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Thoughts on the Bulk Supply Chain Services of Xiamen Xiangyu Co., Ltd

Yu He ^{1,*}

¹ School of Accounting and Finance, Xiamen University Tan Kah Kee College

* Correspondence: 1679268767@qq.com

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Abstract: Under the influence of globalization, the supply chain (SCM) has expanded into a globally integrated supply chain across regions and borders. With the increasing volume of China's commodity trade year by year, China has become the largest global commodity consumption and import for many consecutive years. On August 29, 2011, Fujian Xiamen Xiangyu Co., Ltd. held a grand restructuring and listing ceremony in the Shanghai Stock Exchange, integrating the high-quality asset injection of its logistics and related industries. In recent years, Xiamen Xiangyu Group Co., Ltd. has been committed to supply chain management services, and entered the Fortune Global 500 list in 2018. Taking Xiamen Xiangyu Group Co., Ltd. as an example, this paper uses financial analysis and QR (quick response) methods to analyze the company's main business-global commodity supply chain services. The regression analysis is used to predict the development of the Xiangyu Group case in the next three years and the results show that the bulk commodity supply chain chosen by Xiangyu, as its main business, has a broad market space and a huge market concentration and improvement potential. The continuous transformation and upgrading of the supply chain have brought benefits to the company and created a new service development model in Xiamen for better development prospects.

Keywords: Bulk Commodity; Global Supply Chain Services; Regression Analysis; Financial Analysis; QR

1. Introduction

Founded in 1995, Xiangyu took modern service industries such as commodity supply chain, urban development and operation, and integrated financial services as its main business to invest and operate around supply chain entities. In 2015, Xiangyu established the strategic goal of "becoming China's first-class modern service industry investment holding group". Xiangyu actively responded to "the Belt and Road" initiative, expanded the market of countries along the route and the pace of internationalization continued to accelerate. After 25 years of hard work, Xiangyu has grown from a regional developer with a registered capital of only 138 million yuan to one of the Top 500 enterprises in China (Table 1) and one of the Top 500 Fortune Companies in the world (Table 2), ranking second among China's logistics enterprises (Table 3).

Table 1. Ranking of Xiangyu Group in China's Top 500 Enterprises from 2012 to 2020.

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Rank	136	163	147	125	98	57	42	40	37	32

Table 2. Ranking and prediction of Xiamen Xiangyu Group in the Fortune 500 from 2018 to 2021.

Year	2018	2019	2020	2021
Rank	375	338	298	189

Table 3. China's list of logistics enterprises.

Rank	Firm	Revenue (million)
1	COSCO SHIPPING	26,286,247
2	Xiamen Xiangyu Co., Ltd.	21,612,887
3	S.F. Holding Co., Ltd.	15,174,316
4	Sinotrans Limited	8,453,684
5	JD Logistics, Inc.	7,337,472
6	CMST	4,954,200
7	CRMG	3,670,160
8	Yto Express Group Co., Ltd.	3,490,704
9	Shanghai Yunda Cargo Ltd.	3,350,043
10	Best Logistics Technology Co., Ltd.	3,000,000

The definition of supply chain logistics can be divided into two levels. Supply chain is the process of production and circulation in order to deliver products or services to the end user. The cooperation between upstream and downstream enterprises can be further divided into business flow, logistics, capital flow and information flow. Logistics through transportation, logistics, warehousing, loading and unloading, handling, packaging, circular processing, distribution and other specific activities will be each link of the supply chain to achieve the core needs of stable supply, cost reduction, risk control, comprehensive services and other core needs. According to Barreto *et al.* (2017), the modern new logistics model relies on intelligent technology. Supply chain and logistics use multi-dimensional and deep integration to build a value network popularized, rooted in production, circulation and consumption. Supply chain management is a broader concept than logistics. The constantly developing logistics system is the basis for enterprises to realize supply chain management.

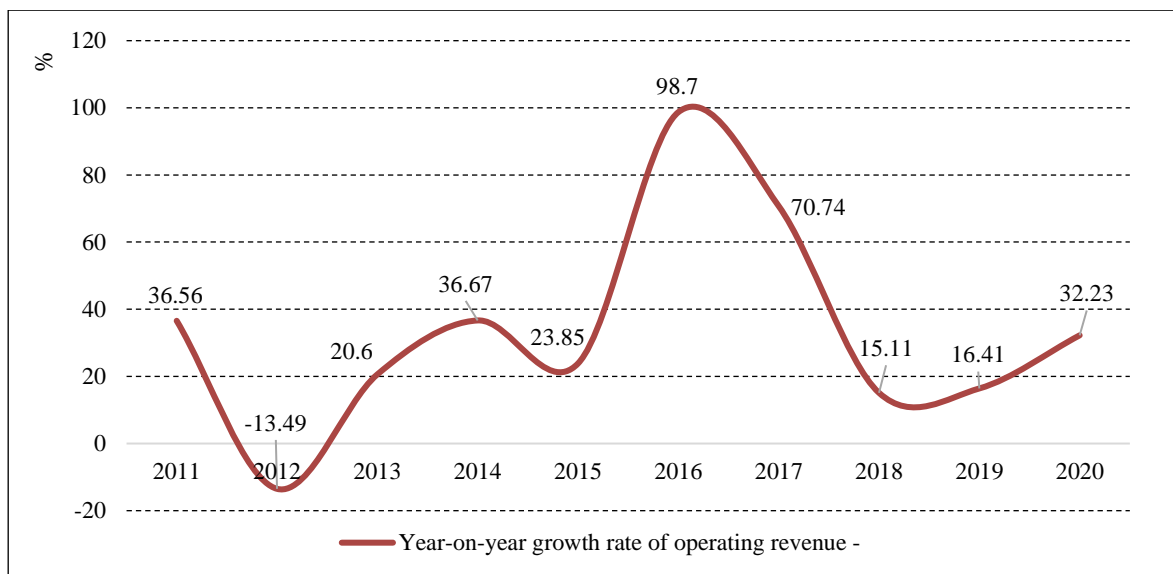
Through integration and innovation, Xiangyu has built a four-in-one supply chain integrated service platform of “logistics, business flow, capital flow and information flow”. Extending along the upstream and downstream of the industrial chain, the platform provides full-value chain circulation services such as procurement and distribution, door-to-door logistics, inventory management, supply chain finance, and information consulting. The “industrial full chain service model” with Xiangyu characteristics provides a full range of supply chain solutions for China's manufacturing industry. This paper will mainly describe Xiangyu's main business (bulk supply chain services) from financial analysis, Quick Response (QR), regression curve and other methods to predict and analyze its future development.

2. Xiangyu's Main Business Operation Situation and Future Trend Forecast

According to the report of SCM World, an American supply chain industry research organization, 64% of supply chain managers believe that big data technology is reshaping the logistics supply chain industry because it can integrate and share resources and information of upstream and downstream enterprises in the supply chain, which has a profound impact on the development of logistics supply chain (Scmworld, 2020). The market concentration of China's bulk commodity supply chain industry is about 4%~5%, more than 50% compared with developed countries. At present, China's bulk supply chain industry is still in the early stage of development, and there is a large room for integration in the future. Xiangyu's main business is divided into two parts: bulk commodity procurement and distribution and logistics. At present, each business segment of the company has gradually shifted to the supply chain company service mode of “mainly on service income, both financial income and transaction income”.

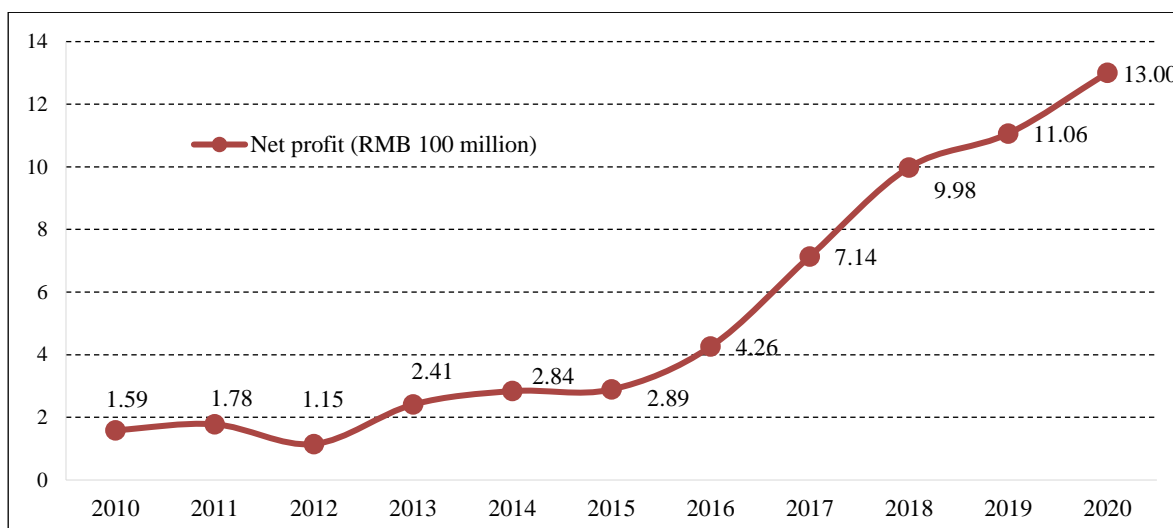
2.1. Good Performance and Financial Position

Xiangyu has benefited from the continuous transformation and upgrading of supply chain business and business scale expansion, and its total revenue grew from 33.93 billion yuan in 2011 to 360.2 billion yuan today, with a year-on-year growth rate of more than 15% (Figure 1). For the bulk goods industry, the value of goods income is mostly included in revenue and cost, resulting in lower net interest rates. In terms of net profit, Xiangyu's net profit, although low, still showed growth (Figure 2), from 159 million yuan in 2011 to 1.3 billion yuan in 2020.



Data Sources: Fortune Global 500 list

Figure 1. Operating revenue growth rate of Xiangyu from 2011~2020.



Data Sources: Fortune Global 500 list

Figure 2. Net profit has grown steadily in recent years.

Among A-share companies, the average company can maintain an ROE of more than 10% for a long time (Table 4), which can be said to meet a standard of high-quality companies.

Table 4. Return of equity (ROE) of Xiangyu.

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
ROE (%)	11.59	7.77	14.38	13.57	7.21	6.79	9.04	9.3	9.61	10.76

The main business revenue growth rate can be used to measure the company's product life cycle and judge the stage of the company's development. From 2011 to 2020, bulk commodity procurement and supply and integrated logistics, as the main business of Xiangyu Group, are generally on the rise. Except for 2012, the revenue growth rate is more than 14%, which is a growth company and will continue to maintain a good growth momentum. The common problem of bulk supply chain enterprises is that the gross margin is very low, the average gross margin is 4.74%. But the last five years are significantly less than the previous 2011~2015 phase. Xiangyu Group, as the top domestic enterprises, its average gross margin is only about 2.5%. At present, the industry has entered the integration period and the digital transformation period, and the gross profit margin of leading companies or companies with successful digital transformation will be improved, thus changing the

pain point of low gross profit margin in the industry. Excluding the impact of the global epidemic in 2020, the GPM of Xiangyu Group has reached 3.09% by 2019 (Table 5).

Table 5. Commodity procurement and distribution services and logistics services of Xiangyu.

Year	Revenue	Cost	GPM (%)	Revenue rate (%)	Cost rate (%)	GPM rate (%)
2011	338.32	330.64	2.27	36.56	37.40	-0.59
2012	289.45	283.49	2.06	-14.37	-14.25	-0.14
2013	351.57	345.05	1.85	21.46	21.71	-0.21
2014	480.05	465.35	3.06	36.55	34.86	1.21
2015	591.68	572.71	3.30	23.25	22.95	0.23
2016	1,182.93	1,146.04	3.12	99.93	100.03	-0.18
2017	2,026.55	1,980.88	2.25	70.96	72.64	-0.95
2018	2,316.78	2,256.34	2.16	14.55	14.08	0.40
2019	2,695.32	2,611.19	3.09	16.30	15.73	0.48
2020	3,502.91	3,441.52	1.75	32.76	34.05	

2.2. Supply Chain Management Mode of Xiangyu Group under B2B Environment

The rapid development of Internet shopping impels more and more manufacturers sell their products directly through online channels. Electronic and digital business process greatly reduces manpower and material resources, reduces transaction costs, and breaks through the time-space limit so that transaction activities can be carried out at any time and in any place, significantly improving the efficiency (Yan and Ma, 2022). In the manufacturing industry, in order to adapt to the increasingly complex market environment, enterprises are facing the pressure to continuously reduce their inventory. Companies today are more dependent on their suppliers and need to build long-term partnerships with them. Sharing of market demand information among the parties working online can reduce the Bullwhip Effect in the supply chain¹, while reducing the inventory levels of suppliers. In view of the difficulties of industrial enterprises to achieve capacity expansion under the problems of slow capital circulation, high financing difficulties, high cost and poor purchase and sale of goods, Xiangyu Stock provides supply chain financial services for them. In addition to traditional supply chain finance services such as agent purchasing and commission sales, financial financing, cargo right pledge and capital supervision, Xiangyu Stock gives full play to its advantages in logistics business and commodity research, provides financial services for upstream factories, and guides the production direction of enterprises by providing product market research reports (Figure 3).

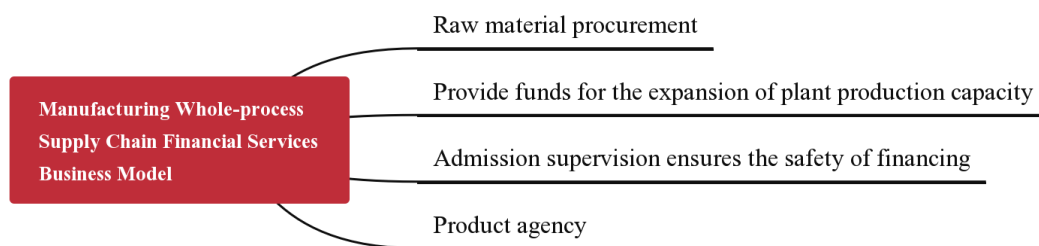


Figure 3. Service link of Xiangyu Stock.

Quick Response is based on barcode scanning and electronic data exchange, aiming to establish a timely and rapid replenishment system between suppliers and retailers. Data interconnection means the increase of information amount and data connection. The key to big data-driven supply chain reform is to effectively integrate and process decentralized and diversified enterprise information (Sun and Yu, 2021). In order to

¹ Refers to a demand variation amplification phenomenon in the supply chain, is the information flow from the final client to the original supplier side. It cannot effectively achieve information sharing, so that the information is distortion and amplified step by step, resulting in more and more fluctuations in demand information. The amplification of this information distortion in the graphics is very much like a throwing bullwhip, so it is figuratively called the Bullwhip Effect.

achieve the successful implementation of the rapid response, Xiangyu continues to explore, transform and upgrad. Xiangyu has innovated the traditional operation mode, combining cross-border e-commerce with supply chain services, and further integrating modern information technology with manufacturing industry. By copying and promoting the whole-chain service mode with its own characteristics, Xiangyu has become a reliable partner for many manufacturing enterprises to improve the quality and efficiency and ensure the stable and smooth supply chain. It has a network logistics service system connecting “public, railway, water, warehouse”, covering the whole country and connecting overseas, and can provide customers with high-quality, whole-process, customized bulk commodity logistics services and multimodal transportation solutions. In 2012, Xiangyu Group established the “Tesco Steel” electronic platform with the embryonic third-party payment function, attracting many groups to develop the third payment business, and creates a third-party spot trading platform with leading advantages in the industry through various types of services (Figure 4). With the increasingly fierce competition in Internet supply chain finance business, the establishment of an electronic platform relying on information technology has become an important way to improve Internet supply chain finance. Manufacturing electronic supply chain has become an inevitable choice for financial institutions to build their core competitiveness. Now Xiangyu acts as the organizer of the commodity supply chain, enabling information to be shared among strategic supply chain partners, gathering customer needs for unified procurement, and reducing procurement costs. Supply chain integration, as a platform for business flow, logistics flow, capital flow and information flow convergence, can also help customers to analyze the market and optimize the purchasing and marketing strategy through big data analysis (Wang, 2015).

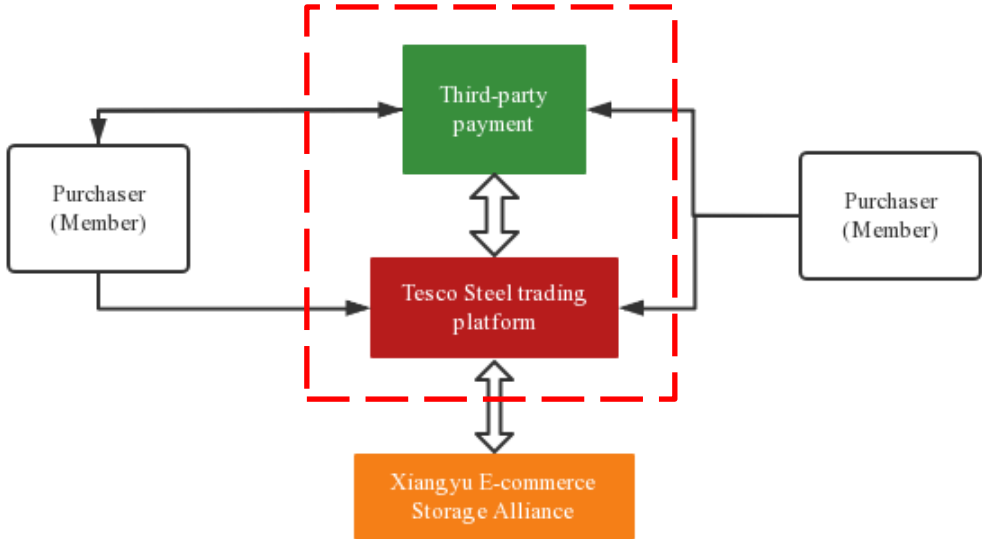


Figure 4. Xiangyu electronic trading platform business trading process.

3. Xiangyu’s Economic Forecast for the Next Three Years

3.1. Data Sources

After searching the annual financial report of Xiangyu Group for 2001~2020, the income and cost of the following main business are obtained (Table 6). This paper will find the fitted linear prediction of Xiangyu performance from 2021 to 2023 based on the following data. It is also obvious from Table 6 that the financial data of Xiangyu were greatly stratified around 2011.

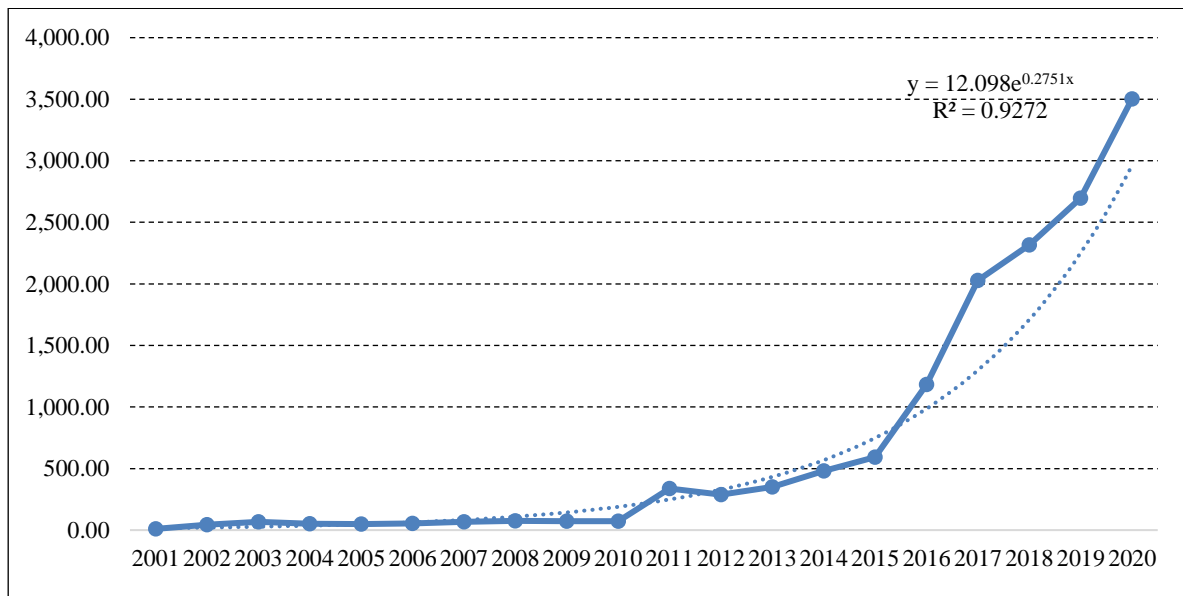
Table 6. the revenues and costs of main business (100 million yuan).

Year	Revenue	Cost	Year	Revenue	Cost
2001	9.88	8.15	2011	338.32	330.64
2002	44.87	27.9	2012	289.45	283.49
2003	68.17	44.69	2013	351.57	345.05
2004	50.54	39.97	2014	480.05	465.35
2005	48.09	42.37	2015	591.68	572.71
2006	55.13	44.32	2016	1,182.93	1,146.04
2007	67.94	56.52	2017	2,026.55	1,980.88
2008	74.18	57.07	2018	2,316.78	2,256.34
2009	71.57	58.84	2019	2,695.32	2,611.19
2010	73.28	64.91	2020	3,502.91	3,441.52

Data sources: Shanghai Stock Exchange

3.2. Establishment and Selection of the Regression Equations

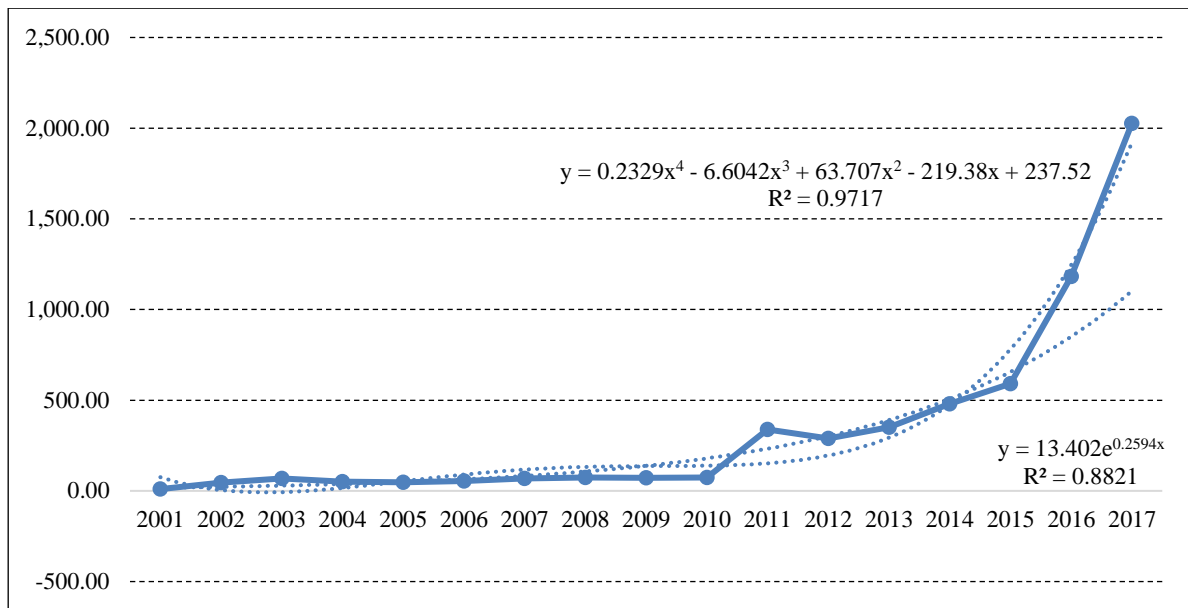
Under general circumstances, economic growth has a certain coherence (Zhu *et al*, 2017). The main business income data of Xiangyu main business revenue from 2001 to 2020 is selected to draw the chart (Figure 5) and look for more fitting equations as follows (Table 7). The R^2 of the fitting curve equals 0.9272, with high goodness of fit. Therefore, it is reasonable to use the formula to predict the revenue in 2021~2023.



Data Sources: Annual statements of Xiangyu Company

Figure 5. Xiangyu main business revenue from 2001~2020.

In order to compare the real data with the trend, the data from 2017 to 2020 (Figure 6) are now artificially abandoned, and the above operation is repeated to get the following formula (Table 7). The fit of curve REV2020 and curve REV2017 is high and has a certain degree of confidence.



Data Sources: Annual statements of Xiangyu Company

Figure 6. Xiangyu main business revenue from 2001~2017.

Table 7. Equation for regression of main business income.

	REV2020	REV2017
Y	$Y = 12.098e^{0.2751x}$	$Y = 13.402e^{0.2594x}$
R^2	$R^2 = 0.9272$	$R^2 = 0.8821$

By merging the three lines into one graph (Figure 7), we can see that the coincidence degree of the three lines is high before 2015. Although the growth rate of its main business revenue in Xiangyu Group is high in recent years, the data is measured in units of 100 million yuan, and it is difficult to reach such a large span in three years. Therefore, it is preferred to choose the data for E (REV2017).

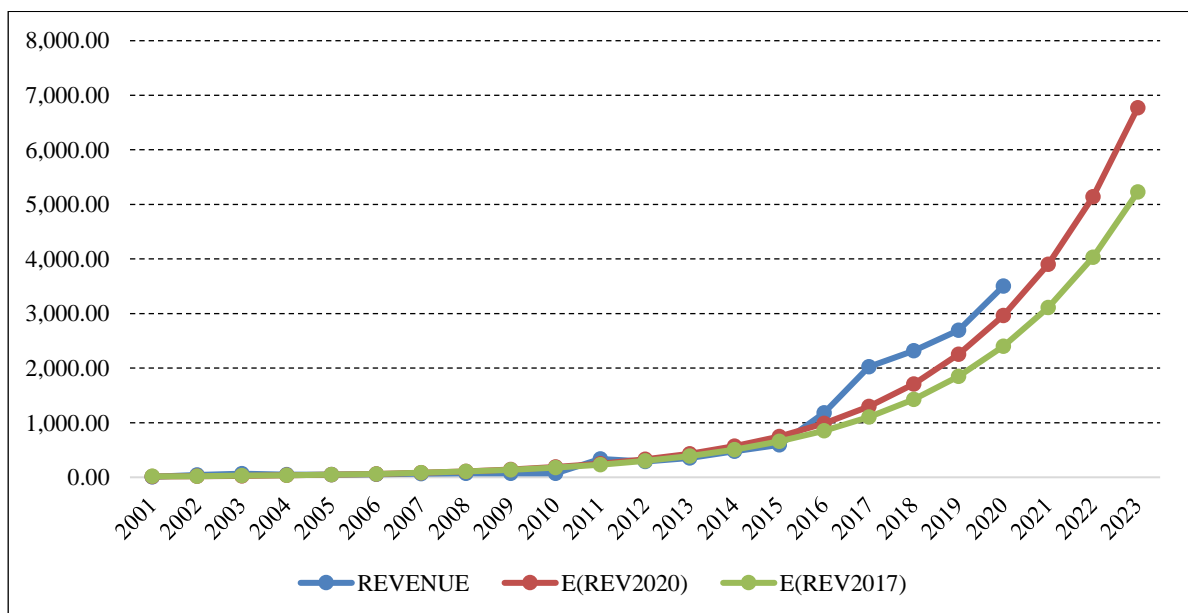
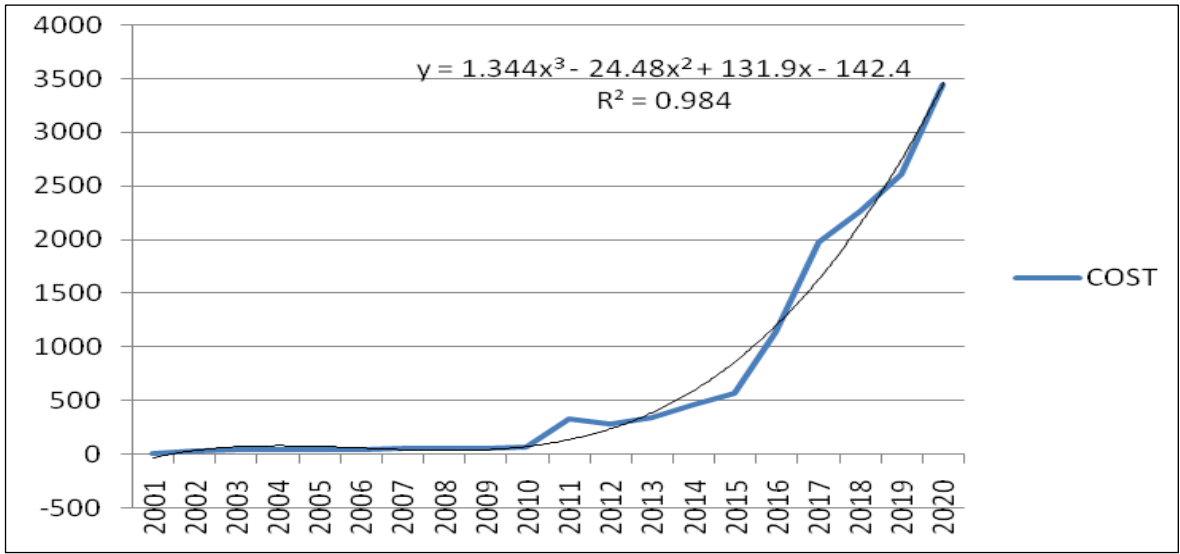


Figure 7. Xiangyu 2001~2023 main revenue trend comparison.

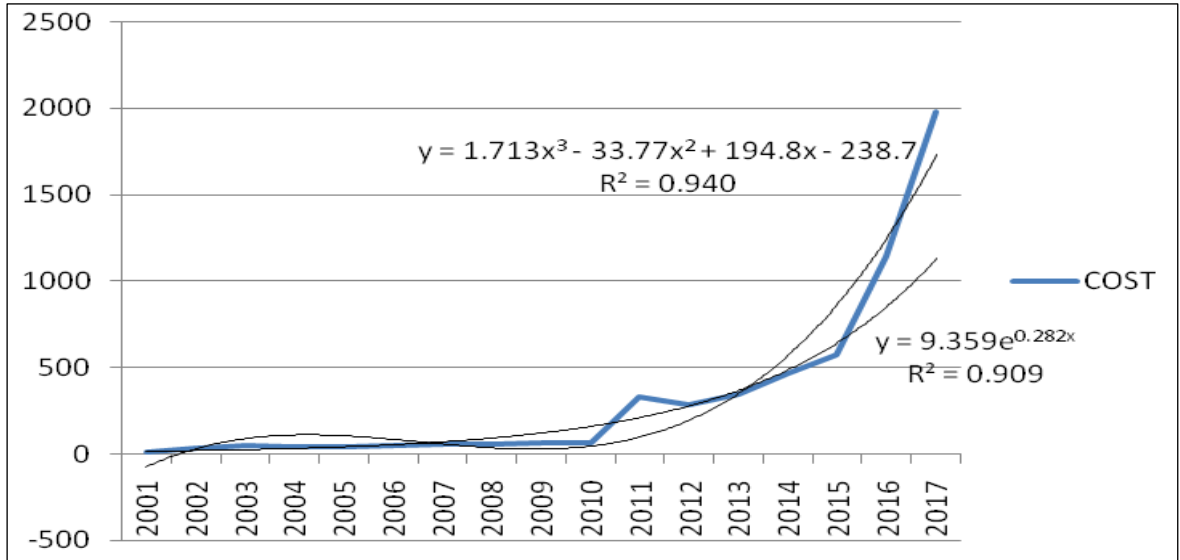
When predicting the cost of the main business, polynomial regression is used to retain all the data from 2001~2020 (Figure 8). The R^2 of the fitting curve equals 0.984 with high goodness of fit. Therefore, it is reasonable to use this polynomial to predict the main cost from 2021~2023.



Data Sources: Annual statements of Xiangyu Company

Figure 8. Xiangyu main business cost from 2001~2020.

In order to compare the real data with the trend, the data from 2017 to 2020 (Figure 9) are now artificially abandoned, and the above operation is repeated to get the formula. In addition, the exponential formula is used to find a better fit regression line.



Data Sources: Annual statements of Xiangyu Company

Figure 9. Xiangyu main business cost from 2001~2017.

As shown in Figure 10, the forecast of the main business cost in the next three years is fast. For conservative estimates, the slowest growing E(COST2017) should be selected. However, since 2021, with the COVID-19 epidemic eased globally and the impact of monetary easing and changing market supply and demand pattern, global commodity prices have been rising and commodity prices represented by energy and minerals have risen significantly. In early April, China's commodity price index hit a ten-year high, with energy, minerals, non-ferrous metals and steel rising significantly, which may have an impact on the development of China's real economy to some extent. Moreover, from the chart, the coincidence degree between the E (COST2020) curve

and the original curve is high after 2011. Therefore, in terms of cost, it tend to choose the prediction of E(COST2020) curve.

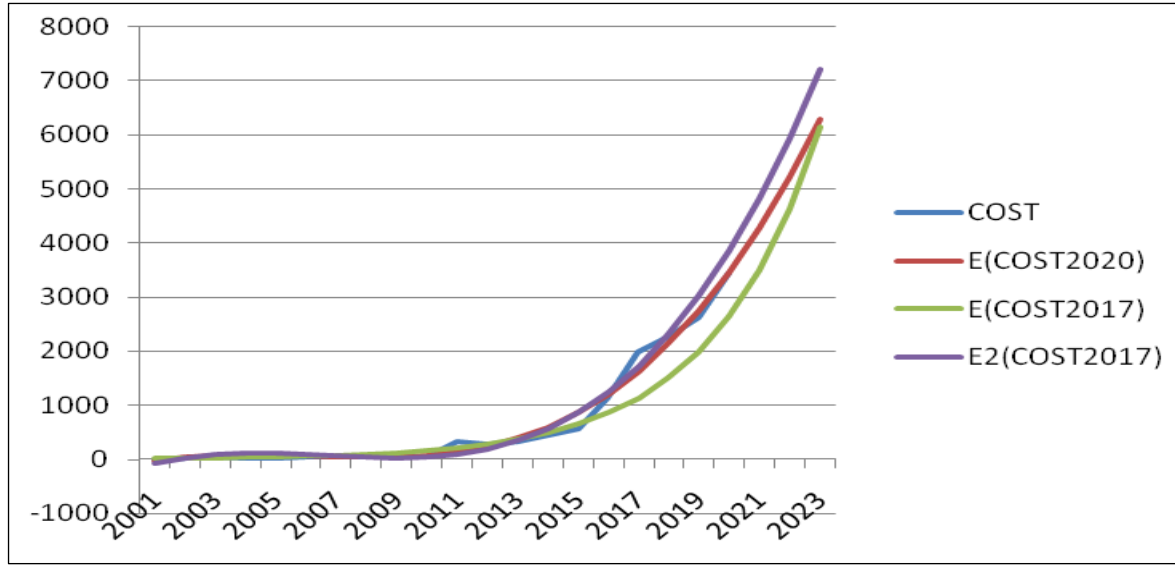


Figure 10. Xiangyu 2001~2023 main cost trend comparison.

Table 8. Equation for regression of main business cost.

	E(COST2020)	E(COST2017)	E2(COST2017)
Y	$Y = 1.344x^3 - 24.48x^2 + 131.9x - 142.4$	$Y = 1.713x^3 - 33.77x^2 + 194.8x - 238.7$	$Y = 9.359e^{0.282x}$
R ²	$R^2 = 0.984$	$R^2 = 0.940$	$R^2 = 0.909$

3.3. Results Analysis and Discussion

Table 9 forecasts Xiangyu Group's block trading supply chain for the next three years. The established fitted model holds significantly and is the model that can be used to predict and further analyze the data (Xu *et al.*, 2020). Due to the relatively single variables of the established multiple linear models and the narrow field, the prediction of data may have a more ideal form. However, Xiangyu Group's cost estimate is significantly higher than its revenue. This doesn't seem like a good sign of excellence in the future. Cost is the economic value of producing and selling certain kinds and quantity of products to consume resources and measure it with money. Production needs to consume materials and labor, which are measured in currency in the cost and is manifested as material cost, depreciation cost, and wage cost, etc. For production and operation activities, enterprises purchase a variety of materials or procurement of goods, and the price and cost paid is the purchase cost or procurement cost. With the increasingly socialization and modernization of production, the scale of the enterprise keeps expanding, and the process becomes more and more complex. Once the production cost of a certain link or a short period of the production process loses control, it may cause irreparable economic losses to the enterprise. In view of this, in order to prevent the runaway of cost management, it is necessary to scientifically foresee the trend and degree of production consumption to take effective measures on this basis and to do a better job in cost management.

Table 9. Xiangyu in the next three years of the main business-related forecast (100 million yuan).

	2021	2022	2023
Revenue	3,111.32	4,032.75	5,227.06
Cost	4,278.06	5,221.99	6,138.52

4. Conclusions

The study found that the total revenue of Xiangyu Group is improving, and the average ROE is around 10%, which is a good chance to reach the next level in the global Fortune 500. Its global commodity supply chain services, as its main business, is growing, but its gross margin is not high. When using the regression curve to forecast, the cost growth trend of the main business is higher than the revenue, resulting in a higher cost than the revenue in the conclusion. The current commodity prices are in the case of the global economy has not fully recovered. Behind the partial recovery of the global economy, the speculation is caused by excessive expansion of liquidity factors. There is also some long-term structural adjustment of the impact of demand structure, and the constraints of the international commodity suppliers. In 2017, The General Office of the State Council issued the Guidance of the General Office of the State Council on Actively Promoting the Innovation and Application of Supply Chain. It points out that by 2020, with the supply-side structural reform as an important support, through the construction and improvement of the smart supply chain system, the focus is on the construction of leading supply chain enterprises (The General Office of the State Council of China, 2017).

In order to prevent the cost from getting out of control, enterprises should study the drivers of the supply chain, combine the information technology services of the digital economy, and strive to design effective cost control models of the digital economy (Wei *et al.*, 2022). Xiangyu company's cross-border e-commerce and supply chain services combined with the bulk commodity trading platform, which undoubtedly opens-up a new road for the manufacturing industry. Third-party payment tools can reduce the storage cost of bulk commodities within Xiangyu, and effectively alleviate the adverse effects such as bull whip effect and pricing conflicts. Secondly, the credit risk of online payment is largely solved, and the large-scale effect reduces the commission fee of large payment. For customers, the third-party payment platform can also comprehensively improve customer experience and service stickiness, and meet more derivative needs of customers. At the same time, enterprises should also introduce more high-end elite talent innovation to improve the company's cost management performance (Han and Ma, 2022). Under the new market pattern, the development of Internet supply chain finance must be based on the whole business ecology, covering all groups in the suppliers, purchasers, manufacturers, investors and consumer chain. Only in this ecosystem can all groups make profits and realize the value-added and sustainable development of the supply chain.

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