Creating Value through Integrated ERM for Health Care Insurers in Europe

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Abstract

This paper focuses on value creation for European health insurance companies through the practical application of integrated ERM frameworks.

The European dimension is characterized by the range of relationships between health insurance and the public health care system (e.g., substitutive, supplementary and complementary forms of health insurance that co-exist in Europe), risk sharing models and the varying nature of market regulation. The health insurer is considered as essentially a system of risk dynamics that consists of market participants that interact with each other. Integrated ERM frameworks (including COSO) are considered with reference to the system of risk dynamics. The associated ERM processes and techniques cover the internal environment, objective setting, event identification, risk assessment, risk response, control activities, information, communication and monitoring.

The strategic agenda for ERM and its ultimate effectiveness are determined by the Board ERM effectively impinges on the main board functions and their control cycles (i.e., policy formulation, strategic thinking, supervisory management and accountability). ERM-based policy formulation and strategic planning does not inevitably lead to effective corporate strategies, and vice versa. However, a sound understanding of the value drivers and value destroyers, which implies a comprehension of the risks to take and those to avoid, is a prerequisite for strategic direction.

Value innovation theory and virtual value chains are discussed in the context of integrated ERM. Value innovation theory challenges the view that higher customer value inevitably involves higher costs. Instead, raising customer value comes from eliminating and reducing the factors insurers compete on and creates uncontested new marketspace by creating valued new factors. It can be characterized as the simultaneous pursuit of product and service differentiation and low cost. For value innovators, practical management tools include virtual value chains, which can be used to reconfigure the physical value chain to meet customer value needs in the increasingly digital world of health care insurance services. The underlying concept is that every business competes in two worlds, the physical world (where we can see and touch the products and services) and the virtual world (where we have only digital information, and which is a new marketspace for customers).

Integrated ERM allied to risk and opportunity management has the potential to increase customer value and lead to a sustainable private health insurance business model. The ERM framework needs to be holistic and to involve the insurers and their suppliers, key stakeholders and medical service providers. The objective is to seek to mitigate downside risks and improve the likelihood of achieving benefits from the upside potential, leading to market development opportunities.

The paper includes specific and practical examples illustrating how an ERM practitioner could apply any proposed approaches and how to communicate them to all levels of a health insurance company in Europe.

Availability

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1. Introduction

This paper focuses on value creation for European health care insurers through the application of integrated enterprise risk management (ERM) frameworks. The European dimension is characterized by the range of relationships between voluntary health insurance and the public health care system (e.g. substitutive, supplementary and complementary forms of health insurance that co-exist in Europe), risk sharing models and the varying nature of market regulation throughout Europe.

European voluntary private medical insurance (PMI) markets and products are shaped by the nature of the public health care system. Voluntary PMI attempts to address the "gaps in coverage" in terms of services, costs, people and expectations. This paper concentrates on complementary and supplementary forms of voluntary PMI.

Complementary PMI provides cover for health care services excluded or not fully covered, including co-payments imposed by the (statutory) public health care system. In many European countries, there is a blurred boundary between the services provided by the public health care system and those provided within the private sector. Sometimes, the services are rationed, so that, although they are theoretically available, many people prefer to "*pay not to wait*" rather than to "*wait not to pay*."

Supplementary PMI provides cover for faster access and increased consumer choice. The supplementary model, in particular, has wider potential relevance across Europe to augment a core public health care system. Supplementary insurers may further benefit from the development of cross border, multinational and expatriate community opportunities due to increased mobility of labor and residence around the EU/EEA member states. Supplementary insurers may also be able to exploit gaps in state provision and in customer segments served by the public sector.

The United Kingdom and Ireland are examples of supplementary (United Kingdom) and complementary (Ireland) voluntary PMI markets. The U.K. market is based on risk analysis and medical underwriting and is aligned to the needs of the corporate market. The Irish private health care insurance model of value innovation based on lifetime community rating (combined with other factors, such as including utilization of public sector provider services and tax concessions for employee sponsored schemes) has helped to grow the Irish private health care insurance market for both companies and individuals. Scope exists to differentiate on value and cost via offering a claims management service, e.g., pre-authorization, case management and to collaborate with hospital providers to offer innovative packages to consumers. [16]

2. Summary

Value innovation theory challenges the view that higher customer value inevitably involves higher costs. Instead, raising customer value comes from eliminating and reducing the factors insurers compete on and creates uncontested new "marketspace" by creating valued new factors. It can be characterized as the simultaneous pursuit of product and service differentiation and low cost.[11] For value innovators, a management tool to help achieve the streamlining and cost innovations required will be to review the "virtual value chains" that should be developed.

The virtual value chain model can be used to reconfigure the physical value chain to meet customer value needs in the increasingly digital world of insurance and financial services.[15] The traditional European voluntary PMI marketplace perceives data and information as supporting the physical value chain (to a greater or lesser degree depending on the individual country market). Insurers do not typically exploit the value of digital assets and the low cost of information production. Exploiting digital assets would create opportunities for insurers to offer digital, renewable products and services and increase competitiveness in relation to insurers charging for the consumption of underlying materials without the benefits of digital data.

The creation of an information underlay and a virtual value chain also has the potential to create personalized product and service offers. [19] These offers can be innovative and profitable due to the combination of relatively low unit costs for products and services and the ability to modify customer behavior. Realizing the value of digital assets can create a new "marketspace." Telemedicine is a good example of how virtual value chains can transform service configuration and delivery. It also has the potential to be integrated into a health care insurance offer that is relevant, cost efficient and offers value to the consumer who wants to delay and manage frailty and chronic illnesses.

Holistic ERM allied to risk and opportunity management can potentially increase customer value and lead to a sustainable supplementary PMI business model. ERM should underpin balancing the risks and rewards inherent in the innovation portfolio, which may involve cross border insurance operations and relatively complex health care service offers. The ERM framework needs to be inclusive, involving insurers, outsourcers, medical service providers, regulatory and government health care policy advisors and independent, external input.

An integrated approach to ERM can help a health care insurance company to move from risk control to opportunity management. For those with an innovation portfolio, the screening tools outlined in this paper can be aligned to a robust and strategic ERM framework and facilitate effectiveness in the opportunity management arena.

3. European Health Care Insurance Markets

3.1 Overview

European PMI markets and products are shaped by the nature of the public health care system. Voluntary PMI attempts to address the "gaps in coverage" in terms of services, costs, people and expectations. There are three types of European voluntary PMI models:[14]

- **Substitutive PMI**—substitutes for cover that would otherwise be available from the state;
- **Complementary PMI**—provides complementary cover for services excluded or not fully covered including cover for co-payments imposed by the statutory health care system;
- **Supplementary PMI**—provides supplementary cover for faster access and consumer choice.

In general, voluntary forms of PMI play a much smaller role in the European Union than in the United States, Switzerland and Australia. Western European countries see

taxpayer funded schemes as being a basic responsibility of the state. State funded health care varies across Europe but is largely universal or near universal:[16]

- Universal rights in Denmark, Finland, Greece, Ireland, Italy, Luxembourg, Portugal, Sweden and the United Kingdom;
- Near universal rights in Austria, Germany, Belgium, France, Malta and Spain;
- More limited rights in the Netherlands (but still in excess of 70 percent statutory coverage);
- Except in Austria, Greece, Portugal and Italy, taxpayers fund over 75 percent of health provision.

Substitutive voluntary PMI schemes are limited geographically:[16]

- For excluded individuals: in the Netherlands, high net worth; in Belgium and Germany, self employed people;
- For exempted individuals: in Germany and Austria, high net worth and self employed can choose private or state.

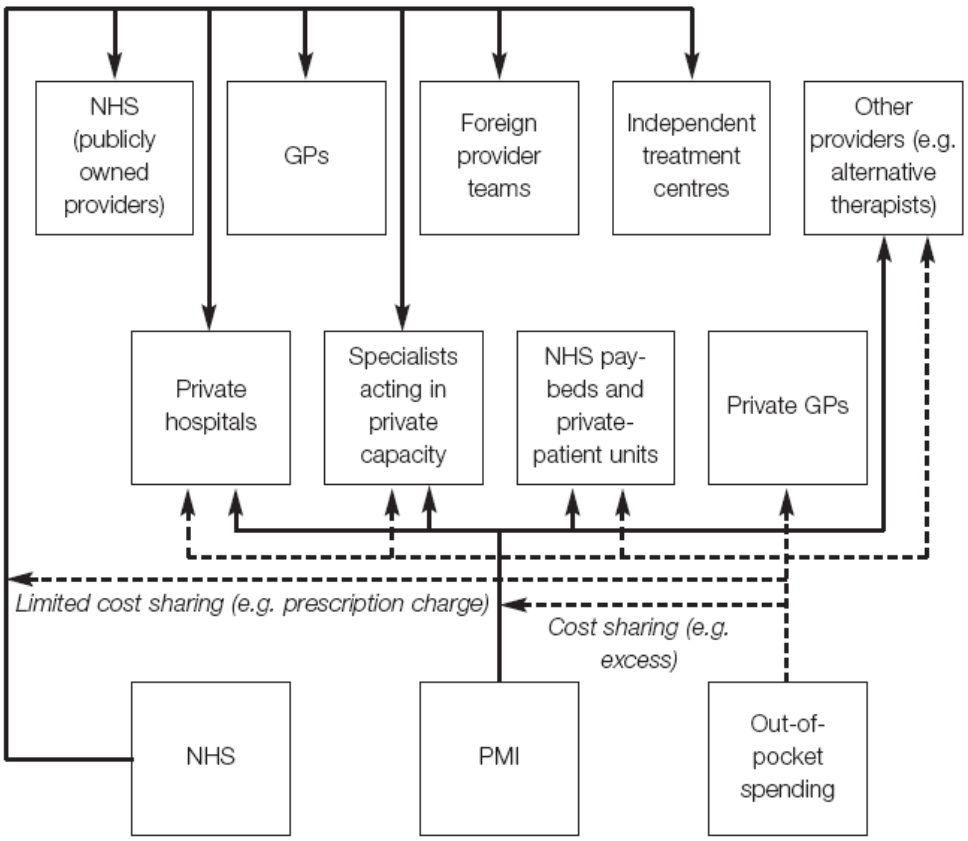
Forms of complementary and supplementary PMI are more widespread where the state requires a user contribution or where state contribution is insufficient. Strong complementary voluntary PMI markets exist in Belgium, Denmark, France, Luxembourg, Sweden and the Netherlands. However, such complementary schemes lend themselves to "scope creep" as the state retreats and insurers may be restricted in their scope to increase premium rates to adjust for richer benefit packages. Ultimately, supplementary forms of voluntary PMI depend upon the extent of state provision. In theory the greater degree of universal access (with limited resources), then the greater is the potential market for products improving access and benefits.

European insurers are subject to solvency level requirements but are not subject to statutory price and product controls. The implications for selection of risk, premium rating and product definitions and terms are that in the majority of EU member states, with the exception of those where PMI is offered as a direct substitute for NHS provision, insurers are able to flex the product components without statutory constraints. Price levels will be influenced by the premium rating methodology.

The supplementary model, in particular, has potential applications across Europe to augment a core public health care system. Supplementary insurers may further benefit from the development of expatriate community opportunities due to increased mobility of labor and residence around EU. This form of PMI is also suitable for corporate customers, including large multinationals to offer as part of their employee benefit packages. Supplementary insurers may also be able to exploit gaps in state provision (e.g., U.K. dental insurance) and gaps in the customer segments (e.g., older people). [16]

3.2 Private Medical Insurance in the United Kingdom

The UK has a mixed economy of public and private health care delivery. PMI is primarily a supplementary voluntary health insurance (VHI) system and is an important component of the mixed health care economy that comprises public and private financing and public and private provision. The flow of funds between the public and private health care sectors is illustrated below.[8]



As PMI is a supplementary coverage, the insured always has the option to try to access the NHS and receive public treatment, provided that he is prepared to wait. If the insured decides to use his PMI cover, he still will have to deal with NHS business processes. In practice, the insured will need to consult his GP, who will refer him to a private consultant. Some insurers require the insured to contact them at the time referral to ensure that the consultant is on their approved list, as well as prior to booking any acute treatment.

Note: Private hospitals and specialists have been boxed separately in the figure, as the initial consultation and the hospital treatment is separated in time and place (moreover, a privately financed consultation may not necessarily lead to a hospital episode). Furthermore, the consultation will often take place in office space that does not belong to a private hospital and for which the specialist will pay rent or a fee.

There may also be incidence of individuals who opt to mix public and private systems to provide different components of their care. For example, the patient may opt for certain higher cost diagnostics to be carried out in the public sector, e.g., MRI scans, and pay a nominal fee to the NHS provider for the diagnostic report which can be used at a private outpatient specialist consultation. This is a problematic policy issue as it involves out-of-pocket payments to be received by NHS providers for a diagnostic test that is carried out using public health care facilities and staff. Pressure also exists for patients to be able to self-pay for high cost pharmaceuticals not available as a public health care service, e.g., cancer drugs, whilst remaining a public patient for all other services.

Supplementary PMI in the United Kingdom provides cover for the costs of treatment in respect of acute medical episodes. There are three key markets:[16]

- **Individuals**—community rated, medically underwritten (e.g., full medical underwriting, moratorium underwriting) and excluding pre-existing medical conditions.
- **Small Company Paid**—partially experience rated (sometimes via rating pools), generally medically underwritten and excluding pre-existing medical conditions.
- **Large Company Paid**—experience rated and not medically underwritten.

3.2.1 Medical Underwriting and Risk Rating

PMI insurers use medical underwriting and risk rating to set the office premium rates. Full medical underwriting requires a declaration of the applicant's medical history. The insurer determines, at the point-of-sale, the medical conditions that will be excluded. Moratorium underwriting, on the other hand, shifts the underwriting process to the point of claim. With moratorium underwriting, pre-existing conditions (and directly related conditions) during the last five years are excluded for two years, following which they are covered provided that the insured has been symptom free.

3.2.2 Group Experience Rating

Groups with 50+ members are generally experience rated, with credibility being given to their own claims experience—the larger the group the greater the credibility factor. Experience rating in sometimes thought of as a form of community rating, as all employees within the group will be accorded the same risk value. However, it is also a form of risk rating, as it is the group sponsor who pays the premium and the group premiums partially reflect past actual claims experience of the group.

3.2.3 PMI as a Supplementary Coverage to the NHS

As PMI is a supplementary coverage, the insured always has the option to try to access the NHS and receive public treatment. If the insured decides to use his PMI cover, he still will have to deal with NHS business processes. In practice, the insured will need to consult his GP, who will refer him to a private consultant. Some insurers require the insured to contact them at the time of referral to ensure that the consultant is on their approved list, as well as prior to booking any acute treatment.

3.2.4 Preferred Provider Networks

Some PMI insurers have preferred provider networks, whereby the insured claimants are directed towards in-network medical service providers. Although private hospital service providers operate "rack rates" for their hospital beds and ancillary patient services, their actual charge levels are the outcome of confidential negotiations between insurers and providers, conducted on a bilateral basis.

The preferred provider network agreements for a large PMI insurer (in 2000) was the subject of the Competition Commission investigation. The matter investigated was the proposed merger of BUPA Hospitals with Community Hospitals Group. It was concluded

that the actual charges set reflected the bargaining strengths and abilities of the two sides, rather than the underlying structure of supply costs. The larger PMI insurers, due to economies of scale and medical expertise, had a competitive advantage over others when it came to negotiating medical service provider prices.[3]

The Competition Commission concluded that the preferred provider discounts achievable were sometimes 25 percent to 35 percent off the "rack rates" for non-network business, and even higher for network business. Furthermore, BUPA Hospitals had charged the BUPA insurance business significantly less than it charged smaller PMI insurers. It concluded that it was far from obvious that the lower BUPA Hospitals charges to the BUPA insurance business were fully justified on a volume basis or because of significant cost savings.[3]

PPO-based health care models are rare in Europe, although insurers may have preferred provider networks to support group employer based contracts. It is difficult to restrict provider choice for voluntary as opposed to employer paid (mandatory) cover. Low market penetration rates and consumer attitudes to a voluntary purchase, which restricts choice, present challenges to integrated health care and risk sharing.

3.3 Private Medical Insurance in Ireland

The U.K. model of PMI is positioned as supplementary coverage to the NHS with limited complementary benefits. This contrasts with other EU member states that provide more substantial complementary coverage to the public health service and utilize risk equalization to underpin the complementary PMI system. Ireland operates a form of complementary PMI[14] governed by the principles of open enrolment, community rated premiums, minimum benefits, maximum waiting periods (12 months for any treatment, up to 10 years for pre-existing conditions) and lifetime cover. The concept of lifetime community rating, introduced by The Irish Health Insurance (Amendment) Act of 2001, also allows insurers to apply a late entry premium loading for those who defer purchasing private health care insurance until they are age 35 or more.

Insurers are subject to a risk equalization scheme that was intended to be applied for the first time in 2005, but has become the subject of a protracted dispute between the market entrants (since deregulation), the incumbents (prior to deregulation) and the government. The Society of Actuaries in Ireland set up a working party to review the actuarial position on the risk equalization scheme. The working party concluded that risk equalization in some form is a logical concomitant to a voluntary health insurance scheme based on community rating, open enrollment and lifetime cover.[1] Their recommended position was that a risk equalisation scheme based on age and gender should be introduced, preferably on a prospective basis.

VHI Health Care (established in 1957 as VHIB) is a non-profit, autonomous body that dominated the Irish market until 1994 when a limited element of competition was introduced.

The third non-life insurance directive triggered this change and the 1996 market entry of BUPA Ireland. Insurers contract with selected providers, utilize private beds in public hospitals and pay hospitals with a fixed rate per diem. Doctors are able to work in both the public and private sectors. The use of private beds in public hospitals has been cited as a cost to the public sector where private bed costs exceeded insurer per diem rates. This was

identified by the government as a concern in 1999 and proposed as an area for gradual, economic reform.

The Health Insurance Act of 1994 defined the foundations for PMI community rating, open enrollment and lifetime cover. A risk equalization scheme was also allowed in order to support the use of community rating via risk equalization transfers where there were material differences in insurer risk profiles. New insurers were able to exempt themselves from the risk equalization scheme during the first three years of trading. The intention was to support an equitable distribution of risk amongst insurers and promote a stable, sustainable community rating insurance offer to individuals, particularly the old and those with pre-existing conditions and to give the regulator considerable scope in the assessment of risk profiles and the calculation and transfer of equalization funds between insurers.

3.4 Private Health Care Insurance Risk Selection

Consumer access to private health care insurance is affected by insurers' ability to select risks, apply exclusions to cover and set their own premium rating bases. European insurers are subject to solvency level requirements but are not generally subject to statutory price and product controls.[14]

The implications for selection of risk, premium rating and product definitions and terms are that in the majority of EU states, with the exception of those where private health care insurance is offered as a direct substitute for NHS provision, insurers are able to flex the product components without statutory constraints. Price levels will be influenced by the premium rating methodology, e.g., community, experience or risk rating. Specific consumer risk groups may be identified as representing higher or lower risk profiles e.g., older people, women (adult, child bearing ages) and those with often multiple, chronic conditions. Individuals may also be disadvantaged over members of employer or other collective schemes due to higher prices and more stringent underwriting terms.

Insurers' rating models are often influenced by the need to minimize the affects of adverse-selection. Adverse selection occurs due to the consumer's ability to exploit the information asymmetry that exists between their actual risk profile and the insurers' knowledge and ability to determine that risk.[1]

Charging a common or community rated premium is one approach which tries to encourage universal coverage and dilute the effects of adverse selection. The risk inherent in this approach is that younger and lower risk individuals effectively subsidize the higher risk groups and may opt out of the PMI market. The net effect is to destabilize the market as lower risk individuals opt out, the subsidy effect is weakened and insurers compensate for the loss of the lower risk individuals by increasing premium rate levels. The effect is a spiral of increasing claims incidence, which can lead to the closure of schemes and market harm.

Risk rating is a difficult concept to apply due to often simplistic rating criteria and proxies available to insurers to predict morbidity levels amongst prospective customers. There is also a socioeconomic gradient which underpins actual morbidity experience which can serve to make premium rates disproportionately expensive to these groups in the population. The weight afforded to this issue is related to the core statutory provision, e.g., health care sectors, service menu, compared with those types of health and care services often at the margins of statutory provision in EU member states.

It is also necessary to convert both incumbent and new market entrant insurance providers to the regulatory framework and mechanisms used to manage risk selectivity at the point-of-sale. The political risk (e.g., Ireland) is that the major disparity between portfolio mix, between the incumbent and the new market entrant, creates a significant challenge to government and the regulators to implement risk equalization systems.

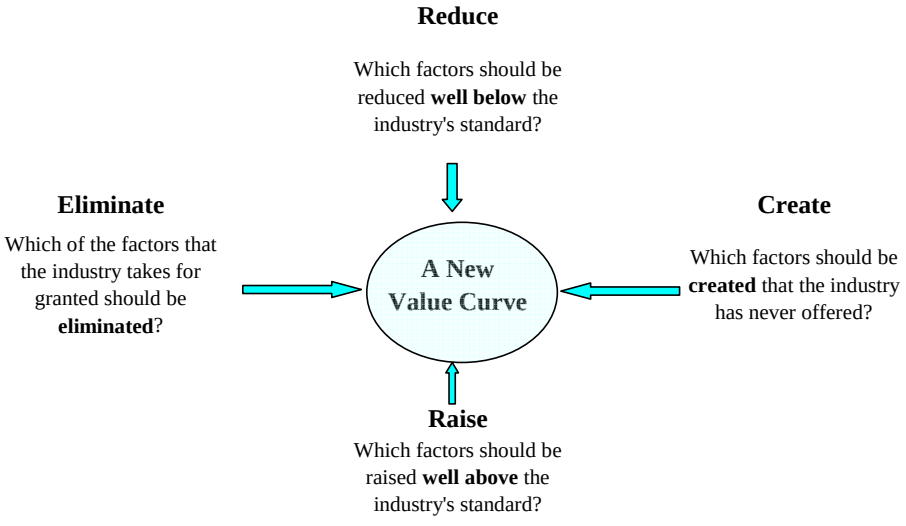
3.5 Value Innovation and Virtual Value Chains

Value innovation theory challenges the view that higher customer value inevitably involves higher costs. Instead, raising customer value comes from eliminating and reducing the factors insurers compete on and creates uncontested new "marketspace" by creating valued new factors. It can be characterized as the simultaneous pursuit of product and service differentiation and low cost. For value innovators, a management tool to help achieve the streamlining and cost innovations required will be to review the "virtual value chains" that should be developed. The virtual value chain model can be used to reconfigure the physical value chain to meet customer value needs in the increasingly digital world of insurance and financial services.

3.6 Value Innovation: Achieving Cost and Value Differentiation

Maximizing customer value creation requires insurers and providers to utilize new concepts of value innovation. Value innovation theory challenges the view that higher customer value inevitably involves higher costs. Instead, raising customer value comes from eliminating and reducing the factors insurers compete on and creates uncontested new marketspace or blue oceans, by creating valued new factors. It can be characterized as the simultaneous pursuit of product and service differentiation and low cost.[11] Risk sharing innovations between insurers and the service providers can help increase customer value and lead to a sustainable private health insurance business model.

Cost savings are made by eliminating and reducing the factors insurers compete on in the contested, red oceans. Buyer value is lifted by raising and creating elements insurers have never offered. Over time, costs are reduced as scale economies kick in from the higher sales that superior value generates. The four-actions framework provides a management tool for reconstructing the customer value elements into a coherent strategic value curve and then helping to generate a new value proposition [11].



Eliminate

Management needs to eliminate factors that other insurers have long competed on. Often these are taken for granted even though they no longer have any value or may even detract from value. Sometimes there has been a fundamental shift in what customers value, but this change is not acted upon. This is generally a result of insurers being too focused on benchmarking themselves on one another and either failing to perceive the fundamental change in customer values or not having the confidence or the courage to act alone.

Reduce

In this scenario, the company over-serves its customers, thereby increasing their cost structure for no gain, as far as customer value is concerned. Management needs to determine whether their products have been over-designed or over-engineered in their race to match and beat the competition. These over-designed and over-engineered factors need to be reduced well below the industry standard.

Raise

The management team needs to uncover and eliminate the compromises that the company, along with its traditional competitors in the industry, has in the past forced its customers to make. These compromises to customer wants and values need to be addressed. The factors for the relevant products and services need to be increased to well above the industry standard.

Create

The management team needs to discover entirely new sources of value for customers and to create customer demand for these new sources of value. It needs to shift the strategic pricing of the industry and design its costs structure to be aligned with its strategic pricing. In essence, the company needs to create factors which the industry has never previously offered.

3.7 Value Innovation Incorporates ERM

Enterprise risk management is embedded in the basic principles that drive the successful formulation and execution of value innovation and blue ocean strategy. Each of these principles can contribute to reducing the effects of an associated enterprise risk management factor, as indicated below [12].

	Formulation principles	Risk Factor each principle attenuates
1	Reconstruct market boundaries	Search risk
2	Focus on the big picture, not the numbers	Planning risk
3	Reach beyond existing demand	Scale risk
4	Get the strategic sequence right	Business model risk

	Execution principles	Risk Factor each principle attenuates
5	Overcome key organisational hurdles	Organisational risk
6	Build execution into strategy	Management risk

3.8 Health Care Insurance Red Oceans and Blue Oceans

Health care insurers are competing in either "red" oceans or "blue" oceans. In the red oceans, firms compete with each other according to well established rules and market boundaries, based on business practices developed over many years.

Products become like commodities and businesses compete for a share of the existing market by reducing their profit margins. The weakest firms fail, leading to red oceans. In the blue oceans, there is untapped marketspace and potential for creating new customer demand. Blue oceans are often created from within red oceans by expanding the existing market boundaries to new areas. Competition becomes irrelevant, as there are no competitors in this new marketspace and the rules of the game are waiting to be established.[12]

Red Ocean Strategy	**Blue Ocean Strategy**
Compete in existing market space	Create uncontested market space
Beat the competition	Make the competition irrelevant
Exploit existing demand	Create and capture new demand
Make the value-cost **trade-off**	Break the value-cost **trade-off**
Align the whole system of a firm's activities with its strategic choice of differentiation **or** low cost	Align the whole system of a firm's activities in pursuit of differentiation **and** low cost

Red oceans are a fact of business life. It will always be important for business to be able to operate successfully by outperforming their business rivals. However, as markets develop and supply outpaces demand, competing for market share in a declining market can be a recipe for stagnation if not disaster.

3.8 Operational Risk Issues for Health Care Insurers

The operational risk enterprise risk management implications of value innovation and blue ocean strategy are outside the scope of this paper. Readers are directed to relevant papers on insurance companies,[15] on general insurance[25] and on life assurance [7].

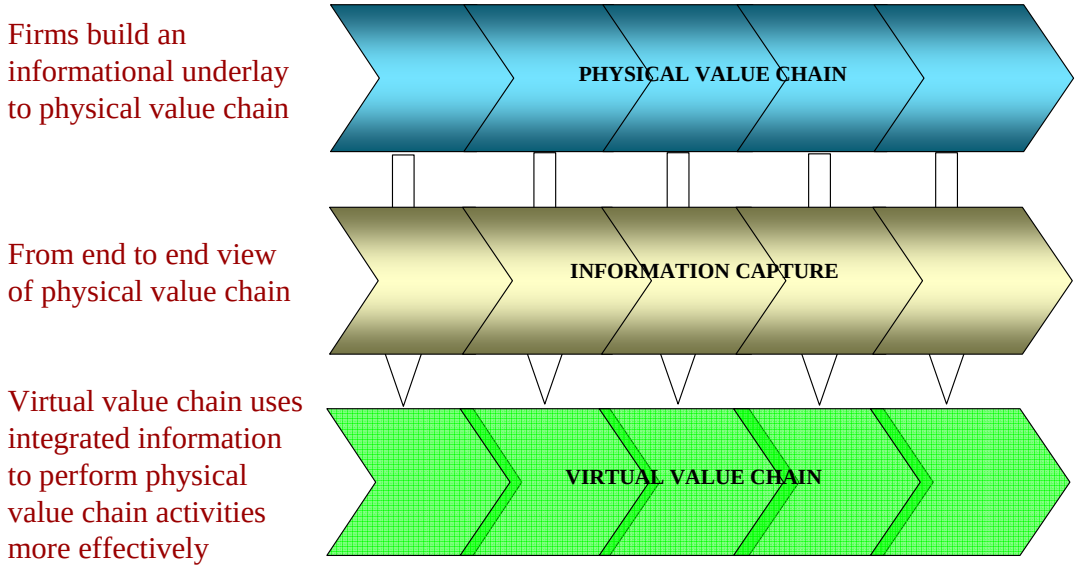
3.9 Virtual Value Chain and Value Matrix: Sources of Cost and Value Differentiation

For value innovators, a management tool to help achieve the streamlining and cost innovations required will be to review the "virtual value chains" that should be developed. The virtual value chain model can be used to re-configure the physical value chain to meet customer value needs in the increasingly digital world of insurance and financial services. A physical value chain can be described as the series of value adding activities connecting a

company's supply side (raw materials, inbound logistics and production processes) with its demand side (outbound logistics, marketing and sales). The process can be mapped via a flow diagram and then "re-engineered" to increase value or reduce costs. The chain consists of a series of activities that create and build value; they culminate in the total value delivered by an organization. By analyzing stages of a value chain, firms can redesign internal and external processes to improve efficiency and effectiveness.

According to Rayport and Sviokla,[19] businesses operate in two worlds, a physical world (*marketplace*), where we can see and touch the products and services, and a virtual world (*marketspace*), where we have only digital information. The physical and virtual value chains represent two interacting value adding processes. For example, a telephone answering machine is in the marketplace (it is physical), whereas electronic answering services are in (virtual) marketspace. Many firms can operate in both spaces (e.g., sales agent and Internet sales). Firms can also overlay marketspace services onto marketplace services. Marketspace development requires firms to first build an information underlay which creates visibility or the ability to "see" physical value chain operations more effectively through information.

Exporting Physical Value Chain Steps to a Virtual Value Chain

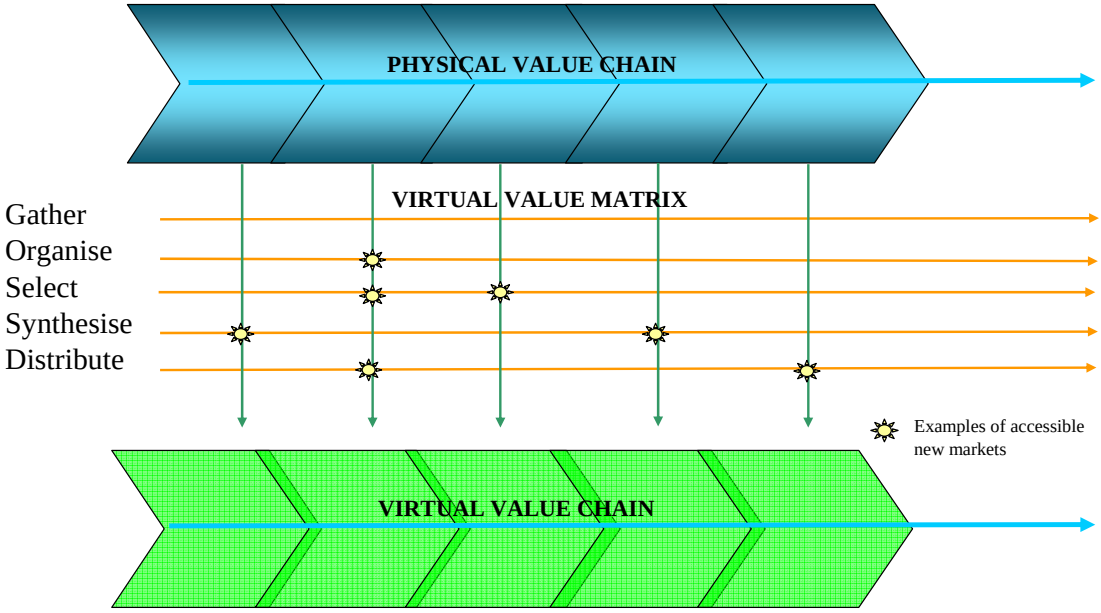


Firms are then positioned to develop "mirroring capability" where virtual activities are substituted for physical value chain activities. Mirroring capability is the stage at which a parallel value chain can start to evolve in the marketspace. According to Rayport and Sviokla:[19]

> Just as someone takes raw material and refines it into something useful—as in the sequence of tasks involved in assembling an automobile on a production line—so a manager today collects raw information and adds value through these steps.

The next stage involves developing new markets and customer relationships. At this point the virtual value chain becomes the source of information, a virtual value matrix which can be exploited via gathering, organizing, selecting, synthesizing and distributing information to offer new markets and customers new forms of value.

Virtual Value Chains Create New Relationships and Markets



A key difference between physical and virtual value chains is their cost efficiency. Whereas the physical value is not itself a source of value, the virtual value chain is a source itself of value, as it has the potential to leverage information in order to create new customer relationships and markets.

Traditionally, the European health care insurance marketplaces have generally utilized information to provide value, not as a source itself of value. However, digital assets, unlike physical assets, are not consumed during use and so can be repeatedly harvested. Therefore, the cost of information value production is close to nothing, and so companies that must charge for consumption of underlying materials face challenges in competing with companies offering digital, renewable products and services. The physical and virtual value chains must be managed in tandem yet separately to gain value from them because of their differences.

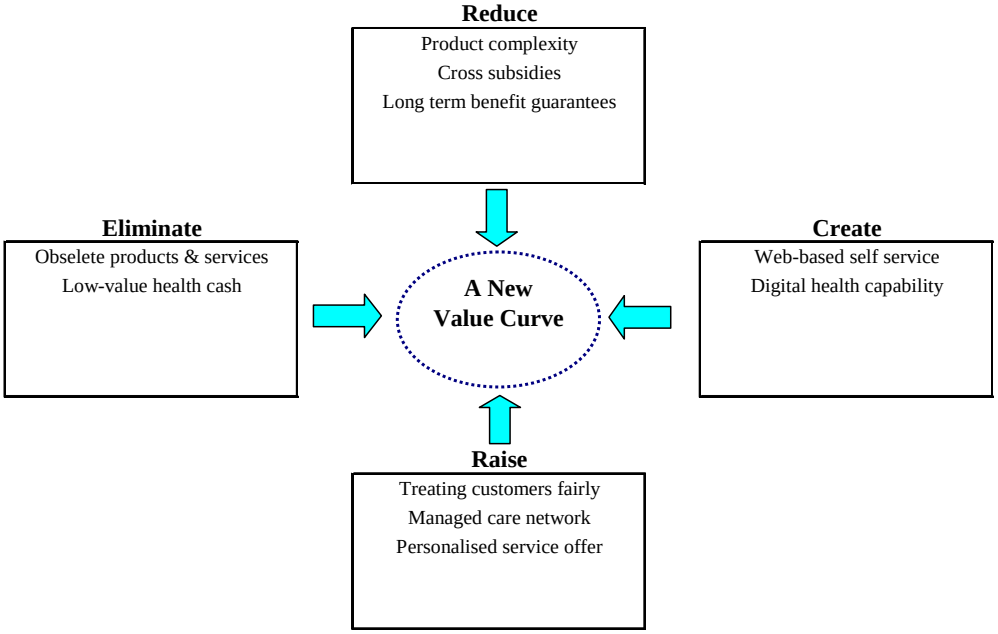
3.10 Data and Information in the European Voluntary PMI Marketplace

The European PMI marketplace perceives data and information as supporting the physical value chain (to a greater or lesser degree depending on the individual country market). Insurers do not typically exploit the value of digital assets and the low cost of information production. Exploiting digital assets would create opportunities for insurers to offer digital, renewable products and services and increase competitiveness in relation to insurers charging for the consumption of underlying materials without the benefits of digital data. For example, individual purchase consumers can be targeted with personalized offers based on data mining and synthesis; products can become more modular with the facility for consumers to configure their own benefit package; and, digital health capabilities can be used to provide health maintenance and hospital-at-home services to provide insurance cover for older people and those with chronic conditions.

3.11 Case Study: PMI in the Digital World

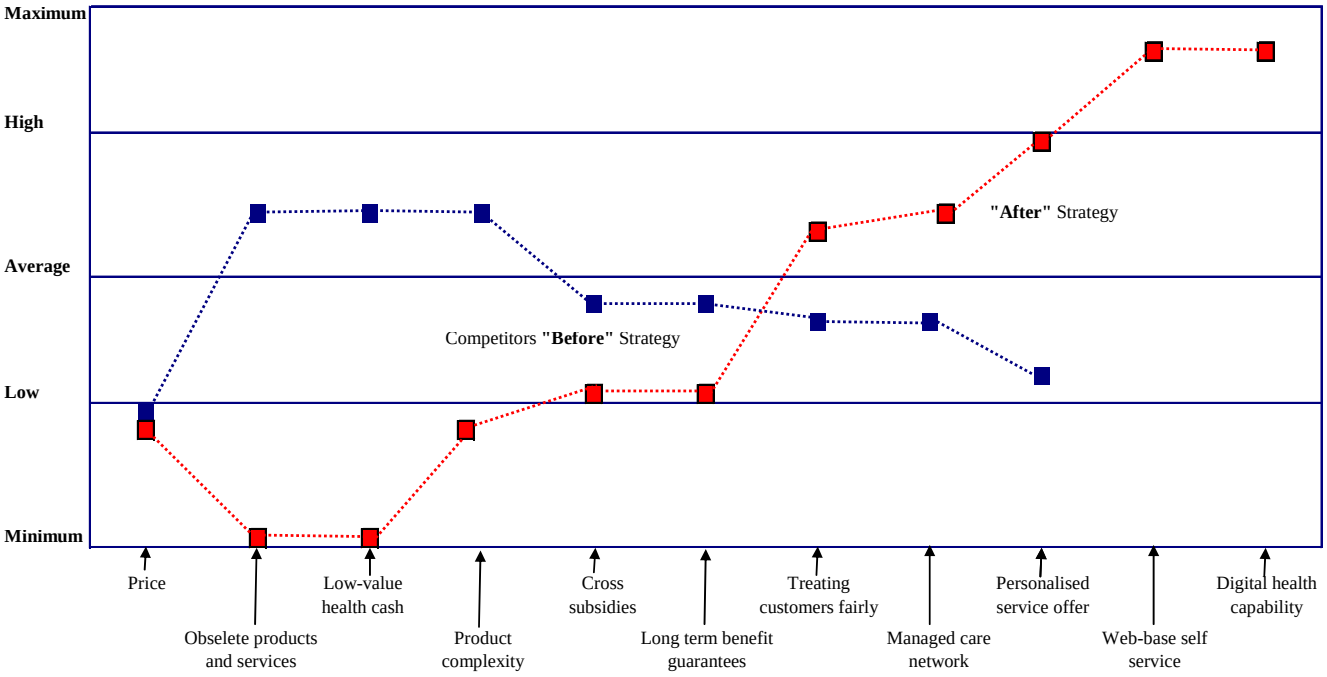
This case study is a focus on the creation of digital health capabilities, choice and self-configuration of benefit packages and the creation of more personalized offers. The model reduces product complexity and long-term benefit guarantees offered in some European supplementary PMI markets, which are influenced by use of agency sales channels. Low value health cash is eliminated where the insured benefit cost represents poor value (e.g., health cash benefits with new business and administration charges). Raised elements are linked to the “create" elements derived from the virtual value chain.

Value Curve Actions: Private Medical Insurance



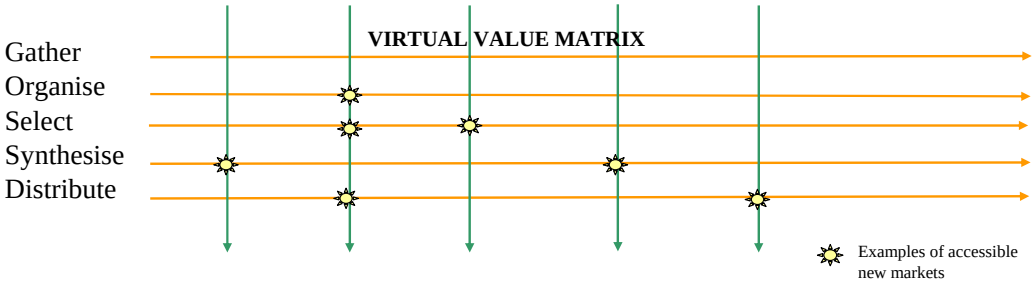
The value curve actions are derived from the exploitation of the virtual value matrix.

The resulting value curve indicates the “before” and “after” strategy for a supplementary PMI health care insurance product:



Physical value chain

- Customer/patient data supports the insurance value chain



Virtual value chain

- Digital health capability for integrated services
- Web-based self-service for product choice and transactions
- Personalised offers based on data mining and synthesis

Physical Value Chain				
Inbound Logistics	**Service Operations**	**Outbound Logistics**	**Marketing and Sales**	**After Sales Service**
Actuarial, NPD, risk assessment, underwriting, premium rating	Price quotations, new business processing, renewal processes, provider relations	Claims processing, lapse processing, managed care, assistance service	Promotion, sales, market intelligence, channel management, client acquisition	CRM, customer services, business retention, personalised offers
Health and care insurance services				
Company infrastructure (for example, ERM, finance, accounting, legal)				
Human Resource Management				
R&D, Technology Development, Systems Development				
Procurement				

Margin

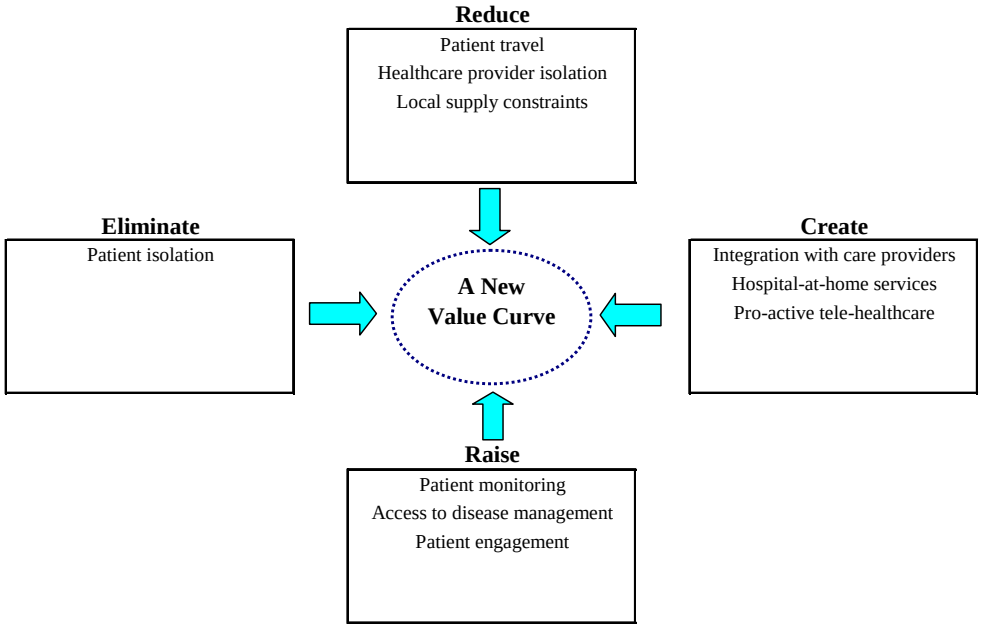
Virtual Value Chain				
Inbound Logistics	**Service Operations**	**Outbound Logistics**	**Marketing and Sales**	**After Sales Service**
Data reception, data storage, data integration, data distribution	Server administration, service deployment, software maintenance, hosting	Service integration, networking, digital health capability	Business development, web-based self service	Technical support, customer care, personalised offers
User Feedback				
User and Contract Management, CRM				
Human Resource Management				
Services R&D, Technology Development, Systems Development				
System Procurement (equipment, telecommunications)				

Margin

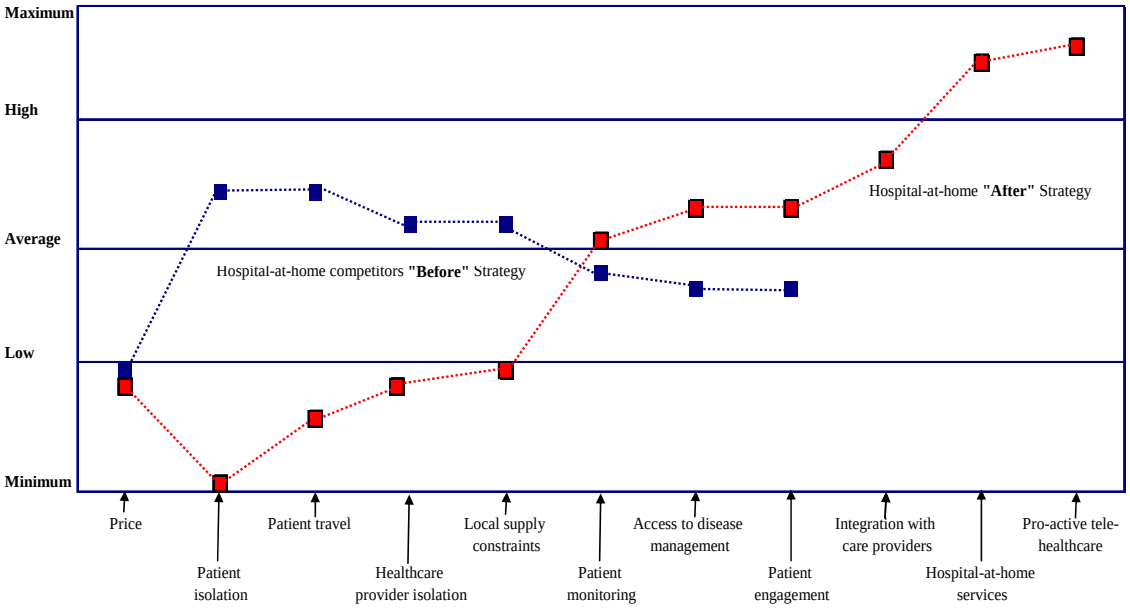
3.12 Case Study: Hospital-at-Home PMI for Third Age Customers

Telemedicine is an example of how virtual value chains create integrated services. Telemedicine has the potential to be integrated into a PMI offer which is relevant, cost efficient and offers value to the consumer who wants to delay the onset of or manage chronic illnesses.

Value Curve Actions: Hospital-at-Home Insurance Package



In this model integrated health care services have the potential to eliminate patient isolation, provide home- and community-centered care and increase patient engagement.



Physical Value Chain				
Inbound Logistics	**Service Operations**	**Outbound Logistics**	**Marketing and Sales**	**After Sales Service**
Actuarial, NPD, risk assessment, underwriting, premium rating, patient acceptance, anamnesis	Price quotations, NB and renewal processes, provider relations, medical exams, surgical operations, consultations, treatment	Claims and lapse processing, managed care, assistance service, patient transfer into care units, patient discharge	Promotion, sales, market intelligence, channel management, client acquisition, reimbursing hospital-at-home services	CRM, customer services, business retention, personalised offers, follow up with the patient
Hospital-at-home and healthcare insurance services				
Company infrastructure (for example, ERM, finance, accounting, legal)				
Human Resource Management				
R&D, Technology Development, Systems Development				
Procurement				

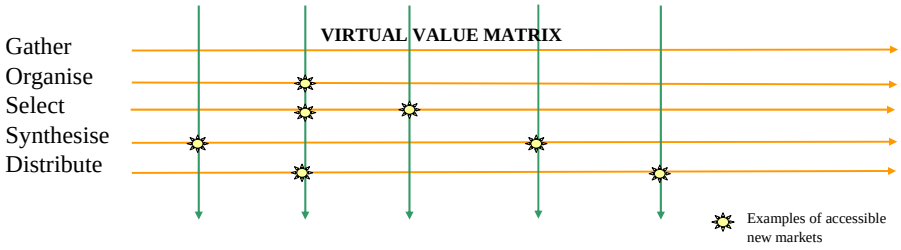
Margin

Virtual Value Chain				
Inbound Logistics	**Service Operations**	**Outbound Logistics**	**Marketing and Sales**	**After Sales Service**
Data reception, data storage, data integration, data distribution	Server administration, service deployment, software maintenance, hosting	Service integration, networking, digital health capability	Business development, web-based self service	Technical support, customer care, personalised offers
User Feedback				
User and Contract Management, CRM				
Human Resource Management				
Services R&D, Technology Development, Systems Development				
System Procurement (equipment, telecommunications)				

Margin

Physical value chain

- Client/patient/underwriting data supports the insurance value chain



Virtual value chain

- Integration hospital-at-home services directly with care providers
- Drive care delivery through physical and virtual value chains
- Proactive tele-emergency and tele-assistance services

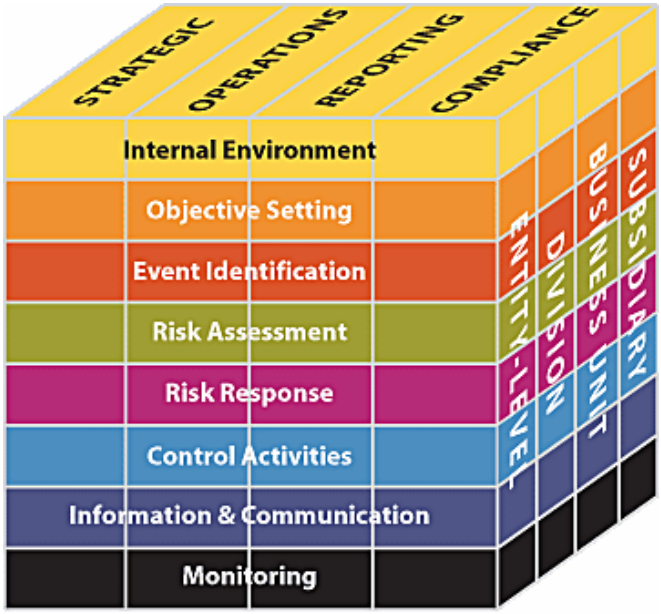
4. Integrated ERM Frameworks

There are several competing ERM framework models, three of which (i.e., COSO, Standard & Poor's, Chapman) are considered briefly in this paper. These were selected from a wider range of ERM frameworks,[17] together with an ERM bibliography of 60 relevant publications.[18]

4.1 COSO (The Committee of Sponsoring Organisations of the Treadway Commission) has defined [5] enterprise risk management as follows:

> Enterprise risk management is a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives.

4.2 The COSO Integrated ERM Framework principles and methodologies are a unifying suite of holistic enterprise risk management processes applicable to almost any enterprise or organization in both the private sector and the public sector (e.g., government, regulators). Private sector applications can include insurance and financial services business.



4.3 The COSO suite of application techniques cover the ERM issues associated with the internal environment, objective setting, event identification, risk assessment, risk response, control activities, information, communication and monitoring.[4] The underlying premise is that every entity exists to provide value and that all face uncertainty and the challenge for management is to determine how much uncertainty to accept as it strives to grow stakeholder value.

4.4 Uncertainty presents both risk and opportunity, with the potential to erode or enhance value. ERM enables management to effectively deal with uncertainty and associated risk and opportunity, enhancing the capacity to build value. Value is maximized when management sets strategy and objectives to strike an optimal balance between growth and return goals and related risks, and efficiently and effectively deploys resources in pursuit of the entity's objectives. ERM encompasses:

(a) Aligning risk appetite and strategy, via evaluating strategic alternatives, setting related objectives and developing mechanisms to manage related risks.

(b) Enhancing risk response decisions, via providing rigor in identifying and selecting among alternative risk responses (i.e., risk avoidance, reduction, sharing, acceptance).

(c) Reducing operational surprises and losses, via gaining capability to identify potential events and establish responses, reducing surprises and associated costs or losses.

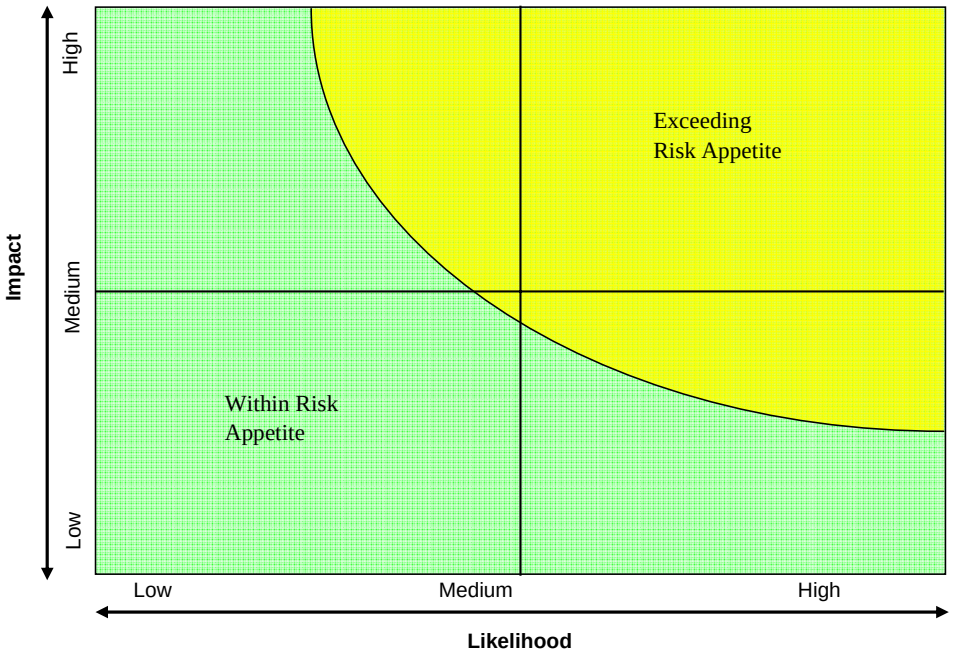
(d) Identifying and managing multiple and cross enterprise risks, via facilitating effective response to the interrelated impacts, and integrated responses to multiple risks.

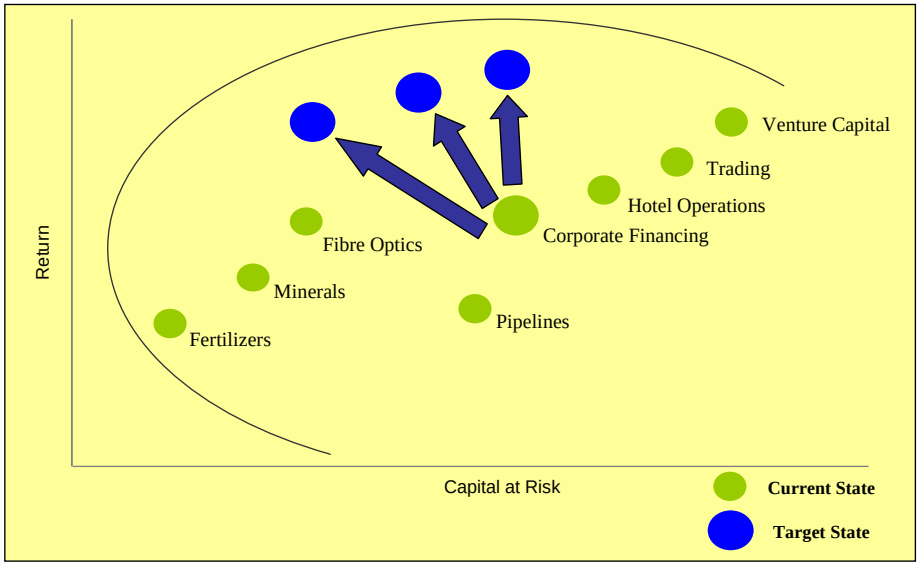
(e) Seizing opportunities, via considering a full range of potential events, management is positioned to identify and proactively realize opportunities.

(f) Improving deployment of capital, via robust risk information that allows management to effectively assess overall capital needs and enhance capital allocation.

4.5 ERM capabilities can help management achieve performance and profitability targets and prevent loss of resources. It can help ensure effective reporting, compliance with laws and regulations, and help avoid damage to reputation and associated consequences. Events can have negative or positive impact, or both. Negative impact events can erode existing value. Positive impact events represent opportunities that can inform strategy and objective setting.

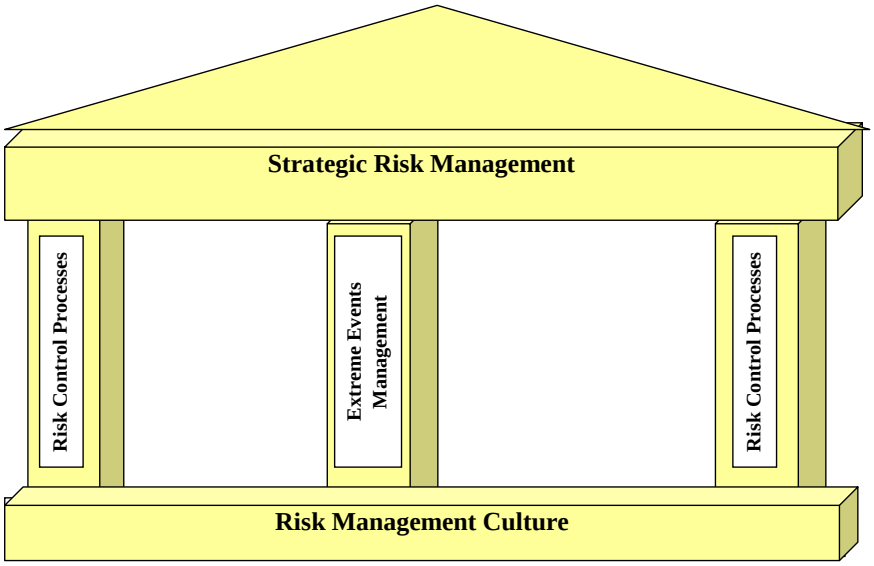
4.6 Risk appetite can be expressed in terms of a "risk map". Any significant residual risk in the map's yellow area exceeds the company's risk appetite, and requires management action to reduce the likelihood and/or impact of the risk to bring it within the company's risk appetite. Portfolio diversification can target a return that aligns to the target profile, rather than lower down, in the interior of the region.[6]





4.7 Standard & Poor's[22] provides an ERM evaluation methodology for insurers consists of seven initial criteria: competitive position, management & corporate strategy, operating performance, capitalization, liquidity, investments, financial flexibility. ERM rationalizes the risk limits and tolerances across different individual risks and allows comparable measures to be applied so that the risk management process can be performed at both the individual risks and enterprise level. Risk capital values can also be linked to risk taking activities enabling assessment of projected and historical performance of activities in proportion to their economic capital requirements. Targets can be set for the return on economic capital of each activity; capital is allocated to optimize the expected return on economic capital and management efforts to meet targets are assessed.

4.8 The strategic risk management pillars are illustrated below.



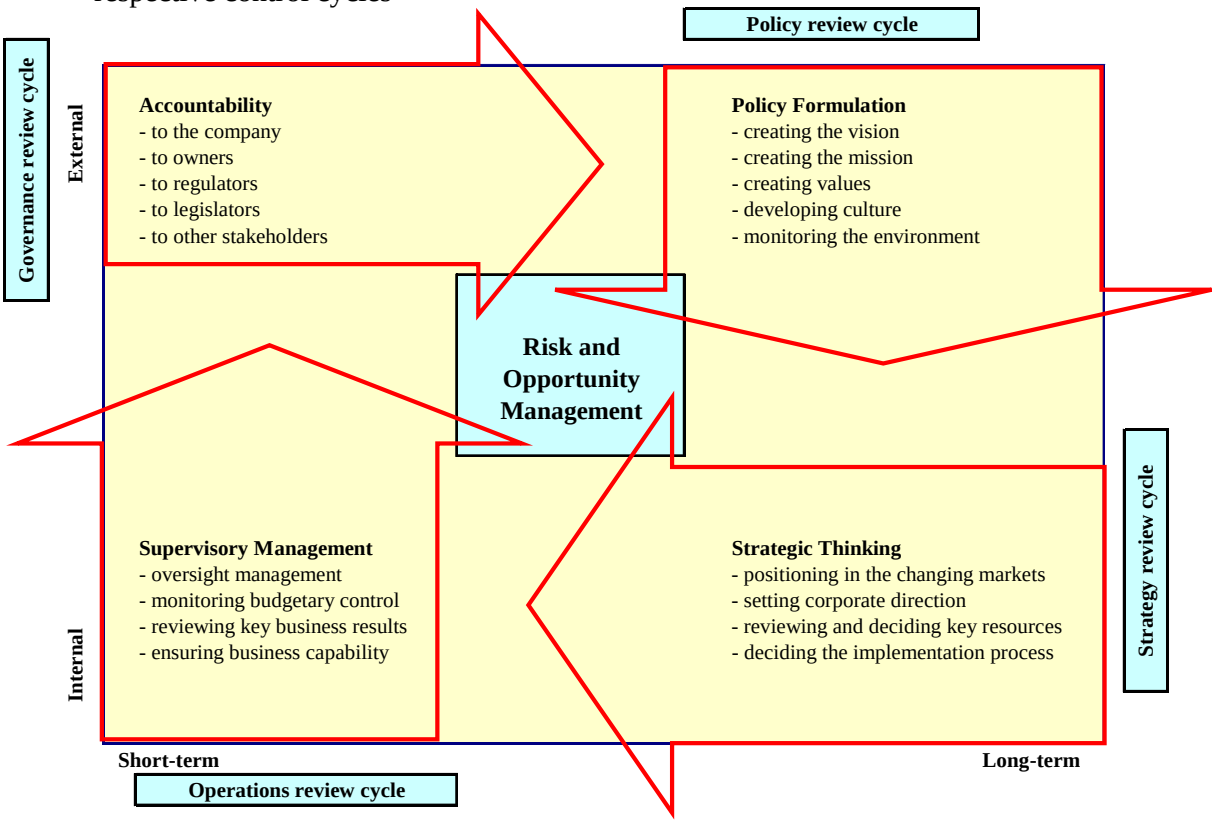
4.9 Standard & Poor's[22] suggested that ERM as a rating criterion has added weight for insurers as taking risk and risk management are core insurance business activities. Companies are viewed as having excellent, strong, adequate or weak ERM relative to

the risks of the company, its ability to absorb risks and the complexity of the risks. ERM classifications relate to sustained capabilities to identify, measure and manage risk exposures and losses within the company's predetermined tolerance guidelines; evidence of the enterprise's practice of optimizing risk adjusted returns; and the extent to which risk and risk management are important considerations in corporate decision making.

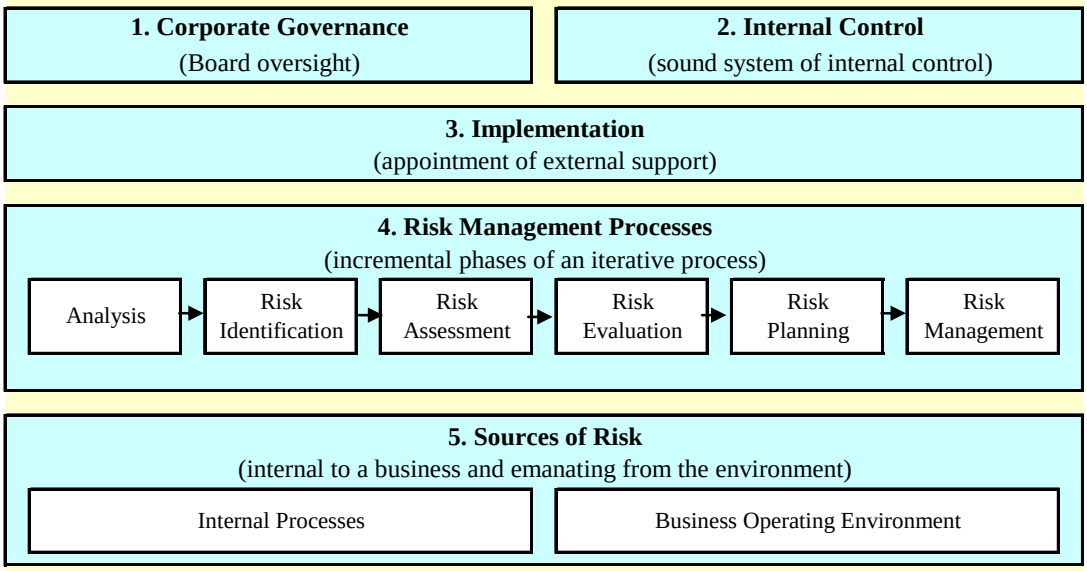
4.10 ERM is viewed as a lead indicator, where a weakening of standards is an indicator of future problems. In particular, excellent ERM insurers need to be mentally prepared for soft markets (e.g., credit markets, equity markets, interest markets and insurance markets) and understand the implications for risk limits and risk/reward standards in the face of the softening of each of their relevant risk markets.

4.11 According to Chapman,[2] the enterprise risk management process is defined as: ERM is a systematic process, embedded in a company's system of internal control (spanning all business activity), to satisfy policies effected by its board of directors, aimed at fulfilling its business objectives and safeguarding both the shareholder's investment and the company's assets. The purpose of this process is to manage and effectively control risk appropriately (without stifling entrepreneurial endeavour) within the company's overall risk appetite. The process reflects the nature of risk, which does not respect artificial departmental boundaries and manages the interdependencies between the risks. Additionally, the process is accomplished through regular reviews, which are modified when necessary to reflect the continually evolving business environment.

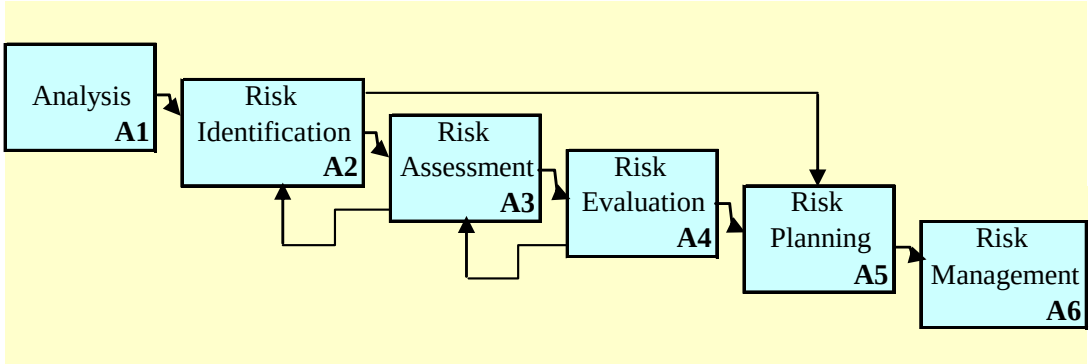
4.12 Chapman [2] describes the process of ERM, which is essentially one of risk and opportunity management, as impinging "on the 4 main functions of Boards; policy formulation, strategic thinking, supervisory management and accountability and their respective control cycles"



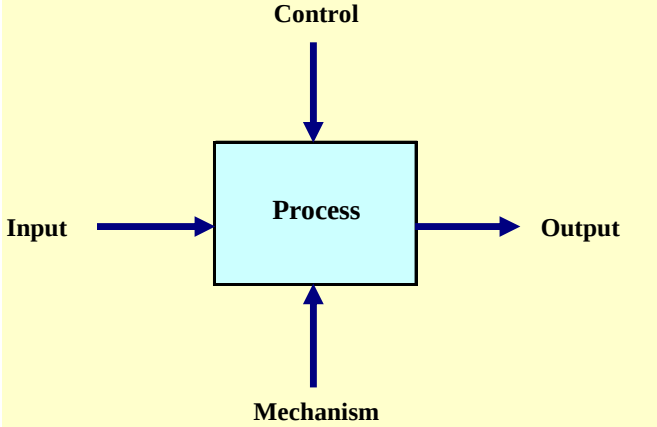
Source: Adapted from Garratt [9].



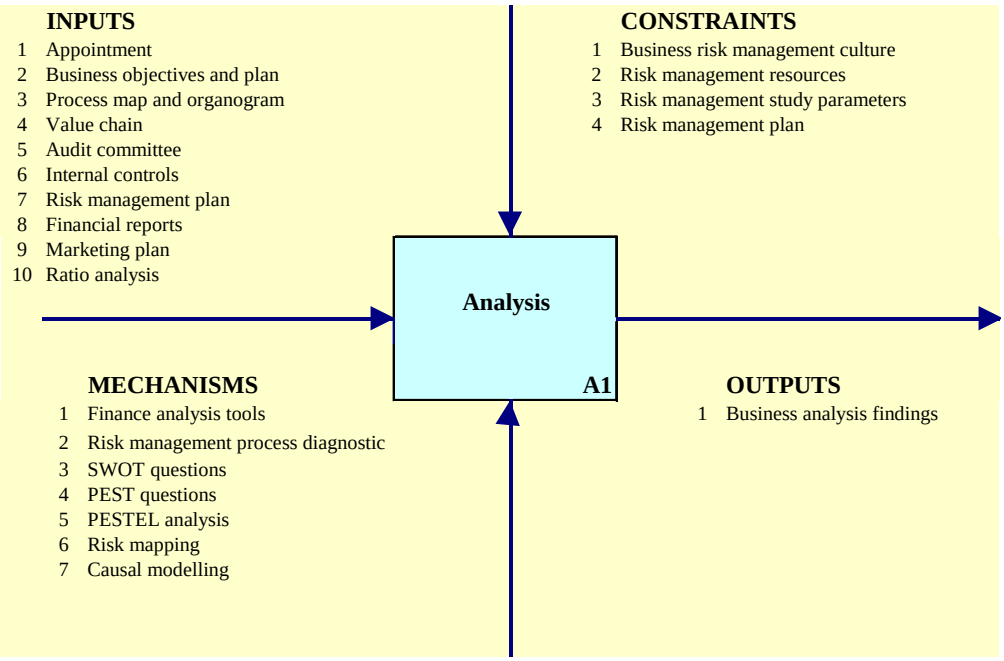
4.13 According to Chapman,[2] the risk management process is a six-stage iterative process:



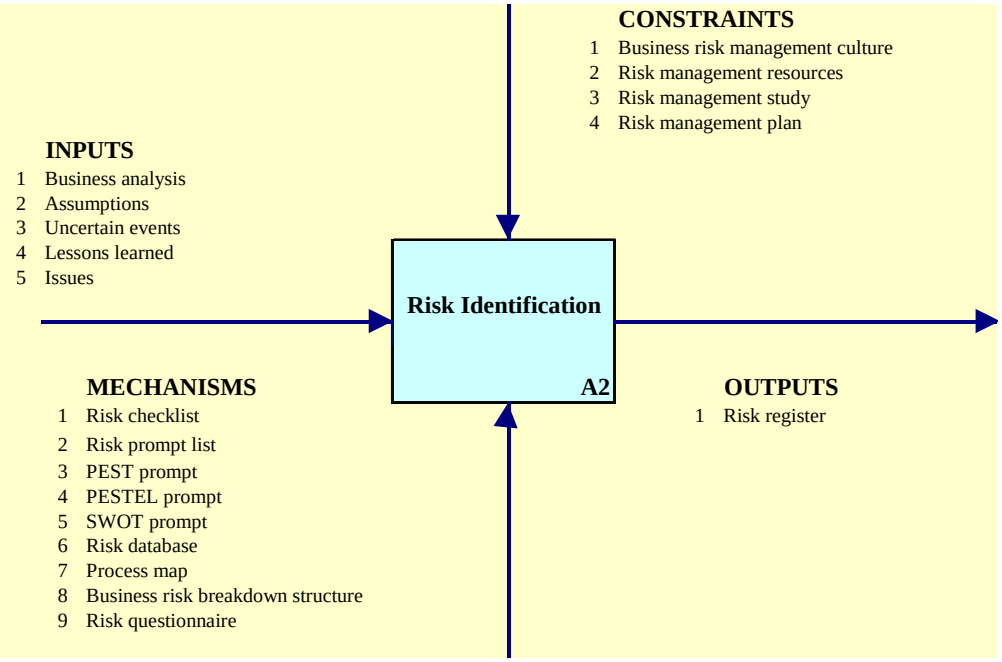
4.14 Each of the six risk management processes has inputs, outputs, control and mechanisms. The modes of data connectivity can be charted using the Integration Definition for Function Modelling (IDEFO) process mapping technique.[2]



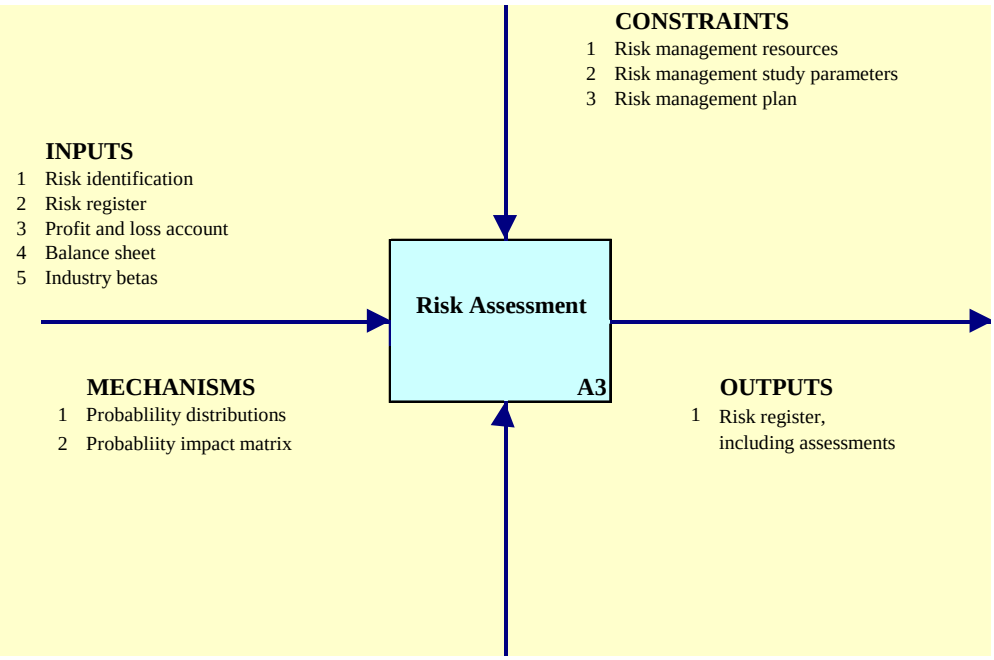
4.15 The first iterative step is Analysis, whereby one gains an understanding of the business as a whole and the specific business activity, process or project, forming the subject of the ERM study. It provides the ERM foundation for everything that follows, so how well it is completed will determine the quality of the remainder of the risk management process.



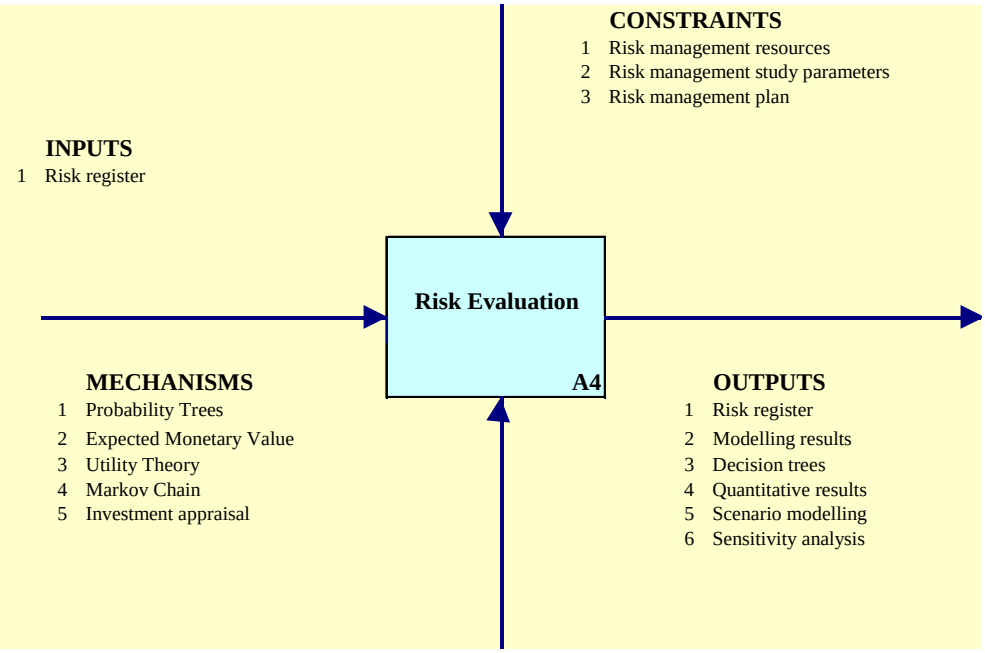
4.16 The second iterative step is Risk Identification, which is a transformation process whereby one generates a series of risks and opportunities that are then recorded on the risk register. As it is a process within ERM, it is useful to adopt the philosophy of process mapping, whereby one process exists to make a contribution to one of more of the ERM goals.



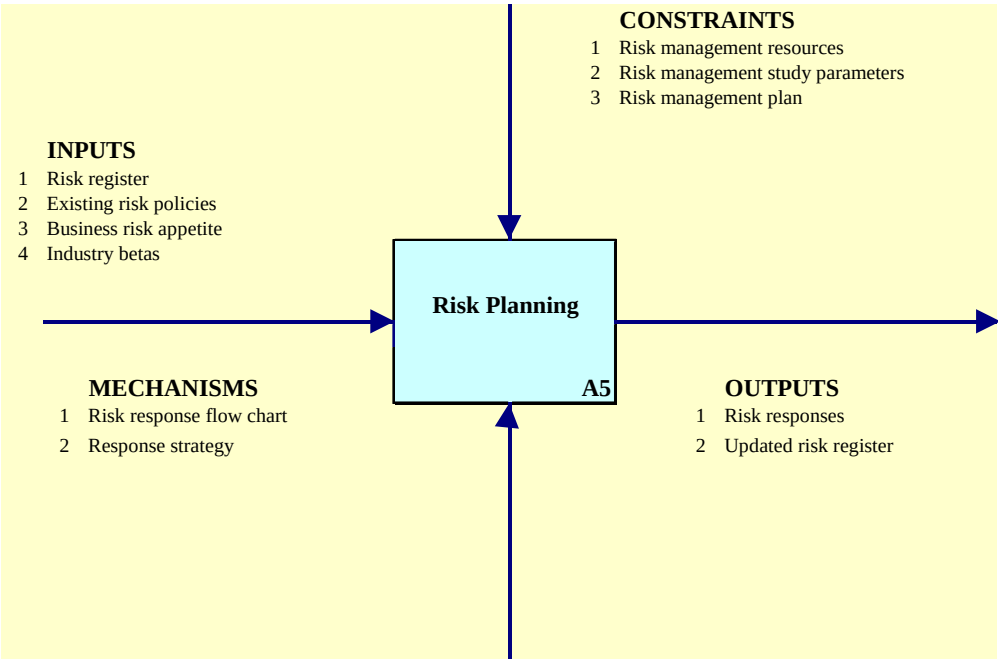
4.17 The third iterative step is Risk Assessment, which provides a judgement of the likelihood and impact of the risks and opportunities identified, should they materialize. This process provides an order of the potential "pain" or "gain" associated with risk and opportunity. Even when there is considerable uncertainty, quantitative techniques provide a useful framework.



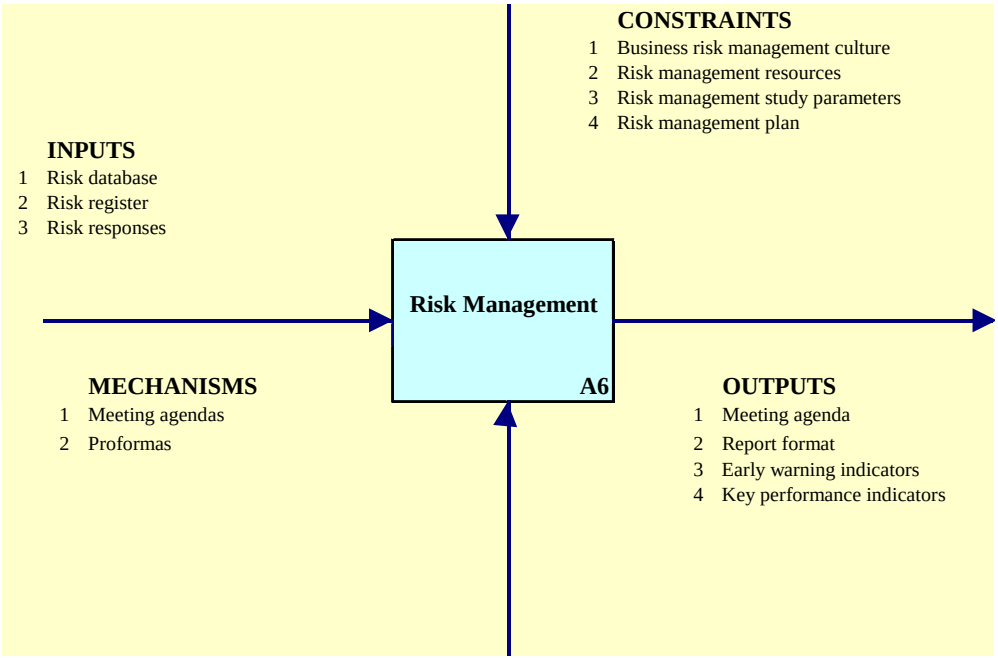
4.18 The fourth iterative step is Risk Evaluation, which involves evaluation of the results of the risk assessment stage and includes an understanding of the inter-relationships between the individual risks and the opportunities. It provides an iterative process of challenge and refinement of the information captured during the risk assessment process.



4.19 The fifth iterative step is Risk Planning, which combines the risks and opportunities together and considers their combined effect. It uses all of the preceding ERM processes to produce responses and specific action plans to address the risks and opportunities identified to secure the business objectives; it is essential to ensure these plans are prepared, considered, refined and implemented.



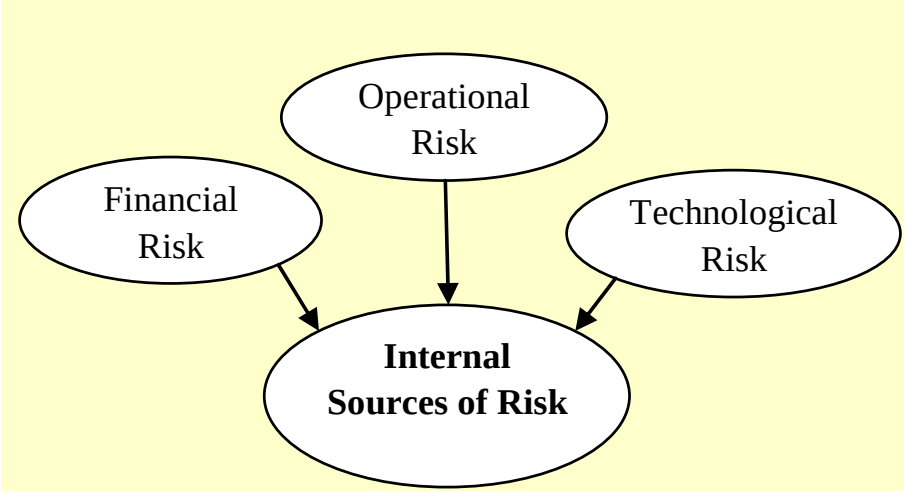
4.20 The sixth iterative step is Risk Management, which consolidates all the previous steps. In fact, all of the six steps are iterative and it is frequently necessary to revisit earlier steps when more information becomes available or circumstances change, as each stage relies upon inputs from the earlier stages. All risk management process maps should state a need to ensure that the risk responses to identified risks are implemented and that the implementation is proactively managed.

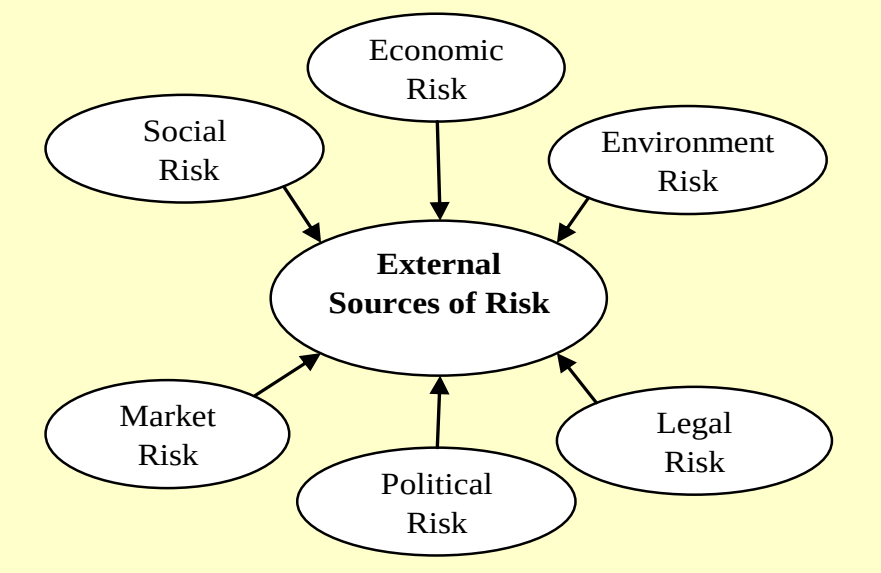


4.21 Chapman develops an ERM corporate governance model that has five elements:2

(a) Corporate governance (Board oversight)
(b) Internal control (sound system of internal control)
(c) Implementation (appointment of external support)
(d) Risk management process (incremental phases of a six-stage iterative process).
(e) Sources of risk (internal and external).

4.22 Chapman also categorizes the micro and macro influences that can be sources of risk and opportunity and shape business performance (i.e., internal and external sources of risk). [2]





5. CRO and ERM for Health Care Insurance

5.1 ERM Frameworks for Expecting the Unexpected

Health care insurance practitioners need to take a necessarily broad and long view. The ERM frameworks, processes and dedicated risk analysis and quantification need to be dynamic, recognizing that catastrophic risks may also sometimes emerge from ambiguous threats.

According to Roberto,[20] "The most dangerous situations arise when a warning sign is ambiguous and the event's potential for causing a company harm is unclear. In these cases, managers tend to actively ignore or discount the risk and take a wait-and-see attitude. Such an approach can be catastrophic."

According to McNamee,[13] "Most of us are too specialized or focused and so accustomed to our environment that we cannot break out of our current thinking patterns to think broadly about our risks. And it is usually the risk that 'no one ever thought of' that causes the most harm. Although an outsider (e.g., a consultant) often is used to facilitate this broader thinking, the organization must eventually learn to do it for itself. It is like learning to ask dumb questions, especially 'How?' and 'Why?'"

According to Rumsfeld,[21] "Reports that say that something hasn't happened are always interesting to me, because as we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns—the ones we don't know we don't know. And if one looks throughout the history of our country and other free countries, it is the latter category that tend to be the difficult ones."

ERM principles can help actuaries to manage health care insurance business risks in a world of uncertainty and to prepare for unexpected events, where equilibrium is an expedient myth that has in the past fooled many European health care insurers. We tend to post-rationalize the unexpected events, due to the limitations of inductive logic based on assumptions of "normality," and so severely underestimate the possibility of unexpected events.

In order to illustrate the limitations of inductive logic, consider the case of the "black swan." According to Taleb,[23,24] a black swan can be defined as a highly improbable incident or event with three principal characteristics: (a) its unpredictability, (b) its massive impact; and, after it has happened, (c) our desire to make it appear less random and more predictable than it was. For example, before the discovery of Australia, people in the Old World were convinced that all swans were white, an unassailable belief as it seemed to be completely confirmed by empirical evidence. The sighting of the first black swan illustrates a severe limitation to our learning from observations or experience and the fragility of our knowledge. One single observation can invalidate a general statement derived from millennia of confirmatory sightings of millions of white swans.

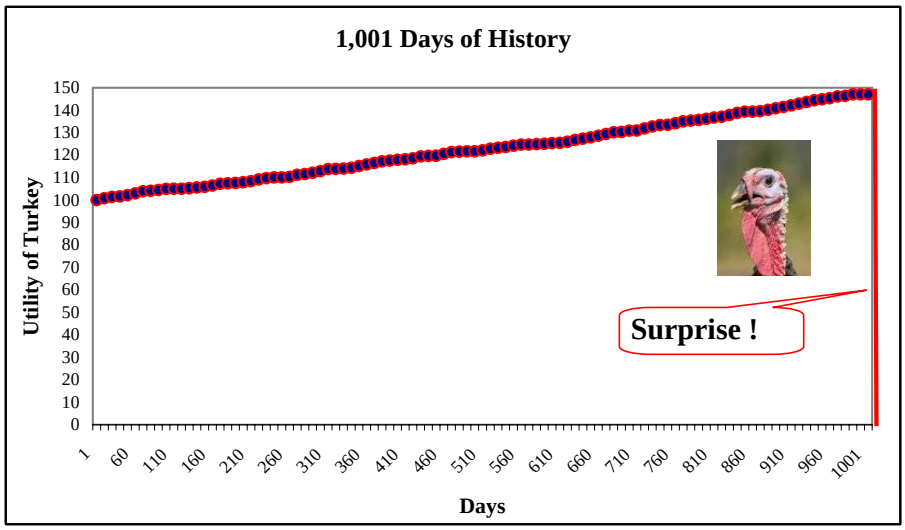
Black Swan logic makes what you do not know far more relevant than what you do know. Many black swans can be exacerbated by their being unexpected. For example, consider the terrorist attack of Sept. 11, 2001. According to Taleb,[23,24] had the risk been reasonably conceivable on Sept. 10, 2001, it would not have happened. If such a possibility

were deemed worthy of attention, fighter planes would have circled the sky above the twin towers and airplanes would have had locked and bulletproof doors, and the attack would not have taken place.

According to Taleb,[24] in the "mediocristan" world of Gaussian normality and equilibrium, one thinks of ordinary fluctuations as the dominant source of randomness, with jumps as an afterthought. Everything needs to fit some general socioeconomic model; people frown upon descriptive models. Mediocristan practitioners seek to be perfectly right in a narrow model, under precise assumptions. They use top-down models and rely on scientific papers and go from books to practice. They are inspired by physics and rely on abstract mathematics.

On the other hand, in the "extremistan" world of skeptical empiricists, one thinks of black swans as the dominant source of randomness. They use bottom-up models and minimal theory, believing that theorizing is a disease that should be resisted. They do not believe that one can easily compute probabilities. They develop intuitions from practice and go from empirical observations to books. They are not inspired by any science and use messy mathematics and computational methods.[24]

Consider the case of a turkey that is fed every day, an illustration of the "problem of inductive knowledge." Every single feeding will firm up the bird's belief that it is the general rule of life to be fed by friendly members of the human race "looking out for its best interests," as a politician might say. On the afternoon of the Wednesday before Thanksgiving, something unexpected will happen to the turkey. It will incur a revision of belief, as illustrated below.



5.2 Risk and Opportunity Management

A holistic ERM approach based on risk and opportunity management can increase customer value and facilitate a sustainable supplementary PMI business model. Upside risks as well as downside risks need to be appreciated and catered for within the ERM framework implementation. Unrealistic assessment and dissemination of upside risks can create

unrealistic stakeholder expectations and a false expectation of continuing good news, which will be disappointed.

The CRO may start with ERM framework implementation (e.g., COSO,[5] Chapman[2]), following which they can commence innovation portfolio management. They will need to balance the risks and rewards, which may require the embedding of ERM within innovation portfolio screening tools. A risk matrix can be used to obtain a clearer picture of how the firm's planned projects fall on the spectrum of risk. The risk matrix is the output from an experienced, multidisciplinary team involving senior managers with a strategic focus and authority for financial resource allocation and the participation of team members delivering specific projects.

The risk matrix is a precursor to other tools used to explore an innovation product concept, its potential market and the company's capabilities and competition. Each concept in the health insurer's innovation portfolio should be assessed by its development team using the R-W-W screening system outlined below.[6] A definite **yes** or **no** answer to the "heading" questions in the first column (i.e.: "Is it real?", "Can we win?", "Is it worth doing?") would require further investigation for robust answers to the supporting questions in the second and third columns.

The CRO needs to embed ERM principles within the resolution of each of the "heading" questions (i.e. "Is it real?", "Can we win?", "Is it worth doing?"), in order to screen the innovation portfolio. The end result is to try to ensure that the proposed innovation portfolio is robust and is aligned to the risk appetite of the company, the ERM framework and the corporate strategy. The "Is it real?" question includes an evaluation of legal, social and environmental acceptability (e.g., the insurer's relationship with client and data protection issues). The question "Can we win?" and assessing ability to compete might involve the consideration of the people and process implications attached to the delivery of a new service or product offer.

The CRO will also need to consider the implications of innovation screening questions for ERM requirements at later stages (e.g., development, implementation, launch and post-launch). The answer to the "Is it worth doing?" question involves a consideration of both "Will the product be profitable at an acceptable risk?" and "Does launching the product make strategic sense?" The evaluation of the capital allocation, risk appetite and opportunity management emerges from applying an ERM perspective to the "heading" questions of "Is it real?" and "Can we win?"

5.3 R-W-W Screening Tools

The R-W-W screening tools,[6] aligned to a robust ERM framework, can help the CRO to move firmly into the opportunity management arena. ERM should underpin balancing the risks and rewards inherent in the innovation portfolio that may involve cross border insurance operations and relatively complex health care service offers. The ERM framework needs to be inclusive, involving insurers, outsourcers, medical service providers, regulatory and government health care policy advisors and independent, external input. A holistic view is required, taking account of both quantitative and qualitative risk measures, if the CRO is going to be in position to effectively manage a business of uncertainty and complexity, such as a health insurer.

The link between ERM and the corporate strategy depends on the strategic direction, the corporate mission, the business objectives, the risk appetite and its communication to the key stakeholders, which may include the shareholders, the rating agencies, the investment analysts, the management and the employees, and of course the regulatory authorities.

Risk averse health care insurers will have a small risk appetite and may want to follow the market leaders, taking as few risks as possible. For them, the risk quantification measures from a risk control environment, erring on the side of caution, will be their mantra. On the other hand, entrepreneurial market leaders with new marketspace ambitions will have a large risk appetite and may focus on using ERM for opportunity management. Whatever the risk appetite of the insurer, the CRO needs to implement and manage a practical ERM framework that is aligned to the agreed corporate strategy and the associated business plans. This will require the effective management of risk and reward in a business of uncertainty, dealing with the upside risks as well as the downside risks.

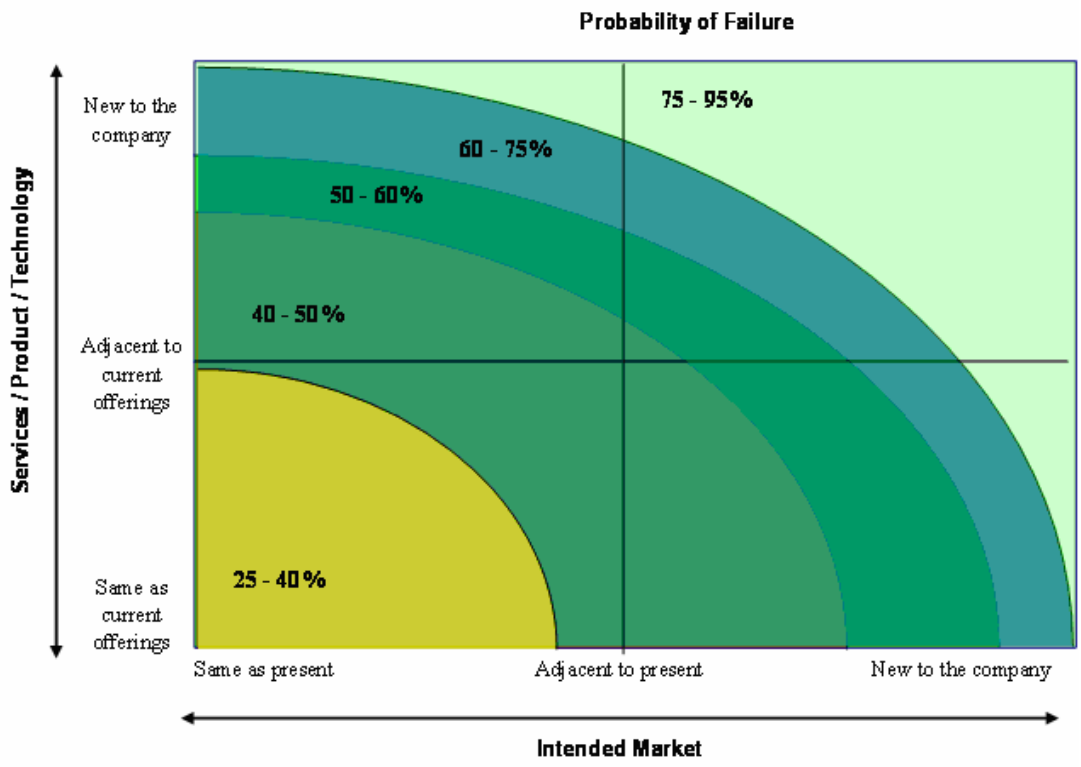
In order to illustrate a practical ERM framework under a stress scenario, consider the idealized case of a supplementary PMI provider with a large risk appetite and market leadership ambitions. This company has an entrepreneurial CEO with many new and insightful ideas, and these ideas have been formulated as an innovation portfolio. The corporate strategy is aligned to the innovation portfolio, and the key stakeholders have been persuaded. How then is the CRO, who may be an actuary, going to support the CEO and facilitate the prudential management of the general insurance company? How is the ERM framework going to facilitate risk and opportunity management?

The CRO might start with the design and implementation of a standard ERM framework, such as COSO [5] or Chapman [2] (e.g., the six iterative risk management steps, the corporate governance and oversight issues, the internal controls, the internal and external sources of risk) and then be in a position to tackle the effective risk management of the innovation portfolio.

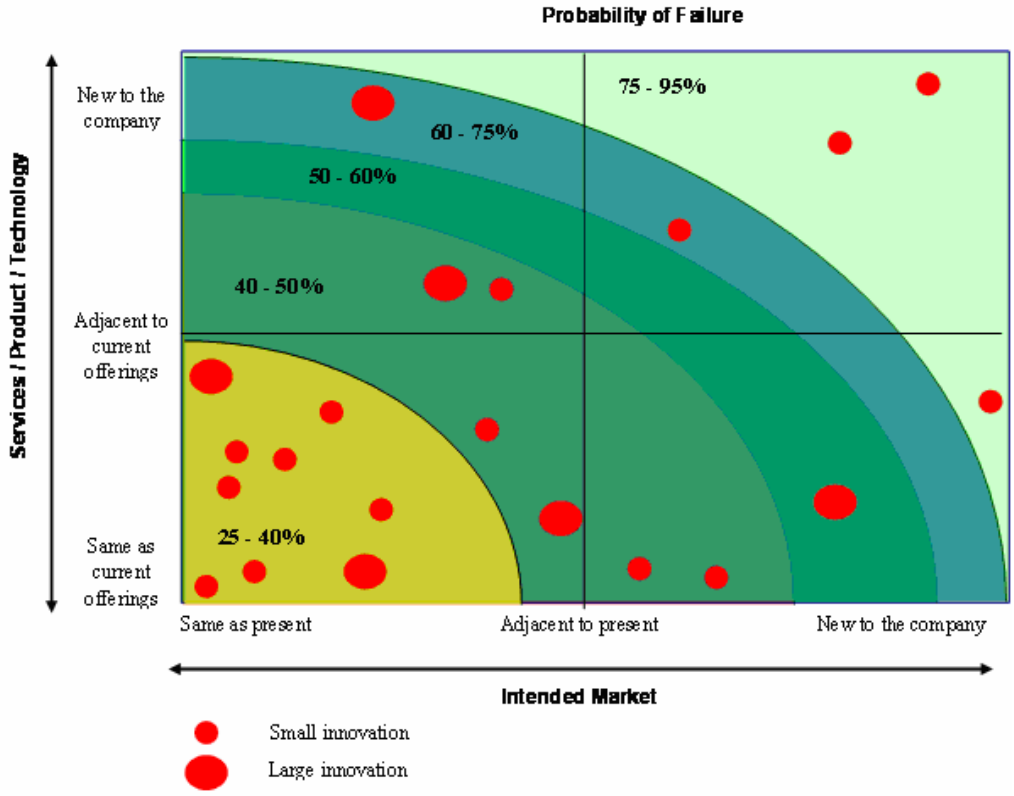
5.4 Case Study using R-W-W Screening Tools

The CRO has adopted the Chapman model[2] (as this seemed to be more aligned with the agreed corporate strategy) and started to deal with the effective risk management of the innovation portfolio and the road towards the achievement of the corporate strategy. The balancing of the risks and rewards inherent in the innovation portfolio requires the adoption of a risk matrix, in order to obtain a clearer picture of how its planned projects fall on the spectrum of risk.

The risk matrix is the output from an experienced, multidisciplinary team involving senior managers with a strategic focus and authority for financial resource allocation and the participation of team members delivering specific projects. Individual team members are required to position products on the matrix and to provide a rationale to support their risk matrix. Differences and divergences across the team are used to help initiate a continuous process of evaluating the company's mix of projects and their alignment with strategy and risk appetite. The risk matrix model, with probability bands indicating the probability of failure, is illustrated below.



The innovation portfolio can then be plotted on the risk matrix, as illustrated below. Some of the product/service/technology innovations are categorized as relatively small innovations, whereas others are judged to be relatively large innovations.



The positioning of each innovation product/service on the risk matrix is based on a scoring system, generally using the ordinal scales 1 to 5. Score 1 represents "same as present" whereas 5 represents "entirely different from our present market, or is unknown." In order to calculate the **"x"** and "**y**" coordinates of the product innovation in the risk matrix, one needs to score each of the attributes of the "Intended Market" and "Product/Service/Technology" matrices, and then accumulate the scores.

The next section includes a template to derive scores for the "Intended Market" and "Product/Service/Technology" matrices. The template is a useful starting point; however, the CRO and team members will need to evaluate and improve the template questions. Nothing about the process should be static; new team members need to be substituted, team member roles need to be varied, and the templates themselves need to be challenged, evaluated and continuously improved. A "starting point" template to score the familiarity and proximity of the "Intended Market" is shown below. Adding the six scores from the "Intended Market" attributes (each scored from 1 to 5) gives the "**x**" coordinate.

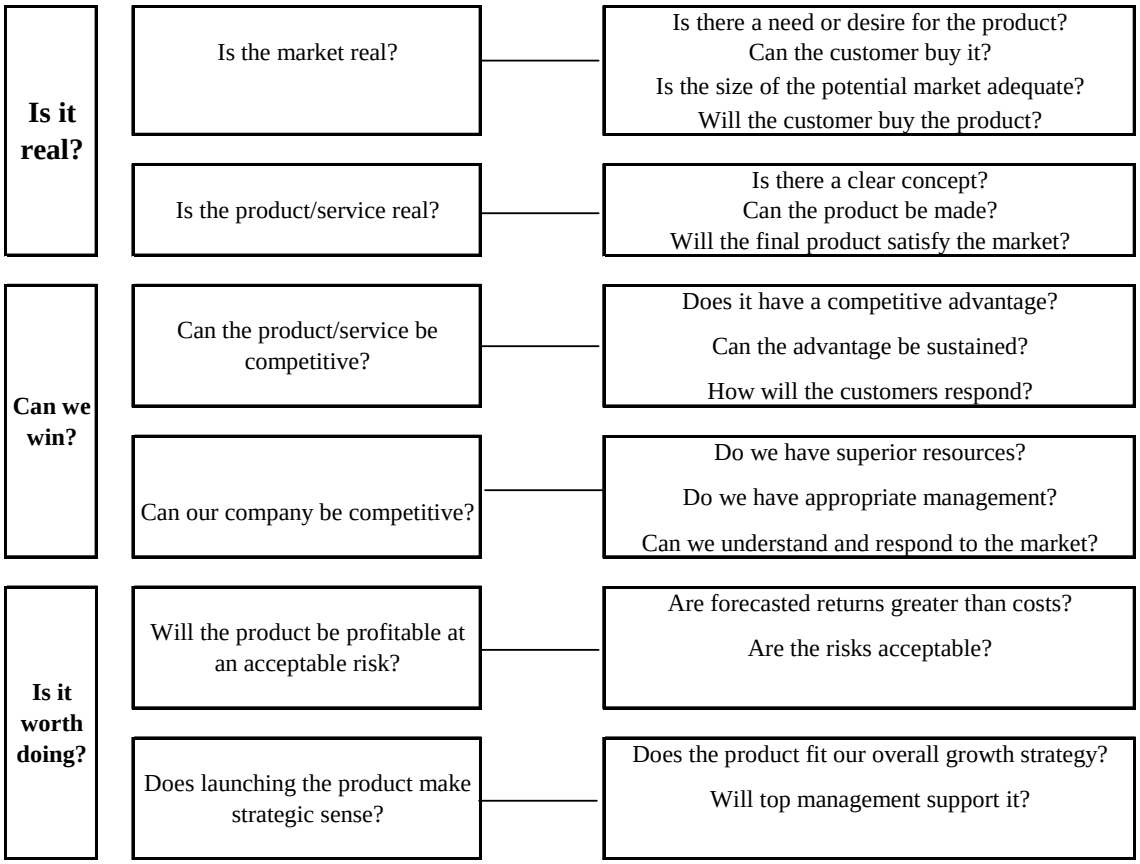
	Intended Market					
	… be the same as in our present market		… partially overlap with our present market		… be entirely different form from our present market or are unknown	
Customers' behaviour and decision making processes will ..	1	2	3	4	5	
Our distribution and sales activities will …	1	2	3	4	5	
The competitive set (incumbents or potential entrants) will …	1	2	3	4	5	
	… highly relevant		… somewhat relevant		... not at all relevant	
Our brand promise is …	1	2	3	4	5	
Our current customer relationships are …	1	2	3	4	5	
Our knowledge of competitors' behaviour and intentions is …	1	2	3	4	5	
					TOTAL (**x**-axis coordinate)	

Adding the seven scores from the "Product/Service/Technology" attributes described in the template (each scored from 1 to 5) gives the "**y**" coordinate.

	Product / Service / Technology					
	… is fully applicable		… will require significant adaptation		… is not applicable	
Our current development capability …	1	2	3	4	5	
Our technology competency …	1	2	3	4	5	
Our intellectual property protection is …	1	2	3	4	5	
Our manufacturing, service and CRM delivery system …	1	2	3	4	5	
	… are identical to those from our current offerings		… overlap somewhat with those from our current offerings		… completely differ from those from our current offerings	
The required knowledge and science bases ..	1	2	3	4	5	
The necessary product and service functions …	1	2	3	4	5	
The expected quality standards …	1	2	3	4	5	
					TOTAL (**y**-axis coordinate)	

The risk matrix is a precursor to other tools used to explore the product concept, its potential market and the company's capabilities and competition. Each product concept in the general insurance company's innovation portfolio should be assessed by its development team using the R-W-W screening system below. A definite yes or no answer to the first column (i.e.: "Is it real?", "Can we win?", "Is it worth doing?") would require further investigation for robust answers to the supporting questions in the second and third columns.

Screening for Success with R-W-W



The CRO needs to embed the selected ERM framework and principles within the resolution of each of the three "heading" questions, in order to screen (via filtering and testing) the company's innovation portfolio. The end result is to try to ensure that the proposed innovation portfolio is robust and is aligned to the risk appetite of the company, the ERM framework and the corporate strategy.

The "Is it real?" question includes evaluating whether there is a clear concept. For example, this might include an evaluation of legal, social and environmental acceptability (e.g., the insurer's relationship with client and data protection issues).

The question "Can we win?" and assessing ability to compete might involve the consideration of the people and process implications attached to the delivery of a new service or product offer. The CRO will also need to consider the implications of innovation screening questions for ERM requirements at later stages (e.g. development, implementation, launch and post-launch).

The answer to the "Is it worth doing?" question involves a consideration of both "Will the product be profitable at an acceptable risk?" and "Does launching the product make strategic sense?" The evaluation of the capital allocation, risk appetite and opportunity management emerges from applying an ERM perspective to the "heading" questions "Is it real?" and "Can we win?"

ERM in the context of innovation screening needs to be positioned as part of a continuous improvement and learning process, rather just a "go/no-go" decision. ERM has the potential to help develop the health care insurer's capability to move from risk control to opportunity management. For those with an innovation portfolio, the screening tools outlined above (which can be aligned to a robust ERM framework) can help the CRO to be impactful into the opportunity management arena.

Finally, the success of ERM depends on people and teamwork, rather than on good ideas from the top management team. ERM needs to be embedded throughout the health care insurance organization, with the underlying message that "we are all risk managers here."

6. Conclusions

6.1. The supplementary model, in particular, has potential applications across Europe to augment a core public health care system. Supplementary insurers may also benefit from the development of cross border, multinational and expatriate community opportunities due to increased mobility of labor and residence around EU/EEA member states. Supplementary insurers may further be able to exploit gaps in state provision and in customer segments served by the public sector. However, insurers may need to adopt a combined strategy of cost and value differentiation to address inefficiencies in the relatively unsophisticated PMI service packages, high claim incidence amongst mature group PMI portfolios, high levels of non-consumption amongst individual personal business and the impact of an aging population.

6.2. Value innovation theory seeks to raise customer value from eliminating and reducing the factors insurers compete on and creating uncontested new marketspace through the creation of valued new factors. It can be characterized as the simultaneous pursuit of product and service differentiation and low cost. For value innovators, a management tool to help achieve the streamlining and cost innovations required will be to review the "virtual value chains" that should be developed.

6.3. The European voluntary PMI marketplace perceives data and information as supporting the physical value chain (to a greater or lesser degree depending on the individual country market). Insurers do not typically exploit the value of digital assets and the low cost of information production. Exploiting digital assets would create opportunities for insurers to offer digital, renewable products and services and increase competitiveness in relation to insurers charging for the consumption of underlying materials without the benefits of digital data.

6.4. The creation of an information underlay and a virtual value chain has the potential to create personalized product and service offers and to utilize health care services and data to support new customer segments e.g. older people supported via telemedicine services. These offers can be innovative and profitable due to the combination of relatively low unit costs for products and services and the ability to modify customer behavior. Realizing the value of digital assets can create a new "marketspace."

6.5. Holistic ERM allied to risk and opportunity management can potentially increase customer value and lead to a sustainable supplementary PMI business model. ERM should underpin balancing the risks and rewards inherent in the innovation portfolio which may involve cross border insurance operations and relatively complex healthcare service offers. The ERM framework needs to be inclusive, involving insurers, outsourcers, medical service providers, regulatory and government health care policy advisors and independent, external input.

6.6. The CRO should start with the design and implementation of a standard ERM framework, such as COSO or the Chapman "risk and opportunity model." Having covered the core ERM implementation issues, including the six iterative risk management steps (if we adopt the base framework outlined by Chapman), considered the corporate governance and oversight issues, the internal controls, the internal and external sources of risk, the CRO can then begin to deal with the effective risk management of the innovation portfolio and the road towards the achievement of the corporate strategy.

6.7. The CRO will need to balance the risks and rewards inherent in the innovation portfolio. ERM needs to be embedded within innovation portfolio screening tools such as a risk matrix which plots a firm's planned projects on a spectrum of risk. The essential input to this project is an experienced, multidisciplinary team involving senior managers with a strategic focus and authority for financial resource allocation and the participation of team members delivering specific projects. The risk matrix is a pre-cursor to other tools used to explore an innovation product concept, its potential market and the company's capabilities and competition.

6.8. Each concept in the health insurer's innovation portfolio should be assessed by its development team using the R-W-W screening system. The CRO needs to embed the selected ERM framework and principles within the resolution of each of the three "heading" questions, in order to screen the company's innovation portfolio. The end result is to try to ensure that the proposed innovation portfolio is robust and is aligned to the risk appetite of the company, the ERM framework and the corporate strategy.

6.9. Health care insurers should consider encompassing the total customer experience rather than simply focusing on externalizations of customer intimacy and loyalty such as customer loyalty cards and programs. Insurance product strategy needs to encompass both technical quality "**what the customer gets**" and functional quality "**how he gets it**."[10] Health care insurance product differentiation and innovation is required to retain loyal/knowledgeable customers, encourage repeat purchases maintain/increase market share whilst copies appear, the competition intensifies and the segments drift apart.

6.10. Product concepts should be positioned as “options” on the future rather than “winners and losers.” The screening process should derive and evolve from the direct input of team members to avoid the risk of “transplant rejection” where a process is grafted on from external or internal superiors and doesn’t share the same DNA as the adopters. Embedding ERM within the organization and ensuring that it is part of the DNA of every strategic and operational decision hinges on people and culture. This includes connecting with a diverse stakeholder community. ERM health care insurance practitioners need to build a culture and business processes which value learning from the people:

> Learn from the people
> Plan with the people
> Begin with what they have
> Build on what they know
> Of the best leaders
> When the task is accomplished
> The people all remark
> We have done it ourselves
>
> **Source:** Taoist sage, Lao-tzu.

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