

# Labeland

## Context

Your client is the government of Labeland, a European Union member state. The client is considering the feasibility of launching a consumer goods marking and tracking system (hereinafter – Marking System). Governments of different countries and private companies have actively implemented marking systems over the last 20 years. The marking technology allows for goods to be tracked along the supply chain and verify their authenticity by scanning a QR code on the packing. If a scanned QR code is registered in the marking system, it will generate a message verifying the item as authentic. The marking technology has demonstrated its high effectiveness in combating the illegal circulation of goods, which explains its rapid proliferation across the globe.

Your client has set an ambitious goal of launching a marking system for all consumer goods. At the same time, the client has asked you to keep the following three constraints in mind:

- Concurrent launch of the marking system for all product groups is fraught with high risks. For this reason, it is expected that product groups will be connected to the marking system on a step-by-step basis
- Because of the budget deficit, the government is unable to fully finance the marking system launch. For this reason, a public-private partnership model is being considered. According to the proposed model, the commercial partner acting as the marking system operator will take on the primary investor's role with the right to monetize the services provided via the marking system. The commercial partner will finance both the creation of the necessary infrastructure and subsequent support
- Players in those industries where the mandatory marking system will be implemented will have to refurbish their production lines (both hard- and software) to enable the marking of output

The client has asked you to analyze the prospects for launching a mandatory marking system for all consumer goods

# Question 1

Bearing in mind that the marking system should be launched on a step-by-step basis, what factors would you take into account when identifying the “first wave” of product groups, for which the marking system launch is the highest priority?

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## ANSWER

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**An answer might contain references to the following factors:**

### *Consumers*

- Would consumption of any products in this group, if they are of substandard quality, pose a serious hazard to consumers' life and health?
- How often do consumers buy the products in this group?
- What consumer rights protection tools exist?

### *Business*

- How will legitimate business revenues grow if the marking system is launched?
- To what extent will market players be able to improve their profitability by optimizing supply chains with the help of product tracking data?

### *Government*

- To what extent will collection of taxes and other levies improve if the share of illegal circulation declines?
- By how much will control and oversight costs decline?
- By how much will labor productivity grow?

# Question 2

To select priority product groups for the marking system launch, the team decided to begin by estimating the net positive impact for key industries. Guided by international experience, the team identified 3 main types of economic impact:

- Substitution of authentic products for illegal products. Consumers who have the means of verifying product authenticity stop buying counterfeit products and prefer legal producers instead
- More effective inventory management. Reduced frequency of cases when a product bought by a consumer is not available in the warehouse
- Production line refurbishment costs

The team chose pharmaceuticals as the priority product group for analysis. It is for this product group that governments and private companies have most often launched the marking system

The client has asked for a calculation of the net economic impact from launching a marking system for the pharmaceuticals product group on the basis of the following data:

- The average annual revenue of pharmaceuticals manufacturers is USD 5 mln
- The share of illegal goods in circulation will fall from 20% to 10%, resulting in an equivalent growth in legal sales
- The frequency of cases in which a product bought by a consumer is not available in the warehouse will fall from 10% to 1%
- The annual cost of production line refurbishment and maintenance is USD 1.2 mln

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## ANSWER

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**An answer might contain the following steps:**

- Legal players' revenue growth =  $90\% / 80\% = 1.125$
- Legal player's revenue growth =  $12.5\% \times \text{USD } 5 \text{ mln} = \text{USD } 0.625 \text{ mln}$
- Sales growth underpinned by the lower frequency of cases in which a product bought by a consumer is not available in the warehouse =  $[(100 - 1) - (100 - 10)] / [(100 - 10)] = 10\%$
- Revenue growth underpinned by the lower frequency of cases in which a product bought by a consumer is not available in the warehouse =  $10\% \times (\text{USD } 5 \text{ mln} + \text{USD } 0.625 \text{ mln}) = \text{USD } 0.5625 \text{ mln}$
- Overall revenue growth =  $\text{USD } 0.625 \text{ mln} + \text{USD } 0.5625 \text{ mln} = \text{USD } 1.1875 \text{ mln}$

- Net economic impact = USD 1.1875 mln – USD 1.2 mln = USD –0.0125 mln

The net economic impact is USD –0.0125 mln, which means that an average manufacturer of pharmaceuticals may not be interested in launching the marking system for the pharmaceuticals product group

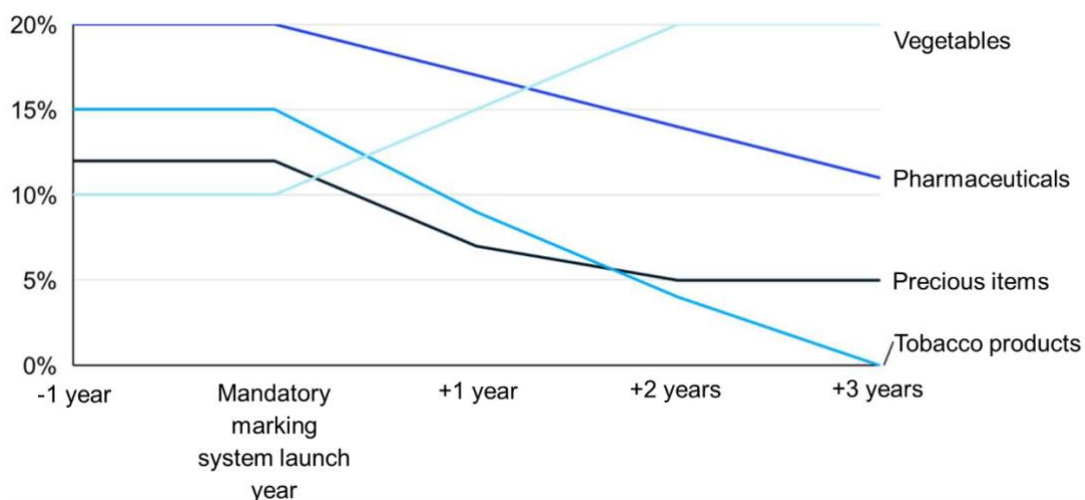
**You might also add the following ideas:**

- Net economic impact may differ across industries
- Manufacturers may pass some of the production line refurbishment and maintenance costs on to other market participants (suppliers, retailers, consumers) by raising prices for their products
- Other market participants (suppliers, retailers, consumers) may be interested in the marking system launch, as for them the net economic impact may be positive
- Major pharmaceuticals manufacturers may be interested in the marking system launch. For them, the net economic impact may be positive due to the relatively lower production line refurbishment costs (economy of scale). Reverse logic holds true for smaller manufacturers

## Question 3

The team analyzed available international experience to assess how the mandatory marking system launch would impact the share of illegal circulation across the top priority product groups, and plotted Diagram 1.

**Diagram 1.** Share of illegal circulation for product groups covered by the mandatory marking system launch



What inferences can you make based on the diagram data?

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## ANSWER

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**An answer might contain the following findings and hypotheses:**

- The average decline in the share of illegal circulation in the priority product groups is roughly 5% over three years after the mandatory marking system launch
- The marking system launch may not reduce the share of illegal circulation to zero in some product groups. In some cases, consumers deliberately buy products and services through illegal distribution channels to save money
- In some industries, the marking system launch leads to a faster decline in the share of illegal circulation. Industries with large shares of small and medium businesses (e.g., in the pharmaceuticals product group) require more time to refurbish production lines than those where 4–5 large players occupy 80–90% of the market (e.g., in the tobacco products group)

## Question 4

After the team had analyzed the impact of the marking system launch on the priority product groups, the client asked for a description of possible options for monetizing the services provided through the marking system

How can the marking system operator monetize the services it provides?

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## ANSWER

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**An answer might include the following:**

### *Provision of access to infrastructure*

- The marking system operator may charge a fee for each QR code generated, or to grant access on a subscription basis
- The marking system operator may make available the hardware and software necessary for product marking

- The marking system operator may provide support services to users of the hardware and software necessary for product marking

### *Provision of high value-added services on the basis of infrastructure*

- The marking system operator may prepare market analysis reports and distribute them for a fee
- The marking system operator may provide additional services to market players. For example, an advanced analytics service for more precise delivery and sales planning

## Question 5

The client decided that payment for each single QR code generated will be the main means of monetization. The client is considering the following model:

- The price per single QR code generated will be the same for all product groups
- The generated QR code price should not be more than 10% of the product value. Otherwise, the QR code generation service will be free

What price for a generated QR code maximizes the marking operator's revenue for the priority product groups on the basis of the data in Table 1?

**Table 1.** Priority product groups market size in USD mln and mln pieces

Category / product group		Vegetables	Tobacco products	Pharma- ceuticals	Precious items
Market size, USD mln	110	150	60	50	
Market size, mln packs	100	50	10	0.5	

## ANSWER

**An answer might contain the following steps:**

- Average value calculation for each product group
  - Vegetables:  $\text{USD } 110 \text{ mln} / 100 \text{ mln} = \text{USD } 1.1 \text{ mln}$
  - Tobacco products:  $\text{USD } 150 \text{ mln} / 50 \text{ mln} = \text{USD } 3$
  - Pharmaceuticals:  $\text{USD } 60 \text{ mln} / 10 \text{ mln} = \text{USD } 6$
  - Precious items:  $\text{USD } 50 \text{ mln} / 0.5 \text{ mln} = \text{USD } 100$
- Thus, 4 pricing scenarios should be considered:
  - $10\% \times \text{USD } 1.1 = \text{USD } 0.11$
  - $10\% \times \text{USD } 3 = \text{USD } 0.3$
  - $10\% \times \text{USD } 6 = \text{USD } 0.6$
  - $10\% \times \text{USD } 100 = \text{USD } 10$
- At a price of USD 0.11, the marking system operator's revenue will amount to  $\text{USD } 0.11 \times (100 \text{ mln} + 50 \text{ mln} + 10 \text{ mln} + 0.5 \text{ mln}) = \text{USD } 0.11 \times 160.5 \text{ mln} = \text{USD } 17.655 \text{ mln}$
- At a price of USD 0.3, the marking system operator's revenue will amount to  $\text{USD } 0.3 \times (50 \text{ mln} + 10 \text{ mln} + 0.5 \text{ mln}) = \text{USD } 0.3 \times 60.5 \text{ mln} = \text{USD } 18.15 \text{ mln}$
- At a price of USD 0.6, the marking system operator's revenue will amount to  $\text{USD } 0.6 \times (10 \text{ mln} + 0.5 \text{ mln}) = \text{USD } 0.6 \times 10.5 \text{ mln} = \text{USD } 6.3 \text{ mln}$
- At a price of USD 10, the marking system operator's revenue will amount to  $\text{USD } 10 \times 0.5 \text{ mln} = \text{USD } 5 \text{ mln}$

Therefore, to maximize the marking system operator's revenue, the cost per QR code generated should be USD 0.3/code