Enterprise Risk Management: a look inside IBM's back-office operations

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INTRODUCTION

Business environment has become more complex and interconnected. These increasing complexity and interdependence are deeply present in the enterprise risk management (ERM) field of organizations. A study conducted by Accenture (2019) reported that risk managers have identified the fast emergence of new complex risks which present new challenges to organizations, as those new risks may be interconnected with known ones. A significant percentage of them may be related to new technologies, like artificial intelligence, and organizations do not yet know how to respond to such complexity. Organizations should be prepared to deal with current and emerging risks. A McKinsey (2020) report pointed out that the types and impact of risks have changed over the past years. Today organizations face the economic uncertainty of the pandemic around the globe, but other complex changes in the environment are challenging them such as climate change, geopolitical disruptions, technological change and demands for high standards on corporate responsibility (e.g. ESG). AON (2021) has published a report highlighting specific risk categories per industry. In the technology industry, the respondents of the survey have identified changes in business models, economic and technology disruption as the top three categories of risks that may impact the future of an organization operating in these segments (AON, 2021). AON (2021) report also highlighted that established companies in these segments are facing the threat of new, more agile technology companies.

Large tradicional companies have increasing complexity, however this should not reflect on efficiency loss. Companies can find competitive advantage based on cost, differentiation or focus. Interrelationships among business units can help create value through synergies (Porter, 1985). At the same time that an organization has to evolve, adjusting itself to the competition, the changing environment, new opportunities and threats, it has to do so by managing the uncertainties and risks associated with them and establishing evolving ERM processes. These processes are able to identify, analyse, evaluate, treat, implement and communicate a plan to manage new complex strategic risks of the organization in order to protect the company's value and where all members of the organization are responsible and committed to ERM (ISO 31000, 2018).

Risk can be split into three main categories: predictable, strategic and external risks. Managing these so-called risks demand different approaches due to their individual nature. Despite that, leadership must be closely involved with ERM so as to fulfill its duty to protect and create the company's value (Kaplan & Mikes, 2012; Chopra & Sodhi, 2004). In order to do so, as a non intuitive discipline, leaders need to avoid anchors and biases, and promote an open-thinking environment so that the company's ERM work with a set of rules and processes, thus thinking of the firm's value chain beyond its boundaries.

In order to evaluate how ERM is supporting the evolving business environment of an incumbent technology company, the objective of this paper is to answer the question: what is the risk maturity level of a shared services function of an incumbent technology company? As specific objectives of this paper, the research uncovered the external and internal relations of the observed shared services organization with its agents and related risks, and explored how a multi-region shared services organization of a technology company is supporting enterprise strategic goals and engaging in ERM processes to be an active participant in protecting the company's value.

The paper starts with a historical analysis of IBM and the Quote to Cash (Q2C) organization, it describes how the shared services organization evolved and how its processes

benefited, under the optics of ERM, from the integration and merging of processes, information systems and human capital. In the sequence, the Q2C organization is assessed by applying the ERM maturity model of Oliva (2016) to perform a diagnosis of the problem-situation and the proposed intervention is documented. Finally, the results obtained are presented and the techno-social contributions are described.

INVESTIGATED CONTEXT

Being one of the biggest and most innovative technology companies in the world, IBM has been developing game-changing technologies since its foundation in the beginning of the 20th century. From tabulating machines to recent cloud technology, the company has gained the trust of its clients by providing them cutting edge technology and helping them implement it through its services line of business. During its more than 100 years of existence, Big Blue has evolved looking for business opportunities to better align its strategy with customers' needs. Over the past years, IBM presented its aim to become a hybrid cloud and AI company, and more recently shared its intent to spin off its technology services business, which is to be done by the fall of 2021 (Forbes, 2020).

IBM operates in more than 175 countries and has five business segments: Cloud & Cognitive Software, Global Business Services, Global Technology Services, Systems and Global Financing. Employing over 345,000 people worldwide, the multinational is divided into three main geographical clusters: (a) Americas, (b) Europe, Middle East and Africa and (c) Asia Pacific (IBM, 2020). IBM operates in a competitive and complex market, so the company has to keep modern standards for both its commercial and internal operations.

Quote to Cash (Q2C) is a shared services organization of IBM that lies in the center of the company's back-office operations, supporting all sales and delivery business lines, performing most back-office workflow tasks, from bid management, contract management, to billing and accounts receivable. Formerly named Sales Transaction Support, Q2C works on processes related to both direct and IBM's distributors' (known as Business Partners, they work delivering IBM's technology for small and medium-sized customers, working as solution builders, system integrators and resellers (IBM, n.d)) sales, playing an important role in all sales channels.

Q2C works in a global structure that follows the same geographic division used by IBM. Squads are separated into two kinds of scope: business operations and internal support. The first scope gathers business operations itself and performs the back-office workflow. The second one works on enhancing systems and processes, and supports Q2C operation teams with other types of activities, such as skill development, communication, audits and reporting.

Prior to the consolidation of Q2C, most activities were done with different standards by different lines of business - some of those activities relied on local needs rather than global, high level ones, potentially increasing transaction costs (Besanko et al, 2012). With the merger of the main back-office activities into Q2C over the past decade, the organization was able to create global standards by integrating interconnected processes and information systems, and also applying two key methodologies into its daily life: Kaizen and Agile.

In order to create a culture of constant process improvements, Q2C has built squads called Technical and Tactical Kaizen that work to bring the main principles of the methodology into the workplace. Technical Kaizen engages with Q2C employees to find automation and other technology use cases to reduce workloads, increase performance and expand the usage of AI-driven processes. Tactical Kaizen analyzes opportunities to simplify and improve processes, working on making them more efficient. Both scopes use employee feedback into their iterations, thus gathering their knowledge to create better solutions (Nonaka, 1991; Imai, 1997).

Together with Kaizen, Agile is used not only as a way of working, but also as a way of thinking. All new information operation support systems (O'brien & Marakas, 2011) were developed so as to work in funnels and squads. In this way, not only workloads are better handled, but also employees have their performances measured by the systems with metrics such as process accuracy and cycle time. Information systems were developed in order to adapt to a data-driven reality in the business, in which leaders can make better decisions with better, real-time information. This approach to Kaizen and Agile, together with a data-driven management, may create competitive advantage by reducing process flaws and helping leaders manage IBM's value chain more efficiently, thus delivering a better customer experience and cutting costs through synergy (Porter & Millar, 1985), and leading to potential economies of scope and scale (Besanko et al, 2012) as processes and information systems are more automated and integrated.

Q2C plays a vital role inside of IBM as back-office of its sales processes for all five segments. As an determining party in the decision making process, Q2C has a key role in understanding and managing the strategic risks of its operations.

Figure 1

Q2C Business Environment
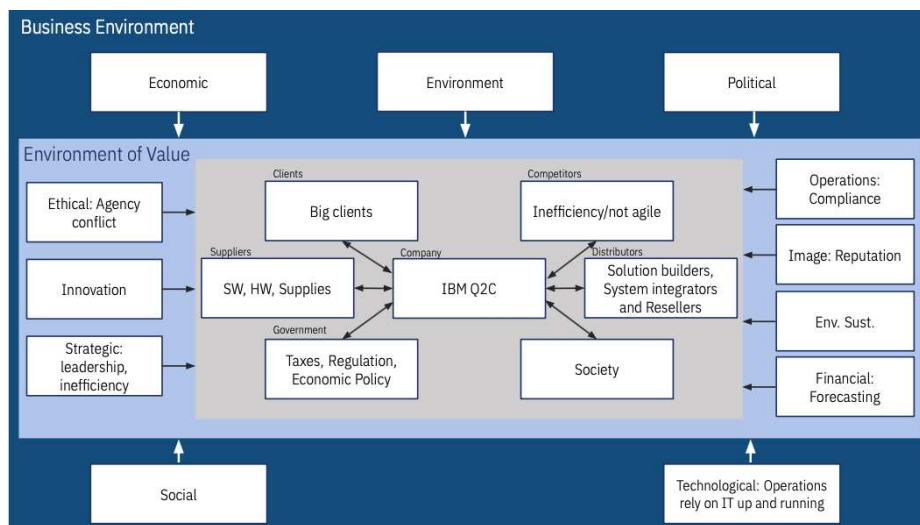
Source: Business Environment, adapted by the authors (Oliva, 2016)

According to Oliva (2016), strategic risks come from the relationship of the company with its agents. Q2C plays a role in managing the risks associated with the relationship of its software and hardware vendors that are the basis to run its back-office workflows, meet the expectations of the company's clients as well as the needs of the distributors, thus avoiding losing customers to competitors due to internal inefficiency. In addition to the key agents' relationships, Q2C has to ensure compliance of its operations with internal controls, the government, and support the business to anticipate any risks related to cash-flow management (fig. 1).

Throughout IBM's operations, Q2C is a part of important relationships with the company's agents, such as clients, the government, competitors and IBM's business partners and vendors. Apart from its core functions, Q2C has a critical role in IBM's strategy by bringing a better customer experience, guaranteeing integrity of regulatory and compliance

aspects of the business, and maintaining IBM's reputation, delivering value to its clients and shareholders.

PROBLEM SITUATION DIAGNOSIS

As a key part of IBM's operations, Q2C is also responsible to manage enterprise risks and ensure that new risks as well as known ones are managed as a part of the company's ERM. In order to assess the level of ERM maturity in a shared services function of an incumbent technology company, the researchers have selected the methodology of a single case study, with exploratory purpose. This methodology enables researchers to uncover and understand factors that impact an organization (Hair et al, 2005). According to Yin (2010), case studies look in depth for the interaction of organizational processes and contemporaneous complex events. Additionally, in the case study, the function of researchers is to observe, inquiry and collect data that enable the comprehension and interpretation of the study's object (Martins & Theóphilo, 2007). Data was also collected from secondary sources and included public information found in the company's website. One of the researchers is a member of the Q2C organization, and for this research acted as an observer.

Figure 2
Explanatory factors of ERM
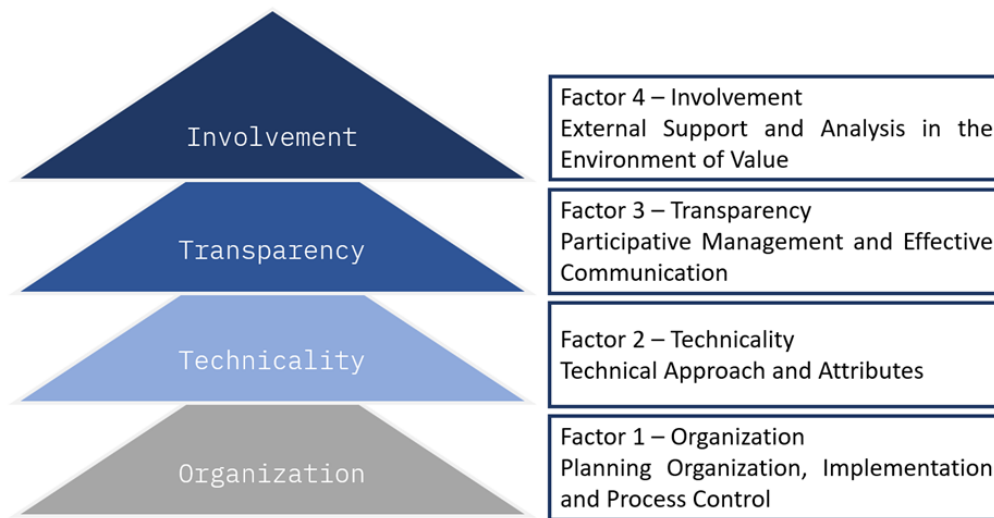
Source: Oliva (2016)

An instrument of research was created to guide a semi-structured interview with the selected roles. Each interview was targeted to last around 90 minutes. The definition of the instrument of research was based on the Q2C business environment (fig. 1) and the Explanatory factors of ERM (fig. 2).

The objective of the research instrument was to identify the key agents, its risks and validate initial assumptions of key agents that initially were identified: Clients, Suppliers, Distributors, Competitors, and Government.The strategic risks to be evaluated are related with the agents identified and the area's tolerance to risk and probability of its occurrence. Additionally, the instrument is looking to identify practices adopted related to ERM looking at the four explanatory factors of ERM (Oliva, 2016) to enable the identification of the maturity level of the organization.

A set of 3 interviews was planned, scheduled and executed. Due to the locations of the interviewees, interviews were conducted using virtual meeting tools and the roles selected were key members of the organization of Q2C's and IBM's ERM, as defined in table 1.

Interviews were conducted with the participation of only one of the researchers and the content was not recorded, per request of the company. Key notes were taken during the interview and immediately after the sessions the full scope of the discussion was documented and shared with the second member of the research team.

Table 1
Interviews completed

Role	Location	Date
Risk Manager	United States of America	June, 2nd 2021
Q2C Leader	Mexico	May, 24th 2021
Q2C Director	Brazil	May, 27th 2021

FINDINGS

The data collection process identified that Q2C is an active part of IBM's ERM processes and procedures, and supports other areas in identifying, analysing, evaluating, treating and implementing plans to deal with risk in accordance with the risk probability and IBM's tolerance to risk. The involvement of Q2C in the risk assessment process of risky events goes beyonds the boundaries of its own organization, and usually is part of a multidisciplinary team of leaders that are engaged to define the treatment of risk and assess the impact of its treatment.

The decision making process, for events that involve risk, engages Finance, Marketing, Operations, Taxes, Commercial and Legal, as needed. In addition to the leaders of these organizations, external legal counsel and consultant experts in the area of decision making are consulted to enable IBM's leaders to have a holistic view of the situation, with the best information available, and be prepared to make the decision in accordance with the risk tolerance that all leaders are aware of.

For example, when facing a situation in which IBM considers breaking a contract due to a breach, several leaders including Operations, Marketing and Legal, as well as an external legal counsel, are involved to evaluate the possible risks associated with the decision of breaking a contract and once the risks are identified, analysed and evaluated, a treatment is defined and implemented.

Q2C works directly as part of risk identification, monitoring and mitigation in its area of responsibility. Based on structured processes, it looks for exceptions. When exceptions can not be avoided, the risks involved are escalated to the accountable organization and Q2C will support the decision making process and uphold its implementation. While Q2C has structured processes, it looks for alignment to adjust them to allow exceptions, as needed.

According to the interviewees, though all agents are considered important for ERM, the main external agents for the Q2C organization are governments, clients, and business partners. The initial risks associated with the main agents identified are presented in table 2.

Table 2
Q2C Main Agents and Risks Associated

Agents	Risks Associated
Government	Compliance with fiscal and tax laws and legislations
Government as a Client	Transparency of bid processes in engagement with the government, prior to IBM participation in it.
Clients	Customer expectations and its impact on Company's image
Business Partners	Conduct of partners with indirect customers

Government risks are associated with being in compliance with tax laws and legislation in general. It requires the ability to be in compliance with new, updated and current legislation in a multi-business units organization that supports multiple countries. The relationship between IBM and the government seeks to minimize the risks at maximum. However it may need to accept some risks. The decisions are made using the best information available with the support of experts to uphold such decisions. There is clarity on the roles and responsibilities to accept and approve some level of risk in the relationship with this external agent.

Government as a client's risks are associated with participation in government bids that does not provide transparency and may expose IBM's reputation. For bids that lack transparency, the company chooses not to participate. Risks related with clients in general are associated with not meeting customer expectations regarding quality of services and it might compromise the company's image. Finally, for Business Partners, risks are associated with their engagement with indirect customers, in which IBM has to ensure that business are aligned with the expected conduct.

Processes implemented in Q2C are aligned with IBM's ERM. Q2C is a key part of certifying process excellence. Digitalization is considered key for the decision making process and is supported by IBM's leadership. Information systems' continuous improvement is seen as key to backing up the decision making process more agile. The decision on risk treatment and implementation is defined with the collaboration of leaders from Finance, Marketing, Operations, Taxes, Commercial and Legal and all of them support the digitization as part of supporting the decision making process. Q2C's tolerance to risk is strongly related to the level of information available.

All interviewees pointed out that IBM's ERM is well structured and benefits from qualified employees and tailor-made information systems. The company's organizational culture also promotes openness and transparency into their ERM approach to operations, gathering employee feedback not only to enhance processes and systems, but also to identify new and emerging risks.

IBM's ERM monitoring process ensures that leadership is engaged in all audits processes led internally or externally to assess compliance to managerial controls and risks associated with the enterprise. The company has quarterly risky transactions reviews, in which Q2C plays an important role by providing insight on issues and process flaws. IBM is able to identify emerging risks involving contract management by the engagement of leadership, including the CFO and the country's controller, with the operations team. Many emerging risks are taken into consideration from employee inputs.

IBM promotes that all employees include in their performance evaluations their actual engagement on the ERM monitoring process, demonstrating positive as well as negative results. Though the interviewees indicated that ERM is included into employees' evaluations, there are no quantitative metrics, employees' results are appraised in a qualitative, rather than in a quantitative way.

PROPOSED INTERVENTION

The data collected from interviews and secondary data obtained from Q2C organization were analysed under the lens of the ERM Maturity model (Oliva, 2016). Practices described during the interviews were listed and compared to the factors and elements of the model, in accordance with Oliva (2016). This analysis has demonstrated that ERM is at the top of the agenda of the Q2C leaders as well of IBM's overall organization. All interviewees showed openness and availability to cooperate with this study. For this reason, the intervention was able to capture both best practices that take place in Q2C as well as opportunities to improve some elements presented in the ERM Regarding best practices, the analysis of the data collected identified that elements of the four factors (fig.2) are presented at Q2C and IBM leverages a proactive and sustainable ERM environment (see Table 3).

For factor 1 - Organizational, that includes elements that demonstrate that the company has practices in place that show a structured ERM, Q2C has scored high in all elements Factor 2 - Technicality, that includes metrics, rituals and intelligence system, Q2C has scored high in most elements, and there is an opportunity to improve in the revision of metrics and alignment of risk tolerance. Factor 3 - Transparency, that includes sharing ERM information and engaging all levels of organization in risk management, Q2C scored high in most elements with the opportunity to measure employee risk performance in a quantitative way. Factor 4 - Involvement, that includes engagement of external partners, Q2C scored high in most elements with the opportunity of further engaging external agents (Oliva, 2016).

In terms of opportunities, this intervention proposes in factor 2 - technicality, the engagement of strategic leadership on the revision of metrics defined to measure risk, to ensure that metrics are evolving with the increasing complexity and includes risks related to external agents. Additionally, it was identified as a possible area for cultural and strategic alignment. While Q2C process reviews were defined to be dynamic and are both agile and secure, initial findings indicate that IBM has a lower risk tolerance in its operations, and it may cause IBM to be not as fast to adjust its processes to the complex environment where it operates, compared to entrant competitors. IBM's organizational culture encourages its employees to have a conservative posture, connected with its reputation of being an ethical, honest and secure company. Other areas of IBM, like R&D, have demonstrated a higher tolerance to risk as per their work scope. Despite this characteristic that might seem to fit an incumbent company such as IBM. Their approach to ERM seems to be overall positive and up to today's needs market-wide.

In factor 3 - transparency, Q2C's employees will benefit from having a holistic view on the impacts of risks that the area's operations face. Though all interviewees agree that the processes are well structured and are suitable for a complex approach to risk management, employees may not have a deep understanding on how the risks faced by Q2C might impact the whole company. The area could also benefit from defining quantitative metrics to measure employees' performance related to risk.

Finally, in factor 4 - engagement, related to external agents, one area of opportunity is to establish metrics to track related risk for specific external agents and have an active engagement with them, given their niche importance to Q2C.

Table 3

Q2C Risk Maturity Factors and its Elements

Factor	Elements
Factor 1 - Organization	1. Risk management multidisciplinary committee, formed by the key executives from the main areas affected directly or indirectly by the decision making process. 2. Engagement with employees to gather feedback and input on new, emerging and existing risks 3. ERM area cascades through the whole company, including Q2C, which has dedicated risk managers associated throughout the organization. 4. Positive impact of organizational culture in ERM.
Factor 2 - Technicality	1. Employees and leaders' evaluations have risk-related targets and metrics. 2. There are mandatory quarter and annual ethics and cybersecurity training for all employees. 3. Internal audit (also known as the SOX area of IBM) tests all Q2C's processes on a monthly basis. 4. Approval matrices are clear on who is to approve each sort of process. 5. There are cost-free IBM internal ERM certifications for employees who voluntarily want to learn more about the subject. 6. Information systems are used as a tool to manage not only performance, but also risk.
Factor 3 - Transparency	1. Leaders openly share audit's results and action plans with employees, being a key part of audit's processes. 2. Leadership is transparent in receiving insights from employees and promotes a non-punitive environment for risk management. 3. Risk tolerance level is clear along the organization.
Factor 4 - Involvement	1. All areas have a place-to-talk in ERM. 2. Not only internal experts but also external legal counsels and consultants are invited to provide information and support the decision making process.

OBTAINED RESULTS

IBM and its back-office operation, Q2C, seem to benefit from well structured processes that are periodically reviewed and have a strong technology driver. The analysis has shown that Q2C scores high in all four factors of the model (fig. 3), which place Q2C in the highest level of maturity in ERM.

Figure 3

Q2C Effectiveness by Factor
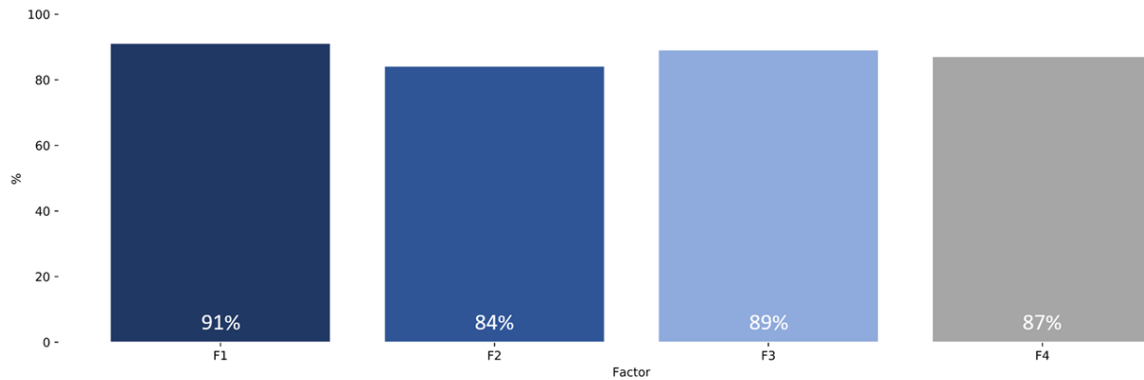
Source: Adapted from Oliva (2016)

According to Oliva (2016), companies that score above 70% in all four factors are companies in level 5 of the maturity mode, Systemic Enterprise Risk Management (fig. 4). The level of maturity identified seems to be built from a positive environment on ERM, in which both employees and leaders get to share information and feedback on the risks associated with the area. The interconnected processes also suggest that even parties that are not directly involved get to share thoughts and concerns, as well as participate in ERM's decision making process. This holistic take on risk assessment shows that not only Q2C is at level 5 of maturity level, but also Q2C gets to play the expected role in the organizational context, by providing knowledge and expertise to the company's leadership.

The intervention was able to identify best practices that Q2C executes to be at the highest level of maturity and additionally, we suggest five areas of opportunities to improve their practices: increase engagement of employees to build a holistic view of risks and their impacts in the whole company, have quantitative metrics for employees' performance towards risk, establish metrics to track risks and engage key external agents, include the senior leadership into the revision of ERM metrics and ensure alignment of risk tolerance of the organization and possible impacts in competitiveness.

TECHNICAL-SOCIAL CONTRIBUTION

The objective of this study was to evaluate how ERM is supporting the evolving business environment of an incumbent technology company. A case study was conducted in Q2C, a shared services area of IBM, to assess the organization's maturity level. It was possible to identify that Q2C has established ERM practices aligned with the whole corporation and that all four factors described in the ERM maturity model of Oliva (2016) are presented, hence the model is a fit to the operations of incumbent companies.

We also have identified that the exercise to go through an evaluation of ERM maturity, enables leaders to rethink the company's practices and identify opportunities to improve. During the interview process, one of the leaders identified the gap to adopt quantitative metrics for employees' performance towards risk and decided to implement it.

Finally, we have confirmed that external agents are a key part of a complex organization, and the risks associated with them should be taken into consideration by all areas of a firm. This agent-centric view on how a company engages with their external agents

can be used as a way of developing metrics and controls for risk. This approach should be among ERM's best practices.

Figure 4
Level of maturity in Enterprise Risk Management
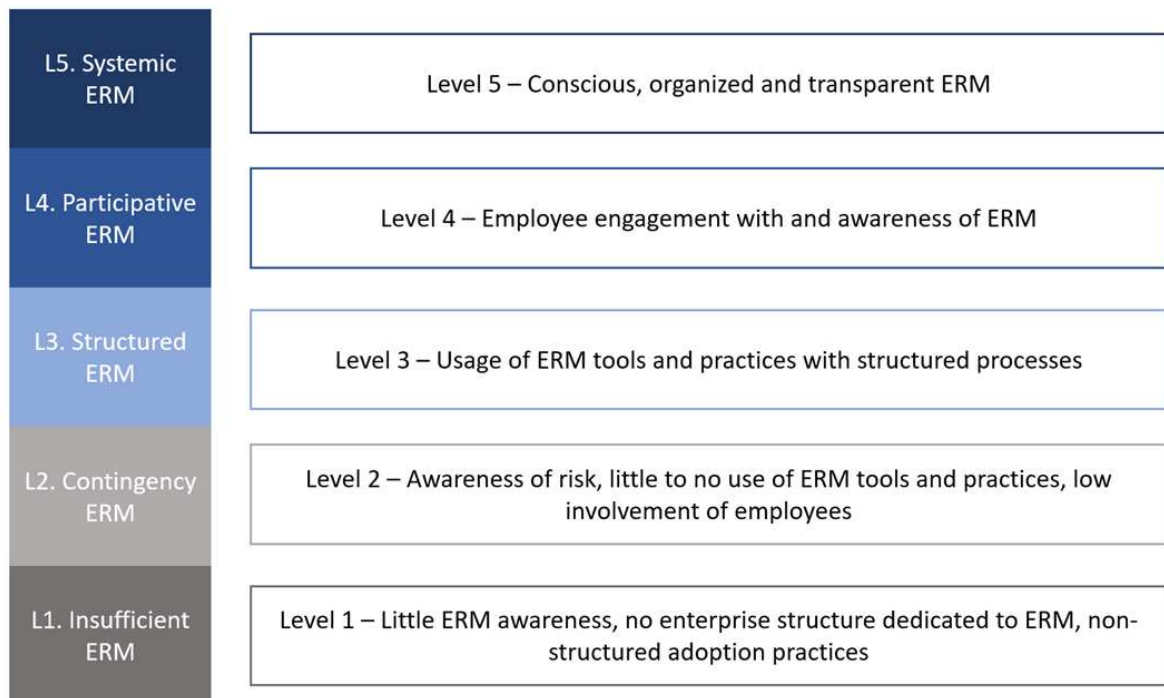
Source: Adapted from Oliva (2016)

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