

Research Methodology

The study methodology and procedures are considered a major axis through which the applied side of the study is accomplished, and through it the data required to conduct the statistical analysis are obtained in order to reach the results that are interpreted in the light of the study literature related to the subject of the study in order to achieve the objectives of the study, so this part aims to explain the methodology of the study and its procedures. This part will deal with an explanation of the method of the study used, a description of the study population, as well as the study tool used, the method of its preparation, how it was built and developed, and the extent of its validity and stability.

According to the objectives of the study, the researcher will use the analytical descriptive approach, which relies on studying the phenomenon as it exists in reality and is interested in describing it as an accurate description and expressing it qualitatively and quantitatively.

Data collection methods

The study relied on two types of data sources:

1- Secondary data sources: In addressing the theoretical framework of the research, the two researchers turned to secondary data sources, which include relevant Arabic and foreign books and references, periodicals, articles, reports, and previous research and studies that dealt with the subject of the research.

2- Primary data sources: Because the researchers believe that the secondary data sources are not able to fully cover the research, they will resort to using the primary sources of data by using the questionnaire as a main tool for the study in data collection and case study.

Population The study population consisted of all Fuel Stations in KSA for the year 2020-2021.

Sample:

Due to the difficulty of a comprehensive inventory of the study population, the researcher relied on drawing an arbitration sample of (12 observations) fuel stations.

Study variables:

- Independent Variable (IV)

The presence and visibility of the Environmental Performance

- Dependent Variable (DV)

Sustainable Supply Chain Management

Study tool

Time series methodology

The time series methodology consists of sequential stages, starting with the stage of diagnosis and description of the model, which is the most important stage, followed by the stage of estimating the parameters of the model, then the stage of examining the suitability of the model, and the final stage comes, which is the forecasting stage. This estimation goes through the following steps:

- Conducting a unit root test for time series to determine their stability and determine their degree of integration.
- Testing the equilibrium relationship between variables in the long run by following the cointegration test using the autoregressive approach for lag periods.

Time series analysis is one of the important mathematical and statistical methods that deals with the behaviour of phenomena and their interpretation over extended periods of time. The objectives of time series analysis can be determined by obtaining an accurate description of the special features of the process from which the time series is generated and building a model to interpret its behaviour and using the results to predict its behaviour in the future, as well as Control the process by which the time series is generated by examining what happens when some model parameters change.

A time series is defined statistically as a series of random variables defined within a multivariate probability space and indexed by the index t , which refers to an index set T . The time series is usually symbolized by the abbreviation $(Y(t))$ and consists of two variables, one is explanatory, which is time, and the other is the response variable, which is the value of the phenomenon studied.

Unit Roots Test

The stability of time series is an important topic; As inference with unstable variables gives misleading results, as the relationship between unstable variables is not real and this is called false regression, and there are many statistical methods used to test stability, and one of the most accurate and widespread methods is the unit roots test, and the goal of testing a root The unit examines the properties of the time series for each variable over the time period of the observations, ensures its stability, and determines the degree of integration of each variable separately. If the series is stable after taking the first difference, then the original series is integrated of order 1, i.e. $I(1)$, but if the series is stable after taking the second difference, then

the first series is integrated of second order, i.e. $I(2)$. Thus, if the original series is stable in its original values, it is said to be integral of order zero; Therefore, it does not have the unit root, i.e. $I(0)$. In general, the series X_t is integral of degree (d) if it stabilizes after taking the difference (d) .

To test the stability of time series, several tests are used, the most important of which are:

- * Augmented Dickey-Fuller Test (ADF) The basis of the DF test (1979) assumes that the time series is generated by an autoregressive (AR) process.