Opportunity and risk report

Basic principles

KUKA Group is a global enterprise with international operations. Any entrepreneurial activity provides new business opportunities, but also involves many risks, especially technical ones. The Executive Board of KUKA Aktiengesellschaft aims to systematically and sustainably improve the value of the company for all stakeholders and shareholders by seizing potential opportunities and minimizing said risks.

To achieve this objective, the Executive Board has implemented a comprehensive corporate risk management system to systematically and consistently identify, evaluate, manage, monitor and report the internal and external risks to which its divisions and subsidiaries are exposed.

Group management regularly assesses the likelihood that identified risks will occur and their potential impact on expected earnings (EBIT). Worst, medium and best case scenarios are considered and serve as the basis for determining a weighted expected risk value. Accruals and write-downs associated with these risks are recognized in the annual financial statements in accordance with applicable accounting principles. The unsecured residual risks, i. e. risks according to risk mitigation measures (net assessment), are therefore depicted as risks.

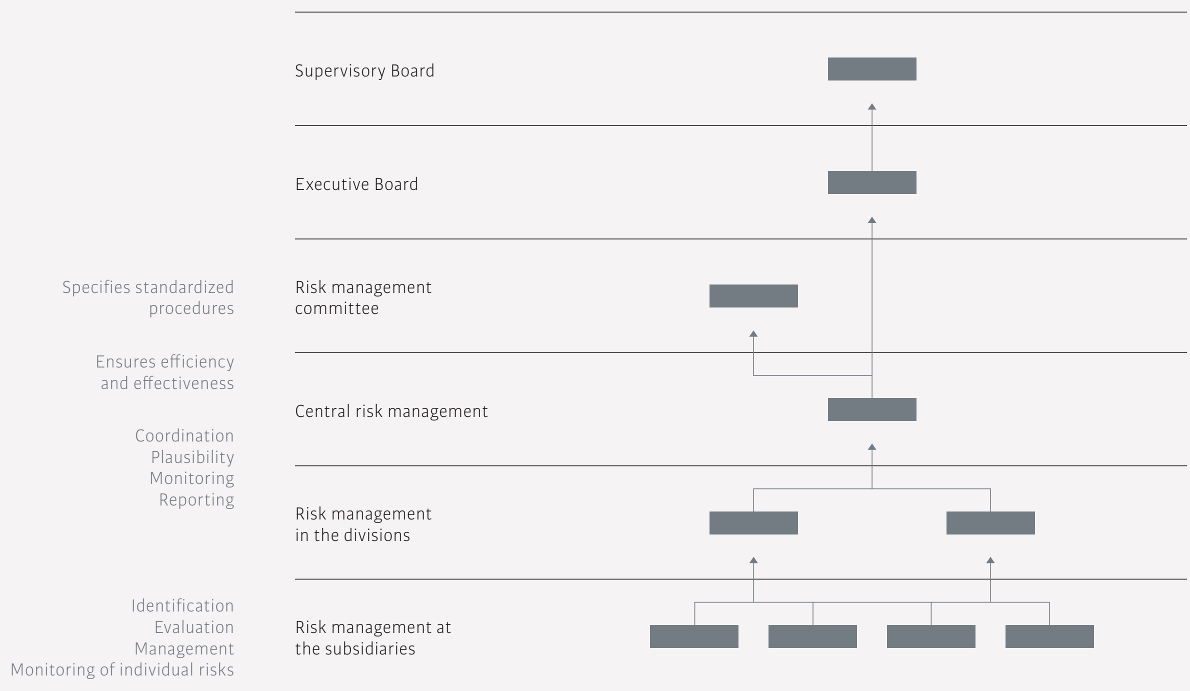
The risk management system is subject to a monthly reporting process (risk inventory) which involves identifying new risks and carrying out a follow-up assessment of existing risks. The information collected in this way is summarized in a risk report that is also prepared each month and addressed to the Executive Board of KUKA Group. This report contains a top 10 risk assessment and a risk exposure assessment (overall risk situation) for the divisions, KUKA Aktiengesellschaft as the holding company and KUKA Group. The top 10 risks are also a fixed part of internal monthly management reporting and are discussed at monthly results discussions between the Executive Board of KUKA Group and the management of the divisions. The identified risks are additionally presented and explained in more detail to the Executive Board each quarter by the Risk Management Committee. The committee also determines whether any measures already implemented to minimize risk are adequate or whether further steps need to be initiated. These plenums also assess the plausibility of the reported risks and determine how to avoid similar risks in future. The risk report is also reviewed during Executive and Supervisory Board meetings, especially by the Audit Committee.

The managers of the divisions and subsidiaries are directly responsible for the early identification, control and communication of risks. Risk managers in the central and decentralized business units ensure that the reporting process is uniform with clearly defined reporting channels and reporting thresholds that are in line with the size of the company. Internal ad hoc announcements are mandatory whenever risks exceed the Group's defined reporting thresholds. The standard risk management procedures applied throughout the Group are efficient and effective. The head of risk management coordinates the risk management system. He compiles the individual risks identified into the aforementioned top 10 risk overviews or risk exposure overviews and communicates and monitors them. This role is based within KUKA Aktiengesellschaft's Group controlling department, which reports directly to the CFO of KUKA Aktiengesellschaft. This ensures that risk management is an integral component of KUKA Group's overall planning, control and reporting process.

In principle, the Group's risk management system enables the Executive Board to identify material risks at an early stage, initiate appropriate steps to counter these risks and monitor implementation of the steps. The internal audit department regularly monitors compliance with the risk management guideline of KUKA Group and therefore whether existing procedures and tools are effective. It also audits those responsible for the risks if this is relevant. The internal audit department also regularly audits the risk management process to ensure efficiency and continuous improvement. Furthermore, external auditors check that the early risk identification system is suitable for early identification of risks that could threaten the existence of the company as a going concern.

In addition to the risk management system, KUKA Group has an internal control system (see Management Report, "Internal control and risk management system" section, page 55 et seq.) above and beyond the risk management system, which it uses to continuously monitor the appropriateness of the corporation's business and accounting processes and identify potential improvements.

Risk management organization



Internal and external auditors check the risk management system and the risk early detection system (RFS)

Risks and opportunities in KUKA Group

KUKA Group's opportunities and risk-related controlling process ensures that the company's managers take both opportunities and risks into consideration. The Group's risk exposure, based upon evaluating operating risks according to the procedure outlined in the "Basic principles" section, is described below. The report includes the aggregated expected risk value, which is calculated on the basis of the various weighted scenarios and their respective likelihood of occurrence.

In order to reduce the complexity of the presentation in the annual reports of previous years and also to increase transparency, the aggregated expected risk values are given for all risks managed and quantified in the Group. Below you will find a quantification of the risks managed at Group level as well as the operating risks of the divisions.

No aggregation is carried out for the opportunities at Group level. For this reason, the opportunities are dealt with in greater detail in the following sections on the divisions.

Group risk exposure

in € millions	2017	2018
Legal risks	11.0	10.7
Economic risks	1.6	–0.7
Financial risks	15.6	13.0
Total for the Group	**28.2**	**23.0**

More detailed explanations of the risk categories listed can be found in the following sections.

Operational risks and opportunities in the divisions

KUKA is exposed to the cyclic investment behavior of its customers in the various market subsectors. A major portion of the divisions' business volume is in the automotive sector where oligopolistic structures and constant price pressure are ongoing concerns. Fluctuations in the industry's capital spending plans are also considered in the respective strategic and operative plans by analyzing public announcements and disclosures. The company continuously strives to be as flexible as possible with its own capacities and cost structure to address the cyclic nature of the business.

Particularly in the second half of 2018, KUKA felt the effects of weakened investment activities in both the automotive industry and the general machinery and systems engineering sector. A deviation from the planning and thus also a correction of the earnings targets were primarily caused by an economic slowdown in the key automotive and electronics industries, weak growth in the important Chinese market, and challenges in project business. The ongoing trend towards automation invariably also offers opportunities in non-industrial sectors, such as the long-term prospects associated with assisting an aging society. The digitization strategy has been continuously implemented by means of various projects.

KUKA works with suppliers that focus on quality, innovative strength, continuous improvement and reliability so that it can supply its own customers with products of the highest possible quality and ensure timely delivery. Generally, KUKA sources product components from several suppliers in order to minimize the risk of sharp price rises for key raw materials, but in a few cases, due to a lack of alternative sources, is dependent on single suppliers that dominate their markets. Continuous monitoring of supplier risks is conducted as part of the risk management process.

KUKA Robotics

Demands for continuous product innovation from international customers and unrelenting cost awareness are the key challenges for this division's product portfolio; especially when it comes to the automotive industry and its subsuppliers. The result is permanent price pressure and potentially longer life cycles for the robotic applications combined with demands for ever-improving quality and longer warranties.

KUKA Robotics responds to such trends by continually developing new products and applications that offer customers in existing markets quantifiable financial benefits driven by quick paybacks. Launching new products goes hand in hand with product performance risks and quality guarantees, which could generate additional costs if rework is required. KUKA employs a comprehensive quality management system that includes extensive validation and test processes to detect, avoid and manage such risks.

KUKA sees an opportunity to continuously expand its customer base in general industry with a focus on electronics. One of the company's key strategic thrusts is to penetrate new, non-automotive markets. The company's profitability should become less and less dependent on exchange-rate fluctuations as it increasingly spreads its value added across different local currencies.

Robotics risk exposure

in € millions	2017	2018
Legal risks	0.0	0.3
Economic risks	0.0	0.0
Financial risks	0.0	0.0
Total for Robotics	**0.0**	**0.3**

The balance of risks is neutral in most cases (the expected risk value for economic and financial risks is thus 0).

KUKA Systems

This division's sales and profits are subject to general business risks due to the length in time it takes to process project orders, the revisions to the specifications that are often necessary while already processing the orders, the infrequency of the orders received, and the price and competitive pressures. Other risks associated with these projects include inaccurate prediction of the actual costs as well as penalties for late deliveries. The division therefore uses appropriate risk checklists for individual orders in order to assess the associated legal, economic and technological risks prior to preparing a quotation or accepting a contract. One of the components of project execution, for example, is to monitor and track solvency risks and mitigate them using a strict project and receivables management process. Other risks are continuously monitored and if necessary accounted for by way of accruals or write-downs. Opportunities associated with the project business arise mainly when parts can be purchased at a lower cost than originally estimated and by invoicing the customer for any change orders received over the course of the project. There were capacity bottlenecks and delays with several projects in Europe in 2018, which resulted in considerable additional costs. Significantly more external resources had to be obtained than planned to address the bottlenecks and make up for the delays. These effects have been taken into account in the amended project calculation and are already included in earnings for 2018 through provisions for impending losses.

Automation requirements in the expansion of global production capacities of the major automobile manufacturers, particularly in the field of electromobility, are currently highly dynamic. KUKA is increasingly working together with internal partners, with several of the division's regional subsidiaries collaborating on a customer project. In these situations, there are risks involved in information exchange, the value-added process and project management across various IT systems. There are also organizational risks associated with extraordinarily rapid and strong growth in business volume, particularly in emerging markets. KUKA mitigates these risks by harmonizing its global IT systems and deploying experienced internal and contract employees when establishing and expanding the local organizations.

The increasing variety of models offered by the automotive industry has a positive impact on the potential market volume, since this generates increasing demand for flexible manufacturing systems, which in turn spurs demand for new or revamped assembly lines. This creates new business opportunities for system providers and subsuppliers. Scarce resources are driving demand for smaller and more fuel-efficient vehicles that will use alternative energy sources. This means automakers, especially American manufacturers, will soon have to invest in new production lines or upgrade their existing assembly lines.

Pay-on-production contracts such as KTPO's (KUKA Toledo Production Operations) offer additional opportunities, but also risks. The Jeep brand continues to promise above-average growth prospects compared to other American car models. KUKA will continue to participate in this growth. 2018 saw investment in the infrastructure of the location in order to recommence production in 2019 for a new vehicle. Here risks involve greater dependence on the volumes produced for the car market.

Thorough market analyses have shown that KUKA Systems also has long-term business opportunities outside the automotive industry; namely, in general industry. The main risks here when tapping into new market potential relate to technical requirements, since customers in these sectors often have no experience with automated systems. The aforementioned checklists to review the technical risks associated with applying new automation techniques are therefore an especially important tool for mitigating risks.

Systems risk exposure

in € millions	2017	2018
Legal risks	0.2	0.3
Economic risks	1.1	–0.2
Financial risks	0.0	0.0
Total for Systems	**1.3**	**0.1**

Intensified risk mitigation measures result in a theoretically negative expected risk value in individual cases.

Swisslog

The division is subject to long-term investment cycles spread over various industries, such as hospitals, pharmaceuticals, food and e-commerce. The competition and the associated pressure on prices vary from one region to another. High investments in its own products to expand its range of solutions serve to strengthen the company's competitive position considerably. The Swisslog segment broadens KUKA's product portfolio and makes a decisive contribution to independence from the automotive industry.

In some cases, projects for the automation of warehouse and distribution centers are subject to long lead times which can give rise to financial risks resulting from miscalculations, failure to meet acceptance specifications or late deliveries. To counter this, regular project risk assessments are carried out at different stages of the projects by those responsible for project implementation in the relevant countries. Potential risks are regularly reviewed, new ones are added or existing ones eliminated, and measures for risk reduction are introduced and their progress documented. Projects requiring particular management attention are classified as "top attention projects" and their status is communicated monthly to the higher management levels.

Market data indicate that the increasing pressure on costs and the strict safety requirements for hospital logistics offer high growth potential for automation. Furthermore, consolidated service centers, in which hospitals standardize their logistics processes and achieve cost advantages, generate greater demand for automation solutions.

Swisslog risk exposure

in € millions	2017	2018
Legal risks	–0.7	0.0
Economic risks	0.5	–0.5
Financial risks	0.0	3.4
Total for Swisslog	**–0.2**	**2.9**

Intensified risk mitigation measures result in a theoretically negative expected risk value in individual cases.

Risks and opportunities managed at holding level (KUKA AG)

Cross-division opportunities and risks are analyzed and managed at Group level for central functions such as legal, taxes, financing, personnel and IT, not by the individual divisions, which is why said risks are only addressed from the Group perspective in the opportunity and risk report. Information about this can be found in the specified sections.

KUKA AG risk exposure

in € millions	2017	2018
Legal risks	11.5	10.1
Economic risks	0.0	0.0
Financial risks	15.6	9.6
Total for the Group	**27.1**	**19.7**

Strategic risks and opportunities

KUKA's business divisions aim to be among the technology and market leaders in their target markets. The key to achieving this is to consistently enhance their core technologies on the basis of coordinated innovation programs. One important task is to identify opportunities and risks associated with technical innovations early and to evaluate the innovations' manufacturability. The company mitigates the impact of faulty market assessments by conducting regular market and competitor analyses, some of which are decentralized. Application-related developments, system partnerships and cooperative ventures reduce the risk of development work not conforming to market requirements. Strategic risks and opportunities are not quantified.

Residual risks and insurance

Since KUKA conducts business around the world, it is obliged to comply with many international and country-specific laws and regulations issued by, for example, tax authorities. The company employs specialists familiar with the respective countries' laws on a case-by-case basis. Opportunities and risks arise as a result of changes to legal frameworks. For example, tax audits discovering non-compliance issues could negatively impact the Group in the form of payment of interest charges, penalties and back taxes. These changes and the resultant risks are continuously monitored; at the present time, however, there are no foreseeable tax or legal issues that could have a significant negative impact on KUKA Group. Appropriate provisions have been recognized for tax risks based on experience.

Standard general contracts are used whenever possible to cap risks from contractual relationships. The Group's legal department supports the operating companies to help limit risks associated with in-house contracts, warranty obligations and guarantees as well as country-specific risks such as the lack of patent and brand protection in Asia. KUKA has developed an independent strategy to safeguard its intellectual property, which is primarily secured by patents and trademark rights.

In the context of insurance/risk management, sufficient property insurance, loss-of-profits insurance, public, product and environmental liability insurance, transportation insurance and cyber insurance are maintained centrally for the Group. D&O insurance (directors and officers liability insurance) is also in place. Existing insurance policies are reviewed annually in order to ensure sufficient cover and to weigh the relationship between the insurance protection and deductibles against the risk premium.

Financial risks

KUKA Group is under the financial control of KUKA AG. The primary objectives of financial management are to secure the liquidity and creditworthiness of the Group, thus ensuring financial independence. Effective management of foreign exchange, interest rate and default risk also serves to reduce earnings volatility.

KUKA AG identifies, coordinates and manages the financial requirements of the Group companies and optimizes the financing of the Group. For this it employs a Group-wide standard treasury management and reporting system. KUKA AG normally procures finance centrally and distributes the funds among the Group companies. In addition, liquidity risk is reduced for KUKA Group by closely monitoring the Group's companies and their management of payment flows.

The two rating agencies Moody's and Standard & Poor's still rated KUKA Group as investment grade Baa3/BBB–. This rating level guarantees access to a broad investor base as a source of finance while also supporting the Group companies in their negotiations with customers, suppliers and service providers. On the basis of an analysis of the market situation, KUKA decided at the end of 2018 that the desired positive support can be achieved even if only one rating is maintained. For this reason, talks were initiated with Moody's with the aim of terminating their rating support. Consequently, Moody's withdrew KUKA's rating in January 2019.

KUKA pursues a conservative financing policy with a balanced funding portfolio. This is essentially based on the promissory note loans issued in 2015 and 2018 with staggered maturities up to 2023 and a syndicated loan extended and amended again at the start of 2018 with a term until 2024 and a remaining extension option for a further year. Two standard financial covenants (leverage and interest coverage ratio) have been agreed for the syndicated loan. KUKA monitors adherence to these covenants based both on the current figures and on planning. The covenants were complied with throughout the 2018 fiscal year. As at December 31, 2018, both covenants were well within the contractually defined limits. Beyond these financing agreements, additional financing options are available to KUKA within a factoring program. The ABS program that was still active as at December 31, 2018, expired at the end of January 2019. Please refer to the notes to the annual financial statements, "Financial liabilities/Financing", page 99 et seq., for comprehensive details of the promissory note loans and syndicated loan as well as the extent to which the agreed credit lines have been utilized.

KUKA hedges the risks from operations, especially currency risks, and risks from financial transactions with financial derivatives. Transactions in financial derivatives are only entered into for hedging purposes, i.e. solely with reference to and for hedging underlying transactions. Whenever possible, KUKA AG is the central hedging partner of the Group companies, and it in turn hedges the Group's risks by concluding appropriate hedging transactions with banks. Internal guidelines govern the use of derivatives, which are subject to continuous internal risk monitoring. For a more precise description of our risk management objectives and the methods employed, please refer to the notes on financial risk management and financial derivatives, starting on page 101.

Currency translation risks, i.e. measurement risks associated with balance sheet and income statement items in foreign currencies, are not hedged, but are continuously monitored. The risk associated with the volatility of leading currencies and the resulting economic exchange risk (competitive risk) is mitigated by having production facilities in several countries (natural hedging).

Personnel risks and opportunities

The success of KUKA Group, a high-tech enterprise, depends to a great degree on having qualified technical and management staff. Personnel risks arise mainly from employee turnover in key positions within the Group. Due to the current general conditions, there is a risk of higher fluctuation, which could lead to shifts in competencies. KUKA is countering this risk, not least by means of in-house continuing education programs such as those offered by KUKA Academy or employee suggestion programs in order to boost the satisfaction, motivation and qualification of the workforce. This also opens up opportunities for the recruiting of new employees.

IT risks and opportunities

IT risks have risen over the past number of years, not least because of the importance of IT to business processes. These risks relate to both the frequency of viruses or hacking and the damage they could potentially cause. The existing IT security and business continuity management systems as well as guidelines and organizational structures are continuously optimized and reviewed in an effort to predict and minimize possible IT-related risks such as failure of computer centers or other IT systems. One way this is addressed is by continuously upgrading hardware and software. Furthermore, KUKA has launched several transformation projects which are currently running with the objective of harmonizing processes and the supporting IT application system architecture throughout the Group. This will generate long-term cost reduction potential and lead to continuous quality improvements. By systematically monitoring the processes concerned, the company reduces the risks associated with an increasing number of external threats as well as dependence on the ever-expanding digitization of business processes.

Risks in the area of information security and data protection are continuously monitored and analyzed, as they can result in considerable risks for the Group due to changes in the legal framework.

Compliance risks

Compliance violations can have far-reaching consequences, resulting in long-term damage to the company and restricting its economic success. In addition to high fines and compensation payments, exclusion from tenders, disgorgement of profits and criminal law repercussions are possible. KUKA's image as a business partner of integrity could also be tarnished. This can have a negative effect not only on customer relationships, but also on business relationships of all kinds. Strategic projects, transactions and capital market measures could suffer as a consequence.

In order to counter these risks in a transparent and appropriate manner, the Group-wide Corporate Compliance Program was set up in 2008.

The Compliance Committee established through this program holds regular ordinary meetings as well as extraordinary meetings as required. The members have a wide-ranging and in-depth wealth of experience in both the company and the industry. This enables them to assess risks carefully and adequately.

The committee is chaired by the Chief Compliance Officer, who reports to KUKA Aktiengesellschaft's CEO, who in turn reports to the Supervisory Board's Audit Committee.

The CEO is ultimately responsible for the Corporate Compliance Program, which is updated as required and subject to strict internal controls. The Corporate Compliance Program is integrated into daily work by means of the comprehensive processes and measures of the Compliance Management System.

No substantial compliance risks were identified in 2018 due to the active countermeasures taken by KUKA to mitigate risk at an early stage and to eliminate risk sources, e. g. by realigning processes and adapting training to specific target groups.

Other risks

KUKA Group continuously monitors other risks and mitigates these to the greatest extent possible. There is no evidence of environmental risks from operational activities, since the company largely abstains from the use of hazardous materials and the locations are regularly certified to ISO 14001. The Group makes use of buildings and properties for its business operations, some of which it owns. As a result, the company is exposed to risks associated with any residual pollution, soil contamination or other damaging substances that may be discovered on its properties. There is currently no evidence of any situations that would have a negative impact on the measurement of balance sheet items. However, it cannot be ruled out that any such situations, which could, for example, require costly clean-up operations to be undertaken, will occur in the future. At the locations, risks relating to fire protection, water and media supply, static and construction defects are regularly investigated. These are assessed by experts and risk improvement measures are adopted.

Please refer to page 59 for information about material agreements subject to conditions related to a change of control.

Summary

In the overall assessment of risks, KUKA Group is primarily exposed to performance-related risks from the divisions and to legal and financial risks controlled at Group level. The Executive Board is not aware of any individual or aggregated risks that could threaten the company's existence. Strategically and financially, the company is positioned to be able to take advantage of business opportunities.