

Inventory Measurement in accordance with IASs under the Corona crisis - particular considerations for Covid-19 vaccine manufacturers-

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ABSTRACT

This research deals presenting the procedures for accounting measurement of inventories in accordance with International Accounting Standard IAS 2 — , Inventories. This study also aims to highlight the key implications of covid - 19 on preparing financial reports that should be mindful by companies producing covid-19 vaccine with regard to the inventory item. Ultimately, we reached a conclusion that indicates that vaccine manufacturers in the Covid-19 period are subjected to abnormal operating conditions, which requires them to apply particular accounting procedures with regard to measuring the inventory of vaccines in the financial statements.

1. Introduction

Considering the dates of the start of the pandemic, the World Health Organization made the first statement on COVID-19 on January 20, 2020, announcing that the Chinese government had informed them on December 31, 2019, of the existence of 44 infections. The Covid-19 Coronavirus is generating an inevitable negative impact on the economy, the quantification of which is subject to a high level of uncertainty. This fact is forcing many governments, including the Spanish one, to take exceptional restrictive measures and drastic reduction of economic activity to contain the spread. The COVID-19 pandemic has resulted (at the time of writing) in almost 160 million confirmed cases and about 3.4 million deaths globally. It has also produced concerns about future social-economic crises and recession. Coronavirus is a new Variant of the virus which it is unprecedented in humans. Given the human losses due to the Corona virus yet. As Since the inception of the spread of the virus, countries are initiated to contain it in various ways that the health authorities are advised through closing airports, land and sea borders, closing schools, universities, companies and stores ... etc., And by the application of home quarantine measures for long periods, as well as social distancing measures and other government directives. Previously measures to contain covid-19 pandemic could lead to significant social and economic toll that cannot withstand for long-term. Given the lack of cure to treat Diseases due to the viruses more generally and in particular stemming from covid-19. The second defense line that is taken by countries to contain covid-19 ways to find a vaccine in addition, closure and quarantine measures taken since inception of the pandemic. Where, many countries, primarily united states that have vaccine production experience have embarked to work for existing a vaccine effectively and as early as possible. This actually took place. Such that since the end of December 2020, many countries announced the commencement of covid-19 vaccination process (e.g. united kingdom), however, the high demand on vaccine in exchange for a few of vaccine manufacturers can create unusual status, and challenge in the work of vaccine manufacturers. Thus, it has to do its best to meet the needs of society across the world through raising the productivity magnitude to provide a quantity of vaccine in high volumes for meeting increased and unprecedented needs of customers through using its productive capacity over normal abilities. COVID-19 has created unique challenges in the operation

and oversight of entities. These challenges are particularly acute when it comes to financial reporting, measurement and disclosure.

For by means what already stated can ask this question:

Which are enforceable international accounting standards requirements of inventory measurement under abnormal conditions due to corona pandemic?

Importance of searching

- The economic information and in particular financial information Are considered as one of significant essential resources to stabilise and continuity of economic entities;
- Accounting is contributed in decision making through providing appropriate information to decision makers;
- The research is derived its importance from great role of financial information in securities markets;
- The research derives its importance from the importance of inventory within resources of economic entities that are necessary for operating it;
- The sale of inventory to customers is often the most significant component of revenue for a business enterprise;
- The inventory is represented by 25% - 75% within economic institution assets, while can reach of 75% in business institutions;
- Covid-19 has an important impact on the enterprise's inventory, either by increase or decrease, which is significantly reflected in its value in the financial statements;
- The inventory's accounting measurement, including other financial statement items is contributed to improve financial information quality;
- International accounting standards became a key reference for Generally accepted accounting principles on which to base when the economic institutions including vaccine manufacturers preparing its financial statements;
- Covid-19 can cause an inappropriate accounting treatment for inventory in the case applying the same requirements in both normal and abnormal conditions, as covid-19 situation that unprecedented and may not estimate its effect and term.

Targets of Search

- Presentation of the types of Covid-19 vaccines that have been developed, and a review of how they work;
- Prominence the accounting measurement requirements of inventory items in accordance with international accounting standards;
- Highlight the most important inventory measurement requirements that must be considered by companies to determine the effects of covid-19 on recognised amounts;

Research methodology

This topic was studied by following the descriptive approach to clarify the various concepts as well as the analytical approach in order to facilitate the full understanding of the topic by highlighting all its parts.

2. Measurement of inventories in accordance with IAS 2

Under IFRS the relevant standard for inventories is IAS 2 – Inventories (Ernst & Young, 2019, p. 1577). This Standard applies to all inventories, except: (International Accounting Standards Board (IASB), 2008, p. 967)

(a) Work in progress arising under construction contracts, including directly related service contracts (see IAS 11 Construction Contracts);

(b) Financial instruments (see IAS 32 Financial Instruments: Presentation and IAS 39 Financial Instruments: Recognition and Measurement); and

(c) Biological assets related to agricultural activity and agricultural produce at the point of harvest (see IAS 41 Agriculture).

Also, while the following are within the scope of the standard, IAS 2 does not apply to the measurement of inventories held by: (Deloitte, 2021)

- Producers of agricultural and forest products, agricultural produce after harvest, and minerals and mineral products, to the extent that they are measured at net realisable value (above or below cost) in accordance with well-

established practices in those industries. When such inventories are measured at net realisable value, changes in that value are recognised in profit or loss in the period of the change;

- Commodity brokers and dealers who measure their inventories at fair value less costs to sell. When such inventories are measured at fair value less costs to sell, changes in fair value less costs to sell are recognised in profit or loss in the period of the change.

2.1. Essential inventory concepts

2.1.1. Inventory as an asset

Paragraph 25 of Financial Accounting Standards Board (FASB) Concepts Statement No. 6, “Elements of Financial Statements,” describes assets as “probable future economic benefits obtained or controlled by a particular entity as a result of past transactions or events.” Inventory generally is acquired or produced for subsequent exchange. This utility or service potential justifies the classification of inventory as an asset of the enterprise that controls it. Normally, inventory is converted into cash or other assets during the operating cycle of the business. In fact, this process is what establishes the operating cycle. As a result, inventory typically is classified as a current asset for purposes of preparing a classified balance sheet. (d. r. carmichael o; ray whittington; lynford graham, 2007, p. 647)

Inventories are current assets and are shown in the statement of financial position (Ian Harrison, 2017, p. 342). Inventory is considered a current asset because a company normally sells it within a year or within its operating cycle. (Belverd Needles, Marian Powers, Susan Crosson, 2011, p. 352).

2.1.1.1. Definition of inventory

The primary authoritative guidance addressing financial reporting for inventory is ARB No. 43, Chapter 4, “Inventory Pricing.” It defines inventory of mercantile and manufacturing enterprises as: (d. r. carmichael o; ray whittington; lynford graham, 2007, p. 648)

The aggregate of those items of tangible personal property which (1) are held for sale in the ordinary course of business, (2) are in process of production for such sale, or (3) are to be currently consumed in the production of goods or services to be available for sale. (Steven M. Bragg, 2011, p. 315)

This definition makes it clear that the trading merchandise of a retailer or wholesaler—and the finished goods, work in process, and raw materials of a manufacturer—constitute inventory. (d. r. carmichael o; ray whittington; lynford graham, 2007, p. 649)

IAS 2 Inventories defines inventories as assets: (Obert, 2003, p. 217) (Barry Elliott and Jamie Elliott, 2017, p. 493)

(A) Held for sale in the ordinary course of business;

(b) In the process of production for such sale (work in process); (Coby Harmon, 2013, p. 56)

(c) In the form of materials or supplies to be consumed in the production process or in the rendering of services (e.g., raw materials). (Coby Harmon, 2013, p. 56).

2.2. Measurement

IAS 2 requires that inventories have to be valued at the lower of cost and net realisable value (Jörg Baetge, Alois Panzer, and Alexander Flußgel, 2016, p. 276). Where net realisable value is below cost, the inventory should be written down to its net realisable value (Ernst & Young, 2019, p. 1594) in the period in which the price decline occurs (Coby Harmon, 2013, p. 35) with the write down being recorded in profit or loss (Ernst & Young, 2019, p. 1594), i.e. the difference of this value and cost is considered as a loss. Whatever the reason for a decline—damage, physical deterioration, obsolescence, changes in price levels, or other causes—a company should write down the inventory to net realisable value to report this loss (Donald E. Kieso; Jerry J. Weygandt; Terry D. Warfield, 2016, p. 444), not necessarily when a sale is made (W. Steve Albrecht, Earl K. Stice, and James D. Stice, 2011, p. 301). The decrease is called a holding loss. (Roman L. Weil; Katherine Schipper; Jennifer Francis, 2014, p. 336)

Recall that cost is the acquisition price of inventory computed using one of the historical cost-based methods—specific identification, average-cost, or FIFO. (Donald E. Kieso; Jerry J. Weygandt; Terry D. Warfield, 2016, p. 444). Net realisable value refers to the net amount that a company expects to realize (receive) from the sale of inventory. Specifically (Jerry J. Weygandt, Paul D. Kimmel, Donald E. Kieso, 2013, p. 275), net realisable value is ‘the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated costs necessary to make the sale’. (Ernst & Young, 2019, p. 1583)

For companies that turn over inventory frequently, the cost and market price for inventory may not diverge much, especially if the company removes older inventory costs ahead of recently acquired inventory (FIFO). Also, in periods of generally rising prices, market price will generally be higher than cost. (STUART A. MCCRARY, 2010, p. 21)

Under U.S. GAAP, companies cannot reverse inventory write-downs if inventory increases in value in subsequent periods. IFRS permits companies to reverse write-downs in some circumstances. (Coby Harmon, 2013, p. 35)

IFRS don't permit firms to remeasure inventories upward to an amount exceeding acquisition cost. Although an increase in the market value of inventory may allow the firm to raise its selling price, the firm does not realize the benefit of that increase until it sells the inventory. IFRS delay recognition of a holding gain on inventories until the firm sells the inventory. (Roman L. Weil; Katherine Schipper; Jennifer Francis, 2014, p. 336).

2.2.1. Cost of inventories

Cost is defined as: 'all costs of purchase, conversion and other costs incurred in bringing the inventories to their present location and condition'. (Alan Sangster, 2016, p. 172)

The cost of inventories shall comprise all costs of purchase, costs of conversion and other costs incurred in bringing the inventories to their present location and condition (IASB Foundation staff, 2008, p. 1). The costs of purchase of inventories comprise the purchase price, import duties and other non-recoverable taxes (i.e. other than those subsequently recoverable by the entity from the taxing authorities), and transport, handling (Anne Le Manh, 2005, p. 48) and other costs directly attributable to the acquisition of finished goods, materials and services. Trade discounts, rebates and other similar items are deducted in determining the costs of purchase. (Obert, 2003, p. 218)

The costs of conversion of inventories include costs directly related to the units of production, such as direct labour. They also include a systematic allocation of fixed and variable production overheads that are incurred in converting materials into finished goods (Obert, 2003, p. 218). Fixed production overheads are those indirect costs of production that remain relatively constant regardless of the volume of production, such as depreciation and maintenance of factory buildings and equipment, and the cost of factory management and administration. Variable production overheads are those indirect costs of production that vary directly, or nearly directly, with the volume of production, such as indirect materials and indirect labour. (Ernst & Young, 2019, p. 1585)

The allocation of fixed production overheads is based on the normal capacity of the facilities. Normal capacity is defined as 'the production expected to be achieved on average over a number of periods or seasons under normal circumstances, taking into account the loss of capacity resulting from planned maintenance'. While actual capacity may be used if it approximates to normal capacity, increased overheads may not be allocated to production as a result of low output or idle capacity. In these cases the unallocated overheads must be expensed. Similarly, in periods of abnormally high production, the fixed overhead absorption must be reduced, as otherwise inventories would be recorded at an amount in excess of cost. Variable production overheads are allocated to each unit of production on the basis of the actual use of the production facilities. (Ernst & Young, 2019, p. 1585)

Other costs are to be included in inventories only to the extent that they bring them into their present location and condition. Often judgement will be necessary to make this assessment. An example is given in IAS 2 of design costs for a special order for a particular customer and the standard notes that it may be appropriate to include such costs or other non-production overheads. (Ernst & Young, 2019, p. 1586)

Cost of inventories excludes: (Greuning, 2006, p. 185)

- Abnormal amounts of wasted materials, labor, and overheads;
- Storage costs, unless they are necessary prior to a further production process;
- Administrative overheads; and
- Selling costs.

An entity may purchase inventories on deferred settlement terms. When the arrangement effectively contains a financing element, that element, for example a difference between the purchase price for normal credit terms and the amount paid, is recognised as interest expense over the period of the financing. (International Accounting Standards Board (IASB), 2008, p. 969)

2.2.1. 1. Cost of inventories of a service provider

To the extent that service providers have inventories, they measure them at the costs of their production. These costs consist primarily of the labour and other costs of personnel directly engaged in providing the service, including supervisory personnel, and attributable overheads. Labour and other costs relating to sales and general administrative

personnel are not included but are recognised as expenses in the period in which they are incurred. The cost of inventories of a service provider does not include profit margins or non-attributable overheads that are often factored into prices charged by service providers (International Accounting Standards Board (IASB), 2014, p. 4).

2.2.1. 2. Cost of agricultural produce harvested from biological assets

Agricultural produce is the harvested product of a biological asset, such as wool from a sheep, milk from a dairy cow, picked fruit from a fruit tree, or cotton from a cotton plant (Donald E. Kieso; Jerry J. Weygandt; Terry D. Warfield, 2014, p. 405). Such produce is sold by a farmer in the ordinary course of business and is inventory (Barry Elliott and Jamie Elliott, 2017, p. 511). Agricultural produce (which are harvested from biological assets) are measured at fair value less costs to sell at the point of harvest (Donald E. Kieso; Jerry J. Weygandt; Terry D. Warfield, 2014, p. 405). The initial carrying value of the inventory at the point of 'harvest' is its fair value less costs to sell at that date. Agricultural entities then apply IAS 2 to the inventory using the initial carrying value as 'cost'. (Barry Elliott and Jamie Elliott, 2017, p. 511)

2.2.2. Techniques for the measurement of cost

2.2.2.1. Cost Standard

For the purposes of cost accounting, a business may have established a series of standard costs for its inventories at various levels of completion. These costs may be used for inventory valuation (David Alexander; Christopher Nobes, 2016, p. 226).

IAS 2 specifically allows the use of the standard cost method, provided that the chosen method gives a result which approximates to cost. Standard costs should take into account normal levels of materials and supplies, labour, efficiency and capacity utilisation. They must be regularly reviewed and revised where necessary. (Ernst & Young, 2019, p. 1589)

2.2.2.2. Retail method

The retail method is often used in the retail industry for measuring inventories of large numbers of rapidly changing items with similar margins for which it is impracticable to use other costing methods. The cost of the inventory is determined by reducing the sales value of the inventory by the appropriate percentage gross margin. The percentage used takes into consideration inventory that has been marked down to below its original selling price. An average percentage for each retail department is often used (International Accounting Standards Board (IASB), 2008, p. 971).

The retail method is used by retailers to estimate the cost of their ending inventory. The retailer can either take a physical inventory at retail prices or estimate ending retail inventory and then use a computed cost-to-retail ratio to convert the ending inventory priced at retail to its estimated cost. This method eliminates the process of going back to original vendor invoices or other documents in order to determine the original cost for each inventoriable item (Steven M. Bragg, 2011, p. 347).

The retail inventory method of estimating inventory cost requires costs and retail prices to be maintained for the merchandise available for sale. A ratio of cost to retail price is then used to convert ending inventory at retail to estimate the ending inventory cost. The retail inventory method is applied as follows: (Carl S. Warren; James M. Reeve; Jonathan E. Duchac, 2018, p. 309)

- Step 1. Determine the total merchandise available for sale at cost and retail.
- Step 2. Determine the ratio of the cost to retail of the merchandise available for sale.
- Step 3. Determine the ending inventory at retail by deducting the sales from the merchandise available for sale at retail.
- Step 4. Estimate the ending inventory cost by multiplying the ending inventory at retail by the cost to retail ratio.

Exhibit 1 illustrates the retail inventory method.

	A	B	C
1		Cost	Retail
2	Inventory, January 1	\$19,400	\$ 36,000
3	Purchases in January (net)	42,600	64,000
Step 1 →	4 Merchandise available for sale	\$62,000	\$100,000
Step 2 →	5 Ratio of cost to retail price: $\frac{\$62,000}{\$100,000} = 62\%$		
	6 Sales for January		70,000
Step 3 →	7 Inventory, January 31, at retail		\$ 30,000
Step 4 →	8 Inventory, January 31, at estimated cost		
	9 $(\$30,000 \times 62\%)$		\$ 18,600
10			

Source: (Carl S. Warren; James M. Reeve; Jonathan E. Duchac, 2018, p. 309)

The key to applying the retail method is determining the cost-to-retail ratio. The calculation of this ratio varies depending upon the cost flow assumption selected. The cost-to retail ratio provides a measure of the relationship between the cost of goods available for sale and the retail price of these same goods. This ratio is used to convert the ending retail inventory back to cost. The computation of the cost-to-retail ratio for the FIFO and average cost methods is described below. (Steven M. Bragg, 2011, p. 347)

FIFO cost—The FIFO method assumes that the ending inventory is made up of the latest purchases. Therefore, beginning inventory is excluded from the computation of the cost-to-retail ratio, and the computation uses the cost of current year net purchases divided by their retail value adjusted. (Steven M. Bragg, 2011, p. 347)

Average cost—Average cost assumes that ending inventory consists of all goods available for sale. Therefore, the cost-to-retail ratio is computed by dividing the cost of goods available for sale (Beginning inventory + Net purchases) by the retail value of these goods adjusted. (Steven M. Bragg, 2011, p. 348)

A simple example illustrates the computation of the cost-to-retail ratio under both the FIFO cost and average cost methods. Note that the only difference in the two examples is the numbers used to calculate the cost-to-retail ratio. (Steven M. Bragg, 2011, p. 348)

	<i>FIFO cost</i>		<i>Average cost</i>	
	<i>Cost</i>	<i>Retail</i>	<i>Cost</i>	<i>Retail</i>
Beginning inventory	\$100,000	\$ 200,000	\$100,000	\$ 200,000
Net purchases	<u>500,000</u> (a)	<u>800,000</u> (b)	<u>500,000</u>	<u>800,000</u>
Total goods available for sale	<u>\$600,000</u>	1,000,000	<u>\$600,000</u> (c)	1,000,000 (d)
Sales at retail		<u>(800,000)</u>		<u>(800,000)</u>
Ending inventory—retail		<u>\$ 200,000</u>		<u>\$ 200,000</u>
Cost-to-retail ratio	$\frac{(a) 500,000}{(b) 800,000}$	= 62.5%	$\frac{(c) 600,000}{(d) 1,000,000}$	= 60%
Ending inventory—cost				
200,000 × 62.5%		<u>\$ 125,000</u>		
200,000 × 60%				<u>\$ 120,000</u>

2.2.3. Cost formulas

2.2.3. 1. Specific identification method

Specific identification of cost means that specific costs are attributed to identified items of inventory. This is the appropriate treatment for items that are segregated for a specific project, regardless of whether they have been bought or produced. (International Accounting Standards Board (IASB), 2014, p. 5)

The specific identification method is not practical unless each inventory unit can be separately identified. For example, an automobile dealer may use the specific identification method because each automobile has a unique serial number. (Carl S. Warren; James M. Reeve; Jonathan E. Duchac, 2018, p. 290)

However, specific identification of costs is inappropriate when there are large numbers of items of inventory that are ordinarily interchangeable. In such circumstances, the method of selecting those items that remain in inventories could be used to obtain predetermined effects on profit or loss. (International Accounting Standards Board (IASB), 2014, p. 5)

2.2.3. 2. First-in, first-out (FIFO) formula

In the vast majority of businesses it will not be practicable to keep track of the cost of identical items of inventory on an individual unit basis; nevertheless, it is desirable to approximate to the actual physical flows as far as possible. The FIFO method probably gives the closest approximation to actual cost flows, since it is assumed that when inventories are sold or used in a production process, the oldest are sold or used first. Consequently the balance of inventory on hand at any point represents the most recent purchases or production. (Ernst & Young, 2019, p. 1590)

2.2.3. 3. Weighted average cost formula

A weighted average cost (including the cost of the beginning inventory and current period purchases and production) is used in connection with a periodic inventory system. A moving average cost typically is used with a perpetual inventory system. The average cost method is used by companies in many industries and is often viewed as producing results similar to those obtained from the FIFO method. The reason is that the inventory balance is directly influenced by current costs. (d. r. carmichael o; ray whittington; lynford graham, 2007, p. 676)

2.2.3. Techniques for the measurement of cost

Using net realisable values means that assets are not being reported at amounts that exceed their future economic benefits. (W. Steve Albrecht, Earl K. Stice, and James D. Stice, 2011, p. 299)

IAS 2 explains that materials and other supplies held for use in the production of inventories are not written down below cost if the final product in which they are to be used is expected to be sold at or above cost. This is the case even if these materials in their present condition have a net realisable value that is below cost and would therefore otherwise require write down (Ernst & Young, 2019, p. 1592). However, when a decline in the price of materials indicates that the cost of the finished products exceeds net realisable value, the materials are written down to net realisable value (Anne Le Manh, 2005, p. 51) is necessary. Often raw materials are used to make a number of different products. In these cases it is normally not possible to arrive at a particular net realisable value for each item of raw material based on the selling price of any one type of finished item (Ernst & Young, 2019, p. 1593). The replacement cost of those materials may be the best measure of their net realisable value (Ernst & Young, 2019, p. 1592).

Current replacement cost of an asset, the amount currently required to acquire an identical asset (in the same condition and with the same service potential) or an asset capable of rendering the same service at a current fair market value (Roman L. Weil; Katherine Schipper; Jennifer Francis, 2014, p. 761). Because inventories are purchased or produced frequently, measuring their current replacement cost may be as simple as consulting suppliers' catalogs or price lists. (Roman L. Weil; Katherine Schipper; Jennifer Francis, 2014, p. 116)

When the circumstances that previously caused inventories to be written down below cost no longer exist, or when there is clear evidence of an increase in net realisable value because of changed economic circumstances, the amount of the write-down is reversed. The reversal cannot be greater than the amount of the original write-down, so that the new carrying amount will always be the lower of the cost and the revised net realisable value (Ernst & Young, 2019, p. 1592).

Under IFRS, the firm would reverse the write-downs in the Allowance for Inventory Impairment account, as long as those reversals do not exceed the cumulative amount of prior write-downs (Roman L. Weil; Katherine Schipper; Jennifer Francis, 2014, p. 338). Profit should not be recognised in advance, but immediate account should be made for anticipated losses (Alan Sangster, 2016, p. 172). Reversals of previous write-downs are recognised as a reduction in the inventory expense recognised in the period in which the reversal occurs (Ernst & Young, 2019, p. 1598). The lower-of-cost-or-market basis for inventory valuation is a conservative accounting policy for two reasons: (Roman L. Weil; Katherine Schipper; Jennifer Francis, 2014, p. 338)

- It recognises losses from decreases in market value before a sale occurs but recognises gains from increases in market value above original acquisition cost only when a sale occurs;
- It reports inventories on the balance sheet at amounts that are never greater, but maybe less, than acquisition cost.

3. Inventory Measurement under the Corona crisis - particular requirements for Covid-19 vaccine manufacturer-

3.1. Covid-19

Coronaviruses (CoV) are a large family of RNA viruses that cause illnesses ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV). The new strain of coronavirus was identified in December 2019 in Wuhan city, Hubei province of China, and has been named by the International Committee on Taxonomy of Viruses (ICTV) as Severe Acute Respiratory Syndrome Corona Virus-2 (SARSCoV-2). The ICTV have determined that SARS-CoV-2 is the same species as SARSCoV but a different strain. The World Health Organization (WHO) has named the disease associated with SARS-CoV-2 infections as Corona “COVID-19”. Since the emergence of the 2019 novel coronavirus (2019- nCoV) infection in Wuhan, China, in December 2019, it has rapidly spread across China and more than 200 other countries. Most of the cases involved in the first cluster in December 2019 were linked to the large Wuhan Seafood Market. The original source(s) of SARS-CoV-2 transmission remain unidentified. However, available genetic and epidemiological data suggests that SARS-CoV-2 is a zoonotic pathogen with possible spillover directly from wildlife or via intermediate animal hosts or their products. Sustained human-to-human transmission has been confirmed in China where numerous healthcare workers have been infected in clinical settings with overt clinical illness and fatalities. Most cases have been associated with fever and respiratory symptoms (coughing and shortness of breath), while other cases are mild or subclinical cases. (Saudi Center for Disease Prevention and Control(SaudiCDC), 2020, p. 4)

COVID-19 is caused by a new coronavirus, known as SARS-CoV-2. It was first identified in late 2019. It is very infectious and can lead to severe respiratory disease. Many people who are infected may not have any symptoms or only have mild symptoms. These commonly start with cough, fever, headache and loss of taste or smell. (Public Health England, 2021, p. 2)

COVID-19 is a viral infection that mainly affects the lungs. Some people may have a mild illness. Others may get very sick, including seniors or people with a pre-existing health condition. The virus can also hurt the lungs, heart, brain and other organs, increasing the risk of long-term health effects. Very rarely, some children can get a serious inflammatory condition. Some people are more likely to get COVID-19 because of where they live or work (toronto.ca, 2021, p. 1). As the coronavirus that causes COVID-19 continues to change into new variants, it can spread infection more easily, and cause more serious illness (toronto.ca, 2021, p. 1).

There is no cure for COVID-19 although some newly tested treatments do help to reduce the risk of complications. (Public Health England, 2021, p. 2)

3.1.1. The purpose of the vaccines and the target cohort

The purpose of the covid-19 vaccine is as follows: (agence nationale de santé publique(Santé publique France), 2021, p. 1)

- Through to vaccines, your body learns to recognise the Covid and to defend itself;
- Covid vaccines are very effective in protecting against severe forms of Covid.

The vaccine is offered to all adults. Some are priority: (agence nationale de santé publique(Santé publique France), 2021, p. 1)

- The elderly;
- People with poor health (eg cancer, rare diseases);
- People who are more at risk of catching the Covid. For example people who live in infirmary, health professionals.

3.1.2. The different types of COVID-19 vaccines

Scientists around the world are developing many potential vaccines for COVID-19. These vaccines are all designed to teach the body’s immune system to safely recognise and block the virus that causes COVID-19. (World Health Organization (WHO), 2020)

Several different types of potential vaccines for COVID-19 are in development, including: (World Health Organization (WHO), 2020)

- **Inactivated or weakened virus vaccines**, which use a form of the virus that has been inactivated or weakened so it doesn’t cause disease, but still generates an immune response.
- **Protein-based vaccines**, which use harmless fragments of proteins or protein shells that mimic the COVID-19 virus to safely generate an immune response.

- **Viral vector vaccines**, which use a safe virus that cannot cause disease but serves as a platform to produce coronavirus proteins to generate an immune response.
- **RNA and DNA vaccines**, a cutting-edge approach that uses genetically engineered RNA or DNA to generate a protein that itself safely prompts an immune response. The coronavirus that causes COVID-19 disease has a "spike protein" that is only found on the virus surface. The vaccines give instructions to cells to make the spike protein so that the body can learn to recognise the virus. These instructions are called messenger RNA (mRNA). The body makes antibodies against the spike protein to protect us from getting sick if we are exposed to the virus. The vaccines do not contain the virus and so cannot give infect people with COVID-19. The Pfizer-BioNTech and Moderna mRNA vaccines, which were tested in large clinical trials to make sure that they are safe and effective. In these trials, the vaccines were 94-95% effective. Millions of people around the world have been vaccinated against COVID-19 (toronto.ca, 2021, p. 1). Pfizer-BioNTech and Moderna are a messenger RNA (mRNA) based vaccine against coronavirus disease 2019 (COVID-19). The mRNA instructs the cell to produce proteins of the S antigen (a piece of the spike protein unique to SARS-CoV-2) to stimulate an immune response. (World Health Organization (WHO), 2021, p. 1)

Several vaccine designs were evaluated by different groups during the development of a SARS-CoV-2 vaccine. The SARS-CoV-2 vaccines currently authorized for use, and others that have late-stage clinical data available, are summarized in the Table. (C. Buddy Creech, Shannon C. Walker, Robert J. Samuels, 2021, p. 2)

Table 1: SARS-CoV-2 Vaccines

Vaccine	Manufacturer	Vaccine type	Antigen	Dose	Dosage	Storage conditions	Efficacy against severe COVID-19 ^a	Overall efficacy	Current approvals
mRNA-1273	Moderna (US)	mRNA	Full-length spike (S) protein with proline substitutions	100 µg	2 Doses 28 d apart	-25° to -15 °C; 2-8 °C for 30 d; room temperature ≤12 h	100% 14 d After second dose (95% CI, not estimable to 1.00)	92.1% 14 d After 1 dose (95% CI, 68.8%-99.1%); 94.1% 14 d after second dose (95% CI, 89.3%-96.8%)	EUA: the US, EU, Canada, and UK
BNT162b2	Pfizer-BioNTech (US)	mRNA	Full-length S protein with proline substitutions	30 µg	2 Doses 21 d apart	-80° to -60 °C; 2-8 °C for 5 d; room temperature ≤2 h	88.9% After 1 dose (95% CI, 20.1%-99.7%)	52% After 1 dose (95% CI, 29.5%-68.4%); 94.6% 7 d after second dose (95% CI, 89.9%-97.3%)	EUA: the US, EU, Canada, and UK
Ad26.CoV2.5	Janssen/Johnson & Johnson (US)	Viral vector	Recombinant, replication-incompetent human adenovirus serotype 26 vector encoding a full-length, stabilized SARS-CoV-2 S protein	5 × 10 ¹⁰ Viral particles	1 Dose	-20 °C; 2-8 °C for 3 mo	85% After 28 d; 100% after 49 d	72% in the US; 66% in Latin America; 57% in South Africa (at 28 d)	EUA: the US, EU, and Canada
ChAdOx1 (AZS1222)	AstraZeneca/Oxford (UK)	Viral vector	Replication-deficient chimpanzee adenoviral vector with the SARS-CoV-2 S protein	5 × 10 ¹⁰ Viral particles (standard dose)	2 Doses 28 d apart (intervals >12 wk studied)	2-8 °C for 6 mo	100% 21 d After first dose	64.1% After 1 dose (95% CI, 50.5%-73.9%); 70.4% 14 d after second dose (95% CI, 54.8%-80.6%)	EUA: WHO/Covax, the UK, India, and Mexico
NVX-CoV2373	Novavax, Inc (US)	Protein subunit	Recombinant full-length, prefusion S protein	5 µg of protein and 50 µg of Matrix-M adjuvant	2 Doses	2-8 °C for 6 mo	Unknown	89.3% in the UK after 2 doses (95% CI, 75.2%-95.4%); 60% in South Africa (95% CI, 19.9%-80.1%)	EUA application planned
CVnCoV	CureVac/ GlaxoSmithKline (Germany)	mRNA	Prefusion stabilized full-length S protein of the SARS-CoV-2 virus	12 µg	2 Doses 28 d apart	2-8 °C for 3 mo; room temperature for 24 h	Unknown	Phase 3 trial ongoing	
Gam-COVID-Vac (Sputnik V)	Gamaleya National Research Center for Epidemiology and Microbiology (Russia)	Viral vector	Full-length SARS-CoV-2 glycoprotein S carried by adenoviral vectors	10 ¹¹ Viral particles per dose for each recombinant adenovirus	2 Doses (first, rAd26; second, rAd5) 21 d apart	-18 °C (Liquid form); 2-8 °C (freeze dried) for up to 6 mo	100% 21 d After first dose (95% CI, 94.4%-100%)	87.6% 14 d After first dose (95% CI, 81.1%-91.8%); 91.1% 7 d after second dose (95% CI, 83.8%-95.1%)	EUA: Russia, Belarus, Argentina, Serbia, UAE, Algeria, Palestine, and Egypt
CoronaVac	Sinovac Biotech (China)	Inactivated virus	Inactivated CNO2 strain of SARS-CoV-2 created from Vero cells	3 µg With aluminum hydroxide adjuvant	2 Doses 14 d apart	2-8 °C; Lifespan unknown	Unknown	Phase 3 data not published; reported efficacy 14 d after dose 2: 50.38% (mild) and 78% (mild to severe) in Brazil, 65% in Indonesia, and 91.25% in Turkey	EUA: China, Brazil, Columbia, Bolivia, Brazil, Chile, Uruguay, Turkey, Indonesia, and Azerbaijan
BBIBP-CorV	Sinopharm 1/2 (China)	Inactivated virus	Inactivated HB02 strain of SARS-CoV-2 created from Vero cells	4 µg With aluminum hydroxide	2 Doses 21 d apart	2-8 °C; Lifespan unknown	Unknown	Phase 3 data not published; unpublished reports of 79% and 86% efficacy	EUA: China, UAE, Bahrain, Serbia, Peru, and Zimbabwe

Source: (C. Buddy Creech, Shannon C. Walker, Robert J. Samuels, 2021, p. 2)

3.2. Inventory measurement requirements under the covid-19 crisis

IAS 2 Inventories requires a company to measure its inventory at the lower of cost or net realisable value and update its estimate of the net realisable value at the reporting date. The COVID-19 outbreak may affect this estimate (Kegalj, 2020, p. 3). Also, consideration should be given to the possible impairment of inventories as a result of the reduction in their net realisable value (Partner, 2020, p. 3).

Net realisable value (NRV) is an entity-specific measurement defined as “the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated costs necessary to make the sale”. As a result of the pandemic, the NRV of an item of inventory may fall below its cost for many reasons, including a decline in selling

prices (e.g. as a result of price concessions offered to customers), or an increase in the estimate of costs to complete and market the inventories (e.g. increased costs to provide protection to employees). (deloitte, 2020, p. 10)

Supply-chain disruptions, reduced economic activity, forced shut-downs etc. have all been unfortunate consequences of the COVID-19 pandemic. These circumstances could impact the availability of inventory and its ability to be resold triggering the requirement in iAS 02 to remeasure inventory at net realisable value if this is now below cost. (The Australian Institute of Company Directors (AICD), Chartered Accountants Australia and New Zealand (CA ANZ) and CPA Australia., 2020, p. 46)

The COVID-19 pandemic may affect the recoverability of inventory balances. Some entities with inventories that are seasonal or are subject to expiration may have to assess whether a write-down for obsolescence or slow-moving stock may be necessary at an interim or annual period as a result of a slower sales pace. Other entities may have to assess whether a decline in their future estimated selling price is expected, which may require a write-down in the cost of inventory in an interim or annual period. (deloitte, 2020, p. 10)

Write-down losses: If a company writes inventory down to its net realisable value at the reporting date, then any resulting losses need to be recognised immediately. (Kegalj, 2020, p. 3)

In a difficult economic environment, the NRV calculation may be more challenging and require more detailed methods or assumptions. Interim inventory impairment losses should be reflected in the interim period in which they occur, with subsequent recoveries recognised as gains in future periods. (deloitte, 2020, p. 10)

Costs of manufactured inventory may also be impacted by changing production levels as overheads must be allocated based on normal production. (The Australian Institute of Company Directors (AICD), Chartered Accountants Australia and New Zealand (CA ANZ) and CPA Australia., 2020, p. 46)

In addition, manufacturing entities may have to reassess their practices for fixed overhead cost absorption if production volumes become abnormally low during the year as a result of plant closures or lower demand for their products. IAS 2 requires that variable production overhead costs should be allocated to each unit of production based on the actual use of the production facilities. It also calls for the allocation of fixed overhead costs to each unit of production based on the normal capacity of the production facilities (deloitte, 2020, p. 11). For those companies producing below capacity as a result of the declining demand, this situation may mean that certain costs cannot be capitalized as an increase in the value of inventories. Also, consideration should be given to the possible impairment of inventories as a result of the reduction in their net realisable value. (Partner, 2020, p. 3)

The COVID-19 pandemic may affect manufacturing entities in a number of ways (e.g. shortages of labour and materials or unplanned factory downtime) that, if sustained, may result in an abnormal reduction of an entity's production levels. In such circumstances, an entity should not increase the amount of fixed overhead costs allocated to each inventory item. Rather, the unallocated fixed overhead costs are recognised in profit or loss in the period in which they are incurred. If the entity presents an analysis of expenses by function, these costs are included as part of cost of sales. (deloitte, 2020, p. 11)

Conversely, if an entity produces goods that are in high demand as a result of the pandemic (e.g. personal protection equipment), its production levels may be abnormally high. If this is the case, the entity will need to decrease the amount of fixed overhead allocated to each inventory item. (deloitte, 2020, p. 11)

An entity will also need to consider whether certain costs incurred because of the pandemic can be capitalised. These may include additional storage costs due to delays in delivery of inventories or costs of repackaging to make goods available in a different market with higher demand. IAS 2 gives the following as examples of costs that should be excluded from the cost of inventories and recognised as expenses in the period in which they are incurred: (deloitte, 2020, p. 11)

- Abnormal amounts of wasted materials, labour, or other production costs;
- storage costs, unless those costs are necessary in the production process before a further production stage;
- administrative overheads that do not contribute to bringing inventories to their present location and condition; and
- Selling costs.

4. CONCLUSION

Covid-19 has been affected the global economy in general, as reflecting negatively on growth rates in most countries of the world, but at the micro level, the impact of covid-19 on Economic companies is varied. Whereby, many companies acting in tourism, hospitality and transport, as well as most companies producing non-sanitary goods and services, are adversely affected, through the increase in its costs while its production decreased due to the decrease in the demand for

its products offered for sale. On the other hand, some companies have benefited positively from the consequences of Covid-19, on top of which are pharmaceutical and vaccine manufacturers and companies manufacturing medical and paramedical supplies, and preventive and personal protection tools. Where there has been an increase in their production as a result of the popularity of their products due to high demand, While the negative or positive impact of Covid-19 on institutions was unusually severe, As such, this will affect the accounting applied in preparing their financial statements, which has significantly reflected in production costs, especially the fixed overheads , as well as the estimation of the amounts included in the financial statements such as the net realisable value of inventory items.

The financial reporting and business impacts of COVID-19 are as varied as the businesses that face them and have given rise to a number of significant economic challenges for entities operating in many industries and sectors. In the current environment, the quality of financial reports and related disclosures is more important than ever for confident and informed markets and investors. COVID-19 is having an unprecedented impact on the economic outlook for the domestic and global economy. For the first time, many entities will be required to consider their requirements in preparing financial statements in more detail In order to meet the needs of investors that expect clear disclosure about the impacts on an entity's businesses, any risks and uncertainties, key assumptions, management strategies and future prospects. Ultimately, we can extract these outcomes:

- Although the economic impacts of Covid-19 on companies are varied, the accounting effects pose a difficult challenge for all companies without an exemption;
- Financial information included in the financial statements of the institution has become to matter significantly the governments such as or more than financial markets are interested in that information. Where information related to the financial position in and performance results of the institution is considered as a key basis for directing government support programs for institutions affected by the consequences of Covid-19;
- For any company that makes or sells merchandise, inventory is an extremely important asset. Managing this asset is a challenging task. It requires not only protecting goods from theft or loss but also ensuring that operations are highly efficient. Further, proper accounting of inventory is essential because misstatements will affect net income in at least two years;
- The IASB has not made any adjustment to IAS 2 on inventory despite the implications of covid-19 for enterprise inventory, as the requirements of the standard remain in effect in current circumstances to date;
- Production level is likely to decline under COVID-19 conditions, and companies should be alert to how incremental fixed overheads are allocated;
- Vaccine manufacturers will need to reduce the amount of fixed overhead allocated to each inventory item as a result of abnormal demand for vaccines, and compliance with the fixed overhead allocation requirements in conditions of extraordinary use provided for under IAS 2;
- Under the circumstances of the Covid-19 virus, it is expected to reduce inventory values to the net realisable value for companies negatively are affected by covid-19; and at cost for companies positively are affected by covid-19;
- The new variants of a virus are expected to occur over time that may affect the effectiveness of vaccines, which will reflect on their net realisable value so that they become less than their cost;
- Vaccine manufacturers may have to reassess their practices to allocate fixed overhead costs if production volumes become abnormally low during the year, as a result of the impact of covid-19 new variants on vaccine effectiveness;
- If vaccine manufacturers are able to develop effective vaccines against Covid-19 variants, IAS 2 allows reversing the loss of inventory value reduction in a later period if the conditions that previously triggering (the virus variants) to reduce the inventory value below cost are removed;
- Companies need to disclose the write-down of inventories to net realisable value and their reversal.

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