“The futures of Elevator & Escalator Industry”

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Abstract

In a world full of disruptions, it is necessary to anticipate what are the possible futures towards Elevator & Escalator industry will evolve. In this paper, using an anticipatory framework, trends of different nature will be analysed as well as possible factors that will accelerate or slow down these trends.

From Megacities trend to the return to rural areas, from the globalisation trend to national retreat, from new disruptive ways of performing maintenance activities through the use of Artificial Intelligence to the surge of customized customer experiences based on human-to-human interactions, from a mainly male-dominant industry to a more balanced gender presence, from rising economies with supply problems and lack of qualified personnel to saturated markets where competition struggle to survive, the futures of the elevator industry seem to be quite rich and complex.

A collective and comprehensive discussion about the future might help to direct the elevator industry to certain “desired” futures, where the quality of product and services as well as the overall wealth of Elevator & Escalator businesses will improve.

Now that uncertainty is present in virtually every sphere of our society, the ability to anticipate is as necessary as inexistent.

The visible decline of the elevator industry in the last two decades forces us to make an urgent reflection on the future, to prevent the industry from continuing to reduce its service quality and safety levels, the density of its productive fabric, the range of technological solutions and its level of adaptation to innovations being implanted by other industries.

We are going to issue a series of articles in which we are going to envisage a specific anticipation of our industry. With a view to simplify the task, we will focus mainly, though not exclusively, on a definite frame: the European Union, by the year 2030.

We will use the Political Anticipation Method[1], which applies the principle of transversality, that is, it obtains information from all spheres: political, economic, social, technological, economic, legal.

The basic **elements** which characterize the political anticipation method are:

- Goal setting.
- Identification of:
    - Relevant trends.
    - Stakeholders' negotiating power.
    - Acceleration factors.
    - Deceleration factors.
    - Disruptive events.
- Evaluation of the anticipation.

Goal setting

Seneca once said: "If a man knows not to which port he sails, no wind is favourable". The creation of a set of well-structured goals that make up the vision we want to reach is the first step to their consecution. The vision of the European elevator industry by the year 2030 would be defined by the following goals:

- **Competitive structure:** An industry that works as a varied ecosystem in which small, medium and big-sized enterprises cohabit, having the ability to differentiate themselves from each other and making different value proposals to the market, thus enriching the options for the consumer. A market in which anti-competitive practices are consigned to the past and market shares based on dominant positions are overseen by competition authorities.
- **Productive infrastructure:** To have a manufacturing structure that meets by itself the demand generated by the European market and its neighbouring countries, for each and every elevator technologies (gearless, hydraulic,…).
- **Continuing training:** An industry where professionalism is valued over goals related to market shares or the company size and where there are advanced training systems that update experienced professionals periodically and train new professionals efficiently.
- **Technological innovations:** A leading industry in the application of new technologies in any of the business areas, which promotes the transformation of the building sector in honest collaboration with the rest of components of the value chain.

[1] The political anticipation method was developed by Franck Biancheri in the late 1990's and formalized by Marie-Hélène Caillol in a little book: *A Manual of Political Anticipation*. This method is applied by LEAP2020 through its GEAB monthly bulletin. The industrial anticipation method we are using now is an application of the political anticipation method, combined with some business strategy tools. The term "political" mustn't be understood as relative to the political sphere, but as an action guide based on the organization of means to achieve specific goals.

- **Environmental:** An industry that contributes to the reduction of the environmental impact resulting from buildings. As the companies with technical abilities that most frequently visit buildings to perform maintenance operations, elevator companies have a real possibility to influence the reduction of energy consumption and CO2 emissions[2]. We remind you that buildings are the largest energy consuming sector in the world, and account for over one-third of total final energy consumption and an equally important source of carbon dioxide (CO2) emissions.
- **Work organization:** An industry where companies promote the reconciliation of work and personnel and professional development, compatible with a rational process automation and the integration of cutting-edge technologies.
- **Social role:** An industry that involves at a local level in barrier removal programs, aimed at groups of people with functional diversity and at an ageing population.
- **Standards:** In the process of creating standards, the ensemble of stakeholders will participate actively, especially to guarantee that the interests of associations of SMEs, consumers… are duly represented.
- **Customer service:** An industry whose companies are committed to creating positive Customer Experiences from beginning to end.
- **Safety:** Last but not least, an industry geared towards the safety of users and workers, that permanently pursues the goal of zero accidents.

Identification of relevant trends

Trends are tools used to attain our goals. According to the PESTEL analysis[3], the trends we will have to work with further on are:

Political	**Economic**	**Social**
1. Globalization. 2. National retreat. 3. Political protest movements. 4. Migratory flows. 5. Demand for transparency. 6. Demand for civic engagement.	1. Modernization of a growing old elevators portfolio. 2. Revival of the local economy (local currencies…) 3. Systemic risks menacing the financial system. 4. Financialization of the economy. 5. New forms of financing. 6. Disruptive business models. 7. Lack of training. 8. Growth of the experience economy. 9. New ways of business organization (holocracy[4], DAO[5]…)	1. Population ageing. 2. Building renovation. 3. Work reconciliation and new ways of working (teleworking…). 4. Defence actions by consumers. 5. Privacy. 6. Associations.
Technological	**Environmental**	**Legal**
1. 3D printers. 2. Collaboration and resource management in the building sector (BIM…)	1. Net-zero buildings. 2. Limitation of CO2 emissions. 3. Renewable energies.	1. Increased requirements to companies. 2. Legal flexibility. 3. Health and Safety at

2 https://www.iea.org/publications/freepublications/publication/Building2013_free.pdf
3 https://en.wikipedia.org/wiki/PEST_analysis
4 http://www.holacracy.org
5 https://venturebeat.com/2017/04/23/companies-of-the-future-no-ceo-no-boss-managed-by-blockchain/

3. Augmented reality. 4. Internet of Things (IoT). 5. Big data. 6. Cybersecurity. 7. Smart cities (wi-fi areas, energy self-consumption…). 8. Robotics. 9. Magnetic elevators. 10. Autonomous flying vehicles.	4. Product labelling. 5. Energy efficiency. 6. Total cost of ownership/ Life cycle.	work. 4. Greater penalties upon tax structures avoiding taxes. 5. Transparency and registration of lobbies. 6. Rules against planned obsolescence. 7. Competition laws. 8. Customs laws. 9. Legislatives changes because of international treaties. 10. International technical standards.

We will now identify the **negotiating power** of the actors involved or stakeholders. Evaluating the stakeholders' level of negotiating power and analysing each one of their interests will help us anticipate how they will behave during the decision-making process and how they will react to the unfolding trends.

According to the future interests of the stakeholders, we will talk about a black scenario where the elevator industry will continue to impoverish at all levels in the next decade or, on the contrary, a more colourful scenario with a rich and diverse ecosystem.

The group of stakeholders that can have a direct or indirect impact on the future of our industry is wide-ranging. This category includes the stakeholders of the following table:

STAKEHOLDERS			
Institutions	Industry	Representative organizations	Building-related companies and professionals
mainly European institutions that create regulations, provide orientations to the standards committees and are vigilant about fair trade practices.	composed of multinationals, and small and medium companies (SMEs) that make up the value chain of the independent sector, within the primary activity or support services.	for consumers, neighbours and groups such as the differently-abled people.	that influence the purchase decision-making process, like developers, constructors, architects or property managers.

First of all, we will analyse the negotiating power of **institutions.** During the next decade, the struggle between the independence of institutions and the influence of companies on the creation of standards will persist. The fact that the decision-making power is drifting away towards the European level, along with the imbalance between the technical knowledge of officials and business representatives, has resulted in a lesser representation of the collective interests.

While the Brexit and the electoral defeat of the extreme right in France, the Netherlands and Austria have led to the relaunch of the European integration process, dispelling the doubts about it, it is not clear however that such relaunch implies a greater representativeness of civil society, that is, a greater influence of citizens and local/regional organizations on the European level, as well as a greater transparency in the decision-making process.

Nonetheless, in the event that the European institutions don't undergo any change concerning representativeness, it is very likely that, by the middle of the coming decade, the main European countries will witness the return of centrifugal movements. And it is far from excluded that a bad management of the process ends up resulting in a partial elimination of the European freedom of movement and, consequently, in the re-lifting of intra-community custom barriers.

With respect to **multinationals**, it is important to acknowledge the time and effort devoted to the creation of standards from which we all benefit every day.

On the contrary, we cannot say that the EU decision-making process has been particularly inclusive. In fact, the creation of EU elevator standards has been led by multinational representatives who act as spokespersons for the industry but not always share common interests with the rest of the industry. The risk-analysis on which standards are based (genuine technical-normative know-how) is not transparent either.

Big companies will still tend, in a legitimate way, to devour market share, but their weapons should be better management and technical development, not access to an easier financing as the main resource to grow, buying smaller companies or performing practices against free competition.

Competition authorities are the ideal vehicle to avoid that collusive practices from the recent past of our industry happen again. In the bright side, the Commission, in the light of what has happened in the last years, is requesting to CEN to draft harmonised standards that ensure fair competition, by not restricting "access to relevant maintenance and diagnostic data, related interfaces and tools needed during use phase of lifts"[6].

Not supervising multinationals and going on giving them a dominant position would contribute to the impoverishment of the market offer and would push us deeper into the blackest scenario.

To create a more colourful future scenario and overcome the political, economic and social incertitude, it is necessary to strengthen, on the one hand, local economies, on which the economic and social tissue of our continent is based, and on the other hand, the cooperation between SMEs at the European level.

Independent elevator SMEs must work actively on five fronts:

1. To lead, in cooperation with **local organizations and businesses of other sectors**, the strengthening of the local economy, proposing particular measures like the use of local currencies, differentiated tax treatment…
2. To promote the relationship with other **companies** (developers and contractors) and **professionals** (architects, property managers) related to the building sector, as well as **representative organizations** for consumers, neighbours and groups such as the differently-abled, to highlight the benefits of SMEs on big companies.
3. It is imperative and urgent to develop the membership of independent companies in **SMEs associations** at the regional, national and European level, for the defence of their interests and the creation of economies of scale, which should put independent SMEs on an equal footing in the access to knowledge, to the creation of standards, to technology and to financing that

[6] EU Commision Implementing Decision C(2016) 5884 final, Mandate number 549, Brussels, 21.9.2016.

allows them to compete. SMEs can't obtain these services through associations controlled by multinationals, just because to promote those services is not convenient for them.

4. To maximize the collaboration between independent installation and maintenance SMEs and **independent elevator manufacturers**, so that the value chain as a whole gains in efficacy and efficiency. They need each other and must learn to generate complementarity win-win situations. Independent elevator manufacturing companies face the challenge of applying the last advances in the automation of manufacturing processes, in order to maintain acceptable levels of competitiveness.
5. With respect to **support activities**, such as promoting the innovation and design of new products, providing middle and long-term financing, training personnel and helping them develop, distributors or developing management software,… elevator SMEs count on an increasing number of private and public collaborators who all together contribute to sustain a rich, diverse and strong ecosystem that withstands geopolitical or macroeconomic difficulties.

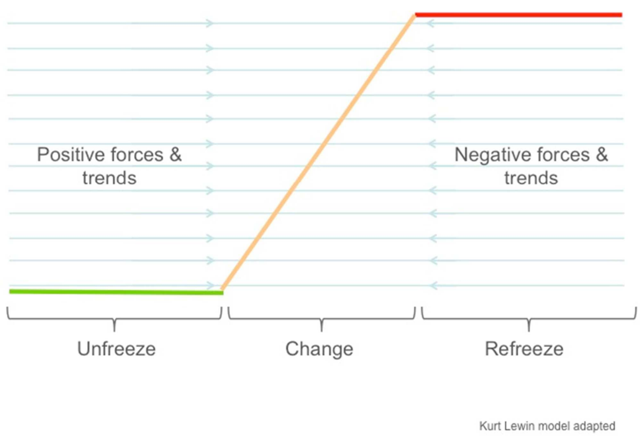
We are talking about pursuing a triple balance between the local and the European level, between business and public interests, between big companies and SMEs, in which all of us (citizens and small, medium or big companies) can gain from the creation of a rich and diverse ecosystem with a view to the European elevator industry in 2030.

We don't understand "anticipation" as a purely speculative theoretical exercise, but as a method aimed at planning actions for change that help us reach the desired future.

The change process

Every effective organisational change makes up a process that, in analogy with Kurt Lewin's theory, would be similar to unfreezing a block of ice to reshape it and freeze it again. The application of this management tool to an industrial ecosystem change process is interesting, considering it is developed on the basis of a time roadmap.

Put simply, the process is divided into three stages, as indicated in figure 1. First, we develop a vision that contributes to "**unfreezing**" the people/organizations subject to the change, then we implement the **change** and finally we "**refreeze**" the new situation to avoid its disappearance.



The trends described in the article published in issue 4/2017 take part in the change process as well as the negotiating power of the main actors, which we talked about in issue 5/2017.

The many change projects that must be applied in all areas to achieve the goals set in the first in this series of articles are very complex and fall outside the scope of this issue.

Now, we wish to underline that each one of us counts in this change process and that all of us can do our bit to improve the **culture of our industry.**

The culture of our industry

The culture of a company or a society doesn't stem from impressive-sounding speeches nor from theories we learn in class. It is forged from the way we react to each one of the changes we face.

A culture is a dynamic set of assumptions shared by a group, which guides the actions of each one of the individuals composing it.

Since culture is alive, the order of values on which social behaviour is based at a given time can be subtly modified by shifts of any sort.

The changes that shaped the industry

Deterioration of the elevator industry is the result of economic, political, regulatory, technological changes… most of which are probably well intentioned, but subtly displace what's most important by emphasizing aspects other than safety.

We will briefly mention some of these changes:

- **Economic changes:** the economic crisis has caused an overall drop in prices and, consequently, further pressure on cost reduction, which indirectly leads to the disregard of aspects like safety. It is noteworthy that this fall in prices is particularly prevalent in public tenders, as is the case of the recent accident in a public hospital.

- **Political changes:** liberalization policies remove legal restrictions to promote competition and, at the same time, reduce the number of inspections, which, at the very least, helped make safety concerns visible among the personnel of a company.

- **Regulatory changes:** on this point, it is most appropriate to talk about "no-changes", that is, the absence of standards that promote the modernization of old elevators in most of the European countries. In Europe, it is estimated that half of the total number of elevators are over 20 years old and need to be adapted to the safety measures of the new elevators.

- **Technological changes:** innovation can also slightly modify the order of priorities. For example, the machine-roomless elevator, which is the standard model for new elevators, supposed a reduction in building costs, but also worsened the workplace of elevator operators. Does it mean that this elevator design is not safe? Not at all, but somehow this shift demonstrated that one of the aspects, efficiency, was more important than another one, the safety/wellbeing of workers.

When hydraulic elevators were stigmatised, large multinationals increased their efficiency by simplification and reached economies of scale, but the market lost a variety of products that provided better solutions for certain types of buildings.

- **Standards changes:** at the beginning of the nineties, ISO 9000 quality management standards were created. However, they gave excessive priority to bureaucracy and documentary registration, something that, fortunately, was revised in the last version. The general desire to get the precious quality stamp led to confusion between offering quality and obtaining a certify, distorting the concepts of good work and professionalism.

On the other hand, the undoubtable and very positive development of harmonised standards in our industry, which focus predominantly on new elevators at the expense of the existing ones, is proof that efforts have been directed to the commercialisation of new products that imply higher turnover, rather than towards guaranteeing the safety of old elevators.

Changing priorities

All of these changes influence, consciously or unconsciously, each one’s actions. Public authorities, neighbourhoods, property managers… we all participate in an economic culture that encourages “growth” over “good work”.

This way, the dominant economic culture considers that the company with the highest market share, growth and profits is better than a small company that doesn’t stand out so much but focuses on doing the job right, taking care of the welfare of its employees and providing a good customer service.

In one of our business management classes, we discussed how a shift in business priorities has a direct impact on issues like safety. Take for instance the appearance in which Toyota CEO apologizes for a series of accidents, some of them fatal, occurred in USA due to a design fault. According to Akio Toyoda, priorities at Toyota had once been firstly Safety, secondly Quality and lastly Turnover. He recognized how this order of priorities had changed owing to the excessive growth of the company, identifying this shift as the direct cause of the accidents.

As we have seen, the changes that have taken place in the last 20 years have seeped into the elevator industry. We should avoid black scenario where the elevator industry will continue to impoverish at all levels in the next decade.

It’s companies, professionals, associations and other groups of interest who must restore the values of safety, personnel wellbeing and customer service deserved, within a more rich and diverse ecosystem.