Viewpoint: Cost-Effective Healthcare Developments and Research Opportunities in China, India and Singapore

Jochen Wirtz, Chen Lin, and Gopal Das

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1 Jochen Wirtz is Professor of Marketing and Vice Dean MBA Programmes, NUS Business School, National University of Singapore, jochen@nus.edu.sg.
Chen Lin is Assistant Professor of Marketing, China Europe International Business School (CEIBS), Shanghai, PR China, linc@ceibs.edu.
Gopal Das is an Associate Professor of Marketing, Indian Institute of Management Bangalore, India, gopal.das@iimb.ac.in.
Abstract

Purpose: This article shows how major service developments in China, India, and Singapore offer different perspectives on how cost-effective service excellence (CESE) can be achieved in healthcare. Resulting research opportunities are highlighted.

Findings: Digital platforms and related technologies seem more advanced in China than in most Western economies in terms of their application, user acceptance, and market penetration. The resulting digital ecosystem enabled innovation that provides CESE in digital healthcare. Second, India benefitted from a large healthcare market without excessive regulation, litigation risks, and interlocking stakeholders. These allowed a number of organizations to achieve CESE through new business models and frugal innovation. Likewise, Singapore is a global leader in health outcomes while it also has one of the lowest healthcare cost per capita. This is achieved through focus on costs and productivity, standardization, and digitization, while being intensely focused on health outcomes and the patient experience.

Research implications: The three countries examined stand out in the ways they achieved CESE in healthcare and offer interesting research opportunities. China has fully integrated digital platforms with rapid innovation capabilities, India has extremely high volumes that met focused service factory and frugal service innovation approaches, and Singapore is a tightly controlled healthcare market with high levels of discipline, both facilitated by its culture and small size. These markets invite research to explore their successes in more depth and deduct lessons for CESE in healthcare elsewhere.

Originality/value: Together, the author team has decades of managerial, executive teaching, and research experience related to service in Asia. The observations and reflections in this article originate from this unique perspective.

Keywords: Digitization, platforms, cost-effective service excellence, frugal innovation, healthcare.

Paper type: Viewpoint.
Introduction

This viewpoint article is based on the personal reflections of the three co-authors and their extensive managerial, executive teaching, and research experience in Asia and the world. We identify and discuss in this article two major themes, namely digitization and cost-effective service excellence (CESE) in the healthcare context. Here, CESE refers to “a state when an organization delivers simultaneously high levels of customer satisfaction and high levels of productivity” (Wirtz and Zeithaml, 2018, p. 61). In this article, we focus on healthcare services as it tends to be largest service sector in most developed economies with intense cost pressure and service quality issues at the same time (Berry, 2019; Kraus et al., 2021). Furthermore, we focus on three Asian countries (i.e., China, India, and Singapore) as they provide the following unique insights for service academics and managers globally with exciting implications for research and practice:

First, digitization, digital transformation, and related technologies (e.g., mobile, artificial intelligence (AI), and analytics) seem more advanced in China than in most Western economies in terms of their application, user acceptance, and market penetration. The regulatory environment (e.g., consumer privacy regulation) and consumer psychology (e.g., consumer privacy needs and motivation) in China combined with an effective lock-out of Western digital platforms (e.g., Google, Facebook, Twitter and YouTube do not have licenses to be used in China) resulted in a unique digital ecosystem. This ecosystem is in many ways different and arguably more dynamic, innovative, and ubiquitous than, for instance, the ecosystem in the US. Where American digital platforms entered, they often lost to their Chinese competitors, mostly by being out-innovated (e.g., Didi beat Uber largely though fast customer-centric innovation; Wirtz and Tang, 2016). China provides innovative case examples that can stimulate thinking on
what might be possible in other markets.

Second, a number of business model and frugal service innovations related to CESE have
had phenomenal success in India, especially in the healthcare context. India has benefitted from a
large and private healthcare market that allowed the creation of focused service factories and
frugal innovation. Likewise, Singapore has one of the most cost-effective healthcare systems
globally with one of the lowest shares of GDP of developed countries (around 5% of GDP
compared to the OECD average of 9% and the US with 17%). Yet, Singapore is globally leading
in terms of healthcare quality indicators (e.g., life expectancy of over 82 years and a maternal
mortality ratio of 10 per 100,000 live births). Bloomberg (2014; 2018) regularly ranks Singapore
as the number 1 or 2 globally in terms of healthcare efficiency, whereas the U.S. ranks near the
bottom (Wirtz, 2019). In this article, we examine the business ecosystems in China, India, and
Singapore with a view on potential research themes for the global service community.

Digital China

Digital China has unique characteristics as it largely developed its own ecosystem with no or
only minimal involvement of the supply-side firms that dominate Western markets. These
typically include the ‘FAANG’ firms’ ecosystems of Facebook, Amazon, Apple, Netflix, and
Alphabet. Instead, massive domestic platforms developed in China such as Alibaba and Tencent
that dominate and effectively managed to organize the digital presence of China’s consumer base
and the vast and digitally less savvy SME population. Initially lacking infrastructure and antitrust
regulations on technological giants, Chinese SMEs have learned lessons on giving up their data
sovereignty, customer ownership, and the rising cost from monopolistic digital platforms much
earlier than their Western counterparts. As Chandy and Narasimhan (2015) point out, the
changes that the contemporary West has experienced (or is yet to experience) are scattered over
decades, whereas emerging markets are undergoing change that is compressed in time. Especially when it comes to digital innovation and marketing agility, stricter regulation pertaining to data privacy and security may make it difficult for Western firms to pursue marketing agility (Kalaignanam et al. 2021).

An interesting observation when comparing unicorns in China to those from Silicon Valley is that US innovation has largely been technology-driven. In contrast, China’s business practices used to be rudimentary and government regulation on antitrust, privacy, and IP-protection were inadequate. The relatively lower IP and consumer privacy protection also resulted in faster innovation and more nimble firms (Kane et al. 2019). For example, Didi out-innovated Uber in China with the latter deciding to exit the market (Wirtz and Tang, 2016). Therefore, Chinese firms focused more on innovation and improvement in the customer experience and journey, and the service model itself.

On the demand side, China has been the world’s most digital and efficient consumer market, while it has at the same time larger gaps in income, education, and social mobility of its 1.4 billion population than most Western economies. China’s advanced digital infrastructure supports highly digital and intelligent consumer experiences and journeys that lead to a “leapfrogging effect” of its previously underdeveloped emerging consumer markets. Its Internet development has grown at a faster rate than its urbanization. China’s anticipated urbanization rate of 75% by 2035 translates into a social migration of 420 million people, a number larger than the entire US population. These digitally-empowered consumers, mostly referred to as Gen-Z, are reported to have the strongest spending power in the world with 13 percent of household expenditure as compared to 4% in Germany and France. This is due to the “six wallets effect” (i.e., two single children who married and have four parents to support them) as they are the
second generation of the one-child policy (note, this was relaxed in 2015 to a two-child policy). They also show high patriotism for domestic Chinese brands and a growing need for recognition and self-expression.

**Digital healthcare in China**

Innovation in healthcare is needed urgently as cost pressure is intense and service quality, both in terms of clinical outcomes and patient experience, is critical for the wellbeing of our societies (Berry, 2019; Ding et al, 2019; Kraus et al., 2021; Phares et al., 2021). To address these challenges, China’s online healthcare services market has been growing fast. According to VCBeat Research Report (2020), the market reached USD30 bn in 2020 and is projected to grow at a compound annual growth rate of 53% for the next three years. In fact, markets seem to be at an inflection point with regard to productivity gains and service industrialization offered by developments in 5G, augmented reality (AR), artificial intelligence (AI), and analytics (c.f., Wirtz et al., 2018; Wirtz, 2019). In China, healthcare going digital is almost a matter of must-happen because of a lack of medical resources in rural areas; medical personnel and hospitals are heavily concentrated in the big cities. However, quality of care and patient experience cannot be compromised, and both patients and doctors have to be well-adapted to digital healthcare. Here, China can provide a unique testing ground for achieving CESE.

The Chinese government is gradually developing the regulatory framework to support the growth of online healthcare which led to the entry of heavy weights like Alibaba and JD.com with their enormous capabilities in traffic generation, promotional pricing, and frictionless customer journey design. To compete, even traditional pharma is entering healthtech in a major way. For example, AstraZeneca China is transforming itself into a platform service provider for patients, doctors, hospitals, and even other pharmaceutical companies. Note that China is
AstraZeneca’s largest overseas market, contributing about 20% of total revenue of USD27 bn in 2020.

AstraZeneca China entered the online healthcare market with a USD 500 million equal-equity joint venture with HillHouse Capital Management to co-found the independent company, Yili Jiankang (http://www.yilijk.com). AstraZeneca has an excellent reputation in the medical community so that doctors trusted this platform backed by AstraZeneca, plus it had a large team of 4,500 well-trained detailing representatives, which was by far the largest among all pharmaceutical MNCs in China. The large number of detailing representatives allowed AstraZeneca not only to penetrate deep into China, but also use its intimate knowledge about doctors to invite the most suitable ones to join its platform. Ideal doctors, according to AstraZeneca’s definition, were those who already had their own sizable patient base as they would contribute traffic to the platform, resulting in low acquisition cost per patient. Furthermore, once doctors agreed to join, the detailing representatives would do all paperwork for them, from the registration with the government for the license to practice online to the account setup with the online platform. In other words, the representatives were able to eliminate regulatory “red tape” and other pain points for the doctors.

A few salient characteristics of the platform included a firm focus on low cost and high-quality care. For example, patients’ drug-taking compliance was monitored (with permission) and shared with their doctors to ensure quality healthcare. AstraZeneca drove the marketing of this digital platform with the aim to reduce transaction costs for both patients and doctors in the initial phase, and later shifted the emphasis to value creation by fostering long-term relationship between the key parties on its platform using AI and analytics for medical and behavioral insights (c.f., Rangaswamy et al., 2021). AstraZeneca also leveraged its global medical resources
to provide up-to-date healthcare content via posts, short videos, and live streaming to educate, engage, and interact with their doctors and patients. Thousands of sales representatives transformed to online “agents” for their previously offline-engaged doctors to gain traffic, manage patients, and sell products on this platform. These strategies and platform approach enabled this start-up to achieve CESE mostly to what Wirtz and Zeithaml (2018) called the operations management (OM) approach that effectively allowed it to deploy scalable systems and technologies while focusing on service excellence.

AstraZeneca started this project in mid-2020, the platform became operational in January 2021, and by the end of March 2021, over 40,000 doctors with 3,800 affiliated hospitals and clinics across 31 provinces had signed up. This was by far the fastest and most successful healthtech start-up in terms of number of active doctors in an online healthcare business globally. On one hand, China’s recent healthcare policy reform with the aim to cut medical costs resulted in a decline in prescription drug sales for foreign pharmaceutical firms. Thousands of AstraZeneca’s sales representatives were no longer allowed to enter public hospitals. On the other hand, it accelerated the digitalization processes of traditional pharmaceutical companies, making China a unique experimental ground for online healthcare services.

Cost-effective and excellent healthcare services in India and Singapore

The global healthcare sector is far from achieving CESE. Rather, it is often notoriously poor in productivity and quality (Berry, 2019; Wirtz, 2019). However, selective healthcare groups in India and the public healthcare sector in Singapore have managed to overcome these challenges.

Narayana Health delivers CESE in India

Narayana Health has been successful in delivering cost-effective healthcare services with high patient satisfaction and excellent clinical outcomes (Wirtz and Zeithaml, 2018). Narayana
Heath is one of the lowest-cost cheapest healthcare provider in the world with high patient satisfaction. An endoscopy costs about USD14, a lung transplantation USD7,000, and an open-heart triple bypass surgery USD2,400 (Bloomberg, 2019; Wirtz, 2019). In spite of the low costs (and prices), Narayana delivers service excellence as is shown by the many awards it won which include the Gold Award in Customer Service by Asian Hospital Management Awards 2014 (Hospital Management Asia, 2014), the Frost and Sullivan India Healthcare Excellence Awards—Healthcare Provider Company of the Year 2012 (Frost & Sullivan, 2012), and the Economist Business Process Reengineering Award 2011 for reducing health-care costs by using mass-production techniques. Dr. Shetty, founder and chairman of Narayana Health, was even called the “Henry Ford of Healthcare” (Economist, 2011). Narayana performs more heart surgeries at a lower cost and a lower mortality rate than leading American hospitals (c.f. Wirtz & Zeithaml, 2018).

Narayana uses two strategic pathways towards CESE in a highly successful manner (Wirtz and Zeithaml, 2018). First, it uses a focused service factory strategy whereby Narayana focuses on serving the largely homogeneous needs of tightly-defined target segments. It decided against building general hospitals that would have intertwined many service processes and patient requirements, and therefore would have been complex and expensive without the same quality output (Global Health and Travel, 2014; Govindarajan and Ramamurti, 2013; Wirtz, 2019). Instead, it built separate focused facilities for cardiac surgery, neurosurgery, and gastro surgery, amongst others. This focused factory approach allows simplicity, repetition, homogeneity, and experience that breed competence, improvements, innovation and lower cost (Skinner, 1974). These, together with Narayana’s leadership and service culture that focused on service excellence, resulted in excellent clinical outcomes and experiences.
The principle of a focused service factory is simple. A specialist service operation that delivers a single product to a tightly defined target segment will be better, faster and more productive compared to a generalist facility that must cater to a wide range of customer needs. “If a service fits the requirement of a focused service factory, it will win hands down in most cases” (Wirtz, 2019, p. 102).

Second, Narayana uses a dual culture strategy which focuses the entire organization on the simultaneous pursuit of service excellence and productivity, and makes both integral parts of its culture. Dr. Devi Shetty stated, “The notion that ‘if you want quality, you have to pay for it’ went out the window a long time ago at Narayana Health” (Global Health and Travel, 2014, p. 44). Text messages on the previous day’s expenses are sent to senior employees to encourage cost consciousness and motivate them to generate ideas on how to reduce costs and improve processes (Govindarajan and Ramamurti, 2013). Frugal innovation also plays a role. For example, the hospital explored how to reuse medical devices that are sold as single-use products – the $160 steel clamps that are employed during open-heart surgery are now sterilized and reused up to 80 times (Bhattacharyya et al., 2011; Govindarajan and Ramamurti, 2013).

Narayana Health is only one of several examples of Indian healthcare groups that achieved CESE through a combination of focused service factory and dual culture strategies. Others include the famous Aravind Eye Care and AIG Hospitals (Govindarajan and Ramamurti, 2013; Rangan and Thulasiraj, 2007; Wirtz, 2019). For example, due to frugal innovation Aravind Eye Care performed over 450,000 eye surgeries annually at a cost of USD18 per patient (Rangan and Thulasiraj, 2007; Aravind, 2021). Aravind Eye, also called the “McDonalds of Eye-Care”, has been successful in maintaining high clinical quality and high customer satisfaction at rock-bottom costs by deploying its unique assembly-line approach that enabled it to increase its
productivity tenfold (Aravind, 2021).

Similarly, AIG Hospitals has become the world’s largest single specialty gastric sciences hospital with over 1,000 beds. Its cost-efficient business model is driven by economies of scale and process efficiencies which allowed it to provide large-scale, high quality, and affordable healthcare. For example, its costs and price of a colonoscopy are USD17 and USD24, respectively. These compare to a typical cost and price in an US hospital of USD2,500 and USD3,600, respectively. The quality of AIG Hospitals is so good that it is the only hospital the Mayo Clinic, arguably one of the best hospitals in the US, partners with in India (AIG Hospitals, 2021).

**Singapore’s public healthcare services**

Singapore’s leadership at the Ministry of Health pushes public healthcare providers, which cover some 80% of in care patients, towards CESE using transparency and benchmarking of key performance indicators that range from average wait times, successful surgery rates, infection rates, and cost per treatment. For example, Yishun Health, a regional health system which is part of the National Healthcare Group in Singapore, was implementing a patient value compass to track outcomes across four categories: clinical, functional, stakeholder experience, and cost-effectiveness/productivity. This intense focus on healthcare outcomes and patient experience combined with innovation on how they can be delivered at reduced costs is a key driver of CESE in Singapore’s healthcare system.

For example, Singapore’s Ministry of Health has been implementing an electronic medical record system called Next Generation Electronic Medical Records which standardized patient records throughout Singapore from data capture, information processing, benchmarking, and enforcement. In addition to vastly better information, the records would be easily accessible
to any physician or clinic a patient grants access to and thereby reduces duplication of data capture, testing, and administrative load. The potential efficiency and quality gains such data can provide in combination with AI (e.g., in interpreting PET scans and suggesting treatment schedules; c.f., Bornet et al., 2021) are substantial.

Furthermore, Singapore extensively uses the operations management approach to achieve CESE (Wirtz and Zeithaml, 2018). Part of this approach includes pushing its entire public healthcare sector to streamline equipment, medication, and consumables procurement and usage to improve efficacy, expertise, and cost-effectiveness. For example, instead of letting knee replacement implant types proliferate, a few standard types are selected and their use is monitored (e.g., physicians have to justify if they use other types of implants). Volume lowers costs, reduces process variability, allows process streamlining, eases process improvements and innovation, enhances training effectiveness, and overall improves the expertise of healthcare providers with this particular process and implant (Wirtz, 2019).

Other ways Singapore pursued CESE include technology (intuitive self-service online reservation systems) and management of patient behavior (e.g., via text messages to confirm appointments, reminders a few days before the appointment, and links to reschedule appointments if needed, deposits to be paid for future visits that are forfeit if patients do not show and have not rescheduled).

Overall, patient choice, behavior, and autonomy are tightly managed with benefits for both providers and patients. The outcome is that patients are not over-medicated and over-tested (as there is little local lobbying and litigation risks are lower than in the US), get mostly medication that works and is procured via system-wide tender processes (typically generic drugs), expensive medication with no or only marginal incremental benefits is not freely offered
patients can request for them but may have to make out-of-pocket contributions towards their cost), and patients are nudged to keep to their scheduled doctor visits.

**Discussion and research opportunities**

The healthcare sector is arguably the most important sector in the global economy in terms of consumer wellbeing and GDP. Aging, lifestyle diseases, and ballooning expectations of the populations especially in developed economies are increasingly putting strain on healthcare systems (Berry, 2019; Ding et al, 2019; Kraus et al., 2021; Phares et al., 2021). Furthermore, in much of the developed world in general, and the US in particular, the complications of the interlocked stakeholders have resulted in an almost stalemate healthcare market that makes business model innovation difficult. Dr. Shetty quipped, “The best place on the planet for a hospital to be built is on a ship parked outside U.S. waters...U.S. regulations make it very difficult for hospitals to innovate and control cost” (Graboyes, 2021). Furthermore, hospital groups, insurers, and big pharma heavily lobby regulators and policy makers and jealously guard their high, and some would say, excessive margins. To make matters worse for the por and underserved, innovation in these countries has mostly focused on creating products and services for rich and/or insured patients who tend to be on the global “top of the pyramid” (Christensen and Overdorf, 2000). Combined with excessive regulation, low risk tolerance, high litigation risks, regulators seem ineffective in driving change. In contrast, the CESE approaches in China, India and Singapore’s healthcare markets in may offer regulators and market players alike new perspectives and alternative pathways for innovation towards CESE with interesting opportunities for service researchers.

In particular, China’s digital markets in general, and its healthtech market in particular, and the overall healthcare markets in India and Singapore developed in very different
environments compared to their Western counterparts. All three countries can be viewed as standing out in different ways that offer interesting research opportunities. China has highly integrated digital platforms with rapid innovation capabilities that have recently been extended to healthcare. India has extremely high volumes (e.g., of heart surgeries) that enabled focused service factory approaches. Finally, Singapore is, facilitated by its culture and small size, a highly controlled public healthcare market (e.g., that can push standardization of public healthcare) with high levels of discipline (e.g., by its doctors and hospitals) that allow the system-wide implementation of standardization and other practices to drive clinical outcomes, positive patient experiences, and low cost. The developments in these markets can be considered natural experiments that show how these relatively extreme environments impact ecosystems, their actors, and outcomes. In other words, they offer interesting environments for service research and we highlight a few suggestions below.

First, research suggests that weaker IP rights protection leads to lower return on investment in innovation (Zhao, 2006). China’s online firms operate in an environment with relatively little IP protection which makes business model innovation, rapid innovation, and an intense focus on frictionless customer journeys and integrated platform ecosystems (e.g., super apps) more important for capturing value and protecting market share. Current research neglects these topics (c.f., Lu et al., 2020; Mariani et al., 2022; Mustak et al., 2021). However, it would be interesting to see whether these factors could have similar effects in Westerns contexts. For instance, would reduced IP protection in Western markets lead to more competitive markets with increased focus on non-IP-protected aspects of value propositions and shorter innovation cycles? Of interest would also be in-depth research on what makes Chinese digital companies in general, and its digital healthcare providers in particular, so much more agile, fast, and customer centric
than most of their Western counterparts. Given the business environment, market and cultural differences, new insights might emerge. Interestingly, the Chinese government recently began enforcing the National Security Law (e.g. on Didi and many other tech giants) in a more robust manner, which might provide a natural experiment for service researchers to explore the impact of regulation on innovation and strategic focus of these firms as they increasingly need to manage the tradeoff between speed to market and navigating governance and regulation (c.f., Kalaignanam et al. 2021).

Second, China’s relatively lower regulatory control over consumer data privacy can facilitate research on privacy and the wider field of corporate digital responsibility (CDR; Lobschat et al., 2021). Chinese consumers seem to show higher acceptance of transparent consumer data, transactional data, and data integration across platforms compared to their Western counterparts. China’s super apps make consumers transparent to the platforms they transact on. It seems, Chinese consumers are willing to trade-off convenient and virtually frictionless online service for less privacy. In addition, it is noteworthy that data compliance in China is multifaceted and highly sensitive under China’s recent Cybersecurity Law, paying special attention to multinationals with operations in China. China may offer researchers again a natural experiment on the effects of privacy regulation and may hold lessons for Western markets where younger internet users tend to have less and less privacy concerns.

Third, common to the success stories discussed are their pursuit of one or several strategic pathways towards CESE. These include the focused service factory approach (e.g., Aravind Eye Care), dual culture (e.g., Narayana Health), and/or the operations management approaches and digitization (e.g., AstraZeneca, AIG Hospitals, and Singapore’s public healthcare system). There seem to be few of such examples in Western markets. China’s digital approach to
healthcare may also hold promised for Western markets and requires besides the enabling technologies (e.g., cloud technology, frictionless user interfaces, and data flow and control) the creation of entire ecosystems that protect doctor-patient rights, deal with insurance and payment, and have effective regulatory supervision and compliance. In a Western market, we expect that it would require a large systemic player to take the lead and get buy-in from the many stakeholders involved. That said, however, in our view the most important facilitating factor is the willingness to accept that online is indeed the future for healthcare services. As these are pressing issues, we invite global service researchers to explore how these pathways to CESE can be applied more effectively, more extensively, and on a much larger scale to achieve low cost–high quality healthcare (Wirtz, 2019). In particular, we need more research on the challenges and their mitigation on how CESE business models, services, and even individual solutions can be implemented. Here, the roles of regulators, private (e.g., in India), and public (e.g., in Singapore) healthcare providers, and public-private collaboration need to be understood better.

Fourth, to establish the performance differential in terms of clinical outcomes, patient experience, and productivity (i.e., cost) benchmarking studies seem particularly relevant. Then, follow on work to dig deeper and to understand the underlying enablers and causes of the differences observed.

Finally, one approach for encouraging innovation that seems to have been successful in many other industries (e.g., fintech) is developing regulatory sandboxes. In particular, we believe that creating more regulatory sandboxes in digital spaces and healthcare may allow alternative and better business models emerge also in the West. While we understand that risks involved in healthcare services are higher than, for instance, those in financial innovation, progress is needed urgently in healthcare and current approaches do not seem effective. The potential benefits are
significant as has been shown in India where the necessity for low cost–high quality healthcare combined with India’s entrepreneurial outlook, risk capital and focus on social impact yielded role model organizations the world can learn from. Perhaps, service research can help to better understand patient risks, perceptions and attitudes, and devise better operating models and business platforms that hardwire CESE into healthcare systems in many more countries.

In sum, we hope this viewpoint encourages more research on the idiosyncratic paths to CESE in China, India, and Singapore’s healthcare service markets. We believe that such endeavors can provide novel impetuses for service research.

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