The Impact of Excess Goodwill on Innovation Performance of Cultural and Creative Enterprises

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Abstract. In recent years, the frequent M&A of listed companies in China have triggered rapid accumulation of goodwill assets, which has aroused the attention and extensive discussion of all walks of life. The essence of goodwill comes from M&A, while excess goodwill is an irrational part of M&A. This study selects the 2010-2020 Chinese A-share listed cultural and creative companies (CCIs) as samples to empirically test the impact of excess goodwill on CCIs' innovation performance. The results show that excess goodwill has a significant negative impact on innovation output, innovation efficiency, radical innovation, and incremental innovation. After a series of robust tests, such as changing the measurement method of main research variables, using the instrumental variable method the Heckman two-step method to control endogeneity and Bootstrap test of mediating effects, the conclusion still holds. Further research found that under the framework of CCI, excess goodwill mainly weakens corporate innovation performance by increasing debt financing costs, knowledge stock can effectively alleviate the negative impact of excess goodwill on innovation performance, whereas knowledge absorptive capacity cannot alleviate that. Finally, this article not only studies the impact of M&A goodwill on corporate innovation, which enriches the research on goodwill and corporate innovation performance as well as related financial research on CCIs, but also practically provides empirical evidence and enlightenment for listed companies, regulators, and investors to realize the economic consequences of unreasonable M&A and excess goodwill with corresponding action and influence mechanisms.

Keywords: Excess Goodwill; Corporate Innovation; Cultural and Creative Enterprises.

1 Introduction

Innovation is a pivotal pillar in the construction of a modern economic system in the new era of our country, serving as the primary driver of technological advancement and

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progress. In conjunction with the current state of supply-side economic reforms and structural transformations, innovation has increasingly become a necessary condition for propelling social development and building a strong socialist democracy. Enterprises, particularly well-capitalized listed companies, are the main units of innovation, with their innovation capabilities and levels underpinning the national innovation blueprint. Consequently, the factors influencing corporate innovation performance have been a hotly debated topic in academia. There is a systematic theoretical framework regarding the elements that can impact corporate innovation performance. For instance, at the national level, economic policies and cultural institutions can alter the environment for innovation performance; at the corporate level, factors such as company size, the extent of agency problems, and audit quality levels have a direct impact on innovation performance; and at the individual level, management styles and educational backgrounds subtly influence corporate innovation performance (Schilling, 2019).

Goodwill, as a significant component of corporate assets, has been a subject of intense academic discussion. According to international accounting standards, goodwill is defined as an intangible asset representing the future economic benefits arising from the acquisition of one entity by another that is not a subsidiary or an associate, recorded when the acquisition cost exceeds the fair value of the identifiable assets acquired (Ramanna, 2008).It is measured at cost less any accumulated impairment losses. The mainstream academic view holds that goodwill is essentially an unverifiable fair value estimate, which can be seen as an external manifestation of the ability to contribute to excess profits post-merger. The prevailing method for recognizing goodwill in practice is the "residual method". Due to its indistinguishable nature, goodwill requires the calculation of differences to deduce its value, offering room for manipulation in accounting practices compared to other tangible, identifiable assets. Mergers and acquisitions (M&A) are widely regarded as an effective way for enterprises to expand. Ideal and rational M&A can strengthen a company's position in internal control, marketing, logistics, operations, financial auditing, and other areas, optimizing management to achieve excess profits. The goodwill generated during this period can theoretically bring additional benefits to the enterprise, enhance cash flow stability, and improve the company's ability to withstand financial risks. Over the past decade, with the continuous improvement of China's stock trading system(Wei & Zhu, 2019), the number of corporate mergers and reorganizations has surged, leading to an increase in the number of companies with goodwill net value and a corresponding increase in the total goodwill number of listed companies.

It is important to note that the growth of goodwill is not linear but rather multidimensional and exponential. Database shows that companies with M&A goodwill in their balance sheets increased from 715 at the end of 2010 to 2,231 at the end of 2020, with a staggering growth rate of 212% over ten years. Furthermore, the ratio of goodwill net value to net assets for listed companies with goodwill increased from an average of 1.52% at the end of 2010 to 14.21% at the end of 2020. This indicates that, after considering the growth of corporate net assets, the total value of goodwill recognized by listed companies increased by 835% from 2010 to 2020. The data not only show a significant increase in the number of listed companies recognizing goodwill but also that the average value of goodwill has grown from a small part of net assets to a "backbone

force" in the composition of corporate assets. However, due to the manipulability in the recognition and subsequent measurement of goodwill, some enterprises may intentionally exploit the discretionary power of goodwill accounting estimates. For example, artificially inflating goodwill net value during the recognition phase can lead to increased goodwill impairment risks, higher operational costs, and the consumption of valuable corporate resources. Manipulating goodwill impairment amounts during the subsequent measurement phase to meet the needs of year-end earnings management can conceal the true performance of the enterprise for the year, increasing agency costs. These two paths deeply reveal the adverse economic consequences of unreasonable M&A goodwill for enterprises and investors: M&A that fails to bring expected synergies and excess profits, reducing corporate profitability and causing profound and lasting economic burdens.

The Cultural and Creative Industries, a product of the knowledge economy's rise in the last century, are deeply integrated with cultural knowledge, creative knowledge, and economic capital. With mature downstream production supply chain capabilities and rapid supply chain iteration methods, they have become a highlight industry alongside high-tech industries in the knowledge economy, with the ability to penetrate beyond national borders. According to the United Nations Conference on Trade and Development and UNESCO's Creative Economy Report 2013 (De Beukelaer, 2014), the cultural and creative industries have become an important and rapidly growing engine for national and regional economic growth. Their value is not limited to the economic perspective but may also play a role in promoting and facilitating the innovation process of the entire economy. Traditional cultural economic powers such as the UK, Australia, and the US have recently proposed policies to increase the proportion of the cultural and creative industries in the gross national product, proposing the integration of the cultural and creative industries, finance, high-tech industries, and other knowledge-intensive industries. This indicates that the knowledge economy development model centered on "innovation and creativity" has been recognized by most mainstream developed countries, and the cultural and creative industries, as one of the most representative industries, have become an important internal driving force for national development.

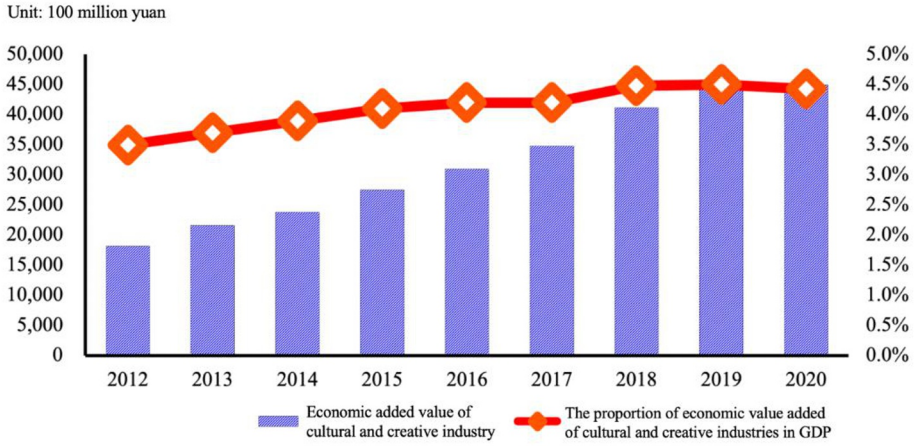

Fig. 1. Economic added value and share of cultural and creative industries in Chinese GDP.

China's local cultural and creative industries emerged in the 1980s, growing wildly with the rise of the market economy. In recent years, the rapid growth of goodwill bubbles in Chinese cultural and creative enterprise listings has caused a strong reaction from all sectors of society. The main reason for this phenomenon is the expiration of the performance commitment period of the acquired companies during the merger wave around 2015, that is, the term of the earn-out agreement after the merger has expired, and there is no need to use earnings management to manipulate merger performance. Starting from 2017-2018, the huge goodwill bombs generated by mergers exploded, with many companies issuing goodwill impairment warnings, and the corresponding annual operating performance was severely affected. For example, *Zenith Entertainment (002354)* is a typical case of Excess goodwill explosion in cultural and creative enterprises: since its listing on the stock exchange in 2014, it has acquired over 9 listed companies, involving the upper, middle, and lower reaches of the cultural and creative industries. Between 2014 and 2017, *Zenith Entertainment*'s average revenue growth was 78.83%.

However, in 2018, after the expiration of the earn-out agreement and the overall winter of the gaming industry, *Zenith Entertainment*'s market value plummeted from a peak of 30 billion yuan to about 4 billion yuan, with an expected loss of about 1.5 billion yuan. This indicates that many listed companies (especially those in the cultural and creative industries) have failed to achieve the expected merger performance, and the accounting consequences of mergers, such as the recognition of goodwill, also have the actual problem of excessive corporate discretion, urgently requiring detailed research on the economic consequences of Excess goodwill in Chinese listed companies to develop systematic countermeasures.

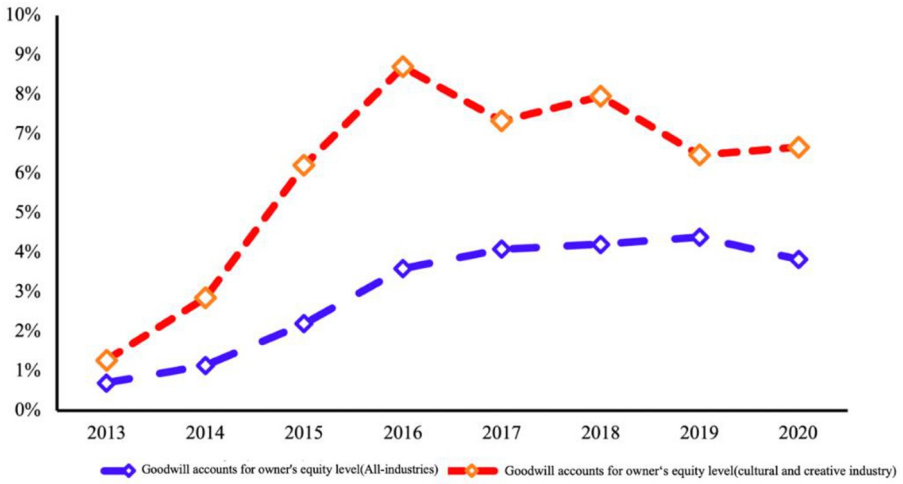

Fig. 2. *Comparison of the level of goodwill in the cultural and creative industries in the ownership equity of listed enterprises*

2 Literature Review and Theoretical Research

2.1 Excess goodwill and innovation performance of cultural and creative enterprises

The cultural and creative industry possesses the general characteristics of emerging industries while also exhibiting its own peculiarities. Firstly, the cultural and creative industry originates from the knowledge economy and is marked by the distinct feature of industrial agglomeration zones, where mergers and acquisitions among upstream and downstream enterprises are frequent, and the synergistic effects between enterprises are significant. Industrial agglomeration can positively promote merger and acquisition activities and enhance the performance of such activities.

For instance, the matching effect of industrial agglomeration as a potential pathway through which industrial agglomeration can promote the performance of mergers and acquisitions (Duranton and Puga, 2004); higher matching quality leads to more transparent merger and acquisition information, resulting in better overall performance. The goodwill resulting from mergers and acquisitions is, in turn, a "byproduct" of the performance of such activities. Current research on the economic consequences of Excess goodwill focuses on its role in leading to decreased operational performance, reduced product competitiveness (Wei & Zhu, 2019); and increased stock price bubbles, among

others (Yang et al., 2018). Compared to traditional industries, the occurrence of goodwill, and even Excess goodwill, is significantly more frequent. The asset types in the cultural and creative industry are predominantly light assets, which increases the discretionary power of enterprises, thereby increasing the likelihood of goodwill manipulation, leading to inaccurate estimations of goodwill in this sector. Consequently, within the context of the cultural and creative industry, the frequency of excess goodwill is higher, and the amount of excess goodwill is notably higher than the average.

Secondly, the cultural and creative industry is essentially the concrete manifestation and industrialization of innovation, creativity, and entrepreneurship. Therefore, compared to traditional industries, the cultural and creative industry requires a more thorough examination of the quality and quantity of innovation performance, and it can even be argued that the innovation performance of cultural and creative enterprises is the "lifeline" of the company; the quality of innovation outcomes is the best criterion for measuring the performance of cultural and creative enterprises (Zhang & Dong, 2022).

Thirdly, regarding the mechanism by which Excess goodwill affects innovation performance, due to the current level of development of China's capital market and the peculiarity of the assets of cultural and creative enterprises, debt financing for cultural and creative enterprises is more complex and more constrained compared to traditional industries, with the average debt financing cost remaining high (Filip et al., 2015). This industry heterogeneity leads to the mechanism by which Excess goodwill affects innovation performance being intensified and potentially undergoing a qualitative change within the context of this industry.

It is widely acknowledged that rational mergers and acquisitions (M&A) can generate predictable excess returns for companies through synergistic effects. For instance, After widespread M&A activity, the operational performance of the merged companies significantly improved (Bell, 2005). Fee et al. (2004), by examining customer-supplier relationships, suggested that the pathways through which mergers improve corporate performance may include enhanced purchasing power and economies of scale(Fee and Thomas, 2004). Rhodes-Kropf et al. (2008) pointed out that within the same industry chain (Rhodes-Kropf & Robinson, 2008), reasonable M&A activities can significantly reduce transaction costs at different stages of production, and this anticipated synergy is reflected in the goodwill paid during the acquisition.

However, the studies are limited in assuming that M&A activities are rational and perfect. This irrationality is reflected in two aspects: First, the selection of M&A targets is unreasonable, which corresponds to the current phenomenon of capital market M&A in Chinese cultural and creative companies, such as the blind M&A behavior of *Zenith Entertainment* (002354), where the management reaped the consequences in the following five years. Therefore, we have evidence to infer that a significant portion of M&A activities in the A-share capital market between 2014 and 2015 were blind and irrational (Wei & Zhu, 2019). Second, the valuation of goodwill in M&A exceeds the actual synergistic effects it can bring, with a severe issue of goodwill premium.

As previously mentioned, due to accounting estimation errors, management agency costs, and excessive executive confidence, the generation of Excess goodwill has been attributed to unreasonable components within the M&A goodwill, namely, the Excess

goodwill. Excess goodwill is significantly different from reasonable goodwill and represents a burden on the normal operation of a company's research and development, production, and management (Wei & Zhu, 2019).

Integrating existing theories of corporate resources, principal-agent theory, and information asymmetry, this study speculates on three possible pathways based on previous research.

First, the emergence of Excess goodwill consumes resources that companies originally planned to use for innovative activities, such as human resource costs, capital(Wei & Zhu, 2019), and social relationship costs.

Second, the high level of goodwill resulting from Excess goodwill brings high performance pressure to corporate management, leading to a significant performance pressure phenomenon. Management tends to engage in short-sighted behavior, diverting funds originally planned for innovation to embellish current financial statements(Yang et al., 2018).

Third, Excess goodwill generally represents predictable goodwill impairment behavior. Goodwill impairment is an important basis for measuring management's discretionary power. Combined with agency theory, management's discretionary power can easily lead to short-sighted behavior, suppressing innovative output(Zhang & Dong, 2022).

Based on this, this paper proposes research hypothesis H1:

H1: Excess goodwill weakens the innovation performance of cultural and creative enterprises.

Furthermore, it is necessary to distinguish the types of corporate innovation performance, as the impact mechanism of Excess goodwill on different types of innovation performance may have different economic consequences. In fact, the distinction between radical (breakthrough) and incremental innovation is crucial for the study of innovation policy, as they differ in the innovation process and their impact on the market and industrial structure (Jugend et al., 2018).

Radical innovation refers to a type of innovation that has never been proposed before, making significant leaps, while incremental innovation refers to gradual progress from previous products. Schilling et al.(2013) believe that radical innovation has the potential to change market structure and push the technological frontier of an industry. At the same time, compared to incremental innovation, it usually involves higher costs and higher risks (Schilling et al., 2019).

For cultural and creative enterprises, the distinction between radical and incremental innovation is necessary. Incremental innovation may serve the realization of short-term profits; radical innovation may serve longer-term goals, considering the cultural and creative industry to be one that combines cultural and aesthetic products with technological factors (Dosi, 1982). Incremental innovation in cultural and creative enterprises unfolds within existing creative trajectories, while radical innovation leads to fundamental innovation outside traditional cultural paradigms (Dosi, 1982). Radical innovation introduces cultural and creative products, breaking established styles and traditions, fundamentally redefining the meaning of products for consumers (Tschmuck, 2003), while incremental innovation ensures the market position of existing cultural and creative products, helping to meet customers' desires for new functionalities.

Therefore, both radical (breakthrough) and incremental innovation are important determinants of success for cultural and creative enterprises. Given the different natures of these two types of innovation, distinguishing between them is a necessary condition for studying the antecedents of innovation performance in cultural and creative enterprises.

Based on this, this paper proposes research hypotheses H1A and H1B:

H1A: Excess goodwill weakens the radical innovation performance of cultural and creative enterprises.

H1B: Excess goodwill weakens the incremental innovation performance of cultural and creative enterprises.

2.2 The intermediary role of debt financing costs

The development path of China's cultural and creative industry has evolved from state-owned enterprises and central enterprises fully funded by the government to a present-day scenario where marketization and state ownership coexist, aiming to maximize industry efficiency. Correspondingly, the industry's financing methods have shifted from mere government funding allocations to a hybrid financing approach provided jointly by the market and the state.

Drawing on existing research on debt financing for the cultural and creative industry in the capital market, both domestically and internationally, ample funding is one of the fundamental conditions for companies to generate innovation performance. The challenge in financing innovation lies in the asymmetry of information, where enterprises tend not to disclose the details of their innovations to investors (Stiglitz and Weiss, 1981). Internal financing methods include retained earnings and equity, while external financing primarily consists of bank loans and other debt financing. It is evident that debt financing plays a crucial role in the funding sources for innovation. So, how does Excess goodwill reduce the innovation performance of cultural and creative enterprises by increasing the cost of debt financing? Current literature focuses on the following two points.

First, as mentioned above, Excess goodwill leads to a general decline in future profitability, a fact that astute creditors are unlikely to overlook. Consequently, creditors demand higher risk compensation to hedge against this risk. For instance, Filip (2015) found through control group experiments that companies avoiding necessary goodwill impairment tend to manage cash flows upwards (Filip et al., 2015), which is an irrational managerial behavior that weakens company performance (Asheim et al., 2007), reducing the quality of accounting information for goodwill and leading to higher corporate debt financing costs.

Second, considering the industry characteristics of the cultural and creative industry, it is an industry that "avoids the tangible in favor of the intangible," manifested by the "light asset" operations of companies, specifically through outsourcing production processes and a significant proportion of intangible assets. We know that risk-averse creditors, such as banks, prefer financing methods that involve tangible assets.

Compared to tangible assets like factory buildings, "light assets" require a higher level of expertise from professional accountants. Furthermore, with the asset evaluation

system for cultural and creative industries still under development and the need for experienced practitioners, if cultural and creative enterprises also have a substantial amount of goodwill on their books, the combination of these factors leads to a significant amount of hard-to-quantify "light assets" on the books, making it difficult for creditors to accept them as reasonable collateral for debt financing, resulting in a significant increase in the cost of debt financing.

Based on this, this paper proposes research hypothesis H2:

H2: Excess goodwill weakens the innovation performance of cultural and creative enterprises by increasing the cost of debt financing.

Like the previous section, when studying the antecedents of innovation performance in cultural and creative enterprises, it is crucial to distinguish the types of innovation. Therefore, this paper proposes research hypotheses H2A and H2B:

H2A: Excess goodwill weakens the radical innovation performance of cultural and creative enterprises by increasing the cost of debt financing.

H2B: Excess goodwill weakens the incremental innovation performance of cultural and creative enterprises by increasing the cost of debt financing.

2.3 The Moderating Role of Knowledge Stock and Absorptive Capacity

According to existing research, we can posit that the innovation behavior of cultural and creative enterprises is more dependent on the knowledge stock in tangible products (such as clothing or furniture) (Asheim et al., 2007) and intangible assets (such as images, designs, and cultural products).

Thus, this paper hypothesizes that the impact of Excess goodwill on corporate innovation within cultural and creative enterprises depends on the enterprise's knowledge stock. First, for radical innovation, a greater knowledge stock facilitates the comprehension of new information (Chesbrough, 2003), enhancing the company's ability to identify radical innovation opportunities (Zahra and George, 2002). Vecchiato (2017) notes that companies with more knowledge stock may have more determination for breakthrough innovations, which in turn guides companies to invest more resources from financing into high-risk and radical innovation projects (Vecchiato, 2017).

A company's knowledge stock determines its ability to mobilize, integrate, and redeploy resources; a greater knowledge stock increases the company's capacity to synthesize and utilize funds (Hill and Rothaermel, 2003) to achieve breakthrough progress (Yayavaram and Chen, 2015). Knowledge stock also reduces a company's dependence on external resources (Pfeffer and Salancik, 2003), thereby helping enterprises alleviate pressures from creditors and shareholders. Consequently, this protects the enterprise from the adverse economic consequences brought about by Excess goodwill.

Second, for incremental innovation, a greater knowledge stock enhances a company's ability to develop, reorganize, and deploy external resources to achieve innovation performance (Cohen and Levinthal, 1990). Moreover, a greater knowledge stock enables companies to understand customers' explicit and latent needs, leading to more effective resource development (Galbraith et al., 2017), resulting in incremental changes and enhanced innovation performance (Zahra and George, 2002). Therefore,

we hypothesize that corporate knowledge stock mitigates the negative impact of Excess goodwill on the innovation performance of cultural and creative enterprises.

As discussed earlier, when considering the weakening of innovation performance by Excess goodwill, we hypothesize that corporate knowledge stock can play a moderating role. From a cognitive perspective, absorptive capacity is particularly crucial. To better utilize corporate knowledge stock, it is necessary to develop internal capabilities (Cohen and Levinthal, 1990) to absorb external knowledge (West and Bogers, n.d.).

On the one hand, participants in collaboration can promote the enhancement of innovation performance; on the other hand, because companies need to more and more integrate this knowledge in a personalized manner to be successful (Del Giudice et al., 2011), this implies that enterprises need to develop so-called absorptive capacity, which is the ability to absorb new external knowledge from the environment and integrate it into their innovation processes (Zahra and George, 2002).

Therefore, absorptive capacity enables companies to increase their knowledge stock and better utilize external knowledge from cultural and creative enterprises, which in turn improves innovation performance (Lichtenthaler and Lichtenthaler, 2009).

The development of these internal capabilities enhances employees' abilities to acquire, absorb, and innovate-related knowledge, information, and creativity, and also makes companies more efficient in obtaining external knowledge sources, leading to better innovation performance (Vrontis et al., 2017). We hypothesize that corporate knowledge stock mitigates the negative impact of Excess goodwill on the innovation performance of cultural and creative enterprises.

Based on this, this paper proposes Hypothesis H3.

H3A: Absorptive capacity mitigates the negative impact of Excess goodwill on the innovation performance of cultural and creative enterprises.

H3B: Knowledge stock mitigates the negative impact of Excess goodwill on the innovation performance of cultural and creative enterprises.

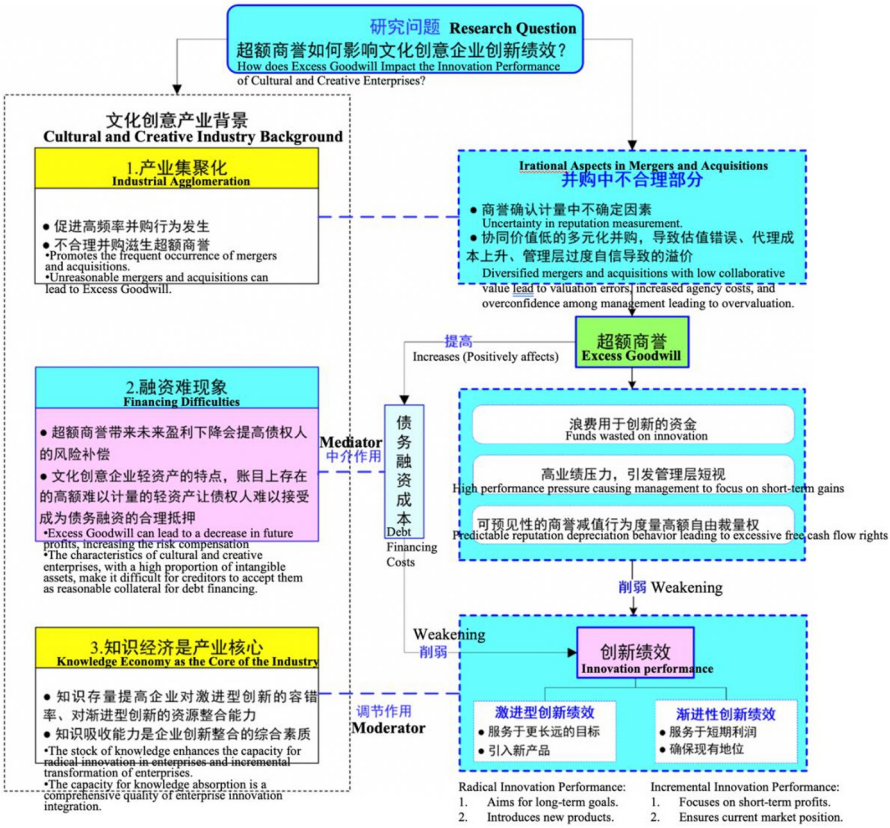

Fig. 3. Mind Map *of theory construction and research hypothesis*

3 Study Design

3.1 Data Source and Sample Selection

In 2007, Chinese enterprises were first required to report goodwill as a separate asset, hence this study selects data from Chinese A-share cultural and creative listed companies from 2010 to 2020 as the research sample. The primary financial data is sourced from the CSMAR database, with missing data supplemented from the WIND database.

Guided by the UNCTAD document (2010) and in conjunction with the actual national conditions of China(Cohendet et al., 2009), this paper identifies eight universally recognized sub-industries within the cultural and creative industries: publishing, design, software and computer services, internet information services, advertising, leisure and entertainment, arts and culture, and film and television.

Based on the defined categories of cultural and creative enterprises, this study manually screened all listed companies on the Shanghai and Shenzhen stock exchanges from 2010 to 2020, resulting in an initial sample of 424 cultural and creative enterprises. Considering the actual research situation, the initial data was processed as follows: first, excluding loss-making enterprises; second, excluding samples with missing key variables; third, excluding insolvent listed companies. Additionally, considering the impact of extreme values, this study performed a 1%-99% WINSORIZE treatment on all continuous variables. After the above processing, this study obtained an unbalanced panel data of 2,230 company-years.

3.2 Variable Definitions and Measures

Building upon the measurement methods of goodwill excess, his paper employs a goodwill regression model to measure excess goodwill through regression residuals(Zhang & Dong, 2022). The specific model is as follows:

In the aforementioned model, this study consolidates key factors influencing mergers and acquisitions into a merger model, which primarily includes whether cash is used for payment (CASH), the payment price of the buyer and seller (BUYER), the industry goodwill level, i.e., the average annual goodwill mean of other companies (GW_IND), company size (SIZE), company profitability (ROA), company growth capability (GROWTH), the proportion of management holdings (MHOLD), whether the CEO and chairman positions are combined (DUAL), and company-year dummy variables. The study regresses these factors together and uses the residuals obtained from the regression (the difference between the actual goodwill paid and the expected reasonable goodwill value) as the method for measuring excess goodwill in this study's base regression model.

$$GW_{i,t} = \alpha_0 + \alpha_1 CASH_{i,t} + \alpha_2 BUYER_{i,t} + \alpha_3 GW_{IND\,i,t} + \alpha_4 SIZE_{i,t}$$
$$+\alpha_5 ROA_{i,t} + \alpha_6 GROWTH_{i,t} + \alpha_7 MHOLD_{i,t} + \alpha_8 DUAL_{i,t} + \sum YEAR + \sum FIRM + \varepsilon_{i,t} (1)$$

Referring to the previous research, and in conjunction with the actual situation of the cultural and creative industry(SCHILLING, 2019), we divide corporate innovation performance into two parts for discussion: innovation output and innovation efficiency. Innovation output primarily refers to the number of all patents and trademarks granted to the company in the current year, while innovation efficiency is the ratio of the total number of patent applications to the natural logarithm of R&D investment, to eliminate the potential impact of the scale expansion of merged companies on the research results.

Furthermore, to study the deeper impact of excess goodwill on the innovation performance of cultural and creative enterprises(Zhang et al., 2020), this paper approximates the patent grant year to the professional output year, measures the incremental innovation performance of enterprises by summing the utility model patents and design

patents granted and taking the natural logarithm after adding 1; the number of invention patents granted in the year is used to measure the radical innovation performance of enterprises by taking the natural logarithm.

Table 1. Definitions and measures of core explanatory variables and explanatory variables.

Variable Name	Variable symbol	Variable definitions
Excess goodwill	GW_excess	According to the method(Zhang & Dong, 2022), the excess goodwill regression model was constructed
Innovative outputs	IP_sum	ln (number of all patents granted + number of trademark rights +1).
Innovative efficiency	IP_eff	The natural logarithm ratio of total innovation output to R&D investment
Radical innovation	IP_radical	ln (Number of granted invention patents+1)
Incremental innovation	IP_incremental	ln (Authorized utility model patent+Appearance patent+1)

The control variables in this paper are selected based on existing empirical literature and include company size (Size), company age (Age), company ownership status (SOE), debt-to-asset ratio (Lev), return on equity (ROA), cash flow quality (Cashflow), board size (Broad), management ownership ratio (Mhold), CEO duality (Dual), top shareholder ownership concentration (TOP1), year dummy variables (Year), and firm dummy variables (Firm).

Table 2. Variable definitions and measurement methods of control variables.

Variable	Definitions
Size	The natural logarithm of total assets (book value).
Age	ln (1 + year of the current year - year of establishment)
SOE	The value of state-owned enterprises is 1; nonstate-owned enterprises is 0
Lev	Total Liabilities/Total Assets
ROA	Ratio of net profit to total assets

Cash-flow	Annual operating cash flow
Broad	Number of Board Members
Mhold	The ratio of the number of shares held by executives to the total number of shares
Dual	The chairman and general manager are one, and the value is 1, otherwise it is 0
TOP1	The shareholding ratio of the company's largest shareholder
Year	The value of the specified year is 1, and the value of other years is 0
Firm	The specified company takes the value of 1 and the value of other companies is 0

This paper constructs an empirical test model based on the ordinary least squares (OLS) estimation. Model below considers that unless goodwill is immediately impaired, the economic consequences of goodwill are far-reaching and enduring(Wei & Zhu, 2019). Innovation also requires time to accumulate. Therefore, it is more reasonable for this paper to consider the impact of goodwill recognition on the company's future 1-3 years.

$$IP_{sum_{i,t+j}} or IP_{eff_{i,t+j}} or IP_{radical_{i,t+j}} or IP_{incremental_{i,t+j}} = \alpha_0 + \alpha_1 GW_{excess_{i,t}} + \sum CONTROLS_{i,t} + \sum YEAR + \sum FIRM + \varepsilon_{i,t} \quad (2)$$

In the model, j=1,2,3.α0 is the constant term;α1 is used to measure the impact of Excess goodwill on corporate innovation performance; *IP*sum is the impact of Excess goodwill on the company's radical innovation output in the next 1-3 years, *IP*eff is the impact of Excess goodwill on the company's innovation efficiency in the next 1-3 years, *IP*radical is the impact of Excess goodwill on the company's radical innovation performance in the next 1-3 years; *IP*incremental is the impact of Excess goodwill on the company's incremental innovation performance in the next 1-3 years; *GW*excess*i*,*t* is the portion of Excess goodwill obtained through regression residuals in equation; *CONTROLSi*,*t* are the control variables; *YEAR* and *FIRM* represent the year fixed effects and firm fixed effects, respectively; $\epsilon i,t$ is the random disturbance term.

4 Empirical Results and Analysis

4.1 Descriptive Statistics of the Main Variables

The following table reports the distribution of samples selected for this study in the cultural and creative industries. It should be noted that the eight major industries here are manually selected and matched with each listed company based on the information

from the CSMAR secondary industry by examining their primary business composition to form a classification of listed companies in China's cultural and creative industries.

Table 3. Distribution of the sample from the cultural and creative industries

Industry	Number of listed companies	Goodwill/ Net assets	The number of listed companies that recognized goodwill
Press and publishing	28	0.1254	14
Design industry	13	0.2703	10
Software & computer services	187	0.2956	139
Network information industry	66	0.3502	57
Advertising	12	0.3020	7
Leisure and entertainment industry	19	0.2541	10
Culture and the arts	7	0.1447	3
Film and television industry	24	0.1332	16
Synthesis	68	0.1895	25
Total	**424**	**-**	**281**

The most significant characteristic of goodwill in China's listed companies at present is the pronounced industry disparity. There is an "industry effect" in the goodwill of listed companies at the industry level in China. Based on this, comparing the samples across all industries with those in the cultural and creative industry,·we can draw a preliminary conclusion: the comprehensive level of goodwill in cultural and creative enterprises is significantly higher than that of the entire industry, and the inter-group disparity within the industry is significantly present but slightly better than that of the entire industry. This indicates that the cultural and creative industry has distinct characteristics and close internal connections. The table below reports the results of univariate tests for excess goodwill, innovation output, innovation efficiency, radical innovation performance, and incremental innovation performance in cultural and creative enterprises with and without merger and acquisition activities, showing that in CCIs with merger and acquisition activities, the mean of excess goodwill is significantly larger, and the median is significantly smaller.

Table 4. Univariate test. Note. ***, ** and * indicate that the significance level is 1%, 5% and 10% respectively; The same below

Variable name	There are mergers and acquisitions		No mergers and acquisitions		Test for differences between groups	
	mean	median	mean	median	mean	median
GW_excess	0.052	-0.012	-0.004	-0.003	0.005**	347.882***
IP_sum	3.211	3.436	1.719	2.091	10.382***	45.325***
IP_eff	0.189	0.202	0.131	0.145	5.898**	27.977***
IP_radical	1.098	0.991	0.781	0.590	9.022***	110.923***
IP_incremental	3.011	1.592	0.981	0.387	21.738***	546.003***

Furthermore, in terms of innovation output, innovation efficiency, radical innovation performance, and incremental innovation performance, listed cultural and creative industry enterprises with merger and acquisition activities exhibit significantly higher innovation behaviors. The possible reason is that these enterprises are larger in scale and have clear expansion goals, with a more distinct short-term and long-term planning for the future, leading to significantly higher levels of innovation. However, how excess goodwill affects innovation still requires further empirical results based on multiple regression analysis.

4.2 Primary Regression Results

The table below presents the baseline regression results of the impact of excess goodwill on corporate innovation performance (innovation output, innovation efficiency, radical innovation performance, and incremental innovation performance). When we assess corporate innovation performance in terms of its nature, namely quantity (output) and quality (efficiency), the results are as shown in columns (1)-(6).

Based on the regression outcomes, the following inferences can be drawn: First, the negative impact of excess goodwill on the innovation performance of cultural and creative enterprises significantly exists in the subsequent periods of 1-3 years. Second, the negative impact of excess goodwill on the innovation performance of cultural and creative enterprises significantly increases over time, meaning that the absolute value of the regression coefficients grows larger with time, while the level of significance remains high.

Table 5. Regression results of the impact of excess goodwill on innovation output, innovation efficiency.

	Panel A:innovation output			***Panel B :innovation efficient***		
Variable	(1)	(2)	(3)	(4)	(5)	(6)
	IP_sum_{t+1}	IP_sum_{t+2}	IP_sum_{t+3}	IP_eff_{t+1}	IP_eff_{t+2}	IP_eff_{t+3}

GW_excess	-1.7630** (-3.153)	-2.0457** (-3.390)	-2.3421** (-3.478)	-0.1040* (-3.162)	-0.1094* (-3.174)	-0.1277* (-3.486)
CONTROLS	Control	Control	Control	Control	Control	Control
Year	Control	Control	Control	Control	Control	Control
Firms	Control	Control	Control	Control	Control	Control
Constant	-12.2054* (-4.479)	-13.0173* (-4.436)	-12.6624* (-3.945)	-0.6213* (-4.491)	-0.6031* (-4.110)	-0.5062* (-3.117)
N	1808	1518	1246	1672	1420	1179
adj.R2	0.1539	0.1549	0.1621	0.1489	0.1445	0.1330

Regarding radical innovation performance, the conclusions drawn from the regression analysis are consistent with the preceding text. Based on the regression results, we arrive at the following conclusions: First, the negative impact of excess goodwill on the radical innovation performance of cultural and creative enterprises significantly exists in the subsequent 1-3 periods. Second, the negative impact of excess goodwill on the radical innovation performance of cultural and creative enterprises significantly intensifies over time, as evidenced by the increasing absolute value of the regression coefficients and the consistently high level of statistical significance.

In terms of incremental innovation performance, the regression results exhibit meaningful changes: the negative impact of excess goodwill on the incremental innovation performance of cultural and creative enterprises is not significant in the next period, but this negative influence becomes gradually significant over time, manifesting as an increase in the level of significance and the absolute value of the regression coefficients.

The reasons for these factors may be as follows: First, cultural and creative enterprises have a high dependency on incremental innovation performance; such incremental innovation products constitute the main body of products in the cultural and creative industry, and enterprises may implement certain protective measures.

Second, considering the nature of incremental innovation performance itself, these types of innovative products do not demand a high investment of time, money, and human resources, which are valuable to enterprises, and thus represent a cost-effective action for management to achieve short-term goals.

Table 6. Regression results of the impact of excess goodwill on radical innovation performance and incremental innovation performance.

	Panel C-1: radical innovation			*Panel C-2: incremental innovation*		
Variable	(7)	(8)	(9)	(10)	(11)	(12)
	$IP\_radical_{t+1}$	$IP\_radical_{t+2}$	$IP\_radical_{t+3}$	$IP\_incremental_{t+1}$	$IP\_incremental_{t+2}$	$IP\_incremental_{t+3}$

GW_excess	-1.7014***	-1.8262***	-1.9281***	-0.6185	-0.8885*	-1.1121**
	(-4.296)	(-4.218)	(-4.006)	(-1.344)	(-1.817)	(-2.042)
CONTROLS	Control	Control	Control	Control	Control	Control
Year	Control	Control	Control	Control	Control	Control
Firms	Control	Control	Control	Control	Control	Control
Constant	-87.1797**	-82.4764*	-20.7057	-15.2287	-20.3957	92.7398
	(-2.271)	(-1.869)	(-0.417)	(-0.305)	(-0.363)	(1.429)
N	1873	1585	1311	1873	1585	1311
adj.R2	0.1631	0.1617	0.1590	0.0895	0.0887	0.0861

4.3 Results of the Mediating Test

Referencing the research of Wei Zhihua et al. (2019), the corporate debt financing cost (COST) is proxied by the total of interest expenses, handling fee expenses, and other financial expenses as a proportion of the total liabilities at the end of the period, calculated as follows: Financial Expense Details - Interest Expenses + Financial Expense Details - Handling Fees + Financial Expense Details - Others, divided by Total Liabilities(Wei & Zhu, 2019).

The regression results are presented as follows. For the validation of Equation, a detailed verification has already been conducted in the preceding text, and thus will not be reiterated here. For the validation of Equation, refer to Table below, where columns (0)-(3) indicate the following: when the dependent variable is debt financing cost (COST).

The excess goodwill in the current period will significantly increase the current financing cost and 1-3 future year financial debt cost in the future. This surge in goodwill can be attributed to several factors, including aggressive acquisition strategies, overestimation of intangible assets, and market optimism that may not be sustainable in the long run which in turn raises the cost of servicing this debt.

Table 7. Regression results of excess goodwill on corporate debt financing costs.

Variable	(0) COST	(1) $COST_{t+1}$	(2) $COST_{t+2}$	(3) $COST_{t+3}$
GW_excess	0.0213***	0.0258***	0.0282***	0.0241***
	(7.678)	(6.512)	(6.217)	(4.559)
Control Variables	control	control	control	control

Annual	control	control	control	control
Firm	control	control	control	control
Constant	-0.0032	-0.0025	-0.0069	-0.0140
	(-0.002)	(-0.141)	(-0.357)	(-0.688)
N	2109	1808	1518	1246
Adj. R2	0.3887	0.3283	0.2766	0.2274

Table 8. Regression results of debt financing cost on innovation performance.

	Panel A: innovation output			***Panel B : innovation efficient***		
Variable	(1)	(2)	(3)	(4)	(5)	(6)
	IP_sum_{t+1}	IP_sum_{t+2}	IP_sum_{t+3}	IP_eff_{t+1}	IP_eff_{t+2}	IP_eff_{t+3}
GW_Excess	-1.4322***	-1.5242***	-1.7345***	-0.5243***	-0.5533***	-0.7429***
	(-4.312)	(-3.424)	(-3.421)	(-5.3434)	(-5.824)	(-5.231)
Cost	-7.4534***	-8.0645***	-8.3756***	-2.2131***	-2.3532***	-2.5342***
	(-4.296)	(-4.218)	(-4.006)	(-3.695)	(-4.534)	(-4.787)
Controls	control	control	control	control	control	control
Annual	control	control	control	control	control	control
Firm	control	control	control	control	control	control
Constant	-12.2054***	-13.0173***	-12.6624***	-8.5770***	-8.7994***	-7.9974***
	(-4.479)	(-4.436)	(-3.945)	(-3.886)	(-3.687)	(-3.064)
N	1808	1518	1246	1808	1518	1246
Adj. R2	0.1539	0.1549	0.1621	0.1048	0.1022	0.1077

4.4 Results of the Moderate Test

As previously discussed, we draw on the insights in conjunction with the fundamental national conditions of our country, using the total number of patents currently held by a company as a proxy variable for the knowledge stock of cultural and creative enterprises. Similarly, this study employs the ratio of a company's research and development

expenditure to sales as a moderating variable for the absorptive capacity of cultural and creative enterprises. Building on the views of predecessors that knowledge stock can mitigate the negative impact of certain antecedent variables on the innovation performance of cultural and creative enterprises, this paper will test whether knowledge stock and absorptive capacity can significantly affect the suppressive effect of Excess goodwill on the innovation performance of cultural and creative enterprises.

The specific approach is to interact the knowledge stock (HSK) and absorptive capacity (AC) with the proxy variable for Excess goodwill (GW_excess) and include this interaction term in the main test model for separate regressions. If this interaction term is significantly positive, it indicates that a company's knowledge stock or absorptive capacity can significantly mitigate the negative impact of Excess goodwill on the innovation performance of cultural and creative enterprises. It should also be noted, in line with the theoretical analysis section of this paper: the following results of the mechanism test are expected to have little distinction in impact on different types of innovation performance. Empirical testing has also largely confirmed this inference. Therefore, primarily due to space considerations, this paper only reports the impact of knowledge stock and absorptive capacity on innovation output and innovation efficiency.

The specific regression results are shown in Table below, where columns (1)-(3) depict the moderating role of knowledge stock, i.e., the regression coefficients of GW excess*HSK on innovation output (IP_sum) and innovation efficiency (IP_eff) are both significantly at the 1% level for the next 1-3 periods, indicating that the knowledge stock of cultural and creative enterprises can effectively mitigate the negative impact of Excess goodwill on their innovation performance. However, as time progresses, there are variations in the significance level and the absolute value of the regression coefficients. The main reasons should include: first, the mitigating effect of the knowledge stock of cultural and creative enterprises is temporary and only a palliative measure, to be used only as a temporary solution. Second, the impact of Excess goodwill on the innovation performance of cultural and creative enterprises becomes more fundamental and thorough over time. As for the moderating role of absorptive capacity, the regression coefficients of GW_excess*AC on innovation output (IP_sum) and innovation efficiency (IP_eff) do not exhibit a significant positive relationship in the next one to three periods.

Table 9. *Cultural and creative enterprises knowledge stock, excess goodwill, innovation performance.*

	Panel A: innovation output			*Panel B : innovation efficient*		
Variable	(1)	(2)	(3)	(4)	(5)	(6)
	IP_sum$_{t+1}$	IP_sum$_{t+2}$	IP_sum$_{t+1}$	IP_eff$_{t+1}$	IP_eff$_{t+2}$	IP_eff$_{t+3}$
GW_Excess*HSK	0.0096***	0.0088**	0.0077*	0.1233***	0.1099***	0.0678**
	(2.973)	(2.230)	(1.758)	(3.765)	(3.652)	(2.329)
GW_Excess	-0.6249	-0.8682	-1.1422*	-1.3422	-1.4321	-1.7239
	(-1.242)	(-1.526)	(-1.743)	(-0.452)	(-0.927)	(-1.323)
Control Variables	control	control	control	control	control	control
Annual	control	control	control	control	control	control
Firm	control	control	control	control	control	control
Constant	-3.8839*	-5.2785**	-5.9523***	-5.3231***	-6.2344***	-7.2221***
	(-1.876)	(-2.507)	(-2.633)	(-4.321)	(-4.239)	(-5.676)
N	1808	1518	1246	1808	1518	1246
Adj.R2	0.3177	0.3150	0.3139	0.2549	0.2754	0.3041

4.5 Robustness Test

In the measurement substitution for the explanatory variable (excess goodwill), both median and mean industry data were incorporated into the excess goodwill measurement model for adjustment. This resulted in the adjusted excess goodwill based on industry median (GW_excess1) and the adjusted excess goodwill based on industry mean (GW_excess2). Due to space limitations, the regression results for this aspect are omitted. Constrained by the length of this paper, only the results with innovation output and innovation efficiency as the dependent variables are disclosed. The analysis regarding the types of innovation is largely consistent with the previous text and will not be reiterated here.

Regarding the innovation performance of cultural and creative enterprises, the measurement standard for innovation outcomes was replaced from the quantity of patents and trademarks obtained to the quantity of applications filed (AIP), with the results

being omitted. In summary, concerning the replacement of the dependent and explanatory variables, regardless of how innovation performance and excess goodwill are reasonably measured, the negative impact of excess goodwill on the innovation performance of cultural and creative enterprises remains significantly unchanged, which is consistent with the results of the baseline tests in the previous text. Therefore, the substitution of the core variables' measurements still supports the baseline research conclusions of this paper.

In the selection of tool variables, in the same year, the average excess goodwill of listed companies in the same industry cannot have any impact on the innovation performance of cultural and creative enterprises. The average value of excess goodwill of listed companies in the whole industry in the same year is selected as an exogenous instrumental variable, and the measurement method adopted is the two-stage least squares estimation method (2SLS). The following table reports the results of the two-stage least squares estimation method: instrumental variables when the explanatory variables are the innovation output and innovation efficiency of cultural and creative enterprises in the next one to three periods, respectively. The average is all at 1%The Anderson test of the instrumental variables can significantly reject the null hypothesis, which indicates that the instrumental variables have excellent recognition ability, and passes the weak recognition test of instrumental variables, indicating that there is no weak recognition phenomenon of instrumental variables. The results of the innovation efficiency table are similar to those of innovation outputs (PanelB omitted based on space constraints).

Table 10. Robustness test 2-two-stage regression.

	Panel A: innovation output					
Variable	Phase 1	Phase 2	Phase 1	Phase 2	Phase 1	Phase 2
	GW_excess	IP_sum_{t+1}	GW_excess	IP_sum_{t+2}	GW_excess	IP_sum_{t+3}
GW_average	-5.5311***		-5.3214***		-5.4231***	
	(-4.77)		(-4.68)		(-4.32)	
GW_excess		-17.0883***		-21.3412***		-29.0002***
		(-4.32)		(-3.98)		(-3.77)
Control variables	control	control	control	control	control	control
N	2,158	2,158	1,892	1,892	1,653	1,653
adj. R2		0.3588		0.3082		0.3622

Refer to previous research, the Bootstrap test of the mediating effect of hypothesis H2 is performed. As shown in the table below, the indirect mediating effect of excess goodwill on weakening the innovation performance of cultural and creative enterprises by raising the cost of debt financing is significantly negative, and all confidence intervals do not include 0. Therefore, the cost of debt financing passes the robustness test of the intermediary effect, and the hypothesis H2 is also fully supported by the robustness test.

Table 11. Regression results of the mediating effect Bootstrap test.

variable	*Panel A: innovation output*			*Panel B : innovation efficient*		
	IP_sum_{t+1}	IP_sum_{t+2}	IP_sum_{t+3}	IP_eff_{t+1}	IP_eff_{t+2}	IP_eff_{t+3}
Bootstrap indirect	-0.2312***	-0.2176***	-0.1834***	-0.1434***	-0.1006**	-0.0730**
	(-5.218)	(-4.580)	(-3.669)	(-3.103)	(-2.225)	(-2.134)
95% confidence interval	[-0.3198, -0.1442]	[-0.3107, -0.1249]	[-0.2819, -0.0544]	[-0.2340, -0.0523]	[-1.1891, -0.0195]	[-0.1460, -0.0019]
N	1659	1384	1121	1873	1585	1311

5 Conclusion and Implications

In recent years, the intense merger and acquisition (M&A) activities of listed companies have led to significant accounting consequences in the form of goodwill impairments on the balance sheet. At the beginning of 2019, the concentrated performance slump caused by the one-time write-off of a large amount of goodwill by hundreds of listed enterprises aroused widespread concern in the capital market and sustained attention from the academic community. This study keenly focuses on the cultural and creative industry, which includes eight mainstream sectors that are closely interconnected and have frequent internal mergers and acquisitions, making it the most vivid and dynamic industrial example for studying the economic consequences of listed company mergers and acquisitions.

Based on the classic accounting principal-agent theory and information asymmetry theory, by measuring Excess goodwill above the normal level, and using data from Shanghai and Shenzhen-listed cultural and creative enterprises from 2010 to 2020, this study empirically examines the relationship between Excess goodwill and the innovation performance of cultural and creative enterprises. The study finds that the higher the Excess goodwill generated by mergers and acquisitions, the lower the innovation performance of cultural and creative enterprises, indicating a fundamental negative correlation between the two, which remains robust after endogeneity and robustness tests. Furthermore, in terms of the nature of innovation, the negative relationship between Excess goodwill and both innovation output and innovation efficiency are significant.

Regarding the types of innovation, excess goodwill negatively affects the radical innovation performance of cultural and creative enterprises, while its impact on incremental innovation performance becomes increasingly significant over time, possibly because incremental innovation performance does not consume significant resources and contributes more to short-term corporate earnings.

Additionally, the intermediary mechanism test proves that Excess goodwill affects corporate innovation performance by increasing corporate debt financing costs. Furthermore, in terms of the nature of innovation, the negative relationship between debt financing costs and both innovation output and innovation efficiency are significant. In terms of the types of innovation, debt financing costs negatively affect the radical innovation performance of cultural and creative enterprises, and their impact on incremental innovation performance becomes increasingly significant over time, possibly because incremental innovation performance does not consume significant resources and contributes more to short-term corporate earnings.

Further research indicates that Excess goodwill can also weaken corporate innovation performance by increasing the level of external feedback and reducing the degree of corporate digitalization. Accounting conservatism can slightly mitigate the negative relationship between Excess goodwill and the innovation performance of cultural and creative enterprises.

The factual basis for acquisition goodwill may not be robust, and the goodwill obtained through the "back-flush method" may not accurately reflect the company's ability to generate excess profits. It could even become a breeding ground for accounting violations that manipulate profits. Specifically, the recognition and impairment of acquisition goodwill are weakly verified accounting estimates. Unveiling the "black box" of manipulated goodwill is an urgent issue that standard setters and regulatory authorities need to address.

In practice, in recent years, both specific cases and empirical studies have shown that, especially in the cultural and creative industry clusters known for their "light assets", there are not few companies that have written off large amounts of goodwill. The subsequent impairment risks brought by large goodwill cannot be ignored for their negative impact on the market and investors. This requires regulators and standard setters to fully consider how to make acquisition goodwill truly meaningful, rather than allowing it to exert excessive performance pressure on the companies and lead to unreasonable resource consumption, becoming a manifestation of excessive discretionary power by corporate management and bringing negative impacts.

At the same time, the government should genuinely focus on the potential of the cultural and creative industry. The cultural and creative industry becoming a hotspot for Excess goodwill explosions is closely related to the current accounting standards' lack of attention to the "light asset" management model of cultural and creative enterprises. Policymakers should fully consider the essential characteristics of the cultural and creative industry, such as knowledge economy, innovation leadership, and industrial clusters, and tailor a series of financial regulatory policies. Concurrently, favorable financing policies should also be introduced to provide more financial support to fill the policy void left before.

First, it should be recognized that the integration of culture, science, and technology within the cultural and creative industries is not an unconditionally positive phenomenon. In some cases, this integration may potentially impair the innovation capabilities of enterprises in the future.

Second, there is a need for vigilance against the irrational integration of humanities and economy in the cultural and creative industries. This irrational integration may lead to unexpected negative consequences and hinder the healthy development of the industry.

Third, it has come to our attention that several factors may potentially serve as decisive elements in the economic outcomes of the integration of humanities and economy in the cultural and creative industries. These factors include, but are not limited to, executive performance pressure, executive personal style, cash flow, debt repayment capacity, and corporate knowledge management innovation reserves. Understanding and managing these factors properly is crucial for achieving the desired economic benefits from the integration.

Listed companies are key to addressing the issue of large goodwill. For listed companies, mergers and acquisitions should focus more on long-term development rather than short-term performance. Blind diversification through mergers and acquisitions is not advisable. Corporate decision-makers and managers should clearly recognize that blind mergers and acquisitions are a mistake that quenches thirst with poison, which can cause irreversible damage to innovation, the driving force behind enterprise development. It not only consumes many corporate resources but also misses industry opportunities and the pace of the times.

For cultural and creative enterprises, innovation is the foundation of why cultural and creative enterprises can become one of the most dazzling industries in the twenty-first century. The importance of innovation to the cultural and creative industry far exceeds that of other traditional industries. Considering the article's conclusion that unreasonable mergers and acquisitions lead to a significant weakening relationship between Excess goodwill and the innovation performance of cultural and creative enterprises, cultural and creative enterprises with a gene for agglomeration should carefully examine the merger targets and assess the advantages between the two companies to achieve the greatest synergistic effect.

As rational investors, they should objectively and calmly view merger and acquisition activities and reasonably evaluate merger events. Mergers and acquisitions do not always bring positive effects to corporate innovation behavior; investors should avoid blindly following trends and speculation, which can damage their own interests.

From a social concern perspective, this paper further studies whether Excess goodwill can weaken the innovation performance of the cultural and creative industry through social information feedback, discussing the media attention and the intermediary role of analysts' optimistic bias. Some tests on incremental innovation performance, different from previous study(Zhang & Dong, 2022), show that analysts' optimistic bias does not have a significant mediating effect in the suppression of innovation performance by excess goodwill. The specific reason may be that social media and analysts do not pay enough attention to the cultural and creative industry, resulting in insufficient sample sizes and insignificant empirical results. Therefore, this study also calls

on all sectors of society to pay attention to the cultural and creative industry and to provide emerging cultural and creative industries with sufficient social exposure and financing opportunities.

This paper has conducted an in-depth discussion on the relationship between Excess goodwill and the innovation performance of cultural and creative enterprises and has widely analyzed its mechanisms of action. However, there are still the following shortcomings.

First, variable measurement can be optimized. The innovation performance of cultural and creative enterprises should also include intellectual property data, and the lack of this type of data makes the research limited. Due to conditions, the mainstream research methods for this part take the form of interviews and questionnaires, which pose practical difficulties for this study. Similarly, due to conditions, the measurement of the knowledge absorption capacity of the cultural and creative industry has not used the most widely recognized Likert five-point scale statistical method, which is also a place where further research can be optimized.

Second, the breadth of mechanism research is insufficient. Specifically, this paper only studies the impact of debt financing costs, the most important source of funds, on the cultural and creative industry. The impact mechanisms of equity capital costs and government funding(Zhou et al., 2020) on the innovation performance of the cultural and creative industry are not discussed further to see if they are roughly the same as debt capital costs. Future research can focus on analyzing the impact mechanism of government funding on the innovation performance of the cultural and creative industry.

Third, sample data has limitations. Firstly, this paper is committed to studying China's cultural and creative industry. However, due to the current situation of financing difficulties in the cultural and creative industry, there may be not few unlisted small and medium-sized enterprises. Do these companies have merger goodwill, and if so, what impact will it have on innovation? Secondly, a considerable number of high-quality cultural and creative enterprises are listed overseas in the form of Chinese Concepts Stock, representing a higher financial and innovation level of cultural and creative enterprises(Zhou et al., 2020), which may cause sample selection bias in this study. Lastly, some current studies choose to use questionnaires and interviews to complete empirical research issues at the company level of the cultural and creative industry(Santoro et al., 2020), possibly because interviews are more authentic. Unlike surface financial data, interviews delve into the internal aspects of cultural and creative enterprises. Due to conditions and considerations of business secrets, this is also a direction for future efforts in this study.

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References

1. Asheim, B., Coenen, L., Vang, J., 2007. Face-to-Face, Buzz, and Knowledge Bases: Socio-ospatial Implications for Learning, Innovation, and Innovation Policy. Environment and planning. C, Government & policy, Environment and Planning C: Government and Policy 25, 655–670. https://doi.org/10.1068/c0648
2. Bell, G.G., 2005. Clusters, networks, and firm innovativeness. Strategic management journal 26, 287–295. https://doi.org/10.1002/smj.448
3. Chesbrough, H., 2003. The logic of open innovation: Managing intellectual property. California management review 45, 33–58. https://doi.org/10.2307/41166175
4. Cohen, W.M., Levinthal, D.A., 1990. Absorptive Capacity: A New Perspective on Learning and Innovation. Administrative science quarterly 35, 128–152. https://doi.org/10.2307/2393553
5. Cohendet, P., Simon, L., Sole Parellada, F., Valls Pasola, J., 2009. Creative Economy: The challenge of assessing the creative economy towards informed policy-making », ONU Report 2008. Management international (Montréal) 13, 159-. https://doi.org/10.7202/037513ar
6. De Beukelaer, C., 2014. The UNESCO/UNDP 2013 Creative Economy Report: Perks and Perils of an Evolving Agenda. The Journal of arts management, law, and society 44, 90–100. https://doi.org/10.1080/10632921.2014.895789
7. Del Giudice, M., Carayannis, E.G., Peruta, M.R.D., 2011. Culture and Cooperative Strategies: Knowledge Management Perspectives, in: Cross-Cultural Knowledge Management, Innovation, Technology, and Knowledge Management. Springer New York, New York, NY, pp. 49–62. https://doi.org/10.1007/978-1-4614-2089-7_5
8. Dosi, G., 1982. Technological paradigms and technological trajectories: A suggested interpretation of the determinants and directions of technical change. Research policy, Research Policy 11, 147–162. https://doi.org/10.1016/0048-7333(82)90016-6
9. Duranton, G., Puga, D., 2004. Chapter 48 Micro-foundations of urban agglomeration economies, in: Handbook of Regional and Urban Economics. Elsevier B.V, pp. 2063–2117. https://doi.org/10.1016/S1574-0080(04)80005-1
10. Fee, Ce., Thomas, S., 2004. Sources of gains in horizontal mergers: evidence from customer, supplier, and rival firms. Journal of financial economics, Journal of Financial Economics 74, 423–460. https://doi.org/10.1016/j.jfineco.2003.10.002
11. Filip, A., Jeanjean, T., Paugam, L., 2015. Using Real Activities to Avoid Goodwill Impairment Losses: Evidence and Effect on Future Performance: USING REAL ACTIVITIES TO AVOID GOODWILL IMPAIRMENT LOSSES. Journal of business finance & accounting 42, 515–554. https://doi.org/10.1111/jbfa.12107
12. Galbraith, B., McAdam, R., Woods, J., McGowan, T., 2017. Putting policy into practice: an exploratory study of SME innovation support in a peripheral UK region. Entrepreneurship and regional development 29, 668–691. https://doi.org/10.1080/08985626.2017.1325939
13. Hill, C.W.L., Rothaermel, F.T., 2003. The Performance of Incumbent Firms in the Face of Radical Technological Innovation. The Academy of Management review 28, 257–274. https://doi.org/10.2307/30040712
14. Jugend, D., Jabbour, C.J.C., Alves Scaliza, J.A., Rocha, R.S., Junior, J.A.G., Latan, H., Salgado, M.H., 2018. Relationships among open innovation, innovative performance, government support and firm size: Comparing Brazilian firms embracing different levels of radicalism in innovation. Technovation 74–75, 54–65. https://doi.org/10.1016/j.technovation.2018.02.004

15. Lichtenthaler, U., Lichtenthaler, E., 2009. A Capability-Based Framework for Open Innovation: Complementing Absorptive Capacity. Journal of management studies, Journal of Management Studies 46, 1315–1338. https://doi.org/10.1111/j.1467-6486.2009.00854.x
16. Pfeffer, J., Salancik, G.R., 2003. The External Control of Organizations: A Resource Dependence Perspective, Stanford business classics. Stanford University Press, Palo Alto.
17. Ramanna, K., 2008. The implications of unverifiable fair-value accounting: Evidence from the political economy of goodwill accounting. Journal of accounting & economics, Journal of Accounting and Economics 45, 253–281. https://doi.org/10.1016/j.jacceco.2007.11.006
18. RHODES-KROPF, M., ROBINSON, D.T., 2008. The Market for Mergers and the Boundaries of the Firm. The Journal of finance (New York) 63, 1169–1211. https://doi.org/10.1111/j.1540-6261.2008.01355.x
19. Santoro, G., Bresciani, S., Papa, A., 2020. Collaborative modes with Cultural and Creative Industries and innovation performance: The moderating role of heterogeneous sources of knowledge and absorptive capacity. Technovation 92–93, 102040-. https://doi.org/10.1016/j.technovation.2018.06.003
20. SCHILLING, M., 2019. Strategic Management of Technological Innovation. McGraw-Hill US Higher Ed USE, Columbus.
21. Stiglitz, J.E., Weiss, A., 1981. Credit Rationing in Markets with Imperfect Information. The American economic review 71, 393–410.
22. Tschmuck, P., 2003. How Creative Are the Creative Industries? A Case of the Music Industry. The Journal of arts management, law, and society 33, 127–141. https://doi.org/10.1080/10632920309596571
23. Vecchiato, R., 2017. Disruptive innovation, managerial cognition, and technology competition outcomes. Technological forecasting & social change 116, 116–128. https://doi.org/10.1016/j.techfore.2016.10.068
24. Vrontis, D., Thrassou, A., Santoro, G., Papa, A., 2017. Ambidexterity, external knowledge and performance in knowledge-intensive firms. The Journal of technology transfer 42, 374–388. https://doi.org/10.1007/s10961-016-9502-7
25. Wei, Z. and Zhu, C., 2019. Whether excess goodwill becomes a burden for business operations: an explanation based on the perspective of product market competitiveness. China Industrial Economics, pp.174-192.
26. West, J., Bogers, M., n.d. Profiting from External Innovation: A Review of Research on Open Innovation. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.1949520
27. Yayavaram, S., Chen, W.-R., 2015. Changes in firm knowledge couplings and firm innovation performance: The moderating role of technological complexity. Strategic management journal 36, 377–396. https://doi.org/10.1002/smj.2218
28. Yang, W., Song, M. and Feng, K., 2018. Mergers and acquisitions goodwill, investor overreaction, and stock price bubbles and crashes. China Industrial Economics, pp.156-173.
29. Zahra, S.A., George, G., 2002. Absorptive Capacity: A Review, Reconceptualization, and Extension. The Academy of Management review 27, 185–203. https://doi.org/10.5465/amr.2002.6587995
30. Zhang, X. and Dong, Z., 2022. Research on the impact of excess goodwill on enterprise innovation. Nankai Management Review, 25, pp.16-30.
31. Zhang, C., Sun, P. and Xie, J., 2020. Does the location of the production chain affect the choice of innovation mode? This is a theoretical and empirical question based on a micro perspective. Management World, 36, pp.45-59+233.

32. Zhou, J., Li, J., Jiao, H., Qiu, H., Liu, Z., 2020. The more funding the better? The moderating role of knowledge stock on the effects of different government-funded research projects on firm innovation in Chinese cultural and creative industries. Technovation 92–93, 102059-. https://doi.org/10.1016/j.technovation.2018.11.002