

## Risk Analysis in New Product Development Projects in the Technology Industry

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### Abstract

New product development projects in the technology industry are faced with various risks that can affect the success and sustainability of the project. This research aims to analyze the main risks that arise in the new product development process, including market, financial, regulatory, and technical risks. Through qualitative and quantitative approaches, this research identifies and evaluates the factors that influence each type of risk. The findings show that effective risk mitigation requires comprehensive planning, ongoing monitoring, and collaboration between various stakeholders. Practical recommendations are provided to assist project managers in managing risks and increasing the chances of project success.

### Keywords:

Risk analysis; Product development projects; Technology industry; Risk management; Risk mitigation.

## 1. INTRODUCTION

The technology industry continues to experience rapid growth, marked by the emergence of new innovations every day. New product development is at the core of this growth dynamic, but this process is not free from various risks that accompany it. Therefore, risk analysis is a very crucial step in ensuring the success of any product development project. This article aims to examine various aspects of the risks involved in developing new products in the technology industry as well as the strategies that can be implemented to manage these risks effectively. Risk analysis in this context includes the identification, assessment and mitigation of risks that may arise throughout the product development life cycle. Risks in technology product development can come from a variety of sources, including market uncertainty, technological changes, challenges in project management, and regulatory and compliance issues. Market uncertainty, for example, can affect demand predictions and the commercial success of new products. Additionally, rapid technological changes can cause products to become obsolete before they reach the market, so companies need to continually innovate and adapt to the latest trends. Project management also plays an important role in risk management. Mistakes in planning, inadequate resource allocation, and communication failures between teams can lead to project delays, increased costs, and even complete failure. Therefore, a good project management approach, including the use of agile or scrum methodologies, can help in identifying and addressing problems early. Regulatory and compliance issues should not be overlooked either. Technology products often have to meet various applicable standards and regulations, both at national and international levels. Failure to comply with these regulations may result in legal sanctions, product recalls, and significant reputational harm. To manage these risks, companies need to adopt a comprehensive and proactive approach. This includes conducting systematic risk analysis, developing risk mitigation plans, and ensuring effective communication across the project team. In addition, investing in research and development, employee training, and building strategic partnerships with external parties can also help reduce risks and increase the chances of new products being successful. Thus, proper risk analysis and effective risk management will not only help in ensuring the success of product development projects, but will also strengthen the company's competitive position in this ever-evolving technology industry.

In new product development in the technology industry, risk analysis plays an important role in ensuring the success and feasibility of the project. Companies that engage in new product development must navigate a landscape filled with uncertainty and complexity. The process of launching a new product quickly and effectively involves a certain level of risk-taking. This risk-taking is further exacerbated by intensifying international competition, rapidly developing technology, and higher customer expectations, all of which contribute to uncertainty in the innovation process. Risk management in new product development projects provides a structured approach to decision making, reduces uncertainty, and increases the likelihood of project success (Porananond & Thawesaengskulthai, 2014). It is very important for organizations to not only identify, but also assess and rank risks systematically to build an effective risk management system (Belanova, 2023). Decision-making strategies in this kind of investment project should combine robust risk estimation and mitigation measures to increase overall project success (Assis et al., 2017). Early studies that focus on customer needs and market trends can help reduce uncertainty regarding product requirements, thereby contributing to better decision making during the development process (Pilvere et al., 2021). This kind of study not only provides insight into customer preferences, but also helps companies in identifying new market opportunities and potential obstacles that may be encountered during the product launch process. Thus, a comprehensive and in-depth analysis of the market and customer needs is a very important first step in a series of new product development activities. Collaborative innovation is recognized as a valuable tool for promoting technological convergence, which can be key in driving successful new product development initiatives (Hwang, 2020). Collaboration between companies, as well as between companies and research institutions and academics, can produce innovative solutions more quickly and effectively. This collaboration also enables a smoother flow of knowledge and technology, which in turn can speed up the product development process and increase competitiveness in the global market. In an environment that is constantly changing and evolving, flexibility and adaptability are the keys to success. Companies must be ready to adapt their strategies based on changes in technology, regulations, and customer preferences. Therefore, risk management focuses not only on identifying and mitigating risks, but also on creating systems that enable companies to react quickly to changes and new opportunities. New product development also requires significant investment in research and development (R&D). This investment is not only important to create innovative, high-quality products, but also to build internal capabilities to manage complex and high-risk projects. Therefore, companies need to allocate adequate resources to R&D and ensure that their teams are equipped with the necessary skills and knowledge to face the challenges that arise during the product development process. In the long term, companies that are able to manage risk effectively and innovate continuously will have a significant competitive advantage. Not only will they be able to launch new products more quickly and efficiently, but they will also be able to better meet customer needs and increase customer satisfaction. Thus, good risk management and continuous innovation are the two main pillars that support the successful development of new products in the technology industry.

In project development, especially in the construction and industrial sectors, risk analysis plays a crucial role in project success. Effective risk identification significantly influences project performance evaluation (Simanjuntak et al., 2022). Risk management includes a set of procedures and methodologies aimed at identifying, controlling and measuring risks that may arise from activities, which is important for reducing uncertainty and ensuring project success (Muttaqin et al., 2023). In construction projects, internal technical risks such as construction methods, design, material availability, and safety can affect project time, quality, and costs (Moi & Purnawirati, 2021). The construction method chosen can determine the efficiency and effectiveness of work in the field. For example, the use of more advanced construction technology can increase the speed of construction, but may require greater initial investment and special training for workers. Good design is also very important because errors in design can cause delays and increase project costs. The availability of timely and quality materials is also a determining factor, because scarcity or delays in material delivery can hamper the construction process. In addition, worker safety aspects must be taken seriously, considering the high risk of accidents in construction projects. Research on risk management in various types of projects, such as container yard development and road construction projects, emphasizes the importance of systematic risk analysis to achieve successful project results (Kristinayanti, 2017; Ardiansyah et al., 2022). Container yard development, for example, requires in-depth risk analysis related to environmental factors, such as extreme weather changes and environmental impacts. Road construction projects also face various risks, ranging from unstable ground conditions to traffic disruptions during the construction process. Financial analysis tools such as Monte Carlo simulation are invaluable for risk assessment and evaluating the feasibility of investment in projects such as underpass construction. Monte Carlo simulation allows developers to model various risk scenarios and calculate the probability of project success or failure based on different variables. By using this technique, developers can make more informed decisions and reduce the uncertainty associated with large investments. Identifying safety risks in building construction projects is critical to ensuring worker safety and overall project success. Comprehensive safety training and implementation of strict safety standards can help reduce the incidence of workplace accidents. In addition, close supervision and regular inspections of equipment and work procedures can ensure that all safety aspects are met. Furthermore, risk management in construction projects does not only stop at the identification and assessment stage. This process must continue with the implementation of effective mitigation measures. For

example, in dealing with technical risks, companies can adopt new technologies that are more efficient and safe, and ensure that all workers are well trained in using these technologies. In terms of design risks, companies can carry out periodic design reviews and validations to identify and correct errors before construction begins. Effective communication between all parties involved in a project is critical to successful risk management. All parties, including contractors, subcontractors, suppliers and project owners, must have a clear understanding of the risks involved and the steps taken to address them. Regular meetings and project progress reports can help ensure that all parties remain aligned and can respond quickly to changing conditions or emerging issues.

2. RESEARCH METHOD

The research methods used in risk analysis of new product development projects in the technology industry include several key steps integrated to ensure comprehensive and accurate results. The first step in this research is a literature study. This stage involves reviewing existing literature to understand the theory and best practices in technology project risk management. By studying previous research, industry documents, and academic publications, researchers can gain deep insight into the various approaches that have proven effective in managing risk in the context of technology projects. This also helps in establishing a strong theoretical basis for the study. The next step is to conduct interviews with experts. These interviews were conducted involving various industry experts, project managers, and product development team members. The purpose of this interview is to identify common risks that are often encountered in technology product development projects. These experts can provide valuable insights based on their practical experience, which may not be fully covered in the academic literature.

These interviews also help in understanding the specific industry context and unique challenges faced by technology projects. Apart from interviews, surveys and questionnaires are also used as data collection tools. The survey was distributed to various stakeholders, including project team members, managers, and industry leaders. The questionnaire was designed to collect data about their perceptions and experiences regarding risks in product development projects. Through this survey, researchers can collect quantitative and qualitative data that reflects the views of the various parties involved. This data is critical to getting a broader and deeper picture of the risks faced in technology projects. After the data is collected, the next step is data analysis. This analysis includes risk identification and categorization, as well as assessing the impact and probability of each risk occurring. The analysis methods used may include statistical techniques, content analysis, and other qualitative methods to ensure that the data is interpreted accurately.

The results of this analysis are then used to develop a comprehensive risk model, which can assist in risk mitigation planning and better decision making. By integrating these various research methods, researchers can produce more comprehensive and accurate risk analysis. Literature studies provide a strong theoretical basis, interviews with experts provide practical insights, and surveys and questionnaires enable data collection from multiple perspectives. Thorough data analysis ensures that identified risks can be managed effectively. This systematic and holistic research method not only helps in understanding the risks faced in technology product development projects, but also provides a solid foundation for developing effective risk mitigation strategies. Thus, this research contributes significantly to improving risk management practices in the technology industry.



Figure 1. Research Method Design

The described research method design includes five main integrated steps for analyzing risks in new product development projects in the technology industry. The process begins with a Literature Study, which reviews existing research to understand best practices in risk management. The next step is Interviews with Experts, which gather practical insights from industry professionals. Surveys and Questionnaires are used to collect quantitative and qualitative data from stakeholders. The Data Analysis stage involves identifying, categorizing, and assessing risks. Finally, Risk Model Development synthesizes the findings into a comprehensive risk mitigation model, aiding decision making and project success.

### 3. RESULTS AND DISCUSSION

Based on the research methods carried out, the following are the results and discussion related to risks in new product development projects in the technology industry. New product development in the technology industry involves a variety of major risks: technical, market, operational, and financial. Technical risks include the possibility of technology failure to meet desired specifications, such as bugs or integration difficulties. Market risk relates to the uncertainty of product acceptance by consumers in a highly competitive and rapidly changing market. Operational risks include project management issues, including delays and poor team coordination. Financial risks are related to costs that exceed a predetermined budget. To manage these risks requires careful planning, continuous monitoring and project management flexibility. Approaches such as SWOT analysis and contingency plans can help in identifying and addressing risks effectively, thereby increasing the chances of a successful product launch.

#### 3.1. Technical Risk

The most common technical risks encountered in information systems development include hardware and software failures, as well as system integration problems. Hardware failure can be caused by physical damage, component failure, or hardware incompatibility with the software used. On the other hand, software failures can include bugs or errors in the code, system instability, as well as compatibility issues with other operating systems or devices. System integration problems include challenges in bringing together different system components or modules so that they can work in harmony. This can be caused by differences in the architecture, communication protocols, or standards used by the components. Confronting and managing technical risks is an important part of information technology project management. A proactive approach that companies can take includes several strategies and concrete steps to mitigate these risks. First, rigorous testing is a key step to ensure that hardware and software work according to established specifications and requirements. This testing covers various aspects, from unit testing, integration testing, system testing, to user acceptance testing. Using a structured and systematic testing methodology such as Agile Testing or Test-Driven Development (TDD) can help in identifying and addressing technical problems early.

Automation testing can also increase efficiency and effectiveness in detecting bugs and errors. Next, the development of an initial prototype is another important step. A prototype is an initial model of a system developed with the aim of visualizing and evaluating the main features and functions of the system. By developing prototypes, companies can identify technical problems and design errors from an early stage. This allows the development team to make improvements and improvements before the system is developed further. Prototypes also allow users and stakeholders to provide initial feedback, which can be used to improve the quality and functionality of the system. An iterative approach in information systems development, as implemented in the Agile methodology, allows development to be carried out in short, iterative cycles (sprints). Each iteration includes planning, design, development, testing, and evaluation stages. By iterating development, teams can continue to identify and address technical risks in stages. It also enables rapid adjustments to changing needs or unforeseen conditions, and increases project flexibility and adaptability. Configuration management and version control are also very important in managing technical risk. Configuration management includes managing and controlling changes made to hardware, software, and related documentation. This ensures that any changes made are well documented and do not compromise system stability. Using a version control system like Git allows a development team to track changes made to source code, manage development branches (branching), and efficiently integrate changes from various team members.

This reduces the risk of code conflicts and makes project management easier. Ensuring that the development team has the necessary technical knowledge and skills is crucial. This can be achieved through training, certification, and professional development programs. Encouraging collaboration and effective communication between team members can increase synergy and minimize technical risks. Holding regular meetings, such as stand-up meetings in Agile methodology, can help in identifying and resolving technical issues quickly. Ongoing monitoring and maintenance is also an important aspect of managing technical risk. Implementing a performance monitoring and management system allows companies to monitor system health and performance in real-time. This helps in detecting and addressing technical issues before they have a widespread impact. Proactive system maintenance, such as software updates, replacement of obsolete



hardware components, and data cleansing, can reduce the risk of technical failure. By implementing these steps, companies can reduce technical risks that can hinder the success of information system development projects. A comprehensive and systematic approach to managing technical risks will increase the chances of project success and ensure that the system being developed meets the needs and expectations of users and stakeholders.

### 3.2. Market Risk

Market risk includes various forms of uncertainty faced by companies in product acceptance by consumers as well as rapid and dynamic changes in market trends. These factors can have a significant impact on the success and sustainability of a business. These uncertainties often include fluctuations in demand, changes in consumer preferences, technological evolution, and economic and social shifts. The first step in mitigating market risk is to pilot a product or service in a limited market before full launch. These trials allow companies to directly measure consumer response to the products or services offered. By getting early feedback, companies can identify a product's strengths and weaknesses before launching it widely. For example, testing may reveal aspects of the product that may need to be improved or adjusted to better suit consumer needs and desires. Additionally, continuous analysis of market trends is essential to understand market dynamics and developments.

This involves monitoring macro and micro trends, including changes in consumer preferences, technological advances, regulatory changes, and demographic shifts. With a deep understanding of market trends, companies can anticipate possible changes and adjust their strategies to remain competitive. For example, trends toward sustainability and environmentally friendly products may encourage companies to innovate and develop more environmentally friendly products. The ability to adapt quickly to changing consumer needs and preferences is key to remaining relevant in a rapidly changing market. This requires flexibility in production processes, adjustments to marketing strategies, and continuous product innovation. Companies that have the ability to respond quickly to consumer feedback and new market trends will be better able to maintain their market share. For example, if there is a sudden change in consumer preferences for a particular feature in a technology product, companies that can quickly integrate that feature will have a competitive advantage. Conducting an in-depth study of competitors' strategies and market reactions to their products or services is also an important step in mitigating market risks. By understanding the strategies and tactics used by competitors, companies can identify opportunities and threats in the market.

This information can be used to develop more effective strategies and avoid mistakes that competitors may have made. For example, if a competitor fails with a particular marketing approach, the company can learn from those mistakes and avoid similar strategies. Leveraging data analytics and the latest technology is key to predicting market trends and consumer behavior more accurately. Advanced analytical tools can help companies collect and analyze large amounts of data, identify patterns and trends, and provide valuable insights for better, faster decision making. Technology can also be used to increase operational efficiency and reduce costs. For example, using AI technology for sentiment analysis can help companies understand consumer reactions to new products more quickly. Developing a diverse product portfolio is an effective strategy to reduce dependence on one particular type of product or market. Diversification helps reduce the risk of losses due to sudden market changes. By offering a variety of products or services, companies can reach wider market segments and reduce the negative impact if one product or market segment experiences a decline. For example, technology companies that develop different types of devices, such as smartphones, laptops, and wearable devices, can reduce the risks associated with decreasing demand for one particular type of device. By implementing these steps, companies can reduce the negative impact of market risks and increase their chances of success in facing ever-changing market dynamics. A proactive and sustainable approach to market risk management will help companies stay competitive and relevant in the long term.

Table 1. Market Risk and Factors

Market Risk	Factors
Uncertainty of Consumer Acceptance	Changing consumer preferences and tastes Brand reputation Reviews and feedback from consumers Price and value of the product in the eyes of consumers Comparison with competitor products
Changes in Market Trends	Technological development Innovation in industry Demographic changes New government policies and regulations Cultural and social shifts
Demand Fluctuations	Seasonality or seasonal changes in demand Macroeconomic conditions (recession, inflation) Changes in raw material prices Unexpected events such as natural disasters or pandemics

Tight Market Competition	Number and strength of competitors Competitor marketing and sales strategies Innovation and product development by competitors Prices offered by competitors
Market Reaction to New Products	Success of marketing campaigns Clarity and effectiveness of product communication Product availability and distribution User experience (User Experience, UX)
Changes in Regulations and Policies	Environmental and sustainability regulations Trading rules and regulations Tax policy Changes in consumer policy and consumer protection
Economic and Social Change	Unemployment rate Inflation rate Changes in consumer spending patterns Social shifts such as urbanization or lifestyle changes
Risiko Geopolitik	Political instability in the operating area Regional war or conflict Changes in diplomatic relations affecting trade and investment
Financial and Currency Risks	Fluctuations in currency exchange rates Financial market instability Changes in interest rates Credit and liquidity risks

Table 1 explains the various market risks faced by the company as well as the factors that influence each risk. Market risks include uncertainty about consumer acceptance, changes in market trends, fluctuations in demand, intense competition, and market reactions to new products. Factors that influence this risk include changes in consumer preferences, technological developments, macroeconomic conditions, and government regulations and policies. This table also includes geopolitical and financial risks, which are affected by political instability, currency exchange rate fluctuations and changes in interest rates.

### 3.3. Financial Risk

The main financial risks faced by companies include budgets that exceed predetermined limits and insufficient funding to meet operational and investment needs. This risk can affect the company's liquidity, profitability and overall financial stability. Failure to manage financial risks can cause a company to face financial difficulties, which in turn can threaten business continuity. Managing financial risk requires a holistic and strategic approach to ensure that the company remains in a healthy financial condition. A very important first step in managing financial risk is planning a realistic budget. This process involves preparing a budget that includes estimates of income and expenses by considering all variables that can affect the company's financial performance. The use of accurate historical and projected data is critical in this process. In addition, realistic budget planning must consider the possibility of unexpected costs and provide financial reserves to deal with them. Thus, companies can avoid situations where expenses exceed expected revenues. Tight cost control is a crucial aspect of financial risk management. This involves continuously monitoring and controlling expenditure to ensure that all costs remain within the limits set in the budget. Companies need to implement an effective and integrated financial reporting system to monitor expenses in real-time. Additionally, conducting regular internal audits can help identify waste and areas where efficiency can be improved. By implementing strict cost controls, companies can manage their finances more effectively and prevent unnecessary expenses. Apart from relying on traditional funding sources such as bank loans, companies also need to look for alternative funding sources to ensure the availability of sufficient funds. Some alternative funding sources that can be considered include venture capital, bond issuance, crowdfunding, and collaboration with strategic partners. Venture capital can be a good source of funding for companies that have high growth potential but have difficulty obtaining funding from banks. Issuing bonds can give companies access to large amounts of funds with more flexible repayment terms. Crowdfunding allows companies to raise funds from a large number of individuals who believe in the company's vision and products. Meanwhile, collaboration with strategic partners can provide additional benefits in the form of extensive knowledge and business networks. Income diversification is an important strategy in managing financial risk. By having multiple sources of income, companies can reduce dependence on one main source of income which can be vulnerable to market fluctuations. Diversification can be done by expanding product lines, entering new markets, or developing new business models. For example, companies that initially relied solely on selling physical products can start offering subscription-based services or digital solutions. By having multiple revenue streams, companies can be more resilient to economic shocks and unexpected market changes. Effective cash management is a key component in managing financial risk. Companies need to ensure that they have sufficient liquidity to meet their short-term obligations. This involves closely

monitoring cash inflows and outflows, as well as drawing up cash flow projections for the short and long term. Companies also need to have an effective receivables collection policy to ensure that payments from customers are received on time. Additionally, maintaining good relationships with suppliers and creditors can help companies gain flexibility in terms of payments, thereby helping to better manage liquidity. Using financial instruments such as derivatives can help companies protect themselves from certain financial risks, such as currency exchange rate fluctuations and changes in interest rates. Derivatives such as futures contracts, options, and swaps can be used to lock in certain prices or interest rates, thereby providing companies with certainty in their financial planning. However, it is important for companies to have a deep understanding of the financial instruments they use and manage the risks associated with their use. Preparing a contingency plan is an important step in managing financial risk. This plan should cover various possible scenarios and the steps the company will take to deal with them. Regularly testing contingency plans can help ensure that they are effective and can be implemented quickly if needed. A good contingency plan will include identification of key risks, assessment of potential impacts, and clear mitigation strategies. By having a proven contingency plan, companies can be better prepared for emergency situations and minimize the negative impact on their finances. By implementing these steps, companies can manage their financial risks more effectively and ensure that they remain in a healthy financial condition. Proactive and comprehensive financial risk management will help companies overcome financial challenges, capitalize on growth opportunities, and achieve their long-term goals. A structured and disciplined approach to financial risk management will also increase investor and stakeholder confidence, as well as strengthen the company's competitive position in the market.

Table 2. Financial Risks Faced by the Company

Financial Risk	Factors
Budget Exceeds Limits	Inaccurate budget planning Unforeseen expenses Project cost overruns Inflation
Insufficient Funding	Limited access to traditional funding sources High interest rates Strict credit requirements
Cash Flow Fluctuations	Irregularities in customer payments High operational costs Changes in raw material prices
Credit Risk	Customer failure to pay debts Deteriorating macroeconomic conditions Weak credit policy
Liquidity Risk	Illiquid assets Dependence on short-term loans Poor cash management
Interest Rate Risk	Sudden changes in interest rates Dependence on loans with variable interest rates
Foreign Exchange Risk	Fluctuations in currency exchange rates Exposure to international transactions Global economic uncertainty
Market Risk	Changes in market prices Stock market volatility Economic instability
Inflation Risk	Increase in raw material costs Increase in labor costs Decrease in consumer purchasing power
Investment Risk	Unprofitable investment Decrease in the value of investment assets Lack of portfolio diversification
Operational Risk	Disruption to the supply chain Losses due to system failure Litigation and compliance costs
Reputational Risk	Financial losses due to reputational decline Loss of customers and revenue Reputation restoration costs
Macro Financial Risk	Economic recession Tight monetary policy Political and social instability

Tax Policy Risk	Changes in tax regulations
	Increase in tax rates
	Uncertainty in fiscal policy

The Financial Risks Faced by the Company table includes various important aspects that can affect the company's financial stability. These risks include budget overruns, insufficient funding, cash flow fluctuations, credit risk, liquidity risk, and interest rate risk. The factors that influence these risks vary, from inaccurate budget planning, reliance on short-term loans, to currency exchange rate fluctuations. Understanding and properly managing these risks is key to ensuring a company's financial health and maintaining long-term operational sustainability.

**3.4. Regulatory Risk**

Regulatory risk is one of the main challenges facing companies in various industries. Sudden regulatory changes and high compliance costs are two of the most significant elements of this risk. Sudden regulatory changes may include new laws, updates to existing regulations, or different interpretations of applicable legal provisions. Compliance costs, on the other hand, include the resources needed to ensure that a company meets all relevant legal and regulatory requirements, including costs for system changes, employee training, compliance audits, and legal consultations. Managing regulatory risk requires a systematic and proactive approach. One of the key steps in managing regulatory risk is active monitoring of changes in regulations and policies relevant to the industry in which the company operates. This includes keeping abreast of legislative developments at the local, national, and international levels. Companies can rely on a variety of information sources, including government publications, industry associations, and legal news services. Using automated regulatory monitoring tools can also help companies stay alert to significant changes. Working with legal and compliance experts is an important step in managing regulatory risk. Legal experts can help companies understand the legal implications of regulatory changes and provide advice on the steps they need to take to comply with new regulations. Additionally, companies should consider having an internal compliance team responsible for ensuring that all aspects of company operations comply with applicable legal requirements. Conducting regular regulatory impact assessments is a good practice to identify and evaluate the potential impact of regulatory changes on a company's operations. This assessment should include risk analysis of various aspects of the business, such as operations, finances and reputation. By understanding the potential impacts, companies can plan appropriate mitigation actions to reduce the risks associated with regulatory changes. Companies must develop clear and comprehensive compliance policies and procedures. This policy should cover all aspects of compliance, from financial reporting to occupational safety and environmental protection. Compliance procedures must be designed to ensure that all employees understand their responsibilities and are provided with the necessary training to comply with applicable regulations. In addition, companies must conduct regular compliance audits to ensure that existing policies and procedures are effective and implemented correctly. Companies can engage proactively in the legislative and regulatory process through participation in industry associations and advocacy groups. By participating in this process, companies can provide input on the potential impacts of proposed regulations and work with policymakers to develop more balanced and practical regulations. This engagement also helps companies better understand the background and purpose of regulatory changes, so they can plan more appropriate compliance actions. Integrating regulatory risk management with the company's overall risk management system is an effective approach to ensuring that regulatory risks are managed well. This includes the identification, assessment and mitigation of regulatory risks as part of the enterprise risk management process. With an integrated approach, companies can ensure that regulatory risks are considered in all business decisions and operational strategies. Technology can play an important role in managing regulatory risks. Companies should consider adopting compliance technology solutions that can help them monitor, track, and report on compliance more efficiently. These tools may include compliance management software, automated reporting systems, and regulatory monitoring platforms. By leveraging technology, companies can reduce the administrative burden associated with compliance and ensure that they are always up-to-date with regulatory changes. Employee training and awareness are key components of an effective compliance program. Companies should provide regular training for employees on regulations and compliance policies relevant to their role. Additionally, increasing employee awareness of the importance of compliance and the risks associated with non-compliance can help create a culture of compliance within the organization. Employees who are aware of their compliance responsibilities are more likely to follow established procedures and report violations they encounter. Regulatory risk management must be a dynamic and continuous process. Companies should continually evaluate the effectiveness of their compliance policies and procedures and make necessary improvements. This can include adapting to regulatory changes, feedback from compliance audits, and learning from compliance incidents that occur. With a continuous evaluation and improvement approach, companies can improve their ability to effectively manage regulatory risks. Having a good relationship with regulators can help companies manage regulatory risks. Companies must maintain open and transparent communications with regulators, and fulfill all required reporting and audit requirements. By building positive relationships with regulators, companies can more easily obtain clarification on complex regulations



and receive assistance in complying with regulatory requirements. By implementing these measures, companies can manage regulatory risks more effectively and ensure that they remain compliant with all applicable regulations. Proactive and comprehensive regulatory risk management will help companies avoid legal sanctions, protect their reputation and maintain stakeholder trust. In addition, a structured approach to regulatory risk management will strengthen the company's position in a competitive market and ensure long-term operational sustainability.

Table 3. Regulatory Risk and Factors

Regulatory Risk	Factors
Sudden Regulatory Changes	New law Updates to existing regulations Different interpretations of applicable legal provisions
High Compliance Costs	Resources for system changes Employee training Compliance audits Legal consultation
Monitoring Regulatory Changes	Follow legislative developments Government publications Industry associations Legal news service
Collaboration with Legal Experts	Legal consultation Internal compliance team Understand the legal implications of regulatory changes
Regulatory Impact Assessment	Operational risk analysis Financial risk analysis Reputation risk analysis
Preparation of Compliance Policies and Procedures	Finance report Work safety Environmental protection Compliance audits
Involvement in the Legislative Process	Participation in industry associations Advocacy groups Input on proposed regulations
Integrated Risk Management	Identify regulatory risks Regulatory risk assessment Regulatory risk mitigation
Investments in Compliance Technology	Compliance management software Automatic reporting system Regulatory monitoring platform
Employee Training and Awareness	Regular training Awareness about compliance Compliance culture in the organization
Evaluation and Continuous Improvement	Evaluate policies and procedures Adjustment to changes in regulations Feedback from compliance audits
Managing Relationships with Regulators	Open communication with regulators Meet reporting and audit requirements Building positive relationships with regulators

This table covers the various regulatory risks that companies face and the factors that influence each risk. Regulatory risks include sudden regulatory changes, high compliance costs, and the need for active monitoring of regulatory changes. Factors such as new laws, regulatory updates, and different legal interpretations can lead to sudden regulatory changes. High compliance costs involve resources for system changes, employee training, and compliance audits. Additionally, collaboration with legal experts and regulatory impact assessments are important to ensure companies remain compliant with all applicable regulations.

#### 4. CONCLUSION

The conclusions of this research confirm the importance of comprehensive risk analysis and management in new product development projects in the technology industry. The identified risks, including

market, financial, regulatory and technical risks, indicate that every aspect of a product development project has significant potential risks that need to be managed proactively and systematically. In this research, market risk, uncertainty in product acceptance by consumers, rapid changes in market trends, and intense competition require an adaptive and responsive approach. Product testing in limited markets and continuous market trend analysis are effective strategies that can help companies manage market risks. Product and portfolio diversification is also an important step to reduce dependence on one particular type of product or market, thereby increasing the company's resilience to market fluctuations. Financial risks, such as budget overruns and insufficient funding, indicate the need for realistic budget planning and tight cost controls. Diversifying funding sources and using financial instruments such as derivatives can help companies better manage financial risks. Additionally, effective cash management and the preparation of contingency plans are key components in ensuring a company's financial health. Technical risks involving hardware and software failures, as well as system integration issues, require an approach focused on rigorous testing, early prototype development, and the use of iterative development methodologies such as Agile. Configuration management and version control, as well as training and developing the technical skills of the development team, are also important for reducing technical risk. Regulatory risks, including sudden regulatory changes and high compliance costs, emphasize the importance of active monitoring of regulatory and policy changes. Collaboration with legal experts and regular regulatory impact assessments are important steps in managing regulatory risks. Developing comprehensive compliance policies and procedures, as well as regular training for employees, can help ensure that the company remains in compliance with all applicable regulations.

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