

# Service Ecosystem as a Lens for Collaborative Risk Management and Sustainable Value Creation

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## Introduction

A collision course often unfolds between risk management and value creation because the former is seen as 'the department of no' (in the words of Nason, 2017) instead of a competence that could support doing things better and with risk intelligence – i.e., that could enhance value creation. Just as our understanding of value creation has broadened from product(ion) oriented view into customer- and market orientation (e.g., Narver & Slater, 1990), risk management has evolved in a parallel manner from a siloed control function to an organization-spanning process supporting strategic planning. Still, contemporary value creation and risk management both face challenges stemming from the increasing complexity of business environments (Andersen & Young, 2022). For instance, climate risks, supply chain risks and health risks prove virtually impossible for any single organization to resolve on its own. They serve as examples of risk management areas that emphasize complexity and the need for collaboration for systemic value creation. Our key claim is that it has become crucial to integrate collaborative risk management and value creation conceptually under systemic service management. Hence, the purpose of this paper is to integrate risk management and value creation perspectives to understand inter-organizational collaboration for managing risk in complex environments. Towards this end, we integrate earlier research focusing on risk management, value creation and service ecosystems. To illustrate our thinking, we apply case study methodology (Dooley, 2002; Simons, 2009) in the context of occupational health risk management.

## 1. Literature Review

Our theoretical background can be traced into several streams of literature. We begin by examining the developments in risk management that have shifted the focus from individual risks to holistic view including intra- and interorgani-

zational risks and their management. Then, we turn our attention to service ecosystems, discussing them as a lens for understanding not only systems-oriented value creation but also the interactions and exchanges that entail risk management aspects between organizations.

*a. Developments in Risk Management*

The development of risk management can be characterized with the transitions from traditional risk management (TRM) to enterprise risk management (ERM) and strategic risk management (SRM) (Andersen & Sax, 2020; Godfrey et al., 2020). Importantly, these developments remain present and of value, however; they complement each other. Traditional risk management (TRM) process begins with identifying risks and assessing their probability and significance. Risk management process also entails risk handling, i.e., how to avoid, reduce, transfer, or accept the risk. Upon implementation, risk-monitoring (including reporting and communication) follows, contributing to the ongoing process. With some exceptions such as using insurance for risk transfer, the TRM process is often described as a rather closed loop within the focal organization. Known risks with established measurement techniques prevail in the realms of TRM. Hence, TRM requires robust historical data and analytics for its measurement and reporting (Aven, 2020). Although TRM is a valid approach to manage risks for many organizations, some critique is evident both in research as well as risk management practice (e.g., Andersen & Young, 2022; Aven, 2020). One key antecedent is the complexity that challenges the prerequisites of TRM. Probabilistic models are ill suited to highly complex environments, which bring not only quantifiable known risks but also uncertainty and even 'unknown unknowns' (Andersen & Sax, 2020). In addition, as Aven (2020) shows, even the known risks may be weighted very differently, depending on the values and goals of the decision-makers and the focal organization. A partial solution for these challenges can be found in Enterprise risk management (ERM) and Strategic risk management (SRM) approaches that extend the TRM focus to cover virtually all risks, and the uncertainty as well. This necessitates breaking free from the risk management silos to adopt an enterprise-wide approach looking across the entire portfolio of risks spanning all functions, business units, and divisions. Risk management and strategic planning join forces, highlighting a forward-looking approach to data and analytics considering risk and uncertainty. Not only the definitions of risk, but also the risk measures need to be considered from various perspectives.

The past decade has witnessed ERM models' expansion into frameworks designed for strategic risk management. This endeavor is visible in how the leading

ERM frameworks ISO:3100 and COSO-ERM define themselves. ISO3100:2018 sets 'value creation and protection' in the focus of risk management principles, and COSO-ERM:2017 emphasizes the 'culture, capabilities, and practices, integrated with strategy setting and performance, that organizations rely on to manage risk in creating, preserving, and realizing value' (see e.g. Andersen & Sax, 2020, p. 40). Today's ERM makes a statement that is pivotal from our standpoint: it explicitly anchors risk management in value creation and, thereby, in protecting and/or creating competitive advantage. This represents abandoning a narrower definition under which risk is conceived of as purely a downside. Identifying risks as opportunities affords a positive slant whereby preventing harm is not the only route to value: risk management also contributes to doing the right things right, striving for reliability and efficiency at the operational level (Luís et al., 2021). Adopting this kind of approach to risk management resonates well with other management disciplines such as lean, where value creation, maximizing quality and productivity, minimizing waste and risk, and holistic view dominate.

On a more strategic stance, the recent interest on SRM further emphasizes how value is defined through maintaining and renewing competitive advantage. Godfrey et al. (2020, p. 33) define SRM as 'A set of principles, processes, teams, and tools that allow firms to manage strategic risks, which are those uncertainties, events, and exposures that create threats to – or opportunities to expand – their core competitive advantages'. The strategic risks may emerge also due to exposures originated from other risk categories, as conditions change, and they may originate both from external as well as internal exposures (Andersen & Sax, 2020). Relative to early definitions of ERM, the emphasis here is on understanding possible scenarios in complex and uncertain environments for identifying exposures that may result in significant downside and upside risks. Importantly, SRM regards the exposures as dynamic: organizations are active actors able to influence on the risk scenarios. SRM then, supports organizations in developing resilience, suggesting a leadership lens, through which complexity can be tackled (Andersen & Young, 2022).

Embracing the evolution of risk management in light of the crucial task of preserving and creating value in complex, uncertain environments pose a major challenge for organizations. Case after case attests that the resources and competencies needed – related to data and analytics but also far more – are beyond the reach of any single organization. As Andersen and Young (2022) explain, whereas ERM played a key role in formalising a systemic approach to collaboration within the organization, the next challenge is to carry this forward to modelling and then implementing something broader-based, 'collaborative risk leader-

ship'. Their view entails both internal perspective to adjacent stakeholder agents (e.g., suppliers, buyers, and lenders) as well as external perspective comprising the public or quasi-public agents alongside private sector agents. As noted above, both internal and external perspective to collaborative risk management practices can be seen in several risk contexts such as climate risks, supply chain risks and health risks. Surprising is, however, the paucity of research focusing on collaborative risk management practices between organizations. There are indications that interest has recently begun to coalesce especially in the field of supply-chain management, for which the systematic literature review by Friday and colleagues (2018, p. 238) offers the starting point of a definition for collaborative risk management – 'an integrative process based on mutual commitment between firms with a common objective to join effort and mitigate supply chain risks and related disruptions through co-development of strategic relational capabilities and sharing of resources'. They also identify six capabilities for collaborative risk management: risk information sharing, standardization of procedures, joint decision making, risk and benefit sharing, process integration, and collaborative performance systems. We provide a brief orientation to these pillars next. Though anchored in the conceptualization by Friday et al. (2018), it focuses especially on the ideas we find most resonant also beyond the supply-chain management domain.

Successful risk analysis requires sound data shedding light on the risks; hence, *risk-information sharing* is developed for aims such as minimizing asymmetry in the information the parties possess and reducing uncertainties. Sharing relevant risk data enables enhanced monitoring and prompt response when needed. Secondly, *standardization of procedures*, a prerequisite for compatibility and less disparity in processes, provides flexibility whereby the parties can reconfigure and integrate their resources in pursuit of better risk management. By rendering inter organization agreements more manageable, standardization increases continuity and often cost-effectiveness too. *Joint decision-making*, from planning of the management strategies to their day-to-day execution, provides coordination that safeguards against negative repercussion from any mistake in an isolated decision within a single company's procedures for the risk management of the partner companies also. Hence, the third pillar supports the decision processes directly but also affords optimal pooling of resources, risks' mitigation, and interoperability of control systems. Successful *risk- and benefit-sharing*, in turn, nurtures genuine reciprocity by means of fair division of the common endeavor's risk burden and underlying value alike. While it typically relies on agreements and policies formalized by the companies involved, those very structures protect against biased incentives, poorly considered contractual

obligations, and opportunistic behavior. Next, as the framing conditions' complexity, uncertainty, and interdependence deepen, *process integration* grows all the more vital – appropriately aligning and managing the processes intra- and inter-organizationally protects the operations in which value is created and protect against their disruption. Finally, *collaborative performance-management systems* equip the joint risk management for goal-setting and monitoring. By enabling solid awareness and handling of variations in process flows, the abilities connected with key performance indicators, metrics, etc., contribute to other capabilities. This factor ties in especially with sharing of information and decisions (the first and third pillar discussed above).

One pathway to understanding what collaborative value creation in risk management could mean lies in turning our gaze to those businesses with risk at their heart: insurers. There has been a recent trend among some insurance companies to join forces with actors across industries to better identify, assess, and manage the risks. This development has also enabled a new positioning based on a shared value proposition: to create value for customers and societies at large through facilitating behavioural change for enhanced safety and health (Jais et al., 2017; Porter & Kramer, 2011; Rintamäki & Saarijärvi, 2021). An insurance firm that understands risks from a host of angles can orchestrate a technology platform that gives customers tools to improve and monitor their behaviors (e.g., physical activity, driving, or finances), and incentives beyond the insurance fee only that are discounts and services provided by a large network of partner companies. In addition to customer value proposition (i.e., what creates value for customers in a way that differentiates from competition), the value proposition for the collaborative effort becomes also essential. In other words, it is not enough to understand the risk and how it can be managed, but also the logic that brings the business models together to make the customer value proposition possible.

#### *b. Setting the Stage for Collaborative Risk Management and Value Creation via Understanding the Service Ecosystems*

To benefit from the interplay of value creation and risk management, one must dress the stage on which collaborative practices are to play out – i.e., the business environment in which multilateral interactions take place. As Möller et al. (2020) show, business environments can be conceptualized through fields, networks, ecosystems, or market systems. As our goal is to go beyond dyadic relationships and business networks to introduce a more systemic and nested view on value creation and collaboration, ecosystems seem to provide the best conceptual frame for further investigations. Applied to business context for at least

for three decades (Moore, 1993), ecosystem is 'the alignment structure of the multilateral set of partners that need to interact in order for a focal value proposition to materialize' (Adner, 2017, p. 42), often relying on nongeneric complementarities that provide synergies for ecosystem partners and/or customers (Jacobides et al., 2018). Hence, both systemic collaboration and joint value creation are intrinsic to the conceptual definition of a business ecosystem. Importantly, although these ecosystems are about bringing business models together around a joint customer value proposition (Adner, 2022), public sector actors may also have a key role (Kramer & Pfitzer, 2016).

Conceptually ecosystem literature is not a monolith. For instance, a vast literature on business ecosystems, innovation ecosystems, entrepreneurial and start-up ecosystems, and service ecosystems exists (for the definitions and related network management issues, see, e.g., Aarikka-Stenroos & Ritala, 2017). Of these, the service ecosystems literature represents inherent service management thinking, and has potential to bridge risk management and value creation. Consider the definition by Vargo and Lusch (2011, p. 185): '[a] service ecosystem is a spontaneously sensing and responding spatial and temporal structure of largely loosely coupled, value-proposing social and economic actors interacting through institutions, technology, and language to (1) co-produce service offerings, (2) engage in mutual service provision, and (3) co-create value'. This condensed definition conveys important ideas that resonate well with the developments in risk management. For instance, the idea of service ecosystems being 'spontaneously sensing and responding' refers to an ability to dynamically adjust to external changes and rearrange mutual relationships, corresponds rather well with agile and resilient conduct of organizations striving for SRM. Moreover, the definition keeps the door open for formal and informal institutions functioning alongside each other. It thus leaves room for, on one hand, ecosystems evolving within the limits of regulations, formal contracts between actors, etc., but also, on the other, more spontaneous, or reciprocity-based forms of collaboration. Furthermore, the elements of co-producing service offerings, engaging in mutual service provision, and value co-creation support but also complement current understanding of the transition from TRM to ERM to SRM. One could cite the main difference between co-production and co-creation as lying in the aim: to have a joint offering (co-production) vs. make sure the offering creates value for the users in their specific contexts and times (co-creation). While perhaps an oversimplification, this distinction holds utility for pinpointing the link between engaging in mutual service provision and the core idea behind service-dominant logic (which has formed a nexus for service ecosystem literature), that all exchange is based on service offerings, either directly or indirectly. Hence, service ecosystems are

formed based on reciprocal value propositions that act as invitations or incentives for the actors to collaborate (Ballantyne et al., 2011; Vargo & Lusch, 2011). Frow et al. (2014) conclude that there are five premises for value propositions in the service ecosystem:

*Value propositions are a co-created and reciprocal mechanism through which actors offer and attract resources.*

*Value propositions in ecosystems arise from the value potential inherent in actors' resources.*

*Value propositions influence the composition of networks, specifically determining with whom actors choose to engage, shaping the nature of market interactions.*

*Value propositions may change over time and shape new resource integration within the service ecosystem.*

*Value propositions act as a balancing/alignment mechanism in the service ecosystem.*

The first of these captures the fact that each actor in the service ecosystem has resources that the others lack but could have access to. They gain access by way of value propositions that form a mechanism for negotiating integration of resources. By means of this, ecosystems can create value that would not be possible with the resources of any single actor. The second and third premise are centered on the value expectations of the actors involved. A value proposition mutually aligns the value-related expectations of actors holding shared-value potential. The ensuing dynamics might well percolate to other parts of the service ecosystem, thereby shaping resource integration more profoundly. With the final two premises, we gain a fuller sense of how the ecosystem evolves as actors negotiate new value propositions or adjust/withdraw existing ones. Radical changes in the ecosystem may even lead to collapse. Such metaphorical forest fires create room for new service ecosystems to sprout. For instance, industries that undergo major transformation or a paradigm shift are likely to witness realignment of the service ecosystem.

## **2. Collaborative Risk Management and Value Creation: An Illustration from the Occupational Health Domain**

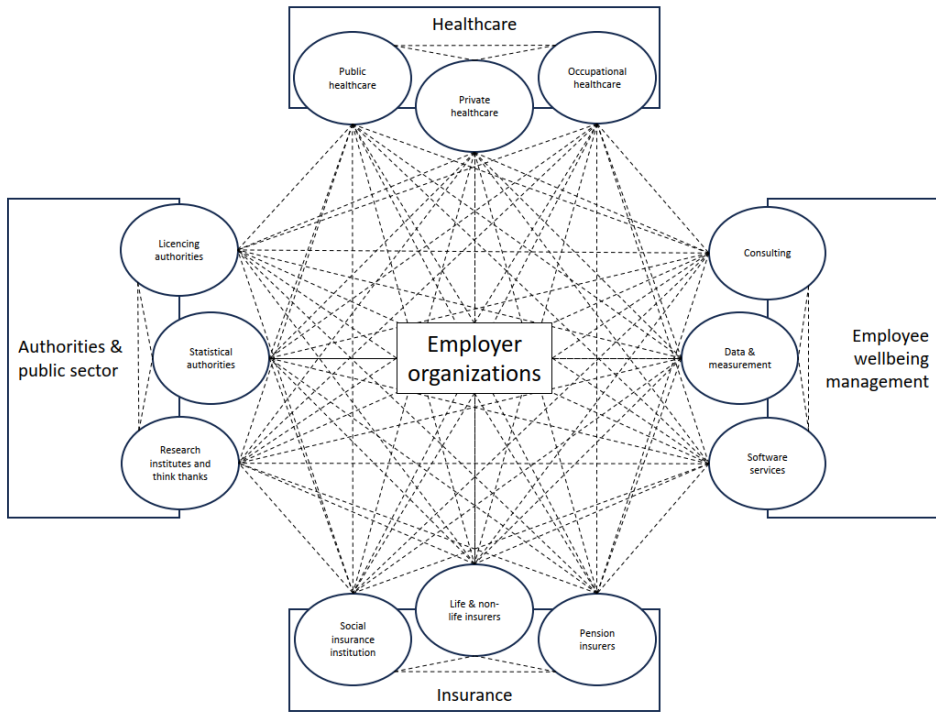
To investigate the real-world power of an approach combining collaborative risk management and value creation perspectives within a service ecosystem and then articulate our theoretical findings, we employed case study methodology (Dooley, 2002; Simons, 2009). The case study approach is well-suited for re-

search focusing on practical applications and facilitates a deeper comprehension of complex social phenomena such as multi-actor contributions to risk management in the occupational health field (Yin, 2014; Eisenhardt & Graebner, 2007). The analysis focuses on a case study in Finland examining the interactions and collaborations among various actors within the occupational health risk management service ecosystem. We chose a case study in this particular field since risks related to work ability are of a highly interwoven nature and their effective management is in the interest of various actors, from individual workers and their employers to institutions such as insurance systems and the society as a whole. The ongoing transformation of work, resulted in social, political, and economic trends, such as increasing importance of technology, climate change, globalization and shifts in demographics alter the occupational health risks. Thus, their management requires inter-organization collaboration at multiple levels and highlights systemic value creation. Furthermore, as occupational safety, health and well-being can be seen as fundamental to socially sustainable business, they in themselves offer an important context for measurement in ESG (environmental, social and governance) reporting. Increasing sophistication of occupational healthcare and disability services can be expected to repay employers for their investment but also should demonstrate added value for the workers, local communities, and healthcare systems. Thus, investments made to occupational health risk management can be viewed as a commitment to social responsibility and sustainable development (e.g., Dyllick & Muff, 2016).

Various data sources, from organizations' records to desk research, were supplemented by material gathered in previous (register-, interview- and survey) studies by the second author (Pasanen, 2022). The analysis started with the identification of different ecosystem actors and their perspectives on occupational health risk and its management. Subsequently, an examination was conducted to observe the dynamics of collaboration among various ecosystem actors. Implementing the case study yielded insight, illuminating the practices through which the different (internal and external) actors contribute to the occupational health risk management and value co-creation.

#### *a. The Occupational Health Risk Management Service Ecosystem in Finland*

Figure 1 depicts the service ecosystem of risk management in the context of occupational health in Finland. From the standpoint of employer organizations, the key players in the service ecosystem of occupational health risk management are (1) healthcare providers, (2) employee wellbeing service providers, (3) insurers and (4) authorities and public sector service providers.



**Figure 1.** The Service Ecosystem of Occupational Health Risk Management in Finland

In most cases, the employer's closest partner for occupational health risk management are occupational healthcare providers. The goal of occupational healthcare is to promote the health and working capacity of employees, the health and safety of work environment, and a well-functioning work community through joint efforts by the employer, employee, and occupational healthcare (MSAH, 2017). Although the contractual obligations focus on preventive measures, national legislation permits employers to arrange also other medical care and health services for their employees as part of occupational health care (Health Insurance Act 1224/2004). In 2021, over 90% of the employees were covered by occupational healthcare and 94% of them were covered by the wider service including not only preventive, but also medical care (Sarparanta, 2023). The employer can obtain occupational health services from an occupational healthcare unit at private medical centers, municipal enterprises or occupational healthcare centers owned by the employer itself or jointly operated by several employers. Today, private medical centers are the most important producers of occupational health services in Finland, with service provision being concentrated in the hands of the three largest players (Terveystalo, Mehiläinen and Pihlajalinna). They dominate the market with a share of more than 75% of end customers

(Sarparanta, 2023). Among the other healthcare providers in the service ecosystem are public and private entities that offer services parallel with and complementary to those of occupational healthcare. The public healthcare is organized by the wellbeing services counties and private healthcare by several medical centers (MSAH, 2019).

The second major set of actors in the ecosystem are suppliers of consultative, measurement and digital services focused on employee wellbeing. The consultation-based services, which include auditing and reporting, foreman's training, and vocational rehabilitation, are provided both by specialist firms (e.g., Katja Noponen, Verve, Barona, Staffpoint) and alongside the core offering of private healthcare centers and insurers. The main providers of measurement services, in turn, are companies specializing in work-ability and work-safety surveys (e.g., Zef, Servitium), observations, or special devices such as wearable technology (e.g., Firstbeat, Oura). One of the latest trends in occupational health risk management involves technology of the latter kind but also implantable or otherwise placeable sensors that supply signals for assessing employee's physical and mental load, physical activity, and recovery, in aims of recognizing hazards and improving work safety. Advances in technology and greater penetration of service provision have opened new opportunities in the domain of occupational health, such that employer organizations can exploit various technologies as part of occupational health risk management (see e.g., Rauttola et al., 2019; Tamers et al., 2020; Von Alftan & Hyry, 2020). The final role here includes various software-service providers that specialize in health-information systems and wellbeing-linked data analytics in Finland (e.g., CGI, Gofore, Sofor, HiQ). They develop and license systems that collect, collate, and analyze data from diverse sources: healthcare providers' internal patient information systems, HR files, surveys, physical metrics, and wearables.

Insurers form the third main component of the service ecosystem. First, the social insurance institution of Finland, Kela, plays a central role in the occupational health risk management since it pays sickness allowance during the period of employee's illness (for up to 300 days), provides reimbursements for medical treatment by private healthcare, compensates for the costs of occupational healthcare, and finances rehabilitation. Second, Finnish law obliges all employers to arrange a pension insurance for their employees, which can be handled via an occupational pension insurance company (e.g., Ilmarinen, Varma and Elo), a pension fund or foundation, or pension institutions established for special categories of workers (Employee's Pension Act 395/2006). The pension insurers are vital collaborators in occupational health risk management since they offer disability pensions, occupational rehabilitation, and disability risk management ser-

vices to their employer-customers. Third, other (life- and non-life) insurers engage in the occupational health risk management, by offering both statutory workers' compensation insurance (subject to §233 of the Worker's Compensation Act, law 459/2015,) and various forms of voluntary health insurances for employees.

The final component of service ecosystem comprises authorities and public sector entities acting in occupational health risk management (regarding public service ecosystems, see, among others, Osborne et al., 2022). First, the ecosystem includes the licensing authorities (namely, Regional State Administrative Agencies and National Supervisory Authority for Welfare and Health), which grant operation licenses to private healthcare providers, supervise healthcare professionals and the services provided, and function as occupational health and safety authorities that conduct inspections on their own initiative and upon employer/employee request. Another relevant licensing authority is the Finnish Social and Health Data Permit Authority, Findata, which grants permits for the secondary use of social and healthcare data from the various registers maintained/used by the various service providers. Second, several government authorities and public non-profits produce statistics characterizing Finnish society and offer material such as open data for decision-making, research, and development purposes. Among these are Statistics Finland, the Finnish Institute of Health and Welfare and the Finnish Centre for Pensions, all of which provide impartial social and health statistics on Finnish society. Third, several research, development, and training organizations serve the public interest in occupational health risk management. Namely, such service providers as the Finnish Institute of Occupational Health, the Finnish Workers' Compensation Center and The Center of Occupational Safety offer science-based information and guidance, complete with test protocols and benchmarks, that can support evaluating and enhancing various aspects of occupational safety, occupational health, and occupational well-being. They also provide training and seminars to strengthen Finnish organizations' risk management in this realm. Universities and applied-science institutions help complete the picture. As part of the research and expertise landscape, they act as partners to employing organizations in various research and development projects related to occupational health risk management.

The foregoing description and Figure 1 alike show that the ecosystem is fragmented; there are many actors, scattered across a field replete with individual laws and implementers. Furthermore, this service ecosystem has witnessed uneven transformation of risk management and business models. Another phenomenon evident here is industry convergence. For instance, the number of occupational healthcare service providers has declined significantly in recent dec-

ades, and occupational healthcare has become the purview primarily of the private sector, with many employer organizations having sold their in-house occupational health operations (Statistical Database Kelasto, 2023). Furthermore, the larger players have gobbled up several smaller consultation providers within the healthcare and employee-wellbeing sector. In a parallel development, cooperation between insurers and private healthcare providers has intensified significantly over the last decade. Insurance companies have muscled their way into the health- and well-being arena through strategic partnerships, by acquiring ownership stakes in private healthcare providers and by establishing their own healthcare centers. This multifaceted convergence has led to a situation wherein a few major healthcare centers and insurer groups (in partnership with software houses) dominate.

One driver of this ecosystem transformation is the transition of risk management from TRM to ERM and SRM. With the TRM approach, employee health and safety are on the agenda mainly for legislative reasons, so the employer's objective could be characterized as 'being compliant'. Accordingly, the various statutory systems, with the corresponding actors, cast in dyadic relationships, constitute the nucleus of the collaboration. As risk management grows more sophisticated, however, ERM and SRM bring changes to the degree and forms of collaboration. For instance, employers become more willing to invest in employee well-being. This is visible in the rise of voluntary health insurance for employees; the number of policies has nearly doubled in only ten years (Finance Finland, 2023). When the employing organization understands occupational health risk management as a strategic success factor and a way to achieve competitive advantage, it resorts to strategy-level collaboration within the ecosystem. This relies on careful selection of partners, and indeed more tightly knit collaborative clusters can be observed. By interweaving the operations of specific private healthcare units and insurance groups, complemented by specialist expertise in health-technology services, these clusters afford comprehensive management of the occupational health risks. The services of these clusters encompass elements of both occupational and private healthcare, consultation and measurement services, and insurance, all delivered in collaboration by multiple service providers. One prominent example is the Työkykyturva [work ability protection] service that private healthcare provider Mehiläinen and insurance group LähiTapiola jointly provide to protect work ability. Such efforts to manage work ability are informed by general scholarship but also by purpose-built projects involving research institutes and experts. Furthermore, an even more sophisticated cluster would also contain a software service provider, that might enable the compiling of versatile data related to employee well-being into a single and

common format. With the person's consent and the help of various operators and Findata, it could be possible to combine data from healthcare, insurers, national registers, and individual's own devices (such as wearables) (e.g., CGI DATA360). This breaking down of silos and the use of versatile data and advanced analytics would enable not only knowledge-based but also predictive management of occupational health risks.

*b. Ecosystem Roles and Their Perspectives to Risk Management and Value Creation*

Having identified the ecosystem's actors and described their roles, actions, and collaboration in the context of occupational health risk management, we have laid the groundwork for discussing the various roles regarding their implications for risk management in combination with value creation. Although occupational health is, at base, a matter of the individual whose health outcomes are at stake, the framing of occupational health risks differs greatly between perspectives. While specific domains and foci may yield considerable divergence among those representing the societal standpoint, employers, employees or any other actors, these perspectives (summarized in Table 1) afford a useful general framing for the key levels, nonetheless.

**Table 1.** Different Perspectives of Occupational Health Risk

<b>Perspective</b>	<b>Relation to risk management</b>	<b>Relation to value creation</b>
Employee	Risk as a risk (work disability risk)	Timely access to relevant healthcare
Employer	Risk as a shared risk (personnel risk, operational risk, strategic risk)	Ensuring compliance to regulations, enhancing productivity, and attracting and keeping the right talent
Occupational health- and wellbeing service providers	Risk as a business	Offering solutions to health risk management is in the core of value proposition
Insurers	Risk as a shared risk and business (underwriting risk)	Providing economic cover for health risk and supporting preventive risk management
Society	Risk as a shared risk (social risk)	Driving health outcomes with regulation and incentives

It is the employee who faces the health and work disability risk most directly. From the individual's point of view, the realization of those risks is bound to bring significant financial and other personal costs. Alongside its obvious economic benefits, gainful employment displays profound links with health and quality of life, gaining and maintaining desired social status, self-esteem, and knowledge (Szymanski et al., 2003). The value for an individual exposed to the occupational health risks lies in timely access to appropriate healthcare. From the employers' perspective, in turn, occupational health risks constitute a shared

risk with the employee. Traditionally, employers have regarded them as personnel risks and operational risks and the focus of employers has been on securing physical safety and guaranteeing satisfactory work conditions for workers to comply with rules and regulations. Today, however, more and more employers are recognizing the upside aspect of occupational health risks and are shifting focus from solely addressing occupational illnesses to promoting overall worker well-being. In consequence, assigning priority to employee safety, health, and well-being is a matter not merely of meeting legal requirements; but also of attracting top-tier talent and fostering stronger employee engagement (Chari et al., 2018; Guest, 2017; Magnavita et al., 2014; Sorensen, 2021). Thus, the value proposition for employers, then, involves attracting suitable people and retaining them in established conditions of solid compliance and high productivity.

For providers of occupational health and wellbeing services, the risk is purely an opportunity; their business coheres around managing that risk through the operation logic they have crafted. Thus, the service providers' incentives to minimize the occupational health risks stem from their specific value propositions. Insurers manifest a slightly more complicated relationship with occupational health risks, as for them, these risks represent a business opportunity but simultaneously a shared risk in the context of disability compensation. The shared element ties insurers' motives for managing these risks to reducing the risk borne by the insured persons and to their own value proposition – to the value identified in providing economic cover for health risks and supporting preventive risk management. Finally, at societal level, occupational health risks are perceived as shared social risks. The risk extends beyond individuals and becomes social for three reasons; 1) when the fate of an individual has collective consequences, alias when the welfare of society is at stake; 2) when the complexity of society itself means that the risks originate from sources beyond the control of any individual and 3) when society recognizes the risks as warranting public consideration (Esping-Andersen, 1999, p. 37). All three of these conditions are relevant for occupational health risks, with the negative consequences of work disability for society – increased public spending and deterioration of employment and well-being – perhaps being most prominent (e.g., O'Donnell et al., 2014). According to Reijula (2022), annual costs related to work-affecting disability, sick leave and occupational accidents exceed EUR 20 billion in Finland alone (e.g., Rissanen & Kaseva, 2014). Management of these risks beyond the narrow definition of the traditional societal value 'health' is particularly pressing for societies struggling with new social risks, connected with such phenomena as mounting mental health issues and the changing nature of work itself.

## Conclusions

Through both our review of recent literature and the original case study in the occupational-health context, we have enriched understanding by demonstrating the vital link between collaborative risk management and value creation. This bridging work demonstrates that risk and value are bound up with each other so tightly that management of the two rarely can be separated. Their connection is especially intimate within service ecosystems, in that the webs of relationships between the actors dynamically adjust to changes (Vargo & Lusch, 2011). Because most conceptualizations and models of service ecosystems ignore or at least under-emphasize risk relative to value and attend to (collaborative) risk management at the expense of value (co-)creation, the balance between the two deserves proper attention. Therefore, we next discuss their synergies from the service-management perspective.

### *a. Collaborative Risk Management and Value Creation as a Service Management Opportunity*

It is rather evident that the concept of risk is of high relevance in understanding business models. Conditions of rising complexity, as concretized in service ecosystems, render that concept even more fundamental and, also, woven in with value creation. Similarly, understanding the underlying phenomenon from the value creation perspective is vital for traditional risk management to develop towards ERM and SRM. As a result, value creation and risk management are in a sense two sides of the coin. As our case illustration shows, analyzing the interactions and exchanges through the lens of service ecosystems can cast light on the interdependence, where value propositions are the key to understanding the underlying motives for collaboration. To frame the potential for collaborative value creation and risk management in service ecosystems, we employed the five value proposition premises identified by Frow et al. (2014), reviewed above as a basis for reflection on collaborative risk management. Table 2 summarizes our findings against that backdrop. The first premise suggests value proposition is a co-created and reciprocal mechanism that binds the actors together for resource integration. From the collaborative risk management perspective this necessitates the joint definition of collaborative risk management capabilities – e.g., risk information sharing, standardization of procedures, joint decision making, risk and benefit sharing, process integration, and collaborative performance systems (Friday et al., 2017) – that enable resource integration for the relevant risk management technique such as avoiding, reducing, transferring, or accepting the risk. The second premise highlights the need to understand the

value potential inherent in actors' resources. As our investigations to occupational health risk illustrate, any given risk as a concept may diverge greatly in meanings from one actor to the next. Understanding these facets, which range from downside risk to business opportunity, can unlock potential to collaborate and pinpoint relevant value propositions. These (scholarly and practitioner) efforts to clarify the opportunities for resource integration, and, in line with the third premise, for constructing a network via which the organizations together are able to cope with complexity and uncertainty they cannot handle on their own. As organizations deepen their collaboration in the course of progressing from TRM to ERM to SRM, they can better spot upsides invisible to some and proactively shape their shared and organization-level strategy alike for a better fit with the risk landscape (Anderson & Young, 2022; Godfrey et al., 2020).

**Table 2.** Potential for Collaborative Value Creation and Risk Management in Service Ecosystems

Five VP Premises in Service Ecosystems (Frow et al., 2014)	Reflections from Collaborative Risk Management Perspective
Value propositions are a co-created and reciprocal mechanism through which actors offer and attract resources	Collaborative risk management capabilities – risk information sharing, standardization of procedures, joint decision making, risk and benefit sharing, process integration, and collaborative performance systems – underlie the value propositions and hence steer the composition of networks and drive resource integration (Friday et al., 2017). These capabilities enable various risk-management techniques, e.g., avoiding, reducing, transferring, or accepting the risk
Value propositions in ecosystems arise from the value potential inherent in actors' resources	<ol style="list-style-type: none"> <li>1. Risk as risk</li> <li>2. Risk as a shared interest</li> <li>3. Risk as a business</li> <li>4. Risk as a shared risk and business</li> <li>5. Risk as a shared risk</li> </ol>
Value propositions influence the composition of networks, specifically determining with whom actors choose to engage, shaping the nature of market interactions	Service ecosystems provide a platform for market-based and nonmarket-based interactions between actors. The degree of collaboration typically increases when moving from TRM, ERM, and SRM
Value propositions may change over time and shape new resource integration within the service ecosystem	Service ecosystems enable the transformation of risk management- and business models, and the convergence of industries. Sometimes new ways to facilitate collaborative risk management may become the driver shaping the resource integration
Value propositions act as a balancing/alignment mechanism in the service ecosystem	Service ecosystems adapt to external and/or internal exposures by changing the focus of risk management, e.g., from mitigation and adaptation to prevention, or TRM to ERM to SRM, thereby redefining the nature of collaborative risk management capabilities

Paying for a certain capacity of healthcare (hours charged for doctors' consultations, lab tests, etc.) probably results in very different composition of actor network (perhaps only a dyadic contract between an employing company and a healthcare provider) than when the goal is preventive healthcare and well-being

at work (a larger composition of organizations that may include both market- and nonmarket-based collaboration). The latter also requires a better preconception of the value potential and understanding the logic of service exchange. Next, factoring in the fourth premise supports synthesizing business models in novel ways by introducing new value propositions to the service ecosystem. For instance, propositions centered on risk management afford corresponding adaptation of the risk management mechanisms/resources, giving them a new shape or sometimes even positioning them as a driver. Importantly, the idea of shaping resource integration enables – and sometimes explains – TRM–ERM–SRM transformation. The final premise defines value propositions as a balancing/alignment mechanism in the ecosystem. Technological disruption, new regulation, or changes in demand may induce developments that call into question the service ecosystem's viability and perhaps plant seeds for a new service ecosystem's emergence. Our case example found evidence of this in, for instance, the ecosystem having been realigned and complemented by actors from industries not previously represented there.

*b. Conclusion and Avenues for Future Research*

Our intended contribution is a concept of collaboration that unites value creation and risk management through the analytical lens of the service ecosystem. It is rather evident that the concept of risk is of high relevance in understanding business models. As the complexity increases, as is the case with service ecosystems, the concept of risk becomes even more relevant. Similarly, understanding the underlying phenomenon from the value creation perspective is vital for traditional risk management to develop towards ERM and SRM. Our central claim is that collaboration often requires, alongside mutual awareness of the risks and of strategies suited to managing them, a comprehensive picture of all the pertinent logics of value creation. As risk management evolves more and more into an inter-organization collaborative endeavor, it becomes enmeshed in the configurations of not only operations models but also the participants' core business models. Hence, those models have to be ready to meet the challenge. We conclude that this approach is vital for addressing sustainability issues since (1) those issues can be fruitfully defined through the fundamental notion of sustainability risk (rather than value); (2) conditions of high complexity dictate collaborative risk management; and (3) for solid risk management, the players must understand all the various value-creation logics making up the picture, so that incentives exist for collaboration (i.e., for bringing the business models together and encouraging both market- and non-market interactions). Clearly, taking a service ecosystem approach to such synergy-sparking service management possesses significant potential, with both managerial and theoretical implications.

Our work offers guidance to practitioners with regard to breaking free of the silos that keep risk management and value creation too far apart, and it points to benefits from incorporating perspectives on risk into the development of value propositions that identify the underlying actor roles, capabilities, and resources. Scholarship stands to benefit similarly from better integration of risk and value as concepts. Attention to both – and to keeping them in balance – should enhance research into service management. Although academic work on service ecosystem design has cited collaboration as important for value creation (Vink et al., 2021), there is plenty of room for future work on how risk management could be part of the design. It is our hope that researchers will devote greater effort to exploring the conceptual common ground for risk and value, in general but also with special regard to collaborative risk management and value co-creation.

## References

- Aarikka-Stenroos, L., & Ritala, P. (2017). Network management in the era of ecosystems: Systematic review and management framework. *Industrial Marketing Management*, 67, 23-36.
- Adner, R. (2017). Ecosystem as Structure: An actionable construct for strategy. *Journal of Management*, 43(1), 39-58.
- Adner, R. (2022). Sharing value for ecosystem success. *MIT Sloan Management Review*, 63(2), 85-90.
- Andersen, T. J., & Sax, J. (2020). *Strategic risk management: A research overview* (1st ed.). Routledge.
- Andersen, T. J., & Young, P. C. (2022). *Strategic risk leadership: Context and cases*. Routledge.
- Aven, T. (2016). Risk assessment and risk management: Review of recent advances on their foundation. *European Journal of Operational Research*, 253(1), 1-13. <https://doi.org/10.1016/j.ejor.2015.12.023>
- Aven, T. (2020). *The science of risk analysis: Foundation and practice*. Routledge, Taylor & Francis.
- Ballantyne, D., Frow, P., Varey, R. J., & Payne, A. (2011). Value propositions as communication practice: Taking a wider view. *Industrial Marketing Management*, 40(2), 202-210.
- Chari, R., Chang, C. C., Sauter, S. L., Petrun Sayers, E. L., Cerully, J. L., Schulte, P., Schill, A. L., & Uscher-Pines, L. (2018). Expanding the paradigm of occupational safety and health: A new framework for worker well-being. *Journal of Occupational Environmental Medicine* 60(7), 589-593.

- Dooley, L. M. (2002). Case study research and theory building. *Advances in Developing Human Resources*, 4(3), 335-354.
- Dyllick, T., & Muff, K. (2016). Clarifying the meaning of sustainable business: Introducing a typology from business-as-usual to true business sustainability. *Organization & Environment*, 29(2), 156-174.
- Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal*, 50(1), 25-32.
- Esping-Andersen, G. (1999). *Social Foundations of Postindustrial Economies*. Oxford University Press.
- Finance Finland (2023). Tilasto sairaukskuluvakuutuksesta 2012-2022 [Voluntary health insurance statistics 2012-2023].
- Friday, D., Ryan, S., Sridharan, R., & Collins, D. (2018). Collaborative risk management: A systematic literature review. *International Journal of Physical Distribution & Logistics Management*, 48(3), 231-253.
- Frow, P., McColl-Kennedy, J. R., Hilton, T., Davidson, A., Payne, A., & Brozovic, D. (2014). Value propositions: A service ecosystems perspective. *Marketing Theory*, 14(3), 327-351.
- Godfrey, P. C., Lauria, E., John Bugalla, J. B., & Narvaez, K. (2020). *Strategic risk management: New Tools for competitive advantage in an uncertain age*. Berrett-Koehler Publishers.
- Guest, D. E. (2017). Human resource management and employee well-being: Towards a new analytic framework. *Human Resource Management Journal*, 27(1), 22-38.
- Jacobides, M. G., Cennamo, C., & Gawer, A. (2018). Towards a theory of ecosystems. *Strategic Management Journal*, 39(8), 2255-2276.
- Jais, N., Lebus, F., Pfitzer, M., & Rodriques, A. (2017). *Insuring shared value. How insurers gain competitive advantage by better addressing society's needs*. FSG.
- Kramer, M. R., & Pfitzer, M. W. (2016). The ecosystem of shared value. *Harvard Business Review*, 94, 80-89.
- Luís, A., Garnett, K., Pollard, S. J. T., Lickorish, F., Jude, S., & Leinster, P. (2021). Fusing strategic risk and futures methods to inform long-term strategic planning: Case of water utilities. *Environment Systems & Decisions*, 41(4), 523-540.
- Magnavita, N., De Lorenzo, G., & Sacco, A. (2014). Health promotion in the workplace. *La Medicina del Lavoro*, 105(6), 473-475.
- Moore, J. F. (1993). Predators and prey: A new ecology of competition. *Harvard Business Review*. May-June, 75-86.
- MSAH. The Ministry of Social Affairs and Health (2019). *Social welfare and healthcare in Finland*. Factsheet.
- MSAH. The Ministry of Social Affairs and Health (2017). Työterveys 2025 – yhteistyöllä työkykyä ja terveyttä. [Occupational health 2025 – working ability and health through cooperation] Sosiaali- ja terveysministeriön julkaisuja 2017.

- Möller, K., Nenonen, S., & Storbacka, K. (2020). Networks, ecosystems, fields, market systems? Making sense of the business environment. *Industrial Marketing Management*, 90, 380-399.
- Narver, J. C., & Slater, S. F. (1990). The effect of a market orientation on business profitability. *Journal of Marketing*, 54(4), 20-35.
- Nason, R. (2017). *Rethinking risk management: Critically examining old ideas and new concepts* (First edition). Business Expert Press.
- O'Donnell, G., Deaton, A., Durand, M., Halpern, D., & Layard, R. (2014). *Well-being and policy*. Legatum Institute.
- Osborne, S. P., Powell, M., Cui, T., & Strokosch, K. (2022). Value creation in the public service ecosystem: An integrative framework. *Public Administration Review*, 82(4), 634-645.
- Pasanen, J. (2022). *The role of earnings-related social insurance in permanent disability risk management*. Academic dissertation. Tampere University.
- Porter, M. E., & Kramer, M. R. (2011). Creating shared value. How to reinvent capitalism and unleash a wave of innovation and growth. *Harvard Business Review*, 89, 62-77.
- Rauttola, A. P., Halonen, J., Lukander, K., Passi, T., Uusitalo, A., Rauhamaa, S., & Virkkala, J. (2019). *Puettavan teknologian hyödyntäminen työterveyshuolloissa ja työpaikoilla*- [Utilization of wearable technology in occupational health services and workplaces]. Työterveyslaitos. <https://urn.fi/URN:ISBN:9789522619112>
- Reijula, K. (2022). Työterveyshuolto uudistuvassa SOTE:ssa – menestys vai menetys? [Occupational healthcare in the reforming SOTE – success or loss?] *Sosiaalilääketieteellinen Aikakauslehti*, 59(4), 465-468.
- Rintamäki, T., & Saarijärvi, H. (2021). An integrative framework for managing customer value propositions. *Journal of Business Research*, 134, 754-764.
- Rissanen, M., & Kaseva, E. (2014). *Menetetyn työpanoksen kustannus*- [Cost of lost labor input.] Sosiaali- ja terveysministeriön työsuojeluosasto. Toimintapolitiikkayksikkö. Strateginen suunnittelu -ryhmä.
- Sarparanta, T. (2023). *Kelan työterveyshuoltotilasto 2021*. [Occupational healthcare statistics of Social Insurance Institution of Finland 2021]. Suomen virallinen tilasto. Kela. <http://hdl.handle.net/10138/359507>
- Simons, H. (2009). *Case study research in practice*. SAGE Publications.
- Sorensen, G., Dennerlein, J. T., Peters, S. E., Sabbath, E. L., Kelly, E. L., & Wagner, G. R. (2021). The future of research on work, safety, health and wellbeing: A guiding conceptual framework. *Social Science & Medicine*, 269, 113593.
- Statistical Database Kelasto (2023). *Occupational healthcare for employers: Number of persons covered and reimbursements paid out 2006-*.
- Szymanski, E., Parker, G., Ryan, C., Merz, M., Trevino-Espinoza, B., & Johnston-Rodriguez, S. (2003). Work and disability: Basic constructs. In E. Szymanski, & R. Parker (Eds.), *Work and disability*. Austin, TX. 1-26.

- Tamers, S. L., Streit, J., Pana-Cryan, R., Ray, T., Syron, L., Flynn, M. A., ... & Howard, J. (2020). Envisioning the future of work to safeguard the safety, health, and well-being of the workforce: A perspective from the CDC's National Institute for Occupational Safety and Health. *American Journal of Industrial Medicine*, 63(12), 1065-1084.
- Vargo, S. L., & Lusch, R. F. (2011). It's all B2B...and beyond: Toward a systems perspective of the market. *Industrial Marketing Management*, 40(2), 181-187.
- Vink, J., Koskela-Huotari, K., Tronvoll, B., Edvardsson, B., & Wetter-Edman, K. (2021). Service ecosystem design: Propositions, process model, and future research agenda. *Journal of Service Research*, 24(2), 168-186. <https://doi.org/10.1177/1094670520952537>
- Von Althaus, K., & Hyry, J. (2020). *Measuring wellbeing citizen survey: Finland, Germany, the Netherlands and France. Total 2020 report*. Sitra. <https://www.sitra.fi/en/publications/european-wearables-survey/>
- Yin, R. K. (2014). *Case study research: Design and methods* (5th edition). Sage.