



Developing an SPPI for Computer Programming, Consultancy and Related Activities in Israel (62 - ISIC Rev.4)

Michael Elizarov
Moriah Hezi

Topics

Introduction

Reasons for Developing an SPPI

Classification

Structure

Issues

Sample

Sampling Frame

Issues

Market Characteristics

Revenue Statistics

Company and Employee Statistics

SPPI

Types of Services

Pricing Methods

Pricing Issues

Summary and Main Conclusion

Introduction

We refer mainly to the data of **Classes 6201** and **6202**. This is because we have not yet met with representatives of companies in Class 6209, which is negligible in the division in terms of its output rate.

Class 6201



Class 6202



Introduction

- The data and information presented here are based on the **Surveys of Industries for 2018-2022** and information received from company representatives with whom we met.
- Currently, we are continuing to establish the **Division 62 index**.



Reasons for Developing an SPPI for Computer Programming (62)

The following are the criteria for developing new indices for the various service divisions:

1

The percentage of GVA of a division out of the total gross value added of all trade and services for 2018.

2

The level of complexity of the industry and hence the difficulty in developing a price index.

3

The weight of sales to other businesses (BTB) and exports versus sales to the final consumer (BTC).

Table 1 - The GVA and GVA Coverage Rate of Division 62 & Existing Indices Out of the Total Services and Trade Divisions' (45-96) GVA in Israel (NIS million), 2018-2020

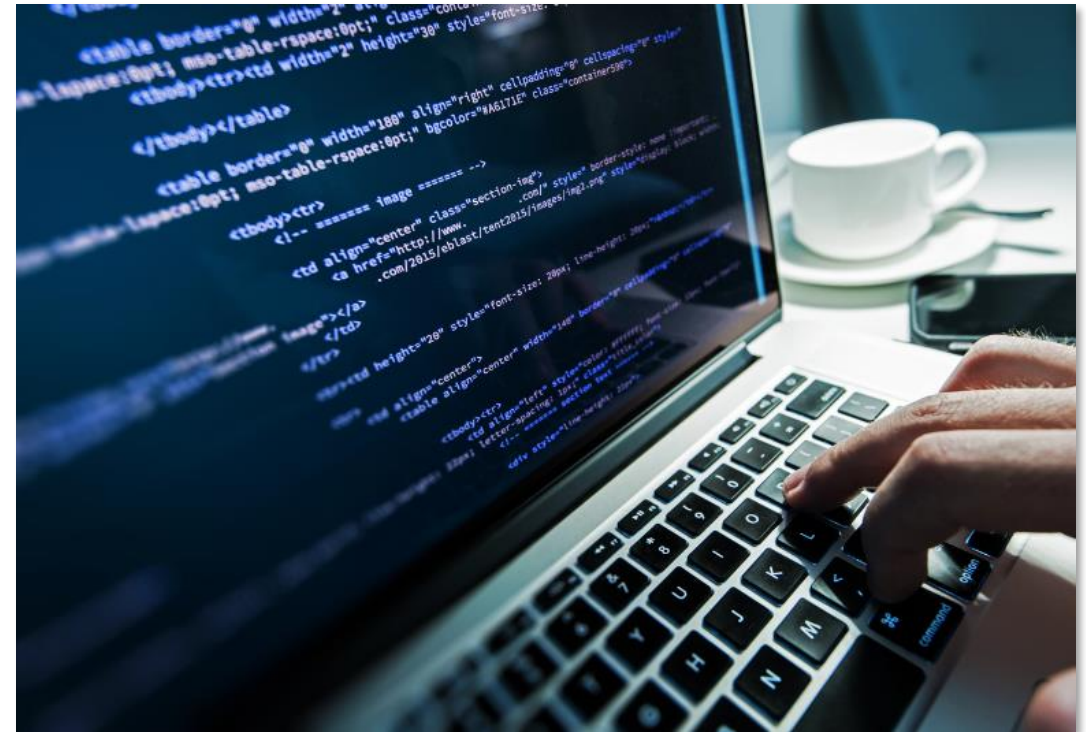
Year	The total GVA of all trade and service divisions	The total GVA of Division 62	The GVA's coverage rate of Division 62	The GVA's coverage rate of the existing indices
2018	501,862	65,252	13.0%	11.9%
2019	530,906	68,560	12.9%	11.8%
2020	510,936	70,876	13.9%	11.9%

Based on these 3 criteria, the first division we chose to develop was **Computer programming, consultancy and related activities - Division 62.**

Meets the first and third criteria and to a lesser extent the second criterion as well

The largest among the trade and service divisions in revenue and gross value added

Due to the growing size of the industry in recent years.



Classification: Structure

In order to establish an SPPI for Computer Programming, consultancy and related activities, we used **two classifications**:



**The UN's ISIC REV.4
classification,
adapted to Israel**



**The UN's Ver 2.1
CPC classification**

Classification: Structure

In order to establish a pyramid of the products and service groups in each of the classes in the division, we also used **data** we received from the company representatives we met with.



Table 2 - Detailed Structure and Correspondences of CPC Version 2.1 to ISIC Rev.4 Adjusted to Israel

Group	Class	Subclass	Description	Corresponding	
				CPC 2.1	ISIC 4
831	8314	83141	IT design and development services for applications	83141	6201 6203
831	8313	83131	IT consulting services	83131	6202
831	8313	83132	IT support services	83132	6202
831	8314	83142	IT design and development services for networks and systems	83142	6202
831	8316	83161	Network management services	83161	6202
831	8316	83162	Computer systems management services	83162	6202
873	8733	87332	Installation services of personal computers and peripheral equipment	87332	6209

Classification Issues

Software R&D centers

In Israel, many companies are software R&D centers and should be classified in Class 6201 (according to the latest ISIC Rev.4 of the UN).

Most of the time, their main activity is R&D for the benefit of the parent companies. Some of them cooperate with other sister companies located outside of Israel

Class 6203

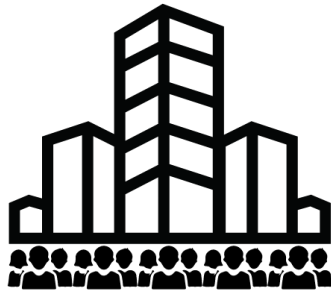
Due to the large number of companies that have high revenues and a large number of employees in R&D activity, it was decided at the ICBS that they will be classified in a new and separate class - 6203: **Software R&D Centers** instead of in 6201.

Inability to measure prices

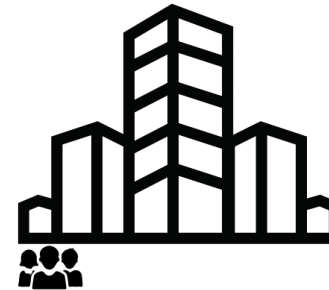
However, due to the fact that their income derives from payments transferred to them by the parent companies located outside of Israel, we do not have the ability to develop an index for this class which will measure market price changes of services or products that the companies produce and sell.

The Sample

The sampling frame is the **Survey of Industries 2019**.



The initial strategy for creating the sample was to include the **largest companies** in the industry in terms of output.

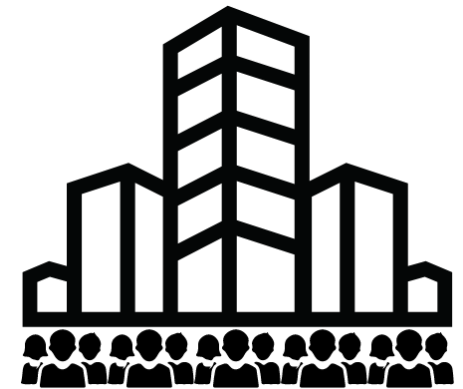


However, we are currently working on determining the criteria for adding **medium and small-sized companies** probabilistically.

Why we chose to start with the large companies?

In order to start scheduling meetings with the companies.

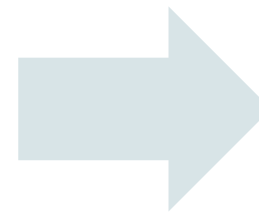
Used as a kind of preliminary survey to learn from the major companies in the industry about its types of services, products, customers, technologies, and characteristics, as well as ways of determining and measuring prices.



These companies cover a large part of the output in each class

An example of data analysis for the purpose of determining a sample in Class 6201

Computer programming - 6201		
	The number of companies	Output (NIS thousands)
Population	12,488	82,634,293
Sample of the Survey of Trade and Services 2019	407	47,280,930
The list's representation in the population	21	26,775,989
The list's coverage of the sample	5.2%	56.6%
The list's coverage of the population	0.2%	32.4%



It can be seen that 21 companies of Class 6201 cover 5.2% of the companies in the Survey of Trade and Services 2019 sample, but cover only 0.2% of the total companies in the population.

However, these companies cover **56.6%** of the output of the sample and **32.4%** of the output in the population.

Sample Issues

The initial sample we chose also included companies that provide virtual games, and companies that advertise through the Internet or the various applications.



Our initial analysis of the companies that provide virtual games is that they should have been classified in the software publishing class (5820) of the publishing industry (58).

However, after checking with the ICBS's Business Register Sector and visiting the companies, it turned out that they were classified in Division 62, because most of the company's activity is software development.

Regarding the companies that advertise through the Internet or the various applications, we wondered why they are not classified in the advertising and market research industry (73).

After checking with the ICBS's Business Register Sector and visiting the companies, it turned out that these companies are also mainly involved in software development, and therefore they are classified in Division 62.

Market Characteristics



The general characteristics of the industry are the **concentration** of the international corporations Alphabet (Google), Meta (Facebook), Amazon and Microsoft, and the **commissions** they derive from all the goods and services that some of the companies in this industry sell to their customers.



These international corporations receive quite a few commissions from some of the companies that use their **cloud** for thousands of different purposes.



Additionally, they receive commissions from the companies that pay using their **digital wallet** platforms, and clearing, for the purchase of the goods and services that the companies in the industry provide to their various customers around the world and in Israel.

Characteristics of Class 6201



Large number of companies and employees.



Over 90% of the revenues of the companies are from **exports**

Most of the companies in this class are **parent companies** of international corporations. Their total **income** is ultimately included in the tax needs of the Israeli parent groups.



Produce themselves all the products and services they provide to their customers.



Characteristics of Class 6202



Second-largest number of companies and employees after Class 6201.



Over **90%** of the revenue of the companies come from the **local market**



As in Class 6201, these companies are the **parent companies** of dozens of subsidiary companies in Israel and throughout the world.



Relatively **concentrated**, because there are a few large companies that bring in most of the **revenue**, and all the rest are negligible in terms of revenue.



Provide their customers with hardware and software from third parties and various types of professionals who manage and operate computer systems and/or data processing facilities for the customers, related support services, in the clients' offices or in the companies' offices themselves; most of the employees are in Israel.



The income of these companies is determined by Cost-Plus contracts, in which the costs of the projects are priced, which combine the 3 elements mentioned above.

Revenue Statistics

Diagram 1 - The Revenue Rate of Division 62 Out of the Total Services and Trade Divisions' (45-96) Revenue in Israel, 2018-2022

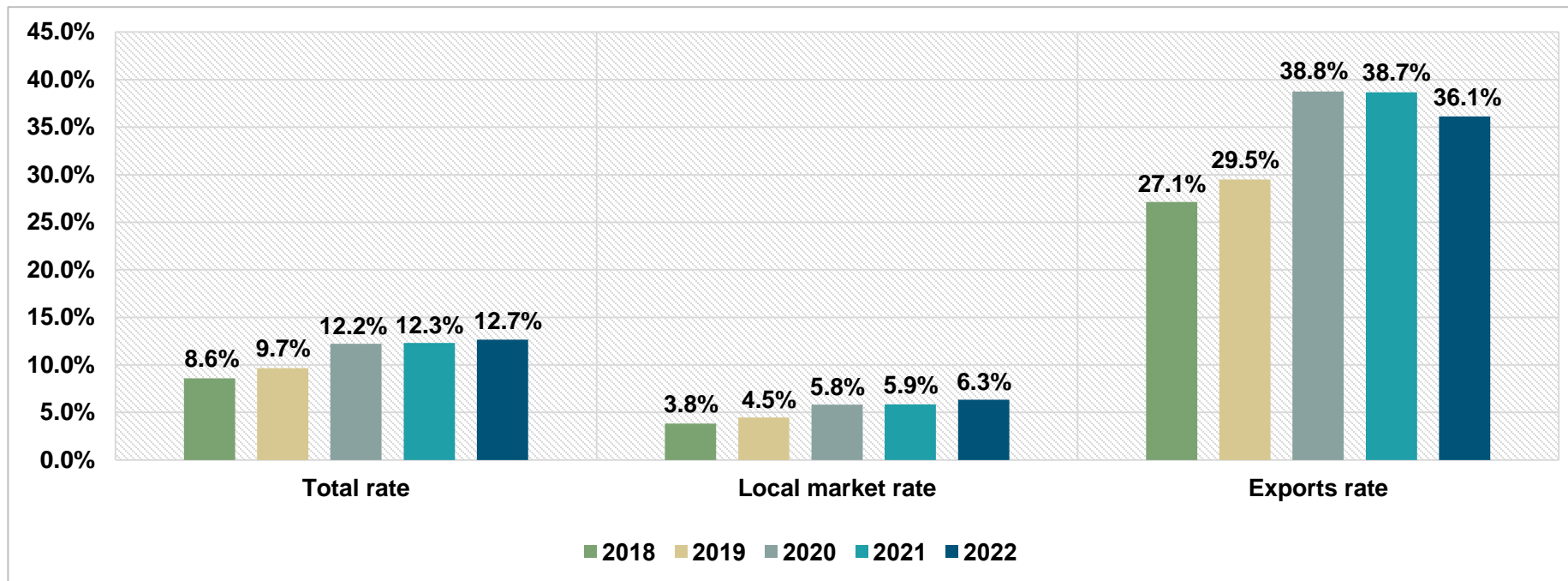
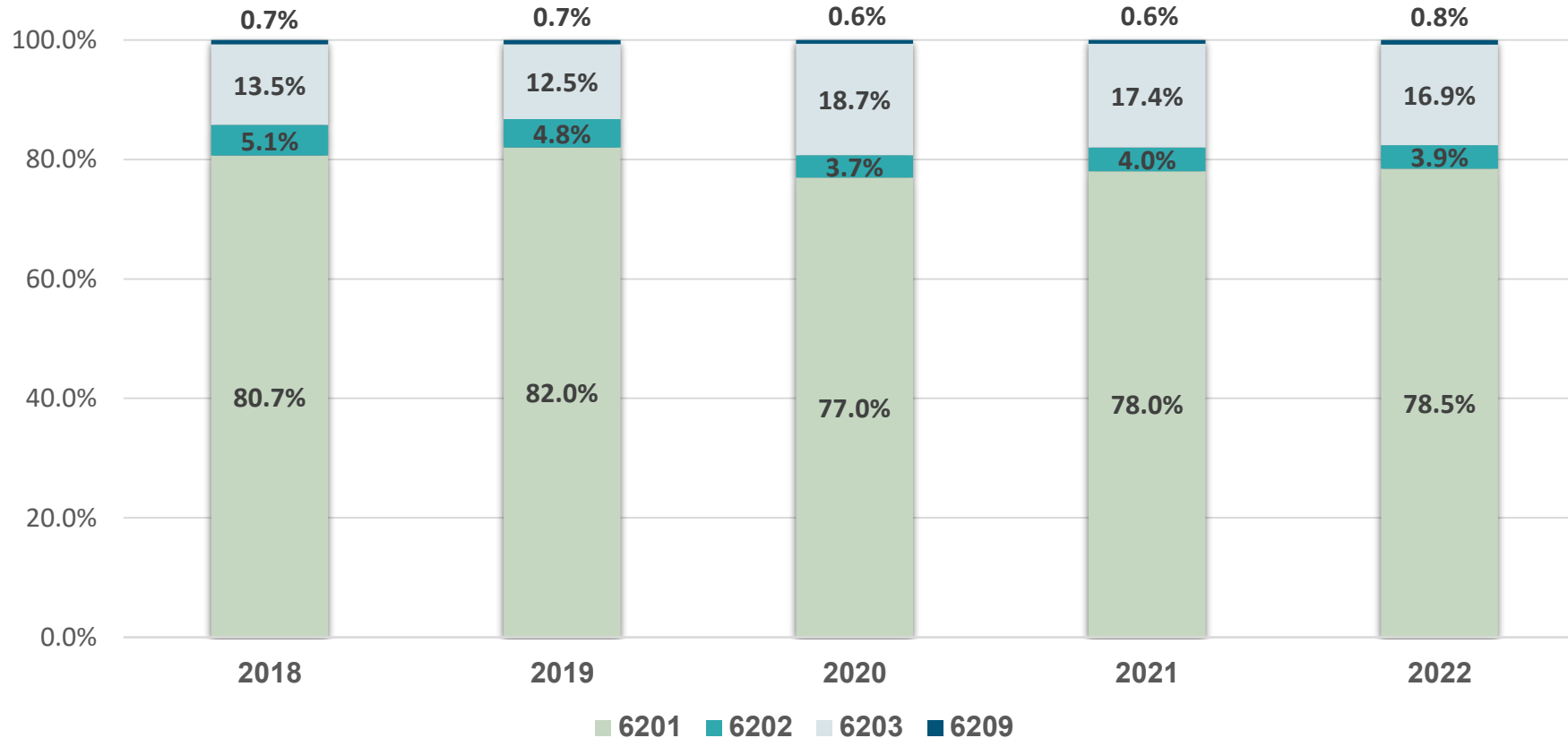


Table 3 - Total Revenues (NIS million)

Divisions	Year	Total	Local market	Exports
45-96	2018	1,289,047	1,026,721	262,327
	2019	1,357,455	1,075,035	282,420
	2020	1,301,877	1,049,287	252,590
	2021	1,572,018	1,262,976	309,042
	2022	1,820,027	1,434,020	386,008
62	2018	110,528	39,356	71,172
	2019	131,234	47,890	83,344
	2020	159,045	61,165	97,880
	2021	193,483	74,009	119,474
	2022	230,441	91,028	139,413

Diagram 2 - The Revenue Rate of Division 62's Classes Out of Division 62's Total Revenue in Israel Between 2018-2022



**Table 4 - Total Revenues of Division 62's Classes in Israel
During 2018-2022 (NIS million)**

Class	Year	Total	Local market	Exports
6201	2018	89,182	33,569	55,613
	2019	107,647	41,423	66,224
	2020	122,448	52,006	70,442
	2021	150,992	62,667	88,325
	2022	180,853	78,086	102,766
6202	2018	5,644	4,138	1,506
	2019	6,235	4,584	1,651
	2020	5,903	4,750	1,153
	2021	7,717	5,802	1,915
	2022	8,971	7,252	1,719

Class	Year	Total	Local market	Exports
6203	2018	14,898	1,021	13,877
	2019	16,415	1,162	15,253
	2020	29,705	3,635	26,070
	2021	33,582	4,656	28,926
	2022	38,861	4,457	34,405
6209	2018	804	628	176
	2019	937	721	216
	2020	988	773	216
	2021	1,192	884	308
	2022	1,755	1,232	522

Company and Employee Statistics

Diagram 3 - The Companies' Rate of Division 62 Out of the Total Services and Trade Divisions (45-96) Companies in Israel During 2018-2022

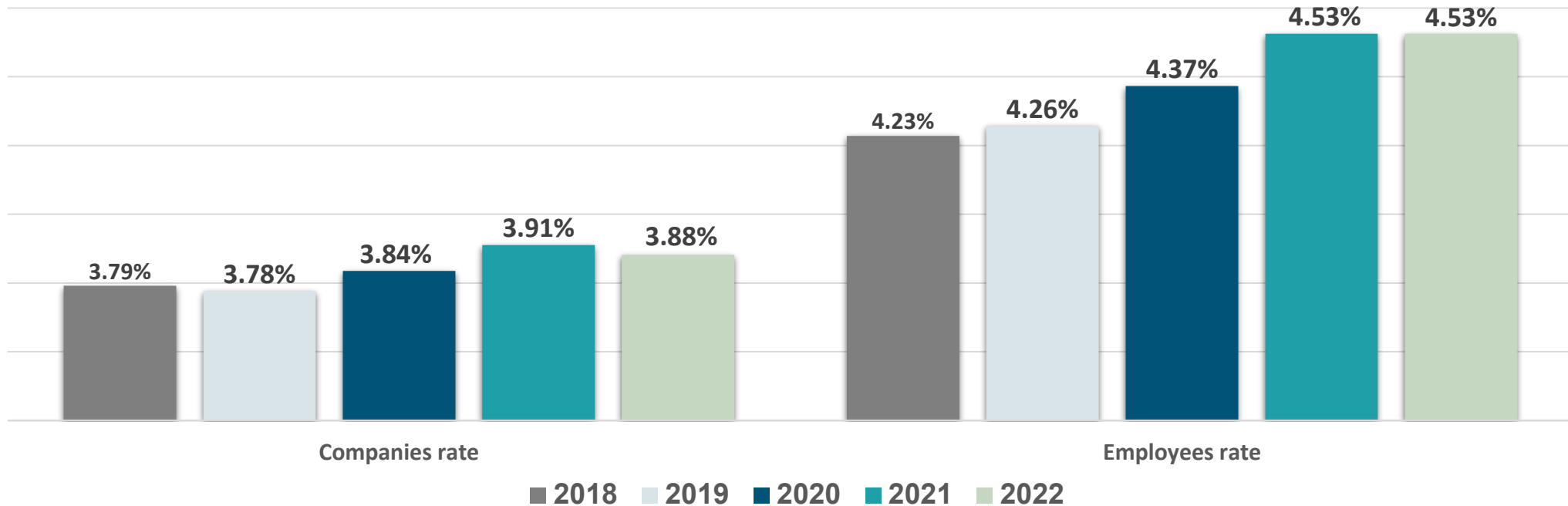


Table 5 - Total Companies and Employees (absolute numbers) of Division 62 and Total Divisions in Israel Between 2018-2022

Divisions	Year	Companies that employ workers	Employees
45-96	2018	226,046	2,998,838
	2019	229,009	3,059,347
	2020	225,728	2,736,183
	2021	230,816	2,948,169
	2022	243,314	3,234,836
62	2018	9,731	145,135
	2019	9,913	156,292
	2020	10,021	158,400
	2021	10,602	179,621
	2022	11,246	211,443

Table 6 - Total Companies and Employees (numbers and rates) out of Division 62's Classes in Israel During 2018-2022

Class	Year	Companies that employ workers	Employees	Companies rate	Employees rate
6201	2018	7,726	111,590	74.7%	80.8%
	2019	7,960	121,337	74.7%	81.6%
	2020	8,000	123,872	73.9%	81.1%
	2021	8,394	134,773	73.3%	80.4%
	2022	8,857	155,782	74.2%	80.4%
6202	2018	1,609	11,840	20.6%	16.8%
	2019	1,583	12,969	20.3%	16.2%
	2020	1,631	12,547	20.6%	16.5%
	2021	1,741	12,759	20.7%	16.7%
	2022	1,759	14,441	20.8%	16.0%

**Table 6 - Total Companies and Employees (numbers and rates)
out of Division 62's Classes in Israel During 2018-2022**

Class	Year	Companies that employ workers	Employees	Companies rate	Employees rate
6203	2018	174	19,369	1.2%	1.8%
	2019	163	19,745	1.1%	1.6%
	2020	151	19,859	1.0%	1.5%
	2021	157	29,559	0.8%	1.5%
	2022	236	37,920	1.1%	2.1%
6209	2018	222	2,336	4.7%	2.3%
	2019	207	2,241	4.9%	2.1%
	2020	239	2,122	5.5%	2.4%
	2021	310	2,530	6.0%	3.0%
	2022	394	3,300	5.0%	3.6%

SPPI - Types of Services

Class 6201

Virtual game applications

Advertising services

Information security and cyber services

Financial fraud detection services

Platform services for creating web pages for businesses and a platform for managing online businesses

CRM services

Software providing billing services, financial services, payroll services, and GIS services.

Class 6202

Project management services - various projects that supply third-party hardware, third-party software

Provision of various types of professionals who manage and operate computer systems and/or data processing facilities for the customers as well as providing related support services.

SPPI - Pricing Methods

Class 6201

The price measurement method is the same as the measurement in manufacturing PPI, namely, **the direct use of prices of the repeated services or the contract pricing method**

Class 6202

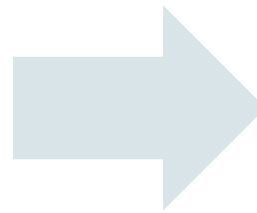
The prices are measured using the **time-based method**

Table 7 – Examples of price measurement in Division 62

Product / Service group name	The name of the Product / Service / Role	Description of the Product / Service / Role	The customer's name	Price - 2023				Unit of measure	The type of currency of sale	Credit payment conditions	Rate of change compared to the previous quarter
				Quarter 1	Quarter 2	Quarter 3	Quarter 4				
Game A	Payment Page	The game's coin shop allows you to buy more coins to enjoy more playing time/gameplay at a higher intensity. Choice of a variety of options (like in the store)	Customer mix	30.24	25.62	27.54		Package (variable mix of amount of coins in the pack)	\$	0	7.49%
	Personalized Offer	A personal offer that pops up to the player according to activity style, and offers coins	Customer mix	14.25	12.87	13.25		Package (variable mix of amount of coins in the pack)	\$	0	2.95%
License to use cyber software	License to use cyber software	License to use cyber software	Customer A	500,000	Temporarily not sold	Temporarily not sold		License for a year	\$	0	0.00%
	License to use cyber software	License to use cyber software	Customer B	Temporarily not sold	Temporarily not sold	375,000		License for a year	\$	0	0.00%
Provision of various types of professionals	Software project manager	Junior	Customer mix	24,352	27,543	25,645		Average monthly rate	₪	Current+30	6.89%-
		Senior	Customer mix	31,254	35,189	34,256		Average monthly rate	₪	Current+30	2.65%-
		Management position	Customer mix	45,784	42,156	47,542		Average monthly rate	₪	Current+30	12.78%

SPPI Issues - Information security and cyber services

- Some companies provide licenses for intrusive cyber software, which is used by intelligence and security agencies of various countries in order to capture terrorists, hostile elements, pedophiles, etc.
- All the customers pay in full for using the company's license for an entire year from the date of first payment.



Therefore, the price will not change for that customer during the three quarters following the quarter of the purchase. Accordingly, we made an agreement with the company that they would report the price of the quarter that the product was purchased for each customer, and afterward they would not need to report on a price change for three consecutive quarters for each specific customer

Project management services



Some companies manage projects for other companies and offer solutions for the client's requests. They **price the costs** of the projects according to the extent of the **investment** that includes manpower, products, and third-party service



The projects are all **different in pricing**; they involve different professional roles and vary greatly in the services provided. It was inherently **difficult to measure** according to projects; therefore, we asked to receive an **hourly rate** charged for the project that includes costs for professional role as well as for software and hardware costs.



The companies representatives we met with so far said they **would not be able to give us such data**, because they do not have such resolutions. They stated that they are able to provide us with the average **monthly expenses** of the companies for the professionals in various roles that they provide to their customers.

Our goal is to obtain an hourly rate charged for the project that includes costs for professional role as well as for software and hardware costs from the companies we visit in the future.

Summary and Main Conclusion

- The global internet revolution in recent decades has accelerated the development of the programming services industry all over the world, providing it with an opportunity to reach anywhere in the world that has internet.
- **In Israel** over the past few years, there has been a steady **increase in the number of companies and employees engaged in the industry.**
- This industry is indeed a **complex industry to measure**, but it has a great **impact on the Israeli economy** in terms of its GVA, GDP, and total revenues, especially in exports.
- The use of the industry index will be substantial, and will have **great value** in terms of the coverage rate of its gross value added out of the total gross value added of the total trade and service industries in Israel. Thus, the ICBS's National Accounting Sector will be able to use it for the purpose of calculating its gross value added in real terms and for other uses, and it will improve their statistical series.
- We hope to create an **accurate index** that optimally represents the changes in all the products and services provided by the various companies that are classified in it to the various customers around the world.



Thank you!

