MANAGEMENT SERIES REPORT

HEALTHCARE SPECIAL SITUATIONS

111, Inc.

YI: How 111 Is Addressing the Inefficiencies Across China's Vast Pharmaceutical Supply Chain

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KEY POINTS

- **We hosted a fireside chat with Co-Founder and Executive Charman Dr. Gang Yu on October 30, 2024.** Dr. Yu, who has a deep background in supply chain management, having filled roles at Amazon and Dell, discussed 111's logistics network and capabilities, and its importance to the company's growth plans. This report contains an edited transcript of the conversation, which can be accessed on demand.
- **Inefficiencies are systemic across China's pharmaceutical supply chain.** Dr. Yu highlighted three major challenges: (1) extensive fragmentation of the supply chain; (2) slow adoption of digitalization and lack of transparency; and (3) limited availability and capability of optimization tools. All of these factors mean that inefficiencies are rife across the entire system.
- **111's solutions are tackling the pain points of the system.** Dr. Yu believes that 111 has probably set an industry benchmark in the charge to tackle the system's inefficiencies with its advanced proprietary digital technology and integrated supply chain solutions, which includes a nationwide network of fulfillment centers recently expanded to 13. 111's supply chain operations can be counted as one of the most efficient in the industry. 111 is not only building the capabilities for internal use, but it is also extending capabilities to help add value to its partners, both upstream and downstream. Dr. Yu explained how it structures and operates its nationwide Kunpeng logistics network to maximize its capabilities for the benefit of its upstream and downstream partners.
- **Network expansion plans.** 111 plans to continue to expand its fulfillment center footprint by adding at least five more centers over the next year. Dr. Yu added that the company's current supply chain expansion plan is on track to carry 111 to the RMB20 billion revenue target threshold, which the company's been talking about in recent quarterly earnings calls.
- **Coming up.** 111 is scheduled to report its 3Q24 earnings on November 27, 2024. We highlight our forecasts for the quarter and beyond in Figure 1.

KEY STATISTICS

Ticker:Exchange	YI:NASDAQ
Current Price	$0.73
52-Week Range	$0.55-$2.49
Average Volume (30-Day)	433,677
Shares Outstanding (MM)	85.7
Market Cap ($MM)	$62.6
Enterprise Value ($MM)	$6.8
Fiscal Year-End	December

PRICE PERFORMANCE

ABOUT THE EXECUTIVE

Dr. Gang Yu
Co-Founder & Executive Chairman

Gang Yu is the Co-Founder and Executive Chairman of 111, Inc. （NASDAQ: YI. Dr. Yu received a B.S. from Wuhan University, an M.S. from Cornell University and a Ph.D. from the Wharton School of the University of Pennsylvania.

Dr. Yu was the Co-Founder and Chairman of Yihaodian, served as Vice President of Global Procurement at Dell Inc. and Vice President of Worldwide Supply Chain at Amazon.com. Before Amazon, Dr. Yu served as Chair Professor at University of Texas at Austin.

Dr. Yu has received the 2002 Franz Edelman Management Science Achievement Award from INFORMS, the 2002 IIE Transaction Award for Best Application Paper, and the 2003 Outstanding IIE Publication Award from the Institute of Industrial Engineers. Dr. Yu has published over 80 journal articles, 6 books, and he holds 3 US patents.

EXECUTIVE DISCUSSION

Robert Sassoon: Hello, everyone. I'm Robert Sassoon, Senior Analyst at Water Tower Research, and I have the pleasure of being joined for this fireside chat by Dr. Gang Yu, Co-Founder and Executive Chairman of 111, Inc.

111 has developed and operates one of China's leading tech-enabled healthcare platforms committed to efficiently managing the pharmaceutical supply chain by digitally connecting the key stakeholders in the supply chain from drug manufacturers through to distributors, pharmacies, and ultimately consumers. 111 trades on the NASDAQ under the ticker YI. For 111's safe harbor statements, please refer to the company's filings with the SEC.

Let me start by first welcoming Dr. Yu. Thank you for joining us today.

Before we get into our main discussion topic that will focus on 111's supply chain logistics network and capabilities, which is a critical part of your growth strategy, it would be helpful if you could give us some background about yourself.

Gang Yu: Thank you, Robert. I hold a master's in physics from Cornell University and a PhD in operations research and operations management from the Wharton School of the University of Pennsylvania.

Over the past three decades, my career has spanned academia, corporate leadership, and entrepreneurship. I've held a role as Vice President of Worldwide Supply Chain at Amazon, responsible for procurement, fulfillment, inventory control, and logistics network design. I've also served as Vice President of Global Procurement at Dell.

Additionally, I've founded and co-founded three companies in the US and China, including CALEB Technologies in the US, which was later acquired by Accenture, Yihaodian in China, which was later acquired by Walmart, and 111, Inc., which is now listed on the NASDAQ.

Robert Sassoon: Thank you very much for that. That's a very nice introduction.

Let me start with a general question. What do you see as the major shortfalls that exist today in China's pharmaceutical supply chain that need to be addressed, and why do you believe 111 has the capacity to fulfill that role?

Gang Yu: That's an excellent question. I think there are three major challenges in China's pharmaceutical supply chain. Number one is fragmentation, which might be the root of many other problems. China has a highly fragmented market, with more than 6,000 pharmaceutical companies, more than 14,000 distributors, and more than 600,000 drugstores. Half of them are chain stores and the other half are independent stores. Unlike the US, where three main distributors control more than 90% of the market and three large chains, now consolidated into two (Walgreens/Rite Aid and CVS), dominate with more than 80% market share. In comparison, the largest pharmacy chain in China holds less than 3% market share. This fragmentation limits economies of scale and drives inefficiencies everywhere across the system.

Number two is the lack of digitalization and transparency. The pharmaceutical industry in China is probably one of the least digitalized. For instance, the CFDA's (China Food and Drug Administration) policy mandates that every transaction, I mean, every transaction between parties requires the exchange of copies of physical permits, with fresh stamps. This creates significant friction. Imagine that our platform alone handles thousands of suppliers and nearly half a million drugstores downstream. Think about how many exchanges must be made. This alone can be extremely cumbersome and a huge barrier. Additionally, this industry has more than 100 different ERP (Enterprise Resource Planning) systems that are currently in use. Integration with these systems becomes a major obstacle, making it very difficult to track and manage the flow of goods, not to mention transparency.

The third is very limited supply chain optimization. Only a handful of major pharmacy chains can afford sophisticated supply chain management systems to optimize their selection, pricing, and inventory. As a result, inefficiencies like excess stock, high stock-out rate, and slow inventory turns, are very common.

At 111, we've tackled the pain points using our advanced digital technology and integrated supply chain solutions. As I mentioned, both the downstream and upstream are extremely fragmented. Even with 14,000 distributors in the country, no one can provide a one-stop shopping experience. Pharmacies have to go to dozens of distributors to replenish their stock. 111 has been leveraging its supply chain capabilities to offer the downstream customers with the richest selection and one-stop shopping experience.

We probably have set an industry benchmark for that. We've developed more than 30 proprietary systems, many of which are focused on supply chain management, including demand forecasting, smart sourcing, selection optimization (which we call Boguan system), S&OP (Sales & Operations Planning), WMS (Warehouse Management System), TMS (Transportation Management System), PIS (Price Intelligence System), and many others. These systems allow us to forecast demand, optimize selection, make data-driven procurement and inventory decisions, and efficiently manage our fulfillment.

I'll give you some numbers. Over the past five years, these innovations have reduced our fulfillment costs from over 5% down to 2.6% of our revenue. Our supply chain is one of the most efficient in the industry. We're not only building the capabilities for internal use, but also extending the capabilities to help our partners, both upstream and downstream.

Let me give you a few examples. We offered our so-called Telescope system to pharmaceutical companies to provide them with full visibility into their product flow. In the past, once their product is out of their door, they probably lose track, but now they have full visibility to where these products flow to, through what distribution channels, to what retail stores, and sold at what prices. We also offer downstream pharmacies supply chain solutions. For example, we help them to make decisions on assortment management, pricing, and optimization of their inventory. Through these efforts, we have achieved a competitive edge, both in terms of supply chain efficiency and transparency.

Robert Sassoon: Well, that's a very full answer. Thank you very much. I think that has given us a lot of information to internalize. Now, earlier this month, 111 announced the expansion of its supply chain network with the addition of two new fulfillment centers to the network. Can you describe to us the scale of the network as it stands today? How expansive is the network geographically within China and what business models are deployed across that network?

Gang Yu: Currently, we operate 13 fulfillment centers covering China. Among all the cities we serve, more than 1,000 we can deliver within 24 hours. Among our 13 fulfillment centers, five of them are central hubs, we call them super hubs, with each hosting more than a few hundred thousand SKUs.

These are located in Shanghai, Tianjin, Guangzhou, Wuhan, and Chongqing. The rest are, we call it, forward-deployed fulfillment centers. This extensive coverage is essential, especially as more that 60% of pharmacies in our customer base are in China's third to sixth tier cities. This allows us to penetrate deep down to every corner of the country.

Let me also emphasize that establishing fulfillment centers for pharmaceuticals is far more complex than traditional e-commerce. We founded Yihaodian, an e-commerce company. In Yihaodian, we could easily build a fully functional fulfillment center (FC) in three to six months, but now on average it takes about two years to build a new (pharmaceutical) fulfillment center from inception to full operation, including receiving all the required CFDA approvals.

To accelerate our expansion, we shifted our model from building fulfillment centers from the ground up to collaborating with partners by transforming existing warehouses into full-fledged fulfillment centers, but with 100% adoption of 111's existing systems and processes. This way, we reduce FC setup time by 70%. We are actively establishing additional FCs to enhance both customer reach and service quality.

Robert Sassoon: You mentioned partnerships. They come in the form of joint ventures, which you control. Is that the case?

Gang Yu: Some are co-founded. Some are just affiliates.

Robert Sassoon: For one of your recent expansions, in Guangdong. You actually entered a different type of model, a franchise model. Can you explain that?

Gang Yu: Right. We have different models. Some are franchise models, some are partnerships with capital arrangements, but with 100% usage of our systems, processes, and quality control. That's very essential (in our operating models).

Robert Sassoon: Let's go on from that and delve into the capabilities of these fulfillment assets. Can you give us an idea of how they improve your procurement and last-mile delivery capabilities?

Gang Yu: Given China's vast geography, each new fulfillment center reduces fulfillment time for local customers covered by that FC to approximately half a day to sometimes two days. We use our proprietary nationwide (Kunpeng) logistics network, which we mentioned in our press release before. We use that proprietary logistics network for cross FC inventory transfers. We follow a rigorous transshipment model that allows for flexible and efficient movement of goods. With each additional FC, we're able to reduce fulfillment costs for a local customer within its coverage by 15%-20%. That's the logistics cost.

Another key advantage is the reduction in product damage due to transportation. For instance, by using our own Kunpeng network, we have cut the damage rate by 55%, really enhancing the overall customer experience through more reliable and intact deliveries. Those are the benefits we gain.

Robert Sassoon: Your closest competitor is YSB. YSB operates many more warehouses nationwide, about 22, I believe, including two smart sub-warehouses. It does seem that based on reported numbers for the first half of 2024, 111 generates significantly more revenue on average per center than YSB. How do you explain the difference and how do you correlate a fulfillment center in your network to sales?

Gang Yu: I really think that efficiency is the key to fully utilizing capacity. I mentioned that we have five super hubs with each hosting more than a few hundred thousand SKUs. The scale economy exemplifies. For each FC, we focus on maximizing throughput and inventory turns, which requires a strong commitment to optimization modeling and algorithms. We made a continuous effort to improve operational efficiency within each FC. For example, over just the past year alone, we've increased the efficiency of shelving and replenishment by 11% due to modeling and optimization algorithms. Additionally, by optimizing order consolidation, we reduced the picking and sorting time by 15%, which further enhanced fulfillment efficiency.

These efforts allow us to handle more inventory than the original capacity design for each FC, making each FC more productive with fuller utilization. This directly contributes to higher revenues per FC.

Robert Sassoon: That's a key factor in competitive advantage.

Gang Yu: Yes, we make full usage of our existing FCs.

Robert Sassoon: Well, thank you for that answer. Now, aside from feeding your ability to scale up, can you lay out the impact the buildout of your fulfillment network has on operating cost structure?

Gang Yu: Let me explain our cost structure. Aside from general administrative expenses, our costs are mainly divided into two categories. One is the sales and marketing expenses; the other is fulfillment costs. The latter include warehousing costs and logistic costs. From a logistics perspective, it's more economical to serve local customers from regional fulfillment centers, where the cost savings can reach up to 20%. However, we must balance the logistic cost savings with warehousing expenses because you have an additional warehouse. Each new FC comes with additional operational costs and inventory costs. Fortunately, we have optimization models and algorithms to rely on. Those models and algorithms guide our decisions. We only establish a fulfillment center in a specific region if our model and analysis confirm that. We'll definitely reduce fulfillment costs while enhancing customer experience. These are the conditions. We cannot deteriorate customer experience, but we have to reduce overall fulfillment costs, including logistics cost and the warehousing cost.

Adding more FCs requires a careful balance between logistics and inventory costs. It's a global optimization with multiple factors in play.

Robert Sassoon: Can you tell us more about your network expansion plans going forward and what are the key determinants as to where you locate the new sensors and which operating model you adopt?

Gang Yu: Certainly, the key factors are customer distribution, inbound/outbound logistics costs, warehousing and inventory costs, customer experience, etc. Those are the factors we must consider. We will continue to optimize our supply chain network based on demand distribution, customer experience, operational efficiency, etc. But with our current lighter business model for adding new fulfillment centers and more standardized systems adaptable to different partnership schemes/setups, we anticipate acceleration of our network expansion. Over the next year, we plan to add at least five new fulfillment centers.

Robert Sassoon: Across the country still?

Gang Yu: Across the country. Right.

Source: 111

Robert Sassoon: Finally, just to follow up on that question, how many centers nationwide do you need to cross that RMB20 billion revenue threshold, which the company's been talking about in recent quarterly earnings calls?

Gang Yu: With our new fulfillment center models and given our own proprietary Kunpeng logistics network, fulfillment center setup is no longer our growth bottleneck. Our current supply chain expansion plan is on track to carry us across the RMB20 billion threshold. Our primary focus remains on delivering exceptional customer experience.

Robert Sassoon: Thank you very much for that. I think we'll wrap it up there. You've given us a much better understanding of the heartbeat of the supply chain management business as it relates to 111. If you have any other questions for Dr. Yu, please send them to me and I'll be sure to pass them on.

For analysis of 111, please refer to our open access website at www.watertowerresearch.com.

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Finally, I'd like to thank Dr. Yu for helping us with that better understanding of the logistics and network capabilities of 111 and thank you to all of you for joining us on this fireside chat and have a great day.

Figure 1: Financial Projections to 2027

RMB Million	1Q24A	2Q24A	3Q24E	4Q24E	2024E	2025E	2026E	2027E
Revenue								
B2B	3,452	3,354	3,575	4,100	14,481	15,929	17,521	20,150
YoY growth	*-4%*	*-1%*	*0%*	*2%*	*-1%*	*10%*	*10%*	*15%*
B2C	76	71	67	75	289	304	322	341
YoY growth	*-32%*	*-20%*	*-24%*	*-15%*	*-23%*	*5%*	*6%*	*6%*
Total	**3,528**	**3,424**	**3,642**	**4,175**	**14,770**	**16,232**	**17,843**	**20,491**
YoY growth	***-4.6%***	***-2%***	***-1%***	***2%***	***-1%***	**10%**	**10%**	**15%**
Gross Profit								
B2B	191	191	197	230	808	948	1,139	1,511
Margin	*5.5%*	*5.7%*	*5.5%*	*5.6%*	*5.6%*	*6.0%*	*6.5%*	*7.5%*
B2C	18	17	16	19	80	70	74	78
Margin	*23%*	*24%*	*24%*	*25%*	*28%*	*23%*	*23%*	*23%*
Total	**209**	**208**	**213**	**249**	**888**	**1,018**	**1,213**	**1,590**
Gross Margin	***5.9%***	***6.1%***	***5.8%***	***6.0%***	***6.0%***	***6.3%***	***6.8%***	***7.8%***
OPEX								
Fulfilment	(89)	(88)	(97)	(110)	(383)	(402)	(434)	(469)
% of Revenue	*2.5%*	*2.6%*	*2.7%*	*2.6%*	*2.6%*	*2.5%*	*2.4%*	*2.3%*
Selling & Marketing	(80)	(80)	(81)	(88)	(329)	(316)	(348)	(382)
% of Revenue	*2.3%*	*2.3%*	*2.2%*	*2.1%*	*2.2%*	*1.9%*	*2.0%*	*1.9%*
General & Administrative	(19)	(17)	(16)	(19)	(73)	(80)	(84)	(88)
% of Revenue	*0.5%*	*0.5%*	*0.4%*	*0.4%*	*0.5%*	*0.5%*	*0.5%*	*0.4%*
Technology	(18)	(18)	(18)	(20)	(75)	(83)	(87)	(92)
% of Revenue	*-0.5%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*	*0.5%*	*0.4%*
Other	1.5	(0.1)	-	-	-	-	-	
Total	**(205)**	**(204)**	**(212)**	**(237)**	**(860)**	**(881)**	**(953)**	**(1,031)**
% of Revenue	***5.8%***	***6.0%***	***5.8%***	***5.7%***	***5.8%***	***5.4%***	***5.3%***	***5.0%***
GAAP Operating Income	**3.7**	**3.3**	**0.9**	**12.5**	**20**	**137**	**260**	**559**
Margin	***0.1%***	***0.1%***	***0.0%***	***0.3%***	***0.1%***	***0.8%***	***1.5%***	***2.7%***
Share-Based Compensation	5.2	5.2	4.3	4.0	18.7	22.2	25.0	25.0
Operating Expenses ex-SBC	**(200)**	**(199)**	**(208)**	**(233)**	**(841)**	**(859)**	**(928)**	**(1,006)**
% of Revenue	***5.7%***	***-5.8%***	***-5.7%***	***-5.6%***	***-5.7%***	***-5.3%***	***-5.2%***	***-4.9%***
Non-GAAP Operating Income	**8.9**	**8.5**	**5.2**	**16.5**	**39**	**159**	**285**	**584**
Margin	***0.3%***	***0.2%***	***0.1%***	***0.4%***	***0.3%***	***1.0%***	***1.6%***	***2.8%***

Source: WTR

ABOUT THE ANALYST

Robert Sassoon
Senior Research Analyst

Robert Sassoon has been an equity analyst for more than three decades, focusing primarily on global special situations. During his career, Robert has worked for several sell-side institutions in London, Hong Kong, and New York, including Credit Suisse, NatWest Capital Markets, and Societe Generale. In 2017, Robert founded AlphaSituations, an independent idea-generating event driven/special situations investment research service, which produced comprehensive research on early stage/emerging publicly traded and privately owned companies with the goal of telling an underappreciated or unknown story to relevant investors.

Robert has developed a uniquely broad and deep knowledge base in multiple industries from a global perspective and has achieved top five rankings in various analyst surveys, including the Extel and Greenwich surveys. Robert holds an MSc in Economics from the London School of Economics and Political Science, and has held FINRA licenses Series 7, 63, 86, 87, and 24.

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