1/1 **Sustainable business model innovation dimensions**

- **Sustainable value proposition**

Sustainable value proposition explains the advantages that are provided by the company's products and services to customers and to all other stakeholders (Bashir et al.,2022). According to Aagaard, (2019), it is concerned with how the available goods and services contribute to financial gain. In a sustainable firm, the value proposition includes both economic and verifiable ecological or social benefit.

- **Sustainable value creation and delivery**

Clauss, (2017) described it as the processes through which businesses produce value along the value chain by using the assets and skills of intra- and inter organizational activities. It points to the specific value that the company provides to customers and other stakeholders. Managers must take into account all the factors that make it possible for the firm's activities to be carried out, including the requisite personnel, resources, and activity-specific flow requirements. Innovation can involve switching to renewable energy sources like solar or wind for manufacturing energy inputs or changing how a product gets to market by adopting low-carbon transportation. Collaboration is also seen as being crucial in the rapidly growing field of circular economy for generating and distributing novel types of value (Kennedy & Bocken, 2020).

- **Sustainable value capture**

According to Kennedy & Bocken, (2020), sustainable value capture encourages managers to think about how the company will hold onto value and how value will be divided among its stakeholders. A business model for sustainability demands 28 companies to capture enough financial value to cover operational costs, as well as that financial, environmental, or social value is collected by stakeholders in a fair and equitable manner. Managers might think about making adjustments to sustainable value capture, such as changing the way the company generates financial revenue to be more inclusive for underprivileged members of society, or redistributing the wealth the company creates (Bashir et al.,2022).

**1/2 Consumer's Stigma definition**

Stigma is a social process that results in exclusion, rejection, or devaluation when a person or group is exposed to, perceives, or logically anticipates a negative social assessment. Stigmatization has been observed to result in social isolation, fewer opportunities for success in life, and put off getting care. It is a source of misery on top of the suffering brought on by sickness (Eissa et al., 2020).

**1/2/1 Consumer's stigma dimensions**

- **Self-stigma**

Internalizing stereotypes and applying them to oneself causes self-stigma, which affects self-esteem and self-efficacy in people with mental illnesses. The "why try effect," one result of self-stigma, is the propensity for people to believe stereotypes about themselves suggesting they are unable to meet the demands of a particular

task (such as a job), and as a result, decide not to attempt this task (forgo applying for or working hard at one's job). (Hing et al., 2016).

- **Public-stigma**

When significant portions of the general population concur with the unfavorable stereotypes, public stigma occurs. Mental illness is stigmatized as being hazardous (caused by the unpredictability and propensity for violence of those who suffer from it), blameworthy (caused by a lack of moral character), and incompetent (unable to perform serious labor).

### 1/3 Sustainable Business Model innovation and Customer's Stigma

Sustainable business model innovation is also defined as: Innovations that modify the organization's and its value-network's methods for creating, delivering, and capturing value (i.e., producing economic, social, or environmental value) or altering their value propositions in order to significantly increase positive and/or significantly decrease negative effects on the environment and/or society (Breier et al., 2020). Moreover, stigmatizing and discrimination is considered as a social and global recent problem facing people with the disease or those at risk of catching it (Coco et al., 2021).

### Academic Gap and problem

The research gap in prior studies motivated the current research to investigate if there is a relationship between sustainable business model innovation and consumers'

stigmatizing attitudes? And are there any differences due to the demographic differences?

## 2.   Research questions

The research is trying to answer the following questions:

2.1   Is there any coefficient relationship between the research variables (sustainable business model innovation, customer's stigma)?

2.2   Is there any effect between sustainable business model innovation and customer's stigma?

2.3   Are there any differences in the Customers' Awareness of the research variables (sustainable business model innovation and customer's stigma) according to their demographic variables (gender, age, education, occupation, residency and income)?

## 3.   Research objectives

The research aims to:

3.1 Determine the nature of the coefficient relationship between all research variables (sustainable business model innovation, customer's stigma and safety behaviors).

3.2 Measure the effect of sustainable business model innovation on customer's stigma.

3.3 Investigate the differences of customers' awareness towards the research variable  (sustainable business model innovation and  customer's stigma) according to the difference of demographic variables (gender, age, education, occupation, residency and income).

## 4. Research Hypotheses

Hypotheses statement:

H1. There is no significant coefficient between all the research variables (sustainable business model innovation, customer's stigma and safety behaviors).

H2. There is no significant effect of sustainable business model innovation on customer's stigma.

H3. There are no significant differences of customers' awareness towards the research variables (sustainable business model innovation and customer's stigma) according to their demographic variables (gender, age, education, occupation, residency and income).

## 5. Research importance

The importance of this study is divided into:

### a- Scientific importance

The scientific importance of the study is to fulfill the research gap by studying and analyzing the mediating role of safety behaviors in the relationship between sustainable business model innovation and customer's stigma.

b- **Practical importance**

The practical importance of the current study is highlighted by:

- Inform hotels managers how to cope with the virus epidemic by implementing sustainable business model innovation.

- Solve the problems of hotels guests' stigma, and determine and find ways to prevent spreading infection diseases.

- Drew the attention of managers of hotels in the study to the importance of complaining to safety behaviors, and its role in infection control and destigmatizing.

**Conceptual Framework for the Relationships between Research Variables**

Based on the Literature, and the research hypothesizes, Figure 1-1 shows the Conceptual Framework for the Relationships between Research Variables
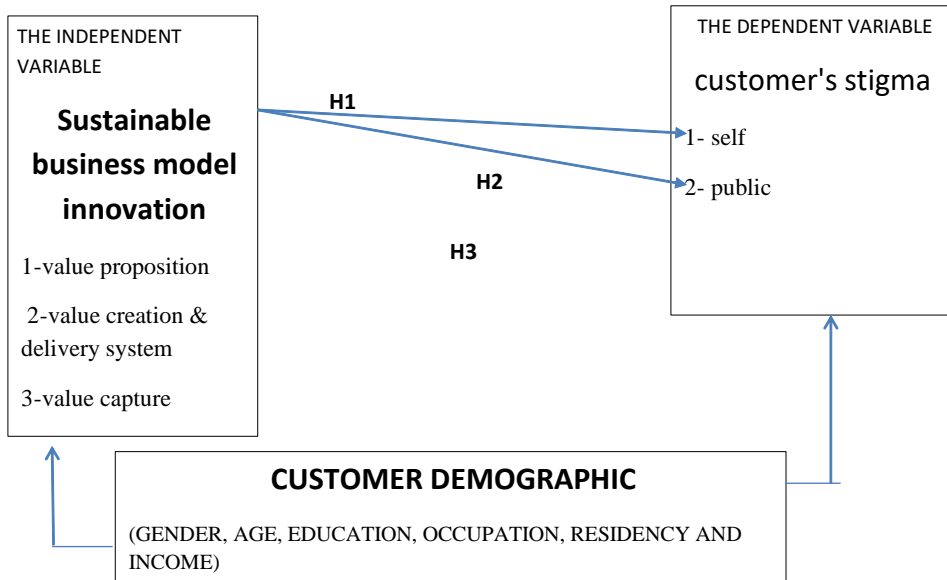
**Figure (1) the conceptual framework prepared by the researcher based on previous studies**

## 6. Research Methods

This study is compatible with quantitative research since it uses the relationships between variables to test theories that are based on facts. These variables can be measured with a device, allowing numbered data to be examined using statistical program.

**6/1 Research Design**

Saunders (2009) claims that the three types of research purposes that are most frequently utilized in studies are exploratory, explanatory, and descriptive. This study uses explanatory research to explain how Sustainable Business Model Innovation and Customer's Stigma

**6/2Data Collection**

**6/2/1) Types of Data**

During this investigation, both primary and secondary data were employed. For a given topic, primary data is first gathered utilizing a variety of techniques such focus groups, interviews, observations, and case studies. On the other hand, secondary data is information that has already been used in published reports and as raw materials for reasons unrelated to the current topic. Using a questionnaire, customers of 5-Stars Hotels in Egypt provided the study's primary data. Secondary data were gathered from books, websites, theses, and articles that have previously explored the research variables and all relevant topics.

**6/2/2) Data Collection Techniques**

Zhang et al., (2023) seen that questionnaires are a suitable approach to gather quantitative primary data. There are two major methods of data collection: interviews and questionnaires. Furthermore, questionnaires are the ideal method for explanatory study.

**6/2/3) Data collection Time Horizons**

According to Saunders et al., (2009), there are two different time horizons for collecting data: snapshot and diary. Snapshot is referred to as cross-sectional, while diary is referred to as longitudinal. , this study depends on a cross-sectional study.

### 7. Questionnaire Survey

According to Saunders et al., (2009), there is two main categories of questionnaires are self-administered and interviewer-administered. First, self-administered questionnaires require individuals to respond to questions by mail, the internet, or a delivery and collection survey. Second, the interviewer-administered which call for speaking with the target sample over the phone or meeting them in person. This study will depend on self-administered questionnaire, which will be personally delivered and collected.

**7.1) Questionnaire Design**

This study depends on structured questionnaire because it makes data management and analysis simple. The researcher can get data quickly and easily with closed questions. Closed, open-ended, and contingent questions are the three main types of structured questionnaires. Although there are only a limited number of possible answers for closed questions, respondents must be innovative in their responses if they want to complete the survey successfully. Hence, closed questions make it possible for the researcher to get information fast and easily. For the reasons listed

above, the researcher chose to use closed questions in this study (Siniscalco & Auriat, 2005).

### 7.2) Variables Measurement

The current study investigates the role of Sustainable Business Model Innovation (Independent variable) on Customer's Stigma (Dependent variable). The researcher concentrated on several measurement components obtained from various earlier investigations. Also, she made an Arabic form of the questionnaire to make it fully obvious to the whole targeted group using five-point Likert 61 scale with choices ranging from "1=completely disagree" to "5= completely agree" to assess the measurement items.

### 7.3) Population and Sampling

The current study's population consists of all hotel customers. There are two types of sampling strategies, according to Acharya et al. (2013): probability sampling (representative sample) and non-probability sampling. Probability sampling is the most commonly used sampling technique in survey-based research.

### 7.3.1) Sampling Unit

The sampling unit used in the current study is the client in any hotel in Egypt. The questionnaire was directed to the customers because they are assumed to have sufficient knowledge about research constructs and the nature of the study in the hotel. The nature of research constructs necessitates directing the questionnaire to the customers.

### 7.3.2) Sample Size

The ability to generalize findings to the population is primarily dependent on utilizing a large enough sample size. The appropriate sample size in this case is determined by the type of statistical analysis employed in the study, the confidence level, the margin of error, and the population size (Saunders et al. 2009). As a result, the population of this study is geographically spread and surpasses 100,000 items, and the appropriate sample size is 384 observations.

### 7.3.3) Sampling Technique

The researcher directed the questionnaire to the hotels' customers. In order to increase the questionnaire response rate, the researcher connected with the customers and discussed the objective of the study and the questionnaire's contents with them. Essentially, the questionnaire was sent to 468 clients, only 436 of them responded. Finally, the researcher gathered only 427 completed questionnaires and 14 uncompleted questionnaires, resulting in only 413 questionnaires that were statistically valid and free of missing data, with a response rate of 88.25% (413/468).

### 7.4) Validity

Validity refers to the idea that whether the questionnaire actually measures what it was aimed at measuring (Bryman & Bell, 2015), i.e., the amount to which a certain variable is reliably measured is referred to as validity (Heale & Twycross, 2015). Face

validity, content validity, construct validity, and criterion-related validity are the four main categories of validity (Saunders et al., 2009).

### 7.4.1) Face Validity

The amount to which specialists in the field of application feel that the questionnaire, in terms of its face, is a valid assessment of the research's concepts is referred to as face validity. Face validity is also related to certain properties of the questionnaire's items, such as clarity, transparency, succinctness, and completeness (Sangoseni et al., 2013). The questionnaire was translated into Arabic by the researcher and given to professionals who checked the grammar and language accuracy.

### 7.4.2) Content Validity

The initial questionnaire was sent to a group of academic specialists to be validated for content validity. First, they established that the questionnaire's items directly correspond to the constructs meant to be measured. Second, they necessitate restructuring some items in order to make them clearer and more understandable to possible replies. They also made suggestions for the format of several questions that were misunderstood, confusing, or needed to be refined. Finally, the researcher used these remarks to create a more accurate, reasonable, and straightforward questionnaire form.

### 7.4.3) Translation of Questionnaire

Researchers that use questionnaires written and prepared in a language different from that of their target prospective respondents must translate the basic questionnaire into the targeted questionnaire in order to increase the validity of the questionnaires (Saunders et al., 2009). In the end, these questions will measure what

is meant to measure, and the translation process will let respondents fully understand the meaning of the items. This process will therefore eventually increase the questionnaire's content validity.

## 7.4.4) Construct Validity

In a broader sense, construct validity describes how well the questionnaire items assess the constructs that are supposed to be tested. Stated differently, it has to do with how few items in the questionnaire evaluate other constructs (Peter, 1981). Construct validity and the capacity to generalize conclusions depending on measuring conditions are related. Convergent validity and discriminant validity are the two subcategories of construct validity. The degree of connectivity among the components in a construct is known as convergent validity. Convergent validity is assessed using the Average Variance Extracted (AVE) method (Hair et al., 2010).

## 7.5) Reliability

The following tables indicate that the adjusted item-total correlation for all items is more than 0.3, indicating strong internal consistency. The questionnaire was distributed to a sample of 55 clients who were instructed to complete it via Google form via the internet. The results were used to evaluate the questionnaire's validity and reliability. Cronbach's alpha and corrected item-total correlation data for each construct are reported in the table below:

| Variables | Dimensions | Measurement Item | corrected item-total correlation | Cronbach's Alpha if item deleted | Reliability | |
|---|---|---|---|---|---|---|
| | | | | | No. of Questions | Total Cronbach's Alpha |
| Sustainable business model innovation | Value proposition innovation | Q1 | 0.664 | 0.847 | 9 | 0.867 |
| | | Q2 | 0.694 | 0.845 | | |
| | | Q3 | 0.455 | 0.866 | | |
| | | Q4 | 0.344 | 0.887 | | |
| | | Q5 | 0.715 | 0.843 | | |
| | | Q6 | 0.736 | 0.840 | | |
| | | Q7 | 0.682 | 0.845 | | |
| | | Q8 | 0.712 | 0.843 | | |
| | | Q9 | 0.572 | 0.856 | | |
| | Value creation innovation | Q10 | 0.619 | 0.913 | 12 | 0.918 |
| | | Q11 | 0.570 | 0.915 | | |
| | | Q12 | 0.663 | 0.911 | | |
| | | Q13 | 0.676 | 0.911 | | |
| | | Q14 | 0.702 | 0.909 | | |
| | | Q15 | 0.607 | 0.914 | | |
| | | Q16 | 0.678 | 0.911 | | |
| | | Q17 | 0.614 | 0.914 | | |
| | | Q18 | 0.668 | 0.911 | | |
| | | Q19 | 0.712 | 0.909 | | |
| | | Q20 | 0.741 | 0.908 | | |
| | | Q21 | 0.742 | 0.908 | | |
| | Value capture innovation | Q22 | 0.772 | 0.858 | 5 | 0.890 |
| | | Q23 | 0.755 | 0.861 | | |
| | | Q24 | 0.764 | 0.862 | | |
| | | Q25 | 0.700 | 0.874 | | |
| | | Q26 | 0.692 | 0.875 | | |

| Variables | Dimensions | Measurement Item | corrected item-total correlation | Cronbach's Alpha if item deleted | Reliability | |
|---|---|---|---|---|---|---|
| | | | | | No. of Questions | Total Cronbach's Alpha |
| The Independent Variable: Sustainable business model innovation | | | | | 26 | 0.955 |
| customer stigma | self-stigma | Q27 | 0.686 | 0.876 | 6 | 0.891 |
| | | Q28 | 0.736 | 0.868 | | |
| | | Q29 | 0.819 | 0.856 | | |
| | | Q30 | 0.718 | 0.871 | | |
| | | Q31 | 0.689 | 0.876 | | |
| | | Q32 | 0.627 | 0.886 | | |
| | Public-stigma | Q33 | 0.678 | 0.933 | 8 | 0.935 |
| | | Q34 | 0.829 | 0.922 | | |
| | | Q35 | 0.869 | 0.919 | | |
| | | Q36 | 0.810 | 0.923 | | |
| | | Q37 | 0.669 | 0.934 | | |
| | | Q38 | 0.868 | 0.919 | | |
| | | Q39 | 0.697 | 0.932 | | |
| | | Q40 | 0.770 | 0.927 | | |

Table (1) shows some results for all variables as follow:

- For the Independent Variable Sustainable business model innovation Cronbach's alpha is 0.955, which is an excellent sign of the construct's dependability. While the Cronbach's alpha is 0.867, 0.918, 0.890 for the three dimensions respectively (Value proposition innovation, Value

creation innovation and Value capture innovation) which also means high level of reliability for all dimensions.

## 7/6) Description of the Sample

This section describes the sample's characteristics in terms of the Customer's gender, age, education, income, and location of residence. Table (4.1) displays these characteristics:

**Table (2): Description of the sample of students (N=413)**

| Demographic Characteristics | | Frequency | Percentage | Cumulative Percentage |
|---|---|---|---|---|
| Gender | Male | 174 | 42.13% | 42.13% |
| | Female | 239 | 57.87% | 100.00% |
| Age | Less than 21 years | 75 | 18.16% | 18.16% |
| | From 21 to less than 31 years | 166 | 40.19% | 58.35% |
| | From 31 to less than 41 years | 125 | 30.27% | 88.62% |
| | 41 years and more | 47 | 11.38% | 100.00% |
| Education | Diploma | 22 | 5.33% | 5.33% |
| | Bachelor | 250 | 60.53% | 65.86% |
| | Post graduate | 141 | 34.14% | 100.00% |
| Income | Less than 5000 | 155 | 37.53% | 37.53% |
| | From 5000 to less than 10000 | 133 | 32.20% | 69.73% |
| | From 10000 to less than 15000 | 63 | 15.25% | 84.99% |
| | More than 15000 | 62 | 15.01% | 100.00% |

| Demographic Characteristics | | Frequency | Percentage | Cumulative Percentage |
|---|---|---|---|---|
| Place of residence | Urban | 329 | 79.66% | 79.66% |
| | Rural | 84 | 20.34% | 100.00% |

Therefore, according to table (2), these two conditions are satisfied and the data are normally distributed.
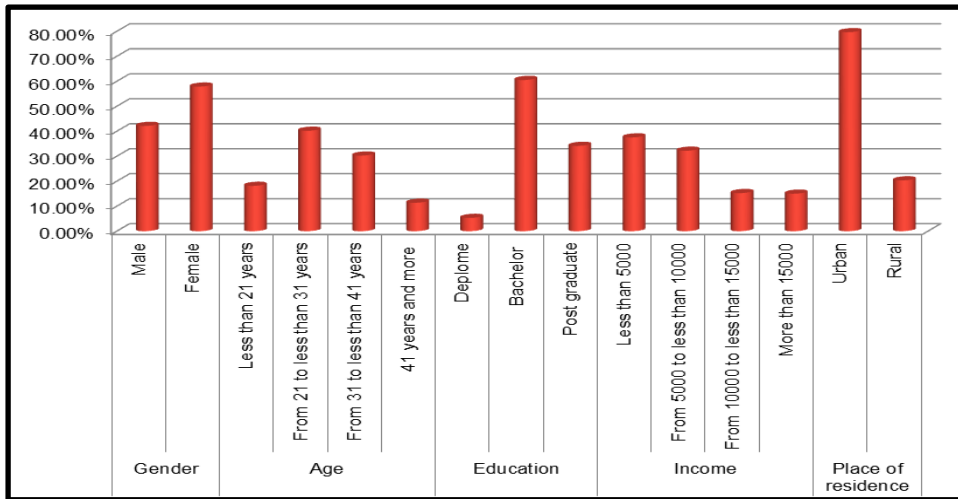


Fig (2): Demographic variables distribution

## 7/6) Descriptive analysis:

Before beginning the statistical analysis, the researcher went through various processes to ensure that the circumstances of the statistical techniques that will be utilized were available. According to Byrne (2010), data assessment is a critical step before testing the measurement model, especially when structural equation modeling is used. The skweness and kurtosis values indicate how regularly

distributed the data is (Blanca et al., 2013). The descriptive statistics for the study variables are shown in Table (2).

**Table (2): Descriptive statistics (N=413)**

| Diminsions | Measurement Item | Mean | Std. deviation | Skewness | Kurtosis |
|---|---|---|---|---|---|
| Value proposition innovation | | 4.024 | 0.633 | -0.761 | 0.732 |
| Value creation innovation | | 4.152 | 0.581 | -0.799 | 0.835 |
| Value capture innovation | | 3.983 | 0.733 | -0.553 | 0.098 |
| Sustainable business model innovation | | 4.053 | 0.581 | -0.569 | 0.338 |
| self-stigma | | 3.748 | 1.212 | 0.240 | -1.097 |
| Public- stigma | | 3.646 | 1.172 | 0.189 | -1.075 |
| customer stigma | | 3.697 | 1.136 | 0.248 | -1.065 |

According to Blanca et al. (2013) the normal distribution of data can be achieved when the absolute values of skweness range between −2.49 and 2.33, and the values of kurtosis range between −1.92 and 7.41. Therefore, according to table (2), these two conditions are satisfied and the data are normally distributed.

Furthermore, the means of all items are greater than 3 which means tending the respondents to approval, so their answers were (Agree, Strongly agree). Consequently, there are no negative responses for all respondents about all items.

**7/7) Structural Equation Modeling**

Byrne (2010) defines structural equation modeling as a statistical tool used to examine a structural theory based on some phenomena. Furthermore, this strategy employs a confirmatory approach that is based on factor analysis and implies

hypothesis testing. As a result, the structural equation model necessitates two steps: the measurement model and the structural model (Fornell & Lacker, 1981).

### 7/7/1) Assessing the Measurement Model:

Investigating the significance of the relationships in the structural model requires testing the validity and reliability of the measurement model (Fornell & Lacker, 1981). Testing the validity of the measurement model in this context is dependent on two factors: the quality of model goodness of fit and construct validity (Blunch, 2012).

### 7/7/2) Exploratory factor analysis:

A statistical technique called exploratory factor analysis (EFA) is used in multivariate statistics to uncover the fundamental structure of a sizable collection of variables. The main goal of the factor analysis method known as exploratory factor analysis (EFA) is to find the underlying relationships between the variables being assessed. Academics frequently use it to identify a set of latent constructs that lie behind a large number of measurable variables while creating a scale, which is a set of questions designed to assess a particular area of study. When the researcher has no preconceived notions about the factors or patterns of the measured variables, it should be applied. Any of the many observable and quantifiable aspects of human nature are considered measurable variables. A person's weight, pulse rate, and physical height are a few instances of measured variables. Usually, a smaller number of "unobserved" elements are thought to be associated to a high number of

measured variables in research. Researchers need to carefully determine how many measurable variables to include in the analysis. EFA approaches are more accurate when each component in the analysis is represented by many measurable variables (Taherdoost et al., 2014).

The basis of EFA is the common factor model. In this model, manifest variables are expressed as functions of common elements, special factors, and measurement errors. The interactions between manifest variables are not explained by any single separate component, and each component affects just one manifest variable. "Factor loadings" are measurements of a common factor's impact on a manifest variable. Common factors have an impact on several manifest variables. Finding common factors and associated manifest variables for the EFA technique is our main goal (Henson and Roberts, 2006).

According to EFA, any variable that can be measured or used as an indication can be related to any factor. When building a scale, confirmatory factor analysis (CFA) should be employed after utilising exploratory factor analysis (EFA). CFA enables the researcher to test the hypothesis that there is a relationship between the observed variables and their underlying latent factor(s)/construct(s), whereas EFA is necessary to find the underlying factors/constructs for a set of measured variables. There is no one right way to do EFA, therefore the researcher has to make a lot of important decisions about how to carry out the investigation. The study used EFA to conduct the Kaiser-Meyer-Olkin (KMO) scale, as stated in table (3):

**Table (3): KMO & Bartlett's Test for all variables**

| Variables | Dimensions | Kaiser-Meyer-Olkin | Bartlett's Test of Sphericity | |
|---|---|---|---|---|
| | | | Chi Square | Sig. |
| Sustainable business model innovation | Value proposition innovation | 0.839 | 495.263 | 0.000 |
| | Value creation innovation | 0.854 | 861.697 | 0.000 |
| | Value capture innovation | 0.813 | 252.403 | 0.000 |
| Independent Variable: Sustainable business model innovation | | 0.880 | 2209.757 | 0.000 |
| Customer Stigma | Self-Stigma | 0.868 | 673.676 | 0.000 |
| | Public- Stigma | 0.909 | 931.673 | 0.000 |
| Customer Stigma | | 0.932 | 1882.691 | 0.000 |

As illustrated in table (3), KMO scale for all variables is greater than 0.5. Additionally, Bartlett's Test significant for all variables, therefore the data are high quality and dependable for structure equation model.

**7/8) The Model Fit of the Measurement Model**

Byrne, (2010) stated that goodness of fit shows the extent to which the measurement model fits to the collected data from the sample. The study utilized the most common indices to evaluate the model fit as it is shown in table (4.4) as follow:

**Table (4): The indices of model fit for the measurement model**

| Measure | Estimate | Threshold | Interpretation |
|---------|----------|-----------|----------------|
| GFI | 0.974 | Closer to 1 | Accepted |
| RMR | 0.027 | Closer to 0 | Accepted |
| CFI | 0.973 | Closer to 1 | Accepted |
| TLI | 0.981 | Closer to 1 | Accepted |
| RMSEA | 0.039 | Less Than 0.8 | Accepted |

The value of CFI is 0.973 which is accepted as it is greater than 0.95. Furthermore, the value of RMR index is also satisfied because it is lower than 0.05. Similarly, RMSEA equals 0.039 which lies under 0.08 as proposed by (Byrne, 2010). The value of GFI which equals 0.974 is accepted as it is higher than 0.8 (Byrne, 2010). Therefore, the measurement model fits the data collected from the hotels' customers.

**7/8/1) The Construct Validity of the Measurement Model:**

To measure construct validity, both convergent and discriminant validity should be investigated. Convergent validity was first tested using the factor loadings in which the values of loadings can be considered to be significant if they are equal to or greater than 0.5 (Hair et al., 2010). Furthermore, convergent validity also measured by (AVE) in which the value can be accepted if it was higher than 0.5. Further, The reliability of the measurement model was measured using both Cronbach's alpha and Composite Reliability (CR). Table (5) summarizes all the factors used to assess model validity:

**Table (5): The validity and reliability of the measurement model**

| Variables | Dimensions | Factor Loading and Reliability | | | Convergent Validity | |
|---|---|---|---|---|---|---|
| | | Questions | Factor Loading | Cronbach's Alpha | AVE | CR |
| Sustainable business model innovation | Value proposition innovation | Q1 | 0.833 | **0.841** | **0.731** | **0.851** |
| | | Q2 | 0.659 | | | |
| | | Q3 | 0.726 | | | |
| | | Q4 | 0.81 | | | |
| | | Q5 | 0.819 | | | |
| | | Q6 | 0.698 | | | |
| | | Q7 | 0.661 | | | |
| | | Q8 | 0.651 | | | |
| | | Q9 | 0.726 | | | |
| | Value creation innovation | Q10 | 0.698 | **0.866** | **0.736** | **0.887** |
| | | Q11 | 0.678 | | | |
| | | Q12 | 0.773 | | | |
| | | Q13 | 0.668 | | | |
| | | Q14 | 0.832 | | | |
| | | Q15 | 0.825 | | | |

| Variables | Dimensions | Factor Loading and Reliability | | | Convergent Validity | |
|---|---|---|---|---|---|---|
| | | Questions | Factor Loading | Cronbach's Alpha | AVE | CR |
| | | Q16 | 0.727 | | | |
| | | Q17 | 0.656 | | | |
| | | Q18 | 0.724 | | | |
| | | Q19 | 0.761 | | | |
| | | Q20 | 0.731 | | | |
| | | Q21 | 0.757 | | | |
| | Value capture innovation | Q22 | 0.828 | | | |
| | | Q23 | 0.692 | | | |
| | | Q24 | 0.797 | **0.822** | **0.738** | **0.769** |
| | | Q25 | 0.699 | | | |
| | | Q26 | 0.672 | | | |
| customer stigma | self-stigma | Q27 | 0.821 | | | |
| | | Q28 | 0.672 | | | |
| | | Q29 | 0.764 | **0.918** | **0.727** | **0.783** |
| | | Q30 | 0.745 | | | |
| | | Q31 | 0.68 | | | |
| | | Q32 | 0.679 | | | |
| | | Q33 | 0.804 | **0.934** | **0.741** | **0.846** |

| Variables | Dimensions | Factor Loading and Reliability | | | Convergent Validity | |
|---|---|---|---|---|---|---|
| | | Questions | Factor Loading | Cronbach's Alpha | AVE | CR |
| | Public-stigma | Q34 | 0.747 | | | |
| | | Q35 | 0.657 | | | |
| | | Q36 | 0.672 | | | |
| | | Q37 | 0.827 | | | |
| | | Q38 | 0.812 | | | |
| | | Q39 | 0.71 | | | |
| | | Q40 | 0.7 | | | |
| | | Q48 | 0.664 | | | |
| | | Q49 | 0.805 | | | |
| | | Q50 | 0.783 | | | |

According to table (5), the accepted cronbach's alpha values are more than 0.6. Furthermore, the AVE values are greater than 0.5, and the composite reliability values are greater than 0.6, which is acceptable according to Fornell and Larcker (1981). In addition, discriminant validity is evaluated in table (4.6). This table shows the correlations between the factors and the square roots of AVEs, as well as how the square root of AVE values are larger than the inter-construct correlations (Fornell &

Larcker, 1981). As a result, discriminant validity is achieved. Finally, the measurement model met all of the criteria for validity and reliability.

**Table (6): Construct Correlations and Square Root of Average Variance Extracted**

|  | Value proposition innovation | Value creation innovation | Value capture innovation | Self-Stigma | Public-Stigma |
|---|---|---|---|---|---|
| Value proposition innovation | 0.855 |  |  |  |  |
| Value creation innovation | 0.740 | 0.858 |  |  |  |
| Value capture innovation | 0.801 | 0.690 | 0.859 |  |  |
| Self-Stigma | 0.796 | 0.753 | 0.736 | 0.853 |  |
| Public- Stigma | 0.681 | 0.741 | 0.849 | 0.671 | 0.861 |

**7/8) Assessing the correlation coefficients among variables' dimensions:**

The Pearson correlation coefficient (PCC), also known as Pearson's r, the Pearson product-moment correlation coefficient (PPMCC), the bivariate correlation, or simply the correlation coefficient, is a measure of linear correlation between two sets of data in statistics. It is the product of the covariance's of two variables and the product of their standard deviations; thus, it is essentially a normalized measurement of covariance, with the result always falling between 1 and 1. The measure, like covariance, can only describe linear correlations of variables and ignores many other

types of link or correlation. Table (7) shows Pearson's r correlation among variable aspects in this study.

The results in this table show that there is a positive significant association between all dimensions for each variable. Additionally, the results ensure a negative significant relationship between Sustainable business model innovation dimensions and Customer Stigma.

In addition, the strongest relationship among the Sustainable business model innovation dimensions and Customer Stigma is the relationship between (Value capture innovation & Self-stigma, where R = -0.512).

Therefore, I can accept the first hypothesis in the alternative form as follow: H1:

*There is significant relationship between all the research variables (sustainable business model innovation, Customer's Stigma.*

**Table (7): Pearson correlation Matrix**

| | Value proposition innovation | Value creation innovation | Value capture innovation | Sustainable business model innovation | Self-Stigma | Public-Stigma | Customer Stigma |
|---|---|---|---|---|---|---|---|
| Value proposition innovation | 1 | | | | | | |
| Value creation innovation | .716** | 1 | | | | | |
| Value capture innovation | .626** | .764** | 1 | | | | |
| Sustainable business model innovation | .866** | .915** | .903** | 1 | | | |
| Self-Stigma | -0.469** | -0.447** | -0.512** | -0.426** | 1 | | |
| Public- Stigma | -0.455** | -0.433** | -0.474** | -0.419** | .817** | 1 | |
| Customer Stigma | -0.464** | -0.441** | -0.498** | -0.423** | .955** | .952** | 1 |

Structural model is utilized to present the causal relationships between research constructs. It is also used to test the hypothesized research model (Byrne, 2010). Table (8) involves the indices used to test the fit structural model as follow:

**Table (8): The indices of model fit for the structural model**

| Measure | Estimate | Threshold | Interpretation |
|---------|----------|-----------|----------------|
| GFI | 0.978 | Closer to 1 | Accepted |
| RMR | 0.031 | Closer to 0 | Accepted |
| CFI | 0.979 | Closer to 1 | Accepted |
| TLI | 0.981 | Closer to 1 | Accepted |
| RMSEA | 0.037 | Less Than 0.8 | Accepted |

The value of CFI is 0.979 which is accepted as it is greater than 0.95. Furthermore, the value of RMR index is also satisfied because it is lower than 0.05. Similarly, RMSEA equals 0.037 which lies under 0.8 as proposed by (Byrne, 2010). The value of GFI which equals 0.978 is accepted as it is higher than 0.8 (Byrne, 2010). Therefore, the measurement model fits the data collected from the hotels' customers.

**7/9) The Direct relationships**

In this section, the results of testing research hypothesis among study constructs are presented. Such hypotheses were tested using SEM with AMOS 26. Hypothesis H2 (a-b-c-d-e-f) proposed that sustainable business model innovation has a direct negative impact on Customer's Stigma, while H3 (a-b-c-d-e-f) posited that Customer's Stigma has a direct negative impact on safety behaviors, besides H4 (a-b-c-d-e-f-g-h-i) predicted that sustainable business model innovation has a direct

positive impact on safety behaviors. Table (9) illustrates the results of testing these direct research hypotheses as follow:

**7/9/1) The direct effect of sustainable business model innovation dimensions on Customer's Stigma:**

According to table (9), it is clear that Value proposition innovation; Value creation innovation and Value capture innovation have significant negative direct impact on Self-Stigma where ($\beta$ = -0.101, -0.218, -0.351 Sig. < 0.05) respectively. In the other side, only Value creation innovation and Value capture innovation have significant negative direct impact on Public-Stigma where ($\beta$ = -0.134, -0.228 Sig. < 0.05) respectively. But it is obvious that all significant dimensions have a negative impact on Customer's Stigma. This result indicates that increasing the sustainable business model innovation lead to decreasing in Customer's Stigma. Therefore, *H2 which represents the negative significant impact of sustainable business model innovation on Customer's Stigma was partially accepted*.

**Table (9): The results of testing direct relationships**

| Hypothesis | | Hypothesis direction | | | Estimate | Sig. | Hypothysis result |
|---|---|---|---|---|---|---|---|
| H2 | H2a | Value proposition innovation | | | -0.101 | 0.038 | Accepted |
| | H2b | Value creation innovation | | Self-Stigma | -0.218 | 0.016 | Accepted |
| | H2c | Value capture innovation | | | -0.351 | 0.010 | Accepted |
| | H2d | Value proposition innovation | | | -0.058 | 0.615 | Rejected |
| | H2e | Value creation innovation | | Public- Stigma | -0.134 | 0.033 | Accepted |
| | H2f | Value capture innovation | | | -0.228 | 0.043 | Accepted |

**7/9/2) Testing the differences between the views of hotels' Customers:**

For testing differences between the views of hotels' Customers, the researcher use non parametric tests such as: Kruskal-Wallis test and Mann-Whitney test. In addition, using parametric test such as ANOVA, so the researcher can illustrate these tests as follow:

**7/9/2/1) Non parametric tests:**

**Firstly**, The Kruskal-Wallis test will be used by the researcher to determine how the age demographic variable differs across patrons of Egypt's five-star hotels. To check if samples come from the same distribution, a non-parametric technique called the

Kruskal—Wallis test, or one-way ANOVA on ranks, is employed. It is named after William Kruskal and W. Allen Wallis. Comparing two or more independent samples with the same or different sample sizes is what it's used for. It is an extension of the Mann-Whitney U test, which is limited to two group comparisons. One-way analysis of variance is the parametric counterpart of the Kruskal-Wallis test (ANOVA).

At least one sample stochastically dominates another sample if the Kruskal—Wallis test is significant. The test does not specify the number of group pairs for which stochastic dominance holds true or the location of this stochastic dominance.

**Secondly**, The Mann-Whitney test will be used by the researcher to determine how the gender attitudes of patrons of five-star hotels in Egypt differ from one another. The Mann-Whitney U test in statistics is a nonparametric test of the null hypothesis that the likelihood of X being higher than Y is equal to the chance of Y being greater than X for randomly selected values X and Y from two populations.

In this study, the results of conducting the Kruskal—Wallis test are as follow:

**Table (11): differences test results for demographic variables of customers**

| Variables | Dimensions | Gender | | | Place of residence | | | Age | | | Education | | | Income | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mann-Whitney | | Result | Mann-Whitney | | Result | Kruskal-Wallis | | Result | Kruskal-Wallis | | Result | Kruskal-Wallis | | Result |
| | | Z-Value | Sig. | | Z-Value | Sig. | | Chi-Square | Sig. | | Chi-Square | Sig. | | Chi-Square | Sig. | |
| Sustainable business model innovation | Value proposition innovation | -1.580 | 0.114 | NS | -1.014 | 0.054 | NS | 4.256 | 0.235 | NS | 1.877 | 0.391 | NS | 2.425 | 0.489 | NS |
| | Value creation innovation | -0.275 | 0.783 | NS | -0.926 | 0.355 | NS | 3.770 | 0.287 | NS | 0.785 | 0.675 | NS | 3.133 | 0.372 | NS |
| | Value capture innovation | -0.478 | 0.632 | NS | -0.924 | 0.355 | NS | 2.324 | 0.508 | NS | 2.183 | 0.336 | NS | 3.001 | 0.392 | NS |
| | Sustainable business model innovation | -0.304 | 0.761 | NS | -1.301 | 0.193 | NS | 2.944 | 0.400 | NS | 1.810 | 0.405 | NS | 3.537 | 0.316 | NS |
| Customer Stigma | Self-Stigma | -0.551 | 0.581 | NS | -0.126 | 0.900 | NS | 0.255 | 0.968 | NS | 0.983 | 0.612 | NS | 2.909 | 0.406 | NS |
| | Public-Stigma | -1.401 | 0.161 | NS | -0.565 | 0.572 | NS | 1.273 | 0.736 | NS | 1.433 | 0.488 | NS | 2.244 | 0.523 | NS |

| Variables | Dimensions | Gender | | | Place of residence | | | Age | | | Education | | | Income | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mann-Whitney | | Result | Mann-Whitney | | Result | Kruskal-Wallis | | Result | Kruskal-Wallis | | Result | Kruskal-Wallis | | Result |
| | | Z-Value | Sig. | | Z-Value | Sig. | | Chi-Square | Sig. | | Chi-Square | Sig. | | Chi-Square | Sig. | |
| | Customer Stigma | -1.075 | 0.282 | NS | -0.380 | 0.704 | NS | 0.267 | 0.966 | NS | 1.190 | 0.551 | NS | 2.063 | 0.559 | NS |

According to table (11), the researcher can conclude some results as follow:

- For the gender variable, there are no significant statistics for all variables, so the researcher concludes that there are no differences among the views of the hotels' customers about gender for all variable research

- For the Place of residence variable, there are no significant statistics for all variables, so the researcher concludes that there are no differences among the views of the hotels' customers about the Place of residence for all variable research.

- For the Age variable, there are no significant statistics for all variables, so the researcher concludes that there are no differences among the views of the hotels' customers about the Age for all variable research.

- For the Education variable, there are no significant statistics for all variables, so the researcher concludes that there are no differences among the views of the hotels' customers about the Education for all variable research.

- For the Income variable, there are no significant statistics for all variables, so the researcher concludes that there are no differences among the views of the hotels' customers about the Income for all variable research.

*Therefore, H3 can be fully accepted because there are insignificant differences between the views of the hotels' customers towards the research variables (sustainable business model innovation and Customer's Stigma) according to their Demographic Variables (gender, age, education, occupation, residency and income).*

**7/9/2/2) Parametric test:**

Multivariate statistics is a subdivision of <u>statistics</u> encompassing the simultaneous observation and analysis of more than one <u>outcome variable</u>. Multivariate statistics concerns understanding the different aims and background of each of the different forms of multivariate analysis, and how they relate to each other.

Table (12): differences test results for demographic variables of customers

| Variables | Dimensions | Gender | | Place of residence | | Age | | Education | | Income | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | F | Sig. | F | Sig. | F | Sig. | F | Sig. |
| Sustainable business model innovation | Value proposition innovation | 1.023 | 0.313 | 3.462 | 0.065 | 1.335 | 0.265 | 0.832 | 0.437 | 0.615 | 0.606 |
| | Value creation innovation | 0.499 | 0.481 | 0.980 | 0.324 | 1.383 | 0.250 | 0.572 | 0.565 | 1.290 | 0.280 |
| | Value capture innovation | 0.688 | 0.408 | 0.560 | 0.455 | 0.588 | 0.624 | 1.098 | 0.336 | 0.969 | 0.409 |
| | Sustainable business model innovation | 0.047 | 0.828 | 1.742 | 0.189 | 1.169 | 0.324 | 1.016 | 0.365 | 1.146 | 0.333 |
| | Self-Stigma | 0.423 | 0.516 | 0.001 | 0.976 | 0.125 | 0.945 | 0.474 | 0.623 | 0.913 | 0.436 |

| Variables | Dimensions | Gender | | Place of residence | | Age | | Education | | Income | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig. | F | Sig. | F | Sig. | F | Sig. | F | Sig. |
| Customer Stigma | Public- Stigma | 1.951 | 0.164 | 0.220 | 0.640 | 0.396 | 0.756 | 0.679 | 0.509 | 0.778 | 0.508 |
| | Customer Stigma | 1.137 | 0.288 | 0.051 | 0.822 | 0.082 | 0.970 | 0.558 | 0.574 | 0.741 | 0.529 |

The practical application of multivariate statistics to a particular problem may involve several types of univariate and multivariate analyses in order to understand the relationships between variables and their relevance to the problem being studied. In this study, multivariate analysis used for identifying the differences between the views of the hotels' customers, consequently table (12) shows the results of multivariate analysis for the demographic variables related to the hotels' customers and the main variables of the research. According to table (12), the researcher can conclude some results as follow:

- For the gender variable, the F-value for all variables is insignificant, which means that there are no differences among the views of the hotels' customers about gender for all variable research.

- For the Place of residence variable, the F-value for all variables is insignificant, which means that there are no differences among the views of the hotels' customers about Place of residence for all variable research.

- For the Age variable, the F-value for all variables is insignificant, which means that there are no differences among the views of the hotels' customers about Age for all variable research.

- <u>For the Education variable,</u> the F-value for all variables is insignificant, which means that there are no differences among the views of the hotels' customers about Education for all variable research.

- <u>For the Income variable,</u> the F-value for all variables is insignificant, which means that there are no differences among the views of the hotels' customers about Income for all variable research.

*Therefore, I can assure the results of non-parametric tests of H6 which indicates this hypothesis can be fully accepted because there are insignificant differences between the views of the hotels' customers towards the research variables (sustainable business model innovation, Customer's) according to their Demographic Variables (gender, age, education, occupation, residency and income).*

## 8) Findings and Recommendations

### 8.1)    Research Questions Revisited

Table (13) below shows the overall view for Research Questions, Objectives, Hypothesizes, and Results of Testing hypotheses as follows:

**Table (13) Research Questions, Objectives, Hypothesizes, and Results**

| Research Questions | Research Objectives | Research Hypothesizes | Results of Testing Hypothesizes |
|---|---|---|---|
| Q1. Is there any coefficient relationship between the research variables (sustainable business model innovation and customer's stigma)? | O1. Determine the nature of the coefficient relationship between all research variables (sustainable business model innovation and customer's stigma). | H1: There is no significant coefficient between all the research variables (sustainable business model innovation and customer's stigma). | Rejected |
| Q2. Is there any relationship between sustainable business model innovation and customer's stigma? | O2. Measure the effect of sustainable business model innovation on customer's stigma. | H2: There is no significant effect of sustainable business model innovation on customer's stigma. | Rejected |
| Q3. Are there any differences in the Customers' Awareness of the research variables (sustainable business model innovation and customer's stigma) | O6. Investigate the differences of customers' awareness towards the research variables (sustainable business model | H6: There are no significant differences of customers' awareness towards the research variables (sustainable | accepted |

| Research Questions | Research Objectives | Research Hypothesizes | Results of Testing Hypothesizes |
|---|---|---|---|
| according to their demographic variables (gender, age, education, occupation, residency and income)? | innovation and customer's stigma) according to the difference of demographic variables (gender, age, education, occupation, residency and income). | business model innovation and customer's stigma) according to their demographic variables (gender, age, education, occupation, residency and income). | |

**Source:** By Researcher based on Literature, Data, and AMOS 26 Statistical analysis outputs.

### 8.2)    Research Findings

Table (14) below shows the summary of research findings compared to literature:

**Table(14) Research Findings compared to Literature**

| Research Findings | Compared to literature |
|---|---|
| There is significant relationship between all the research variables (sustainable business model innovation, Customer's Stigma). | Agree with Kirk & Rifkin (2020) ; Bashir et al., (2020); Velter et al., (2020); Mejia et al., (2021); Breier et al., (2021); Payberah et al., (2022) |

| Research Findings | Compared to literature |
|---|---|
| Sustainable business model innovation significantly affect Customer's Stigma | Agree with Mitra & Gaur, (2020);  Mattera et al. (2021); Ndichu, & Rittenburg (2021); Abdollahi & Rim (2022). |
| There are significant differences of customers' awareness towards the research variables (sustainable business model innovation and Customer's Stigma) according to their demographic variables (gender, age, education, occupation, residency and income). | Within the researcher's knowledge, there are no previous studies that have previously investigated this relationship |

Source: By Researcher based on Literature.

## 8.3)    Theoretical Implications

The current research contributes to the body of knowledge of the existing literature of sustainable business model innovation, Customer's Stigma and safety behaviors. In addition, the research aimed to fill the knowledge gap focusing on the effect of sustainable business model innovation on Customer's Stigma. Therefore, researchers summarize the theoretical implications as follows:

The current Research contributes to a broader and more comprehensive understanding of sustainable business model innovation and knowing the extent of its effect on Customer's Stigma.

The current research gives deeper analysis for the effect of Demographics' differences on the differences of respondents' opinions about research variables.

Based on current research, researcher recommends these topics for future research:

1. Study the effects of research variables applied on other Population, like Universities or Banks.

2. Study the effect of sustainable business model innovation on Customer's Stigma of Universities students.

### 8.4) Practical Implications

Based on the results of the current research, researcher summarized the practical recommendations in Table (15) as follows:

**Table (15) Research recommendations for the field of practice**

| Practical Recommendations | Notes for application |
|---|---|
| 1. Building a culture that supports sustainable business model innovation to health and well-being awareness in light of potential diseases | Whom? top management and human resources management<br>How? Conducting survey, qualitative and experimental studies and Providing training programs that motivate leaders and employee applying sustainable business in hotels<br>When? Along the service cycle: stages before, during and after customers visit the hotel. |

| Practical Recommendations | Notes for application |
|---|---|
| 2. Develop and maintain a healthy climate to reduce diseases in hotels. | Whom? top management and human resources management<br><br>How? Implementing participatory workshops for both managers and employees to encourage the adoption of sustainability behaviors, and provide moral incentive to everyone who presents new and innovative ideas.<br><br>When? Along the service cycle: stages before, during and after customers visit the hotel. |
| 3. Preparing a modern guide to the risks and crises to which tourism is exposed to in Egypt | Whom? top management and executives<br>How? Allocating programs to raise awareness of infectious diseases and innovative health and procedural methods to prevent their spread, and developing advanced information programs aimed at predicting emergency and expected crises, to support decision-making centers with accurate information to manage them appropriately.<br>When? Along the service cycle: stages before, during and after customers visit the hotel. |

| Practical Recommendations | Notes for application |
|---|---|
| 4.  Achieving hotel security by establishing appropriate legal and sustainable frameworks | **Whom?** top management **How?** Spreading awareness among workers about the necessity of developing the regulatory system and holding scientific and technical meetings for specialists. **When?** Along the service cycle: stages before, during and after customers visit the hotel. |

Source: By Researcher based on results.

**8.5)    Research Limitations**

This research has some limitations which researcher summarizes it as follows:

**People:** This research results are limited to Customers of 5-Stars Hotels in Egypt.

**Place:** This research results are limited to 5-Stars Hotels in Egypt.

**Time:** This research results are limited to the cross-sectional period in when the questionnaire was shared to customers of 5-Stars Hotels in Egypt during the period from august to November 2023.

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