

**Methodology**

**Construction Cost Index – 2021**

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**First: Background on Survey**

**1.1 Introduction:**

The construction sector has an impact in the national economy due to its association and direct impact on many economic activities, The Construction Cost Index (CCI) achieves many goals and benefits to economic decision and policy makers, businesspersons and the authors of the national accounts. DSC seeks to build index system, which represents accurate reference for those interested in the development of data whether data related to the prices of all kinds or data related to production development of various economic activities.

Therefore, DSC has created Construction Cost Index, which reflects construction and building cost prices change in order to present a complete image about the development of the construction sector and relied upon as a statistical index that measures construction cost changes. Moreover, it is an important index used by planners and staffs in the fields of development and production.

since 2012 the available numbers have been prepared and processed according to Building Stage Classifications (B.S), Central Product Classification (CPC2.1) and International Standard Industrial Classification (ISIC4), serving the calculation of current construction cost index, where the number of commodities and services included in the calculation of CCI is 361 commodities and services collected from 92 establishments distributed to most areas of Emirates of Dubai.

The results have been prepared in tables that the user can identify the movement of construction costs according to the types of buildings. Buildings type classified into residential building and non-residential building, and residential buildings classified into villa building and Multi-storey building. Non-residential buildings classified into public buildings and industrial buildings.

* 1. **Survey Objectives**

Construction Cost Index measures the construction cost changes of prevailing types of buildings during certain periods within Emirate of Dubai, survey key objectives summarized as follows:

* Monitoring changes that occur in the prices of commodities and services included in buildings construction costs.
* Identifying changes that take place in construction costs of buildings of all types whether residential buildings or non-residential buildings.
* Identifying the progress and development in construction sector in a certain period versus another through defining the demand size on building materials reflected by high or low prices of those materials.

**Second: Target Population and Survey Sample Frame**

* 1. **Target Population:**

Studying the prices of a set of commodities and services included in construction costs prices system, classified according to ISIC4 in order to calculate the index based on the following types of buildings:

* Residential buildings:
	+ Villas
	+ Multi-storey buildings
* Non-residential buildings:
	+ Public buildings
	+ Industrial buildings

**2.2 Survey Sample Frame:**

For survey sample frame, it has been relied on sales and production sources of building materials due to the privacy of the survey; specialists have selected the sources, which provide the materials included in the basket taking into account to be always available.

**Third: Survey Sample**

**3.1 Sampling Units:**

A purposive sample used to reach commodities and services categories prices of building materials sales and production sources distributed to all areas of Dubai. The number of commodities and services included in the sample is 361 commodities and services collected from 92 establishments distributed to most areas of Emirate of Dubai in 2021.

**Fourth: Stages of the Survey**

The survey phases included a series of overlapping and integrated operations carried out by the team, depending on the methodology of the governance and management of statistical operations phases to prepare the action plan and timetable for its implementation to ensure completion of the work within the highest quality standards. It included the following:

**4.1 Design Phase**

This phase included the preparation and review and approval of preliminary statistical form also includes sample design and its methodology, preparation of description variables and the design and adopt the validation, auditing and reviewing rules, as well it include the methodologies of data processing and reports for the statistical systems.

**4.2 Building Phase**

This stage included preparing, designing and approving the statistical form, developing a system of index numbers for the process of entering prices and calculating the index of construction costs, and designing and building reporting tables for statistical systems.

**4.3 Field Data collection Phase**

Data collection phase of the field include one of the largest and most important stages of work in the survey, which include the preparatory phase and during which select the frame, pull the sample units, and identify them as well as systematic data collection and field mode, as this phase includes the implementation of training courses. It also includes the field phase, which includes collecting field data and submitting reports on the progress of work.

**4.4 Data Processing Phase**

The data processing phase includes applying the rules of auditing, reviewing and checking the data, approving the raw data, compensating the missing values, linking the variables from multiple sources from the systems development department, calculating the weights, calculating the aggregate results from the main and secondary data, and approving the semi-final database.

**4.5 Analysis Phase**

This phase includes calculating preliminary results and initial indicator calculation, Auditing overall results, and comparison of pervious statistics, Data Analysis, Review result and its privacy level. Approve the results after revision and in this phase, the general mythology and the approved working methods will be documented.

**4.6 Dissemination Phase**

The phase includes ascertaining the designs of all outputs and their ability to be published, determining the levels of publication, reviewing and approving publication levels, and building statistical packages and reports at this stage, which is concerned with publishing data on packages that were designed in the construction stage. The center and the management of the social media channels of the center, as well as receiving and delivering the requests of the various concerned groups, and communicating with customers by responding to their inquiries after the completion of the publication of the data.

**Fifth: Main Documents of the Survey**

The index system included survey documents from data collection forms, a number calculation program, output tables, and presentation of results.

**5.1 Survey Form:**

A form was designed to collect data through the Indices system for each source of sale, so that the form includes the name of the source and the month of collecting the statement, the name of the commodity, the description of the commodity and its unit, in addition to the country of origin, the price of the previous month, and the price of the month whose data is to be collected.

**5.2 Coding Data:**

Through the Indices system, the commodity and services included in the construction cost index basket classified according to the classification of construction stages

**Sixth: Survey Staff**

**6.1 Survey Staff Functional Structure**

The survey staff who participated in technical, administrative, and fieldwork organized as follows:

* Technical Supervisor of the Survey: Key functions include preparing all the technical methodologies related to the study “the integrated methodology, auditing methodology, results methodology… etc.” In addition, he is the only reference for any technical instructions related to questions, concepts, definitions, and variables of the survey and any other technical aspects related to the form, in addition training and testing the survey staff and preparing a detailed report that includes the key survey outputs.
* Field Staff: Their number reached 5 researchers distributed among the sales outlets. The tasks of the researcher include carrying out the process of data collection and making sure that all data completed before leaving the field, as well as checking the data completed in the field and entering it into a program designed to calculate the numbers in the index number system.

**6.2 Selecting and Training Staffs:**

Since the field staff working in the survey is from the Department staff, two members selected to work in the survey at different supervisory and executive levels according to several bases, including prior experience. The survey staff-training plan was developed and the staff trained before beginning collecting data from field, including defining the survey, its objectives, the data to be collecting, and collection mechanism. They were also training practically on the entry software in the index number system.

**Seventh: Fieldwork Phase**

This part includes a brief presentation of the fieldwork stages, which easily included fieldwork progress procedures and desk audit.

**7.1 Organizing the Fieldwork:**

The fieldwork was organized and executed in a way that ensures the survey data will obtained easily and accurately. The work distributed to all different outlets to provide the required commodities and cover all items of basket of commodities.

**7.2 Data Collection Method:**

Data collection conducted through the field visit to the outlet for the first time. After the responsible person defined of the survey and its objectives, it shall be agree with him on the data collection method (field/phone/internet) using the index number system to facilitate collection method, for the staff and responsible person in the outlet in order to collect the commodities prices on a monthly basis. Review the prices and it is rational among different sales sources and various periods, make sure certain prices are accurate through the field review and get rid of some abnormal prices non-confirming with the logical chain of the prices movement.

**7.3 Field Audit:**

Data collection form includes commodities prices of the previous month at the time of field visit of data collection to enable the staff check the accuracy of data collected. After the collection stage concluded before leaving the outlet, all data shall audited and verified by the staff.

**Eighth: Data Processing Phase:**

Data collection form was designed and automated in a manner facilitated the work which has had a significant impact on ensuring all data required is completed. The input process in the program shall made by staff and he shall audit once more all data to make sure the data collected and entered to the system is accurate and ensure data is processed for index calculation phase.

**8.1 Office Processing:**

During the process of collecting data from the field and sent electronically, these data are checked by the researcher and are reviewed after the process of entering into the system and after ensuring the data’s readiness, the general technical supervisor of the survey performs a desk check on the data through the index number system. At this stage, the focus is particularly on checking the consistency and completeness of the data to reduce the size of the error as much as possible, in a way that overlaps with the fieldwork stage.

**8.2 Electronic Processing:**

The specialists in the department have automated the index system for calculating the number. Staffs and technical supervisor trained on how to use the program and finish the predesigned auditing process. The available devices utilized at the highest possible efficiency to speed up the auditing process. It made certain that the consistency rules implemented to make sure the data entered is logical and consistent with each other as per other variables. Implementing auditing rules were effective in preparing a file with error free data. Then, some results classified by pre-suggested structural tables and the extracted tables audited.

**8.3 Presenting and Disseminating Results**

To view the results, the output tables were prepared as follows:

* Tables that include the indices of the quarterly and annual construction costs and according to the types of buildings: residential buildings, non-residential buildings, and the general index.
* Tables that include the percentages of change in the quarterly and annual construction cost indices and according to the types of buildings: residential buildings, non-residential buildings, and the general index.
* Tables that include indices of quarterly and annual construction costs and according to the types of buildings: residential buildings, non-residential buildings, and the general index.

And according to the approved classifications:

* Classification of construction phases (B.S)
* Central Product Classification (CPC2.1)
* International Standard Industrial Classification of Economic Activities (ISIC4)

Starting in 2021, the construction cost indices in the emirates of Dubai were extracted with a new series according to the classification of work stages and the central classification of products in addition to the International Standard Industrial Classification of Economic Activities (ISIC4) starting from 2013 and assigning the index to 2019, where it is implemented and clarifies the classification of the different stages of construction starting From the necessary preparations for construction, the stage of preparing the structure of the building, and the final stage, which is the necessary finishes to prepare it for final use, whether for housing, work, or any purpose for which the building was prepared. The central classification of products shows a comprehensive classification of all goods and services, and includes all products that can be the target of local or international transactions or can be included in stores. The classification presents products that are considered the product of economic activity, including transportable goods and non-transferable goods and services.

The classification of work stages has been adopted as a main classification based on which press news related to the project is published, for ease of understanding by the user and linking the indicator with the real practice of users. To update the basket of goods and to adopt the year 2019 as a new reference period, while following the method of weighing the goods in the basket instead of adopting the method of calculating the geometric mean when calculating the index numbers according to the **Laspeyres** equation. The results of the survey will be published according to the approved classifications through the smart statistical system for the Emirate of Dubai available at the Dubai Statistics Center through the interactive statistics systems and statistical indicators, as well as through a specialized bulletin that reviews the main results of the survey. These outputs are published in several ways, the most important of which are:

1. Dubai Statistics Center website.

2. The smart statistical system of the Emirate of Dubai.

3. press news.

**Ninth: Key Definitions**

The definitions and classifications used were prepared based on the international criteria issued by UN and some of its specialized agencies. You can find below the key definitions used in the survey:

|  |  |
| --- | --- |
| Places in which commodities and services sold. | **Data collection sources:** |
| Price index is a mathematical gauge that measures the changes in commodities and services prices between two certain periods.  | **Price index:**  |
| The mathematical equation (developed by Statistician Laspeyres) which calculates the index by using the price levels weighted by the base quantities (weights). | **Laspeyres Equation:** |
| Costs of materials and services required to construct buildings. | **Construction cost:** |
| A period by which the current period compared with. | **Base period:** |
| Weights are the relative distribution of construction materials and costs size distributed by chapters, main sections, and groups and items which commodities are composed of according to ISIC. Such weights used in the calculations that depend on Laspeyres equation.  | **Weights:** |
| The prices of a commodity or service during the base period, with which the commodity and service prices of other periods compared.  | **Base prices:** |
| A set of commodities and services included in construction cost prices system, classified by ISIC Rev.4, | **Commodities frame:** |
| A separate or semidetached building intended with its all storeys to occupy by one family, with one ground entrance and separate parking in addition to independent external spaces.  | **Villa:** |
| All buildings which consist of ground floor + first floor or repeated floors, the first floor and repeated floors are usually used for residential and office purposes, while the ground floor is used for car parking and/or commercial activity (this means it is used for investment purposes and at the same time must be distinguished from investment villas).  | **Multi-storey building:** |
| All buildings that constructed for public use purposes. Their stories vary by the type of usage such as hospitals, schools, mosques, libraries, gardens, embassies, and sport clubs, etc.) | **Public establishments:** |
| All buildings that are constructed for purposes of industrial production | **Industrial buildings:** |
| ISIC is the international reference classification of productive activities. Its main purpose is to provide a set of activity categories that can utilized for collecting and classifying statistics according to such activities in a form designed for economic analysis purposes. ISIC consists of a coherent and consistent structure for the economic activities based on the internationally accepted set of concepts, definitions, principles, and classification rules. It is the international reference classification for products and provides a comprehensive classification of all goods and services that includes all products that can be the target of local or international transactions or can be included in stores. The classification presents products that are considered the product of economic activity, including transportable goods and non-transferable goods and services.It is a classification that depends on the different stages of construction, starting with the necessary preparations for construction, the stage of preparing the structure of the building, and finally the final stage, which is the necessary finishes to prepare it for final use, whether for housing, work, or any purpose for which the building was prepared. | **International Standard Industrial Classification of All Economic Activities (ISIC):****Central Product Classification (CBC):****Building Stage Classification (B.S):** |

**Tenth: Improvement Plans**

* Updating the list of commodities and services in the industrial production basket.
* Following-up the update of internationally accepted methodologies and classifications.