Risk management practices from risk maturity models perspective*

*Monika Wieczorek-Kosmala***

The paper aims at providing insight to the understanding, application and utility of Risk Maturity Models that represent a valid tool supporting risk management procedures in organisations. Founded on thorough conceptual analysis of available literature and applicative studies, the paper explains the purposes and methodology of constructing Risk Maturity Models, and then demonstrates possible ways of their use with the application of panel data characterising risk management practices of sampled Polish companies. The demonstration results in pre-mature assessment of risk management practices of Polish companies within the selected criteria.

Dieser Artikel soll einen Einblick in die Verwendung und den Nutzen des Risk Maturity Modells geben, welches eines der bedeutendsten Hilfsinstrumente für Risikomanagementverfahren in Organisationen darstellt. Basierend auf einer gründlichen konzeptionellen Analyse vorhandener Literatur und Studien, erklärt der Artikel den Zweck und die Methodik der Konstruktion des Risk Maturity Modells, um anschließend mögliche Anwendungen aufzuzeigen. Hierfür werden Paneldaten, die die Risikomanagementpraktiken polnischer Unternehmen charakterisieren, verwendet. Die Ausführungen resultieren in einer vorläufigen Bewertung der Risikomanagementpraktiken in polnischen Unternehmen anhand der ausgewählten Kriterien.

Key words: Risk Maturity Models, risk management, enterprise risk management, strategic risk management (JEL: D81, G32)

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1. Introduction

Currently, risk management issues grow in importance within both financial and non-financial organisations. Undoubtedly, the prime reason for this trend are the rapid dynamics and constant hardening of the business environment. A well designed and successfully implemented risk management process is helpful in overcoming such obstacles and in providing organisations with a comparative advantage over those that do not manage risk.

Over the past decades, the approaches to risk management evolved to meet the growing requirements of use and effectiveness. According to Culp (2002:8-14), the discussion of risk management in a corporate finance context is still considered odd by some companies. In particular, till the late 90's companies demonstrated visible lack of understanding of risk management by distinguishing 'capital market' vs. 'insurance' perspective of risk management. Since then, the revolution of the concept of risk management is progressing, supported by the convergence of capital market and insurance market products and development of risk management procedure toward a strategic and value-creation oriented approach (Culp 2002:13-14). It seems highly important to promote and discuss ways in which non-financial companies may implement and then control their efforts in managing risk. One of the core problems is how to effectively assess the quality of a company's risk management performance.

The prime purpose of this paper is to provide a closer insight to the understanding, application and utility of Risk Maturity Models (Hillson 1997; Chapman 2006). Grounded on a strategic (holistic) approach to manage risk in organisations, Risk Maturity Models are presented as a valid tool, supporting risk management procedure by providing so called 'hallmarks' of advancement. In the research dimension, the paper aims at demonstrating practical application of exemplary Risk Maturity Models to the assessment of maturity of risk management practices of sampled Polish companies. The example includes a comparison with the maturity of practices recorded in global surveys (AON 2009; AON 2010).

In a theoretical dimension, the paper contributes to the existing knowledge and literature on risk management by filling the gap in the presentation and comparative study of the currently available Risk Maturity Models. In addition, the paper offers some extensions within the discussion over utility of Risk Maturity Models by providing a general approach to the construction of Risk Maturity Models and their linkage with cost-benefit trade-off. In a practical dimension, the paper contributes by providing managerial implications of the use of Risk Maturity Models. The included example offers a case study of the interpretation and classification of chosen characteristics of risk management practices (observed in surveys) in accordance with the levels of maturity included in exemplary Risk Maturity Models.

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The paper is organised as follows. The second section offers theoretical insight to the problem by providing the conceptual analysis of the problem of risk management in a strategic dimension, which is central to the understanding of the idea and attributes taken into consideration in the assessment of risk management maturity. In section three Risk Maturity Models are discussed by examining their usage, construction and characteristics. As the problem of Risk Maturity Models is rarely the subject of deeper and complex academic studies, the applicative sources (in the form of sources provided by consultants) are also taken into account. The fourth section of the paper offers an example of the application of Risk Maturity Models (and maturity criteria considered within) in the assessment of risk management practices of Polish companies. The fifth section concludes the paper.

2. The strategic dimension of risk management practices – theoretical insights

Organisations manage risk as they expect that it will support the value creation process, mainly through the reduction of cash flow volatility, financial distress costs and the tax burden (Stulz 1996:8-24; Meulbroek 2002:56-70; Smithson/Simkins 2005:8-18). In a model version, risk management follows a defined sequence of activities (Williams/Heins 1989:18; Hollman/Forrest 1991:49-56; Williams et al. 2006:67-86; Ahmed et al. 2007:22-36; Ojasalo 2009:200-209). It begins with setting the context of risk management, with regard to the strategic objectives of an organisation. The second stage is the risk assessment directed towards the identification of risk exposures and on measuring (with qualitative or quantitative methods) the frequency and severity of particular risks. The third stage is to choose the proper risk response tools that are then implemented. The risk management process is an ongoing one, where the constant monitoring aims at improving the efficiency of the whole process and the particular activities conducted within.

However, two distinctive approaches to risk management should be identified – traditional and strategic. In the traditional approach, risk management is usually defined as a process that aims at identifying, measuring and treating exposures to potential accidental losses (Williams/Heins 1989:4). It is focused on the negative impact of risk and – as a consequence – is based on assessing the probability of the loss frequency and loss severity. The risk treatment methods are directed either to reducing the loss frequency or loss severity. It is conducted by the application of risk control tools (such as risk avoidance, risk prevention or risk repression) and financial risk control tools (such as risk retention and risk transfer, in particular the insurance risk transfer) (Rejda 2001:12-15; Vaughan/Vaughan 2003:16-18). Loss control, claims analysis and optimal insurance coverage remain prime areas of managerial concern.

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The strategic approach to risk management is perceived as an important revolution of the risk management ideas (Baranoff 2004:58; Chapman 2006:4). A distinctive feature of strategic risk management is that it focuses both on the downside and upside of risk. The risk management process is addressed to support the growth of an organisation and is perceived as a process integrated with all other areas of decision-making. Thus, strategic risk management is often referred to as 'holistic' or 'integrated' risk management (Lam 2003:45; Baranoff 2004:58; Hillson 2006:4; Frigo/Anderson 2011:81-88). The integration of risk management postulates to perceive the problem of risk in a holistic manner and assumes the interdependencies of risk rather than following so called 'silo' (that is piecemeal) approach.

The strategic approach to risk management is also based on more advanced risk management techniques as compared to the ones used in traditional concepts. It addresses both the the advancements in risk analysis techniques (especially the application of quantitative analysis and risk-based indexes) and in risk treatment techniques. According to Culp (2002:13-14), the latter trend is caused by the growing integration between the capital market and insurance market and the use of new risk management techniques appearing (such as alternative risk finance (the ARF) instruments) (Holzheu et al. 2003:16; Hartwig/Wilkinson 2007:925).

In the applied sense, the concept of strategic risk management is reflected in the International Organization for Standardization (ISO) recommendations. Here, risk management is defined as 'coordinated activities to direct and control an organisation with regard to risk' (ISO 2009:2). It highlights that from a managerial point of view the focus is not on managing risk, but managing an organisation with regard to risk. Accordingly, the risk management process in ISO approach is extended. Apart from establishing the risk management context, risk assessment, risk treatment and monitoring and reviewing the process, the ISO model adds a level of communication and consultation at each stage of the process. In particular, the communication and consultation proposes to communicate the scope and the outcomes of the risk management process to all company's stakeholders. Monitoring and review addresses the regular checking of each stage of risk management process. Other elements of the risk management process by ISO address the achievement of the main goal of an organisation. While establishing the context of risk management, an organisation should articulate the internal and external parameters that should be taken into account while managing risk (as well as the scope and criteria for the remaining steps of the process). Risk assessment aims at generating a comprehensive list of risks that might influence the achievement of an organisation's objectives, followed by an analysis of their consequences (risk analysis) and comparison with the criteria admitted in the establishment of risk management context (risk evaluation). Risk treatment is also an ongoing process. Among others, risk treatment aims at as-

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sessing whether the residual levels of risk are tolerable (assuming that residual risk is the risk that remains after the outcome of risk treatment) (ISO 2009:14-20).

In particular, strategic approach to risk management corresponds with the concept of enterprise-wide risk management (hereafter: ERM) (Walker et al. 2003:51-55; Liebenberg/Hoyt 2003:37-52; Beasley et al. 2005:521-531; Chapman 2006:4; Lam 2006:6; Liebenberg/Hoyt 2011:795-822). The ERM framework highlights two other valid elements of the risk management process: corporate governance and internal control. The corporate governance element addresses the need to place the responsibility for risk management on the management board to ensure that appropriate actions (in the holistic sense) are taken. It is recommended to establish a separate risk management department with a CRO (Chief Risk Officer) as the head who reports risk to the management board (Lam 2001:16-22).

The problem of placing the responsibility for risk management is nowadays highlighted by regulatory bodies and industry initiatives around the world by the issuance of risk management guidelines and standards (Lam 2003:53; Chapman 2006:10-11). Internal control, including policies, tasks, products, behaviours and other aspects of an organisation that are taken together to facilitate efficient operations by enabling a response to significant risks, help to ensure the quality of internal and external reporting and help to ensure compliance with applicable laws and regulations provided by guidelines and standards (ICAEW 1999:7,11; Page/Spira 2004:16; IIA 2004:2; Chapman 2006:11,34; FRC 2008:9-10). The COSO 'Enterprise Risk Management – Integrated Framework' or 'A Risk Management Standard' (AIRMIC/ALARM/IRM 2002; COSO 2004) belong to most widely recognised standards. Other examples of ERM standards are provided by (Moeller 2007). In general, these standards aim at unifying the terminology and the pattern of risk management practices (Moeller 2007:331), remaining aligned to the ISO standard, and are usually worked out by institutions promoting various risk management initiatives or risk management consultants. The evolution of risk management standards follows a response to the legal requirements or guidance concerning the whole or an element of the risk management process (Young/Tippins 2001:6,9; Graham 2011:12-13). Primarily, the problem of integrating risk management was linked with auditing procedures, it then evolved to integrated (holistic) dimension (ICAEW 1999; FRC 2005; Marshall et al. 2006:393; Fraser/Henry 2007:392). Often, risk management standards, in particular those within the concept of ERM, are wrongly perceived as the procedures applicable for entities operating in financial sector (Layton/Funston 2006:2). It is true, that in the financial sector the problem of over-excessive assumption of risk is the main focus and thus the regulatory bodies issue guidance addressing the problem of capital adequacy, often providing the clear methods and measures the financial institutions are expected to meet. The examples here

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are the regulations issued by the Basel Committee for Banking Supervision for the banking sector, so called Basel Accords (BIS 2004) or the regulations for the insurance industry, so called solvency rules (Frey/Karl 2010). However, risk management process, in the shape presented above, may be implemented in any type of organisation, regardless of its sector and size.

3. Risk maturity models

3.1. The idea and construction of risk maturity models

The strategic approach to risk management requires organisations to properly conduct risk management activities and to introduce proper risk management practices, especially at the board-level. For these purposes, Risk Maturity Models are applicable, as their idea and structure allow a logical sequence of implementation of risk management advancements. Accordingly, such models might be used in assessing the current stage of an organisation's risk management implementation and practice. Risk Maturity Models derive from the idea of Capability Maturity Models (CMM) (Humphrey 1987; Paulk et al. 1993; Paulk 2009:5-19; Helgesson et al. 2012:436-437). However, in literature sources, Risk Maturity Models remain a rare subject of study. That is why in the remainder of this section the presentation of examples will take into account the applicative sources as well.

Risk Maturity Models are believed to provide a generally accepted framework of benchmarks useful in assessing the stage of risk management implementation. In an academic (theoretical) dimension, Risk Maturity Models are useful in understanding the degree of sophistication of the risk management process and practices, its reliability and effectiveness at each stage. Moreover, Risk Maturity Models are useful for organisations that wish to develop or improve their current approach to risk management (Chapman 2006:115). Alternatively, Risk Maturity Models are applicable for rating companies against key competitors or best practice.

Typically, the Risk Maturity Model is structured as a matrix in which the levels of maturity are cross-referenced with the attributes reflecting the primary risk management practices. Each of the matrix's field outlines the competences that indicate the attained or desired practices. The crucial elements of the structure of the Risk Maturity Model are provided in figure 1.

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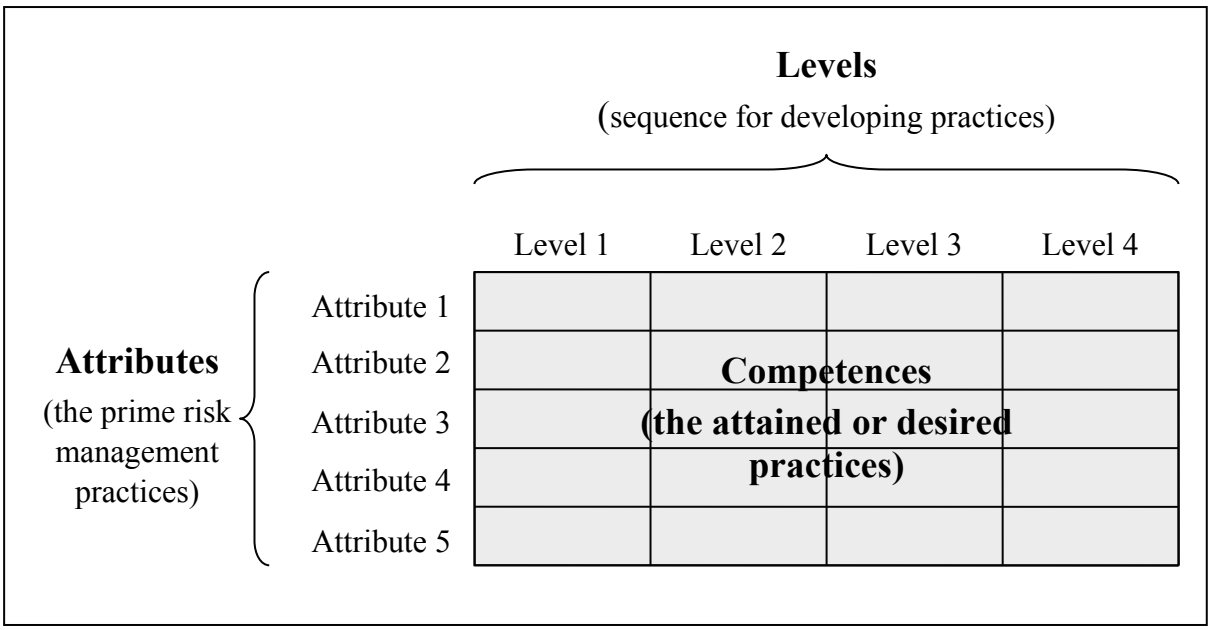
Figure 1: The structure of a Risk Maturity Model



Source: Own study.

The attributes of Risk Maturity Models reflect the primary risk management practices an organisation would establish to develop risk management capabilities. The attributes are typically connected with the content of the risk management process (such as identification, assessment, implementation of the risk management process), the application of the process and the training of employees that enables them to understand and implement the process. The attributes address the problem of embedding risk management within an organisation and also the managerial oversight of the process (OGC 2007:121).

Typically, Risk Maturity Models define four or five levels of progression and the quality of the risk management process within each level is described through the selected attributes. The levels in the model are gradual, leading from the benchmarks of initial or lacking risk management practices to the mature ones. Thus, the levels are comparable to the stepping stones for incremental improvement that provide a logical route from initial to mature practices (Hillson 1997:38; OGC 2007:121).

The progression in risk management maturity is motivated by the growing awareness of the business benefits that may be gained by effective risk management. As a consequence, the higher the level of maturity, the higher are the expected benefits of risk management, as presented in figure 2. These benefits, however, are often immeasurable, although mature risk management requires a set of indicators, optimally tied to value creation metrics (such as economic value added for example). On the other side, the advancements in risk management maturity are followed by an increase of costs as the managerial techniques implied are more sophisticated and require a proper infrastructure.

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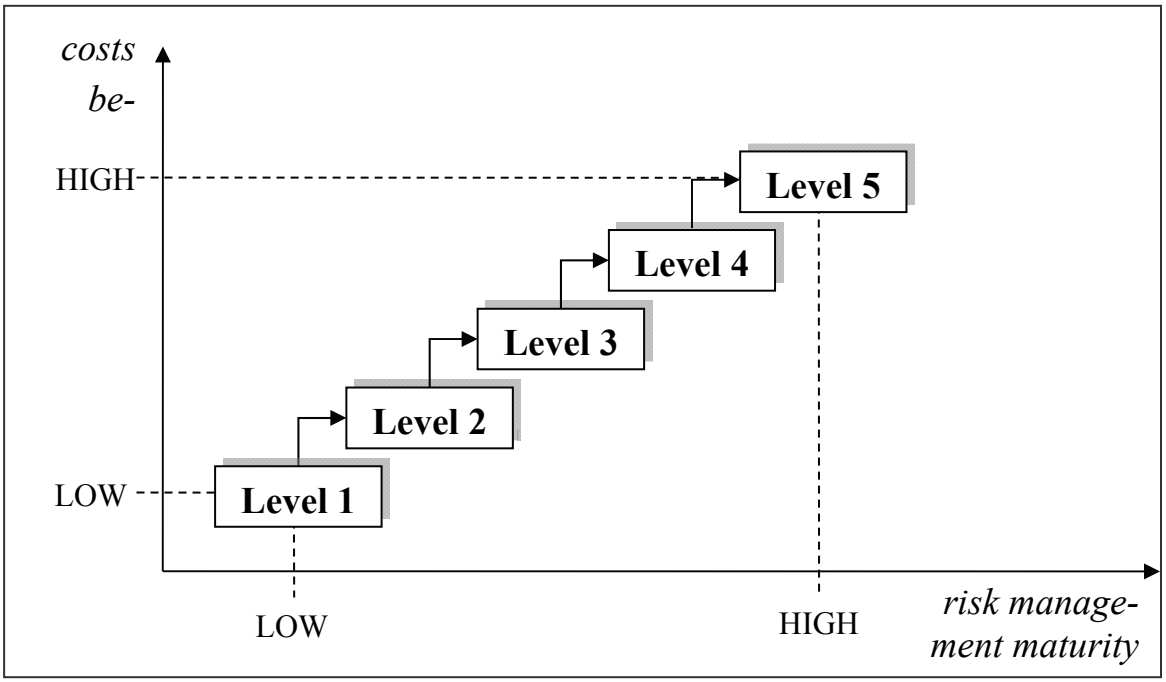
Figure 2: The progression of the risk management maturity and the costs-benefits trade-off



Source: Own study.

For the particular levels of maturity, Risk Maturity Models provide a further description addressing the competences associated with the attained or desired capabilities. It deepens the understanding of the following stages of maturity of risk management as well as the prime areas of managerial concerns. From that perspective, the competences of the lower levels should be perceived as good indicators of the prime steps that an organisation should undertake while implementing a risk management process. The higher levels of maturity reflect the most advanced managerial practices and competences in the risk management process. In particular, the attributes of advanced risk management are good indicators applicable in the assessment of risk management implemented in an organisation, as they indicate both the fulfilment of procedural requirements and the recommended board-level attitudes.

An application of Risk Maturity Models in examining the current stage of risk management implementation may be confusing as it is possible that an organisation will reach different levels of maturity in each attribute, which makes the final judgements difficult. According to Hopkinson (2011:8), the overall assessment is only as high as the weakest among the evaluated criteria. The rationale for such a scheme of assessment is that the risk management process is only as strong as the weakest area. A convincing argument is that a developed risk reporting structure at board-level will bring no effects if the risk identification and assessment are poorly driven.

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3.2. The domain features of exemplary risk maturity models

A few proposals of Risk Maturity Models are provided in the literature as well as in the applicative studies of consultants. All available models follow the general idea of its construction, with a gradual description of risk management advancements towards full maturity. These models differ, however, with the number of levels evaluated and the attributes examined (compare figure 3).

Figure 3: A comparison of levels and attributes of exemplary Risk Maturity Models

Hillson (1997)	**4 Levels:** − Naive − Novice − Normalised − Neutral	**4 Attributes:** − Culture − Process − Experience
Hopkinson (2000)	**4 Levels:** − Naive − Novice − Normalised	**6 Attributes:** − Management − Risk Identification − Risk Analysis − Risk Control − Risk Review
Chapman (2006)	**4 Levels** − Initial − Basic − Standard	**5 Attributes:** − Culture − System − Experience − Training − Management
AON (2010)	**5 Levels** − Initial/Lacking − Basic − Defined − Operational − Advanced	**9 Attributes:** − Board-level commitment − A dedicated risk executive in a senior level position − risk management culture that encourages full engagement and accountability − Engagement of all stakeholders − Transparency of risk communication − Integration of risk information into decision-making − Use of sophisticated quantification methods − Identification of new and emerging risks − Risk management focused on extracting value

Source: Own study.

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Hillson's proposal was published in 1997 (Hillson 1997:p.39) and should be considered as the pioneering model. The Hillson's model is composed of four levels addressing four attributes, as presented in figure 3. Hopkinson (2000) developed the model based on the levels presented by Hillson, but he examined six attributes of maturity (in his proposal called 'perspectives'). Hopkinson developed two versions of Risk Maturity Models: one applicable for a project environment (Hopkinson 2011) and second applicable on a business level (Hopkinson 2000). The latter is included in figure 3. Chapman (2006) provides another proposal, which is composed of four levels cross-referred against five attributes. The AON's five-level model represents a worthwhile proposal developed by practitioners (AON 2010:46-47). The model examines a well-described set of nine attributes (originally called 'hallmarks'). For the purposes of presentation in figure 3, the description of the attributes (hallmarks) was shortened.

Among the models developed by practitioners, one of the earliest was the four-level model developed in 1993 by the Government Centre for Information Systems (Chapman 2006:417). The Office of Government Commerce (2007) provides the example of a five-level model with the Initial, Repeatable, Defined, Managed and Optimised levels. Deloitte, similarly, describes a five-level model with the Tribal and Heroic, Specialist Silos, Top-Down, Systematic and Risk Intelligent levels (Layton/Funston 2006:7). The Deloitte model associates the highest risk management maturity level with achieving the risk-intelligence state, attributed by embedding risk management to all areas of business activity.

In all Risk Maturity Models presented in figure 3. it is assumed that at the first level an organisation simply does not manage risk. It is unaware of the need for risk management and the benefits it may bring. As a consequence, it does not develop a risk management framework. Even if any managerial steps are taken in this field, they are chaotic, ad-hoc and individually-driven. The following levels of risk management maturity reflect the advancements an organisation may undertake in developing and improving the implementation of a strategic risk management framework. The second level of maturity is often characterised by experimenting with risk management, which means that the organisation adopts some elements from more advanced levels. However, it still has limited capabilities to identify, assess, manage and monitor risk. The pre-mature levels are characterised by sufficient capabilities of risk management, but an organisation still lacks a true integration of risk management with all areas of decision-making. Also, it does not recognise or implement risk metrics addressing the value creation process. At the highest levels of risk management maturity a commitment by the management board is evident, especially the efforts of embedding risk management into each aspect of a decision-making process.

There are a few relevant areas of the board-level commitment that are underlined at the highest levels of maturity in risk management. The management board should develop the risk management culture, which means that all em-

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ployees are risk aware and all business processes are risk-based. This corresponds with the development of risk management strategy and framework that should be constantly reviewed and updated. In addition, risk maturity models are useful in benchmarking against best practices. Also, the models raise the problem of risk management communication. The outcomes of a risk management process should be channelled both internally (inside the organisation, to all employees) and externally (to stakeholders). At the most mature level of risk management the management board and the key managers possess risk awareness, are able to learn from past experience, and continuously master the skills (including the external training). Additionally, the management board should conduct the effective risk reporting, combined with regular (periodical) review of risk (at least for the most significant risks).

4. The assessment of risk management practices with risk maturity models – a case study of Polish companies

4.1. Data and methodology

As mentioned previously, Risk Maturity Models represent a useful basis of benchmarks reflecting the advancement of risk management practices. In order to demonstrate the practical application of Risk Maturity Models for such purposes, this study uses a panel of data characterising risk management practices of sampled companies.

The data characterising sampled Polish companies were gathered by a survey conducted by AON Polska – one Polish leading risk management service provider. The survey aimed at revising risk management and insurance strategies of Polish companies and the results were reported by (Słobosz/Ziomko 2009). The research in Poland was conducted at the end of 2008 and at the beginning of 2009 and covered 106 companies operating in non-financial sectors, across multiple branches, with total revenues above 50 millions PLN. Among the respondents 74% were privately owned, 13% publicly traded and the remaining 13% government-owned or not-for profit organisations.

A similar survey that was conducted globally by AON Corporation (2009) at the end of 2008, covering a sample 551 companies, out of which 53% operated in North America and 25% in Europe. 37% of the globally questioned companies were privately-owned, 56% publicly traded and 7% government-owned or not-for profit organisations. The global survey covered both financial and non-financial companies (7% of the respondents of the global survey operated as providers of banking or insurance services).

Taking into account the scope of available data, this study is based on the following methodology. The assessment of risk management practices of Polish companies is positioned against the competences of most mature risk manage-

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ment practices according to the Hilson's model, which are described closely in figure 4.

Figure 4: The attributes and competences of most mature risk management practices addressing level 4 (Natural) in Hillson's (1997) Risk Maturity Model

Attribute	Competences
Culture	top-down commitment to risk management (with leadership by example), proactive risk management encouraged and rewarded
Process	risk-based business processes, regularly updated and refreshed, routine risk metrics with constant feedback for improvement
Experience	all staff risk aware and able to use basic skills, learning from experience is a part of the process, regular external training for improving skills
Application	applied to all activities, risk-based reporting and decision-making, advanced tools and methods

Source: Hillson (1997:39).

In order to provide a background as well as the point of reference for such an assessment, the AON's Polish survey data are compared with the results of the global survey.

From the wide range of data provided by AON's surveys only a set of risk-maturity relevant issues are extracted here. With regard to the competences assessed in Hillson's Risk Maturity Model, data are analysed using three separate sub-elements: (1) risk assessment practices, (2) board-level involvement and (3) delegation of risk management activities. Then, within each sub-element, a set of detailed survey findings are closely considered. The graphic model of the assumed research methodology is outlined in figure 5.

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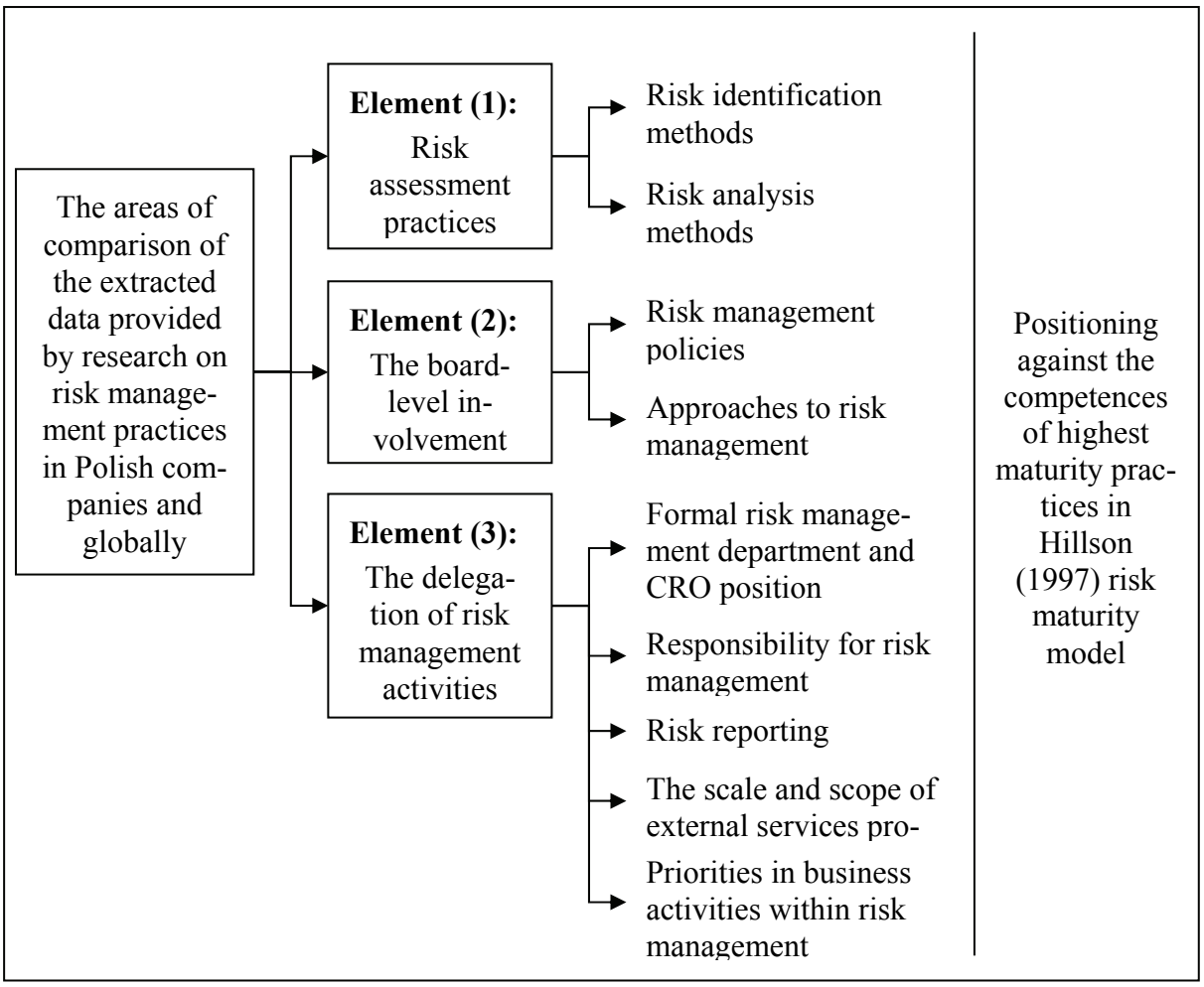
Figure 5: The graphic model of the applied research methodology



Source: Own study.

The adopted research methodology allows the confirmation of two plausible hypotheses on the maturity of risk management in Polish companies:

(1) Within the evaluated aspects, the risk management practices of Polish companies are visibly worse than the practices observed globally,

(2) With regard to the competences evaluated in Hillson's model, risk management practices of Polish companies are generally of lower levels of maturity.

4.2. Results and discussion

4.2.1. Problem (1): Risk assessment practices

Within risk assessment practices two sub-problems are subject to a closer examination: the prime methods of (a) risk identification and (b) risk analysis. Polish respondents admitted that the prime method used to identify major risk was board-level discussion and analysis, which was identified by 62% of the examined Polish companies. This is a high result as compared to the information pro-

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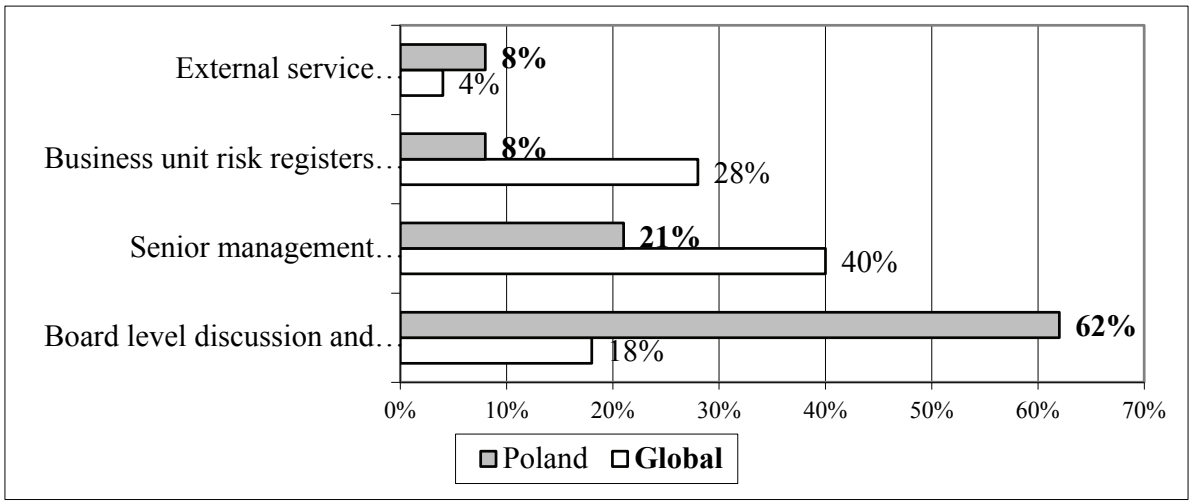
vided at the global level (18%)[1]. However, as presented in figure 6, Polish companies tend not to rely on the senior management intuition and experience (21%), which differs visibly from global tendencies, where 40% of examined companies use this method as the prime one. In Poland, however, such results may be partially explained by the relative novelty of risk management and thus the shortage of managerial capabilities for proper risk identification. Probably for similar reasons Polish companies do not implement business unit risk registers or key risk indicators worksheets as prime methods (only 8%). Such practices are more common from the global perspective (28%). Additionally, for the purposes of risk identification the questioned Polish companies appointed external service providers more frequently as compared to global trends.

Figure 6: Comparison of risk identification practices



Source: Own study based on the data provided in (Słobosz/Ziomko 2009:24; AON 2009:23).

Similar tendencies are observed within the practices of risk analysis provided in figure 7. In Poland, the prime method is board-level discussion with the application of qualitative methods (40%), whereas globally this practice was identified by 12% of respondents. Business unit quantitative analysis and the management intuition and experience were applied less frequently as compared to global trends, and the appointment of external services providers and advisors is at a comparable level.

[1] In the presentation of results and discussion some answers (such as 'Do not know' or 'Other') are purposely omitted.

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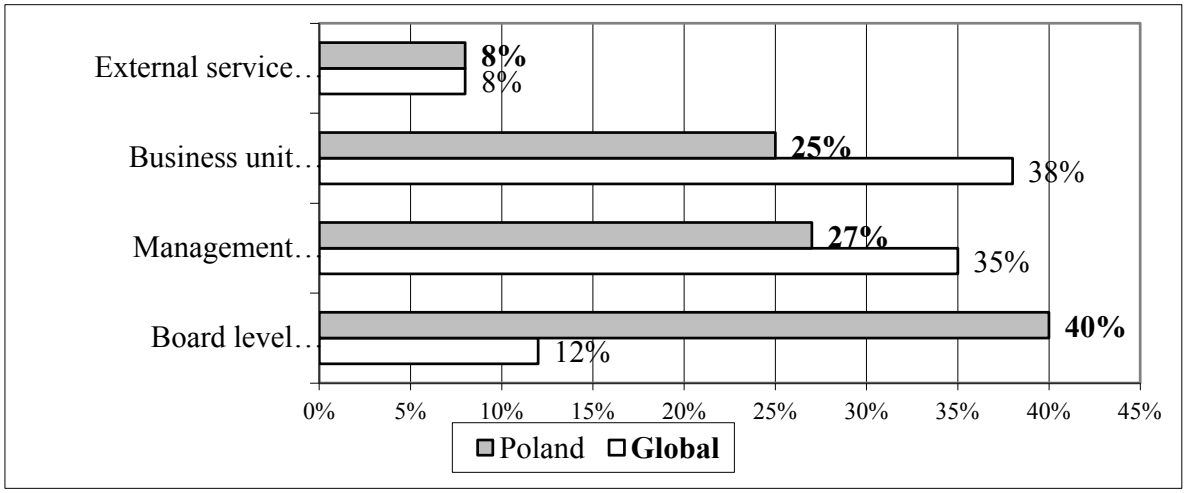
Figure 7: Comparison of the risk analysis practices



Source: Own study based on the data provided in (Słobosz/Ziomko 2009:24; AON 2009:24).

4.2.2. Problem (2): The board-level involvement

Management board involvement in risk management initiatives might be reflected both by the (a) establishment of risk management policy and (b) by the board's involvement in current approaches to risk management in an organisation. With regard to the first criteria, 75% of questioned Polish companies admitted that they had totally or at least partially established risk management policies. This result is comparable with the global survey (where 76% respondents have such policies) and indicates that the questioned Polish companies are aware of the importance of the risk management and the problem of risk is one of the priorities for board-level agendas. However, some significant differences are visible when comparing the proportion of companies that established partial or total risk management policies. In Poland 47% of questioned companies established partial risk management policies and 28% total policies, whereas globally these proportions are reversed: 29% of respondents established partial policies and 47% total (AON 2009:28; Słobosz/Ziomko 2009:26). Among the Polish respondents, 24% declared clearly that they didn't establish a risk management policy, whereas in the global survey there were 17% (other companies indicated that they do not know if such policies are established).

With regard to the board-level approaches to risk management, 95% of questioned Polish companies admitted that the board is somehow involved. This result is comparable with the 89% indications in the global survey. In the Polish sample of companies, 5% indicated no board involvement, whereas in the global survey – 6% (AON 2009:29; Słobosz/Ziomko 2009:26). Once again, the differences are visible when comparing the type of board-level involvement (compare figure 8). In Poland, 35% of questioned companies admitted that the board systematically participates in approaches to risk management and 38% indicated that the board considers specific business risks. In both of these criteria the

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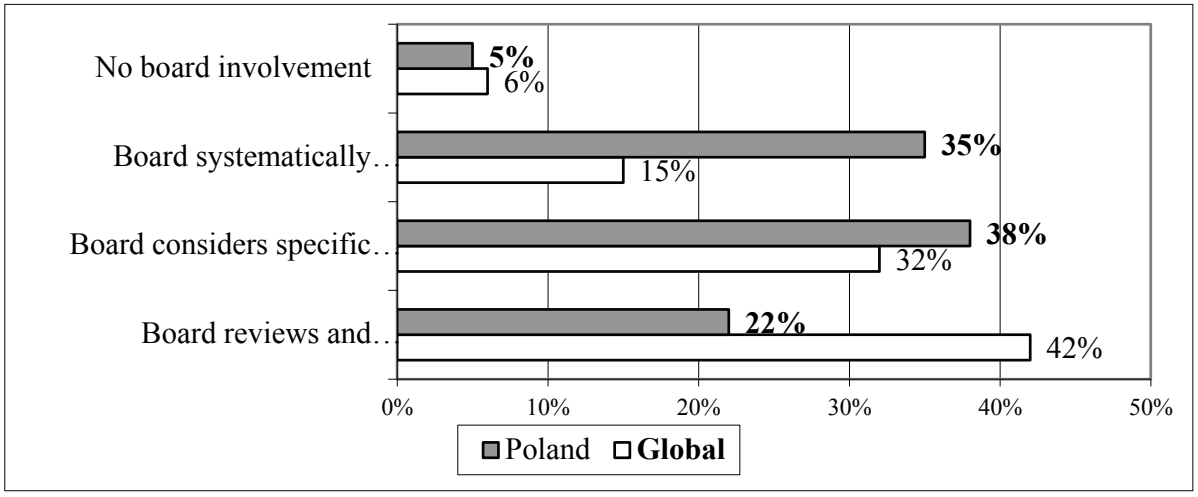
global survey indications were at a lower level. Globally, the most frequent involvement is in the form of annual or periodic approval of the approaches to risk management (42% of respondents), whereas in Poland only in 22% of questioned companies involves the board in such a way.

Figure 8: The comparison of board-level involvement in risk management



Source: Own study based on the data provided in (AON 2009:29; Słobosz/Ziomko 2009:26).

4.2.3. Problem (3): The delegation of risk management competences

Risk management might be conducted internally, by the establishment of a risk management department, or externally, with the appointment of advisors. Thus the prime issue is whether the organisation established a risk management department and if so, how the department functions. If it uses external service providers (advisors), then the areas of their involvement should be analysed. Regardless of the internal or external organisation of the risk management department, from the risk management maturity point of view, it is also important to review the policies on risk reporting as well as the prioritisation of risk management activities.

The establishment of a formal risk management department, with a CRO (Chief Risk Officer) as head of the department, is perceived as an indicator of higher maturity in risk management. According to AON's surveys results, among the questioned Polish companies only 19% possessed a risk and insurance management department whereas in the global survey 78% of respondents declared so. In Poland a relevant factor influencing the presence of the risk and insurance management department was the sector in which a company operates (the majority were found in building, chemicals, transportation or logistics) (Słobosz/Ziomko 2009:26). In the global survey, however, the correlation was found with the level of revenues – formal risk and insurance management departments are more frequent in companies with higher level of total revenues (AON 2009:34). Concerning the presence of a CRO, among Polish respondents only 16% admitted that they established such a managerial function as compared to

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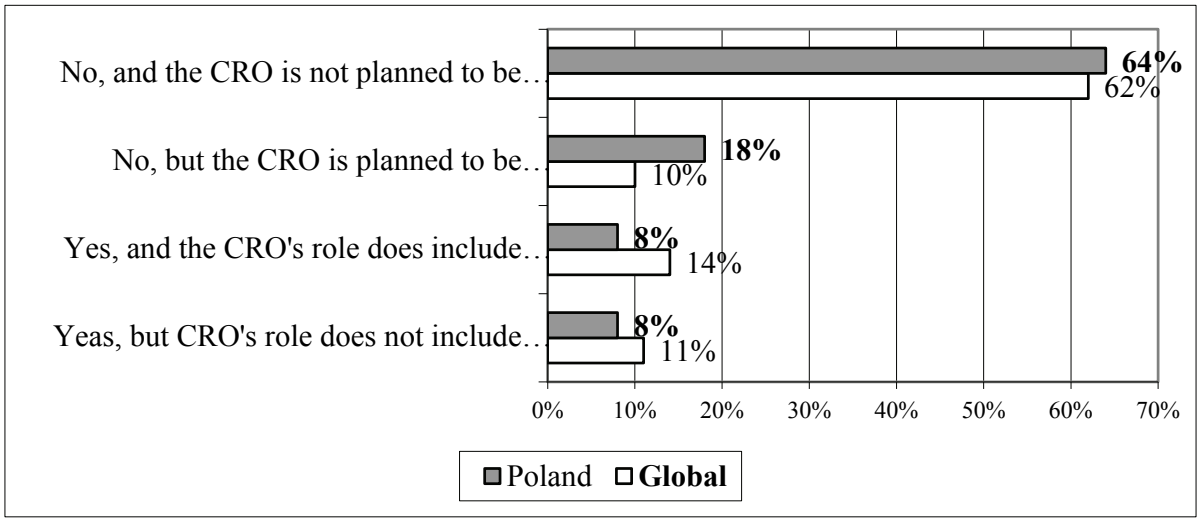
25% of respondents in the global survey. As presented in figure 9, the CRO's functions often include insurance risk management, which means seeking alternatives to traditional insurance programs. In Poland 18% of questioned companies considered creating such a position in the future as compared to 10% of respondents in the global survey. But it is relevant to stress that in Poland 64% and globally 62% of respondents do not plan to create such a position at all.

Figure 9: Comparison of the CRO presence



Source: Own study based on the data provided in (AON 2009:33; Słobosz/Ziomko 2009:27).

These results confirm that although there is a growing interest in risk management practices, companies do not feel prompted to establish a separate position (the CRO) dedicated to managing risk. In such circumstances, the valid question is who is most frequently responsible for managing risk in companies and to whom the risk and risk management issues are reported to. In Poland, the responsibility for risk management is most frequently held by the CFO (38%), the CEO or president (30%) or by internal audit (10%). The global survey indicated similar results with regard to the responsibility of the CFO (43%) with lower indications of the CEO or the president (15%). In the global survey, 9% of respondents held responsible the treasurer and 6% the audit committee. Also, it is worth to indicate that 6% of Polish companies held responsible the accounting department, with the minor indications of risk committee (3%) and the treasurer (2%). As for risk reporting, 40% of Polish respondents report risk to the CFO, financial department or treasurer, then 25% to the management bureau and 20% to the CEO or the president. However, according to the global survey results risk is primarily reported to the CFO, financial department or treasurer with 62% of indications (AON 2009:35,37; Słobosz/Ziomko 2009:27). It is worth noticing that reporting to the management board, which was in second place in the Polish survey, was not indicated in the global survey and should be recognised as a specific feature of Polish practices, which can be explained by the practices within risk identification and risk assessment analysed above.

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In the absence of a risk management department, or in order to support the activity of an existing one, an organisation may turn to external service providers (advisors). Such practices are highly valued in Risk Maturity Models. According to the AON's survey results, independent consultants are treated as an outsourced support with a comparable frequency (40% both in Poland and globally). However, Polish companies less frequently rely on consultants for project works (32% as compared to 71% in the global survey) and on the ongoing basis (61% as compared to 71% in the global survey) (AON 2009:38; Słobosz/Ziomko 2009:28). With regard to the leading types of service provided by external providers (advisors), in Poland the insurance-linked activities still play a dominant role whereas globally it is less important. In table 1, the top five indications of Polish companies are compared with the rank in the global survey. In the global survey, however, apart from the actuarial risk analysis and risk modelling, the property loss control was indicated as the most frequent service provided by advisors (51%).

Table 1: The top five activities of external service providers indicated by the questioned Polish companies as compared to the global trends

Activity	**Polish results**		**Global results**	
	Percentage of indications	Rank	Percentage of indications	Rank
Independent insurance program analysis	37%	1	35%	6
Actuarial risk bearing capacity analysis and risk modelling	33%	2	51%	1
Contract review (including insurance contracts)	29%	3	47%	3
Captives management	29%	4	46%	4
Credit risk management	27%	5	34%	7

Source: Own study based on the data provided in (AON 2009:38; Słobosz/Ziomko 2009:29).

The fact that Polish respondents are more focused on traditional (that means protective, insurance-based) approach to risk management as compared to the global results, was confirmed additionally by the review of the priorities in risk management. The map of risk management priorities presented in table 2 indicates that the questioned Polish companies gave higher priority to insurance buying and claims management as compared to the global survey results. In addition, they diminish the role of internal risk management communication. What is specific to Poland, is that the prime driver of business activities within risk management is the regulatory compliance and reporting, given fourth place in the

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global survey. However, the priorities of the Polish companies in the next two years will more accurately match the pattern in the global survey. The risk quantification, identification and analysis are going to be prioritised. The companies clearly identify the need for an enterprise-wide approach to risk management and internal risk communications. Also, a sign of a more mature risk management practices is shown by the decreasing importance of insurance buying and claims management.

Table 2: A map of risk management priorities

Priority ranking in the Polish survey				**Priority ranking the in global survey**			
Business Activities	Current ranking	Ranking in next two years	Change	Business Activities	Current ranking	Ranking in next two years	Change
Regulatory compliance and reporting	1	2	↓	Risk identification, quantification and analysis	1	1	↔
Risk identification, quantification and analysis	2	1	↑	Managing risk on an enterprise-wide basis	2	2	↔
Insurance buying	3	6	↓	Loss control/ prevention	3	3	↔
Loss control/ prevention	4	4	↔	Regulatory compliance and reporting	4	4	↔
Managing risk on an enterprise-wide basis	5	3	↑	Insurance buying	5	6	↓
Risk financing	6	5	↑	Risk communication – internally	6	5	↑
Claims management	7	9	↓	Risk financing	7	7	↔

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Emergency/ contingency planning	8	8	↔	Emergency/ contingency planning	8	8	↔
Risk communication – internally	9	7	↑	Claims management	9	9	↔
Risk communication – externally with stakeholders	10	10	↔	Risk communication – externally with stakeholders	10	10	↔

Source: Own study based the data provided in (AON 2009:31; Słobosz/Ziomko 2009:28).

It is worth pointing out that the Polish ranking is more dynamic as compared to the global one, where only two business activities are planned to be re-prioritised and the other kept at the current level. This should be perceived as a proof that in Poland risk management is growing in importance and it is still in the phase of experimentation. Companies are currently learning how to conduct effective risk management and how to prioritise business activities conducted within.

4.2.4. Problem (4): The assessment of maturity of risk management practices of Polish companies

The above revised risk management practices of Polish companies allow to assess their risk management maturity. For that purpose, these practices are positioned against the four attributes and the related competences indicated in the Hillson (1997) model. The results of this positioning are outlined in table 3.

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Table 3: The assessment of maturity of risk management practices of the examined Polish companies with the application of Hillson's (1997) Risk Maturity Model attributes and competences

Attributes	Practices of lower levels of maturity	Practices of higher levels of maturity
Culture	• diminished role of the internal risk communication • rare risk management departments (and the CRO position)	• the expected change of priorities within risk management
Process	• only partial risk management policies implemented (the risk management does not cover all areas of decision-making)	• board-level discussions and analysis within risk identification and risk assessment • a systematic participation of the management board in risk management activities
Experience	• commitment of consultants for traditional risk management activities (which indicates that the strategic meaning of risk management is diminished)	
Applications	• risk responsibility and risk reporting – does not reflect the global trends and the importance of management bureau • a low frequency of the application of business unit risk registers or key risk indicator worksheets (which indicates the low application of advanced risk management tools)	• an application of both qualitative and quantitative methods of risk assessment

Source: Own study.

The analysis revealed some practices indicating low levels of risk management maturity. With regard to the culture of risk management, the surveyed Polish companies diminish the role of internal audit communication, which was of low priority among the most important risk management activities. Also, most of the

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surveyed Polish companies do not have a risk management department, not to mention a dedicated risk manager as a leader of risk management practices. Further, the implementation of risk management policies is only partial and the use of external service providers is mostly focused on traditional risk management activities (with the leading role of insurance-linked services). As for the applications attribute, the surveyed Polish companies differ visibly from the global research results with regard to both the practices of risk responsibilities and risk reporting. Instruments such as risk registers or key risk indicators are also relatively infrequently applied, which is partially balanced by the application of both qualitative and quantitative methods of risk assessment.

A higher level of maturity, however, was indicated by the expected change of risk management priorities, that will more accurately match the patterns followed in global research. Also, the board-level commitment indicates mature practices because most of the surveyed companies admitted the managerial involvement in risk analysis as well as the systematic participation in other risk management activities. In this area the surveyed Polish companies differ most visibly from the global trends. This can be explained by the relative novelty of standardised risk management practices in Poland. As a consequence, these practices are perceived as a board-level task and thus naturally turn into board-level functions.

5. Conclusions

A strategic approach to risk management recognises both the dual nature of risk and the need to introduce advanced risk management practices in all areas of a decision-making process. As it was explained, Risk Maturity Models provide a set of benchmarks indicating the level of progression of risk management practices in an organisation. Thus, Risk Maturity Models should be perceived as an important tool for developing strategic risk management. It is worth remembering, that the understanding of risk management cost-benefit trade-off is a fundamental issue in risk management implementation.

The study shows that the available academic and practical Risk Maturity Models differ with (i) the levels of assessment, (ii) the attributes evaluated, and (iii) the competences revised. However, the Models agree with the features of mature risk management characteristics and practices. In this context, Risk Maturity Models provide a logical set of benchmarks applicable in assessing the current advancement of risk management practices. The assessment might be provided both at an organisational (internal) level, as well as for comparative analysis against best practice.

In the practical part, the study demonstrates the possible application of Risk Maturity Models in managerial practice for benchmarking. The data characterising different aspects and activities conducted by Polish companies within their risk management practices are used here to evaluate the maturity of these practices.

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In this context, two plausible hypotheses were verified. The first one, stating that within the evaluated aspects, the risk management practices of Polish companies are visibly worse when compared to the practices observed globally, found convincing support. Only with regard to board level commitment, Polish companies are better as compared to the results of the global survey. However, this can be explained by the relative novelty of risk management practices which is still perceived as an area of managerial concern.

The comparison of the survey results with the 'attributes' and 'competences' of Hillson's Risk Maturity Model, gives a strong support for the second hypothesis, stating that risk management practices of Polish companies are generally less mature. Within the majority of the examined issues, risk management practices of Polish companies are still far from the characteristics of most mature practices.

Undoubtedly, in Poland risk management issues (in the strategic dimension) constantly spread and win the growing interest of key managers. This raises the further questions regarding the role of CFOs and CEOs in developing mature risk management practices in accordance with the requirements of corporate governance and ethics. The progression of risk management practices in Polish companies is followed by the adoption of solutions practiced globally, including the wide acceptance of practical risk management standards.

Although the study was prepared with thoroughness, it has several limitations. A first limitation is a relative lack of academic studies over the problem of risk maturity and Risk Maturity Models, both in theoretical and practical dimension. As a consequence, a broad foundation for the understanding of research problem was needed. The problem of risk management maturity is valid for risk management theory and practice, a more in depth studies are recommended. This paper provides a closer insight to the construction and utility of Risk Maturity Model, thus it offers some contribution to the existing knowledge and literature on risk management related issues.

Another limitation was connected with the available data used. The data came from a questionnaire done on a relatively narrow sample, and in many aspects represent purely declarations of respondents. As a consequence, the provided assessment of maturity of risk management practices is exposed to the risk of bias. Further questionnaires of this type may deliver data useful to verify the assessment and estimate the progress of maturity of risk management practices of Polish companies. Nevertheless, in practical dimension, the study offers a ready platform for further researches and comparisons within the assessment of the maturity of risk management in companies. In particular, the study offered a proposal of the possible research methodology, together with the set of data that may be used in further researches addressing cross-national context.

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References

Ahmed, A./Kayis, B./Amornsawadwatana, S. (2007): A review of techniques for risk management in projects, in: Benchmarking: An International Journal, 14, 1, 22-36.

AIRMIC, ALARM, IRM (ed.) (2002): A Risk Management Standard, retrieved from: http://www.theirm.org/publications/documents/Risk_Management_Standard_030820.pdf (accessed 01 September 2009).

AON (ed.) (2009): Global risk management survey, retrieved from: http://img.en25.com/Web/AON/GlobalRiskManagementSurvey2009.pdf (accessed 15 July 2011).

AON (ed.) (2010): Global Enterprise Risk Management Survey, retrieved from: http://www.aon.com/attachements/2010_Global_ERM_Survey.pdf (accessed 10 July 2011).

Baranoff, E. (2004): Risk Management and Insurance. Hoboken: John Wiley & Sons.

Beasley, M./Clune, R./Hermanson, D. (2005): Enterprise Risk Management: An Empirical Analysis of Factors Associated With the Extend of Implementation, in: Journal of Accounting and Public Policy, 24, 6, 521-531.

BIS (ed.) (2004): International Convergence of Capital Measurement and Capital Standards. A Revised Framework, Basel Committee on Banking Supervision, Bank for International Settlements, retrieved from: http://www.bis.org/publ/bcbs107a.pdf (accessed 12 December 2011).

Chapman, R.J. (2006): Simple Tools and Techniques for Enterprise Risk Management. Chichester: John Wiley & Sons.

COSO (ed.) (2004): Enterprise Risk Management – Integrated Framework. Executive Summary, retrieved from: http://www.coso.org/documents/COSO_ERM_ExecutiveSummary.pdf (accessed 20 August 2010).

Culp, C. (2002): The Revolution in Corporate Risk Management: A Decade of Innovations in Process and Products, in: Journal of Applied Corporate Finance, 14, 4, 8-26.

Fraser, I./Henry, W. (2007): Embedding Risk Management: Structures and Approaches, in: Managerial Auditing Journal, 22, 4, 392-409, retrieved from: www.emeraldinsight.com/0268-6902.htm (accessed 10 June 2009).

FRC (ed.) (2005): Internal Control: Revised Guide for Directors on the Combined Code (The Turnbull Guidance), Financial Reporting Council, London, retrieved from: http://www.frc.org.uk/documents/pagemanager/frc/Revised%20Turnbull%20Guidance%20October%202005.pdf (accessed 10 October 2011).

FRC (ed.) (2008): Guidance on Audit Committees. Financial Reporting Council, retrieved from: http://www.iia-ru.ru/files/documents/Smith_Report.pdf (accessed 10 October 2011)

https://doi.org/10.5771/0949-6181-2014-2-133 - Generiert durch IP 216.73.216.36, am 16.01.2026, 04:33:09. © Urheberrechtlich geschützter Inhalt. Ohne gesonderte Erlaubnis ist jede urheberrechtliche Nutzung untersagt, insbesondere die Nutzung des Inhalts im Zusammenhang mit, für oder in KI-Systemen, KI-Modellen oder Generativen Sprachmodellen.

Frey, A./Karl, K. (2010): Regulatory Issues in Insurance, in: Swiss Re, Sigma 3.

Frigo, M.L./Anderson, R.J. (2011): Strategic Risk Management: A Foundation for Improving Enterprise Risk Management and Governance, in: Journal of Corporate Accounting and Finance, 22, 3, 81-88.

Rejda, G.E. (2001): Principles of Risk Management and Insurance. Boston, San Francisco, New-York: Addison Wesley Longman.

Graham, A. (2011): Integrated Risk Management. Implementation Guide, retrieved from: http://post.queensu.ca/~grahama/publications/TEXTPDF.pdf (accessed 11 November 2011).

Hartwig, R.P./Wilkinson, C. (2007): An Overview of Alternative Risk Transfer Market, in: J.D.Cummins and B.Vernard (ed.), Handbook of International Insurance. Between Global Dynamics and Local Contingencies. New York: Springer, 925-951.

Helgesson, Y.Y.L./Host, M./Weyns, K. (2012): A Review of Methods for Evaluation of Maturity Models for Process Improvement, in: Journal of Software Maintenance and Evolution: Research and Practice, 24, 4, 436-454.

Hillson D.A. (1997): Towards a Risk Maturity Model, in: The International Journal of Project & Business Risk Management, 1, 1, 35-45, retrieved from: http://www.riskdoctor.com/pdf-files/rmm-mar97.pdf (accessed 12 August 2011).

Hollman, K.W./Forrest, J.E. (1991): Risk Management in a Service Business, in: International Journal of Service Industry Management, 2, 2, 49-56.

Holzheu, T./Karl, K./Raturi, M. (2003): The Picture of ART, in: Swiss Re, Sigma 1.

Hopkinson, M. (2000): Risk Maturity Models in Practice, in: Risk Management Bulletin, 5, 4.

Hopkinson, M. (2011): The Project Risk Maturity Model. Measuring and Improving Risk Management Capability. Burlington: Gower Publishing Ltd., retrieved from: http://www.gowerpublishing.com/isbn/9780566088797 (accessed 12 August 2011).

Humphrey, W.S. (1987): Characterizing the Software Process: A Maturity Framework, Technical Report CMU/SEI-87-TR-11, Software Engineering Institute, Carnegie Mellon University retrieved from: http://www.sei.cmu.edu/reports/87tr011.pdf (accessed 20 August 2012).

ICAEW (ed.) (1999): Internal Control. Guidance for Directors on the Combined Code, The Institute of Chartered Accountants of England and Wales, retrieved from: http://www.ecgi.org/codes/documents/turnbul.pdf (accessed 10 October 2011).

IIA (ed.) (2004): The Role of Internal Auditing in Enterprise-Wide Risk Management, The Institute of Internal Auditors, retrieved from: http://www.ucop.edu/riskmgt/erm/documents/role_intaudit.pdf (accessed 10 October 2011).

ISO (ed.) (2009): Risk Management – Principles and Guidelines, ISO 31000:2009, International Standard, International Organization for Standardization, retrieved from: http://www.lesia.insa-toulouse.fr/~motet/papers/ISO_FDIS_31000_(E).pdf (accessed 03 March 2011).

Lam, J. (2001): The CRO Is Here to Stay, in: Risk Management, 48, 4, 16-22.

Lam, J. (2006): Managing Risk Across the Enterprise: Challenges and Benefits, in: Ong, M.K. (ed.): Risk Management. A Modern Perspective, London: Elsevier, 3-19.

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Layton M./Funston R. (2006): The Risk Intelligent Enterprise. ERM Done Right, Deloitte Development LLC, retrieved from: http://www.deloitte.com/assets/Dcom-Shared%20Assets/Documents/DTT_ERS_RiPOV_062606.pdf (accessed 15 July 2011).

Liebenberg, A./Hoyt, R. (2003): The Determinants of Enterprise Risk Management: Evidence From the Appointment of Chief Risk Officers, in: Risk Management and Insurance Review, 6, 1, 37-52;

Liebenberg, A./Hoyt, R. (2011): The Value of Enterprise Risk Management, in: The Journal of Risk and Insurance, 78, 4, 795-822.

Marshall, R./Isaac, A./Ryan, J. (2006): Integration of Operational Risk Management and the Sarbanes-Oxley Act Section 404, in: Ong, M.K. (ed.): Risk Management. A Modern Perspective, London: Elsevier, 391-412.

Meulbroek, L.K. (2002): A Senior Management Guide to Integrated Risk Management, in: Journal of Applied Corporate Finance, 14, 4, 56-70

Moeller, R.R. (2007): Understanding the New Integrated ERM Framework. Hoboken: John Wiley & Sons.

OGC (Office of Government Commerce) (ed.) (2007): Management of Risk: Guidance for Practictioners. London, retrieved from: http://books.google.com/books/about/Management_of_risk.html?id=ph3SpaBJ6IYC (accessed 12 July 2011).

Ojasalo, J. (2009): A Model of Risk Management in Globalizing Companies, in: The Business Review, 13, 1, 200-209.

Page, M./Spira, L. (2004): The Turnbull Report, Internal Control and Risk Management: Developing Role of Internal Audit, The Institute of Chartered Accountants of Scotland, retrieved from: http://www.icas.org.uk/site/cms/download/res_page_spira_Report.pdf (accessed 11 November 2011).

Paulk, M.C. (2009): A History of the Capability Maturity Model for Software, in: ASQ Software Quality Professional, 12, 1, 5-19.

Paulk, M./Curtis, W./Chrissis, M.B./Weber, C. (1993): Capability Maturity Model for Software (Version 1.1), Technical Report CMU/SEI-93-TR-024, Software Engineering Institute, Carnegie Mellon University, retrieved from: http://www.sei.cmu.edu/library/abstracts/reports/93tr024.cfm (accessed 20 August 2012).

Słobosz, J./Ziomko, R. (2009): Zarządzanie ryzykiem i ubezpieczeniami w firmach w Polsce. Warszawa: AON sp. z o.o., retrieved from: http://www.pid.org.pl/uploads/AON%20Polska_Zarzadzanie%20ryzykiem%20i%20ubezpieczeniami.pdf (accessed: 15 May 2011).

Smithson, C./Simkins, B.J (2005): Does Risk Management Add Value? A Survey of the Evidence, in: Journal of Applied Corporate Finance, 17, 3, 8-17.

Stulz, R.M. (1996): Rethinking Risk Management, in: Journal of Applied Corporate Finance, 9, 3, 8-24

Vaughan, E.J/Vaughan, T. (2003): Fundamentals of Risk and Insurance. New York: John Wiley & Sons.

Walker, P.L./Shenkir, W.G./Barton, T.L. (2003): ERM in Practice, in: Internal Auditor, 60, 4, 51-55.

https://doi.org/10.5771/0949-6181-2014-2-133 - Generiert durch IP 216.73.216.36, am 16.01.2026, 04:33:09. © Urheberrechtlich geschützter Inhalt. Ohne gesonderte Erlaubnis ist jede urheberrechtliche Nutzung untersagt, insbesondere die Nutzung des Inhalts im Zusammenhang mit, für oder in KI-Systemen, KI-Modellen oder Generativen Sprachmodellen.

Williams, R./Bertsch, B./Dale, B./Van der Wiele, T./Van Iwaarden, J./Smith, M./Visser, R. (2006): Quality and Risk Management: What Are the Key Issues?, in: The TQM Magazine, 18, 1, 67-86.

Williams, Jr. C.A./Heins, R.M. (1989): Risk Management and Insurance. New York, St. Louis, San Francisco: McGraw-Hill.

Young, P./Tippins, S. (2001): Managing Business Risk. An Organization-wide Approach to Risk Management. New York: American Management Association.

https://doi.org/10.5771/0949-6181-2014-2-133 - Generiert durch IP 216.73.216.36, am 16.01.2026, 04:33:09. © Urheberrechtlich geschützter Inhalt. Ohne gesonderte Erlaubnis ist jede urheberrechtliche Nutzung untersagt, insbesondere die Nutzung des Inhalts im Zusammenhang mit, für oder in KI-Systemen, KI-Modellen oder Generativen Sprachmodellen.