Study on potential risks and hidden dangers of digital tools and means

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Abstract： With the progress of science and technology, digital tools and means are used more and more frequently. However, while digital tools improve efficiency, they also have hidden data security risks, technical risks, supply chain risks, etc. This paper not only analyzes the advantages of digital tools and means in detail, but also points out the risks and potential hidden dangers they face.

Key words: Digital tools; potential risk

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1 Research background

Digital tools and methods have emerged gradually with the rapid advancement of information technology and changes in market demand. With the widespread adoption of computers, the internet, big data, and artificial intelligence, these digital tools and methods have become crucial for businesses to improve efficiency and meet consumers' personalized needs. These tools and technologies not only transform business models but also significantly enhance production efficiency and service quality. At the same time, government policy support and industry standard setting provide strong backing for the development of digital tools and methods. For example, the VR Showroom feature launched by Alibaba International is a successful application of digital tools in cross-border trade, effectively reducing search costs and improving transaction efficiency.

2 the advantages of digital tools and means

2.1 Improve efficiency

Digital tools significantly streamline workflows through automation technology, markedly enhancing execution efficiency. In data processing, cloud computing platforms can handle massive amounts of information in real-time, leveraging big data analytics to achieve second-level responses. For instance, e-commerce companies use user behavior data modeling to accurately predict sales trends and automatically adjust inventory levels, reducing decision-making cycles by 80%. Intelligent document systems employ OCR and NLP technologies to automatically complete tasks such as contract reviews and invoice categorization, with key clause recognition accuracy exceeding 95%, thus freeing up substantial human resources. Project management software, after integrating AI algorithms, can dynamically optimize task scheduling and warn against resource conflicts, reducing project schedule deviations by 60%. These tools, when combined, create synergies that drive companies from repetitive labor to high-value creation, forming a data-driven agile operational model.

2.2 Reduce costs

By reconstructing business processes through digital tools, companies can systematically eliminate redundant steps and achieve precise and intensive resource allocation. At the operational level, digital office platforms (such as DingTalk and Feishu) enhance cross-departmental collaboration efficiency by over 40% by integrating instant messaging, online document collaboration, and intelligent scheduling functions. For example, data from Tencent Meeting in 2023 shows that enterprise users reduce their annual travel frequency by an average of 12 trips per person, saving more than 20,000 yuan per international trip. Additionally, with the help of AI meeting summary generation, post-meeting information organization time is reduced by 80%. In the document circulation process, electronic signature systems (such as eSign)

shorten contract signing cycles from 5-7 days in traditional mail mode to just 10 minutes, while also reducing costs associated with printing, storing, and managing paper documents.

Deeper optimization is reflected in the supply chain and production management sectors. The integration of IoT (Internet of Things) devices with ERP systems enables real-time monitoring of raw material inventory dynamics, reducing over-purchasing rates from 15% to below 4% through demand forecasting algorithms. For instance, CATL uses digital twin technology to simulate production line operations, accurately identifying idle equipment losses, which saves 12 million kWh of electricity annually. Additionally, AI-driven automated approval systems can replace 60% of financial reimbursement reviews, reducing the time for processing individual expenses from three days to just 20 minutes and mitigating compliance risks associated with manual reviews. According to an IDC report, companies undergoing comprehensive digital transformation see an average reduction in operating costs of 22%, with process automation contributing 65% to this reduction and hidden waste caused by resource misallocation decreasing by 34%.

2.3 Enhance customer experience

Digital tools and methods can provide more convenient and personalized services, meeting the diverse needs of consumers and enhancing customer satisfaction. Take the intelligent recommendation system as an example; Alibaba's "Thousand Faces for a Thousand People" algorithm analyzes over 2,000 behavioral tags, including user browsing history and purchase preferences, increasing product click-through rates by 35% and reducing return rates by 18%. In the experience economy, technologies such as AR makeup trials (like Watsons' virtual magic mirror) and VR house tours (such as KE Holdings' "Rusight" system) break physical limitations, allowing consumers to simulate lipstick color effects in real-time or inspect house details from a 360-degree perspective. According to Sephora data, these technologies have increased online average transaction values by 27% and shortened decision-making cycles by 40%. Additionally, NLP-based smart customer service (such as JD JIMI robots) can handle up to 100,000 inquiries simultaneously, achieving a satisfaction rate of 92%, far exceeding the 78% satisfaction rate of human customer service. KPMG research indicates that companies adopting digital service matrices see an average increase in customer retention of 29%, with immersive technology contributing 43% to the incremental value of the experience.

2.4 Promoting innovation

Digital technology not only reshapes the path of corporate innovation but also gives rise to new business models that integrate across industries. In manufacturing, the combination of artificial intelligence and digital twin technology has enabled Midea Group to develop smart home appliances that can simulate user habits. By analyzing energy consumption data from 30 million households, they have iterated an air conditioning algorithm that saves 30% on energy. In retail, Uniqlo leverages 3D body scanning and AI recommendation engines to offer a "virtual fitting room" service, increasing the accuracy of clothing size matching to 95% and reducing return rates by 22%. In healthcare, wearable devices combined with AI diagnostic systems extend service boundaries; Tencent Miying's lung nodule screening accuracy reaches 97%, enhancing the service capabilities of primary healthcare institutions by 40%. According to IDC data, 50% of global innovative products in 2023 were driven by rapid prototyping and validation through digital technology, with the average R&D cycle shortened by 63%.

2.5 Improve the quality of decision-making

Digital tools and means can collect and analyze a large amount of data, providing strong support for the decision-making of enterprises. Through data-driven decision-making, enterprises can more accurately grasp the market trend and customer needs, and formulate more scientific and reasonable strategies and plans.

The digital tool-built comprehensive data collection network enables corporate decision-making to shift from experience-driven to real-time dynamic optimization. Leveraging IoT sensors, user behavior tracking, and social media crawling technologies, companies can establish PB-level data lakes and use machine learning algorithms to uncover hidden correlations. For instance, Midea Group connects real-time operational data from 60 million smart devices to build an energy consumption prediction model, precisely formulating product iteration strategies, with the efficiency ratio of air

conditioning products increasing by 8.2% annually. In the retail sector, Starbucks utilizes 27 million user profile data from its digital membership system, combined with weather API predictions for regional temperature changes, to dynamically adjust the ratio of cold drink offerings, reducing the quarterly sales fluctuation rate of individual stores by 19%. Gartner research shows that companies adopting predictive analytics see a 57% increase in strategic decision accuracy, with supply chain demand forecast errors reduced from 12.3% to 4.7%, and inventory turnover efficiency improved by 35%.

3 the risks of digital tools and means

3.1 Data security risks

Digital tools and methods provide businesses with more efficient, convenient, and intelligent ways of working, but they also bring certain data security risks. First, there is a risk of data leakage. The use of digital tools involves various steps such as collecting, storing, analyzing, and transmitting large amounts of data. If the data is stolen, tampered with, or damaged, companies may suffer significant economic losses, damage to reputation, and even legal liabilities. Second, digitalization can lead to employee errors, such as sending incorrect emails or sharing wrong files, which could result in the accidental exposure of sensitive information. Additionally, there may be third-party threats: when sharing data with suppliers and partners, third parties can become potential security risks, such as malicious theft or misuse of data. For example, due to the large amount of 3D spatial models and data stored online, if Alibaba International Station or its service providers do not have adequate security measures, it could lead to data breaches or hacker attacks, thereby posing a threat to the information security of merchants and consumers.

3.2 Technical risks

In addition to posing data security risks, certain technical risks are also introduced. First, the introduction of new digital technologies may lead to system instability, affecting the continuity of business operations. Moreover, if merchants and consumers become overly reliant on digital tools like VR Showroom, it could result in neglect of traditional sales and service models. Should these technological tools encounter issues, normal operations might be disrupted. Second, there is a risk of data loss or security vulnerabilities, as data loss or security breaches can occur during technology updates or upgrades, increasing corporate risks. Additionally, the risk of rapid technological updates must be considered. The pace of technology advancement is swift, and companies need to continuously adapt and keep up; otherwise, they may fall behind their competitors. As technology continues to evolve, digital tools like VR Showroom also require constant updates to meet new market demands and technological changes. If merchants fail to keep up with the pace of technological development, they may face the risk of being phased out.

3.3 Copyright and intellectual property rights

The 3d space model and images in VR Showroom may involve copyright and intellectual property issues. If a merchant uses another person's intellectual property without authorization when building the 3d space model or displaying the product, it may lead to legal disputes.

3.4 Supply chain risk

3.4.1 Market demand risk

In the digital economy era, traditional manufacturing companies not only face competition from peers but also from emerging competitors across industries, sectors, and borders. The innovation and application of digital technologies have significantly accelerated the pace of market demand changes, making consumer needs increasingly diverse and personalized. If traditional manufacturing companies fail to adjust their supply chain strategies in a timely manner, it could lead to inventory overstock or shortages, thereby affecting customer satisfaction and brand image.

3.4.2 Supplier risk

Due to the continuous innovation in digital technology and intense market competition, suppliers' technical capabilities, quality levels, and delivery capacities may change, affecting the stability and reliability of the supply chain. For example, some suppliers may adopt more advanced digital technologies, improving production efficiency and product

quality, thereby gaining a larger market share and competitive advantage; while others may fall behind technologically or suffer from poor management, leading to increased production costs or more product defects, thus losing customers and credibility. These changes can cause imbalances and disharmonies in the supply chain, increasing its risks. Moreover, collaboration and information sharing among suppliers are also significant risk factors. In the context of the digital economy, the supply chain needs to achieve high levels of collaboration and information sharing to enhance transparency, flexibility, and responsiveness. However, there may be issues such as conflicts of interest, lack of trust, and information asymmetry between suppliers, making them unwilling or unable to effectively collaborate and share information with other suppliers. These problems can affect the coordination and integration of the supply chain, increasing its complexity and vulnerability.

3.4.3 Production and operation risks

In the production and operation process, the use of digital technology and tools involves a lot of data, systems, and equipment in the supply chain. These data, systems, and equipment are of great value to the supply chain but can also bring significant risks. If issues such as data errors, system failures, or equipment malfunctions occur, they can lead to various problems and losses in production and operations. For example, data errors may cause deviations and inaccuracies in production planning, order management, and inventory control, affecting the accuracy and timeliness of the supply chain; system failures may result in interruptions and delays in production control, information exchange, and data analysis, impacting the continuity and reliability of the supply chain; equipment malfunctions may lead to crises and damages such as production line shutdowns, product defects, and safety incidents, affecting the stability and security of the supply chain.

3.4.4 Logistics and distribution risks

Due to the widespread use of digital technology and high standards set by customers, logistics distribution must achieve goals such as efficiency, punctuality, traceability, and low cost. These goals are at the core of supply chain competitiveness and also potential risk points. If issues like logistics delays, damage, or loss occur, they can lead to a decline in the quality and efficiency of logistics distribution, which in turn can result in decreased customer satisfaction, damaged reputation, increased compensation, and other losses. For example, logistics delays may cause customers to miss delivery deadlines, cancel orders, file complaints, or even sue, affecting the credit and reputation of the supply chain; logistics damage may result in customers receiving damaged or substandard products, impacting the quality and brand of the supply chain; logistics loss may prevent customers from receiving their products, affecting the service and revenue of the supply chain. All these losses can reduce customer loyalty and market share.

4 Potential hidden dangers

4.1 The gap between virtual and reality

Although VR technology can provide a close to real experience, there is still a gap between virtual and reality. This may lead to consumers' expectations of products not matching the reality, which in turn affects their purchase decisions and satisfaction.

4.2 User experience

VR Showroom requires a stable network environment and appropriate equipment support. If the network environment is poor or the device performance is insufficient, it may lead to poor user experience or even fail to use VR Showroom functions normally.

4.3 Market acceptance

Although VR Showroom features bring convenience to merchants and consumers, market acceptance may vary by region, industry, target audience, etc. If the target audience is not familiar with or interested in VR technology, it may affect the promotion and application of VR Showroom features.

5 Conclusion

In summary, with the continuous development and popularization of digital technology, digital tools and methods will become increasingly widespread and diverse. Various new digital tools and methods will continue to emerge, such as

intelligent voice assistants, smart robots, and self-driving cars. These tools will play a significant role in greatly improving production efficiency, optimizing management processes, and enhancing user experience. While digital tools and methods bring convenience, they also require us to pay attention to their potential risks and hidden dangers. Businesses and platforms need to take corresponding measures to mitigate the impact of these risks and hidden dangers, ensuring the sustained development and application of digital tools.

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