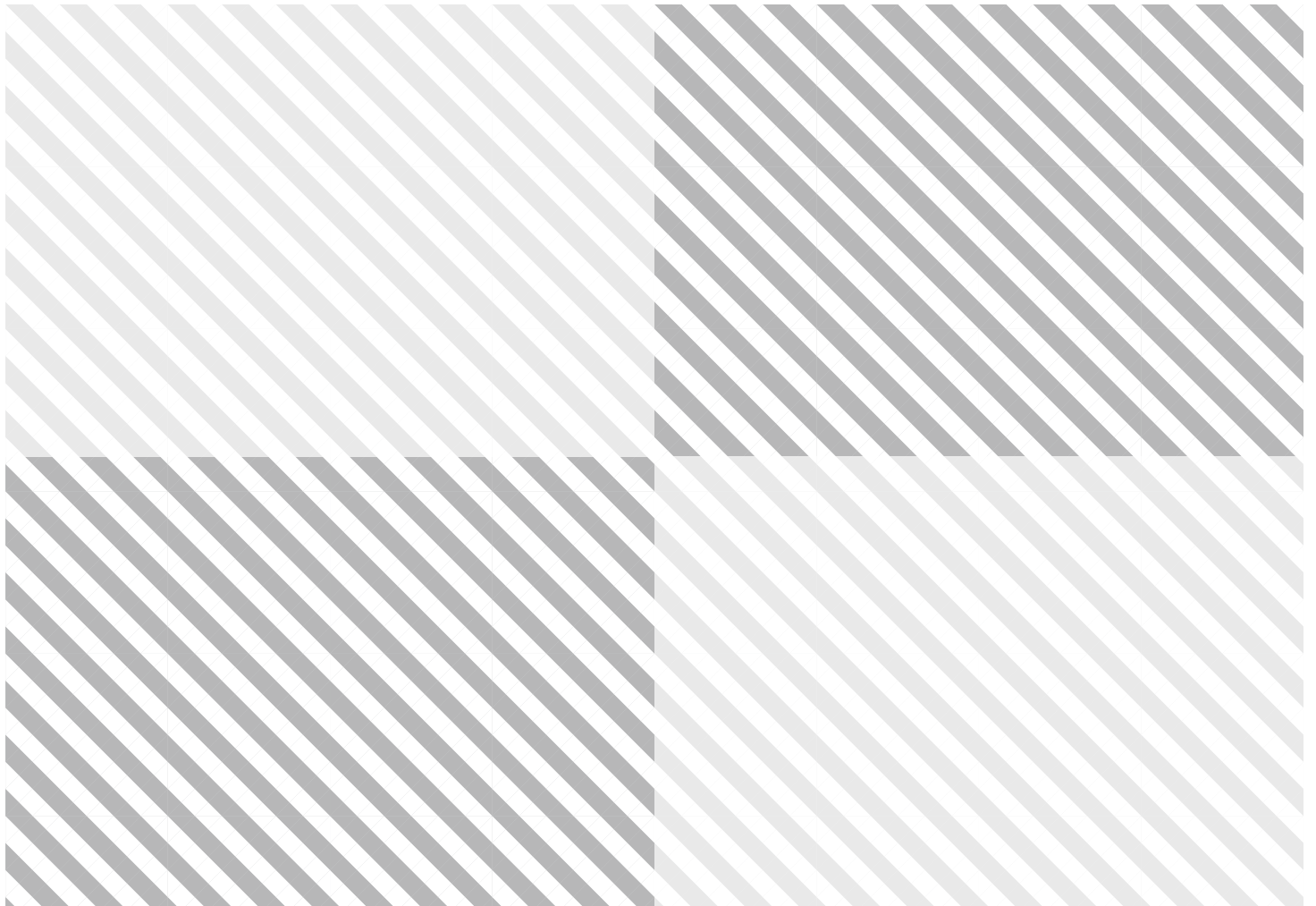


White Paper

How Technology Can Unlock the Growth Potential along the New Silk Road

In collaboration with Bain & Company

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Contents

3	Introduction
3	Overview and background
4	Primary challenges
6	Preliminary recommendations
7	Final thoughts
7	Information sources
7	Key contributors

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REF

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Introduction

At the 2016 Annual Meeting of the World Economic Forum in Davos, the Governors of the Supply Chain and Transport community mandated a study to understand the challenges and drivers of the New Silk Road. In many ways the New Silk Road serves as a living example of a key message that Forum reports have delivered in the past years as part of the Enabling Trade initiative: that countries can achieve significant trade benefits by reducing supply chain barriers. As the global economy continues to slow and the world searches for new growth engines, the Silk Road Economic Belt and the 21st Century Maritime Silk Road (aka One Belt One Road) offers a major development framework and opportunity for connectivity, international trade, and economic development. This year in collaboration with Bain & Company, the World Economic Forum prepared a concise document summarizing the improvements that advanced technology can bring to the New Silk Road initiative. The primary authors of this report, Wolfgang Lehmacher, Mark Gottfredson and Gerry Mattios, developed the preliminary recommendations through interviews and secondary research.

Overview and background

The ancient and historic trade route between China and Europe is coming back to life as one of the biggest infrastructure projects of the 21st century, with major implications for economies around the world. One Belt/One Road (OBOR) is an all-encompassing effort to restore old trade routes and streamline the transport of goods from Asia to Europe. It's a wide-ranging endeavour that stands to create a significant economic boost to more than 60 countries that represent 70% of the global population, more than half of global GDP and 24% of global trade.

China already has invested over \$51 billion and more than 100 countries have signed on – with free trade, collaboration agreements or other partnerships – in a project that involves more than 12,000 engineering contracts. When completed, OBOR could result in the creation of 70,000 new jobs, vastly improving the economies of such countries as Kazakhstan, which already is receiving significant sums in foreign direct investment (FDI). It could open the doors for small and medium enterprises from both Asia and Europe to enter new markets which may not be easily accessible today.

Primary challenges

OBOR has great potential, but it faces difficult problems, primarily in the speed and cost of shipping goods. Getting the trains running smoothly has been a big start, but it's just the start. For example, consider that when companies ship by air, they only need to deal with customs red tape and inspections at the beginning and end of a journey. Ground transport is less expensive, but it stalls each time you cross a border. Products not only move more slowly but also are subject to increased costs and may have to move from one truck or train to another. There are also tariffs, arbitrary delays and possible system manipulation. However, if OBOR operated with a single unified customs system and effective methods of tracking the products onboard, shipments could move smoothly across boundaries – combining the efficiency of air shipments with the low cost of land transport.

Fortunately, opportunities exist to help OBOR reach its full potential with technologies that improve infrastructure inefficiencies, connect people and create new opportunities. For example, companies could achieve real-time supply-chain visibility by deploying low-cost satellites accessible by iPhone or other handheld devices. Companies like Amazon have pioneered the use of satellites. Another move that could dramatically help would be for Asia-Pacific Economic Cooperation to introduce a standard customs procedure for OBOR freight by consolidating requirements and developing a common IT platform. These are moves that ensure basic data – also informally referred to as “small data” – is readily available. The steady flow of consistent data could serve as the foundation for compounded opportunities and open the door to digital enablement.

For OBOR countries, this path to an efficient and cost-effective New Silk Road begins by systematically addressing four digital supply-chain pain points. We'll look at them one by one.

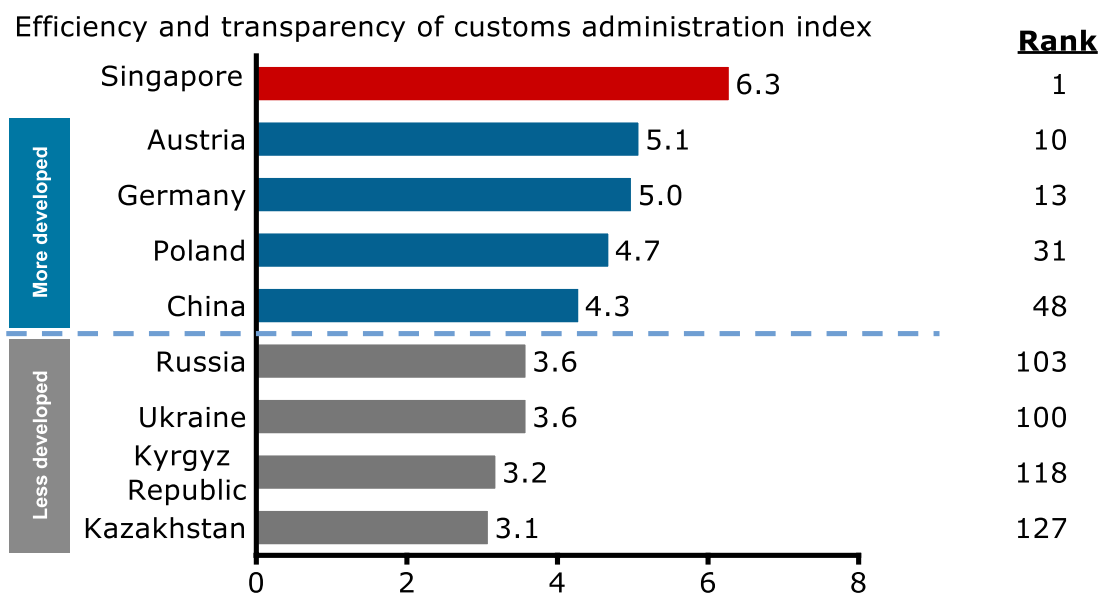
Speed is the first of these obstacles. Even though advances have improved the time it takes to move goods between multiple points in China and Europe, there are still major drawbacks. For instance, the lack of state-of-the-art warehouse

and inventory management systems – including capacity-planning and supplier collaboration – results in poor use of manpower and resources.

A second roadblock is inconsistency (see Figure 1). Inefficient customs clearance procedures cause irregular and slow service. It's a problem that can be tackled by upgrading the IT infrastructure in all countries along the Silk Road. The answer may be simple, but the effort and cost are substantial. It requires implementing systems that standardize the clearance of goods while using common templates and replacing human decision-making with artificial intelligence processes that can speed up customs clearance. Today, the lack of coordination among multiple border agencies and non-transparent border administration procedures contributes not only to slower shipments but also opens up the potential for system manipulation.

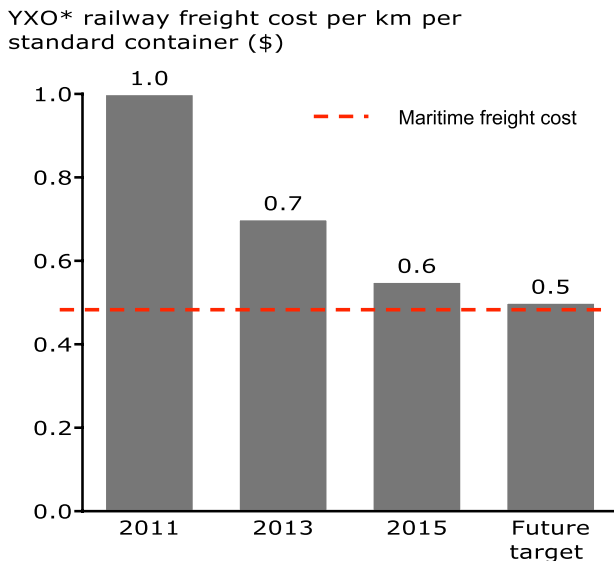
Costs are the third major pain point. While the overall costs of operating the rail route from China to Europe have dropped dramatically, there still is much room for improvement (see Figure. 2). For example, last mile delivery costs, especially in rural and sparsely populated areas, can be reduced through real-time optimization of delivery routes and even with crowd-based pick-up and delivery. IT infrastructure advances and innovative new digital capabilities could significantly help lower labour and other direct costs for companies; for example with automation replacing such labour-intensive activities as loading/unloading, sorting paperwork and optimizing capacity. Meanwhile, warehouse automation, which requires a major long-term capital investment, can reduce the high indirect costs that result from shipment delays while also increasing the overall supply-chain resilience. These boosts would provide transparency that can help companies better manage such risks as those caused by political instability. Transparency into potential threats and disruptions is an ingredient for scenario planning and modelling, a major approach to risk management. Such systems also will help to reduce the direct and indirect costs such as lower onboard insurance.

Figure 1: Customs consistency varied significantly among OBOR countries



Note: Score from 1-7, with 7 being the highest efficiency
 Source: World Economic Forum; *Global Enabling Trade Report 2014*

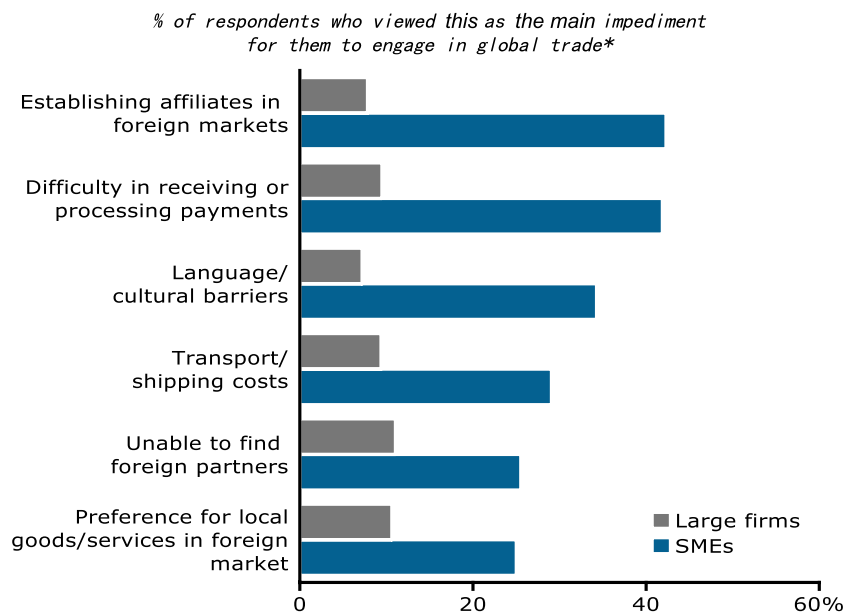
Figure 2: China-Europe railway costs have reduced significantly



*YXO(YuXinOu) railway from Chongqing, China to Duisburg, Germany opened in 2011 and currently need 13 days from China to Europe
Source: Xinhua Agency

A final obstacle is the lack of visibility of goods along the supply chain once they enter the New Silk Road. Despite efforts aimed at generating improvements, visibility still is woefully poor. There's a scarcity of real-time tracking information, and what information is available tends to be scattered and unstructured. Information typically is not transmitted along with the cargo, so it's difficult for the many stakeholders to know when a shipment will arrive and plan operations in advance. This situation could be vastly improved with distributed ledger technology (DLT). DLT allows for distributed and real-time multi-party tracking, management of letters of credit, and visibility of assets and liabilities. DLT uses block-chain technology, a shared digital ledger, for a continually updated list of all transactions. The decentralized ledger keeps a record of each transaction that occurs across a network. With this technology, end-customers would, among many other advantages, be able to track a shipment in real time, viewing progress live on a single electronic map. Today's e-commerce consumers are now accustomed to having such visibility; OBOR shippers should have the same level of expectation. Companies like Flexport are pioneering the use of integrated document services to make shipping across regions much easier. As such technologies emerge and set new standards, they could make customs delays and long wait times a thing of the past.

Figure 3: Lack of access to new markets is key impediment for SMEs to engage in global trade



*This questionnaire surveyed 8,400 firms involved in imports and exports in the US and Europe, and respondents rated the severity of 19 obstacles on a 1-5 scale, with 1 indicating no burden and 5 indicating a severe burden. This graph shows the % of SMEs and large firms rating selected impediments as 4 or 5 on the 1-5 scale; firms with between 0 and 499 employees in the US are categorized as SMEs.
Source: WTO World Trade Report 2016; US International Trade Commission; World Economic Forum; Bain analysis

Preliminary recommendations

By investing in the IT infrastructure to address these pain points, companies and countries will generate basic data which, as it matures and is structured, becomes invaluable when accumulated as “big data” – complex data sets that can be collected and analysed for insights that serve as a starting point for improving everything from operations to the development of services.

IT overhauls in OBOR countries would make it possible for stakeholders to collect and benefit from three overall types of data: user data, such as customer identity and digital activity; machine data, such as device and service log data; and enterprise data, such as supply chain and marketing data. Companies analyse the data to gain insights into consumer behaviour, social network activity and device performance, and to generate micro-segmentation. They then apply what they learn to improve internal processes and existing products or services, build new offerings, or transform their business model for greater success.

With such systems in place, three key areas of opportunity will emerge along the New Silk Road.

First, small and medium-sized enterprises (SMEs) will have fast and affordable access to new markets. Today, market access is a key impediment for these companies. They struggle to establish affiliates in foreign markets, have difficulty receiving or processing payments and face high shipping costs among other obstacles (see Figure 3). Indeed, HP, Lenovo and others already ship goods on the New Silk Road. But the real opportunity is for SMEs, such as, for example, a small European producer of high-quality machinery or healthy food.

Upgraded technology could level the playing field. SMEs could create market intelligence reports based on the real-time market data enabled by the internet of things and cloud services. This would help them understand product supply-and-demand dynamics and quickly adjust production plans, track pricing, predict future price trends based on historical behaviour, and identify and react to new market demands that are not fully satisfied. Also, DLT could help these smaller and medium-sized companies reduce counterparty risk and minimize fraud. In all, the market access gains made by SMEs are expected to boost GDP in OBOR countries by 4%-7%.

Another major benefit that big data capabilities can create for OBOR markets is explosive growth in innovative and collaborative business models. Throughout the world, many industries have been disrupted by collaborative consumption and asset-sharing. Now, with the right IT in place, the sharing opportunities appear endless for companies and

countries along the New Silk Road. For example, regional logistics providers could leverage each other's infrastructure outside their coverage area and build a seamless, real-time collaboration platform. On-demand manufacturing and warehouse management platforms could connect markets with factories. To enable such sharing, again DLT provides significantly increased asset transparency between market participants and reduces information asymmetry. In addition, the emergence of a big data-inspired sharing economy will create employment opportunities in OBOR countries for talent with digital proficiency, expertise in logistics, transport and international business, and multilingual skills – this in a region that is now grappling with high unemployment.

Imagine available space in container cars travelling across a Central Asia desert advertising their readiness to load goods – potentially at a discount – and connecting with shippers en route looking for a cost effective and efficient way. Centuries after it was established, the New Silk Road could define a new quality of trade between East and West – but only if the right technology is in place.

Finally, smart technology and big data will attract even more FDI into OBOR countries. Already, information/IT services is the fastest-growing segment in China's outward FDI flow. In 2015, China invested \$18.9 billion in such projects, a sum that grew by 39% over 2014 and represents around 13% of China's total FDI.

Final thoughts

OBOR offers to open up more opportunities for global connectivity, international trade, and economic development. The revived trade corridors, if combined with smart technology investments alongside new traditional industrial infrastructure, can create exciting economic gains and social benefits for its participants. FDI specifically dedicated for the creation or adoption of new technologies could broaden the economic base in high-growth developing countries participating in this major economic framework. Take for example, Kazakhstan. The country could leverage such advances as 3D printing to develop its manufacturing industry. It could also develop into a key trading hub similar to Dubai, which transformed itself from a fishing village to a global centre of trade, finance and other business services. SMEs could make their money selling IP for these technologies and shipping end-products to customers. The identification of these and other potential areas of collaboration between the private and public sectors can make countries alongside the 'New Silk Road Initiative' ease trade flows and guide practical action to eliminate the most pressing barriers to business.

Information sources

Analyst reports and Expert interviews
China Xinhua Agency
China Ministry of Commerce
China National Bureau of statistics
China State Administration of Foreign Exchange
United States Department of Transportation
US International Trade Commission
WEF Global Enabling Trade Report (2013 and 2014)
World Trade Organisation – World Trade Report 2016

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