Asian Economic and Financial Review
ISSN(e): 2222-6737
ISSN(p): 2305-2147
DOI: 10.18488/journal.aefr.2019.96.712.723
Vol. 9, No. 6, 712-723
© 2019 AESS Publications. All Rights Reserved.
URL: www.aessweb.com

"INTERNET PLUS" STRATEGY AND TRANSFORMATION AND UPGRADING OF TRADITIONAL ENTERPRISES

Bin Li[1+]
Litao Duan[2]
Geng Peng[3]
Benfu Lv[4]

[1,2,3,4]*School of Economics and Management, University of Chinese Academy of Sciences, Zhongguancun Road East 80, Haidian District, Beijing, China.*
[1]*Email: libin172@mails.ucas.ac.cn Tel: +86-15810701958*
[2]*Email: duanlitaophd@gmail.com Tel: +86-15210659121*
[3]*Email: penggeng@ucas.ac.cn Tel: +86-13693076725*
[4]*Email: lubf@ucas.ac.cn Tel: +86-13501118319*

(+ Corresponding author)

Article History
Received: 15 March 2019
Revised: 22 April 2019
Accepted: 31 May 2019
Published: 8 July 2019

Keywords
"Internet plus" strategy
Traditional enterprises
Mediation model
Service quality
Asset turnover
Internet business model.

JEL Classification:
L10; L29; L52.

ABSTRACT

Based on the sample of China's A-share listed companies from 2013 to 2015, we used the mediation model in this study to investigate the impact and mechanism of the Internet on the performance of traditional enterprises. The results showed that the implementation of "Internet plus" strategies can significantly improve the performance of traditional enterprises. Further research showed that traditional enterprises can significantly improve service quality by implementing an "Internet plus" strategy, thereby significantly improving business performance. Traditional enterprises can also use the Internet and information technology to significantly improve asset turnover, thus significantly improving enterprise performance. The findings will encourage traditional enterprises to adopt the Internet business model to keep up with the trend of social development and maintain competitive advantages in the market. To sum up, in today's Internet age, implementing an "Internet plus" strategy is the only way for traditional enterprises to achieve transformation and upgrading.

Contribution/ Originality: This study is one of very few studies that have investigated the influence mechanism of the "Internet plus" strategy on the performance of traditional enterprises.

1. INTRODUCTION

"Internet plus" is a new economic structure which refers to relying on the Internet and information technology to integrate the Internet and traditional industries, and achieve economic transformation and upgrading by optimizing the distribution of production factors, updating the business systems, and reconstructing business models. On March 5, 2015, the term "Internet plus" appeared in the Chinese Government's Work Report for the first time and was regarded as an important driving force for social and economic development. Since then, "Internet plus" has become a national development strategy in China.

After more than 30 years of rapid development, traditional enterprises have entered a bottleneck period and face product homogenization, rising costs, ecological and environmental deterioration and declining profits, which makes them eager to find ways to transform and upgrade. The traditional enterprises here refer to enterprises that have no natural connection with the Internet or an Internet business model, such as textile enterprises and toy manufacturers. Will the Internet help traditional enterprises achieve transformation and upgrading? If so, how will this happen? These issues are the main focus of this article.

© 2019 AESS Publications. All Rights Reserved.

The profound changes in the social-economic situation at home and abroad have made transformation and upgrading an inevitable choice for traditional enterprises. Transformation refers to the transformation of an enterprise's business operation or business model, while upgrading refers to the rise of the company's position in the value chain (Gereffi, 1994). By implementing the "Internet plus" strategy, traditional enterprises can adopt a more promising Internet business model and also maintain a competitive advantage in a fierce market.

As the "Internet plus" strategy continues to advance in China, the integration of traditional enterprises and the Internet is getting deeper and deeper. As a result, more and more scholars have begun to pay attention to the role it plays in the transformation and upgrading of traditional enterprises. Li *et al.* (2014) believe that Internet thinking and the Internet business model will reshape the modes of production and consumption in society, which will be a revolutionary change for traditional enterprises. If traditional enterprises can't keep up with the pace of social development, they would only be eliminated in the competition for survival of the fittest. Wu *et al.* (2016) believe that traditional enterprises can use the Internet to realize the direct connection between consumers and producers, thus achieving a seamless link between personalized customization and mass production.

The Internet can significantly enhance the performance of traditional enterprises, which has been widely recognized, but the research on how the Internet improves the performance of traditional enterprises is relatively insufficient. Taking China's A-share listed companies as the sample, we used the mediation model and found that service quality and asset turnover are important mediating variables, which are the intermediaries between the Internet and corporate performance. To be specific, when traditional enterprises try to provide consumers with more commodity information and better after-sales service through the Internet, although their sales expenses will increase, they will occupy a larger market share and gain better returns. Traditional enterprises can also realize the organic unity of production process and circulation process through the Internet, accelerate asset turnover, and thus obtain higher incomes within a fixed period.

2. LITERATURE REVIEW

The development of information technology and support from the government promote the integration of traditional industries and the Internet. "Internet plus" has become the key to affect residents' life quality and the international competitiveness of the industry. Hao (2015) believed that the development of "Internet plus" originates from the Internet business model with long tail effect and that it can provide more convenient conditions to satisfy personalized needs. Based on the Internet platform chosen, it can take advantage of information and communication technology and cross-border integration of various industries to promote industrial transformation and upgrading so as to constantly create new products, new business and new models, thus building a new ecosystem that connects everything (Ma *et al.*, 2015).

"Internet plus" is a dynamic process of promoting the maximum dissemination, flow, sharing and creative use of all kinds of information through the wide application of information technology, the construction of information infrastructure and the innovation of policies and systems, so as to improve the efficiency of economic and social operation. Introducing the idea of creative destruction, Zhao (2015) believes that the essence of "Internet plus" is the deep integration of real economy and virtual economy, and the creative destruction of traditional industries and market foundation. "Internet plus" has the technical characteristics of connecting everything and data as an important production factor. It has a major impact on the production mode and business model of the entire economy. It promotes innovation, enhances the competitiveness of traditional industries, and discovers new growth drivers. It is significant in enabling the environmentally friendly development of traditional industries (Li, 2016).

Before 2013, only a few traditional enterprises implemented the "Internet plus" strategy, but in the following two years, more than one third of traditional enterprises had implemented the "Internet plus" strategy, which meant the speed of integration between traditional enterprises and the Internet had significantly accelerated (Yang and Liu, 2018).

© 2019 AESS Publications. All Rights Reserved.

Wan and Yang (2017) studied 1918 cinemas with the O2O marketing model and found that the third-party online platform could significantly improve the sales performance of cinemas. Ma (2018) studied twelve micro enterprises across three industries in Zhejiang province as the observed object, and found that "Internet plus" had different effects on different industries. Lightfoot and Harris (2003) believed that enterprises could use the Internet to reduce production costs, improve production efficiency and increase added value.

Wu *et al.* (2016) found the realization mechanism of large-scale intelligent customization based on "Internet plus" through theoretical construction and case analysis, and the research showed that with the virtual market effect and data-based technology effect of "Internet plus", enterprises could achieve seamless connection between personalized customization and large-scale standardized production. Zhang *et al.* (2017) discussed the mechanism of the Internet on promoting cluster transformation and upgrading under the background of "Internet plus", where the resource integration ability of the Internet can provide enterprises with an ecosystem of resource sharing and almost zero marginal cost, so that enterprises can take advantage of information, flexible production and knowledge spillover effect to realize process upgrading, product upgrading, function upgrading and cross-field upgrading.

Yang and Liu (2018) found that, compared with the return of the companies that don't implement "Internet plus" strategy, the earnings per share of the companies that implemented "Internet plus" strategy increased by about 31%, and the return on assets increased by about 24%. Further research results showed that "Internet plus" affects the degree of differentiation, thus improving corporate performance. In other words, differentiation is an important mediator of "Internet plus" affecting corporate performance. However, "Internet plus" does not affect enterprise cost. In other words, cost advantage is not an important mediating variable.

Most scholars focus on the connotation analysis of "Internet plus" and the direct role of the Internet in the transformation and upgrading of traditional enterprises, but ignore the ways in which the Internet promotes the transformation and upgrading of traditional enterprises, which is exactly the problem we studied in this article.

3. THEORETICAL ANALYSIS AND RESEARCH HYPOTHESES

3.1. The characteristics of "Internet Plus" and the transformation of Traditional Business Models

According to the summary of Ma *et al.* (2015) there are six basic features of "Internet plus" strategies. First, cross-border integration where "Internet plus" is an open ecosystem, that can closely connect all walks of life. The second feature is innovation as an "Internet plus" strategy can comprehensively promote enterprise innovation in terms of technology, factors, market and business models. The third feature is structural reconstruction as the Internet has broken the original modes of production and consumption, changed the original relationship between producers and consumers, and reshaped the processes of production and consumption. The fourth feature is that of respect for humanity because enterprises can use the Internet to achieve an organic unity between individualized demand and mass production. The fifth feature is open ecology because enterprises can optimize the relationships with external enterprises through the Internet, and build a good ecosystem. The sixth feature is that everything will be connected allowing information, technology and various elements to flow more freely.

Traditional enterprises can use the Internet and information technology such as big data and cloud computing to establish a whole new Internet business model. In practice, a large number of small and medium-sized enterprises rely on the Internet to apply the technology of big data and cloud computing to all aspects of production and circulation, so as to gain competitive advantages in the market.

The development of an "Internet plus" strategy in China is often bottom-up. Enterprises often lead in implementing an "Internet plus" strategy in the market and then the government promotes it as a national strategy. In 2013, only about 23% of listed companies implemented an "Internet plus" strategy, but by 2015, the number of companies implementing an "Internet plus" strategy has doubled, which can be seen in Figure 1 below.

© 2019 AESS Publications. All Rights Reserved.

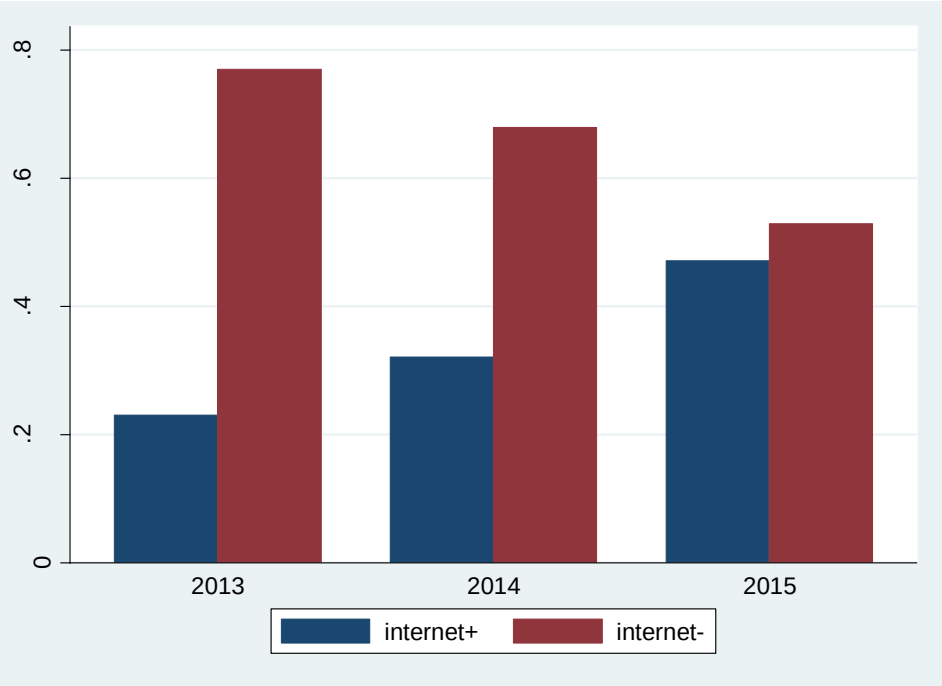

Figure-1. Proportion of Traditional Enterprises Adopting "Internet Plus" Strategy.
Note: "Internet +" refers to the enterprises that have implemented the "Internet plus" strategy, and "Internet -" refers to the enterprises that have not implemented the "Internet plus" strategy. The data comes from China Stock Market & Accounting Research Database (CSMAR).

The integration of traditional enterprises and the Internet refers to the transformation of the traditional business model or a transition from a traditional business model to an Internet business model. This transformation is an important decision because it means that enterprises need to redefine their internal and external relationships, and rebuild their customer relationships, channel relationships and profit models. In the transformation to an Internet business model, traditional enterprises often have to spend a lot of fixed costs and various kinds of fees but the marginal cost of the Internet will often slowly decrease.

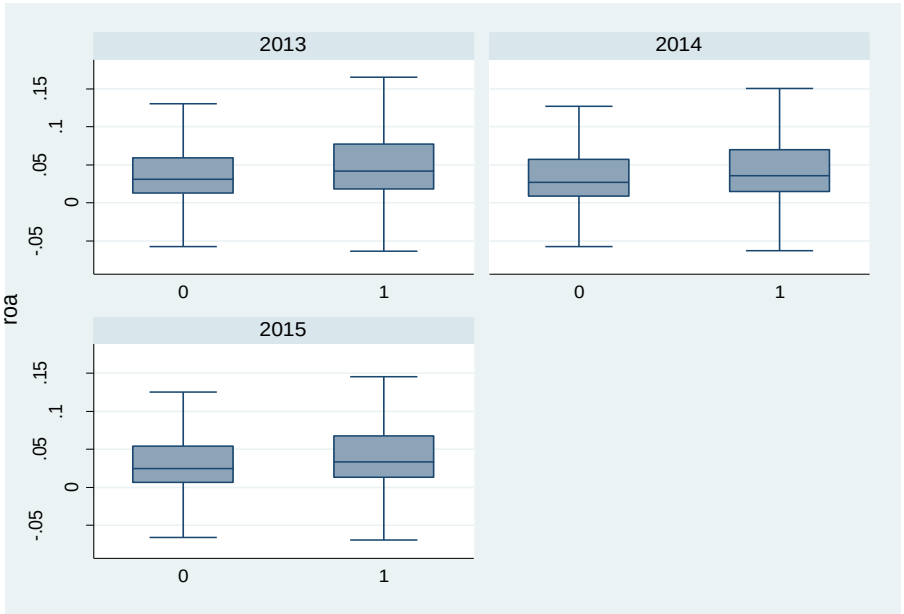

Figure-2. Return on Assets of Different Types of Companies.
Note: 1 refers to the enterprises implementing the "Internet plus" strategy, 0 refers to the enterprises not implementing the "Internet plus" strategy. The data comes from China Stock Market & Accounting Research Database (CSMAR).

© 2019 AESS Publications. All Rights Reserved.

According to Metcalfe's Law, the more members a network has, the more valuable it is. For example, in the process of transformation, traditional enterprises have to invest a lot in design, development, promotion, commissioning and other things. However, the marginal cost of information transmission is almost zero, and the value of the network increases as the network scale increases. In the end, enterprises will gain greater benefits. It can be seen from Figure 2 above that enterprises implementing an "Internet plus" strategy have a higher return on assets on the whole than those without an "Internet plus" strategy.

3.2. The path of the Internet to improve the performance of Traditional Enterprises

There is consensus that the implementation of an "Internet plus" strategy can help traditional enterprises improve their performance. But how can the Internet improve the performance of traditional companies? With the development of economy and society, people pay more attention to the quality of life. However, traditional enterprises are caught in the dilemma of product homogenization, rising costs and declining profits.

In order to survive, traditional enterprises try to find a balance between satisfying personalized needs and realizing mass production. An "Internet plus" strategy drives producers to adopt the latest information technologies such as big data, cloud computing and the Internet of things in the production process and circulation process. Through the Internet and information technology, traditional enterprises can realize the seamless link between personalized demand and mass production, and they can also realize the organic unity of production process and circulation process.

In this process, enterprises need to collect more information to improve the quality of their services. Although this will lead to higher costs, it will also bring better returns. Therefore, traditional enterprises can improve the quality of service through the Internet, and improve their performance.

In the Internet business model, the relationship between enterprises and consumers is closer. Enterprises can shorten the production time and circulation time, and improve asset turnover, and achieve better business performance within a fixed period. Therefore, traditional enterprises can improve asset turnover through the Internet, and then improve corporate performance.

Hypothesis 1: traditional enterprises can improve service quality through the Internet, and then improve corporate performance.

Hypothesis 2: traditional enterprises can improve asset turnover through the Internet, and then improve corporate performance.

4. DATA DESCRIPTION AND MODEL SPECIFICATION

4.1. Sample selection and data description

China's Internet began in the late 1980s and developed rapidly in the early 20th century. But only in recent years have traditional enterprises begun to pay attention to using the Internet, and trying an Internet business model.

We used the China Stock Market & Accounting Research Database (CSMAR), to collect relevant data from China's A-share listed companies from 2013 to 2015. In order to ensure the reliability of the research conclusions, the original data was processed.

First, non-traditional enterprises were eliminated, that is enterprises that have natural links with the Internet, such as software companies and Internet companies. Second, it was determined that when the enterprise begins to take advantage of the Internet in some important business, the company is considered to have implemented an "Internet plus" strategy. Third, some companies with missing data were excluded.

In order to study whether service quality and asset turnover were mediating variables, which are intermediaries of the Internet affecting corporate performance, we used the Return on assets (ROA) as the explained variable, whether the enterprise implemented an "Internet plus" strategy (internet) as the explanatory

© 2019 AESS Publications. All Rights Reserved.

variable, and service quality (serqual) and asset turnover (turnover) as the mediating variables. Among them, the explanatory variable was a binary dummy variable. If the enterprise implemented an "Internet plus" strategy, its value was 1; otherwise, it was 0.

As per prior research (Bentley *et al.*, 2013; Dichev *et al.*, 2013) we also included whether the chairman and the general manager were the same person (same), whether the enterprise was a state-owned enterprise (state) and the size of the enterprise (size) as control variables. If the chairman and the general manager were the same person, the value was 1; otherwise, it was 0. If the enterprise was state-owned, the value was 1; otherwise, it was 0.

Table-1. Grouped Descriptive Statistics of Major Variables.

Sample	Statistics	roa	eps	turnover	serqual	same	state	size
internet=0	Mean	0.0349	0.2842	0.6291	0.0546	0.1998	0.4719	22.2238
	Sd	0.0610	0.4357	0.5706	0.0753	0.3999	0.4993	1.2847
	Min	-0.4083	-2.6500	0.0015	0	0	0	18.1867
	Max	1.5601	3.6100	11.8414	1.0645	1	1	28.5087
	Obs	3293	3293	3293	3293	3293	3293	3293
internet=1	Mean	0.0427	0.3871	0.7999	0.0890	0.2350	0.4033	22.4541
	Sd	0.0549	0.6187	0.6852	0.0991	0.4241	0.4907	1.3267
	Min	-0.3905	-3.6878	0.0122	0	0	0	17.6413
	Max	0.4636	12.3400	8.1295	1	1	1	28.5040
	Obs	1711	1711	1711	1711	1711	1711	1711
Total Obs		5004	5004	5004	5004	5004	5004	5004
Diff		-0.0078	-0.1029	-0.1708	-0.0344	-0.0351	0.0686	-0.2304
t-value of Diff		-4.4419	-6.8288	-9.3640	-13.708	-2.8870	4.6400	-5.9499

Note: Diff represents the difference between the mean values of the grouping variables.

As can be seen from Table 1 above, on the whole, compared with traditional enterprises not implementing an "Internet plus" strategy, those implementing a "Internet plus" strategy had better market performance, higher service quality and higher asset turnover.

4.2. Model specification

In order to test whether service quality and asset turnover were effective mediating variables, we constructed the following econometric model:

$$Y = \alpha + \alpha_1 * T + \alpha_2 * X + \varepsilon_1 \qquad (1)$$

$$M = \beta + \beta_1 * T + \beta_2 * X + \varepsilon_2 \qquad (2)$$

$$Y = \gamma + \gamma_1 * T + \gamma_2 * M + \gamma_3 * X + \varepsilon_3 \qquad (3)$$

In the above model, Y represents the explained variable, T represents the explanatory variable, M represents the mediating variable, and X represents the control variables. Equation 1 was used to confirm whether the explanatory variable had significant influence on the dependent variable, and Equation 2 was used to confirm whether the explanatory variable had significant influence on the mediating variable. On this basis, Equation 3 was used to confirm whether there was any mediating effect.

If the following four conditions were all satisfied, the mediation effect was considered to exist. Firstly, the mediating variable had to significantly affect the explained variable. Secondly, the explanatory variable had to significantly affect the mediating variable. Thirdly, in the absence of a mediating variable, the explanatory variable had to significantly affect the explained variable. Fourthly, in the case of the inclusion of the mediating variable, the effect of the explanatory variable on the explained variable had to be reduced but still significant. As long as one of the conditions was not satisfied, the mediation effect could not be confirmed.

© 2019 AESS Publications. All Rights Reserved.

5. EMPIRICAL RESULT

In order to test whether the service quality was a mediating variable, we needed to test whether all the above four conditions could be met. The regression results of the first three columns in Table 2 show that service quality was an effective mediating variable, and that it accounted for 26.69% of the Internet's impact on enterprise performance, which was significant at the confidence level of 5%. In the regression of column (1), the influence of Internet on enterprise performance was significantly positive at the confidence level of 1%, which indicated that enterprises adopting an "Internet plus" strategy had better market performance than those not adopting an "Internet plus" strategy.

In the regression of column (2), the influence of Internet on service quality was significantly positive at the confidence level of 1%, which indicated that enterprises adopting an "Internet plus" strategy provided better sales services.

In the regression of column (3), the impact of Internet and service quality on corporate performance was significantly positive at the 1% confidence level, but the impact of the Internet on corporate performance was weaker than that in the regression of column (1). This showed that part of the Internet's impact on corporate performance was achieved indirectly through service quality. In other words, traditional enterprises used the Internet to improve service quality, and that then promoted the enhancement of corporate performance.

This meant that all four conditions were satisfied. Therefore, Hypothesis 1 was verified. This meant that traditional enterprises could improve service quality through the Internet, and then occupy more market share with high-quality services to obtain better benefits.

Similarly, in order to test whether the asset turnover was a mediating variable, we also needed to verify whether all the above four conditions could be met. The regression results in the last three columns of Table 2 showed that the asset turnover was an effective mediating variable, and it explained 21.39% of the Internet's influence on enterprise performance, which was significant at the confidence level of 5%. The regression results of column (4) showed that the influence of Internet on enterprise performance was significantly positive at the confidence level of 1%, which indicated that enterprises adopting an "Internet plus" strategy had better market performance than those not adopting an "Internet plus" strategy.

The regression results of column (5) showed that the impact of the Internet on asset turnover was significantly positive at the confidence level of 1%, which indicated that enterprises adopting an "Internet plus" strategy could speed up asset turnover. The regression results in column (6) showed that the impact of Internet and asset turnover on corporate performance was significantly positive at the 1% confidence level, but that the impact of the Internet on corporate performance was weaker than that in the regression of column (4), which meant that part of the Internet's impact on corporate performance was achieved indirectly through asset turnover. In other words, traditional enterprises can use the Internet to increase asset turnover, and the increase in asset turnover will contribute to the improvement of corporate performance.

As all four conditions were met, Hypothesis 2 was verified. This meant that traditional companies could accelerate asset turnover through the Internet, enabling companies to achieve higher returns over a fixed period of time.

In summary, the regression results in Table 2 showed that both Hypothesis 1 and Hypothesis 2 were verified. By implementing an "Internet plus" strategy, traditional enterprises can improve service quality and capital turnover and achieve better business performance.

From other perspectives, we found that the size of the enterprises and whether the enterprises were state-owned had a significant impact on the performance of the enterprise, while whether the chairman and the general manager were one or not had no significant impact on the performance of the enterprise. To be specific, the larger the size of enterprises, the better the performance of enterprises, and the market performance of state-owned enterprises was not as good as that of private enterprises.

© 2019 AESS Publications. All Rights Reserved.

At the same time, we also found that over time, the return on assets of enterprises showed a declining trend and that the rate of decline is increasing, which is caused by the decrease of marginal returns on capital.

In the era of the Internet economy, people pay more attention to the improvement of life quality and efficiency, while the traditional business model cannot meet the current needs of people. Meeting people's personalized needs is the key to the transformation and upgrading of traditional enterprises, as well as the inevitable requirement for traditional enterprises to obtain higher returns. Through the Internet and information technologies such as big data and cloud computing, traditional enterprises, can adopt Internet business model to achieve transformation, and achieve upgrading by improving service quality and accelerating asset turnover.

Table-2. Basic Mediation Models.

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	**roa**	**serqual**	**roa**	**roa**	**turnover**	**roa**
Internet	0.0084***	0.0361***	0.0062***	0.0084***	0.2012***	0.0066***
	(0.0018)	(0.0025)	(0.0018)	(0.0018)	(0.0187)	(0.0018)
Serqual			0.0615***			
			(0.0100)			
Turnover						0.0089***
						(0.0014)
Size	0.0015**	-0.0103***	0.0022***	0.0015**	-0.0015	0.0015**
	(0.0007)	(0.0010)	(0.0007)	(0.0007)	(0.0070)	(0.0007)
State	-0.0120***	-0.0130***	-0.0112***	-0.0120***	0.0346*	-0.0123***
	(0.0018)	(0.0025)	(0.0018)	(0.0018)	(0.0188)	(0.0018)
Same	0.0032	0.0014	0.0031	0.0032	0.0134	0.0031
	(0.0021)	(0.0029)	(0.0021)	(0.0021)	(0.0218)	(0.0021)
year2014	-0.0044**	0.0003	-0.0044**	-0.0044**	-0.0614***	-0.0038*
	(0.0020)	(0.0029)	(0.0020)	(0.0020)	(0.0213)	(0.0020)
year2015	-0.0103***	-0.0012	-0.0102***	-0.0103***	-0.1529***	-0.0089***
	(0.0021)	(0.0029)	(0.0021)	(0.0021)	(0.0215)	(0.0021)
Constant	0.0103	0.2906***	-0.0075	0.0103	0.7052***	0.0041
	(0.0149)	(0.0209)	(0.0151)	(0.0149)	(0.1545)	(0.0148)
% of Tot Eff mediated	26.69			21.39		
95% Conf. Interval	(18.51, 44.55)			(14.98, 35.54)		
Observations	5,004	5,004	5,004	5,004	5,004	5,004
R-squared	0.0190	0.0749	0.0263	0.0190	0.0279	0.0273

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

6. ROBUSTNESS ANALYSIS

6.1. Sensitivity test

Only when the model satisfies the sequential ignorability were we able to obtain reliable results. Sequential ignorability here refers to the random allocation of treatment variables and mediating variables. If sequential ignorability was not satisfied, we could not obtain reliable estimates of the average casual mediation effect.

Sensitivity analysis could tell us what happened to the estimates of the average casual mediation effect once the critical condition mentioned above was not established. In the sensitivity analysis, we quantified the violation degree of sequential ignorability as the correlation between the error term of the mediation model and the error term of the outcome model, and then calculated the average casual mediation effect closely related to the sensitivity parameter.

If the average casual mediation effect varied greatly with the change of sensitive parameter, our conclusion was sensitive, that is to say, unreliable. Figure 3 shows the relationship between the average casual mediation effect and the violation degree of sequential ignorability when quality of service was the mediating variable. As can be seen from Figure 3, the sensitivity parameter changed greatly while the average casual mediation effect changed little, which indicated that our conclusion that service quality was an effective mediating variable was robust.

© 2019 AESS Publications. All Rights Reserved.

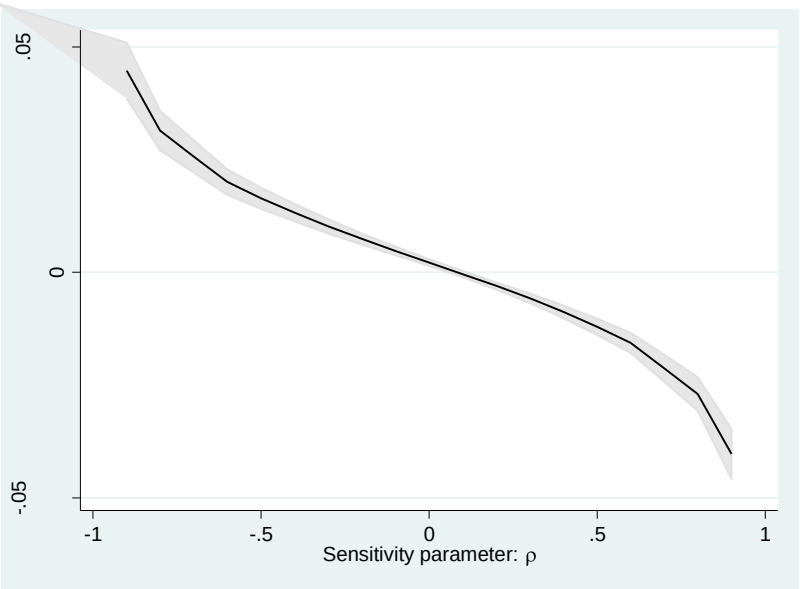

Figure-3. Sensitivity Analysis of Service Quality.
Source: Developed by authors based on data sources from CSMAR.

Figure 4 shows the relationship between the average casual mediation effect and the violation degree of sequential ignorability when the asset turnover rate was used as the mediating variable. As can be seen from Figure 4, the sensitivity parameter changed greatly while the average casual mediation effect changed little, indicating that our conclusion that the asset turnover was an effective mediating variable was robust. Through the above sensitivity analysis, we also found that the higher the violation degree of sequential ignorability was, the greater the fluctuation of average casual mediation effect.

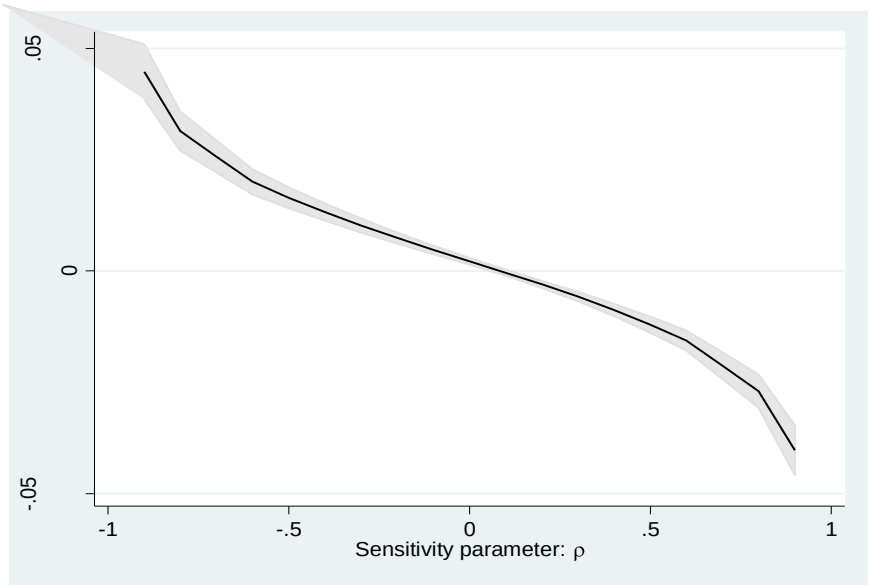

Figure-4. Sensitivity Analysis of Asset Turnover.
Source: Developed by authors based on data sources from CSMAR.

6.2. The robustness test for replacing the explained variable

In the above model, we used the Return on assets (ROA) as the explained variable to measure corporate performance. There are many other indicators to measure corporate performance. We used earnings per share (eps) instead of the Return on assets as the explained variable.

© 2019 AESS Publications. All Rights Reserved.

The regression results of the first three columns in Table 3 showed that service quality was an effective mediating variable, and it explained 25.19% of the Internet's impact on enterprise performance, which was significant at the confidence level of 5%. Compared with the conclusion of the basic model, the mediation effect decreased slightly, but this did not change the basic conclusion.

The regression results in the last three columns of Table 3 showed that the asset turnover was an effective mediating variable, and it explained 16.09% of the Internet's impact on enterprise performance, which was significant at the confidence level of 5%. The mediation effect was lower than that of the basic model, but this also did not change the basic conclusion. After replacing the explained variable, we found that the conclusion of the basic model was still true, which verified the robustness of our conclusions.

Table-3. Robustness Test for Replacing Explained Variables.

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	**eps**	**serqual**	**eps**	**eps**	**turnover**	**eps**
Internet	0.0918***	0.0361***	0.0688***	0.0918***	0.2012***	0.0771***
	(0.0149)	(0.0025)	(0.0151)	(0.0149)	(0.0187)	(0.0150)
Serqual			0.6363***			
			(0.0829)			
Turnover						0.0731***
						(0.0112)
Size	0.1104***	-0.0103***	0.1169***	0.1104***	-0.0015	0.1105***
	(0.0056)	(0.0010)	(0.0057)	(0.0056)	(0.0070)	(0.0056)
State	-0.0898***	-0.0130***	-0.0815***	-0.0898***	0.0346*	-0.0923***
	(0.0150)	(0.0025)	(0.0150)	(0.0150)	(0.0188)	(0.0149)
Same	0.0179	0.0014	0.0170	0.0179	0.0134	0.0169
	(0.0174)	(0.0029)	(0.0173)	(0.0174)	(0.0218)	(0.0173)
year2014	-0.0444***	0.0003	-0.0446***	-0.0444***	-0.0614***	-0.0399**
	(0.0170)	(0.0029)	(0.0169)	(0.0170)	(0.0213)	(0.0170)
year2015	-0.1144***	-0.0012	-0.1136***	-0.1144***	-0.1529***	-0.1032***
	(0.0172)	(0.0029)	(0.0171)	(0.0172)	(0.0215)	(0.0172)
Constant	-2.0833***	0.2906***	-2.2682***	-2.0833***	0.7052***	-2.1349***
	(0.1233)	(0.0209)	(0.1250)	(0.1233)	(0.1545)	(0.1231)
% of Tot Eff mediated	25.19			16.09		
95% Conf. Interval	(18.85, 36.31)			(12.15, 23.04)		
Observations	5,004	5,004	5,004	5,004	5,004	5,004
R-squared	0.0854	0.0749	0.0961	0.0854	0.0279	0.0931

Note: standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

6.3. Robustness Test of Instrumental Variable Regression

Whether traditional enterprises adopt an "Internet plus" strategy or not may be affected by the market environment and their own characteristics, which will lead to endogenous problems. In order to solve the endogenous problem of the explanatory variable, we selected the Internet's application-level (degnet) of the industry that the enterprise belonged to as the instrumental variable. The application-level of the Internet was divided into five levels from low to high, with 0 indicating the lowest level and 4 indicating the highest level. The regression results in Table 4 show that service quality and asset turnover were still valid mediating variables. Although the mediation effect was slightly different, the basic conclusions did not change fundamentally.

7. CONCLUSION

Based on the data from China's A-share listed companies, we found that compared with traditional enterprises that don't implement an "Internet plus" strategy, traditional enterprises that adopt an "Internet plus" strategy could achieve better corporate performance. This situation arises because through the Internet and information technology, traditional enterprises can realize the seamless link between personalized customization and mass production and achieve the organic unity of production process and circulation process.

© 2019 AESS Publications. All Rights Reserved.

Using the mediation model, we found that both service quality and asset turnover were mediating variables, which are intermediaries of the Internet affecting the performance of enterprises. With an Internet business model, traditional enterprises can improve service quality, and then attract consumers with high-quality services, thus realizing the purpose of improving enterprise performance. In addition, traditional enterprises can also optimize the production process and circulation process to accelerate asset turnover and gain more profits in a fixed period.

Table-4. Robustness Test of Instrumental Variable Regression.

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	**roa**	**serqual**	**roa**	**roa**	**turnover**	**roa**
Degnet	0.0060***	0.0213***	0.0048***	0.0060***	0.1201***	0.0050***
	(0.0010)	(0.0014)	(0.0010)	(0.0010)	(0.0106)	(0.0010)
Serqual			0.0587***			
			(0.0100)			
Turnover						0.0086***
						(0.0014)
Size	0.0014**	-0.0104***	0.0021***	0.0014**	-0.0019	0.0015**
	(0.0007)	(0.0010)	(0.0007)	(0.0007)	(0.0070)	(0.0007)
State	-0.0116***	-0.0123***	-0.0109***	-0.0116***	0.0387**	-0.0120***
	(0.0018)	(0.0025)	(0.0018)	(0.0018)	(0.0188)	(0.0018)
Same	0.0030	0.0008	0.0029	0.0030	0.0099	0.0029
	(0.0021)	(0.0029)	(0.0021)	(0.0021)	(0.0217)	(0.0021)
year2014	-0.0048**	-0.0006	-0.0047**	-0.0048**	-0.0667***	-0.0042**
	(0.0021)	(0.0029)	(0.0020)	(0.0021)	(0.0213)	(0.0020)
year2015	-0.0111***	-0.0027	-0.0110***	-0.0111***	-0.1619***	-0.0097***
	(0.0021)	(0.0029)	(0.0021)	(0.0021)	(0.0216)	(0.0021)
Constant	0.0120	0.2930***	-0.0052	0.0120	0.7205***	0.0059
	(0.0148)	(0.0209)	(0.0151)	(0.0148)	(0.1544)	(0.0148)
% of Tot Eff mediated	22.42			14.51		
95% Conf. Interval	(17.28, 30.62)			(11.28, 19.77)		
Observations	5,004	5,004	5,004	5,004	5,004	5,004
R-squared	0.0215	0.0778	0.0282	0.0215	0.0303	0.0293

Note: standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

The process of integrating traditional enterprises with the Internet is the process of traditional enterprise transformation. In this process, traditional enterprises will generally take the lead in implementing an "Internet plus" strategy in some business departments, and then popularize it according to the situation, which is a gradual trial and error process. No one can guarantee that as long as traditional enterprises implement an "Internet plus" strategy, that they will certainly achieve transformation and upgrading. However, integration with the Internet is indeed the only way for traditional enterprises to transform and upgrade for the moment.

The process of traditional enterprises using the Internet and information technology to improve enterprise performance is the process of upgrading. In this process, traditional enterprises can use the latest Internet technologies such as big data and cloud computing to rapidly collect market demand information and market supply information, and then make optimal decisions based on the collected information. In today's Internet era, traditional enterprises must take effective measures to achieve transformation and upgrading if they want to obtain sustainable competitive advantages. At the micro level, traditional enterprises should make full use of the Internet to obtain more valuable information and promote their own technological innovation and achieve a deeper integration of the Internet and the actual business. At the macro level, the government should establish and improve the Internet laws and regulations, while encouraging and supporting the integration of traditional enterprises and the Internet.

Funding: This study received no specific financial support.
Competing Interests: The authors declare that they have no competing interests.
Contributors/Acknowledgement: All authors contributed equally to the conception and design of the study.

© 2019 AESS Publications. All Rights Reserved.

REFERENCES

Bentley, K.A., T.C. Omer and N.Y. Sharp, 2013. Business strategy, financial reporting irregularities, and audit effort. Contemporary Accounting Research, 30(2): 780-817.Available at: https://doi.org/10.1111/j.1911-3846.2012.01174.x.

Dichev, L.D., J. Graham, C.R. Harvey and S. Rajgopal, 2013. Earnings quality: Evidence from the field. Journal of Accounting and Economics, 56(3): 1-33.Available at: https://doi.org/10.1016/j.jacceco.2013.05.004.

Gereffi, G., 1994. The organization of buyer-driven global commodity chains: How US retailers shape overseas production networks. Westport, CT: Praeger. pp: 93-122.

Hao, S.Y., 2015. Research on multiple competitive advantages of "internet plus" business model. Inquiry into Economic Issues, 36(9): 41-48.

Li, H.J., Y.X. Tian and W.J. Li, 2014. Mobile internet thinking and tradition business reengineering. China Industrial Economics, 31(10): 135-146.Available at: https://doi.org/10.19581/j.cnki.ciejournal.2014.10.011.

Li, X.H., 2016. The theoretical basis of "internet plus" transformation of traditional industries. Economic Review, 32(3): 57-63.Available at: https//doi.org/10.16528/j.cnki.22-1054/f.201603057.

Lightfoot, W. and J.R. Harris, 2003. The effect of the internet in industrial channels: An industry example. Industrial Management & Data Systems, 103(2): 78-84.Available at: https://doi.org/10.1108/02635570310463401.

Ma, H.T., X.F. Zhang and J. Du, 2015. Internet plus: National strategic action roadmap. China Citic Press. pp: 10-27.

Ma, X., 2018. Research on the mechanism of "internet plus" strategy for the transformation and upgrading of traditional industries: Theory and case. Journal of Guiyang University, 13(4): 98-106.Available at: https//doi.org/10.16856/j.cnki.52-1141/c.2018.04.021.

Wan, X. and J. Yang, 2017. Internet platform choices, vertical integration and firm performance. China Industrial Economics, 34(7): 156-174.Available at: https//doi.org/10.19581/j.cnki.ciejournal.2017.07.009.

Wu, Y.S., Y. Sheng and N. Cai, 2016. Study on mass intelligent customization based on "internet plus"—cases of Qingdao Redcollar and Foshan Weishang furniture. China Industrial Economics, 33(4): 127-143.Available at: https//doi.org/10.19581/j.cnki.ciejournal.2016.04.010.

Yang, D.M. and Y.W. Liu, 2018. Why can "internet plus" increase performance. China Industrial Economics, 35(7): 80-98.Available at: https//doi.org/10.19581/j.cnki.ciejournal.2018.05.005.

Zhang, N.Y., Y. Sheng and Z.H. Yan, 2017. Research on the mechanism of "internet plus" on the transformation and upgrading of industrial clusters. Modernization of Management, 37(2): 9-11.

Zhao, Z., 2015. Crossover administration of "Internet plus": Perspective of creative destruction. China Industrial Economics, 32(10): 146-160.Available at: https//doi.org/10.19581/j.cnki.ciejournal.2015.10.011.

Views and opinions expressed in this article are the views and opinions of the author(s), Asian Economic and Financial Review shall not be responsible or answerable for any loss, damage or liability etc. caused in relation to/arising out of the use of the content.

© 2019 AESS Publications. All Rights Reserved.