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# International Operations

## ACPA 7003 - International Innovation Management

Hélène Cheung - February 2022

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## Introduction

This report presents how our consultancy firm view Organisation X international manufacturing and distribution opportunities and risks for their body temperature scanner on the three continents: Asia, South America and Africa. Three countries for each continent were shortlisted and here are findings highlighting the cultural and social implications, the economic systems, and the countries international strategies and management of global operations.

The body temperature scanner is classified as a medical device Class I regarded as low risk. It will require to comply with Part II of the UK MDR 2002 for general medical devices to enter the United Kingdom market.

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## South America

### Chihuahua (Mexico)

#### Political system and global trade strategy

Almost 10 years ago when JPMorgan's Philip Guarco stated that Mexico was the new China in terms of manufacturing opportunities for MNEs, he referred to the lower wages, the proximity with the USA and the established automotive manufacturing sector.

The Mexican manufacturing sector is export- led and relies heavily on international markets (Villanueva, 2017). The trade agreement with the USA and Canada (T-MEC) pushes Mexico to align with their standards; for instance the development, implementation and enforcement of their new law of quality and protection of intellectual property came into force in 2020.

#### Cultural and social implications

Mexico is ranked 71 of the 101 list for low wages. Even though the minimum wage is increasing (almost doubling in the last 20 years), the 2021 increase was not as high which may indicate a stabilisation: 9% in 2021, 25% in 2020 and 16% the 2 previous years.

The positive aspect of the medical device manufacturing industry in Chihuahua, is the claimed retention of the staff, with a turnover of 1% to 3% annually.

#### Logistics and transportation

The strategic geographical position of the Chihuahua region allows to be at the heart of the US logistics hub, and takes its advantages from the border with Texas facilitated by the railway network. It is also its Achillea's heel, making it a target to protests. Chihuahua

also offers a connection with the major international port Topolobampo which has direct links with South East Asia and the rest of the Americas.



Figure 1. Rail transportation in Mexico (Union Pacific, n.d.)

### Manufacturing and production quality

The manufacturing sectors attached to Mexico are mainly automotive and aerospace. However the Chihuahua region represents 41% of Mexico international export of medical devices (Class I, Class II and Class III) which accounts for 8% of the global medical devices exports.

The manufacturers follow the international standard ISO 13485-2016, the Mexican regulations COFEPRIS Good Manufacturing Practices and the USA FDA.

## **Montevideo (Uruguay)**

### Political system and global trade strategy

Uruguay attracts MNEs thanks to its political stability, low corruption and democracy in South America.

### Cultural and social implications

Education is free until university and the Smart Talent platform allows MNEs to advertise job opportunities and gives them access to skilled applicants. Uruguay offers 70% subsidiaries to MNEs who require internal training for their export operations.

### Logistics and transportation

Montevideo is the only free port in south America. Its free trade zone means that no taxes are applied to manufacturing, however it also mean that the origin is lost. Its geographical location consolidates its position as a global distribution centre for Latin America.

### Manufacturing and production quality

Uruguay innovation is focused on the pharmaceutical industry rather than the medical device manufacturing, with supports from the government to foreign life sciences companies.

## **São Paulo (Brazil)**

### Political system and global trade strategy

Being such a young democracy, there are still problems of corruption.

Brazil is one of the BRICS countries and represents the largest new market for medical devices.

The medical device industry has been steadily growing in a effort to reduce imports. The need for a Brazilian Registration Holder and for a ANVISA (Health regulatory body) certificate if the medical device is manufactured outside of Brazil lends more towards a protectionist model.

### Cultural and social implications

Employment laws in Brazil are governed by the Labour Code. Even though work contracts are not mandatory, they are regular practice and, unions can negotiate a Collective Bargaining Agreement.

## Logistics and transportation

The majority of transport in Brazil is done by road (68% in 2019). However the poor condition of these roads with only a small portion asphalt (12.4% in 2019) brings Brazil transportation network to 17th place in Latin America.

## Manufacturing and production quality

Both agencies ABIMO and APEX have the mission to transform Brazil into an exporter of medical devices, putting São Paulo on the map with its international trade fair in the industry.

Patents applications must be written in Portuguese and submitted to the INPI.

All medical devices manufactured or commercialised in Brazil are regulated by the ANVISA.

## **Recommendation**

If Organisation X market research concluded that the USA market was promising with very little competition for the body temperature scanner it would be beneficial to consider Mexico to manufacture the new product, especially because the port with a rail link to Chihuahua has routes to Australia and New Zealand as well. However if Brazil as a new power economy offers more opportunities it would be worth investigating whether importing or manufacturing is the best way to enter the Brazilian market.

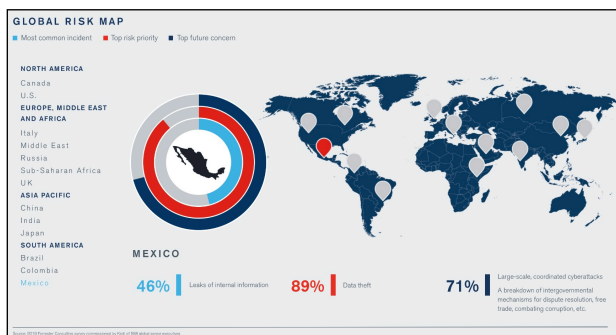


*Figure 2. Kroll Global Risk map Mexico  
(Duff and Phelps, n.d.)*

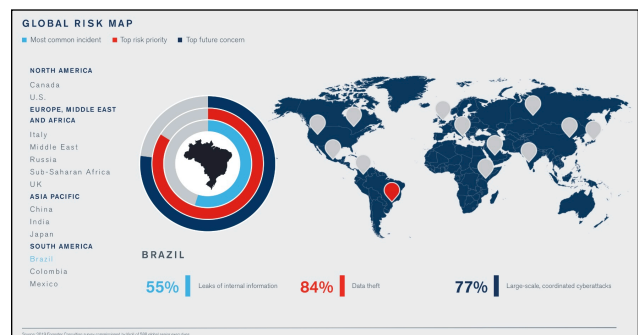


*Figure 3. Kroll Global Risk map Brazil  
(Duff and Phelps, n.d.)*

The companies surveyed by Kroll describe equivalent risks for Mexico and Brazil regarding internal information and data theft for which the new Trade Continuity Agreement with Mexico should protect UK companies.

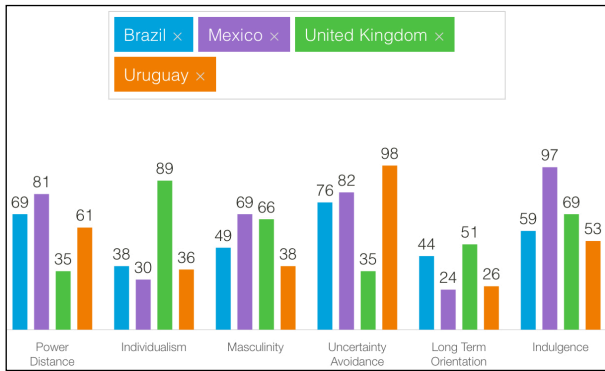


Figure 4. National culture comparison  
(Hofstede Insights, n.d.)

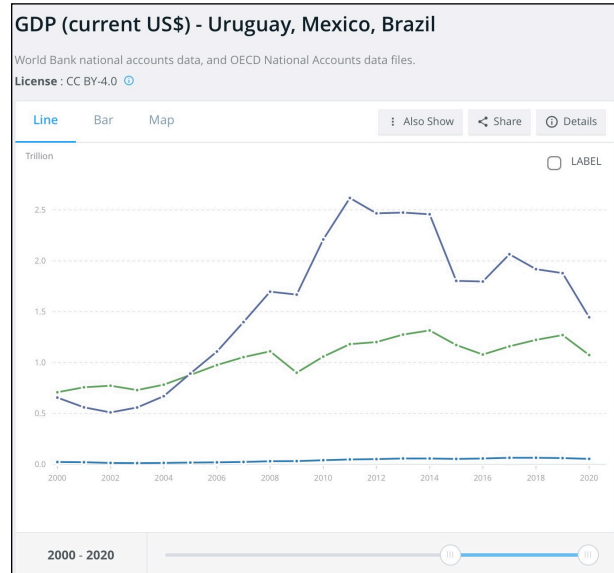


Figure 5. GDP (World Bank, n.d.)

From a cultural point of view using the Hofstede model, the United Kingdom is quite far from these 3 South American countries which have a similar profile. So there is no significant differentiator.

The GDP of these 3 countries are contrasting. Mexico stable growth and a trillion US dollar GDP makes it the country of choice for the continent.

## Asia

### Shenzhen (China)

#### Political system and global trade strategy

President Xi Jinping vision for China of “common prosperity” means that the state has a more regulatory role in the wealth of the private sector. The new Data Security Law, in effect since last September, which like the European GDPR protects data but with a more blurred purpose.

Since the 2000s, Chinese authorities play an active role at a local economic level. Partnering with a Chinese company is very much about building a relationship; contracts are regarded as mere guidelines. The view on Intellectual Property is alien; inventions are regarded as open source innovation. As soon as a product gain interest online copycats flourish. The China Britain Business Council offers help in IP protection.

### Cultural and social implications

Even though the Harvard Business Review article may not be entirely impartial considering the relationship between China and the USA, it nevertheless highlights crucial points concerning a company doing business in China CSR. Indeed, the risks associated with corruption and IP theft are not the only ones: the response to HongKong protesters and to the evidences of force labour in Xinjiang pose an ethical dilemma to foreign companies.

### Logistics and transportation

Shenzhen is the fourth largest port in the world, reaching 26.55 million TEU in 2020.

### Manufacturing and production quality

Shenzhen is the Chinese capital of electronic manufacturing.

The strategy announced by President Xi Jinping was to make China a technology superpower.

Since 2010 Shenzhen GDP has tripled, topping HongKong. Of that, 60% originates from services and softwares demonstrating the dynamic created by the support given to start ups and universities in the city.

## **Taipei (Taiwan)**

### Political system and global trade strategy

Taiwan encourages its companies to seek trade outside of China. This strategy can be illustrated by the attempt to sign a Free Trade Agreement with the USA, which creates tension with China. Having said that, the plan for the Taiwan Semiconductor Manufacturing Company to invest in two factories in the USA reinforces the relationship cross Pacific.

### Cultural and social implications

Taiwanese strongly support their democratic system and fear the fate of Hong Kong if they accept China's one country two systems model.

The Ministry of Education pushes entrepreneurship with success as Taiwan is ranking 7th on the National Entrepreneurship Context Index with an increase of 1.71% in number of SMEs.

### Logistics and transportation

Taipei is not the main port of Taiwan as its competitor Kaohsiung almost six times its size, on the other side of the island, provides cheaper container freight.

### Manufacturing and production quality

Chang (2020) articles explains that 97.73% of Taiwanese manufacturing companies are SMEs and most of them are Original Equipment manufacturing companies, following their customers specifications. Taiwan is specialised in what is called intermediate goods manufacturing. This means that only a quarter of their exports are consumer goods.

The growing industries include the electrical, the optical and the medical equipments. A third of exports go to mainland China, helped by the Economic Cooperation Framework Agreement. Experiencing a slow growth, Taiwan actually benefit from exporting in countries other than China as the study by Bih Jane Liu, Tzu-Han Yang and Deng-Shing Huang (2020) shows.

Since signing the Memorandum of Understanding in 2013, the UK and Taiwan cooperate to regulate the IP rights.

### **Visakhapatnam (India)**

#### Political system and global trade strategy

As Mehrotra (2020) explains, there has been a lack of industrial strategy in India resulting in a poor growth of the manufacturing GDP which he demonstrates is the basis for an innovative services sector. The lack of investment in R&D (only 0.7% of GDP), the lack of rationalised labour laws (35 central and over 100 state related) and the lack of infrastructures hinder the export opportunities.

#### Cultural and social implications

Low cost labour is explained by the fact that the vast majority of employment is supported by companies with less than 50 employees.

Despite the Factories Act 1948 and the recent Occupational Safety, Health and Working Conditions Code in 2019 which rationalise the different laws for various industries, factory accidents causing death are still common in India.

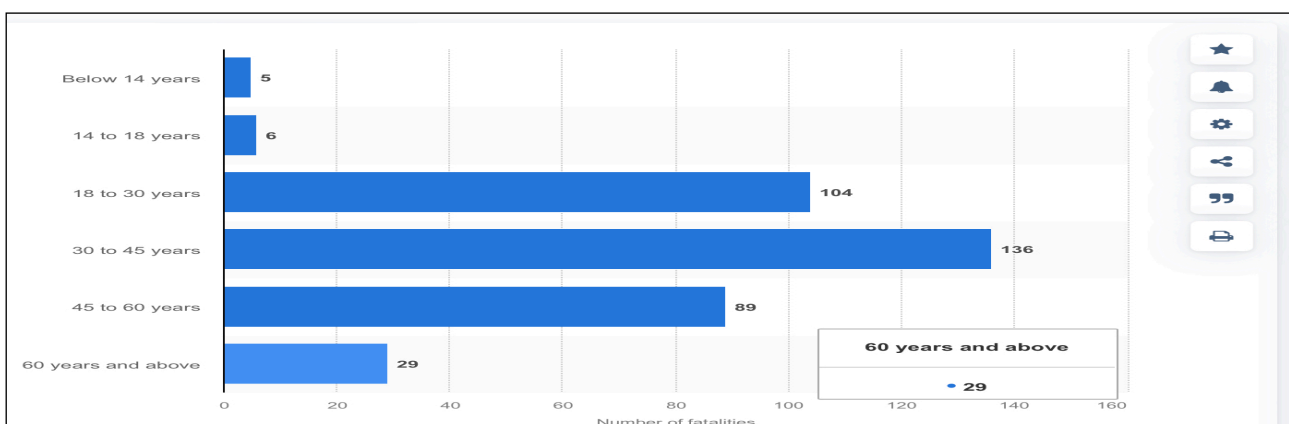


*Figure 6. Industrial fatalities in India (Statista, n.d.)*

## Logistics and transportation

The Special Economic Zone Act, 2005 has made Visakhapatnam an area that facilitates logistics and export, offering tax incentives.

The plan to invest in the east coast corridor Visakhapatnam (Vizag) - Chennai facilitates export.

Visakhapatnam port has routes to South East Asia. The rail network links with other cities like Chennai, Delhi and the IT capital Hyderabad.

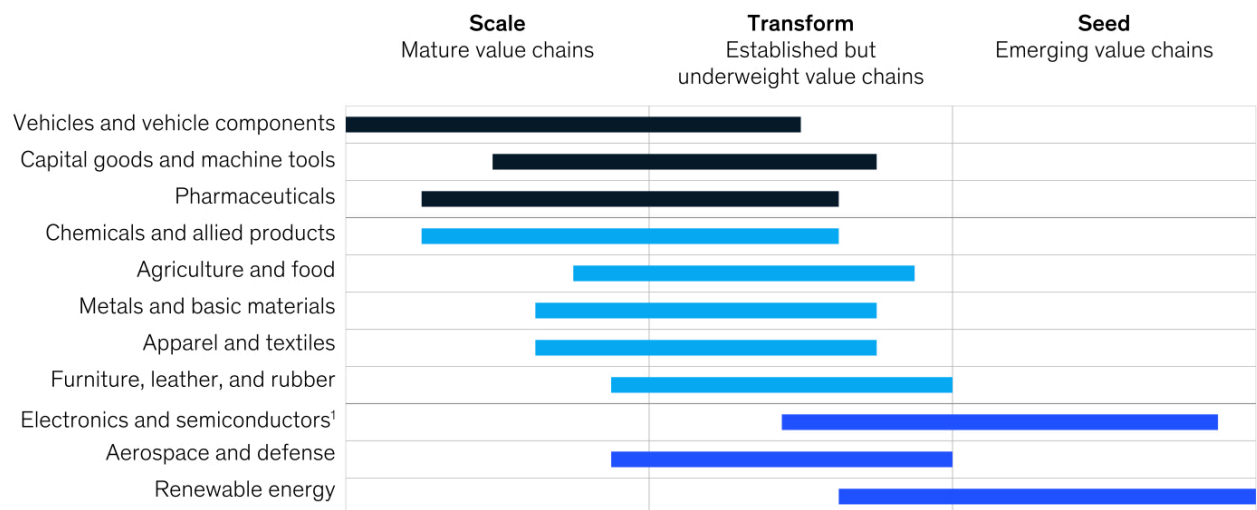
## Manufacturing and production quality

The manufacturing sector GDP slowed down its growth in the last 7 years creating little return on investment.

### **India's high-potential manufacturing value chains have attained various levels of global competitiveness.**

#### **Time horizon for India's manufacturing value chains to reach global competitiveness**

● Skill intensive    ● Raw-material intensive    ● Technology/innovation intensive



<sup>1</sup>Also includes electrical appliances and white goods (<5%).

*Figure 7. Manufacturing value chains in India (Dhawan and Sengupta, 2020)*

As the graph shows, India is still a skill intensive manufacturing country.

## **Recommendations**

To protect Organisation X reputation over its CSR, we would advise to consider Taiwan as a manufacturing partner in Asia, not only to avoid the risks that China would

represent regarding the disregard for human rights at present and the risks in India for not enforcing their safety laws. On the other hand Taiwan has a few advantages: it is a democracy, the company's IP will be protected and the island offer know how as well as export opportunities across the world including China and Europe.

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## Africa

### Durban (South Africa)

#### Political system and global trade strategy

Following Brexit the UK signed a trade agreement with South Africa to ensure continuity.

Regarding the exports from South Africa, no medical equipment appears in the top 10. However it represents 2.8% of the total goods imported.

Medical equipment manufacturers are mainly based in Cape Town while Durban is a port with heavy industries.

The paper by Maharaj and Sunjka (2019) exposes the barriers manufacturers of medical devices faces in South Africa including an inconsistency of regulations and a disregard for compliance.

#### Cultural and social implications

South Africa has been experiencing a negative GDP growth since the 2008 crash and has seen another deep as a result from the Covid 19 pandemic. With 29% of unemployment, it creates resistance to automation, perceived as taking jobs away.

#### Logistics and transportation

Road counts for 91.2% of transport. The skill shortage in the logistics sector is coupled with social unrest leading to trucks targeted and set alight. The poor condition of the road infrastructure add costs and delays.

Concerning ports, there are problems of inefficiency, labour unrest and unreliable electricity supply, contrasting with the smooth operational airports.

#### Manufacturing and production quality

The latest research conducted by Chakravarty, S. (2021) shows that South Africa can provide innovative medical device on a frugal R&D model using 3D printing technology (Dzogbewu, T.C. et al., 2021). Companies who succeeded obtained the ISO 13485 certification.

Durban is a mature manufacturing city in transition.

## **Bulawayo (Zimbabwe)**

### Political system and global trade strategy

Since the change of power to Mnangagwa, there is a shift towards a militarisation which was brought to light by the way the pandemic was dealt with, crushing civil spaces (Helliker K. and Chikozho Mazarire G., 2021).

The Zimbabwean economy relies on the informal economy with over 80% of the population depending on the informal sector to survive.

The case study of MSEs in Bulawayo conducted by Gandiwa (2019) shows a deficiency of business management skills despite government programs. However these programs are not necessarily suited to informal manufacturing SMEs (Matsongoni and Mutambara, 2021).

The UK-ESA Economic Partnership Agreement is here to facilitate trade between the two countries.

### Cultural and social implications

The risks faced by UK businesses in Zimbabwe include bribery and corruption. The volatile currency with a high inflation poses another risk even though companies trade in US dollars.

### Logistics and transportation

Zimbabwe is landlocked relying on Mozambique and South Africa ports infrastructures. The majority of its road network (80%) needs repair with only 12% asphalted. This problem is exacerbated by the unreliable rail network leading to the avoidance of rail freight and preference to road transport even for heavy loads. There are 3 international airports including Bulawayo.

### Manufacturing and production quality

The study conducted by Avenyo, Konte and Mohnen (2020) showed that innovative formal industries can benefit from the informal companies providing they interact collaboratively with them.

## **Tunis (Tunisia)**

### Political system and global trade strategy

Since the Jasmine revolution, Tunisia struggles to get its economy thriving. Tunisia is still in a transition period from an autocratic regime to a democracy. The government has a debt of 90% of its GDP. Some new laws aim to create an environment favouring entrepreneurship. New support policies focus on small and exporting companies as well as the tourism sector.

## Cultural and social implications

The unemployment rate is still raising so much so that half a million of its population is threatened to fall below the poverty line.

## Logistics and transportation

Sea freight represents 96% of international trade, giving Tunisia 8 ports, however their 10m depth means that they are limited to smaller vessels. They invested in an online system simplifying the customs process.

The internal transport is by road for 90% , it is also where the investments are concentrated; with the freight rail mainly used for the phosphate transport.

## Manufacturing and production quality

In the paper written by ElHaddad (2020), Tunisia is said to already have the know how to develop its electronic sector. And indeed the statistics show that products join the electrical cables in the electronic sector. The data shows that the growth is potentially in the optical, medical devices industry.

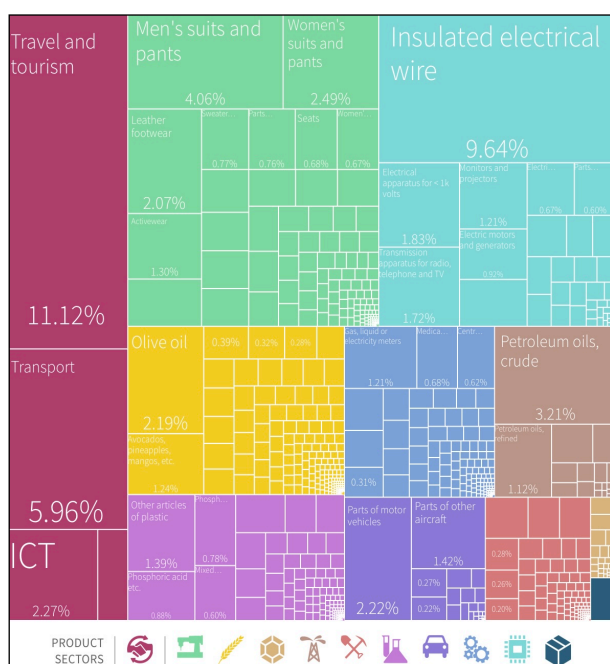


Figure 8. Tunisia exports in 2019 (Atlas of Economic Complexity, n.d.)

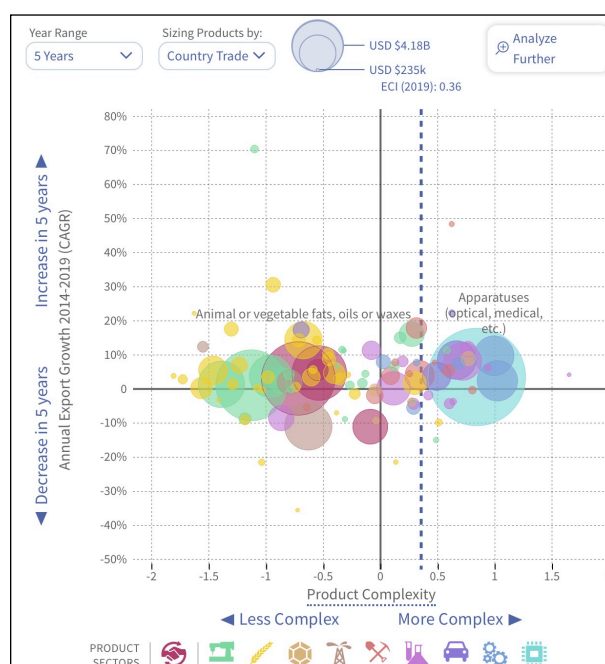


Figure 9. Tunisia export growth dynamics (Atlas of Economic Complexity, n.d.)

## Recommendation

Even though South Africa is a richer economy, with a frugal approach to innovation which could give Organisation X the edge with reverse innovation to enter the European market as well as the African market using trade agreements, the proposal to manufacture in Durban despite its ideal location to export, from its port, would be out of the medical device manufacturing hub in Cape Town.

That is why we would recommend to consider Tunis as a base for manufacturing electronic medical devices; it has the technology and the supply chain. The Tunisia UK Association agreement provides guidance on trade as well as intellectual property protection. Tunisia exports mainly to the European Union (70%) and has various agreements with different African countries.

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## Innovation Management Standard opportunities

If we look at the 8 principles of the Innovation Management Standard ISO 56000, we can analyse how they can be applied to Organisation X and what benefits they would bring to the company. The standard defines innovation as an experimental method to add value, originating from a culture where the right to fail is followed by the duty to learn from failures. It also values the overall environment of the company and all its network to facilitate collaborations and open innovation practices.

There is no audit for an ISO 56000 but its guided framework provides a checklist to implement and sustain innovation within a company. We will compare the ISO 56000 with other standards and gauge what role it is likely to fulfil.

### As good practice

#### Exploitable insights

Like the ISO 50001 energy managements systems standard, ISO 56000 provides what could be regarded as good practice. Indeed the 4 steps: plan, do, check, act can be considered as a basic approach (Jovanovic and Filipovic, 2016) whereby decisions should be made while keeping the trends in mind.

However a framework capable of giving a company a starting point for good practice to use forecasts in its decision making, should be valued as much as ISO 26000 guidance on social responsibility when encompassed with CSR instruments globally recognised (Zinenko, Rovira and Montiel, 2015).

### Uncertainties management

Implement a strategy to minimise uncertainties existing in innovation management which is different from project management where the deliverables are known. Uncertainty goes hand in hand with disruptive innovation (Kapoor and Klueter, 2020). Going through experiments followed by validation is a way of assessing the strategic contingencies.

### **As a tool**

The ISO 56000 checklist is a tool geared for employees to think outside the box; unlike the ISO 14001 environmental management systems which is a tool to help companies complying with governments regulations (Nemati, Zheng and Hu, 2019), and differently again to the ISO 27001 information security management system which is almost exclusively considered essential by ICT companies (Mirtsch, Kinne and Blind, 2021).

### Realisation of value

Organisation X is shifting the sector it is operating in: from a security one to a healthcare one, applying their knowledge and expertise to a new product to present to their current clients. As manufacturers, a realisation of value as Nailer and Buttriss (2020) define it, is the ingredient to a business model evolution. And indeed the healthcare sector is preparing for a new operating model towards a product service system (Homrich, Galvão and Carvalho, 2020) which would mean that the company would benefit from guidelines to achieve this switch.

### Systemic approach

All employees from the company participate to the company's innovation portfolio. This principle from the standard would allow Organisation X to identify resources needed to sustain innovation, establishing innovation at its core across the whole company. Indeed it would plan for experiments, letting the teams play like entrepreneurs (Dodgson and Gann, 2018) to create ideas making the company proactive as well as reactive.

### **As a human value**

When ISO 9001 becomes internalised, it has a positive impact on the employees job satisfaction and develops a strong employees affective commitment (Bello-Pintado, Heras-Saizarbitoria and Merino-Díaz-de-Cerio, 2020). The possibility for the ISO 56000, like ISO

9001, to be internalised would help employees retention, during what is called “The Great Resignation”.

### Strategic direction

It is essential to communicate the strategy to employees to deliver innovation in synch with the company’s mission. As this ideal may seem obvious, Marimon, Mas-Machuca and Rey (2016) talk about internalisation of the mission as the aim for the mission statement of the company to be present in these five dimensions: leadership, importance, knowledge, co-workers engagement and implication.

### Culture

The company’s culture depends on 6 factors: workspace, hiring impact, internal communication, organisation type, approachable leadership and recognition. Diversity will trigger discussions and generate ideas. It is also the chance to initiate what Campos-Blazquez, Morcillo and Rubio-Andrada (2020) call internal ideation contests where feedbacks are the game. A company capable of creating such a favourable culture of openness will nurture its employees and create opportunities for innovation.

### **As a view into the future**

#### Future-focused leaders

The last couple of years have taught businesses that, if people cannot predict the future, companies can prepare for dealing with a crisis: it is the role endorsed by leaders as Salisbury (2018) highlights in his review of Tibbo’s “Leadership in the Eye of the Storm: Putting your people first in a crisis”, so decisions made by leaders have an impact in the future.

#### Adaptable structure

The benefits of an interchangeable organisational structure, like a matrix organisational structure, are for Organisation X employees to move around the organisation and be part of teams project based, deploying innovative solutions faster than its competitors.

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