

When Culture Trumps Economic Laws: Persistent Segmentation of the Mobile Instant Messaging Market

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Abstract. This paper discusses the general characteristics of the mobile instant messaging market from a competition point of view. Positive feedback and indirect network effects, which strongly influence the mobile instant messaging market, tend to facilitate the development of one quasi-monopoly. Even after several years of market maturation, however, no mobile instant messaging application has yet established such a monopoly, seemingly contradicting economic theory. In order to resolve this contradiction, this paper deconstructs the global instant messaging landscape using theoretical insights into local bias and distinct cultural needs. We find that differences between high- and low-context cultures provide the most compelling explanation for market fragmentation and derive possible strategies for single applications' global market expansion.

Keywords: instant messaging, network economics, information economics, monopoly, shared market

1 Introduction

Instant messaging, often abbreviated simply to IM, first became popular in the late 1990s with desktop applications like ICQ, AIM, or MSN Messenger. Recently, due to the widespread use of smartphones and the increasing diffusion of mobile Internet access [1], mobile IM has become predominant.

Instant messaging applications are, according to Shapiro and Varian's definition [2], information goods. They are software that can be encoded into a stream of bits which is costly to produce but involves very low marginal costs. They are also products driven by the network economy, where the number of users directly and indirectly affects utility and thus consumer adoption, resulting in a so-called positive feedback loop [3,4]. Markets with such characteristics, in turn, are usually so called winner-takes-all markets which tend to tip in favor of the company or technology that is ahead [2], [5]. In other digital markets such as social networks or the e-commerce market, such near-monopolies obviously occur [6,7].

In the mobile instant messaging market, however, we are not able to identify one service that is dominating the market on a global level even almost 11 years after the first mobile IM service, Blackberry Messenger (BBM), launched in 2005. Instead, the

mobile IM landscape is still a highly fragmented space, with multiple applications offering similar value propositions, competing to increase their market share.

When the necessary mobile technologies became widely available, the market allowed for a lot of new competitors to enter the market. *WhatsApp*, *LINE*, *WeChat*, *Kakao Talk*, *Snapchat* and *Viber* all entered the market after 2009, while veterans like Facebook Messenger or Tencent QQ successfully transitioned to mobile as well. Today, there are more than 10 different mobile IM applications with more than 100 million users¹, and while not all of them grow at the same rate, market competition shows no signs of slowing down.

From a global perspective, WhatsApp currently leads, having recently reported more than one billion users². It may thus appear as the frontrunner and the foreseeable monopolist to most. The Asia-Pacific market, however, has demonstrated itself impenetrable for the application. Similarly, LINE and WeChat are also having trouble expanding beyond their respective regional markets.

This paper seeks to explain the apparent discrepancy between economic theory and the observed structure of the mobile IM market. The instant messaging market lacks any significant objective data, which companies try to leverage for competition reasons. Accordingly, instead of a quantitative analysis, we strive to find compelling explanations using theoretical insights. For this aim, we first analyze how (direct and indirect) network effects influence the instant messaging market in section 2. We then briefly introduce the most important mobile IM applications and their specific characteristics in section 3 and illuminate global and local market structures of mobile IM in section 4. On top of that, we provide possible explanations for the observable market fragmentation in defiance of network effects in section 5. In particular, we see variables like local bias and different cultural givens to significantly moderate competition in network markets. Finally, we discuss possible strategies for overcoming cultural obstacles to market expansion pursued by different mobile IM players in section 6. Section 7 concludes.

2 Networks Effects in Instant Messaging

Network economics largely rest upon four main concepts: direct network effects, indirect network effects, switching costs, and lock-ins [8]. In order to establish a common ground for our discussion, these concepts shall be described and applied to the instant messaging market in brief.

Direct Network Effects

In a network subject to direct network effects, the value of connecting to it depends on the number of people already connected [2]. Communication networks are the prime example for such network effects, since the user can't extract any use from the product

¹ WhatsApp, LINE, WeChat, Kakao Talk, Snapchat, Viber, Kik, Tango, Facebook Messenger, Tencent QQ and iMessage have all individually reported having more than 100 million users

² <https://blog.whatsapp.com/616/One-billion>.

if the network isn't there [9]. According to Metcalfe's law, the value of the communication network increases as the square of the number of users. The more users a network already has, in turn, the more will it attract further users. This so-called positive feedback, where a system feeds itself to become stronger, is ignited once technologies reach a certain threshold of users – the so-called critical mass [2]. As different players in a market try to reach this critical mass at, a battle between them ensues. Markets with strong positive feedback usually tend to tip in favor of the company or technology that is ahead [2], while players that lag behind eventually slump. These are so-called winner-takes-all markets. Figure 1 shows the typical evolution of such markets.

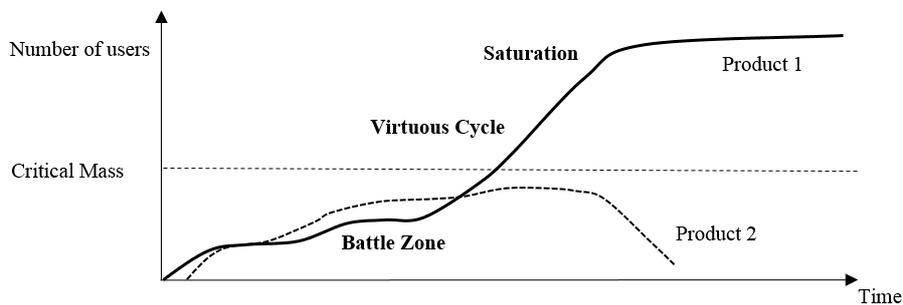


Fig. 1. Evolution of a winner-takes-all market over time, according to [2], [10]

Mobile IM is in its very nature a telecommunication technology. Users can communicate with others who use the same instant messaging application and consequently build a communication network subject to strong direct network effects and positive feedback. The value of a mobile IM application to the individual user depends on how many potential communication partners already use the same application or a compatible one.

Wang et al. [3] proved that the perceived number of users in instant messaging networks directly influences behavioral intention to use. Other research [4], [11] provides similar results.

Indirect Network Effects

Indirect network effects refer to the dependency between the size of a network and the availability of complementary products and services [8]. When the size of a network increases, more complementary goods are developed as producers see more potential in the market. The availability of more complementary goods, in turn, makes more users want to join the network.

In the mobile IM market, complementary goods particularly exist in the form of so-called “stickers”, which are digital images that can be obtained as “add-ons” used in conversation to express emotions. They are usually developed by third-party designers or advertisers and therefore subject to indirect network effects: more stickers will be developed with increasing size of the network, which in turn makes the network more attractive to users considering adoption. This positive in instant messaging applications

has been shown in [4]. Other examples for complementary products in instant messaging are in-app games or additional services.

Switching Costs and Lock-in

Switching costs and lock-ins refer to the disadvantages (in terms of monetary costs or effort, for example) that a user faces if he decides to switch to a new technology [9]. Complementary products typically heighten these switching costs as long as they are not transferable across different networks. When the switching costs are so high that they keep the user from switching at all, then the user is locked-in [2].

Switching costs are especially critical for instant messaging applications, as most applications cost nothing to download and join. Users can run multiple applications on their phones, but have to deal with the burden of managing multiple apps simultaneously. As continuous use is a prerequisite for these applications to make profit at all, applications try to lock-in their users in order to ensure loyalty. Besides complementary products, switching obstacles for instant messaging applications include the user's established relations with other users in the network, the user's chat history or any other data that binds the user to the application, and possible relearning and retraining costs regarding the applications usability. Deng et al. [12] proved that switching costs directly influence customer loyalty to mobile IM applications.

3 Applications

Most mobile IM applications share the same basic features, but as competition in the market increased, established players and new entrants started offering new services and value propositions. While it is clear that people use mobile IM applications to communicate with other people, the features that mediate the communication differ. In the following, we will thus introduce some of the most popular mobile IM applications and identify their defining features.

WhatsApp

WhatsApp launched in 2009. It is a simple and straightforward app that relies heavily on the basic chatting functionality and cross-platform compatibility. Users can communicate through text and simple Unicode emojis. They can share contact information, images, video, audio, documents and their location, just like in all of the other apps mentioned below. WhatsApp also provides group chat functionality and recently introduced the ability to make voice calls.

Facebook Messenger

Facebook Messenger spun out of the company's desktop messenger, Facebook Chat, which launched in 2008. In April 2014, Facebook removed the messaging feature from the main app, in order to force users to the separate Messenger application. Since then, it has evolved into a feature-rich application. In addition to WhatsApp's features, Messenger also has "stickers" and GIFs that can be used in conversations. Moreover, the

mobile version has recently added a third-party app platform. Furthermore, users can also chat with businesses and organizations that have a Facebook page.

WeChat

WeChat has basically the same features as Facebook Messenger: it also offers stickers and allows users to chat with official business and organization pages. WeChat’s platform is, however, significantly more advanced. It offers payment services and businesses can run whole e-commerce shops on the platform.

LINE

LINE first launched in Japan in 2011, as a response to the damaged telecommunications infrastructure in Japan caused by an earthquake. Since then, it has evolved into a rich platform that provides many multimedia features, similar to WeChat. It allows users to talk to strangers in the same way, and also enables business to connect to users through the app.

Kakao Talk

Kakao Talk offers a rich user experience. The messaging app has expanded into a social platform that provides not only the messaging feature, but also games, social-network-like user feeds, music-streaming and e-commerce. It was an innovator when it came to expanding the platform to integrate new features.

Table 1 summarizes how the aforementioned apps differentiate each other in terms of features. What is noteworthy is the extreme simplicity of WhatsApp, as well as the richness of the Asian applications. Facebook Messenger also provides some of the features of its Asian competitors, though they only adopted them after the features had shown success in the Asian market (e.g. stickers in instant messaging took off in 2012 when LINE introduced them. Facebook Messenger followed in 2013).

Table 1. Distinguishing features of the top applications

Features	WhatsApp	Facebook Messenger	WeChat	LINE	Kakao Talk
Stickers		✓	✓	✓	✓
Business Pages		✓	✓	✓	✓
Third-party apps		✓	✓	✓	✓
User feed		(Facebook)	✓	✓	(KakaoStory)
Share location	✓	✓	✓	✓	✓
Group chat	✓	✓	✓	✓	✓
Payments		✓	✓	✓	✓

4 Local Markets and the Global Instant Messaging Landscape

As already laid out above, markets with strong positive feedback usually end up tipping and become so-called winner-take-all markets. Shared markets on the other hand, don't tip and competitors share the market with predictable market shares [5]. Furthermore, we also showed in section 2 that the mobile IM market is strongly influenced by positive feedback. Accordingly, one provider should eventually emerge as the winner and conquer the global market for mobile IM. Nonetheless, almost 11 years have passed since the first market entry (BBM in 2005) and there is still no winner in sight. WhatsApp leads in matters of the total number of users and recently passed the 1 billion milestone but, as Figure 2 shows, other applications like Facebook Messenger and WeChat also continue to gain users at comparable speeds.

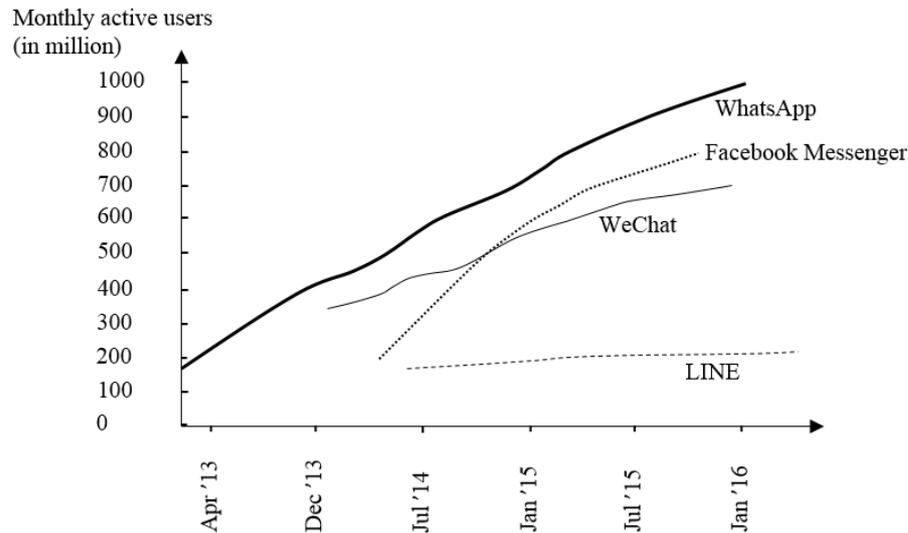


Fig. 2. Evolution of the instant messaging market over the last 3 years³

At closer inspection, it turns out that different mobile IM applications prevail in different regions of the world: WhatsApp controls the European market, as well as the South American market. In countries like Spain, Germany, Italy and the Netherlands,

³ Numbers according to <https://www.techinasia.com/wechat-697-million-monthly-active-users>, <http://www.forbes.com/sites/niallmccarthy/2016/02/02/whatsapp-reaches-one-billion-users-infographic/#244ac6a8520b>, <http://fortune.com/2016/04/07/facebook-messenger-900-million/>, <https://www.techinasia.com/line-annual-revenue-2015>

it is hugely popular. However, WhatsApp has barely had any traction in the Asia-Pacific region⁴. The application failed to attract a substantial share of the market in key countries like Japan, Taiwan, Thailand and South Korea. It is the only popular foreign application not forbidden by the Chinese government, but the application hasn't found much of a user base there either (aside from Hong Kong). After failing to cooperate with a criminal investigation, WhatsApp saw its services temporarily banned in Brazil, a move that left many users scrambling for alternatives.

In fact, governmental regulations also shaped the Chinese Market considerably. WeChat, in turn, currently has more than 700 million users, the majority of which are from mainland China. The app has benefitted from China's increasing smartphone penetration and the relative lack of competition in the market. A variety of laws and regulations prevent several websites and applications from functioning, which leads to the development and popularity of their domestic products [14].

LINE dominates the markets of Japan, where it first launched, Taiwan and Thailand. The application recently made a big push into the Indonesian market, and managed to attract a significant share of the market (see also section 6), though BBM still dominates there. The application managed to attract a large user base in the first year, and introduced stickers less than a year after launch, a feature that has shown to be very popular and profitable in the Japanese market.

Facebook Messenger has recently reached 900 million users. The application is especially popular in North America, where it is for example the most downloaded Android app after Facebook's main app⁵.

Kakao Talk, a Korean product, is South Korea's market leader in the instant messaging market. South Korea is currently ranked as the country with the highest smartphone penetration in the world⁶, which makes them an interesting, mature and developed market for mobile-instant messaging services. With more than 38 million monthly active users in the country in 2015, Kakao Talk reports a penetration of more than 97%⁷. That figure becomes even more remarkable when compared to the penetration rate of other applications. Facebook Messenger has less than half of Kakao Talk's market share, and WhatsApp barely exists in South Korea with a 1% install rate⁸.

Altogether, market structures of mobile IM significantly differ across the world. Instead of one single global monopoly, we see different regions to be dominated by different mobile IM players: WhatsApp in South America and Europe, Facebook Messenger in North America, Kakao Talk in South Korea, LINE in Japan, Taiwan and Thailand, and WeChat in China.

⁴ <https://ondeviceresearch.com/blog/messenger-wars-how-facebook-climbed-number-one>

⁵ <https://www.quetra.com/research/mobile-app-landscape-2015-q3-report/>

⁶ <http://www.pewglobal.org/2016/02/22/smartphone-ownership-and-internet-usage-continues-to-climb-in-emerging-economies/>

⁷ http://www.kakaocorp.com/en/pr/pressRelease_view?page=2&group=1&idx=8255

⁸ <https://www.quetra.com/research/mobile-app-landscape-south-korea-insights-november-2015/>

5 Explanation Approaches

As we see, the market for mobile IM is much more fragmented than suggested by economic network theory. A possible approach for resolving this discrepancy between theory and the observable situation in mobile IM markets lies in the local-bias-theory laid out by Lee et al. [15]. According to this theory, local bias occurs when a user only maintains relationships with a small number of acquaintances that do not adopt the leading technology, but rather one of the lagging competitors, thus preventing a winner-takes-all market from actually developing. If all friends of a certain user live in South Korea and use Kakao Talk, for example, the user could be unaffected by the network effects of WhatsApp or another big network, as he doesn't perceive value in connecting to a network not adopted by his peers. Local bias tends to be preserved in highly clustered networks, but if many links between the clusters exist, then the effect of local bias is usually damped down [15].

As established in section 4, instant messaging popularity tends to differ significantly according to geographical location. Different countries or cultures thus build different clusters. However, many opportunities for links between the clusters exist: the world is becoming gradually more interconnected as people increasingly tend to interact across the boundaries of such clusters (that is, communicate with people from other regions of the world where other mobile IM applications prevail). This would speak against the prospect of local bias persisting in the mobile IM market. The social network market is a good example: It is relatively similar to the mobile IM market and it is also a market fueled by network effects. As opposed to mobile IM, however, the social networking market eventually tipped in favor of Facebook, even in countries where there had been an established local alternative (studivZ in Germany, Mixi in Japan). While it may moderate the market to some degree, local bias is therefore not a powerful enough variable to fully explain the current state and evolution of the mobile IM market.

Another variable that moderates a market's likelihood to tip is different customer needs. When different users have very different requirements, then the market is less likely to tip [2]. In this regard, different communication styles are an important factor in the mobile IM market. Hall's theory of high and low context cultures [16] may thus be another valuable explanation approach. It attempts to categorize cultural orientations and represents the extent to which different cultures contextualize information. High-context cultures rely heavily on situational information such as nonverbal behavior or the relationship between participants to facilitate understanding [17]. As much of the communicative content is already given by the respective context and thus does not need to be codified explicitly, communication tends to be economical, efficient and satisfying [16]. Low-context cultures, on the other hand, typically communicate primarily through verbal information [17].

Putting this dichotomy in relation to mobile IM, several studies have shown that stickers or emojis are highly important for users in high-context cultures [17,18] as they allow users to express certain feelings or emotions that cannot be easily articulated in words. Both, emojis and stickers originated in Japan. They tend to be really popular in high-context cultures like Japan, Taiwan, South Korea and China. LINE claims that its

users send close to two billion stickers a day⁹. In cultures where languages tend to have thousands of characters and tricky input methods, it's not hard to understand how applications that offer stickers got so big.

The distinction between high- and low-context cultures and the resulting differences in communication style may thus provide an explanation for the lack of traction of some mobile IM applications in specific low-context markets. Applications like WhatsApp, that do not provide the necessary support for visual or non-verbal communication are not suited for that communication style and thus fail to attract users.

Shapiro and Varian [2] also identified the legacy of an earlier system and the tendency to favor domestic firms as possible reasons that might keep a global market from tipping. The latter certainly seems to be the case in some local markets, for example in South Korea. Tang and Lee [19] theorize that Kakao Talk's success might be due to Korean's loyalty to domestic products or services. They favor Korean search engine *Naver* over *Google*, *Samsung* and *LG* phones over *Sony* and *iPhones*, while also favoring Korean social network services like *KakaoStory* and *NaverStory* over Facebook.

Across Europe, in turn, WhatsApp seems to have attracted a large user base because its simplistic and straightforward design caters to the more low-context communication style of cultures like Germany, Netherlands and the Scandinavian countries. But that doesn't tell the whole story. WhatsApp now benefits from its legacy. BlackBerry Messenger preceded it four years, yet WhatsApp was the first one to offer cross-platform compatibility, which gave them a considerable advantage in Europe's very diverse mobile OS market. In the first year after launching in 2009, WhatsApp was already available on Apple, Android, BlackBerry and Symbian phones. Furthermore, the creators made the application available not just to smartphone users, but also for Nokia feature-phones, who at the time still controlled a considerable share in the European market. BBM is another example of a legacy system having a lasting effect on the mobile IM market. The application dominates in Indonesia, where historically BlackBerry held a large share of the device market. Because the app came preinstalled, Indonesians started using it, and when they switched to modern smartphone brands like Samsung, they continued to use the app (which was ported to other platforms in 2013) there.

Lock-in and Apple's legacy also has significant repercussions for the mobile IM market. iMessage is an instant messenger service integrated almost seamlessly in iPhone's traditional SMS and MMS application. iOS users usually start using the application by default and are therefore less likely to seek other instant messaging applications like WhatsApp, which ranks consistently higher in the US's Android application store than in the iOS store.

As shown in section 2, lock-in and switching costs are a powerful driver for user loyalty to IM applications. The legacy systems mentioned above have secured high switching costs and lasting lock-in effects for their users. This suggests a certain inertia in the market, where switching costs may be too high to overcome.

Altogether, we can thus identify different communication needs in high- vs. low-context cultures as the most compelling explanation for the observed fragmentation of

⁹ <https://nmk.co.uk/2014/03/19/next-in-line-for-mobile-messaging-interview-with-line/>

the mobile IM market in defiance of what economic network theory suggests. In addition, the structure of the smartphone market in a given region may have a significant indirect effect on the local instant messaging market, as legacy systems have managed to hold on to the lock-in associated with their IM application. The local bias theory, however, does not satisfy as the only explanation for the segmentation of the market, even though it may influence the market to some degree.

6 Strategies and Implications

Given the above analysis, it is crucial to recognize different cultural environments within various local markets for companies looking to expand beyond their established region. In the literature (e.g. [20]) on market internationalization, two general strategies have emerged: globalization and localization. Globalization involves selling the same products or services in the same way everywhere, while localization involves operating in a number of countries and adjusting products and practices accordingly [21]. In the following, we will discuss both strategies for the mobile IM market.

Globalization

Pursuing globalization as a strategy has many advantages. For one, providers are able to save costs, because they don't have to adapt the product according to local markets. The product also benefits from stronger network externalities, as a network with more users has a higher perceived value. On the other hand, globalization also faces challenges: no local market is like any other, so adaptation to local needs may be necessary to attract more users and maximize profits.

Facebook Messenger is perhaps the application that is most aggressively pursuing the global market. From 2013 onwards, Facebook Messenger started to venture away from its messaging core capabilities and also introduced stickers and platform features – with the obvious intention of making the app more appealing to the Asia-Pacific market.

Western markets seem unaffected by Facebook Messenger's feature expansion, as users continue to use the app. The move proved to be successful in the Philippines, where it is the most frequently used mobile IM app¹⁰. However, its diversification efforts haven't yielded promising returns in South Korea, Japan and Taiwan, where local applications still dominate. Perhaps users don't see a reason to switch, as the applications they're using already provide the features Facebook is now implementing. As Facebook Messenger shows, expanding an existing application with features addressing specific needs of multiple cultures can be a viable strategy for expanding market share in yet unexploited regions.

¹⁰ <http://thenextweb.com/asia/2014/07/09/facebook-messenger-outguns-whatsapp-asias-chat-apps-philippines/#gref>

Localization

The localization strategy is associated with higher marketing costs, as it requires product customization and extensive market research, but may prove to be advantageous in the instant messaging market, which, as established in section 5, has to cater to very distinct cultural needs. LINE's expansion into the Indonesian market is a fine example of this.

The company developed stickers that show characters fasting and celebrating Ramadan, which appeals to the country's large Muslim population. LINE also made their application available for the BlackBerry operating system, as they recognized the large number of users who still had a BlackBerry device. Recently, though, there has been some backlash regarding some stickers in the app depicting LGBT themes. Indonesia is a very socially conservative nation. After governmental ban, LINE removed LGBT-themed stickers from the app, which shows how important it is to cater to the market's culture.

While the localization strategy can thus also prove viable in general, LINE's expansion to new markets has been comparably slow and the company is struggling to grow their user base further (see Figure 2). This raises doubts about whether, in a market as dynamic as mobile IM, the costly and time-consuming localization strategy may be suitable.

7 Conclusion

Altogether, mobile IM applications operate in a market driven by network economics. Economic theory tells us that such markets should eventually tip and become winner-takes-all markets. This is what finally ended up happening with the social network market: after market entry in 2004 and global launch in 2006, Facebook first controlled the North American market, but eventually managed to dominate in local markets where other applications once ruled.

The same *tippyness* would be expected of the mobile IM market. However, as shown in section 4, the market still seems very fragmented. Insights into cultural differences suggest that one of the reasons the market hasn't tipped yet is the distinct communication style of different cultures. Lock-ins and a tendency to favor domestic firms have also been observed in the instant messaging market. Basically, two different strategies can be pursued for addressing these factors in order to open up new markets: a globalization strategy, where different culture-specific features are joined in one product, and a localization strategy, where culturally different markets are targeted individually. In the mobile IM market, both strategies can currently be observed, with the globalization approach appears to be more agile and successful.

It will be interesting to see how the same cultural challenges will be addressed in other markets beyond mobile IM in the future. In particular, the market for business messaging faces comparable challenges. Internationalization and remote work has increased interculturality within companies. Players in the business messaging world thus also have to address barriers in cross-cultural communication.

References

1. Smith, A.: Mobile access 2010. Washington, DC: Pew Internet & American Life Project (2010).
2. Shapiro, C., Varian, H.: Information rules. Harvard Business School Press, Boston, Mass. (1999).
3. Wang, C., Hsu, Y., Fang, W.: Acceptance of technology with network externalities: An empirical study of Internet instant messaging services. *Journal of Information Technology Theory and Application (JITTA)*. 6 (4), 15-28 (2005).
4. Zhou, T., Lu, Y.: Examining mobile instant messaging user loyalty from the perspectives of network externalities and flow experience. *Computers in Human Behavior*. 27 (2), 883-889 (2011).
5. Arthur, W.: Positive Feedbacks in the Economy. *Scientific American*. 262 (2), 92-99 (1990).
6. Haucap, J., Heimeshoff, U.: Google, Facebook, Amazon, eBay: Is the Internet driving competition or market monopolization?. *International Economics and Economic Policy*. 11 (1-2), 49-61 (2013).
7. Baran, K., Fietkiewicz, K., Stock, W.: Monopolies on Social Network Services (SNS) Markets and Competition Law. 14th International Symposium on Information Science (ISI 2015). pp. 424-436 (2015).
8. Katz, M., Shapiro, C.: Network externalities, competition, and compatibility. *The American Economic Review*. 75, 424-440 (1985).
9. Shy, O.: The economics of network industries. Cambridge University Press, Cambridge, U.K. (2001).
10. Dietl, H., Royer, S.: Management virtueller Netzwerkeffekte in der Informationsökonomie. *Zeitschrift Führung und Organisation*. 69 (6), 324-331 (2000).
11. Lin, C., Bhattacharjee, A.: Elucidating Individual Intention to Use Interactive Information Technologies: The Role of Network Externalities. *International Journal of Electronic Commerce*. 13 (1), 85-108 (2008).
12. Deng, Z., Lu, Y., Wei, K., Zhang, J.: Understanding customer satisfaction and loyalty: An empirical study of mobile instant messages in China. *International Journal of Information Management*. 30 (4), 289-300 (2010).
13. Bayer, J., Ellison, N., Schoenebeck, S., Falk, E.: Sharing the small moments: ephemeral social interaction on Snapchat. *Information, Communication & Society*. 19, 956-977 (2015).
14. Deans, P., Miles, J.: A framework for understanding social media trends in China. Paper presented at the 11th International DSI and APDSI Joint Meeting. 12-16 (2011).
15. Lee, E., Lee, J., Lee, J.: Reconsideration of the Winner-Take-All Hypothesis: Complex Networks and Local Bias. *Management Science*. 52 (12), 1838-1848 (2006).
16. Hall, E.: Beyond culture. Anchor Books, New York (1976).
17. Kayan, S., Fussell, S., Setlock, L.: Cultural differences in the use of instant messaging in Asia and North America. Proceedings of the 2006 20th anniversary conference on Computer supported cooperative work - CSCW '06. 525-528 (2006).
18. Lim, S.: On Stickers and Communicative Fluidity in Social Media. *Social Media + Society*. 1 (1), 1-3 (2015).
19. Tang, N., Lee, Y.: A comparative study on user loyalty of mobile-instant messaging services. Proceedings of the 17th International Conference on Electronic Commerce 2015 - ICEC '15. (2015).
20. Coskun Samli, A., Wills, J., Jacobs, L.: Developing global products and marketing strategies: A rejoinder. *Journal of the Academy of Marketing Science*. 21 (1), 79-83 (1993).
21. Levitt, T.: The Globalization of Markets. *Harvard Business Review*. 61 (3), 92-102 (1983).