

# Singapore's Producer Price Indices E-Survey System (PIES)

for

*Cross-cutting topic (1) – New methods and challenges employed by NSOs post-pandemic to collect data “electronically” in lieu of in-person*



# Introduction

## Producer Price Indices compiled by Singapore Department of Statistics (DOS)

### Services



**Accounting Services Price Index**



**Computer Consultancy & Information Services Price Index**



**Warehousing & Storage Price Index**



**Telecommunications Services Price Index**



**Freight Forwarding Price Index**



**Sea Freight Transport Price Index**



**Cargo Handling Price Index**

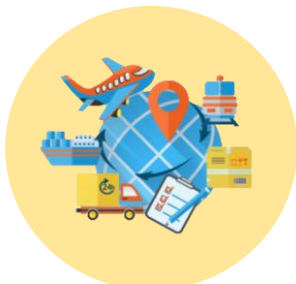


**Air Transport Price Index**

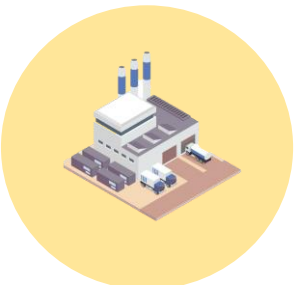
### Goods



**Import Price Index**



**Export Price Index**



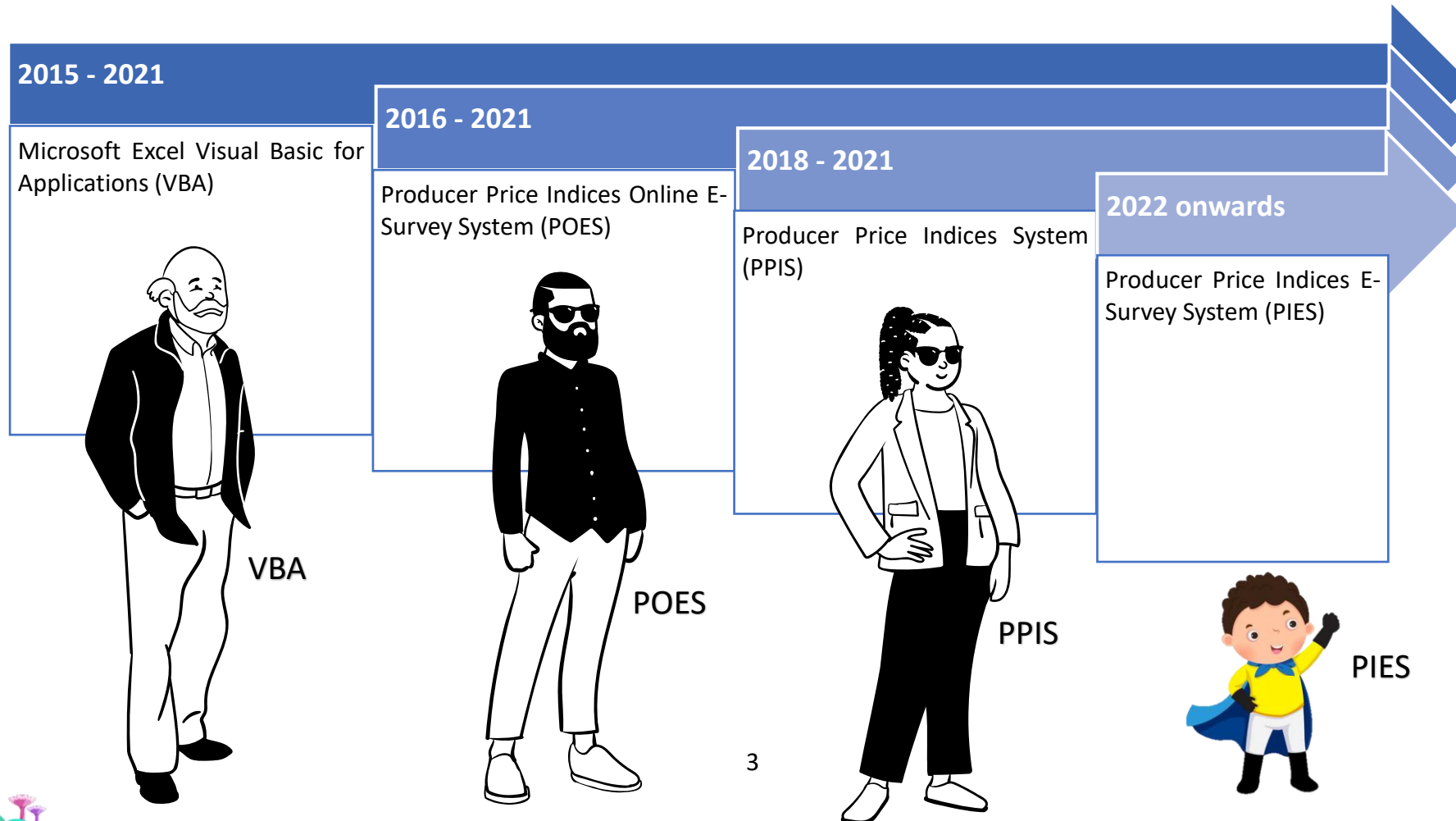
**Singapore Manufactured Products Price Index**



**Domestic Supply Price Index**

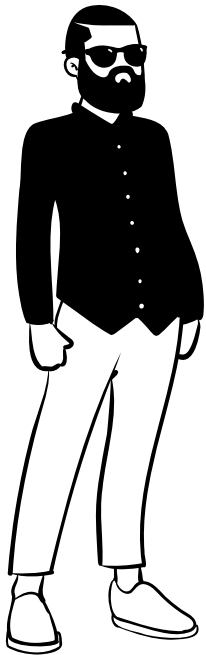
# DOS's Digital Transformation

As part of DOS's digital transformation, we are constantly adopting and implementing digital technology to facilitate the compilation of the various price indices. Our operations have been supported by the following software and systems:



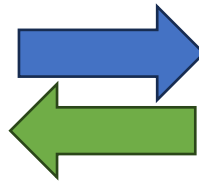
# Producer Price Indices Online E-Survey System (POES) & Producer Price Indices System (PPIS)

## POES the data collector



- **Data Collection** system developed in 2016 for surveying respondents via email or online
- **Features**
  - Allows users to **generate survey forms** to conduct surveys via email or online
  - **In-built validation checks** to ensure the data entered by survey respondents are sensible

Data Transfer



## PPIS the data compiler



- **Data processing and index compilation** system developed in 2018
- **Features**
  - Enabled users to **compile producer price indices** based on the defined index structure using the selected index formula
  - Allow users to carry out **price imputations** such as carrying forward previous month's prices or applying a weighted average price change of a group of linked items within the price index

# Limitations of having 2 separate systems POES and PPIS

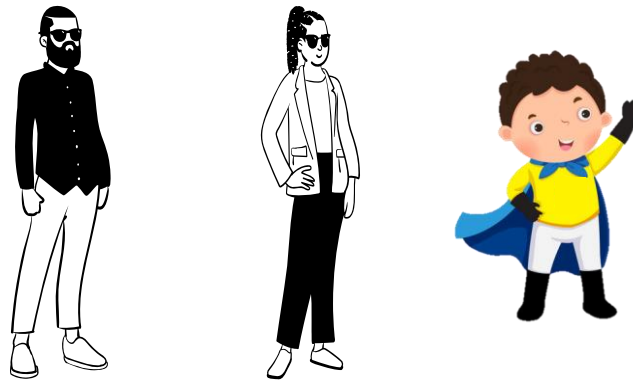
- 2 separate systems developed by different vendors, hence **resources were expended to ensure smooth communication between both systems.**
  - E.g., POES output files had to be modified to meet the input requirements of PPIS to be transferred and uploaded successfully. Hence, DOS officers must also take the additional step to **verify the accuracy of data transfers** between both systems.
- **Additional costs** were incurred to host and maintain 2 systems.
- **Time and effort** were spent to manage 2 different vendors.
- **Survey forms generated by POES were not customisable** to incorporate any new data items to reflect relevant changes in the industry. The lack of any customisability also resulted in **costs incurred** as the vendor of POES had to create bespoke modules to meet the requirements of newly developed or rebased price indices.
- As a stop-gap solution, DOS officers wrote Visual Basic for Applications (VBA) Macros using Microsoft Excel to generate the customised survey forms externally from POES. However, **significant manual effort** was still required by DOS officers to actively manage and debug the codes for the respective price indices. Furthermore, the **data transfer issue** caused by managing 2 separate databases persisted.



# Development of PIES

- Considering the limitations of POES and PPIS, and the accelerated digitalisation exacerbated by the COVID-19 pandemic, DOS initiated the development of **PIES**

POES + PPIS = PIES



- An **integrated system** whereby **data collection, data processing and index compilation** can be conducted on a single platform
- Addressed most of the limitations of POES and PPIS as it is **cost effective** and **saves resources**

# Development of PIES

Initial Fact Finding	<ul style="list-style-type: none"><li>• Sharing of DOS officers' requirements with vendor</li><li>• Vendor assisted to gather, analyse and confirm the requirements for development</li></ul>
System Design and Planning	<ul style="list-style-type: none"><li>• Discussion of system design between DOS officers and vendor</li><li>• Conduct of usability interview and workshop with stakeholders</li></ul>
System Development	<ul style="list-style-type: none"><li>• Development of PIES based on finalised system design</li></ul>
User Acceptance Testing	<ul style="list-style-type: none"><li>• System testing performed by DOS officers and vendor before PIES go live</li></ul>
System Commission	<ul style="list-style-type: none"><li>• Data migration from POES and Microsoft Excel VBA database</li><li>• System was commissioned and live on January 2022</li></ul>



# Functions of PIES

- 1. Setup index structure, product details and weights**
- 2. Upload and maintain firms and respondents' information**
- 3. Design survey templates for customised survey forms**
- 4. Send out survey forms and collect survey data via (1) Email or (2) Online E-Survey**
- 5. Process survey returns and undertake imputations**
- 6. Compile indices and generate reports for dissemination and servicing of data requests**





# Functions of PIES – Setup index structure, product details and weights

PIES SFTPI P2022 Index Setup Survey Data Processing Compilation & Report Internet System

Home > Index Setup > Item List > View Item > Edit Item

### Edit Item

Item Id	101473	Estab Name	TEST ESTABLISHMENT
Index Series	201 - Sea Freight Transport Price Index (SFTPI)	Base Period	P2022 (Jan 2022 - Dec 2022)
Parent Index	(01020393) DRY BULK VOYAGE CHARTER	Item Code	0102039301
Base Currency	SGD Singapore Dollar (SGD)		
End Month	Month <input type="text" value=""/> Year <input type="text" value=""/>	End Remark	<input type="text"/>
Compilation Method *	AM <input type="text"/>	Base Price Type *	AM <input type="text"/>
Item Status	Reserve	Survey Item Format	Voyage Charter (Dry Bulk)
Do Not Include Item in Survey	<input checked="" type="checkbox"/>		

### Item Specification Value

Customer Code	vc 1	Vessel Name	<input type="text"/>
Vessel Type	<input type="text"/>	Vessel Class (e.g. Aframax, Panamax, Suezmax)	vc suezmax
Vessel Capacity	<input type="text"/>	Port of Origin in Asia	<input type="text"/>
Port of Destination in Asia	<input type="text"/>	Port of Destination in North America	<input type="text"/>
Port of Destination in South America	<input type="text"/>	Port of Destination in Persian Gulf or Africa	<input type="text"/>
Port of Destination in Europe	<input type="text"/>	Port of Destination in Oceania	<input type="text"/>
Port of Origin	<input type="text"/>	Port of Destination	<input type="text"/>
Date of Contract (Start)	<input type="text"/>	Date of Contract (End)	<input type="text"/>
Internal Comments	<input type="text"/>		



# Functions of PIES – Maintain firms and respondents' information

Captures all the relevant information (e.g., contact details, mailing address) of the respondents surveyed

View Establishment			
Establishment Id	51210		
Index Series	201 - Sea Freight Transport Price Index (SFTPI)	Base Period	2022 (Jan 2022 - Dec 2022)
Estab Code	A0000132	UEN	T08GA0040K
Estab Name	TEST ESTABLISHMENT	Company Status	Active
Company Website	-		
Respondent			
Respondent Id	55055	Respondent Access ID	4jy9Aq99v9
Resp Code	1	Active	Yes
Resp Name 1	TEST RESP NAME 1	Resp Name 2	TEST RESP NAME 2
Designation 1	TEST DESIGNATION 1	Designation 2	TEST DESIGNATION 2
Department 1	TEST DEPARTMENT 1	Department 2	TEST DEPARTMENT 2
Attention Person	Resp 1		
Preferred Mode	Email	DNS	No
Preferred Freq	-		
Preferred Data Gran	-	Survey File Format	Excel
Email Password Protection	7N95v<<UEN, -3>>	Email Protection Option	Zip folder
Email Password Description	7N95v		
Downloaded File Name	SFTPI_<<Survey Period From>>-<<Survey Period To>>_<<Establishment Name>>		
Mailing Address 1	TEST MAILING ADDRESS 1		
Mailing Address 2	TEST MAILING ADDRESS 2		
Mailing Address 3	TEST MAILING ADDRESS 3		
Main Tel	-		
DID	61234567		
Email	Respondents@gmail.com		
Email CC List	-		
Email CC List (Officer)	DOS_Officers@gmail.com		
OIC1	Llewellyn Ho		
Notify OIC1	No	Notify OIC2	No
Officer Sect	1	Sign Off Officer Name	Llewellyn Ho

Unique access code for respondents to login and access the e-survey

Allow DOS user to specify the file name and format of the survey form. In addition, the survey form can be password protected based on user settings

# Functions of PIES – Design Survey: ‘Customise survey item’ Template

PIES SFTPI 2022 Index Setup Survey Data Processing Compilation & Report Internet System Hi Llewellyn Ho

Home > Survey > Survey Item Format > View Survey Item Format

### View Survey Item Format

Survey Item Format Id	196		
Index Series	201 - Sea Freight Transport Price Index (SFTPI)	Base Period	2022 (Jan 2022 - Dec 2022)
Survey Item Format Name	Liner (Europe)	Active	Yes

### Survey Item Format

Index Name Display	<b>Container Liner Service (Asia - Europe)</b>: <<Item Code>>		
Price Columns Heading	-		
Price Component Name Display	<<Price Component Name>>		
Component Input Name Display	<<Component Input Name>>		
Currency/UOM Display	One setting across all periods		
Item Grouping in Price Table	Every Item in Separate Price Table	No. of Price Table Before Pagebreak	1
Display Period Columns Heading	Yes	Display Currency Column	Yes
Display UOM Column	Yes	Display GST Column	No
Remark Display	Per Price Table	Display Remark in New Item Form	Yes
Enable Copy Prev	No	Enable Item Ended	By Item

Item Specification Display	<div style="border: 1px solid black; padding: 2px;"> <p><b>Not Displayed</b></p> <ul style="list-style-type: none"> <li>Port of Loading</li> <li>Port of Discharge</li> <li>Port of Discharge in Asia</li> <li>Port of Discharge in North America</li> <li>Port of Discharge in South America</li> <li>Port of Discharge in Persian Gulf or Africa</li> <li>Port of Discharge in Oceania</li> <li>Vessel Name</li> </ul> </div>	<div style="border: 1px solid black; width: 100px; height: 100px;"></div> <p>Display left of Price Table</p>	<div style="border: 1px solid black; width: 100px; height: 100px;"></div> <p>Display above Item Price</p> <ul style="list-style-type: none"> <li>Service Route Name (If applicable)</li> <li>Port of Loading in Asia</li> <li>Port of Discharge in Europe</li> <li>Container Load Type</li> </ul>	<div style="border: 1px solid black; width: 100px; height: 100px;"></div> <p>Display below Item Price</p>
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### Replacement Item Template

Replacement Item Template [Replacement Liner\(Europe\)](#)

# Functions of PIES – Design Survey: ‘Customise Survey’ Template

**PIES**   SFTPI   2022   Index Setup   Survey   Data Processing   Compilation & Report   Internet   System   Hi Kelvin Teh

Home > Survey > Survey Template > View Survey Template

### View Survey Template

Survey Template Id	59		
Index Series	201 - Sea Freight Transport Price Index (SFTPI)	Base Period	2022 (Jan 2022 - Dec 2022)
Survey Name	Sea Freight Transport Price Survey	Survey Code	-
Data Gran	Monthly		
Remark	-		

### Internet Settings for Base Period

Publish Email	-	Mailbox Message Email	<a href="#">Mailbox Message</a>
Acknowledgement Email	-		
Acknowledgement Message	-		
Extension Duration	14	Maximum Extension Duration	28
Survey Help	-		

### Internet Settings for Survey

Maximum No Price Period	3	Archive Survey After Days	-
Unlock Approval Email	-	Extension Approval Email	-
Online Survey Introduction	-		
Declaration Message	-	Undeclared Message	-
Delete Blank New/Replacement Item Forms	No		

### Survey Form

Downloaded File Name	SFTPI_<<Survey Period From>>-<<Survey Period To>>_<<Establishment Name>>		
Excel Worksheet Name	<<Item Template Name>><<Item Code>>		
Number of Periods	6	Number of Editable Periods	3
Add 1 Survey Period Before (New/Replacement Item Form only)	Yes	Print Orientation	Landscape
PDF Top Margin (cm)	0.3	PDF Bottom Margin (cm)	0.3
PDF Left Margin (cm)	0.3	PDF Right Margin (cm)	0.3

### Survey Header

Left Column	<b>UEN: </b><<UEN>> <b><<Establishment Name>></b>	Right Column	<b>Survey Period</b> <<Survey Period From>> - <<Survey Period To>>
Center Column	<b>SINGAPORE DEPARTMENT OF STATISTICS Sea Freight Transport Price Survey</b>		

Introduction

1) Please provide the requested information for the services specified in the survey form. If the pre-filled information is incorrect or has been revised, please contact the officer-in-charge to make the necessary amendments.  
2) If a service has ended, please provide a replacement by filling up the attached replacement form with the requested information of the new service. Please make extra copies of the replacement form if there is more than one replacement service.

# Functions of PIES – Survey Sending (Excel/PDF Form)

**UEN:** 123456789C  
ABC PTE LTD

**SINGAPORE DEPARTMENT OF STATISTICS**  
**Sea Freight Transport Price Survey**

**Survey Period**  
Mar 2023 - May 2023

- 1) Please provide the requested information for the services specified in the survey form. If the pre-filled information is incorrect or has been revised, please contact the officer-in-charge to make the necessary amendments.
- 2) If a service has ended, please provide a replacement by filling up the attached replacement form with the requested information of the new service. Please make extra copies of the replacement form if there is more than one replacement service.

**Container Liner Service (Asia - Europe):**

Service Route Name (If applicable)

Port of Loading in Asia

Port of Discharge in Europe

Container Load Type

	Currency	UOM	Feb 2023	Mar 2023	Apr 2023	May 2023
<b>Rate</b>						
Ocean Freight Rate						
Load Port Terminal Handling Charges						
Discharge Port Terminal Handling Charges						
Bunker Adjustment Factor						
Other Seaborne Surcharges						
<b>Remarks</b>						

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# Functions of PIES – Survey Sending (Online E-Survey Form)

Survey:  
**Sea Freight Transport Price Survey**

0101010101026

0101010102007

0101010104003

[Replacement Liner\(Intra - Asia\)](#)

[Replacement Liner\(N America\)](#)

**[Replacement Liner\(Europe\)](#)**

[Supporting Document \(Optional\)](#)  
[Save as Draft](#)  
[Close without Saving](#)

**i** This replacement form was generated as you had indicated that one service/item under survey form: 0101010104003 had ended. If you are unable to provide a replacement for the ended service/item, please delete this form using the "Delete Item Form" button at the bottom of this page.

**i** 1) Please provide the requested information for the services specified in the survey form. If the pre-filled information is incorrect or has been revised, please contact the officer-in-charge to make the necessary amendments.  
 2) If a service has ended, please provide a replacement by filling up the attached replacement form with the requested information of the new service. Please make extra copies of the replacement form if there is more than one replacement service.

**Container Liner Service (Asia - Europe):**

Service Route Name (If applicable)

Port of Loading in Asia

Port of Discharge in Europe

Container Load Type

	Currency	UOM	Jun 2023	Jul 2023	Aug 2023	Sep 2023	Oct 2023	Nov 2023	Dec 2023
<b>Indicate as No Price</b>			Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Rate</b>									
Ocean Freight Rate	<input type="text"/>	<input type="text"/>							
Load Port Terminal Handling Charges	<input type="text"/>	<input type="text"/>							
Discharge Port Terminal Handling Charges	<input type="text"/>	<input type="text"/>							
Bunker Adjustment Factor	<input type="text"/>	<input type="text"/>							
Other Seaborne Surcharges	<input type="text"/>	<input type="text"/>							

Remarks

[< Previous Form](#)
[Go to Replaced Item](#)
[Delete Item Form](#)

[Proceed to Submit](#)

# Functions of PIES – Survey Processing

**PIES** SFTPI P2022 Index Setup Survey **Data Processing** Compilation & Report Internet System

Home > Data Processing > System Price Entry

### System Price Entry (Hide Filters)

Index Series: 201 - Sea Freight Transport Price Index (SFTPI) Base Period: P2022 (Jan 2022 - Dec 2022)

Item Code(s): 0102039301 Excluded Item Code(s):

Establishment UEN: Estab Code: Estab Name: Resp Code: OIC1: OIC2: Item Status:  Active  Reserve  Replaced  Used  Deleted

Item Ended:  Yes  No  Both Is Imputed:  Yes  No  Both

Imputation Method:  ACT  C/F  IMP  LNK  RLNK  WGRP  UWGRP  WGLNK  UWGLNK  INDEX Has Computed Survey Price:  Yes  No  Both

Has 0 Contribution Percent:  Yes  No  Both End Entry Month: Dec 2023

Order By: Item Code Sort Order:  Ascending  Descending

Result Per Page:  20  50  100  500

Search Clear Search Filters

**Search Result** Showing 1 to 1 of 1 entries

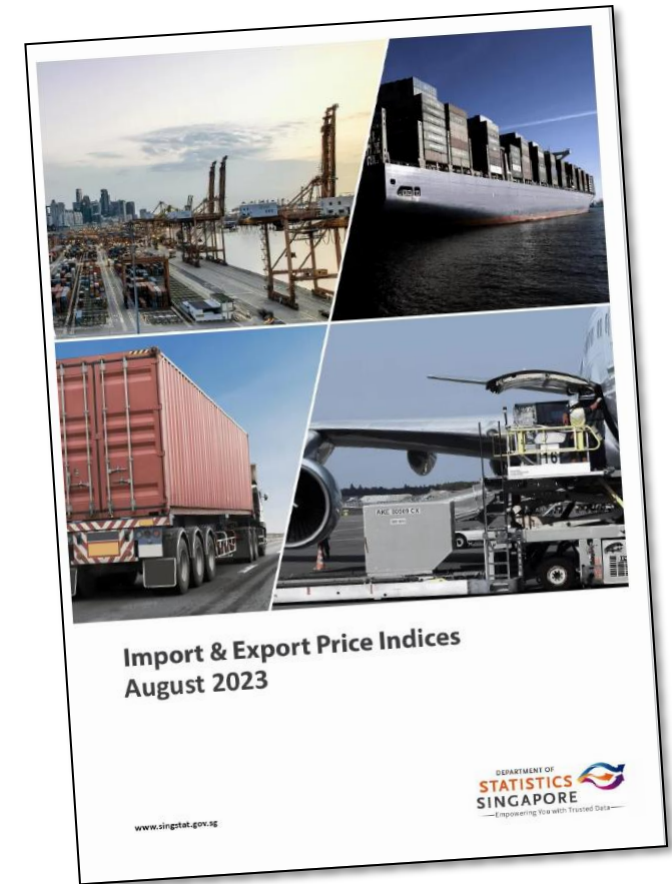
Data has been edited. Please save before navigating away from the page.

Item Code	Estab Name	Item Description					End Month
		Jul 2023	Aug 2023	Sep 2023	Oct 2023	Nov 2023	
<input type="checkbox"/> 0102039301	TEST ESTABLISHMENT	Customer Code: vc 1; Vessel Class (e.g. Aframax...					
Voyage Details (01)							
Time Charter Equivalent (TCE) (02)							
Voyage Charges (You are not required to complete this section if TCE was provided above) (03)							

Update Imputation to ACT Update Imputation to C/F Compute Compute and Save Close without Saving

# Functions of PIES- Compile indices and generate report

Compiled data are generated from PIES and subsequently used to prepare the report for dissemination.





# Conclusion

- **Covid-19 has changed the way people work:**
  - More respondents are shifting to working remotely
    - Postal surveys not as effective
    - Spike in submissions via email and e-survey
- **Accelerated DOS's digital transformation** in survey operations
- **Consideration for digital illiterate respondents**
  - Industry specific (e.g. cargo handling) where most still prefer postal surveys
- Development of PIES has **improved work productivity** and provided **greater convenience** to our respondents.





# Thank you

## Our Vision

National Statistical Service of Quality, Integrity and Expertise

## Our Mission

We Deliver Insightful Statistics and Trusted Statistical Services that Empower Decision Making

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