INTERNATIONAL ECONOMICS OLYMPIAD

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CSI

BIG PHARMA: PRICING A COVID-19 VACCINE

Business Case

September 2020

Business Case: PRICING A COVID-19 VACCINE

Your client is Big Pharma Corporation, which is one of the major international pharmaceutical companies* developing COVID-19 vaccine.

The vaccine trials of your client have been successful. Clinical trials are close to be finalized. The client is certain that its vaccine will get approved by authorities.

Your client has asked your team to develop a Pricing Strategy for its COVID-19 vaccine.

such as GlaxoSmithKline, Sanofi, Pfizer, Merck, AstraZeneca, etc.

Business Case: PRICING A COVID-19 VACCINE

GUIDING QUESTIONS TO START CRACKING THE CASE

- What are key issues regarding pricing a COVID-19 Vaccine?
- Who are the key players and how to get ahead of the competitors?
- How should be geographical prioritization (and pricing)?
- Recommendations regarding pricing and pricing structure (specifically for the approved vaccine)?
- Should the client adopt different strategies for different periods?
- What will work best in the short, medium and long run?

MATH QUESTION*

Based on available data and trends, please estimate the United Kingdom market size of COVID-19 vaccine in April 2021 (in terms of people)?

**All teams have to answer this question by relying on actual available data. Please in a back-up slide provide your calculations (logic, assumptions, sources, etc.).*

Appendices

Appendix 1: Business Case Solution Requirements

- The competition in business is a team competition and includes the oral presentation of the results.
- Presentations must be supported by slides. No more than 8 slides. The presentations should be in English.
- All additional information (analytics, calculations, etc.) can be backed up in the presentation.
- Case study part is a team competition and lasts for two days:
  - Day 1: preparation
  - Day 2: presentation
- During the day of preparation, contestants may use any online and offline materials, but it is prohibited to contact other people for help.
- No changes to slides are allowed after submission.
- Each team will have 10 minutes for presentation and 10 minutes for Q&A.

Appendix 2: Evaluation Criteria

ANALYTICAL THINKING

Ability to structurally approach the solution of a complex business problem, correctly dividing it into streams (into directions within which the solution of the problem may lie).

CONCEPTUAL THINKING

Ability to build correct hypotheses based on the resulting structure, made by analysis. Here the team checks how ideas respond to the necessary request and correctly address these or other problems of the enterprise, the team also makes sure that these solutions are feasible and have a common and business sense.

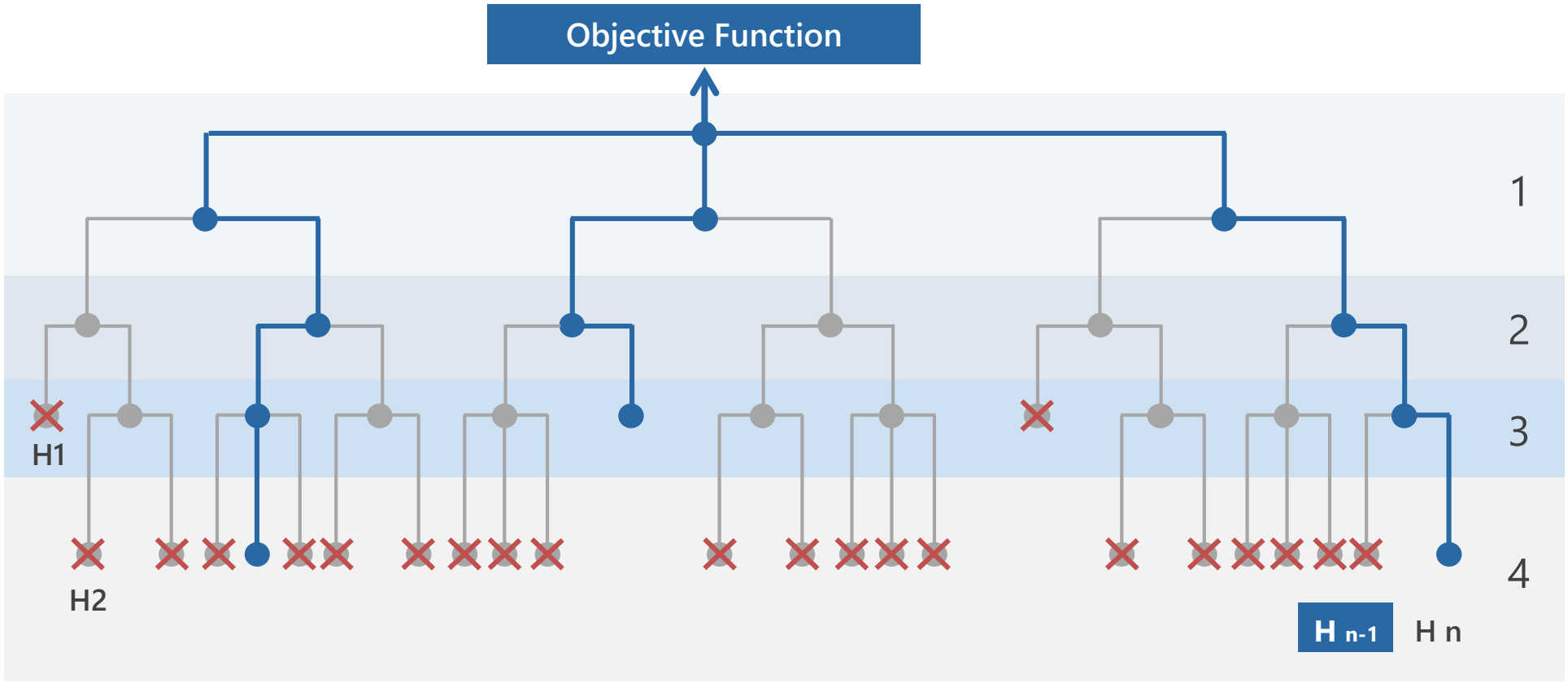
QUANTITATIVE THINKING

No case can be solved without simple but fast calculations and more complex models that illustrate certain analysis.

COMMUNICATION SKILLS

Ability to create a presentation, communicate your findings, recommendations and case solution, and also to answer challenging questions from the jury.

Appendix 3.1: Business Case Solving Approach – Structure



Structuring the problem according to the MECE principle:

ME - Mutually Exclusive

CE - Collectively Exhaustive

Often the solution to business problems lies at levels 4-5

1. An **objective function** is determined to solve a business problem (for example, an increase in profits, income).
2. The objective function is divided into structural elements according to the MECE principle, up to indivisible elements (a **decision tree** is formed).
3. A **hypothesis** is put forward for each element (Hypothesis: H1, H2, etc.).
4. Each hypothesis is **confirmed or refuted** on the basis of analysis.

Appendix 3.2: Business Case Solving Approach – Storyboard

Reading the **slide titles**, you should get one logically coherent storyboard

Storyboard is written (by project manager) before the start of the analysis

Storyboard often changes as project proceed and new data is obtained

Storyboard serves as a **work direction** for the project team

PRESENTATION SLIDES FOR A CLIENT

Slide titles 1 → Slide titles 2 → Slide titles 3 → ... → Slide titles N

SLIDE STRUCTURE

Slide titles (max. 2-3 lines)

Main part
(slide title supporting data)

Source, comments, etc.

Slides should answer the question "**So what?**", and carry a clear message.

SMART guiding criteria:

S - Specific
M - Measurable
A - Achievable
R - Relevant
T - Time-framed

Storyboard helps to make the presentation clear and to the point in order to convey the message to the client, not just a set of data.

Clients like messages!

Source: Center for Strategic Initiatives (CSI.KZ)

Appendix 4: Vaccine Production Process

1. Research

2. Preclinical preparation

3. Clinical trials

4. Approval

5. Mass production

6. Distribution

The vaccine development process typically takes a decade, but COVID-19 timelines are being compressed due to the global urgency of the pandemic.

Some suggest a timeline from start of development to public use is 12-18 months from January 2020, when the genetic sequence of the virus that causes COVID-19 was published.

After pre-clinical studies are completed, the multiple phases of the clinical trial process test whether new vaccines are safe and effective before going public – culminating in a regulatory review.

Oftentimes developers will try to ensure that enough of a vaccine is ready to ship the moment approval comes in by beginning the manufacturing process during clinical trials.

Source: https://www.covid-19vaccinetracker.org/

Appendix 4: Big Pharma is in the third phase of clinical trials

There are currently

210

vaccines in development for COVID-19

These fall into

9

different product categories/platforms

At this time

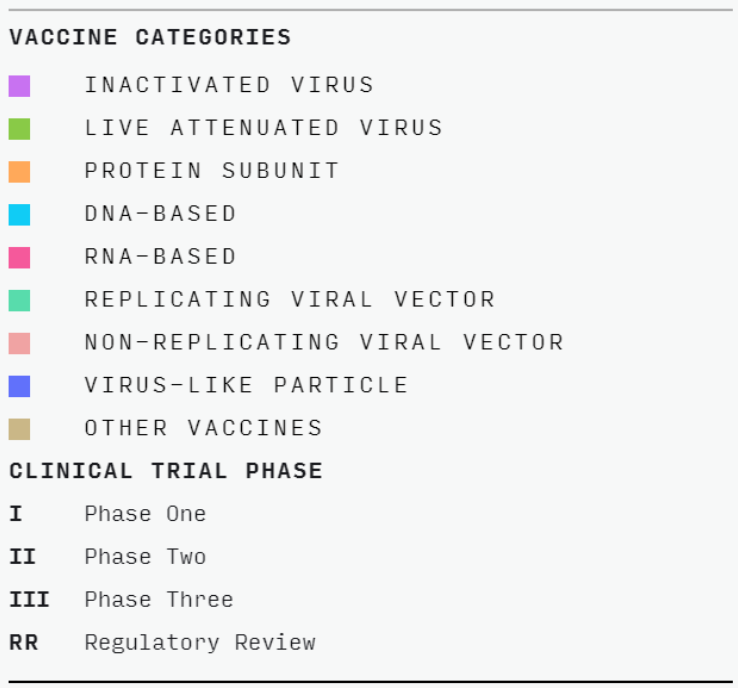
30

vaccines are in clinical testing

Leading Candidates

FARTHEST ALONG*	CLINICAL PHASE
Univ. of Oxford/AstraZeneca	III
Sinovac/Instituto Butantan	III
Wuhan Inst./Sinopharm	III
Beijing Inst./Sinopharm	III
Moderna	III
BioNTech/Fosun/Pfizer	II/III
CanSino Biologics	II
Inst. of Medical Biology	II
Anhui Zhifei Longcom	II
Novavax	I/II

*Ranked by entry into latest phase of development. Clinical phases move when it is publicly reported that the product has been dosed in a trial.



Source: as of September 8, 2020 - https://www.covid-19vaccinetracker.org/

Appendix 5: COVID-19 Vaccine Production in News*

cdc.gov/vaccines/programs/vfc/awardees/vaccine-management/price-list/index.html

Adult Vaccine Price List

Vaccine	Brandname/ Tradename	NDC	Packaging	CDC Cost/ Dose	Priva Secto Cost/ Dose		
Hepatitis A Adult [5]	Vaqta®	00006-4096-02	10 pack – 1 dose syring	$32.86	$69.580	6/30/2021	Merck
		00006-4841-41	10 pac 1 dose vial				
Hepatitis A Adult [5]	Havrix®	58160-0826-52	10 pac 1 dose syring				
Hepatitis A-Hepatitis B Adult [3]	Twinrix®	58160-0815-52	10 pack – 1 dose syringe	$62.035	$10		

Coronavirus Business Update Coronavirus pandemic + Add to myFT

The race for a vaccine heats up

UK secures 90m doses, GSK buys stake in CureVac and Oxford/AstraZeneca trial shows promise

Covid-19 vaccine tracker, August 8: Some shots could cost less than Rs 240 per dose

Coronavirus (COVID-19) vaccine tracker August 8 update: Serum said this low price would be enabled through a new US$ 150 million funding it is receiving from the Bill and Melinda Gates Foundation to 'accelerate' the production of Coronavirus vaccines.

There's also a difference between the price a manufacturer charges and the price a consumer sees. The federal government awarded Maryland-based vaccine maker Novavax $1.6 billion in exchange for ownership of the first 100 million doses of any coronavirus vaccine it makes. That comes out to an investment of $16 per dose. But the government-owned vaccines would then be offered to the public for free (providers are allowed to charge for the cost of administering the vaccine).

healthline SUBSCRIBE

NPR reports that Moderna, one of the companies leading the race for a safe and effective COVID-19 vaccine, has made deals with other countries to sell the vaccine for $32 to $37 per dose.

Developing Covid-19 Vaccines at Pandemic Speed

Nicole Lurie, M.D., M.S.P.H., Melanie Saville, M.D., Richard Hatchett, M.D., and Jane Halton, A.O., P.S.M.

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HEALTH NEWS ✓ Fact Checked

How Much Will You Pay for a COVID-19 Vaccine? Here's What We Know

Written by Shawn Radcliffe on August 11, 2020 — Fact checked by Jennifer Chesak

Dozens of potential COVID-19 vaccines are currently in testing. Getty Images

- **Millions of Americans will be able to get a COVID-19 vaccine at no additional cost, thanks to congressional legislation, but many people, including the**

**Links to these news articles and other materials are in Appendix 6*

Appendix 6: Useful links

- https://www.nejm.org/doi/full/10.1056/NEJMp2005630
- https://www.healthline.com/health-news/how-much-will-you-pay-for-a-covid-19-vaccine-heres-what-we-know
- https://www.marketplace.org/2020/07/17/how-much-will-coronavirus-vaccine-cost/
- https://www.nytimes.com/interactive/2020/04/30/opinion/coronavirus-covid-vaccine.html
- https://www.cfr.org/backgrounder/what-world-doing-create-covid-19-vaccine
- https://www.who.int/blueprint/priority-diseases/key-action/novel-coronavirus-landscape-ncov.pdf
- https://www.cdc.gov/vaccines/programs/vfc/awardees/vaccine-management/price-list/index.html
- https://docs.gatesfoundation.org/Documents/Production_Economics_Vaccines_2016.pdf
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5518734/
- https://www.businessinsider.com/how-much-will-coronavirus-vaccine-cost-2020-5
- https://www.ft.com/content/0da5cf98-77d4-4134-a02e-42b6cde09173
- https://www.rfi.fr/en/wires/20200811-new-russian-virus-vaccine-one-among-many
- https://timesofindia.indiatimes.com/life-style/health-fitness/health-news/coronavirus-vaccines-to-be-sold-under-pandemic-pricing-how-much-would-they-actually-cost-the-public/photostory/77390490.cms?picid=77390507
- https://indianexpress.com/article/explained/covid-19-vaccine-tracker-india-rs-225-a-dose-6545018/
- https://www.youtube.com/watch?v=7SuKywEZ5AM
- https://www.youtube.com/watch?v=gJyp4Vly1U4
- https://2020.ecolymp.org/#Challenge

Appendix 7: Assumptions

- Your client is one of major international pharmaceutical companies with well established business worldwide (such as GlaxoSmithKline, Sanofi, Pfizer, Merck, AstraZeneca).
- The headquarter is based in the USA, UK or Switzerland.
- The vaccine price at question is not for how much final consumers buy. The price needed to be determined is for how much your client will sell to its clients.
- Currently the future price of a ready-to-use vaccine is unknown, however, several early orders have been contracted with other developers.
- Whenever there is not enough information or data, please feel free to come up with your own reasonable (practical) assumptions.
- All public information can be used. Source has to be provided for each critical information.

GOOD LUCK!