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EDITORIAL

FUNDACION MAPFRE ESTUDIOS

University-level training in Risk Management

Today we present our readers with GR magazine, with the changes announced as a result of the survey carried out in issue No. 31. The main changes are some minor modifications to the layout (while keeping to the broad outlines of the previous design) and a more topical approach in the articles, with more flexibility and a new treatment, with the aim of meeting as closely as possible the needs of our readers who basically come from large companies (with special departments for risk and insurance management) and from the field of industrial and company insurance professionals (large insurance companies, underwriters, inspection engineers, assessors, accounts executives and brokers). Similarly, we have tried to ensure that the News Section, now at the front of the magazine, has a greater «journalistic» and news-oriented content, at the same time avoiding excessive text, comment or reflections which could apart the reader at first sight.

We hope, always relying on the opinions and judgement of our readers, that GR magazine in its new form will be more useful in the training, information and motivation of the groups referred to.

In this issue there appear two articles relating once again to Catastrophic Risks. The terrible events which have taken place recently in the Far East, as well as in the USSR, make plain the economic and human element of natural hazards in our society: a formidable challenge which must be tackled in depth, however remote the chance of such events may seem. The liberalisation of this type of cover in Spain, to which reference has already been made, and the ever-present Sword of Damocles hanging over companies and organisations in Latin American countries are factors which have influenced the inclusion in GR magazine of these two new approaches: cover for Loss of Profit following this type of damage, and the Analysis of Economic Losses due to earthquakes. On the latter subject the United Nations (through UNDRO - the United Nations Disaster Relief Office, based in Geneva) has also proposed for next October in Santiago, CHILE, the organisation of an International Conference with the participation of Civil Protection experts, public officials, engineers, insurers and re-insurers in order to achieve a multidisciplinary overview of seismic phenomena.

Another original article analyses the relationship of the responsibilities of Risk Management to the general management of the company. It considers how to manage elements of insurance and risk within the strategic framework of the company, and gives a strategic viewpoint of the functions of Risk Management.

However, we would like to draw special attention to the presentation of the results of a Survey into University-Level training of Insurance Professionals, carried out only a few months ago. The Survey analysed the requirements of companies and industry as well as insurers (or intermediaries, such as brokers) for professionals who could, in the near future, take the top positions and responsabilities in Risk Management with the best and most up-to-date academic background. The survey was carried out within a broad group of leaders of the sectors mentioned; and its results, therefore, can be considered fully representative of the opinions held in the sector regarding this group of experts, who are even more vital for the management of risks within our society.

The most important conclusion of the survey points towards the need to consider **specific university-type training**, to include legal, economic and business subjects as well as theoretical and practical insurance matters, allowing its students to assume business responsibilities with a solid multidisciplinary base. We have no doubt that the experiment begun by the «FUNDACION MAPFRE ESTUDIOS» a couple of years ago, with a University Degree of this kind, whose approval as a fully-fledged separate degree is being considered by the Universidad Pontificia de Salamanca, will fill this important gap and fulfil the need for better development of Risk Management in our companies. Let us hope that the future bears out our view.

RISK AND SAFETY MANAGEMENT

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FUNDACION MAPFRE ESTUDIOS

The content of the directive function as a prescriptive factor: management

The most outstanding feature of business management is its **prescriptive capacity**, in other words, the possibility of intervening in the design and decisions which involve the entire coordination process of material, human and financial resources in order to achieve the objectives defined by the manager.

However, management activity also involves the particular «skills» of its men, since the management has to «achieve managerial objectives generally through other people»... Which people?... Traditionally, it was considered that management obtained results through its own human resources, in other words, through the employees who collaborated directly within the company. Nevertheless, this sphere is *quite restricted* since managerial objectives encompass not only the sum total of people contained within each manager's sphere of control, but the need arises to consider the broader context, in other words, to include other groups of individuals, such as:

- The **Suppliers who affect the company**.
- The Managers and **Collaborators from other managerial units** or departments, without whose contribution it would be impossible to accomplish many of the company's projects and objectives.
- The **groups of clients**, the «commercial distributors»...
- The persons in charge of public and private institutions, etc.

From this perspective, management is not only a combination of managerial techniques or decision-making analyses, but rather it brings together the whole of the *managerial system.*

What are the components of management? A certain element of confusion exists as to the different *functions, elements and objetives* which characterise it and this is because the managerial phenomenon has different dimensions and study angles. Figure 1 provides and illustration of Management in terms of its two traditional dimensions: the *organisational and instrumental* dimensions.

In the *organisational dimension* we find the resources and their relations, in other words, human, material and financial resources. The handling of these resources and the problems inherrent in each of them, their relation with the environment, the legal framework, the Law, etc., provide different viewpoints from which to examine each of these resources and in this way, we are speaking from a functional point of view of *Human Resources Management, Financial Management, Technical Management, Production Management,* etc.

This well-known managerial concept constitutes the modelo which we will term FUNCTIONAL MANAGEMENT. This management model has generally been used by companies over the past decades in the basic search for **optimisation of managerial resources** by means of a continuous efficient allocation of resources, in other words, in an attempt to find solutions to the following types of questions: What is *the objective sales growth?* Which are the *products that the company should develop* in the near future? Which *investments* are necessary for this product development? Which *allocation of human resources...?*

Safety and functional risk management

In this environment, how does business management perceive safety? And how does is perceive risk?

In the majority of cases, the optimisation of costs presupposes and inevitable minimisation of the impact or effect of rules and regulations of a labour or mercantile nature, therefore it is easy to comprehend that in function of this concept, risk and safety have been managed primarily in the following way:

- **Restrictions** to the normal development of managerial activity (compliance with legal regulations, agreements, labour obligations, social considerations, etc.).

- The necessary consideration of **cost** and its minimisation.

The risk and safety which characterise this managerial model will be those which enable the **prevention and reduction** in the number and size of a company's accidents, minimising the value of *insurance policies* and seeking a reasonable risk cover, in addition to «ensuring» minimum legal requirements in terms of environmental hygiene.

Strategic business management

At the end of the 70's, a new Business Management concept or model arose: the **Strategic Managerial Model**. Pioneer companies in strategic activities were attempting not only to optimise all the company's resources and reach specific objectives but also, after prior analysis of the company's **potential** and of the opportunities offered by the environment and markets, *to contrate its efforts* on key postions and on strategic future areas.

The company's internal and external analysis, «its relative position» in relation to the competition, the threats to the company constituted by the short and middle-term developments of each market, entail a specialised analysis from which *the strategies will develop and subsequently, the managerial objectives.*

Therefore, this **new strategy** acquires *further dimensions* on which to base managerial planning.

The managerial structure must be expanded in order to enable the adaptation of structures, systems and organisations.

A new dimension to be assumed by the managerial model in this new approach is the one relating to **strategic areas**.

We take STRATEGIC AREAS to refer to those important managerial positions upon which *management will base the new strategies.* In this case, it is not an exclusively organisational, product, functional or even instrumental vision but rather, it involves approaches which enable all the company's resources and their corresponding activities to be combined in order to achieve or maintain the strategic positions mentioned above. By way of example, positions of this nature would include:

- Research and development of new industrial products.
- The product's brand image.
- Special training skills or human resources' capacities.
- *Excellent levels of safety.*
- *Risk management.*
- Quality of products, services and processes.
- Costs and productivity, etc.

Safety... a strategy

What do we understand by **excellence** in safety terms...? How can this be considered within a strategic area? As we have mentioned, it is a question of transforming the more traditional vision of safety (as a cost) into a strategy which enables improved results to be obtained (profitability and growth). Safety creates *fixed advantages in respect of the competition.*

What are the reasons supporting this new concept of strategic safety management?

• Firstly, reasons of a managerial ethical nature. We have already seen the managerial vision which incorporates this position and what it represents as a reference framework for the conduct and behaviour of all the company's managers.

• Safety strategies in the company promoted by senior management affect the *human resources' motivation.* It is not simply a question of solving problems of dissatisfaction arising from the «lack of safety» in certain jobs, it is also necessary to involve the safety protagonists themselves in solving these problems. The important point is to transform safety into a *motive for professional satisfaction.*

• Recent surveys of successful companies in the different economic sectors of activity have revealed that there is an important correlation between levels of ***safety, quality and competitivity***. In other words, cost and productivity can *also improve* by integrating safety as an essential element in operational processes.

• Defending the company's equity can be valuated in economic terms if we *take «risk» into account* and this constitutes a further reason which guarantees this new way of approaching business management.

• The reduction of accidents also implies removing conflictive labour factors.

• Management implemented in consideration of the safety concept also implies using this idea as part of the company's offer of products and services, etc.

This concept of RISK and SAFETY as forming part of the company's strategic areas has the advantage of seeking a more efficient coordination of each manager's efforts.

LOSSES DUE TO EARTHQUAKES

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Earthquakes-a natural threat

World-wide statistics on natural disasters show many deaths as a result of earthquakes, representing a high percentage of the total. The number of victims due to destructive seismic activity in America during the last 400 years is slightly more than 300,000 per year, based on a compilation of the effects of 134 earthquakes affecting 71 locations on the continent. Property damage has totalled 150 million pesetas (US$ 1.5 million) per day over the last two decades.

There has been considerable progress towards a better understanding of seismic phenomena and their effects over the last 15 to 20 years: a new discipline, seismic engineering, has been included in the syllabus of undergraduate specialism. However, the non-deterministic nature of the basic manifestations associated with earthquakes and their effects is a recognised fact.

In a compilation of natural disasters responsible for more than 500 victims and/or property damage exceeding 10,000 million pesetas (US$ 100 million) from the beginning of 1960 until August 1983 there were a total of 59 separate incidents world-wide, of which 24 were earthquakes. The total loss of life in this sample was 571,000. Total property losses were 5.9 billion pesetas (US$ 59,000 million), representing an average

annual loss of 252,000 million pesetas (US$ 2,528 million). The percentage of victims due to the 24 earthquakes included in the sample was 62.6%. Property damage due to earthquakes was 46.9% of the total.

Some of the problems associate with the possible future occurrences of earth tremors have been analysed on the basis of statistics of past events. It is acknowledged that this actuarial treatment has its limitations, due largely to the lack of homogeneity of the data used and to the absence, in many cases, of previous experience, since the frequency of severe seismic activity is low in relation to the rate of change of construction technology. In spite of these limitations, the statistics of effects are a very valuable source of data, allowing for the verification of possible algorithms for use in predicting expected consequences and different types of future seismic activity.

Loss of human life

It has been estimated that in the last 4,000 to 6,000 years earthquakes have caused a total of between 10 and 15 million victims. The results of the statistics on destructive earthquakes worldwide reveal that in the past century they have led to about a million deaths: this figure greatly exceeds the mortality due to volcanic eruptions, which in the last four centuries have claimed more than 266,000 victims worldwide.

It is a statistically demonstrable fact that earthquakes can cause many deaths: in some cases more than 10% of the population, as was the case in Agadir, Morocco, where the numer of victims due to the earthquake of 29-2-1960 reached 34% of the population. Obviously, in epicentric zones the percentage of victims can be very high, as in the case of Tabas-e-Golshan in Iran, where 11,000 out of the 13,000 inhabitants perished, or more recently in Spitak, Armenia, which was literally wiped from the map by the earthquake of 7 December 1988.

Material losses

Prospective studies on losses expected to arise from natural threats in the USA reveal that, even though annual average earthquake-related losses are small, the potential losses from one sigle event could reach figures in excess of 6.5 billion pesetas (US$ 65,000 million).

The loss staatistics are not always presented adequately. A well-researched case in point is the earthquake which shook the San Fernando area of California in 1971. This affected a considerable number of wooden houses, causing varying degrees of damage. The information on losses related to the value of restoration in a sample of 12,00 of these bulidings, between 1 and 20 years old, shows an average loss of 5.98%, with a distribution shown in fig. 10; this, based on Roth's data (ref. 9) reveals that only 10% suffered damage greater than 18% of the cost of rebuilding, 4% had losses in excess of 30%, and 1% in excess of 50%.

Final note

These statistics illustrate the importance of earthquakes a natural threat with which man must learn to live in many parts of the planet. The most common preventive actions form a **long-term strategy**: to design and build in such a way that buildings resist the stresses induced by seismic movement, taking advantage of the unquestionable advances in this field.

Some initiatives, such as reinforcement, reduction of earthquake-prone situations, etc., are **short-term strategies**, whose cost is prohibitive in view of the number of existing buildings. In some societies this strategy of adaptation is being applied to buildings which have to withstand intense seismic shock, such as hospitals, fire-stations, or constructions whose failure could lead to disaster (nuclear power plants, dams, storage tanks for inflammable substances in urban areas).

Finally, it should be borne in mind that the systematic application of the latest advances in seismic engineering allows us to increase the reliability of man-made constructions in areas with a high risk of seismic activity, and thus to reduce considerably the potentially disastrous consequences of earthquakes within our societies.

NATURAL CATASTROPHE AND LOSS OF PROFITS COVER

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Natural catastrophe and loss of profit insurance in Spain

It is a proven fact that, during the months following a phisical damage of certain importance, companies experience unfavourable financial results which lead to the conclusion that insurance has not fulfulled its function to full effect.

The insurance industry offers a product designed to put the insured company back into the financial position it would have been in had the damage not occurred. This is so-called Consequential Loss, Business Interruption, or Loss of Profits insurance.

The following pages analyse Loss of Profits cover in relation to «catastrophic hazards», although they focus implicitly on the socalled natural risks (earthquake, flood, volcanic eruption, cyclonic storms, etc.).

In Spain the cover of direct material loss or damage due to defined extraordinary natural phenomena has been closely linked to the Consorcio de Compensación de Seguros (Consortium of Insurance Compensation), an organization which has until very recently enjoyed exclusive rights in the cover of this type of loss.

The same has not been the case with respect to cover for Business Interruption resulting from these extraordinary events. The Ruling on Extraordinary Risks to Persons and Property expressly excludes indirect losses from the Consortium's cover, and therefore those of profits. It has thus been the private insurance sector the one which has directly underwritten cover for this risk; that is to say that a systematic division has been produced between the insurer of Material Losses (the Consortium) and that of Loss of Profits (private companies).

In principle, the promptrand quicker the settlement of material losses, the shorter is the period of interruption and restoration of the business activities and, therefore, the amount of Loss of Profits.

There have traditionally been problems in our market in putting this principle into effect as far as Extraordinary Risk Cover is concerned, due to the above-mentioned split between the Property Damage insurer and the Business Interruption insurer.

Generally speaking, insurance of Loss of Profits due to Extraordinary Risks in Spain has been related to subjective estimation rather than to strictly underwriting criteria, due to the lack of adequate statistical data and tariffs which could serve as a basis for premium calculation.

Another feature of this insurance, in contrast to the principle of compensation which is followed in the material damage cover provided by the Insurance Compensation Consortium, is its trend to «antiselection», since it is a voluntary insurance for which demand has tendency to concentrating systematically and principally on geographic areas which are relatively prone to different catastrophic risks.

Forms of insurance and risk factors

From the insurance point of view, in general, the problem with Business Interruption following natural catastrophe

is company to recover, and to what extend that is prejudige by the circumstances. There are a series of factors which, in the case of natural catastrophes, can adversely affect recovery after the disaster:

— In the affected zone there can often occur and interruption in the supply of utilities, preventing the provision of some of the primary elements vital to the performance of any production process (e. g. electricity, gas, water or telephone). This fact would immediately have very serious repercussions on the plant's production, even if no material damage to the plant itself has happened.

The financial consequences of inactivity due to interruptions of such nature may be covered by an insurance on Loss of Profits resulting from services interruption.

— Similarly, it may happen that the Insured suffers financial loss as a result of the impact of the disaster on suppliers' facilities.

The standard Loss of Profits cover may be widened to include losses resulting directly from an insured material loss in the facilities of one or several suppliers. There is an increasing tendency to request this supplementary insurance not only for large-scale risks, but also for smaller-scale insured parties who may indeed be proportionally worse affected, in view of the likelihood that large industrial suppliers whose production is adversely affected by the disaster will supply their larger clients first.

A similar situation may arise when the Insurer's whole output is sold to a restricted number of consumers.

This risk of loss may also be covered by means of a supplementary clause to include those business interruption losses deriving directly from material damage to the facilities of specified clients.

— Another aspect which, in case of natural disaster, may have a considerable effect on the prompt restoration and resumption of the business operations is the possible shortage of available building materials and resources due to the sudden increase in demand arising from the requirements of a large numer of properties and industries simultaneously affected within the disaster zone. This may translate into a further increase in the time needed to supply these materials and, in short, of the time necessary for rebuilding, which would directly affect the actual loss sustained by the Insured.

Losses associated with the «additional» extension of the recuperation of the extension of the recovery period for such reason, since they are independent from the «due speed and promptness» with which the insured may act after the disaster, are guaranteed under the normal formulas of cover, whether under the European sales-based version («Loss of Profits») or the American production-based «Gross Earnings». In both the insured has the moral and contractual duty to mitigate his losses in any way possible, restoring his operations «exercising due diligence and dispatch» and, on this premise, will be covered for delays caused by market limitations to respond to a sharp short-term increase in demand.

— Another circumstance which may lengthen the recuperation period is evacuation and the impossibility of entering the zone where the plant is located, following an order from the government or other authorities.

This loss risk may be covered by an insurance against «Impossibility of Access».

— When the disaster causes damage over an extensive geographical area it may happen, depending on the nature of the Insured's business, that as a result of the disaster the Insured may have nobody to sell his products to: in other words, he suffers a temporary loss of sales volume.

The insurance industry's answer to this particular problem will depend on whether the cover has been effected on the basis of the European sales-based «Loss of Profits» or the American production-based «Gross Earnings». The definition of the period of indemnity is different in each case.

Basically, in the European sales-based model, sales losses arising from insured material damage are meassured for the indemnity period specified in the policy. This indemnity period begins on the date of the material loss and continues for the period during which the business's results are directly afected by the damage, up to a previously agreed time limit. The choice of this time-limit, the maximum indemnity period, is made by

the Insured. This maximum period normally includes and estimated time for rebuilding and restoring plus and estimated time for recuperation of the sales level after rebuilding.

The American production-based model takes into account the loss of production arising directly from insured physical damage, which result in a loss of earnings during the indemnity period defined by the contract. The indemnity period is calculated from the time of the material damage caused by the disaster until such time when, by with the exercise of due diligence and dispatch, the Insured's plant and equipment can be restored to the same or equivalent physical and operative conditions that existed prior to the damage.

As can be seen on consideration of the indemnity period defined under either of these formulas, the European sales based model has an indemnity period which includes consequential loss of sales following restoration and recuperation of operations, although with a predetermined time limit; the indemnity period under the production-based system lasts until physical restoration has been effected by the Insured, with no predetermined time limit, using due diligence and promptness, but excluding the recuperation of sales levels following the reconstruction period.

Finally, it must be emphasised that this type of insurance still has a long way to go world-wide, and that knowledge of and response to its problems will always be linked to those of the extraordinary natural phenomena whose ever-increasing frequency and severity demand most careful study regarding assumption of liabilities, establishment of suitable prices, creation and maintenance of reserves and control of the great accumulation of values in risk areas, with the object of fulfilling the social function of the insurance industry by providing a financially viable response.

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