The New Journey of “Internet+”

P23. Transformation Begins for Manufacturing Industry

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The New Journey of “Internet+”

Deloitte China

Innovation · Impact · Leadership
China’s economic growth has indisputably slowed, and it may continue to do so in the future. Unlike in years past, external demand is likely to be anaemic, and China’s demographic and cost of production advantages are also likely to diminish, making it imperative for China to transform its modes of growth. 2016 marks the beginning of China’s 13th five year plan, and in order to achieve proposed development goals, the government has put forward five development concepts: innovation, balanced growth, green economy, opening-up, and inclusive development. Of these concepts, innovation is regarded as the primary driving force for development. It is emphasized in the 13th Five Year Plan that innovation should be given top priority in overall national development, and it is necessary to continuously innovate in the theoretical, institutional, technological, and cultural realms.

The manufacturing industry, which is in desperate need for transformation, and the service industry, with its great potential, need to determine how to implement “Internet Plus” to optimize and innovate business models. This has become the key factor for enterprises in these industries in order to maintain their competitiveness against the backdrop of maturing information technology and rapid Internet penetration.

This Deloitte Perspective focuses on transition trends in manufacturing, healthcare, film production, commercial banks, retail, and other pillar industries against the backdrop of informatization and digitalization. With continued reform, China’s economic structure has changed significantly. The service industry now contributes a bigger share of the GDP than manufacturing, and is gradually making a larger contribution to economic growth. However, the trend of informatization in manufacturing remains an important topic. Based on Deloitte’s surveys and interviews of China’s advanced manufacturers, Advanced Intelligent Manufacturing comprehensively analyzes the current informatization level of China’s manufacturing and its major difficulties, and proposes customized solutions. Internet Healthcare experienced rapid development last year through breakthroughs and varying degrees of support with regard to policies, funding, and technology. The 13th Five Year Plan repeatedly stressed the importance of “people’s livelihood,” and therefore popularized and improved medical services are bound to be key points for reform in the coming three to five years. The “Crossroads” of Internet Healthcare highlights medium-micro levels by discussing medical service providers’ opportunities in medication e-commerce and online diagnosis. It can be said that Retail is the industry most impacted by consumer’s increasingly internet-based purchasing models and behavior, and in recent years, the penetration of the Internet has furthered this trend. A Billion To One: The Crowd Gets Personal reveals how retailers provide personalized commodities and services via big data. In addition, China’s film market’s record-breaking box-office is gradually closing the gap with Hollywood, and is preparing for a new era of globalization and digitalization.

Our views and observations are based on rigorous data analysis and candid conversations with industry leaders. As such, we would like to provide some fruit for thoughts for executives and investors who are operating in China.

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<td>In the mobile Internet era, banking industry faces an urgent need to restructure and to transform. In order to maintain its edge amid online finance, banks should focus on channels, product and service offerings, and clientele by creating powerful support systems and IT capabilities that promote digital transformation.</td>
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<td>The creation of products and services derived from crowd-based insights is the foundation of the “billion-to-one” experience. Taking your characteristics and behavior and contextualizing them with data from thousands of individuals allows designers to deliver products and services unique.</td>
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<td>Some changes enabled by the Internet of Things will be incremental, while others will be transformative. Yet the need to capture value remains as acute as ever. The established principles of strategic differentiation, process flow, and network economics will go a long way toward revealing a path to long-term success.</td>
</tr>
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Despite a challenging external trade environment and domestic stock market turmoil, the Chinese economy still managed to grow at 6.9% in 2015. And though the year was dogged by investor’s concerns of an economic hard landing, there were and are quite a few bright spots in the economy. For example, the labor market is strong because of a booming service sector which is being propelled by the transformation of the economy and consumers’ desire for upgrading certain ‘big-ticket’ items (e.g., cars). Contrary to the many gloom and doom scenarios doing the rounds during the first half of last year, the housing market has shown itself to be surprisingly resilient, with first tier cities even seeing significant price increases thanks to a healthy pent-up demand and an ultra-low consumer leverage (consumer debt/GDP at less than 40%). Our base-line scenario on the residential housing market is that the price levels in 1st and 2nd tier cities will hold up well in 2016 -- despite a general economic slowdown.

2016 is expected to be a far more challenging year for China, but the Government still has many tools.
Compared to the previous year, 2016 is expected to be a far more challenging year for China, but the Chinese Government still has many tools in its tool box. The key issue is whether China will be able to implement certain reforms amidst persistent economic deceleration. In addition, policy mix and policymakers’ communication with the market would be crucial in 2016 (hence People’s Bank of China Governor Zhou Xiaochuan long-awaited interview on the exchange rate during the Chinese New Year holidays).

How should China confront the twin challenges of a slowing economy and rising debt and capital outflows? To start with, China needs to clarify its position on the RMB exchange rate which has been under persistent downward pressure after the People’s Bank of China made the initial adjustment of less than 3% on August 11 2015. China’s intention was to remove the perceived exchange rate misalignment (the RMB has appreciated against most currencies for years) and to inject some flexibility into its relatively rigid exchange rate regime. However, due to a lack of proper communication about the timing of the (miniscule) devaluation, investors who were already rattled by the interventions in the stock market interpreted the adjustment of the RMB exchange rate as a sign of loss of control. PBOC Governor Zhou, who enjoys the nickname of ‘Mr RMB’ and is known for being the driving force behind the RMB’s internationalization, publicly articulated his views on the RMB during the spring festival break. The gist of Governor Zhou’s views on the RMB can be summarized as the following: 1) there is no economic basis for the RMB’s persistent depreciation; 2) The Chinese economy can maintain a relatively high growth rate; 3) the PBOC will improve its communications with the market, but it won’t reveal all its cards; 4) China will peg to the basket but won’t necessarily be free floating. His words are given credence by the fact that indeed, China continues to run a healthy current account surplus (expected to be 3% of GDP this year), and foreign reserves are adequate for over 20 months of imports.

Unfortunately Governor Zhou’s deliberations have come on the heels of a negative inter-governmental meeting (to be held in September in Hangzhou, China) to unveil further pledges on preventing financial outflows. To start with, China needs to clarify its position on the RMB exchange rate during the Chinese New Year holidays).

How should the policymakers prioritize the goals which are highlighted above? Is a 6.5% GDP growth rate a binding target? If the unemployment rate can be contained, and assuming that the New Economy can successfully absorb those who are being made redundant from certain sectors (e.g., steel, coal, cement and etc.) which will have to be consolidated, such target would not have been necessary. Of course, we do not expect a drastic de-leveraging process because of the existing large weight of investment of the economy. Therefore, continued build-up of leverage in the next couple of years must be accompanied by rapid credit growth, which would in turn bringing about renewed pressure on the RMB exchange rate. In short, deterioration of asset quality would be the price to be paid for a relatively modest GDP growth target.

The optimal policy mix, therefore, seems to be pro-growth measures of fiscal expansion and monetary easing. There is no doubt that China has ample room for increasing Central Government deficit (to maybe 4-5% of GDP) and reducing reserve requirement rates (still at very high level after the 1st reduction in late February). But quite possibly short term interest rates have bottomed out because China has been undergoing interest rate liberalization which is being propelled by both policy initiatives and innovations of e-commerce companies.

Another important question that may arise in the near future is this: if reductions of the reserve requirement rate were to produce a diminishing impact, should China contemplate exchange rate adjustment, not necessarily on the ground of competitiveness, but as an additional tool of monetary easing?

In conclusion, China will face many difficulties in 2016 but will also seize the opportunities born out of crisis to implement important structural reforms, thus safeguarding its economic health. In fact, if SOE reform, which is the center piece of supply side reform, could see meaningful progress, the economy would be on a much sounder footing. But the reality is that China still enjoys immense policy leeway and a booming service sector and therefore can put off the more difficult parts of SOE reform for a while.
Decades have passed since China’s state-owned enterprises (SOEs) started their internationalization. Many impressive achievements have been made, yet there is still room for improvement. On September 13, 2015, the Central Committee of the CPC and State Council published a top-level government policy paper entitled “Guidelines to Deepen Reforms of SOEs”, in fact a de-facto blueprint for the further reform of SOEs. The guidelines stated that SOE reforms aim to achieve a socialist market economy and improve the modern enterprise system. What this means, in effect, is that SOEs, especially larger SOEs, should compete in global markets, allocate resources across the world, and increase operational efficiency. Step by step, China is implementing its national strategy for a new era of economic development and opening up to the outside world, i.e. the Silk Road Economic Belt and the 21st-century Maritime Silk Road (“One Belt, One Road” or “OBOR”) Initiative. These initiatives have created more favorable external conditions for SOEs to invest abroad and thus ushered in a new age of internationalization. It is also likely that the internationalization of SOEs will change focus from mere expansion to improving operations management and enhancing global competitiveness by taking advantage of the OBOR Initiative. Through surveys of middle and senior-level SOE managers, we obtained insights into SOE participation in the OBOR Initiative as well as learning about the challenges they face. This paper presents several representative solutions to such challenges, and aims to offer some new ideas on how Chinese SOEs can successfully internationalize.
Part One: A Historical Review of SOEs’ “Going Global” Strategy and an Analysis of the OBOR Initiative

1.1 By “going global”, SOEs have grown, but managerial skills need improving

China’s SOEs began “going global” in the mid-1990s. After China became a WTO member, more and more SOEs expanded their businesses abroad, carrying out international operations, overseas investments, and M&As. After the 2008 financial crisis, many SOEs jumped into the overseas market looking for bargains, and entered into an increased number of overseas investments and M&As. In China’s Top 100 Multinational Enterprises 2014 published by the China Enterprise Confederation, there were 84 SOEs - 50 were central SOEs holding overseas assets of RMB4.5 trillion and 34 were provincial SOEs holding overseas assets of RMB 500 billion. China’s state-controlled financial institutions possessed even larger amounts of overseas assets. According to the China Banking 2013 Corporate Social Responsibility Report issued by the China Banking Association, by the end of 2013, the total amount of overseas assets owned by 18 Chinese banking financial institutions had reached RMB7.45 trillion. Currently, China’s government holds overseas assets totaling over RMB12 trillion. According to statistics published by the Ministry of Commerce, in 2014, Chinese enterprises made direct overseas investments of US$116 billion, which exceeded that of foreign direct investments in China, making China a net capital exporter. SOEs have played a vital role in China’s overseas investments and deserve much of the credit for this historic breakthrough.

By “going global”, SOEs have allocated resources across the world, expanded into broader markets, achieved economies of scale, by-passed barriers to international trade, and increased capital flexibility and arbitrage opportunities --- all of which has profoundly impacted not only international economic structures, but also China’s own domestic economic reforms, and the upgrading of its’ industrial structure. A measure of their success in the last two decades is the fact that, with SOEs as the main driving force, Chinese enterprises have leapt into the Fortune Global 500. As of July 2015, 106 Chinese enterprises (84 of which were SOEs) were listed as Global 500 companies, further closing the gap with the United States (128 enterprises)1. Such impressive achievements notwithstanding, China’s SOEs still face many challenges and risks on the road to globalization. In a nutshell, China’s SOEs have grown phenomenally but are still not strong enough, and need to learn how to run multinational operations. Compared with top global companies, China’s SOEs have a long way to go to gain experience and enhance risk control capability.

China’s SOEs have used specific methods to achieve internationalization. These include import and export trading, project contracting, greenfield investment, and overseas M&A. But each strategy poses unique challenges:

- Import and export trading: low value-added goods, such as textiles, still make up the bulk of China’s exports; The export of high value-added goods and services such as high-speed rail and nuclear power has just begun.
- Contracting and greenfield investment: understanding of local environments is insufficient at the bidding stage, the risk control mechanism is unsound at the construction stage, and post-construction management is weak; in the future, Chinese enterprises may consider BOT (build–operate–transfer) or PPP (public–private partnership) models for more projects to marry the interests of host countries with those of Chinese enterprises, following more international market practices and taking sustainability into account.
- Overseas M&A: pre-M&A due diligence is insufficient, risk control ability is weak during M&A, and post-M&A integration capacity is low.
- From a commercial and financial perspective, many overseas investments and M&As fail to live up to expectations.
- Many of China’s SOEs have merely expanded abroad but do not yet possess the strategic perspective and abilities needed to manage a multinational enterprise.
- Only a few of China’s SOEs have international competitiveness and global brand recognition.

1.2 “One Belt, One Road” will initiate a new era of internationalization but China’s SOEs must interpret the policy based on their individual economic conditions.

Under the OBOR Initiative, the internationalization of China’s SOEs will enter a new era. Having learned their lessons from “going global” in the past, in the next 5 to 10 years China’s SOEs should be able to advance beyond the stage of “feeling their way” with untested, short-term strategies to a more mature long term view. If they are to learn from past experience, China’s SOEs must do more than simply increase in scope and size, they need to concentrate on delivering better management. With the broader stage and strong support provided by the OBOR Initiative, improving internal management capabilities and truly becoming large enterprises with international competitiveness will be both feasible and a priority for China’s SOEs.

When Chinese President Xi Jinping visited Central Asia and Southeast Asia in September and October 2013, he announced the initiative of jointly building the Silk Road Economic Belt and the 21st-Century Maritime Silk Road. The announcement attracted attention worldwide. On March 28, 2015, Vision and Actions on Jointly Building Silk Road Economic Belt and 21st-Century Maritime Silk Road (“Vision and Actions”) was jointly issued by the National Development and Reform Commission, Ministry of Foreign Affairs, and Ministry of Commerce of China; this document provides the framework for the implementation of the OBOR Initiative.
A close study of the document reveals the following points.

Though the OBOR Initiative is based around Afro-Eurasia and its surrounding bodies of water, it is not tied to a geography or place. The Chinese government has repeatedly stressed the inclusiveness and openness of the OBOR Initiative. Therefore, while the interpretation of “the plan spanning 65 countries along the OBOR” has been widely cited, we understand the OBOR Initiative to be a global strategy, welcoming any countries willing to participate. Moreover, the influence of the OBOR Initiative is not limited to the 65 countries along to road, but can reach across the globe. Norway, for example, does not lie along the geographic OBOR route, but that did not stop the country from joining the Asian Infrastructure Investment Bank (“AIIB”) and participating in the OBOR Initiative as an AIIB founding member.

The OBOR Initiative promotes economic and cultural cooperation among countries, suggesting five major goals of policy coordination, facilities connectivity, unimpeded trade, financial integration, and interpersonal connections. Many countries along the Belt and Road have poor transportation and energy infrastructure yet are richly endowed with natural resources, so their demand for infrastructure construction is huge. For instance, Indonesia is one of the most important economic entities in Southeast Asia, and also has the largest population among ASEAN members. However, according to the Asian Development Bank and International Monetary Fund’s report, the lack of infrastructure development signals barriers to growth and overall development for Indonesia. Statistics show that Jakarta’s traffic congestion raises business costs and reduces quality of life by US$3 billion annually. Another country on the Silk Road, Mongolia, has rich coal, copper, iron, and phosphorus resources, but poor transportation and communication infrastructure. Investors wanting to invest or establish factory or mining operations in Mongolia are forced to solve transportation, water, electricity, and communication issues on their own, increasing investment costs immensely. This lack of infrastructure prevents Mongolia from receiving FDI and developing its economy.

Development in many other countries in Southeast Asia, South Asia, Central Asia, and North Africa are similarly hindered by varying degrees of lack of infrastructure, and these countries eagerly await investment to upgrade current systems. Chinese enterprises have accumulated a wealth of overseas construction experience in recent years, with projects including highways, high-speed railways, ports, harbors, airports, oil and natural gas pipelines, and power lines. In a written bulletin Premier Li Keqiang highlighted the role of international cooperation in production capacity and equipment manufacturing in promoting China’s economic growth. Boosting such cooperation is essential to halting economic slowdown, achieving medium-to-high speed growth and a medium-to-high level of development, further integrating into the global economy, and having win-win outcomes in cooperation with other countries.

Besides infrastructure, countries and regions involved with the OBOR Initiative will witness cross-border trade and industry investment reaching new heights. Jointly built industrial parks, such as free trade zones and cross-border economic cooperation zones, will be established within these countries and regions, reducing numerous cross-border trading costs and barriers; new commercial activities—such as cross-border e-commerce—will also develop within industry zones. We forecast extensive opportunities for Chinese companies in the OBOR regions in agriculture, forestry, animal husbandry, and fisheries, agricultural machinery manufacturing, farming, marine-product farming, deep-sea fishing, aquatic product processing, as well as in the areas of seawater desalination, marine bio-pharmacy, ocean engineering technology, and environmental protection. Opportunities for Chinese SOEs will also arise in processing technology, equipment, and engineering services in areas such as hydropower, nuclear power, wind power, solar power, and other clean and renewable energy sources. There will also be greater government to government cooperation in the surveying and development of coal, oil, gas, metal and mineral deposits, and other conventional energy sources.

While the OBOR Initiative is a national strategy, the market itself should still be the deciding factor for SOEs in deciding which projects to take up. And the government should only provide necessary support services. Enterprises should first evaluate their own strengths and weaknesses and then decide whether and how to participate in the OBOR Initiative. Management of enterprises carrying out OBOR projects should concentrate upon how to avoid or control risks, increase profits, and maintain sustainable growth. The OBOR Initiative has no public project list, only a public list of economic corridors. The “Vision and Actions” document issued by the National Development and Reform Commission, Ministry of Foreign Affairs, and Ministry of Commerce of China, also emphasizes that the Belt and Road Initiative is a systematic project, which will be “jointly built through consultation to meet the interests of all, and efforts should be made to integrate the development strategies of the countries along the Belt and Road”. In other words, projects will be negotiated and decided jointly by China and involved countries. Although the OBOR Initiative is a global strategy, we understand that the majority of future major infrastructure construction projects and industry investment projects will be implemented in the following economic corridors:

- **Overland**: international economic cooperation corridors such as a new Eurasian Land Bridge corridor, the China-Mongolia-Russia corridor, the China-Central Asia-West Asia corridor, the China-Pakistan corridor, the Bangladesh-China-India-Myanmar corridor, and the China-Indochina Peninsula.
- **By sea**: one route from China’s coast through the South China Sea to the Indian Ocean and to Europe, and another from China’s coast through the South China Sea to the South Pacific.

However, with respect to specific economic collaboration projects, the market itself should still be the deciding factor with enterprises playing the leading role. It is China’s SOEs’ social responsibility to undertake the OBOR projects. They are certainly capable of such an undertaking given that SOEs, especially central SOEs, comprise the majority of enterprises that have “gone global.” As the OBOR Initiative continues, the internationalization of SOEs will further.
develop in both depth and breadth.

In the new era of internationalization, China’s SOEs should not blindly follow trends. Instead, they ought to consider whether and how their operations and development strategies are related to the opportunities brought by the OBOR Initiative. China’s SOEs should stick to a market-oriented perspective and strong commercial practices, and carefully study local needs, balancing them against all possible innovation, cooperation, and investment models. Presented with an opportunity such as the OBOR Initiative, China’s SOEs, especially the 84 SOEs among the Global 500, should they wish to truly become multinational companies with global competitiveness, brand influence, and international management capability, need to grow stronger internally, in particular, by grasping top-level design thinking.

There are different ways to achieve internationalization, none of which applies universally, and enterprises will have to make strategic decisions in light of their own needs, capabilities, economic strengths and weaknesses. Internationalization strategies include import & export, multi-domestic, global standardization, and geographical diversification strategies. Different strategies correspond to different kinds of advantage, product types, scope of competition, standards for site selection, and standards for designing organizational structure.

**Figure 1  Internationalization strategies commonly adopted by enterprises**

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<tr>
<th>Strategic Situation</th>
<th>Description</th>
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<tbody>
<tr>
<td>Import and export</td>
<td>Companies adopting this strategy usually offer lifecycle-based products. They can expand their product portfolio through internationalization. Subsidiaries are responsible for profit in each country. Instead of setting mandatory requirements, headquarters only offer advice, in order to give local subsidiaries room to maneuver. Global best practices are not used company-wide, instead, companies let subsidiaries operate independently and achieve profits according to local market environments. Company structure is based on geographic location. Example: Groupe Danone.</td>
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<tr>
<td>Multi-domestic</td>
<td>Companies offering standardized global products and services usually adopt this strategy. They compete in global markets by achieving economies of scale through internationalization. These companies unify local constituents through globally-shared business objectives, values, and principles, and design their organizational structures based on business units instead of geographical locations, and are capable of mobilizing managers globally. Example: Procter &amp; Gamble.</td>
</tr>
<tr>
<td>Global standardization</td>
<td>A geographical diversification strategy is a combination of the two aforementioned strategies, suitable for companies with platform-based products. This strategy applies global best practices in certain regions and aims at building a globally unified brand and establishing a matrix organizational structure, allowing local management to have independent decision-making authority on certain matters but not all. Example: LOreal Group.</td>
</tr>
<tr>
<td>Geographical diversification</td>
<td>Compared to complete globalization or localization, regional internationalization can coordinate different countries’ needs within the region, reducing the impact of differences between countries. Usually, these companies will not integrate business across different regions. Example: Unilever.</td>
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No Internationalization strategy can be judged as inherently good or bad. While different enterprises are internationalized to different degrees, adopting a particular strategy depends on the objectives and advantages that a company wants to achieve through internationalization. A company on its way to internationalization needs to make key decisions on products, competition, site selection, organizational structure design and in the ultimate analysis, strike a balance between maintaining a unified internationalization strategy within the group and efficiently executing global operations.

Every outstanding enterprise boasts sustainable and profitable growth. One tried and tested way to achieve sustainable and profitable growth is entering new markets through internationalization, expanding product portfolios, adjusting organizational structure, and improving internal capability.

In the new round of internationalization promoted by the OBOR Initiative, China’s SOEs bear the responsibility of carrying out the national strategy, but this brings its own set of challenges. In order to stand out as internationalized enterprises, China’s SOEs should first consider the following issues:

- How to integrate the OBOR Initiative with the enterprise’s own long-term strategy?
- How to adjust the company’s industry and product portfolios?
- Which countries or regions should be targeted as priority areas for internationalization?
- Which approach should be taken to enter the target market?
- What kinds of difficulties will the enterprise encounter? How can these be overcome?
- How can the company comprehensively manage risks? How can it establish a system of crisis management, including early warning and post-crisis feedback mechanisms?
- Which internal and external abilities need to be improved?
- Which kinds of organizational and systematic protection are necessary?

**Part Two: Survey and Key Findings - Internationalization of China’s SOEs and the OBOR Initiative**

In order to provide insights into the above issues, we need to first understand the current status of the internationalization of China’s SOEs and their intentions and difficulties in participating in the OBOR Initiative. By surveying middle and senior-level SOE managers regarding the internationalization of China’s SOEs and the OBOR Initiative, we discovered the following:

1. The category and industry distribution of interviewed SOEs tallies with our analysis of which industries stand to gain the most from the OBOR initiative.

In total, we received 54 valid surveys, of which, 54 percent were from central SOEs, 39 percent from provincial SOEs, and 7 percent from state-owned financial institutions and cultural media. Such distribution is consistent with the composition of SOEs participating in the OBOR Initiative: central SOEs take the lead, provincial SOEs play a major secondary role, and state-owned
financial institutions and cultural media are also active participants. As for the industry distribution, infrastructure construction (including telecommunications) and energy are the two industries in which the majority of interviewed SOEs are located, each accounting for 24 percent, with manufacturing (22 percent) and consumer business (15 percent) coming next. Enterprises in the top four industries constitute 85 percent of the interviewed SOEs. This percentage tallies with our analysis of which major industries stand to gain the most from the OBOR Initiative.

Figure 2 Category and industry distribution of interviewed SOEs

![Category and industry distribution of interviewed SOEs](image)

2. Overall, the proportion of total revenue coming from overseas operations for China’s SOEs is significantly lower than that of leading multinational companies in the Global 500, and lower than that of Chinese private enterprise in the Global 500 as well.

The survey shows that for 43 percent of China’s SOEs, their overseas revenue currently accounts for less than 5 percent of their total revenue; for 60 percent of China’s SOEs, the proportion is less than 10 percent. This demonstrates that the majority of China’s SOEs are still in the early stage of overseas market development and their overseas revenue potential has yet to be realized. However, for a minority 20 percent of the interviewed SOEs (11 out of 54) overseas revenue accounts for more than 30 percent of total revenue. Of these 11 SOEs, 73 percent (8) are central SOEs. By industry distribution, about 40 percent are in the infrastructure construction industry, with the energy and manufacturing industries coming next. These results again show that central SOEs are the “going global” pioneers, with SOEs in the infrastructure construction, energy and manufacturing industries leading in internationalization.

According to the China Enterprise Confederation and China Enterprise Directors Association’s ‘China Top 500 Enterprises Analysis Report 2014’, 272 enterprises among the top 500 have provided their overseas revenue data (most of which are SOEs); for these companies overseas revenue accounts for 10.9 percent of the total revenue, which is essentially consistent with the results from our survey. However, for some leading multinational companies, overseas revenue accounts for more than half of the total revenue demonstrating that for these select companies the overseas market has become an integral part of their market. These same five Fortune Global 500 companies ranked in the Top 50 by profits.

Figure 3 Overseas revenue proportion of notable Fortune Global 500 companies

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Ranking in Fortune Global 500 in 2015</th>
<th>Overseas Revenue Proportion</th>
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<tbody>
<tr>
<td>Exxon Mobile</td>
<td>5</td>
<td>62%</td>
</tr>
<tr>
<td>Chevron</td>
<td>12</td>
<td>59%</td>
</tr>
<tr>
<td>GE</td>
<td>24</td>
<td>52%</td>
</tr>
<tr>
<td>IBM</td>
<td>82</td>
<td>55%</td>
</tr>
<tr>
<td>P&amp;G</td>
<td>100</td>
<td>67%</td>
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Compared to many of China’s SOEs in the Global 500, Lenovo and Huawei are ahead of the curve regarding overseas revenue proportion. In the fiscal year 2014 – 2015, the proportion of Lenovo’s overall revenue coming from overseas earnings reached 68 percent and Huawei’s was about 62 percent. These numbers are comparable to many leading multinational companies.

3. About 90 percent of Chinese SOEs have established either a centralized or decentralized structure for internationalization, but they still have to adjust the limits of authority for different units within the company, improve responsibility and increase management efficiency according to their own internationalization strategy.

On the organizational structure side, nearly 60 percent of interviewed SOEs have established an “international” department to centrally plan and manage overseas business, about 24 percent of the SOEs have their overseas business management personnel placed in each business unit, and 6 percent leave overseas subsidiaries to handle this independently. It is worth mentioning that about 10 percent of interviewed SOEs have no specific department to handle their overseas business, which can lead to an unstructured, somewhat disorganized management of overseas business. These companies need to further refine their organizational structure.

As mentioned above, there are no “good” or “bad” internationalization strategies. An organizational structure needs to be designed in correspondence with an internationalization strategy. There is no single ‘right’ answer to whether centralized management or decentralized management is better. However, further analysis of decentralized management shows that a multi-domestic strategy corresponds to an organizational structure based on geographic locations, while a global standardization strategy corresponds to an organizational structure based on business units. In the next stage of internationalization, China’s SOEs will need to adjust their organizational structure according to their respective internationalization strategies, and more importantly, define the bounds of authority and responsibility between different departments and improve internal rules and regulations. The ultimate goal is to increase management efficiency within the company and thus operate efficiently on a global scale.
4. With the implementation of the OBOR Initiative, China’s SOEs have adopted diversified forms of internationalization and the number of Greenfield projects will increase.

Amongst the SOEs who were surveyed, overseas M&A was the most widely adopted method of internationalization, followed by overseas construction contracts and establishing overseas branches to advertise and promote domestic business products. For overseas M&A, most SOEs preferred whole ownership or being the controlling shareholder, while only a few accepted to acquire a minority interest. Some SOEs also chose overseas trading or cooperation with foreign institutions as their preferred method of internationalization.

Greenfield investment is a form of investment where a parent foreign company establishes a new enterprise in the host country; this new enterprise must abide by the host country’s laws, with partial or whole assets belonging to the parent foreign company. While it is true that Greenfield projects have a longer time cycle compared to M&A, and thus require higher management capability from the investors when compared to a simple construction contract, entering target markets with greenfield investment allows Chinese investors to retain the monopoly advantage and have better risk control. If the host country is a developing country, the investment project will usually come with policy support, reducing costs and increasing investor profits. Many OBOR projects will adopt the PPP model (Public Private Partnership, where the host country government collaborates with the Chinese enterprise), with China’s SOEs investing or carrying out investment and construction simultaneously in the host country, hence it is very likely that the number of greenfield projects will increase substantially.

5. About 40 percent of interviewed SOEs indicated that their internationalization directions would not lean towards the OBOR Initiative, demonstrating maturity and independence in making investment decisions.

Concerning the intention to participate in the OBOR Initiative and the changes in foreign investment scales, nearly 60 percent of interviewed SOEs stated that their short-term internationalization would rely on the OBOR Initiative while the remaining 40 percent indicated that it would not. This latter figure shows that a large number of SOEs can independently plan future development rather than blindly follow trends. At the same time, 70 percent of interviewed SOEs stated that their future internationalization direction relied on the OBOR Initiative. Among SOEs willing to participate in the OBOR Initiative, 78 percent anticipated that the overall scale of future overseas investment would become larger than in recent years. Under the guidance of the OBOR Initiative, China’s SOEs, especially central SOEs, are likely to unleash a new wave of overseas investment in the coming years.

6. The most favored investment destinations are Southeast Asia and South Asia.

Southeast Asia and South Asia were the regions most commonly picked as favorable investment destinations by interviewed OBOR SOEs, followed by Central and Eastern Europe, CIS, and Central Asia. Southeast Asian countries, with their geographic closeness to China, frequent economic and trade exchanges, relatively high degree of development, and huge need for infrastructure improvement, are the most favorable investment destinations for SOEs. South Asian countries have large populations and huge market potential. Priority regions for the OBOR Initiative include the Bangladesh-China-India-Myanmar and China-Pakistan economic cooperation corridors, and these regions should see many projects in the near future. For this reason, South Asia has received attention from China’s SOEs.

7. SOEs need to upgrade four kinds of capabilities: long-term strategy, financing, risk control, and international talent.

When asked what were the three most important changes that need to be made in the company for successful internationalization or participation in the OBOR Initiative, the following were most common answers:

- Up to 61 percent of interviewed SOEs indicated that during overseas investment and expansion, the enterprise itself has to form a clear, long-term strategy which takes the
entire group into account, and to avoid impulsive investment (done without an exploration of market potential) and other short-sighted actions.

- 54 percent of interviewed SOEs chose “increase financial support for enterprise’s internationalization by government, financial institutions, or social capital”.
- 46 percent of interviewed SOEs selected “improve capabilities for evaluating, preventing, and responding to various risks, such as political, legal, tax, cultural (religious) risks of the investment host country”.
- 33 percent of interviewed SOEs chose “create a reserve of international talents capable of comprehending local laws, regulations, and culture, as well as management and operation”.

The results show that the difficulties encountered by China’s SOEs during internationalization mainly concerned four aspects: strategy, finance, risk control, and talent. In addition, post-investment management, such as “PMI (Post-Merger Integration)” and “sustainable management enhancement of overseas greenfield projects/contract constructions”, was also regarded a big SOE shortcoming. 24 percent of interviewed SOEs chose the category “reasonable construction/organization of enterprise’s management structure to enable headquarters to better manage overseas branches/projects”, reflecting that SOEs also need to improve their organizational structure and control system building. In addition, some enterprises mentioned their need for support in seeking suitable projects, as well as their hope that the Chinese government would take measures to avoid unhealthy competition in the international market among SOEs in the same industry.

Figure 6 Major challenges perceived by internationalized SOEs

69 percent of interviewed SOEs do not have a complete tax risk management system or specific risk control positions. Compared to the advanced and full-fledged tax management systems in leading multinational companies, the majority of China’s SOEs still have much room for improvement. Chinese enterprises should give due attention to tax risk management in overseas investment and operations, otherwise it will become a constraint on their ability to compete globally and stop them from becoming truly modern multinational enterprises.

8. China’s SOEs lack sufficient understanding of local risks in host countries and therefore are unable to respond adequately. More than 60 percent of SOEs have not set up related in-house risk control positions nor attempted to engage professionals to help them reduce risk.

The overseas operations of China’s SOEs, particularly in the projects related to the OBOR Initiative, are exposed to all kinds of risks, including natural risks, political risks, social risks, and legal risks, to name a few. But Tax risks were singled out as being the single most worrisome. Our survey results below enumerate the three biggest tax-related challenges relating to participating in the OBOR Initiative:

- 90 percent of interviewed SOEs indicated that “they are unfamiliar with host countries’ tax system, tax collection and management; overseas projects involve relatively high tax risks”.
- 78 percent of interviewed SOEs stated that “host countries of overseas projects generally impose strict regulation on Chinese enterprises”.
- 67 percent of interviewed SOEs have encountered “difficulties due to lack of experience in responding to local tax authorities’ inspections or tax disputes”.
- 53 percent of interviewed SOEs felt “host countries of overseas projects frequently change tax regulations while Chinese enterprises have limited resources to gain relevant information in time”.
- 43 percent of interviewed SOEs do not have experienced tax management staff for overseas projects.

69 percent of interviewed SOEs do not have a complete tax risk management system or specific risk control positions. Compared to the advanced and full-fledged tax management systems in leading multinational companies, the majority of China’s SOEs still have much room for improvement. Chinese enterprises should give due attention to tax risk management in overseas investment and operations, otherwise it will become a constraint on their ability to compete globally and stop them from becoming truly modern multinational enterprises.

67 percent of interviewed SOEs have never employed tax advisers to evaluate the tax environment, collection and management systems, and tax risks in the host countries, nor arranged appropriate tax optimization for overseas projects. This shows clearly that China’s SOEs have not paid enough attention to reducing tax risks in the operation of overseas projects, nor have they tried to utilize globalized professional institutions to develop strategies for optimizing their overall tax burden.
**Part Three: With the OBOR Initiative, the Internationalization of China's SOEs will Reach New Heights.**

SOE reform focuses on three areas - "Marketization, specialization, and internationalization". China's SOEs interpret internationalization as the ability to compete successfully in the global marketplace, and in the process become more professional by improving various internal capabilities. In other words, the success of the internationalization of SOEs hinges on the improvement of internal capabilities.

Based on its research, Deloitte now proposes a conceptual framework for SOE reform, covering various internal capabilities of enterprises. This framework can act as a guideline for individual companies who want to design their own blueprints for successful internationalization under the OBOR Initiative.

**Figure 7 Conceptual framework: SOE reform**

Before undertaking an OBOR sponsored project, SOEs should carefully evaluate their position with regard to the key aspects of our conceptual framework: strategy, finance, risk identification and control, talent, and control systems.

**Long-term strategy:** Where most SOEs were concerned, the lessons of the past with regard to short-sighted or impulsive investment have been well learnt. More than 60 percent of interviewed SOEs stated that "formulating a clear, long-term strategy" is one of the most demanding challenges in the new era of internationalization. First of all, as part of the group's overall business activities, the strategic planning of overseas investment and operations must serve the group's overall strategy. Next, to effectively implement its overseas investment strategy, the strategy must be broken down into different components such as positioning, strategic targets, execution, quantitative indices, and risk control.

**Finance:** To provide funding for SOEs participating in the OBOR Initiative, China has initiated the Asian Infrastructure Investment Bank (AIIB) and established the Silk Road Fund. However, AIIB will have only US$100 billion and the Silk Road Fund US$40 billion, and so more funds will need to be found to make OBOR projects a reality. Greenfield investment is one good way of attracting finance. By establishing a joint venture project company in the host country with contributions from the host country's government, other "going global" SOEs, third party enterprises, and financial institutions, the SOE in question should succeed in obtaining financing. In addition, grouping its interests with those of the host country and third parties will reduce project risk.

**Risk control:** China's SOEs, particularly OBOR projects, will quite likely encounter numerous risks during the process of internationalization - political risk, legal and compliance risk, operational risk, and of course financial risk. The capacity to evaluate, respond, learn from and hence prevent these risks will determine how successfully China's SOEs internationalize.

**Talent Development:** Investing in talented personnel is the foundation stone of successful SOE internationalization and reform. Talented personnel include not only Chinese management personnel acquainted with local laws and culture but also local management personnel and staff. Interpersonal relations play an important part in the implementation of the OBOR Initiative. The success of OBOR projects depends on gaining the trust and support of local people. In some recent cases, newly-elected host country governments have been unwilling to proceed with projects, however, with support from local people and employees, Chinese enterprises have managed to convince the governments to complete the projects. Many OBOR projects are obliged to hire local employees, and therefore communicating with various local parties, sharing corporate culture, and establishing a corporate image in a market radically different from the domestic market politically, economically, and culturally, will test SOEs' "soft power", i.e. their cultural sensitivity, during the internationalization process.

**Financial control:** A major goal of internationalizing SOEs is to achieve effective operations on a global scale under the guidance of an integrated and clear development strategy. Effective operation requires the establishment of a control system with well-defined authority and responsibility boundaries and risk control functions, a management system which measures
performance, an application sharing mode to achieve intensification of operation, and management standardization for quick worldwide implantation of operational models. As proven by the practices adopted by world leading multinational companies, the construction of a shared financial service center increases the integration of operations and finance allowing management to react quickly and efficiently to opportunities and problems that arise during the execution of the project.

Tax planning: In recent years, with Chinese enterprises “going global” and participating in bigger projects in OBOR countries, local governments and tax authorities at all levels have begun scrutinizing the management and tax compliance systems of Chinese enterprises much more closely. Often local tax authorities target the operations and construction projects of local Chinese enterprises, conducting regular or irregular tax inspections and audits of Chinese enterprises. Many enterprises have been involved in tax disputes and even some tax-related litigation with local tax authorities in their “going global” projects. Therefore we believe that before signing project agreements, enterprises must consider potential tax risks in relation to transaction structures and contractual term. They should actively communicate and negotiate with local tax authorities during the implementation of the projects, and invoke tax exemption clauses and cases to reduce fines and/or resolve tax disputes.

Internationalization is the only way for China’s SOEs to grow in size and strength, to reform and develop. While the OBOR Initiative can create unprecedented opportunities in the coming decades, it will also throw up unprecedented challenges. Looking to the future, we would like to make the following suggestions:

• Every outstanding enterprise boasts sustainable and profitable growth. SOEs should conduct comprehensive feasibility studies and predictions before investing in overseas projects or carrying out international operations and focus on long-term profits and return on assets.

• Enterprises should not blindly follow trends or make impulsive investments. Investments should be consistent with the enterprise’s overall strategy, giving due attention to risk factors and due diligence. Managers must have the courage to vote against unfeasible projects.

• The OBOR project countries have different political and economic systems and diverse cultural backgrounds. Legal, tax and other risks abound. Instead of turning a blind eye to risks or exaggerating risks to the extent of not daring to move forward, enterprises should correctly identify and keep themselves updated on risks, actively manage risks and carefully plan the mechanism and measures to respond to risks.

• Where organizational structure is concerned, an enterprise’s overseas investments or operations require a specific department for overall planning and management as well as well-defined authority and responsibility boundaries for each department and post.
Manufacturing is undergoing an unprecedented, radical transformation as consumer expectations and technology trends converge. Consumers’ expectations from products have risen: they want to know more about the products they are buying and also want the ability to customize their purchases. Products have become “smarter” therefore, with sensors connected to platforms and applications that generate real-time data and analysis. As a result, manufacturing is no longer confined to the product alone, but involves supplying an extended chain of associated goods and services that together make up the end product, which may be closer to an experience. The line between hardware and software is blurring, and as consumers demand greater product differentiation to meet increasingly exacting tastes and needs, the line between production and consumption will get blurred as well.

These trends will impact every part of the manufacturing industry in significant ways. In China, the trend towards intelligent manufacturing, digital production, and the “Internet of Things” (IoT) will transform how value is created and distributed along the entire supply chain.
The Information Economy Arrives in Manufacturing

Industry 4.0, the Industrial Internet and the Internet of Things may have different origins, scopes and focal points, but they are united in the recognition that physical objects can connect with each other through networks and platforms, exchange information and communicate with each other to gain insights into consumer behavior and perform certain functions. The emergence of intelligent, connected products is the starting point for a radical change in manufacturing.

According to the standard set by the Chinese Ministry of Industry and Information Technology, the integration of the information with the manufacturing economy passes through four stages: a preliminary explorative stage; single unit application; integrated application; and finally cooperative innovation. In China, although the transition from single unit application to integrated application began several years ago, until recently only a small number of enterprises had been involved, so the impact of information technology on manufacturing was limited.

However, research by Deloitte in 2015 showed that 46% of companies interviewed were at the stage of single unit application while 42% had already progressed to the integrated application stage (Figure 1). As more enterprises advance to the level of integrated application, the overall effect on China’s manufacturing industry will be enhanced.

It is worth noting that the technologies driving the information economy tend to mature rapidly; however, enterprises are slower to make effective use of the real-time data and analytics delivered by the new technologies, given that these require new working processes and enterprise capabilities. In short, technology moves quickly, whereas enterprises are slower to change, as they are challenged by integrating their operations with new software and production possibilities (Figure 2).

Most companies agree that integrating the information economy with manufacturing can enhance productivity and add value to the product. Yet many remain unsure of whether financial benefits really will follow. As a result, some companies are hesitant to make significant investments into this area.

Deloitte has conducted preliminary research to answer the question of who actually reaps financial gains from corporate investment into the information economy. Based on the work of George Westerman, the MIT Initiative on the Digital Economy, and others, as well as results of interviews with 132 companies, we classify companies into four types according to their respective IT proficiency, and management and execution skills: leader, conservative, radical and newcomer.

Following this, we evaluated these companies’ financial performance, using the net profit margin and per capita revenue generation of their employees in 2014 as yardsticks, and aggregated these results for each quadrant. We found that the net profit margins of information economy leaders was 12%, and the revenue generation of their employees 46 percent higher than the average for all 132 companies (Figure 3). The survey also found that a higher IT proficiency improved income-generating efficiency and net profit margins within each quadrant of the survey. (Figure 4).

Notes: 1) Based on enterprises’ data in 2014. 2) Machinery includes robot manufacturers. 3) Others include fine chemical, rail transit, aerospace, medical instruments, electrical wire and cable, etc. Source of information: Informatization Research of Chinese Manufacturers, September 2015, Deloitte Research.
Intelligent Manufacturing: Extensive Application Initiated with True Value yet to be Discovered.

Endowing production facilities with information (analog or digital) capability, enables them to calculate, communicate and diagnose, thereby turning them into “intelligent devices”. When intelligent devices are applied on a large scale, the entire production process starts to become self-diagnosing and self-improving. This begins the transition to ‘intelligent manufacturing’.

Our survey research shows increasing use of intelligent devices in manufacturing enterprises since 2013. 23% of the enterprises interviewed in 2015 had begun to extensively integrate intelligent devices into the production process, up from just 11% two years earlier (Figure 5).

The percentage of companies that were using any kind of intelligent device had also risen from 51% in 2013 to 59% in 2015. Among such enterprises, those in the automobile and spare parts industries recorded the highest usage of intelligent devices, followed by those in engineering machinery, electrical power and equipment, and other machinery.

Based on current trends, it is plausible that the use of robots in production in the 3C electronics, metal, rubber and plastics, food, and pharmaceutical industries will rise above their use in the automobile industry in the next three years. In other words, the general manufacturing sector will become the new front for industrial robots.

Intelligent Manufacturing in China: Competition ahead

China’s manufacturing industry, with its massive production capacity, offers a new frontier for the transition towards intelligent manufacturing, while creating opportunities for the equipment and software industries. Robots, sensors, industrial software and 3D printing all have potential market sizes of tens or hundreds of billion RMB.

In February 2014, the University of Michigan analyzed and compared the intelligent manufacturing markets of 19 countries outside the USA, in order to gauge the size of the market for the American intelligent manufacturing industry abroad. The research, which aggregated data on growth potential, market openness, market size, infrastructure, and country risk, characterized China’s market as possessing relatively high degrees of openness and potential for growth (Figure 6).

Market openness, growth potential and sheer size will make China a key market for multinational intelligent manufacturing enterprises to compete in.

Most of Intelligent Manufacturing remains unexplored; Enterprises focus on technology upgrades while business model innovation lags behind

Simply installing robots inside the factory will not create intelligent manufacturing. Although it might be a necessary first step, it must be followed by data analytics, business process upgrading, and ultimately, business model innovation. In these respects China’s manufacturers are still in the early stages of development.

Although many interviewed enterprises (47%) have introduced intelligent devices, only 20% are constructing intelligent manufacturing systems. Even fewer have extended the scope of intelligent manufacturing to value chain integration and business model optimization (Figure 7). Given the focus on devices and equipment, business model optimization and innovation has lagged behind. Most Chinese enterprises still try to simply upgrade equipment to take advantage of the latest technology, while imitating the business models of foreign enterprises.

The entire manufacturing industry is undergoing a transition from the traditional model...
of “mass production + mass marketing” targeting passive consumers towards the model of “customization on demand + big data marketing + collaborative production” centered on creating experiences for prop-active consumers. Only through a transformation of business operation from “sales oriented” towards “market oriented” and by offering consumers more personalized and customized services and products, can an enterprise convert technological achievement into business profits and market value more effectively.

“Internet Plus Manufacturing”: The Platform Revolution and Maker Movement

Intelligent manufacturing eventually leads to integration of the Internet with manufacturing, and the Internet of Things. Although this is still in an early stage, the Internet has begun to permeate the management of the supply chain, R&D, manufacture, logistics, sales, and customer service, and as a result, is beginning to reshape the structure and business model of manufacturing, and reconstruct the relationship between companies and users.

The Platform Revolution

1. Turning products into platforms

The shift in users’ needs and the success of software platforms, paired with the wider availability of embedded technologies, has prompted many manufacturers to explore how to turn products into platforms. A software platform open to third party partners allows all participants to add new platform-based modularized functions. Such a platform model will not only bring software applications to physical hardware but, more importantly, also enable enterprises to accelerate the design and innovation of products, allow greater personalization and customization, shorten time to market, and satisfy more individualized and diversified users’ needs.

2. Benefit from Internet platform value

Internet-based platforms can provide companies opportunities to improve their branding, procurement, sales, services and other capabilities.

• Branding: With the help of Internet and e-commerce platforms, enterprises can reach both domestic and overseas markets, furthering their brand in multiple markets;
• Procurement: More information about stock and flow makes it easier for enterprises to find the right suppliers and reduce procurement costs;
• Sales: Companies can use the Internet to expand marketing channels, cut intermediate or agency costs and increase margins on sales;
• Service Innovation: Platforms can help companies establish direct links with users, allowing them to more effectively understand their needs, interact with them, and meet their aspirations;
• Business Model Innovation: In combination with service innovation, companies are able to transform their business model from pure product sales to “product + service” sales.

With the help of Internet platforms, enterprises, clients, and other interested parties can all participate in various parts of the supply chain, including value creation, value delivery and value realization. Internet has changed the manufacturing value ecosystem and thus given birth to new ways to create and distribute value, while also creating new competitors and collaborators.

3. Towards the construction of value chain platforms?

Some leading manufacturers have considered constructing value chain platforms to better integrate resources, data, technology, and supply-demand information of the entire value chain. However, they have encountered some difficulties. The main barrier is the lack of an overarching acceptance of big data and cloud computing that integrates the entire manufacturing industry. Why? With market integrity and legal systems still under development, few Chinese companies are willing to give access to their data banks without sufficient protection. The first movers may well be companies that are either more powerful or have closer relations with customers, which they can use to initiate platforms that span the entire value chain.

The Rise of the Maker Movement: Implications for Manufacturing

The Internet has permeated many markets and industries, initiating a radical reshaping of the industrial order. Driven by technological innovation, the Maker Movement is democratizing the means of production and enabling connections between resources and markets. The Makers,
with their keen sense of new technology and their ability to turn it into processes that “disrupt”, i.e. technologically displace, existing business practices, are leading and influencing this revolution.

Companies that we interviewed generally acknowledged that the Maker movement did have an impact on manufacturing and 73% of them agreed that makers had the potential to influence the future of manufacturing profoundly. As to which parts of manufacturing will be most impacted, 94% of the interviewed enterprises chose R&D; 89% regard makers as the ones who will topple the current manufacturing environment, which is dominated by big enterprises; 79% thought they would initiate open manufacturing; and 76% thought that they would lead the way to an individualized and customized manufacturing model (Figure 8).

Figure 8 Interviewed Enterprises’ Opinions on Makers

<table>
<thead>
<tr>
<th>Statement</th>
<th>Agree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Makers could provide creative source for manufacturers or help them solving R&amp;D inefficiency</td>
<td>94%</td>
<td>6%</td>
</tr>
<tr>
<td>Makers will topple the current big enterprises monopoly, even individuals and small enterprises will be able to manufacture precision instruments</td>
<td>89%</td>
<td>11%</td>
</tr>
<tr>
<td>Makers promote open manufacturing, with its design-sharing and cooperative innovation characters, could become the main stream</td>
<td>79%</td>
<td>21%</td>
</tr>
<tr>
<td>Makers are more suitable for customized products in small quantities</td>
<td>76%</td>
<td>24%</td>
</tr>
<tr>
<td>Makers will profoundly influence manufacturing industry</td>
<td>75%</td>
<td>25%</td>
</tr>
</tbody>
</table>


How Should Enterprises React?

Chinese manufacturers should acknowledge the change in consumers’ needs, the nature of products and the manufacturing environment that has resulted from the Internet. Based on this, they need to radically alter the yardsticks they use to evaluate their strengths and value adding capability. In other words, the information economy and the Internet of things can motivate traditional manufacturers to re-evaluate, and restructure their enterprises to prosper in the new era of global competition. This will require developing a range of key capabilities, including the following:

1. Continuous Learning: Enterprises’ application and integration of new technologies approach often leads to a decrease in efficiency. Continuous Learning: Enterprises’ application and integration of new technologies should be continuous and gradual so as to support sustainable growth. A radical approach often leads to a decrease in efficiency.

2. Enterprise Venture Capital Management: Identify new trends, and invest in them at an early stage in order to benefit to the maximum from the exponential growth of disruptive innovation and new technology application.


4. Multidimensional Innovation and Innovation Management: innovation in product, process, profit model, services, distribution channel etc., manage innovation in terms of strategy, organisation, structure, project management and product development etc.

5. Information Security Planning: Construct customized risk management system and Internet security tactic to prevent or reduce potential attacks on each section of the value chain. With respect to IT security, manufacturing industry lags severely behind financial industry.

6. Intellectual Property Management: New business model and cooperation model will require incorporating sensor suppliers, modules, control system communication network, electrical wire and cable, rail transit, etc.

7. New Tax Model: The application of 3D printing will bring changes to laws and regulations on VAT, customs duty and other taxes.

8. Optimization and Reconstruction of Business Model: Based on “value design”, key elements include: subdivision of customers for locating true potential customers, analysis of the needs of target customers, valuation and integration of enterprise’s core resources, creative thinking and transformation of the service delivery model, open cooperation, and final value delivery.

9. Business Model Innovation and Innovation Management: innovation in product, process, profit model, services, distribution channel etc., manage innovation in terms of strategy, organisation, structure, project management and product development etc.

10. IT System Integration: Construct a new system with better inclusivity, which may incorporate sensor suppliers, modules, control system communication network, commercial applications and user interface applications and other components.

11. Data Mining and Management: Comprehensive perception, collection, mining, analysis and sharing of data, including the achievements of big data.

12. IT System Integration: Construct a new system with better inclusivity, which may incorporate sensor suppliers, modules, control system communication network, commercial applications and user interface applications and other components.
Online Medicine at a Crossroads

The last two years have witnessed surging growth for online medicine in China, along with a series of business and management obstacles. Online medicine has arrived at a crossroads; however, further growth requires new policies, improved technologies, and a robust business model with clarity.

Mark Weiser, the father of ubiquitous computing, said that the most influential technology is the one that recedes into the background of our lives. This description precisely fits the Internet. As it embeds itself in traditional industries, the Internet changes how information is distributed, reorganizes how factors of production are combined, optimizes marketing, and improves consumers’ experiences. The Internet has permeated through every aspect of our daily lives, and restructured various sectors such as retail trade, tourism, finance and education.

By / Yvonne Wu, Andrea Ding
Without a doubt, the impact of Internet will continue to deepen. What does the future hold for the healthcare industry in such drastic change?

In China, healthcare demand is huge. However, there are many weaknesses in its healthcare system. There is great potential to help it overcome these drawbacks if technologies such as the “Internet of Things” can be applied to the medical industry. Over the last two years, we have seen rapid growth in online diagnosis, treatment and prognosis. It has attracted significant corporate investment and growing interest from private investors to medical professionals.

However, further investment and entrepreneurship in health care is blocked by the monopolistic nature of the traditional medical industry, the lack of a well-established system of professional medical evaluation and regulation, and the inability of online services to really diversify and distinguish themselves. As a consequence, online treatment is not yet well-entrenched within the medical system.

Internet-based medicine, therefore appears to be at a crossroads in China. New policies are needed, and relevant technologies need to be applied and improved. With its first stage of development, the online medical industry is ready for a new stage of development and integration, backed by clearly defined business models.

The Rise of Internet Medicine

Internet medicine originated in 2000, when many medical websites were launched and visited by a steadily growing number of users. With the application of mobile technology and the popularization of smartphones, online users have gradually shifted from PC to mobile platforms. Online medical companies have opted for mobile medical provision, and this has triggered a surge of investment. According to Analysys International, China’s internet medicine market was valued at 11.4 billion yuan in 2014 and maintained a compound annual growth rate of 31.1% in the previous four years. This is expected to increase in the future. From 2015 to 2017, the growth rate is expected to reach 52.4%, a gross value of RMB36.5 billion. The market structure has shifted towards mobile medicine, whose share has increased from 17% in 2011 to 26% in 2014. Mobile-based medicine will surpass online medicine by 2017 with a market share of 35% and a value of RMB20 billion.

Since 2014, Internet medical startups entered in a booming stage. At that time, medicine had yet to be heavily impacted by Internet technology, and so Internet medical healthcare soon became a new hotspot for investment, with over 30 large direct investments since 2014. For example, Tencent injected USD70 million in DXY.cn during its Series C financing. Chunjuy Doctor raised USD50 million from CICC and Temasek, and CID Group invested USD50 million in yapinggua.com in a Series A financing.

In the secondary market, public companies are also taking action: Lepu Medical entered the wearable devices market by acquiring e-care365.com. Faru Medical Science acquired Emperor Medical to support the expansion of its chronic diseases management business. Alibaba acquired CITIC 21CN to compete in the online pharmaceutical industry, and Sino-care increased its investment in Dnurse to enter the mobile medicine segment of diabetes management.

Figure 2  Investment cases into China’s Internet of Medicine

<table>
<thead>
<tr>
<th>Date</th>
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<th>Amount (10,000 CNY)</th>
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<tr>
<td>July, 2014</td>
<td>Huakang Mobile Healthcare</td>
<td>Series B</td>
<td>Undisclosed</td>
<td>Both online and offline Internet interactive platform for medical and health services</td>
<td>Yanfeng Capital</td>
</tr>
<tr>
<td>July, 2014</td>
<td>gmei.com</td>
<td>Series A</td>
<td>Undisclosed</td>
<td>Mobile plastic surgery services application</td>
<td>Sequoia Capital, Matrix Partners China</td>
</tr>
<tr>
<td>Aug, 2014</td>
<td>5UDoctor</td>
<td>Series A</td>
<td>Undisclosed</td>
<td>Mobile medical service platform in private family doctor model</td>
<td>SAIF Partners, Trust Bridge Partners</td>
</tr>
</tbody>
</table>
## Online Medicine at a Crossroads

### Industry Trend

| Aug, 2014 | Chunyu Doctor | Series C | 31,000 | Mobile medical care application | CICC, CCIG, Temasek, Pavilion Capital Pte Ltd |
| Aug, 2014 | kaichufang.com | Series A | 3,100 | Internet Medical platform in P2P model | Sequoia Capital, Lightspeed China Partners, Lightspeed Venture Partners |
| Aug, 2014 | Manyunbang.com | Seed/Angel | Undisclosed | Mutual aid community for chronic diseases patients | Tsinghua Technology & Innovation |
| Sep, 2014 | iHealth | Series A | 15,500 | Provide health products on mobile, including mobile Internet blood pressure meter | Xiaomi Ventures |
| Sep, 2014 | dxy.cn | Series C | 43,400 | Social networks and information platforms for medical professionals | Tencent Collaboration Fund, Tencent |
| Sep, 2014 | quyiyuan.com | Series A | Undisclosed | Medical consultations and services platform | SoftBank, Highlight Capital, SBCVC |
| Oct, 2014 | diandao.org | Series A | 1,000 | Door-to-door healthcare massage services in O2O model | Banyan Capital |
| Dec, 2014 | MisFit | Series A | 12,400 | Invent and manufacture wearable smart products | Shunwei |
| Dec, 2014 | Soyoung.com | Series B | 6,200 | Healthcare and plastic surgery services | Undisclosed |
| Dec, 2014 | anhao.cn | Series A | 2,000 | Integrated mobile application for medical consultations, doctor & treatment searching, hospital & pharmacy positioning, disease encyclopedia and health management | Undisclosed |
| Dec, 2014 | health-100 | Series F | 7,600 | Diversified business chains combining health checkup, management and consultation | ChinaEquity, GGV Capital, BeyondHund |
| Jan, 2015 | 111.com.cn | Series C | 45,000 | Integrated one-stop online pharmacy | Undisclosed |
| Jan, 2015 | 7LK.com | Series A | 30,000 | Internet medicine trade services | TusPark Ventures, Govtor Capital, Grand Yangtze Capital |
| Jan, 2015 | yapingguo.com | Series A | 1,000 | Vertical B2C e-commerce websites for dietary supplements | Undisclosed |
| Jan, 2015 | Easyhin | Series A | 1,000 | Mother & infant healthcare management service platform | SBCVC |
| Mar, 2015 | anhao.cn | Series A | 1,000 | Integrated mobile application for medical consultations, doctor & treatment searching, hospital & pharmacy positioning, disease encyclopedia and health management | Longling Capital, Guohai Innovative CCI Capital |

### Market Drivers of the Internet Medicine

The booming investment and fast growth of Internet medicine is largely due to the inadequacies of China’s current healthcare market, such as the huge gap between supply and demand, resources misallocation, low efficiency, and the many challenges affecting the growth of key market players. The distribution of China's medical resources are heavily biased towards the cities in the eastern part of the country and large 3A hospitals, leaving the central and western parts of China and rural areas undersupplied. Moreover, grassroots medical institutions tend to be poorly supplied in terms of their technical capabilities and equipment; thus patients with major or minor diseases, acute or chronic, tend to go to 3A hospitals in big cities. The result is that quality medical resources are not used efficiently.

Much of the problem stems from a high degree of information asymmetry between patients and doctors, as well as patients’ scant knowledge of healthcare and the medical system in general. Doctors also lack the ability to perform proper medical evaluations in some cases. Regulation has

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**Note:** For transactions before 11 August 2015, 1 USD = 6.2 CNY; for transactions thereafter, 1 USD = 6.35 CNY

**Source of Information:** Wind, Public Information, Deloitte Analysis

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**May, 2015**
- jumper-health.com | Series A | 8,000 | Gestation management encyclopedia | Undisclosed
- 1hu.me | Series A | 4,129.2 | Mobile platform for postoperative rehabilitation | China Growth Capital, Plum Ventures
- 上药云健康 | M&A | 21,212.5 | Three O2O platforms of electronic prescriptions, medicine data and patient data, integrated one-stop medical care services | 北京和谐成长基金; JD.com
- yapingguo.com | Series B | 31,000 | Vertical B2C e-commerce websites for dietary supplements | CID Group
- Huajian Health Checkup | Series A | 6,200 | Patient follow-up and management mobile application for doctors | China Investment Corporation
- 上药云健康 | Series A | 6,062.5 | Three O2O platforms of electronic prescriptions, medicine data and patient data, integrated one-stop medical care services | IDG Capital Partners
- NANA Panda | Series A | 6,000 | Mobile O2O platform for massage and physiotherapy matching services | Undisclosed
- quyiyuan.com | Series B | 25,400 | Mobile Internet medical treatment platform | Baidu Investment, Highlight Capital, SBCVC
- sescon.com | Seed/Angel | 2,000 | Internet medicine trade services | kangmei Pharmaceutical, GF Xinde Investment Management
- 111.com.cn | Series D | 100,000 | Integrated one-stop online pharmacy | Undisclosed

**May, 2015**
- jumper-health.com | Series A | 8,000 | Gestation management encyclopedia | Undisclosed
- 1hu.me | Series A | 4,129.2 | Mobile platform for postoperative rehabilitation | China Growth Capital, Plum Ventures
- 上药云健康 | M&A | 21,212.5 | Three O2O platforms of electronic prescriptions, medicine data and patient data, integrated one-stop medical care services | 北京和谐成长基金; JD.com
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**Market Drivers of the Internet Medicine**

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Much of the problem stems from a high degree of information asymmetry between patients and doctors, as well as patients’ scant knowledge of healthcare and the medical system in general. Doctors also lack the ability to perform proper medical evaluations in some cases. Regulation has
further pushed up the cost of medical services. These challenges could be opportunities for Internet medicine, which aims to promote a free flow of medical information, and redistribute medical care more efficiently to serve a need where it exists.

Followings are some examples emerging of how the Internet of medicine can ease current stress points in the system:

1) Internet pre-diagnosis services could help patients understand their conditions better, and become more knowledgeable about which hospitals or doctors might possess relevant knowledge or facilities;

2) Online doctor and hospital rating systems can help patients find services or doctors who closely fit their needs;

3) The use of wearable devices paired with online diagnostic applications can supplement the monitoring and treatment of minor illnesses as well as chronic diseases, thereby freeing offline medical resources;

4) Telemedicine can integrate medical resources across different regions and hospitals, thereby promoting a more efficient allocation of scarce medical resource, serving remote areas, and providing patients with more comprehensive services;

One can foresee that Internet technology will be applied to all links in the chain of medical treatment, with the potential to improve medical service efficiency and quality. Online and offline medical services will be more clearly defined, optimized and integrated, leading to better care for more patients in more areas.

The development of Internet medicine is well aligned with China’s current policy and emerging needs. As a result of urbanization and population aging, China’s medical infrastructure faces rising demand and costs. China’s health spending was RMB3.68 trillion in 2014, and the figure is expected to rise to RMB5.79 trillion in 2019. With China’s social security coverage reaching saturation and its depth of coverage increasing, finding cheaper ways of getting health care to the people has become a top priority challenge for the government.

The experience of other countries should be instructive for China. According to McKinsey, telemedicine has helped to reduce 15% spending on diabetes treatment in U.S.

From a business point of view, the potential of Internet medicine lies in its ability to bring benefits to all the parties involved, not just some of them. For patients, it increases access to appropriate services. Besides, it not only makes in-patient diagnosis and treatment more convenient and less time-consuming, but also segments the market according to requirement and type of treatment needed, which cannot be done under the existing system. Such market segments include wellness enhancement, high-end customized services, post-operative rehabilitation, and chronic disease monitoring.

For doctors, Internet applications provide a way of using their fragmented time better, also provide better care of patients, better preparation of research data, and opportunities to increase their income lawfully without having to rely on unlawful kickbacks. This will greatly increase the efficacy of the governments’ campaign against such kickbacks. For medical equipment manufacturers and pharmaceutical companies, it provides an opportunity to market products transparently through lawful e-commerce platforms, while providing more background data on their products. This will help both doctors and patients to prescribe and use medication more precisely.

**Business Model of the Internet of Medicine**

Basically, internet medicine targets three general stakeholder groups: potential and existing patients, doctors, and hospitals.

For healthy people and patients, Internet medicine will allow preliminary self- or assisted diagnosis followed by appointment and registration, online professional diagnosis and treatment, out-patient health management, rehabilitation and chronic disease management. Internet health management has become a primary mobile-assisted medical service. For example, Meet You and Dayima.cn are specialized in female health management. Meimeida.cn and SoYoung.com offer plastic surgery services, and FitTime and 71kr.com attract fitness customers. As these applications have low barriers to entry and offer a uniform quality of service, those that offer multiple tiers of professional assistance and possess better function integration, and interactivity with customers will develop higher levels of customer loyalty and grow faster.

Some Internet medical services are already offering broader sets of services. Guahao.com and 91160.com, for instance, offer online appointment and registration services; Chunyu Doctor and Dr.Good, are platforms for self-diagnosis and online diagnosis and treatment; Dnurse and Lifesense support chronic disease management; and likhealth.cn, offers medicine purchasing services. However, in the current policy environment, there are still many limitations for online services. Many parts of the market are still awaiting a green light from the government.

Internet-based medical services for doctors mainly focus on meeting their four core needs: scientific research, diagnosis assistance, doctor-patient communication, and peer-to-peer communication. Internet platforms facilitate the discussion among doctors and sharing of professional knowledge; Internet applications enable doctors to obtain and publish research with ease as well as offer access to pharmacopoeias, clinical guidelines and case management records to assist diagnosis; doctor-patient communication platforms help doctors manage patients more efficiently,
Online Medicine at a Crossroads

Industry Trend

Figure 4: Online services for healthy people and patients

Internet medical services offer health people and patients

- Extraordinary Health Management
  - Lack of systematic health management plan and professional guidance
- Extraordinary self-diagnosis
  - Hidden costs caused by the lack of medical knowledge and understanding of health system
  - Admissions fail to be treated by professionals outside hospitals
- Extraordinary diagnosis and treatment
  - Poor local medical conditions, difficulty in discriminating the qualifications of medical personnel
  - Mismatch between medical resources and patients
- Extraordinary Rehabilitation
  - Limited understanding of one's own progress in recovery
  - Lack of follow-up care advice

Source of Information: Deloitte Analysis.

Figure 5: Case: Chunyu Doctor: Mobile medical application for self-diagnosis and healthcare consulting services

Target Customers
- Patients and sub-health people
- 45 thousand doctors from more than 60 thousand patient-attended topics

Contents of Services
- Self-Diagnosis: Using medical database to satisfy patients' basic needs, allowing patients to obtain preliminary diagnoses through online research
- Health Management Consulting: Consulting with doctors through Chunyuplatform, pay and rete their services, which helps grading doctor's needs
- Big Data: The aggregated medical care and medicine data could be used as a foundation to cooperate with other market participants

Potential Future Development
- Transition from online consultation to medicine and doctor search
- Big Data: The aggregated medical care and medicine data could be used as a foundation to cooperate with other market participants

Limitations
- Professional consultation, convenient access to medicine, guide to the right doctor
- Big Data: The aggregated medical care and medicine data could be used as a foundation to cooperate with other market participants

Source of Information: Deloitte Analysis.

Figure 6: Online services for doctors

Internet medical services for doctors

- Scientific Research
  - Lack of professional communication platform, huge research pressure
  - In need of professional biomedical sciences website for medical literature retrieval and knowledge spread
  - Lack of systematic health management
  - Incomplete record leads to loss of cases with scientific merits

- Doctor-patient Communication
  - Heavily overloaded workload, difficulty in patient management
  - Doctors with limited income due to lack of experience
  - Tense doctor-patient relationship and lack of effective communication

- Peers Communication
  - Convenient and quick access to quality information within the industry, expand one's own network and influence

Source of Information: Deloitte Analysis.

Figure 7: Case: DXY.cn: Platform company that relies on doctors as resources

Target Customers
- Initial customers are medical professionals
- Gradual expanding to pharmaceutical companies, hospitals, medical equipment manufacturers and research companies

Contents of Services
- Information for medical professions: Provide literature search, medical information and communication platform
- Marketing: Offer Internet marketing, precision marketing and medicine information and communication platform
- Information for medical professionals: Provide literature search, medical information and communication platform
- Gradual expanding to pharmaceutical companies, hospitals, medical equipment manufacturers and research companies

Potential Future Development
- Providing literature search services to pharmaceutical companies, hospitals, medical equipment manufacturers and research companies
- Marketing: Offer Internet marketing, precision marketing and medicine information and communication platform
- Information for medical professionals: Provide literature search, medical information and communication platform

Limitations
- New-medical institutions are not allowed to conduct self-diagnosis, their services are limited to consultations
- Advise selection caused by doctors

Source of Information: Deloitte Analysis.

These developments come at a time when China's doctors (especially in 3A hospitals) are feeling more squeezed than ever, and face more constraints on raising their incomes to levels commensurate with their responsibilities. Internet medical services will allow them to aggregate core resources within the hospital system and provide ancillary medical service online. This will enable them to increase their incomes by providing pharmaceutical companies with medical data and insurance companies with professional intermediation.
With regard to serving hospitals, there are currently two main types of services. One is medical intelligence navigation services, e.g. “Future Hospital” operated by Alibaba and “Intelligent Medical” operated by Tencent, through which hospitals can offer smoother and less time-consuming procedures. The second type of service aims at hospital cost control, such as through management pharmacy benefits more efficiently. Given the government’s strict cost control measures and restrictions on reimbursement under the current medical insurance system, the road to commercialization of this service seems smoother.

The key for services targeting hospitals is to support a greater integration of information, so as to support the delivery of an entire chain of services. Information might include medical data, patient profiles and drug administration, and all of this could be subject to big data analysis which would support the integration of the entire value chain, starting from the hospitals.

What does the Future Hold for Internet Medicine?

Given the policies, technologies, needs and capital, the Internet-based medical industry has made an impressive start and attracted much attention; at the same time, there are clear signals of a rapidly changing external environment, fierce competition and an evolving industry structure. Existing companies will need to make massive injections of capital to enlarge the market, aggregate traffic and integrate resources, even while they face challenges from new enterprises backed by magnates outside the industry.

As a result, within the space of a few short years the Internet-based medical industry is set to enter its next stage of development, where only the fittest will survive. Victory will come to companies that accurately grasp industry trends, understand the true needs of key stakeholders, exploit their advantages and develop strong execution capabilities.

Figure 8 Case: Ali Future Hospital with hospital process optimization at its core

| Target Customers | Hospital information
| Contents of Services | Open platform, mobile platforms, hospital processes
| Potential Future Development | Hospital process optimization, patient engagement
| Limitations | Hospital information system

Source of Information: Deloitte Analysis.

Expansion of Vertically Integrated Business Models

Focused vertical service businesses have the following features: 1) the company focuses on the business operation in a specific disease domain, and enhances brand value by its differentiated positioning and specialized operation; 2) the company does not limit itself to one single node or stage of the medical procedure, but rather integrates a series of medical services to form a complete service chain which then becomes a closed-loop service for the customers / patients; 3) the company creates a medical ecosystem that connects doctors, patients, hospitals and other service providers and intermediaries, offering a unique value proposition to each so as to retain their cooperation.

Welldoc, an American mobile medical company founded in 2005, specializes in chronic disease management and has made an impressive start. Uniquely, this mobile application allows doctors to prescribe prescription drugs, and pharmacists to approve the prescription. Welldoc then provides home visit personalization based on patient’s condition. There are two keys to Welldoc’s success. The first is that the service is backed by deep knowledge of diabetes, clinical support based on big data; and customized real
time guidance, backed by capital and technology including hardware and software. Secondly, Welldoc has successfully constructed a collaborative environment connecting doctors, government, insurance companies and pharmacies.

In China, several companies have started to explore this ‘focused vertical service’ business model. For instance, Lepu Medical, focuses on cardiovascular medicine, with multiple mobile medical platforms, including ixinzang.com for appointment and registration, online consultation and healthcare management services, e-care365.com for wearable devices, and aaa-link.com for family medical healthcare services. It is planning to acquire e-medical companies, build an online community of patients and doctors, and construct a cardiovascular healthcare system covering key parties.

Furui Medical Science is another example. Focusing on hepatopathy, it has developed a liver fibrosis diagnostic system (FSTM), which is expected to become a necessary diagnostic tool for doctors. It also supports chronic disease management, e-medic and mobile applications (http://www.eyisheng.com/) for follow-up services to patients. In sum, it has built a comprehensive system for hepatopathy that connects and meets all parties’ needs.

Focused vertical service models are relevant because they are built on the reality that medical treatment is actually a chain of services, and thereby relieves patients of the inefficiency and inconvenience of switching between different service providers with their own interfaces. Focused vertical models integrate the entire service chain from a single entry point, and thus, its users are more loyal and its visitors are more likely to convert to permanent users. For a medical service provider, vertically integrating the service chain helps to ensure data flow, and to focus the delivery of services more precisely. Focused research into relevant sub-sectors therefore makes services more professional. An integrated service system that supports various sub-service providers both online and offline, can thus become a solid foundation for success.

Closing the Loop between Payment Platform and Medical Insurance

Medical insurers are emerging as critical partners for B2C Internet-based medical service providers. For search engines that aim at medical procedure optimization (e.g. “Future Hospital” by Alibaba and “Intelligent Medical” by Tencent), the key to large-scale application is to achieve real time settlement of social insurance. Internet companies have already accelerated their schedules for bonding with social insurance. As the Chinese government is increasing its support for commercial insurance and upgrading social insurance management, the link between Internet medical services and social insurance is likely to get better established.

With respect to obtaining reimbursement from commercial insurance, strong support is needed from government to make it possible for Internet medical service providers to charge insurance companies. By purchasing Internet medical services (e.g. from BlueStar, which American insurance companies are willing to pay for) and making use of their background data, Chinese insurance companies can reduce costs, design customized insurance products, reduce claim risks and expand market size. With respect to social insurance, attempts to collaborate with mobile medical services have already been made, e.g. Alibaba announced that it had enabled social insurance settlement to be made via Alipay in Guangzhou Overseas Chinese Hospital and planned to incorporate such social insurance settlement into the second phase of its “Future Hospital”, which would allow patients to fully settle their social insurance payments before leaving the hospital.

Figure 10  Collaborations between Internet-based medical and commercial insurance companies

<table>
<thead>
<tr>
<th>Commercial Insurance</th>
<th>Internet Medical</th>
<th>Collaboration Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>太保安联</td>
<td>阿里健康</td>
<td>• Implement the online purchase, claim, audit and direct payment function for CPIC Allianz’s existing health insurance products   • Design new products for Al cloud hospital’s patients   • Explore new policies such as hierarchical diagnosis and treatment system</td>
</tr>
<tr>
<td>中国平安</td>
<td>苏宁蚁康</td>
<td>• Forming its health care network “健康云” based on health insurance business, online health management, and medical data and customer information accumulated from smart device business   • Combine insurance with its own medical, pharmaceutical and information network, forming closed loop payment</td>
</tr>
<tr>
<td>中美人寿</td>
<td>博医康</td>
<td>• With the professional knowledge of physicians from Chunyu Doctor, providing readily available conversational services with doctors</td>
</tr>
<tr>
<td>阳光保险集团</td>
<td>天通医药</td>
<td>• Launched China’s first medicine insurance that fully covers online medical model   • Users consult healthcare professionals via telephone, purchase corresponding medicines form Tmall; insurance company will refund the purchase price unconditionally</td>
</tr>
<tr>
<td>梅莉莎保险</td>
<td>乐动方</td>
<td>• Matching with MetLife’s travelling and sports injury insurance products   • Users could gain points by taking exercises and trade them for insurance products</td>
</tr>
</tbody>
</table>

Source of Information: Deloitte Analysis.
Online Medicine at a Crossroads

Industry Trend

It is noteworthy that medical insurance cost control will remain the focus of those who pay, with respect to both commercial insurance and social insurance. An ideal partner should possess the following two abilities: the first is ability to achieve a cure, reduce medical fees and increase the efficiency of medical procedures; the second is the ability to prove the efficacy of Internet-based medical services with sufficient data.

BAT’s Entering will Influence the Market Structure Profoundly

The Internet-based medical industry has vast room for market development and, in this light the BAT (the Big Three Internet companies of China: Baidu, Alibaba and Tencent) have already put down stakes, playing off their respective strengths. Alibaba has built “Future Hospital” with the payment platform Alipay as its core, using AliHealth as a platform to expand O2O pharmaceutical business. Tencent has implemented “Intelligent Medical” based on Wechat, invested in DXY.cn and Guahao.com to gain doctor and patient resources to develop on medical procedure side, and constructed an integrated intelligent medical devices management platform with Wechat as its vehicle by conducting R&D and collaborating with hardware vendors to develop the health management side. Baidu has constructed its open data platform based on its technical strength in Chinese search, data mining and analysis.

As huge companies with abundant capital, solid technical strength and rich experience of the ‘Internetization’ of traditional industries, BAT will influence the market structure of the Internet-based medical industry profoundly. Against such a backdrop, for smaller companies, developing strategic cooperation with BAT would seem a wise course to follow. For instance, leading mobile medical platforms in the appointment domain, such as Guahao.com, hk515.com, guiyuan.com, 91160.com, and yihu.com, all have built strategic cooperative relationships with BAT.

From Disorder to Integration, the Emergence of an Oligopolistic Market

Due to its inherent characteristics and constraints, the development of the medical industry is relatively slow compared to other traditional industries. However, with companies integrating resources and spreading out broadly in the market, over time they will find business models that can make full use of their respective advantages. The development of Internet-based medicine is accelerating this stage of integration where the market will separate the wheat from the chaff. Early movers who have accumulated resources and loyal users will likely experience first-mover advantages and expand via equity investment, M&A, green field projects and other ways of expansion. The entry of BAT has further intensified competition, promoting market integration.

It’s foreseeable that in the future, a few ‘giants’ will emerge in different subsectors of the Internet-based medical industry. As happened in the development of the group-buying and car rental industries, in the Internet medical industry, venture capital will cast a wide net at its inception, then select major projects and make more investment, using their capital to support both online and offline projects so as to wipe out competing narrowly based medical services and products. While it is important for Internet-based medical companies to expand, another way to success is to find powerful strategic partners and obtaining financial support to outlast and out-compete others in the market.

Source of Information: Deloitte Analysis.

Figure 11 BAT’s current investments in Internet medical industry

From Order to Integration, the Emergence of an Oligopolistic Market

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New Era of China’s Film Industry

By / Po Hou, Roger Chung

With box office revenues reaching RMB 44 billion in 2015, today China is the fastest growing film market in the world. By 2020, China’s box office revenues are expected to reach RMB 200 billion, at which point it will overtake North America as the world’s largest market for cinema, both in terms of number of movie-goers and revenue. How did this happen? And what can we expect of the film and entertainment industry in the future?

Three main developments in the entertainment industry have made this breakneck growth possible. A concerted government policy to encourage the growth of the culture and entertainment industry, the spectacular growth of the Internet and Internet related services, and fresh injections of capital from new investors in particular, Internet giants, led by BAT (Baidu, Alibaba, Tencent), and real estate developers such as Wanda. These ‘new players’ have used their scale and capital advantages to gradually penetrate the entertainment industry and build an ecosystem. For instance, Wanda Group, a Chinese property developer, has merged its culture and property resources, taking advantage of its commercial property to build movie theatres, and expanded into the upstream film industry. Since its acquisition of AMC Entertainment Holdings Inc. (AMC), Wanda Group has become the largest cinema chain operator in the world. In early 2015, Wanda Cinema was listed on the SME Board of the Shenzhen Stock Exchange, and became the first cinema chain stock to list on the domestic stock market. Competition between the ‘new players’ and industry stalwarts has led to this dynamic growth within the film industry.
Faced with a rapidly evolving situation both inside and outside of the industry, the traditional film industry stalwarts have embraced change too, particularly Internet Plus-based change and comprehensive industry chain restructuring. For example, with Disney as its model, Huayi Brothers have launched a “de-cinematic” strategy that integrates the traditional film business, Internet entertainment, and location-based entertainment, and expands into upstream and downstream industry chains to alleviate dependence on the film industry.

In the next five years, China’s culture and entertainment industry will develop rapidly. Mainstream forms of entertainment such as film, online videos, and TV will prosper; competition between new entrants and industry stalwarts will become fiercer; cross-industry cooperation and competition will continuously come into play and the industry chain will be re-shuffled and transformed.

Here are seven key trends to watch for.

**Trend One: From Bigger to Biggest**

1.1 China’s box office revenues and number of movie-goers are expected to surpass North America by 2020

China’s film industry is made up of three different elements: film consumption, investment in films and theaters, film exports. Each has a different profile and therefore will grow at a different rate. On the film consumption front, China’s film industry maintained rapid growth, with a combined revenue of RMB 66 billion in 2014. In recent years, revenue generated from non-box office activities, copyright, and advertising (theaters, TV, and Internet) has grown rapidly, providing important support for the continuous expansion of China’s film consumption. Regarding film and theater investment, investment in new theaters is expected to stabilize, and the extensive operation model will be replaced with an intensive one. Moreover, against a backdrop of theater glut and high costs in first-tier cities, steady expansion into second, third, and fourth-tier cities will be rewarded with better returns. As for film exports, due to cultural differences between China and foreign countries, legal considerations, and other factors, only mild growth is expected, with little impact on the industry as a whole. According to Deloitte’s forecast, by 2020, China’s film industry will see further expansion, with revenue reaching RMB200 billion. By then, China will overtake North America in box office revenue and number of movie-goers, and will become the largest film market in the world.

**Trend Two: From “Made in China” to “Made for the World”**

The size and attractiveness of the domestic Chinese market has attracted a number of foreign film investors and directors. The box office success of co-productions like Wolf Totem (Sinno-French, 2015) which earned RMB700 million in the first 35 days, has increased the interest in co-operating with Chinese partners. But the eventual objective of these co-productions is not to ‘create’ for the domestic market alone but to ‘create films for the world’.

2.1 Co-productions will increase, resulting in a “win-win” partnership for China and its foreign counterparts

In the past, China’s investment in the foreign film market and China’s film exports were small. However, in recent years, as China has become the world’s second largest market (based on box office returns) and a number of foreign investors and film producers have shown willingness to cooperate with China. Co-productions are a way for Chinese films to enter foreign markets and for foreign films to gain access to China’s audiences. At present, half of the countries listed as ‘top 10 international box office markets’ have signed co-production agreements with China, and the number of co-productions is increasing, albeit slowly. In 2014, though co-productions accounted for only 6 percent of total productions screened in China, they contributed around 50 percent of total box office revenue. In the first quarter of 2015, co-productions contributed ~60 percent of total box office revenue. Co-productions can achieve “win-win” outcomes for both parties because co-produced films are considered to be “Made in China” and enjoy the same treatment as domestic ones. Compared to imported films, co-productions enjoy better distribution, revenue sharing percentage, and policies. Nonetheless, co-productions are still faced with many challenges such as copyright ownership, cultural differences, and different work styles.
2.2 Co-productions for the global market

Currently, most co-productions are targeted at the Chinese market. Wolf Totem, released in early 2015, was a Sino-French co-production which used many Chinese elements. Most of the filming was done in China, and almost all of its actors were Chinese. Western resources were mainly used for content creation, such as direction, and diversified capital support. This film had great success in the Chinese market, earning RMB700 million at the box office in 35 days!

However, achieving success in the Chinese market is not the ultimate goal for such co-productions. For instance, Fast and Furious 7, screened in 2015, was not only targeted at the Chinese market, earning RMB700 million at the box office in 35 days! Achieving worldwide success like this is the ultimate goal for Chinese films. With investment from global platforms and a successful RMB2 billion in its first 15 days. Achieving worldwide success like this is the ultimate goal for Chinese films. With co-productions becoming more frequent, and cooperation deepening, the appetite for co-productions is bound to grow, fueling the co-production trend and bringing more and more Chinese films to the international market.

Trend Three: From “non-intelligent” to “Intelligent”

3.1 Big data will be used to drive decision optimization and profit growth

The wealth of information about people’s tastes, lifestyles and interests generated by the Internet and internet based technologies has had a huge impact upon the Chinese film industry. Internet and the use of ‘big data’ has transformed the domestic film industry chain – particularly in the fields of IP (Intellectual Property), production, marketing and promotion, distribution, and ticket sales. Internet giants such as BAT have invested continuously in the film industry - Tencent Pictures, IQIYi Films, and Baidu Pictures have all been trying to get a foothold in the movie business. Traditional film companies have responded to this situation through mergers and acquisitions and other methods. For example, Shanghai New Culture Media (listed on the A-share market) along with other film companies announced private placement and investment plans in Internet and big data technologies totaling several billion yuan.

The use of Internet technologies and Big data is set to transform the movie business in the following ways throughout the ecosystem:

Production and distribution: With the exception of some high quality scripts, filmmaking and production will be more driven by market demand. The right to select content and creative personnel will gradually move from producers and directors to movie-goers. More film IP will be based on Internet creations. Investment and production decisions will be based on data on movie-goer’s preferences regarding content, actors, etc. taken from the Internet and social networks, thereby achieving more precise market positioning and box office forecasts, and higher investment returns.

Marketing: Data on new media users makes it possible for precise marketing of films. Traditional marketing methods such as posters and trailers are not sufficient for large scale marketing and promotion of new films. New media technologies are being used for film marketing, which match film content to the target audience, and audience feedback on preferences are being used for adjustment of marketing strategies, which will increase box office earnings.

Online ticketing: Another change to the film industry brought about by the Internet is that online ticketing has upended traditional ticketing channels. Online ticket sales accounted for 63 percent of total ticket sales in Q1 2013.6 Online ticketing platforms have great influence and related marketing is essential to drive film consumption and penetrate the upstream film industry to help integrate the film industry and Internet. The online ticketing sector has attracted many competitors such as Meituan, Gewater, Wepiao, Taobao movie, and Dianping, among others. In addition, online ticketing platforms have streamlined the film-watching experience.

Cinema screenings: Where cinema screenings are concerned, there is big potential for data...
analysis, which will be used for decision and service optimization. Breakup Buddies, prior to its official screening in 2014, used the online booking platform Meituan to lock up over RMB100 million in box office revenue through online booking. On the basis of the film’s online sales, its screening rate in domestic theaters reached over 36 percent, substantially surpassing other films screened during the same period. Based on online ticketing data and box office forecasts, theaters are able to adjust screening schedules more efficiently, improve an audience’s movie-watching experience, and increase ticket sales.

**Trend Four: From “Highly Concentrated” to “Diversified”**

Responding to the arrival of industry ‘outsiders’, the traditional film companies have gone on an acquisition spree, buying up smaller production houses and integrating ‘upstream’ and ‘downstream’ along the production line. This has led to a much greater ‘concentration’ within the industry. At the same time, in order to take advantage of internet based film products, many big companies have hived off their internet and new media departments, creating entirely new companies that can then go public independently. Another element of ‘decentralization’ is crowd-funding. This is being used by big and small film production houses either as publicity tools or as ways of getting funds for small budget ‘experimental’ films.

4.1 Investment in the film market is steadily increasing, and non-industry acquisitions are also rising

Since 2014, investment in the film sector has totaled RMB 1.28 billion, with year on year investment in 2015 up by 15 percent. In the market, there are four types of investments favored by investors: “online ticketing platforms,” “film + Internet platforms,” “transnational co-productions,” and “fan films.”

![Figure 5  Investment and acquisition trends in the film industry(2009–2015Q1)](image-url)

Acquisition mania has also spread to other industries, and acquirers from non-film industries accounted for 49 percent of total acquirers. Among these acquirers, Internet enterprises have accelerated their expansion into the film industry. One of the most notable acquisitions last year was Alibaba spending RMB 6.24 billion to acquire a 60 percent stake in ChinaVision and renaming it Alibaba Pictures.

Shanghai Zhongji Investment Holding, a traditional enterprise, spent RMB1.5 billion to acquire Beijing Ruyi Xinxin Film Investment—producer of Old Boys and Youth Days—with a view to shore up its strong growth points, take advantage of the rapidly growing film industry to slow down its recent trend of decline, and realize strategic transformation of its enterprise. Industry giants like Huayi Brothers, Enlight Media, and Huace Film and Television will continue to acquire small scale film companies with a single profitability model, and improve their industry chains. However, judging from the current situation, many companies have yet to achieve satisfactory results after integrating film enterprises, because significant differences in management and culture can make it difficult for these combinations to gel.

4.2 Film enterprises might delist from foreign stock markets and return to domestic A-share market

The main reason for Chinese film companies delisting from foreign stock markets is the long-term undervaluation of their American stocks. Bona Films, for example, helped produce or invested in 12 domestic films in 2014, which generated 2.6 billion in box office revenue for the whole year, accounting for 15 percent of total box office revenue, and its total market value was around RMB 5 billion. Enlight Media, however, released 12 films in 2014, contributing about RMB3.1 billion in box office revenue, and its total market value was about RMB 59 billion; Huayi Brothers released 10 films, contributing about RMB1.1 billion in box office revenue, and its total market value was RMB70.9 billion. Bona Films also invested in building theaters, and has 22 theaters in operation. In fact, Bona Films was equivalent to about one third of SMI Holdings Group in market value, while total market value of SMI Holdings was 12 billion HK dollars. By comparison, Bona Films was seriously undervalued on the American stock market.

4.3 “Internet Plus” will drive film companies to split into separately listed companies and go public individually

In the wake of “Internet Plus”, many giants in the film industry intend to fully develop the Internet entertainment sector by dividing themselves into separately listed companies that will go public individually and adopt a capital market operation model for expansion. For example, Huayi Brothers plans to make their new media and Internet entertainment business into an independent Internet entertainment company that can go public on its own. These spin-off companies are one way to build an Internet-based entertainment company. Different from a
Trend Five: From “Long Tail” to “Thick Tail”

Currently the Chinese film industry relies almost entirely upon box office revenue and therefore the risks are high. However, using the business model of international companies like Disney as a blueprint and taking advantage of the growth of Internet technologies and Big Data domestically, film companies are now restructuring their revenue structures and will continue to do so in the future.

5.1 The current single profitability model will require a diversified strategy

Though the domestic film market is thriving, only a few film companies actually make profits and the risk involved is very high as in China covering film production costs relies heavily on box office revenue. However, the Disney model offers a successful blueprint for the Chinese film industry to follow. At present, Disney’s production and entertainment business only contributes 15 percent of its total revenue, the rest comes from diversified business including theme parks, toys, books, video games, and media networks. Core IP, derivative products, licensing, and entertainment projects also help provide Disney with stable sources of income.

4.4 Crowd funding provides supplementary financing for the film industry

In 2015, there were over 100 crowd funding platforms in China, whose impact on the film industry can be gauged in three areas: new financing channels, open transition, and marketing means. Generally speaking, capital raised through crowd funding only amounts to around ten million RMB, which is a fraction of the amount (billions) required for film production. For small film companies, crowd funding offers a viable way to raise capital. For large film companies, however, crowd funding is mainly used for promotion and testing market response.

In the future, there will be three types of crowd funding. The first type is “reward-based”, using games to encourage public participation while acting as a mean to promote films; the second type is to adopt a “low threshold and reasonable returns”, allowing the public to profit from box office; the third type is “equity-based” crowd funding, requiring a high threshold (need to have certain level of net assets) to film investors.

In China, Huayi Brothers took the lead in launching a “de-cinematic” strategy, and its expansion resulted in continued adjustments to revenue structure. By implementing this “de-cinematic” strategy, Huayi Brothers gradually decreased its dependence on the traditional film industry and maximized overall value by expanding ‘upstream’ and ‘downstream’ on the industry chain. Enlight Media, another traditional entertainment company, followed Disney’s model and launched projects that entered into several industries including gaming, animation production, and location-based entertainment development.
Trend Six: From “single IP” to “IP franchises”

6.1 IP sequels are vital for future success

One can judge the importance and value of IPs (Intellectual Properties) from the following observations: first, high quality IPs can earn higher box office revenue; second, IP-based fan bases form an established market, which is conducive to more efficient marketing; third, based on the above two points, IP owners have greater bargaining power in the market, can influence the direction of capital flow and compete with big enterprises. Fast and Furious, a record-breaking box office success in 2015, existed for ten years as a television series, and has become the hottest car racing “super IP” in film history. In China, there are three key elements required for IPs to become “Super IPs”:

1) IP resources, or, the competition for quality IPs.

By 2015, the rights to 114 novels had been bought by either Internet or traditional giants. Currently, 90 are being adapted for television, and of which 24 works will probably be made into movies. Internet companies have begun to hoard source IP resources. For example, Baidu set up Baidu Literature; Tencent Game, Literature, and Animation have also accumulated many IP sources to conduct cross-platform expansion by centering on IP authorization.

2) IP conversion:

How to find the right people to adapt and build an IP series, thus improving its commercial value is a crucial element in the whole IP game. The process of converting quality IP involves the whole cultural industry chain. After being created in one field, an IP needs to extend to other fields in order to enhance its commercial value, form an IP system, and evolve from “single brand” to “cluster brands”, thus achieving maximum benefits.

3) IP operation:

Operation of an IP ecosystem can prolong an IP’s life span. Integrating content making and distribution, platforms, and hardware terminals enables the same IP content to be converted into multiple forms (films, cartoons, mobile games, novels, toys). In the future, IP operation mode will shift from a “single model” to an “integrated model”. Disney’s Toy Story 3 earned US$1.1 billion in global box office, but its IP full line development such as...
Trend Seven: From a lack of standards to “Standardization”

With the rapid development of China’s film industry, problems in film production are beginning to surface. Due to lack of standardized processes and methods for creating films, it is quite common for films to become ‘overdue and over-budget’. About 70 percent of the 600 or more films produced annually in China are never screened; this is a colossal waste of resources for producers and the film industry as a whole, and furthermore, poses potential hazards for investors. It is imperative to standardize and normalize the film production process. Enforcing a guarantee system will reduce these risks and allow greater growth.

7.1 Completion guarantees will promote industry standardization

Completion guarantees are a relatively mature film financing and production supervision model in the United States. As a third party (neither investor nor producer), the completion guarantee company is responsible for supervising the whole process of film production, including distribution. The company also conducts comprehensive reviews and is responsible for ensuring that film production and distribution are on budget and on schedule. If the film cannot be delivered on schedule, the completion guarantee company will take over film production and compensate the investor with a guaranteed amount.

The impact of this system on China’s film industry is two-fold: first, the system helps resolve issues of non-standardization in film production, and helps to enforce quality controls. Second, it helps solve financing problems for small and medium-sized film companies, and establishes a sound financial security system, providing a bridge between film and finance industries.
In the Internet era, the evolution and digitization of banks is inevitable. To implement digital strategies, banks should focus on the transformation of channels, product services, and clients by constructing powerful support systems and providing capable IT services.

Ever-advancing information and communications technology means significant changes in client behavior, the rate of Internet expansion, and business operation models.

These changes challenge the banking industry in two major ways. First, the concept of banking “Anytime, Anywhere” presumes that customers know what they need, and banks thrive when offering services directly targeting customers’ new behaviors and expectations. Second, new entrants to the finance industry are disaggregating the traditional banking value chain, impacting banks’ assets, liabilities, and intermediary businesses.
Industry Trend

Online Overhaul: Banking in the Digital Age

Challenges in the Internet Era

Mobile internet access reshapes social behaviors and business models. Banks face challenges from both new customer expectations and new entrants.

Figure 1  Bank Challenges

- New Customer Needs
  - New Expectations & Behaviors
    - Low loyalty
    - Personalized products
    - Convenient accessibility
    - More self-informed
  - New Expectations & Behaviors
    - Anytime, Anywhere
    - Various internet financing products took away bank deposits
    - 3rd party payment platforms radically changed and shifted payment channel landscape

- New Entrants
  - Asset business
    - Internet borrowing reduced customers’ reliance on banks for their financing needs
  - Liability business
    - Various internet financing products took away bank deposits
  - Intermediary business
    - 3rd party payment platforms radically shifted payment channel landscape

Information Source: Tower Group, Deloitte Analysis.

New Expectations

Changing customer expectations have strongly impacted the banking industry. Customers seek electronic, intelligent, and personalized experiences, convenient and tailored service, omni-channel interaction, and transparent terms and pricing.

New demands for “Anytime, Anywhere” accessibility and personalized services threaten the traditional banking business model.

1. “Anytime, Anywhere”

The digital lifestyle has changed customers’ expectations towards financial products and services. More and more customers prefer mobile banking services (especially for transactions).

Therefore, the traditional branch-centric banking model with its call centers, ATMs, and online banking can no longer satisfy customers’ desire for “Anytime, Anywhere” service. In order to improve customer experience, banks need to construct a customer-centric, omni-channel business model that gives customers control over channel selection and simplifies the once arduous process by avoiding repeated information requests.

2. Customer Needs

Deloitte’s study shows that personalized services (customized products, personalized pricing, and targeted marketing) can improve deposit scale, product sales, and payment volume by 59%, 87%, and 34%, respectively.

New Expectations & Behaviors

- Low loyalty
- Personalized products
- Convenient accessibility
- More self-informed
- Anytime, Anywhere
- Various internet financing products took away bank deposits
- 3rd party payment platforms radically changed and shifted payment channel landscape

Figure 2  Traditional Banking Channels vs. Omni-Channels

Personalization requires banks to dissect available data, analyze customer behaviors and identify different customer needs in order to offer customized products and services, tailor pricing terms, and give recommendations based on a customer’s actual needs.

3. Personalized Services

Customers value both the consideration of their personal needs and their overall service experience; as such, they need banks to offer more targeted and predictive service and advice based on their individual situations.

An abundance of long-tail customers are underserved under the traditional banking model. However, the financial needs of the long-tail market have long been inhibited by low returns on savings, poor service quality, and limited product offerings.

In recent years, advancements in technology have lowered service costs and improved the operational efficiency of financial institutions, meaning that the long-tail market is gradually becoming the new battleground for banks. Internet companies, however, provide higher return, more variety, and more customer-centric products and services that meet the demands of underserved customers.

New Entrants Disaggregate the Banking Value Chain

Technology companies are eager to gain a foothold in the financial services market. Emerging FinTech start-ups such as Kickstarter, Square, Simple, and Prosper have disaggregated the traditional banking value chain, instead focusing on a niche segment of banking by providing specialized services.

Meanwhile, Internet giants such as Amazon, Google, and Apple have extended and integrated their service value chain with financial platforms, enabling them to provide comprehensive and unique services to their customers.

With technological innovation come new entrants and intensified competition:

- Internet lending has taken over some market share from the banking asset business.

For example, P2P and crowdfunding are rapidly claiming the long-tail market with their low transaction costs and high efficiency.
• Many e-commerce retailers are using their ample supplies of customer data to optimize lending services.
• Quasi-saving products offered by technology companies are causing banks to lose customer deposits.
• Third-party payment platforms have radically shifted the payment landscape and technology companies are using this as a gateway to acquire customers. This creates cross and up-selling opportunities for other financial products.
• The emergence of online financial product portals has lessened the banks’ intermediary role by offering improved convenience and accessibility.

1. Impact on the Liability Business

Various types of online payment services have gained substantial popularity by offering convenience and a top-notch customer experience. As a result, these products have successfully attracted a huge amount of deposits. Many technology companies are good at bundling their core services with financial services by providing integrated solutions with a unique value proposition that has not been copied by banks. This has posed a significant threat to bank’s liability services.

In China, the combination of money market funds and Internet channels have impacted banks’ deposits and increased funding costs. Between 2010 and 2013, the CAGR of money market funds reached 79%, exceeding deposit growth rates by more than 13%. In 2013, the share of money market funds in the total deposits climbed to 0.82%, a four-fold increase compared with 2010. Meanwhile, as money market funds are mainly invested in deposit agreements, they directly increased banks’ funding costs. In 2013, about 90% of money market portfolios were invested in deposit agreements. As of April 2015, “Yu’E Bao”, the most popular money-market-fund-linked, quasi-saving product had grown by more than 700 billion yuan in less than 2 years.

2. Impact on Asset Business

P2P institutions have seen rapid growth over the past five years due to their low operation costs and high efficiency. In terms of loans and investments, P2P companies have encroached continuously on the traditional banking business. In China, P2P businesses have developed due to the lack of investment channels for medium and small investors and SME dissatisfaction regarding responses to their financing needs. In 2007, the first Chinese P2P company, “Pai Pai Dai”, was established, and in the next five years the entire P2P industry grew significantly. The P2P business has grown from 10 platforms in 2010 to 1,575 platforms in 2014. Meanwhile, P2P transactions and loan balances have reached 252.8 billion yuan and 103.6 billion yuan, respectively.

3. Impact on Intermediary Businesses

By expanding the scope of its services, the third-party payment market is also booming. In combination with other Internet financial services, it helps the market to actively build a gateway to broader financial product offerings. Between 2010 and 2014, the number of mobile transactions shot up by more than five times, helping non-banking transactions reap a CAGR of 88.7%, well above that of banks (55.6%).

In China, third-party Internet payments have exceeded that of banks. In 2014, third-party Internet transactions totalled 8 billion yuan, and since 2009 have seen an an average CAGR of 82.4%. Internet companies are the leaders of the third-party payment market; platforms such as Alipay and Tenpay take up to 70% of the market. By comparison, banking third-party payment platforms such as Union Pay claim only 11% of the market.

Digitization Strategies

In the face of challenges raised by new customer expectations and behaviors, banks should formulate comprehensive digitization strategies that address channels, products, and customers and are supported by an agile, efficient IT infrastructure.

Figure 3 New Entrants Encroaching On the Banking Value Chain

Figure 4 Overview of Digitization Strategy
through the transformation of physical branches as well as the improvement of digital channels, ensuring seamless and consistent service, and thereby enhancing customer experience.

1. Physical channel transformation

Banks should recognize the importance of transforming the function of physical channels from transaction-centered to socially-centered. They should take note of strategies employed by leading retailers (such as Apple and Starbucks) and position the branch as the “third point” between home and office, encouraging customers to treat branches as a part of their daily social life. By building a long-term relationship with customers, banks will be able to better understand customer needs and improve customer loyalty. Banks also need to gradually shift low value-added transaction services to digital channels (e.g., mobile banking, online banking, and ATMs), and reinforce the significance of the physical branch as the point of sale and service for customers who prefer face-to-face communication with bank personnel. In the meantime, a well-planned physical network encompassing different types of branches is needed to lower operational costs.

Deloitte believes there will be three major trends in physical channel transformation:

- Tailored advice: traditional branch functions (teller services and limited financial advice) will significantly weaken, and more emphasis will be placed on providing tailored financial advice based on customers’ personalized needs.
- Essential Networking: improve network service and functionality and use social media to connect with customers and build brand loyalty.
- Online-to-Offline (O2O) Collaboration: use branches’ physical presence to improve Know-Your-Client (KYC) and client sign-up processes. Improve customer experience and comply with regulatory requirements.

2. Digital channel improvement

Banks should upgrade online banking systems by integrating online digital channels with social media and mobile technology. The interactive communication channels established by social media can bring customers and banks closer together. Meanwhile, mobile banking also can provide instantaneous customer service and improve overall customer experience.

Banks can improve their digital channels by upgrading online banking, exploring mobile banking, and utilizing social media platforms.

- Upgrade online banking
  - Simplify the process and improve convenience. Provide direct banking by experimenting with convenient, simple, and transparent financial products specifically designed for the digital generation.
  - Build application-based gateways linking customers’ daily lives to financial services in order to increase banks’ ability to gain new customers.

- Explore mobile banking
  - Upgrade mobile banking to include features such as branch locator, P2P remittance, transaction alert, purchasing wealth management products, and non-card cash withdrawal.
  - Collaborate with technology companies to build a mobile financial ecosystem by developing mobile financial apps that incorporate both parties’ products and services.
  - Co-operate with mobile operators to develop mobile money and payment solutions.

- Social Media

-   • Enrich Social Media Use
  - Enrich and improve the efficacy of branding channels and launch marketing campaigns.
  - Listen to customers through social media platforms, identify customer expectations, identify the potential for product/service improvement, and enhance overall customer experience.
  - Multi-channel Integration

Banks should focus on integrated services, making sure that customers in different channels have a consistent experience. Future omni-channels should be focused on the mobile Internet with support from branches, ATMs, call centers, and computer-accessed Internet, giving customers control over channel selection.

Recently, leading Chinese commercial banks have started to explore the use of digital channels. About 95% of listed banks have created official Weibo social media accounts as public relations tools to promote their brands and receive customer feedback. Some 50% of listed banks have introduced direct banking in preparation for the overhaul to digital retail banking.

Bank of Beijing built an O2O channel network, allowing the bank to improve customer...
experience in opening accounts and also bettering its own risk assessment for regulatory compliance. From a global perspective, direct banking (e.g., ING, First Direct) emphasizes building a mobile-centric, omni-channel model. This model gives customers the choice to take their preferred channels.

Cross-Sector Platform

The cross-sector platform integrates products and services of banks and third parties to enrich product and service offerings. It is a comprehensive financial service platform with applications involving cross-industry cooperation and expansion of the financial service chain. Banks should develop cross-sector platforms that include customer-centric, service, product, and function platforms.

- The customer platform should effectively integrate all customer resources to increase customer acquisition.
- The service platform should open up different service channels, and form a distinct O2O service advantage over Internet companies.
- The product platform should focus on developing products tailored for Internet users, offering one-stop financial services.
- The function platform should be based on customer insights and integrate both up and downstream businesses in constructing a fully-developed platform that encompasses products, lifestyle, consumption, and investment.

Banks need to play to their strengths in order to improve customer experience and facilitate cross-industry collaboration. For example, banks should focus on their core financial services while expanding into e-commerce, supply chains, and corporate management. Furthermore, through collaboration with technology companies (e.g., for third-party payments), banks can provide professional cross-sector financing services with a superior customer experience. They can also co-ordinate and link travel agencies, property developers, shopping malls, and social media platforms to integrate banking products into customers’ daily lives. This full-dimension platform is built upon four fundamentals — customers, services, products, and functions. The goal is to build an integrated financial service ecosystem covering healthcare, consumption, education, entertainment, and accommodation, among others.

Smart Banks

The smart bank strategy profiles customer needs in order to create value for them by applying Big Data technology and cloud computing. Following these advancements, banks are now able to conduct in-depth analysis of customer behavior patterns that helps banks proactively manage customer relationships and gain a multi-dimensional understanding of their customers. Ultimately, banks will be able to offer a superior customer experience due to comprehensive customer contact and insight.

1. Three Ways to Attract Customers

The smart bank strategy will proactively attract customers, build active customer relationship management systems, and identify customer needs with a better method. This can be done in three ways: by understanding customers’ lifestyles, enhancing digitization, and building multi-dimensional customer classifications.

- Understanding customers’ lifestyles
  - Focus on basic financial service needs: convenient payment, transaction management, savings finance, etc.
  - Analyze customers’ consumption patterns to provide consumer loans, car loans, and foreign financing
  - Use social media to attract new customers, deepen customer connections, and enhance brand popularity

- Further digitization
  - Increase the use of digital technology
  - Establish a cohesive system for gathering and updating data
  - Ensure consistency by analyzing the “big picture” of customer data
  - Establish a digitalized, individualized approach
  - Proactively manage customer relationships
  - Identify customer needs based on an individual’s phase in the life cycle of their banking relationship
  - Design products that suit customers’ behavior patterns
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Industry Trend

- Develop multi-dimensional customer segmentation
  - Transition from a one-dimensional segment (e.g., the size of financial assets) to a multi-dimensional segmentation system
  - Make full use of data analytical tools, understand and classify customer segments based on results of analysis
  - Consider customers’ demographic, behavioral, and risk preferences

2. Customer Experience

As technology advances, smart banks aim to provide a superior customer experience through multiple touch-points and a deep understanding of customer behaviors. In particular, with the transformation of the “brick + mortar” model (i.e., branch + relation manager) into the omni-channel model, banks’ interaction with customers has been trending from single to multiple touch-points. By implementing Big Data technology, banks are also able to move from a superficial customer understanding to gaining multi-dimensional, deep insights.

Critical IT Capabilities

In the digital era, banks are facing the challenge of business transformation and rebuilding. Agile IT capability will help digital banking succeed.

Based on the analysis of technology risk, implementation difficulty, and impact on potential business, we believe that cloud services, Big Data, and channel innovation are necessary short-term focuses for banks.

Cloud Computing and Open Platform Technology Supporting Cross-sector Platform

Senior bank managers, having to consider banking capital and costs, have recognized that despite the high availability of systems, the sustainable development of IT operations needs high resource utilization, improvement of business delivery efficiency, flexible service offerings, and cost optimization. Financial institutions and their software and hardware vendors have all noticed that an open platform IT system would support banks’ real-time deals with secure, reliable, agile, and continuous operating ability. Thus, cloud computing, with its scalable and agile architecture, flexible resource pools, and enhanced customer service features, has become an optimal solution for commercial banks.

Deloitte believes that IaaS could be an entry point for banks to build private cloud platforms. Banks can structure an IT resource pool that serves the entire bank through virtualization and subsequent “migration to the cloud.” The resource pool details the service units of the IT infrastructure and turns all departments into its “tenants,” satisfying a broad range of IT needs.

Figure 8 Bank Private Cloud Framework

Information Source: Deloitte Analysis.
flow, but also with advanced model/signal detection and exploration of unstructured data.

Figure 9 Potential Big Data Applications in Banking

Finally, banks must realize the unique challenges to digitalization posed by specific socio-economic and geographic conditions.

Figure 11 Regional Divisions

Digital development provides a major opportunity for banking in the future. To implement digital strategies, banks must focus on channels, product services, and clients by constructing powerful support systems and IT capabilities that promote digital transformation: payment methods to reinforce an all-channel strategy, product services to implement a big platform strategy, and managing an intelligent bank strategy.

This will pave the way for banks to implement digital strategies, construct a digital ecosystem, and promote digital transformation to become leaders in the online financial realm.

Information Source: Deloitte Analysis.

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The world is home to more than a billion smartphone users. Internet platforms are bringing those billion people together to share ideas and co-create millions of apps that entertain us, simplify our daily tasks, and nudge us toward healthier living.

Through mobile devices—and soon, sensors and the Internet of Things—the crowd is becoming personal.
Consider Waze, a transportation app that helps drivers find the most efficient routes in cities around the world. By actively sharing reports through the app or simply keeping it open while driving, users help develop a real-time landscape of the traffic environment, including congestion, speed traps, accidents, and any other hazards. Drivers need only enter their destination to access this knowledge from the crowd and get the best possible route to take at that time.2

But it’s not just traffic information that’s driving the “personalization” of big data. We have digital personae generated by our digital exhaust as well, and these are constantly being defined and refined by a growing universe of sensors, bar codes, and cameras that track our every move.

Taking your specific characteristics and behavior and contextualizing them with data on thousands or millions of other individuals allows designers to deliver products and services that are, or at least feel, unique. Auto insurers, for instance, can track the driving behavior of their customers through GPS devices and use the insights for actuarial pricing and segmentation. Such data also can be meshed with insights from behavioral economics to offer customers useful products such as personalized progress reports or performance comparisons with a peer group, encouraging better driving.3

We call the creation of unique customer products and services derived from crowd-based insights the “billion-to-one,” or B2ONE, experience.

Core capabilities of the B2ONE experience

The B2ONE experience involves a set of core capabilities (see figure 1) that are leading to fundamentally new ways of delivering value to consumers and citizens.

Crowd data: Aggregated data from the crowd form a critical component of B2ONE models. Organizations can tap the data and brains of the crowd and use the insights gleaned to provide a highly customized user experience. Tranquilien, a sort of Waze for rail transit users, helps passengers find vacant seats in Paris’ crowded subways. Its algorithms are based on multiple data sources, most prominently real-time, crowdsourced data. As with Waze, users input their routes and then use the app to plan their travel.4

Sensing: Sensing, digitization, and related analytics offer us an unprecedented ability to gather and assess evidence in real time. For instance, the Sleep As app for Android devices can wake you at the appropriate time, track and graph your sleeping habits, and warn you if you’re running on a sleep deficit. It also can determine whether you are snoring or talking during your sleep, and it even claims to help detect conditions such as sleep apnea.5

Behavior: Customer behavior analytics monitor actual consumer behavior in real time, providing much more accurate and actionable data than questionnaires. Behavioral science, which studies how people’s choices and behavior can be influenced by how choices are presented, in turn can help turn those data into recommended actions.6 Take iHeal, a wrist-worn biosensor that tracks indicators of arousal or stress in drug addicts. It measures electrical activity in the skin, body motion, skin temperature, and heart rate and then wirelessly transmits these data to a mobile app that delivers personalized drug-prevention intervention to users. Over time, the app creates a repository of information it uses to track behavioral changes and fine-tune its real-time interventions. (For a detailed account on how combining behavioral science and data analytics can help solve problems, see “The last mile” elsewhere in this issue.)

Adaptation: World-class, personalized customer experiences require a strong feedback loop with users. This means collecting data on user behavior, constantly gathering user feedback, and then using these insights to continually improve products and services. AltSchool enables students to develop their own personalized learning plans and then adapts the plans regularly based on what’s working and what’s not, while providing and receiving constant feedback on the plans’ progress (see sidebar “Disrupting the education value chain”).

Figure 1  Core capabilities of the B2ONE experience

![Diagram of the B2ONE experience](image_url)
Upending the value chain

The traditional understanding of process management is anchored in value chain theory, first described by Michael Porter nearly three decades ago. The concept positions customers at the end of a process that converts inputs into products or services designed to meet the customers’ assumed needs (see figure 2).

Figure 2  Michael Porter’s value chain

Graphic: Deloitte University Press | DUPress.com

But emergent digital ecosystems overturn this model. Instead of being at the end of the value chain, customers and citizens are engaged as cocreators throughout—and often act as both supplier and customer in the same value exchange. This idea was first articulated decades ago by futurist Alvin Toffler, who in his 1980 book The Third Wave coined the term “prosumer,” a consumer who takes part in the production process as well. Toffler argued that pure consumers are a phenomenon of the Industrial Age and that they will be replaced by prosumers, who will coproduce many of their own goods and services.

Three decades later, Local Motors, a vehicle manufacturer founded in 2007, epitomizes this concept. The buyers of Local Motors’ cars, sport utility vehicles, motorcycles, and even electric skateboards are involved at every stage of the value chain. Taking advantage of digital technologies from computer-aided design (CAD) files to 3D printing, the Local Motors community of customers can participate in conceiving vehicles, creating the designs, and even in the final production. Using in-house tools and parts and an interactive online build manual, anyone who buys a Rally Fighter, the company’s flagship car, can build his or her own vehicle in the company’s microfactory with help from the Local Motors team. Perhaps the most remarkable aspect of the Local Motors model is that the company claims it can produce a customized car or motorcycle in three days.

Local Motors is just one of dozens of companies who treat customers as co-designers. At consumer products manufacturer Quirky, for example, customers can pitch design ideas for new products and, through voting directly, influence what the company makes and sells. The result: hundreds of useful, one-of-a-kind products, ranging from a smart air conditioner to a citrus spritzer.

Such ecosystems grow and evolve organically across social networks, in ways that do not conform to traditional theories of process engineering or lean manufacturing. Companies are learning to incorporate the contributions of individual customers as well as communities. This collaboration creates a dynamic, engaging customer experience (see figure 3).

DISRUPTING THE EDUCATION VALUE CHAIN

The B2ONE approach is as relevant to services as it is to products. Consider AltSchool, a San Francisco–based network of K–8 schools whose stated purpose is to redefine the value chain for education, leveraging technology to offer personalized learning experiences.

At AltSchool, students help personalize their learning plans and adapt them to meet their changing needs, while providing and receiving constant feedback regarding their progress. Students are assessed regularly through computerized tests that are adjusted based on individual skills. Parents are asked for frequent feedback to help inform the redesign of student learning plans. “We are trying to actually advance a new model of a school,” says AltSchool CEO Max Ventila. “Rethinking school starts with rethinking curriculum, and we’ve reimagined how students should be spending their time in and outside the classroom.”

Moreover, AltSchool’s future vision for the classroom involves using sensors and audio-visual equipment to assess student language skills automatically, eliminating the need for formal assessments.

AltSchool is still in its infancy, but it shows how even the most traditional value chains can be disrupted by B2ONE approaches (see figure 4). As more such models emerge, school systems will likely face increasing pressure to rethink the most basic elements of teaching and student engagement.

B2ONE in the real world

Organizations delivering B2ONE experiences range from Silicon Valley start-ups to social enterprises to Fortune 500 companies.
Figure 3  The B2ONE value web

The B2One value chain is lightweight, iterative, data-driven, and democratized. Customers are embedded throughout as framers and shapers of their own experience.

Figure 4  How AltSchool disrupts the education value chain

In 2001, graduate students from Arizona State University and California State University San Marcos conducted an experiment designed to persuade households to use less energy. They tested four messages to determine which had the biggest impact on reducing energy use: save money, save the planet, be a good citizen, or your neighbors are doing better than you in saving energy.

Surprisingly (or not), the first three strategies had little or no impact. However, the last one, which brought social pressure to bear, spurred a significant drop in energy consumption.

Inspired by this experiment, Harvard University graduates Alex Laskey and Dan Yates created a company, Opower, with a single goal in mind: to use the power of behavioral economics to motivate people to save energy.

Opower created a customer engagement platform designed to help electric utilities deliver more energy efficiency programs to their customers. Opower’s primary products are home energy reports based on user data and behavioral science principles. The company uses a mix of utilities data on user consumption patterns as well as crowdsourced data from energy users themselves. Its online scoreboard encourages friends to discuss and compare their household electricity use.

Opower then gamifies the experience by allowing energy users to complete challenges, participate in groups, and earn points and badges tied to reduced energy use. Using data from these interactions, Opower constantly tweaks its processes to keep energy users engaged. The company now partners with 95 utilities and claims that its model generates energy savings of 2 to 4 percent, translating into hundreds of millions of kilowatt-hours saved.

Balloon, an online career skills and learning marketplace, connects students to nearly 15,000 courses provided by leading technology companies and educational providers. With aggregated user data, Balloon aims to address the growing gap between the skills employers need and what employees actually have. It does so by helping people identify career paths and understand the knowledge and skills required by potential employers, and then connecting them to the right courses to acquire those skills.

Companies like these are helping to redefine business models and offer viable alternatives to traditional businesses and governments. The question is whether these kinds of new market makers will remain boutique providers or scale to become national or even global players.

Cocreation platforms

A key way in which B2ONE business processes personalize user experiences is through cocreation, in which a part of the value chain, often design, is created with the help of end users or the crowd.

The T-shirt maker Threadless is based entirely on user innovation. It solicits design ideas
from its community of more than 2 million people via social media and by organizing competitions. All T-shirt designs are voted on, and the designs with the most votes are produced and sold to the Threadless community.18

Threadless’ founders realized that even something as mundane as a T-shirt could benefit from the personalization trends sweeping digitally minded consumer businesses. While only four out of every thousand designs submitted are ultimately chosen, customers still love that they’re involved in the creation.19

3D printing represents the extreme end of customized design and production. The 3D printing company Shapeways, for instance, has completely outsourced the design phase to its users. Customers design the products they seek and upload the designs to the Shapeways website for a pricing quote based on the materials involved. Users also can refine their designs with help from “experts” on the Shapeways forum, or they can opt for preexisting designs and make minor changes to them before ordering.20

Incumbents
And what of the big legacy enterprises? The insurance companies that will redesign their coverage and rates if you agree to have a sensor put in your car are but one example of the changes under way. Established companies from nearly every industry are using sensors, digital data, and smartphone interactions to innovate with respect to their products and services. Amazon, for example, recently gained a patent for a method that preempts customer action and ships the product before the customer orders it; the company calls this “anticipatory shipping.” Although the method has not been deployed, it offers a view of how companies plan to use behavioral data to improve the customer experience.21

Virgin Atlantic uses Bluetooth beacons in airports to send travelers push notifications to improve the airline travel experience. Personalized information, coupled with geolocation, also makes it possible to have a cocktail prepared before the airline traveler arrives or a blanket ready based on where the person will be napping. In the future, beacons may be attached to luggage so that the owners will know where and when to pick it up.22

Companies also use behavioral insights to nudge customers toward making better choices, such as healthier living. British grocer Tesco, for instance, has partnered with Diabetes UK to combat the disease. With the information and consent of Tesco club cardholders, Diabetes UK involves in the creation.23

it’s a system designed around infrastructure and vehicles: roads, bridges, subways, and buses. A B2ONE approach might instead design the system around individual mobility—getting each traveler from point A to point B as quickly and efficiently as possible.

This is what the city of Helsinki is attempting to do with its plan to create an on-demand mobility-as-a-service system by 2025. The idea is a real-time marketplace that would allow customers to choose among transport providers and piece together the fastest or cheapest way of getting where they need to go at any time. “The city’s role is to enable that market to emerge,” explains Sonja Heikkilä, a transportation engineer with the city.24

Bus routes would be dynamic, changing based on current demand at any moment (see figure 5). From planning to payment, every element of the system would be accessible through mobile devices.25

Figure 5  Helsinki’s Kutsuplus (on-demand) bus ride

Citizens would receive a personalized travel experience irrespective of their mode of transport. Wherever they are in the city, they could access a variety of options with their phone: a ride-share, an on-demand bus, an automated car, special transport for children, or traditional public transit. Residents could purchase “mobility packages” from private operators that would give them a host of options, depending on weather, time of day, demand, and so on. The ultimate goal is a city where no resident actually needs to own a private car to get around quickly and efficiently.

The Digital Human Research Center (DHRC) in Japan aims to create a safer world for children through pioneering work on accidents, the leading cause of childhood injuries. The scientists are studying the main causes of these accidents, their costs to society, and ways in which they can be prevented.26
DHRC Director Dr. Takeo Kanade has reported that how information about childhood accidents is presented to families, schools, retailers, and others makes a big difference on whether behaviors change. His team created video simulations that present statistically valid images of how accidents occur, and how better behavior and product design can help prevent them. Online surveys of people who download and view these accident-prevention videos provide the team and other partners (parents, product designers, educators, and physicians) with critical data on what is and isn’t working. With data on things from product performance to personal injuries, governments, businesses, and consumers can collaborate as problem solvers in a digital knowledge management ecosystem.

These are early examples of how the world’s digital exhaust can be recycled into products and services that can help us lead safer and healthier lives.

Creating a B2ONE experience

How can you create a B2ONE experience for your customers? It’s not necessarily easy. Many large companies, encumbered by legacy systems and cultures focused on products rather than customers, have stumbled along the way. The same holds true for government organizations, which tend to be organized around programs rather than citizen needs.

There are five principles, however, that can help even the most tradition-bound organizations get on the path to B2ONE.

1. Shift the organizational focus from products and services to creating an experience.

Successful B2ONE applications focus on solving a problem and creating an experience instead of just selling a product. “Whenever a company moves toward customization, it’s moving into the customer experience business,” explains Bruce Kasanoff, the author of Smart Customizers, Stupid Companies.26

Consider automobile manufacturers, which for years have focused on product customization: providing options in color, design, stereo, seat temperature control, and so forth. In the digital age, however, savvy automakers are shifting their customization focus to creating an engaging customer experience.

“Mercedes me” provides one example. Its underlying idea is that the company’s future growth will be driven as much by focusing services around each customer as by new product lines.27 “Mercedes me” offers several personalized services to its customers, including “move me,” “connect me,” and “inspire me.” Each implies a commitment to ongoing customer engagement. “The experience of every single customer is central for us,” says Wolfgang Gruel, one of the chief architects of Daimler’s innovative mobility solutions. “This experience includes new services and goes far beyond the automobile.”

“Move me” covers Mercedes’ intelligent mobility solutions, including the car-sharing services car2go and car2gether and parking service Park2gether. With “move me,” “Mercedes is trying to create an experience of getting from one place to another, as opposed to the experience of owning a car,” explains Gruel.28

Lastly, “inspire me” allows Mercedes customers to become involved in the development of new technologies and services, interacting with experts and contributing their own ideas and suggestions.

2. Define the customer problem you want to solve.

Because a key part of the B2ONE experience is user involvement, the organization must give customers a compelling reason to become engaged. The best reasons involve solving one of their daily problems better than anyone else.

“Your customers don’t buy from you to have the experience of buying, but to solve a problem,” says Don Peppers, coauthor of Managing Customer Relationships. “I should be able to solve a customer’s problem without them even knowing I’m there.”

This mindset was front and center when Waze first built its maps app. “We had a complete vision even back then,” explains Waze cofounder Di-Ann Eisnor. “We wanted to tap into mobile devices and sharing. It’s one thing to help each other find a restaurant. It’s another to actually change traffic patterns.”

Waze didn’t set out to build maps per se. Instead, the goal was to find the best routes for getting around.29 Early on, the Waze team made it a bit of a game to get people to drive to areas that hadn’t been covered yet. These digital-age equivalents of Lewis and Clark drove on unmapped roads for the benefit of subsequent travelers.

3. Treat customers like designers.

Customer feedback has always been important to product and service designers. In the digital age, however, designers’ success can depend upon how well they respond to and make use of a nearly constant stream of data on customer satisfaction.

Feedback from mobile devices yields a wealth of information on mass and individual consumption behavior. Organizations can use these data to allow their customers to become codesigners of the goods or services they receive. Users may not always know how their behavior leads to customization, but this pattern is becoming the new normal in fields ranging from health care to security.

The customer as an engaged codesigner is at the heart of Local Motors’ business model. Each of the company’s first 60 vehicles is unique for its brand, with no two having exactly the same look and features due to the different design ideas contributed by members of the company’s online community.30

“With Local Motors, people are cocreating not just at the beginning but throughout the ownership process, and ever improving it,” says Justin Fishkin, chief strategy officer of Local Motors. “So there’s this constant iteration of each unit being better than the last.”

What’s
more, the customer input at all stages of production actually becomes a key part of the customer experience.

LEGO has a long tradition of listening to, and even collaborating with, its fan base on toy concepts. The company launched a crowdsourcing website, Cuusoo, in Japan in 2008 (now called LEGO Ideas), where users are invited to submit ideas and vote for them. Once an idea crosses 10,000 votes, it is formally reviewed by headquarters, and if it goes into production, the creator of the idea receives a 1 percent royalty on any net revenue of the toy. The company has come a long way since its first crowdsourcing project, Shinkai, took 420 days to accumulate enough crowd votes to trigger a review. Minecraft, with its 20 million registered users today, racked up 10,000 votes in just 48 hours. LEGO says it believes that cocreation helps it to better understand latent consumer demand.

4. Create better and faster feedback loops.

In a B2ONE model, the organization continually collects and analyzes consumer feedback and uses the resulting insights to improve and redesign its offerings. Better and faster feedback loops can thus become engrained in the organization.

Clover Food Lab collects customer feedback at each step of its food-making process and enters it—along with social media survey results and comments from the Clover website—in a central database. Clover customers are invited to attend weekly open houses to taste new dishes. Customer recipes have even made it to the store’s final menu. All this adds up to a new “experience” in the fast food industry, where the focus is on delivering a high-quality meal experience that has been shaped and approved by customers themselves.

Better, faster feedback loops can be easy to envision but hard to create, particularly in large, established companies and government agencies. “The business model is just so different in big companies,” explains Frank Pilar, a senior researcher with the Massachusetts Institute of Technology’s Smart Customization Group. “It revolves around product lines, not customizing for the customer.”

Overcoming this difference requires a changed mindset, in which organizations understand customers at a fairly granular level and have the ability to deliver different products and services to different kinds of customers. Building a platform to actively listen to the voice of the customer can help.

5. Build trust.

People won’t share their data with organizations they don’t trust. This makes trust a key ingredient to making B2ONE experiences work. And let’s face it: Some people find the growing practice of combining user digital exhaust with behavioral science to target and customize offerings for individual consumers a bit creepy.

So how can companies and government agencies avoid “the creepy factor” when delivering a B2ONE experience? First, it’s important not to force it on customers. Sharing data should require users to opt in rather than it being the default. Health start-up Ginger.io, for example, targets extremely sensitive behavioral health problems such as depression with its mobile app solution. For a patient diagnosed with depression, the app would track data such as how much users are moving and who they’re calling, emailing, and texting (and how often). By comparing these data against a larger population and clinical results, the company claims that the app can detect patterns that might be consistent with depression or even suicide attempts and then alert the user’s physician. This approach only works because installing the Ginger.io app is purely voluntary on the part of the patient.

While you might think many people would object to being tracked in this way, very few patients refuse to participate for privacy reasons, according to Julie Bernstein, a vice president at Ginger.io: “We’re providing value back to individuals. They’re using the app as a tool to improve their lives and recognize we need to understand their behavior to help them do that.”

This last point is critical. In the value exchange, users need to get something valuable in return for their data. “Having knowledge of the customer is the only durable competitive advantage for companies,” says Kasanoff. “But they need a business model that truly benefits the customer. Extreme trust and ‘proactively do the right thing’ should be central tenets of this model.”

Only a glimpse

The confluence of the crowd, big data, and customer empowerment is shaping new business models that behave more like ecosystems and self-managed networks than traditional value
chains. This fertile digital environment is fueling a new breed of commercial and social entrepreneurs who are engaging customers and citizens in the co-design of “unique experiences” that can adapt to changing circumstances. Some big businesses and governments are also beginning to make their design and production processes more permeable and adaptive to social intelligence, predictive modeling, and customer behavior. But today we are seeing only a glimpse of the future possibilities for competitive advantage, market disruption, and societal impact that the B2ONE phenomenon might soon provide.


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Note


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The more things change: value creation, value capture, and the Internet of Things (IoT)

By / Michael E. Raynor and Mark J. Cotteleer
Illustration By / Alex Nabaum

Most “things”, from alarm clocks to Zambonis, the human body included, have long operated largely “dark”, with their location, position, and functional state unknown or even unknowable. No longer, thanks to the Internet of Things (IoT), a suite of technologies and associated business processes that allow us to track and count, observe and identify, evaluate and act in circumstances heretofore effectively invisible and beyond reach.

In relaxing many of the constraints that have traditionally defined fundamental business processes, the IoT demands that we revisit the two defining questions of strategy: how to create value, and how to capture it.

We have concluded that how companies create value has changed profoundly. A tennis player no longer values her racquet solely in terms of the stiffness of the frame, the string tension, and its weight and balance, but also—in the case of Babolat’s Play and Connect racquet—as a source of information about her tennis stroke and how to improve it. In other words, it is not merely the features of a product or service that create differentiated value—it is information about that product or service. And information, we argue, creates value very differently than do products or services.

How companies capture value remains largely the same, a function of competitive position and competitive advantage. Companies that control the flow of information in the value creation process enjoy competitive positions that are likelier to afford better opportunities to capture value from other participants in their ecosystem. In other words, they know where to play. Companies that differentiate the way in which they control the flow of information from other companies with similar positions enjoy a competitive advantage. In other words, they know how to win.

Some changes enabled by the Internet of Things will be incremental, while others will be transformative. Yet the need to capture value remains as acute as ever. The established principles of strategic differentiation, process flow, and network economics will go a long way toward revealing a path to long-term success.
IoT technology is creating opportunities in unexpected places and ways, including Internet-connected wearable fitness monitors, insurance policies, pill bottles that know when you’ve opened them, retail supply chains, and, yes, tennis racquets. We hope you will agree that embracing the new challenges of information-based value creation without abandoning the time-tested tools of value capture—where to play, and how to win—is a powerful first step in creating an effective IoT strategy for your organization.

**What’s new: Value creation**

Putting a sensor in a tennis racquet can let you know that your overhead smash is off-center. This knowledge helps relatively little, however, if you cannot act in ways that advance desired outcomes—in this case, improving your game. In other words, information creates value only when it is used to modify future action in beneficial ways. Ideally, this modified action gives rise to new information, allowing the learning process to continue. Information, then, creates value not in a linear value chain of process steps but, rather, in a never-ending value loop.

The mere creation of information does not enable its effective use, however, and so we are well-served to capture the stages between action in the world (your overhead smash) and improved action in the world (your better overhead smash). In completing a circuit of the Value Loop, from action back to modified action, information is communicated from its location of generation to where it can be processed—perhaps in the case of the tennis racquet, to your smartphone. Information is aggregated over time or space in order to create data sets that can be analyzed in ways that generate prescriptions for action. After all, data from a single tennis stroke do not provide nearly as much value as data over a one-hour practice session, or as much motivation as comparing your stroke with those of relevant peers. These prescriptions guide modifications to your stroke. New action is then sensed, which creates new information, starting the cycle anew (see table 1).

We capture the stages (that is, Create, Communicate, Aggregate, Analyze, Act) through which information passes in order to create value with the Information Value Loop, shown in figure 1.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create</td>
<td>The use of sensors to generate information about a physical event or state</td>
</tr>
<tr>
<td>Communicate</td>
<td>The transmission of information from one place to another</td>
</tr>
<tr>
<td>Aggregate</td>
<td>The gathering together of information created at different times or from different sources</td>
</tr>
<tr>
<td>Analyze</td>
<td>The discernment of patterns or relationships among phenomena that leads to descriptions, predictions, or prescriptions for action</td>
</tr>
<tr>
<td>Act</td>
<td>Initiating, maintaining, or changing a physical event or state</td>
</tr>
</tbody>
</table>

Table 1 The stages of information value creation

The technologies illustrated around the perimeter of the Value Loop have been under development for decades. For example, if you’ve ever seen the “check engine” light come on in your car and had the requisite repairs done in a timely way, you’ve benefited from an information value loop. Something about your car’s operation—an action—triggered a sensor, which
communicated the data to a monitoring device. These data’s significance were determined based on aggregated information and prior analysis, and the light came on, which in turn triggered a trip to the garage and necessary repairs.

In 1991 Mark Weiser, then of Xerox PARC, saw beyond these simple applications. Extrapolating trends in technology, he described “ubiquitous computing,” a world in which objects of all kinds could sense, communicate, analyze, and act or react to people and other machines autonomously, in a manner no more intrusive or noteworthy than how we currently turn on a light or open a tap.

The future he imagined is increasingly upon us—not thanks to any one technological advance or even breakthrough but, rather, due to a confluence of improvements to a suite of technologies that collectively have reached levels of performance enabling complete systems relevant to a human-sized world (see table 2). Today’s IoT applications, in what is now known as automotive telematics, have the potential to go far beyond “check engine.” Companies such as Delphi offer aftermarket solutions for vehicle diagnostics and maintenance, but some smart automobiles now drive off the showroom floor with remote diagnostics and system monitoring capabilities pre-installed. Sensors in the vehicles monitor the functionality of various mechanical and electrical systems, creating information about the vehicle’s status. That information can then be communicated to the dealership and to the driver via console alerts and mobile apps and aggregated to develop a fuller picture of functionality for the driver, dealer, and manufacturer.

Getting information around the Value Loop allows an organization to create value; how much value is created is a function of the “value drivers,” which capture the characteristics of the information that makes its way around the Value Loop. The first formulation of these drivers to gain general acceptance came in 2001: volume, velocity, and variety. The intuitively appealing argument made then was that more information, generated more quickly, and capturing a wider range of features about the world, would be more valuable. Since then, this alliterative list has grown to include velocity, viability, variability, visualization, and others besides. The limiting factor seems to be the quality of one’s thesaurus.

We can bring order to this chaos by recalling that the value of information inheres largely in its flow: from being created through sensing action back to informing more effective action. This implies that information can be valued much as one would value any flow—say, cash. The value of a cash flow is determined by the magnitude of cash one expects, the risk that it will not materialize as expected, and the time over which the cash will arrive. A greater magnitude of money, generated at lower risk, and over a shorter time period all increase the cash flow’s value. Similarly, the drivers of information value can be captured perhaps more precisely and sorted into the same categories of magnitude, risk, and time (see table 3).

Different value drivers will have different levels of importance based on the specific value loop in question. For example, in the retail sector, a sales manager wants to be able to influence customer decisions, and that can require knowing what customers want now and here. This can require information with higher frequency, accuracy, and timeliness so that the retailer can influence customer action in real time through, for example, offering complementary products or incentives. (Having a system in place that anticipates and responds to customers on the spot represents a big step beyond, say, mailing coupons days after a purchase.)

At the same time, an inventory manager might not require real-time updates, since store inventory is not restocked that quickly. Hourly or even less frequent data updates might suffice. Yet scale and scope might well matter much more: Knowing the inventory status of every product in every store—and linking that information to warehouses, drivers, and manufacturers also generating real-time data—can enable significant purchasing or logistical efficiencies.

In sum, companies can create value through both the value chain for each of their products or services, which determines performance, and the value loop for each product or service, which...

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**Table 2. The enabling technologies of the Internet of Things**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensors</td>
<td>A device that generates an electronic signal from a physical condition or event</td>
<td>The cost of an image sensor has fallen from $22 to 40 cents in the last 20 years. Similar trends have made other types of sensors small, inexpensive, and robust enough to create information on everything from fetal heartbeats via conductive fabric in Mom’s clothing to jet engines roaming at 35,000 feet.</td>
</tr>
<tr>
<td>Networks</td>
<td>A mechanism for communicating an electronic signal</td>
<td>Wireless networking technologies can deliver bandwidths of 300 megabits per second (Mbps) to 1 gigabit per second (Gbps) with near-ubiquitous coverage.</td>
</tr>
<tr>
<td>Standards</td>
<td>Commonly accepted prohibitions or prescriptions for action</td>
<td>Technical standards for interoperability are emerging via a number of mechanisms, including industry consortia and legal or regulatory mandates.</td>
</tr>
<tr>
<td>Augmented intelligence</td>
<td>Analytical tools that improve the ability to describe, predict, and exploit relationships among phenomena</td>
<td>Petabyte-sized (10^15 bytes, or 1,000 TB) databases can now be searched and analyzed, even when populated with unstructured (e.g., text or video) data sets. Software that learns is giving rise to “artificial intelligence” that might soon substitute for human analysis and judgment in many circumstances.</td>
</tr>
<tr>
<td>Augmented behavior</td>
<td>Technologies and techniques that improve compliance with prescribed action</td>
<td>Machine-to-machine interfaces are replacing reliably fallible human intervention with automated optimized processes. Insights into human cognitive biases are making prescriptions for action based on augmented intelligence more effective and reliable.</td>
</tr>
</tbody>
</table>
Table 3  Information value drivers

<table>
<thead>
<tr>
<th>Value driver</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnitude</td>
<td>Factors that determine the amount of information that informs action</td>
</tr>
<tr>
<td>Scale</td>
<td>Corresponding to “volume,” this is the number of instances of the same action that inform subsequent action. One can dispatch trucks knowing the location of one truck in a fleet or knowing the locations of all the trucks in a fleet.</td>
</tr>
<tr>
<td>Scope</td>
<td>Corresponding to “variety,” this is the number of different dimensions of an action on which information informs subsequent action. One can dispatch trucks knowing the location of a truck, or knowing that truck’s location, speed, and direction.</td>
</tr>
<tr>
<td>Frequency</td>
<td>Corresponding to “velocity,” this is the interval between opportunities to adapt action based on new information. One can update truck dispatches knowing the truck locations once per hour, or knowing them once per minute.</td>
</tr>
<tr>
<td>Risk</td>
<td>Factors that determine the probability that information will create value in the manner expected</td>
</tr>
<tr>
<td>Security</td>
<td>Is the information used only by those with the necessary authorization? If thieves also know the location of one’s trucks, the information may well lead to a net reduction in value due to higher rates of theft.</td>
</tr>
<tr>
<td>Reliability</td>
<td>Is the information consistently generated as expected? If the other value drivers of information are unpredictable, it is more difficult to make optimal use of that information.</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Does the information capture the actual value of what it represents? If the information on the location of the truck misrepresents the truck’s actual location, dispatch instructions based on that information will be less valuable.</td>
</tr>
<tr>
<td>Time</td>
<td>Factors that determine how quickly value can be created from information</td>
</tr>
<tr>
<td>Timeliness</td>
<td>Is the information available for use at the most opportune moments? Dispatch schedules that are updated as the trucks reach their routes’ halfway point are more valuable than those updated after the trucks have returned to the depot.</td>
</tr>
<tr>
<td>Latency</td>
<td>Does the information capture the state of the world as it is, or as it was? Knowing trucks’ locations 30 minutes ago is less valuable than knowing their locations 30 seconds ago.</td>
</tr>
</tbody>
</table>

Note: The categories of magnitude, risk, and time are a framework within which one can identify the drivers that are relevant to a given use case. The elements identified above within each category are not intended to be definitive or exhaustive, although, as a practical matter, they are likely a good place to start and, in many cases, will prove sufficient. Source: Deloitte analysis

The more things change: value creation, value capture, and the Internet of Things (IoT)

determines informational content. Today, few products or services are information-free, and so both typically feature in some measure. Thanks to advances in the enabling technologies of the IoT, the information content of many markets is rising rapidly, and so an increasing number are usefully characterized as information-centric. As information becomes a key differentiator in more and more markets, a command of the Information Value Loop may well become a prerequisite to competitive success.

What's the same: Value capture

The value loops in each of Babolat’s tennis racquet, automotive telematics, and either of our retail applications are relatively self-contained. Consequently, those creating the value would necessarily capture it. Yet many value loops are enabled by ecosystems of independent organizations that must simultaneously cooperate and compete. In these circumstances, companies must pay much closer attention to questions of value capture. This means answering two questions: where to play, and how to win.

Where to play

In any process, there will be a stage that determines the flow rate for the process as a whole; this is known as the bottleneck for the process. A bottleneck is characterized as seen as a bad thing, a limiting factor in an otherwise smooth, even flow. Yet in a value loop enabled by an ecosystem, the bottleneck is an opportunity for value capture, precisely because it is what limits value creation. For a given value loop, the flow of information as measured by the value drivers that matter most (magnitude, risk, and/or time) will be at its lowest at one or more of the stages in the loop. The player in the ecosystem that determines the flow rate of information with respect to those drivers at that stage is in a position to increase the value of the entire loop and therefore in a position to capture more than its fair share of that increase.

Take, for example, the problem of patient compliance with medication regimens. At least half of patients are noncompliant in ways that compromise their health and result in significant cost increases for unnecessary care. The US Department of Health and Human Services estimates that the systemic cost of non-adherence runs up to $105 billion annually.

Currently, there is no IoT-enabled value loop because there is no automatically generated data on patient action. People have to log what they take and when. Consequently, the bottleneck has been at the Create stage due to the lack of an appropriate application of sensor technology.

David Rose, of the MIT Media Lab, has attempted to tackle this problem with GlowCap, a pill bottle with a “smart” cap that is connected to the Internet. A patient registers a GlowCap bottle, each of which has its own unique identifier, inputting the drug and dosage. In tandem with a reminder light, the bottle cap flashes to prompt a patient to take her medication; reminders escalate to text messages and automated phone calls. The loop is completed when a
patient responds to these prompts and removes the GlowCap from the bottle. The patient can use a button on the bottom of the cap to trigger a reorder of the medication. It appears to work: In a study cited by GlowCap, patient compliance increased from 75 percent to over 95 percent as a result of the technology. In effect, GlowCap addresses the bottleneck with … the bottle cap.

The value loop created by GlowCap is potentially far-reaching: The device creates and communicates data and enables the aggregation of data at the level of individual patients. This is of value to patients who value their health. It is valuable to the insurers that pay for their treatment. It is valuable to hospitals looking to reduce their readmission rates.

When a company enjoys the latitude to choose where it plays in a value loop, it should, in general, play at a stage where there is a bottleneck. Where it cannot control the bottleneck itself, it should seek to mitigate the power of whoever does control the bottleneck. This can require developing alternative suppliers, reconfiguring the value loop, or at the limit, creating a new value loop with a different bottleneck that the company can control.

In this case, the bottleneck is at the create stage, which, for now, GlowCap controls. Consequently, participants in this value loop would do well to consider the extent to which the “smart pill bottle” market will have sufficiently vigorous competition to prevent GlowCap from exerting pricing power over them. Alternatively, or perhaps in addition, they might consider participating in GlowCap’s early-stage growth—less as an investment in a specific start-up than as a strategic option that can reduce the possibility of being in a disadvantaged negotiating position in the future.

By breaking the bottleneck at the create stage in this value loop, GlowCap enables a larger one that depends upon the aggregation of data for populations of patients. This allows for analysis that can reveal the efficacy of treatment regimens in general, which is valuable to physicians who will know better what to prescribe, to insurers that can now establish formulas based on better data about what is likely to work and for whom, and for pharmaceutical companies that can now devise more efficient and effective clinical trials.

The need for appropriate privacy protections, such as the Health Information Portability and Accountability Act (HIPAA) determines informational content. Today, the create phase of medical data is at the aggregate stage. Efforts to break this bottleneck include the State of North Carolina’s PHARMACeHOME systems, which links pharmacy information with electronic medical records to track and identify issues with a patient’s medication. US Congressman Michael Burgess is taking that effort a step further with his draft legislation proposing integration standards for electronic medical records. The standards would mandate open and complete access to health data by authorized users, ensuring the discoverability and exchange of data—central to all successful IoT applications.

Note, however, that should the Aggregate bottleneck in this value loop be broken, when it comes to data on patient compliance with medication regimens, the bottleneck will shift again: perhaps to analyze, as companies struggle to make sense of the volumes of health data they now control, or it may well shift back to the create phase as companies seek to add sensors to more functions and thereby collect more data. After all, the ability to aggregate data has value only when there are data to aggregate. Ecosystem players connected with efforts to aggregate patient data might want to take a lesson from expert chess players and think at least two or three moves ahead: When the bottleneck they control is relaxed, where will it be next, and how will that affect them? Without this strategic foresight, one might end up simply creating value that others capture.

How to win

Picking the right place to play in an ecosystem is only half the battle. After all, if there is significant competition at the bottleneck stage, then the value created at that stage is likely to be contested at best. From a company’s perspective, an effective antidote to competition is creating a strategy that is difficult for competitors to imitate, even when they know what your strategy is. As an aside, note that end-use customers in consumer markets capture not profits but, rather, consumer surplus. See Power struggle, in this issue, for a discussion of the determinants of value capture between companies and consumers.

Like the where to play question, understanding how to win turns largely on the careful application of existing principles, but with a twist: Not only must companies compete on the basis of their products—they must also be alert to the ever-expanding opportunities to compete on information.

The fitness-monitor market provides an illustration of different levels of emphasis on product and platform. Polar Electro, a Finland-based company, has been making some of the most technically advanced, generally available heart rate and activity monitors since 1977. FitBit, founded in 2007, started with basic activity trackers and has quickly branched out into some measure.
more sophisticated devices. Each company’s products provide information on user activity with a scale, scope, frequency, accuracy, and so on, according to the requirements of the targeted customer segments.

So far, this seems a straightforward story of performance-based differentiation and competition. When viewed through the lens of information-based platform competition, however, some potentially important differences begin to emerge. Both Polar and FitBit are creating information-based value loops, and each sits firmly astride the create stage of those loops. Yet each is fashioning a different type of ecosystem to complete the loop for its customers.

For example, at the aggregate stage, both companies make their Application Programming Interface (that is, API) available to third parties so that, subject to user approval, data can be combined and analyzed. Fitness research and corporate wellness programs make use of this functionality. End-use customers, in contrast, do not write their own programs but, rather, rely on a population of readily available aggregators assembled by Polar and FitBit, respectively. Polar’s portfolio of data aggregators generally available to users consists of Google Fit and Apple® HealthKit. In contrast, FitBit has almost 40 different health-data aggregator partners, some aiming to capture a broad range of customer data, others more focused on specific tracking tools for diet, weight, sleep, and so on.

In addition, each supports behavior modification differently. Merely monitoring activity does not lead to lasting and effective change for most people. To close the information value loop in the activity-tracker market, the analysis of activity must lead to changes in action, which is accomplished via augmented behavior technologies, and FitBit and Polar approach this challenge differently.

The careful application of social networking can help those who are less intrinsically motivated to make the necessary changes. Simple “gamification”—the comparing of one’s activities with a group of others—is typically ineffective and often counterproductive: Many of those who join such groups are already quite fit and active, and for those who most need motivation and support, being constantly told that one is at the bottom of the heap can be demoralizing.

FitBit enables a more nuanced approach, providing the user the ability to create or participate in carefully designed user groups—a form of aggregation. This seems better aligned with supporting behavioral change among those not already highly motivated. In contrast, Polar seems to focus more on sustaining intrinsic motivation, allowing the user to share specific workout results via social media, or to access training advice based on user performance.

Polar’s ecosystem is more self-contained than FitBit’s because Polar is competing largely on the differentiation of its device: It creates data for its customers. Customers can then save those data to information platforms, which in turn connect to a wider array of services that, collectively, aggregate, analyze, and enable action. Polar’s bet appears to be that it will compete on the merits of its device, leaving to others the task of building the information ecosystem their device feeds.

In contrast, the value loop that FitBit enables is more reliant on an ecosystem of commercial application developers and other users connected via the FitBit platform. Rather than feeding an ecosystem, FitBit seems to be building one. These differences imply very different drivers of long-term success.

For example, for FitBit’s user networks to be effective, each user needs to be able to link up with other users with similar enough profiles, and that can require a large population from which to draw. Polar, on the other hand, is focused more on elite athletes. FitBit therefore depends to a larger extent on widespread adoption, while Polar must provide the performance and robustness demanded by higher-performance athletes. These differences are consistent with each company’s pricing: At the low end, a FitBit monitor is priced at under $50 with a high end of about $250; Polar’s entry-level product is over $100, with elite devices priced at $500 or more.

Where Polar is competing more on the basis of its product’s performance, FitBit is competing more on the basis of the platform it has created. When competing on performance, a deep understanding of the needs of targeted segments is essential. In addition, tight control over every aspect of product development or design that affects the performance your most important customers value most is indispensable. In short, when competing on performance, relying on an ecosystem can be a high-risk strategy.

FitBit’s strategic challenge is quite different. Its success is likely to turn more on creating a very large ecosystem of aggregators and users in order to set up at least three positive feedbacks: More aggregators means more users; more users means more aggregators; and, thanks to the benefits of appropriate social networks, more users means more users. Since smaller aggregators are unlikely to develop applications for multiple devices, and users are unlikely to use multiple monitors, FitBit is more dependent upon becoming a platform standard than is Polar, and so its willingness to invest heavily to draw large numbers of developers to its platform, and users to its device—and quickly—is likely to be a key component of long-term success.

… the more they stay the same

The world of business, like many fields of human endeavor, can fall victim to the innate human desire for newness. It is for this reason that it is crucial to look upon the Internet of Things with both an open mind and a certain crusty skepticism. We need to be creative and inventive to make the most of the new ways in which companies can create value thanks to IoT technologies’ new sources and types of information. Failing to capitalize on new sources of competitive differentiation and even entirely new business models might well leave currently dominant incumbents to the fate of so many before them: disrupted by those willing to embrace change.
Yet, of course, it is always possible to go too far. For every successful innovator, many more have failed because they forgot that despite the significance of the changes enabled by new technologies, there remain eternal verities that must be respected. In the case of the IoT, information as a new source of value does not change the need to capture value by competing and winning.

Companies are beginning to explore what the IoT means for them. Some changes will be incremental and relatively easy to adopt; others will be more nearly transformative and require a willingness to question some deeply held assumptions. In every case, our advice is to approach every IoT deployment with a clear understanding of the information value loop created by these technologies. It is the rise of information as a key source of value that suggests fundamental change.

Forewarned is forearmed, however: The need to capture value remains as acute as ever, and we advise that companies look at their positions in the information value loops they are creating with a pragmatic and practiced eye. The established principles of strategic differentiation, process flow, and network economics will go a long way toward revealing a path to long-term success.

It is by understanding both what has changed and what has stayed the same, and the importance of each, that we can find truth rather than merely cliché in the old aphorism Plus ça change, plus c’est la même chose. DR

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Note
2. Sometimes this distance is trivial—the nanometers between a sensor and the logic circuits on a nearly-atomic scale microprocessor; sometimes it is thousands of miles to a cloud-based big data cruncher.
3. Sometimes analysis and action is informed by simulations or analysis based on models created from data created outside a given loop, sometimes based on data created within a given loop, but every loop depends upon aggregated data, since a single data point is not a useful foundation for any generalization.
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