The Global and Country-Level Economic Impacts of WhatsApp

Greg Rafert and Rosamond Mate[1,2]

Executive Summary

This study estimates WhatsApp's contributions to global economic activity, with a particular focus on four countries with significant WhatsApp usage: Brazil, India, Germany, and Spain. To do so, we employ several complementary methods to estimate WhatsApp's economic contribution, including focus groups, nationally representative surveys, and econometric analyses.

Although WhatsApp started as an application to enable individuals to communicate with friends and family, the results from our survey of WhatsApp usage suggest that WhatsApp may be used for other reasons that help to spur economic growth. Our research thus explores the extent to which WhatsApp contributes to economic growth, particularly given WhatsApp's focus on consumers and its recent, early plans for consumer-to-business communication features.[3] Mechanisms by which WhatsApp appears to increase efficiency and/or drive economic growth include:

1. **Lowering production costs and increasing the efficiency of internal business operations**: 25% of all respondents who use WhatsApp use it to interact with colleagues, supervisors, and/or other employees, and 63% of respondents surveyed on this usage say that doing so saves them time or increases their productivity during the day. Moreover, 81% of respondents who use WhatsApp to communicate internally at work indicate that doing so is important or somewhat important to them.
2. **Improving customer service:** 18% of WhatsApp users communicate with businesses, stores, or service providers. The most common reasons customers use WhatsApp to communicate with businesses include: making or confirming an appointment or reservation (43%), placing an order or making a purchase (41%), and asking for information on products or services (e.g., price, inventory, return policy) (36%). By making communication faster and more efficient, WhatsApp may enable businesses to lower their labor costs and attract more customers.

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[2] The authors would like to thank Dr. Bernd Skiera for his insightful comments and suggestions throughout the course of this research project. This report also greatly benefited from valuable feedback provided by Dr. Ana Valenzuela on the survey portion of the study.

[3] Forbes (2016) "WhatsApp Is Finally Inviting Businesses Onto Its Massive Network This Year," available at https://www.forbes.com/sites/parmyolson/2016/01/18/whatsapp-businesses-free-1-billion/#5259989b6236, accessed February 24, 2017.

3. **Lowering marketing costs**. 72% of survey respondents who received messages from businesses reported forwarding them at least once in the last seven days. Affordable and fast communication decreases costs for businesses, thus potentially increasing profits and contributing to growth.
4. **Making communications with investors more efficient.** 10% of WhatsApp users communicate with business partners, investors, shareholders, or financial contributors. Rapid interactions and quick updates may lead to higher investments for a firm or business, resulting in increased output and long run growth.
5. **Improving public sector services.** WhatsApp improves communications between the public and the social sector. 24% of WhatsApp users across all surveyed countries, including 41% of WhatsApp users in India, use WhatsApp to communicate with community organizations like schools or with health care providers.

Using data covering four years and 157 countries, we then estimate the relationship between WhatsApp usage and GDP using panel regressions and instrumental variable approaches. The most conservative of the estimates (based on our instrumental variable analysis and taking the lower bound of the 95% confidence interval) **suggests that a five percentage point increase in WhatsApp penetration in 2015 is associated with the following increases in GDP**:

- $22.9 billion globally (PPP 2015 U.S. dollars)
- And regionally:[4]
    - $10.6 billion in Asia
    - $5.4 billion in North America
    - $3.9 billion in Europe
    - $1.1 billion in the Middle East
    - $1.0 billion in South America
    - $0.8 billion in Africa

[4] All regional amounts are also expressed in PPP 2015 constant U.S. dollars.

I. Introduction

Anecdotes from our focus groups help to highlight the wide-ranging benefits of WhatsApp. Examples include the following:

- *There is huge time saving. We used to sit at the mail before, handling three different clients earlier. But here, you send one message and it gets sent to all of them. You don't have to make personal calls neither do you have to send mails. Your work gets done INSTANTLY.*[5]
- *I had an appliance maintenance guy, for stove and fridge, that I though was very clever. I located him through WhatsApp … after he serviced my home, he sent me a message asking me if everything was working, after a while, and then when the warranty was going to expire he sent me another message saying that my warranty was going to expire and asking me if I needed service before that. And I thought to myself, that is someone who provides a great service.*[6]
- *I've used it with the city hall, I don't live in Barcelona but in Mataró, and there's an available WhatsApp in case you see some mishap on the street or happening to you, and I've used it. The dumpsters on my street, one didn't work, I wrote the address and the next day it was fixed.*[7]

With one billion users across the globe,[8] WhatsApp is a leading messaging application.[9] Messages sent and calls made using WhatsApp rely on either mobile data or an internet connection, and individuals use WhatsApp to communicate with friends and family, businesses, doctors, public officials, government agencies, and a range of other entities.

To date, WhatsApp has focused almost exclusively on consumers, and tools enabling consumer-to-business communications are still nascent. Nevertheless, like previous

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5 Professionals focus group participant from New Delhi, India. See Appendix I, Anecdote A.1.

6 Consumers' focus group participant from Sao Paulo, Brazil. See Appendix I, Anecdote C.6

7 Consumers' focus group participant from Barcelona, Spain. See Appendix I, Anecdote D.7

8 WhatsApp (2016) "About," available at https://www.whatsapp.com/about/, accessed September 22, 2016.

9 SimilarWeb, "The Most Popular Messaging App in Every Country," available at https://www.similarweb.com/blog/worldwide-messaging-apps, accessed September 21, 2016.

communications technologies – from the landline, to the mobile phone, to the internet - WhatsApp lowers the barriers to communication, making it faster, easier, and less expensive. As a result, we hypothesize that WhatsApp contributes to economic growth by facilitating large volumes of less expensive communication.

To test this hypothesis, this study estimates WhatsApp's contributions to global economic activity, with a particular focus on four countries with significant WhatsApp usage: Brazil, India, Germany, and Spain. To do so, we employ three complementary methods to estimate WhatsApp's contributions:

- **Focus groups** in Brazil, India, Germany, and Spain to unpack the mechanisms by which WhatsApp may affect economic activity.
- **Surveys** of consumers and employees or owners of small and medium-sized businesses in Brazil, India, Germany, and Spain to estimate the share of all consumer spending that was in any way touched by or associated with WhatsApp, as well as mechanisms through which WhatsApp affects economic and social outcomes.[10,11]
- **Econometric analyses** to estimate the economic activity (measured as GDP) that may be due to WhatsApp's usage.

Together, these methods allow us to compare and relate qualitative and quantitative data in order to develop a more complete understanding of the potential impacts of WhatsApp on economic activity.[12]

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[10] We chose to survey four countries—two lower income and two higher income countries—with high levels and/or growing levels of WhatsApp usage to obtain a large enough sample sizes to conduct our WhatsApp usage survey. As of October 2016, the percentage of active WhatsApp users in the four surveyed countries was 13% for India, 43% for Germany, 49% of Brazil, and 47% for Spain.

[11] See Appendix III and Table V.1 in Appendix V for a detailed description of how survey respondents were selected.

[12] Creswell, John W, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, Fourth Edition, SAGE Publications, 2014, p. 215-223.

Results from focus groups and surveys indicate five mechanisms through which WhatsApp appears to drive economic growth:

1. **Lowering production costs and increasing the efficiency of internal business operations**: 25% of all respondents who use WhatsApp use it to interact with colleagues, supervisors, and/or other employees, and 63% of respondents surveyed on this usage say that doing so saves them time or increases their productivity during the day. Moreover, 81% of respondents who use WhatsApp to communicate internally at work indicate that doing so is important or somewhat important to them.
2. **Improving customer service:** 18% of WhatsApp users communicate with businesses, stores, or service providers. The most common reasons customers use WhatsApp to communicate with businesses include: making or confirming an appointment or reservation (43%), placing an order or making a purchase (41%), asking for information on products or service (e.g., price, inventory, return policy) (36%). By making communication faster and more efficient, WhatsApp may enable businesses to lower their labor costs and attract more customers. In particular, for 44% of respondents who use WhatsApp in the context of work and are aware of the amount of sales at their company, approximately half or more of their sales transactions involve communications via WhatsApp.
3. **Lowering marketing costs**: 72% of survey respondents who received messages from businesses reported forwarding them at least once in the last seven days. Affordable and fast communication decreases costs for businesses, increasing profits and contributing to growth.
4. **Making communications with investors more efficient:** 10% of WhatsApp users communicate with business partners, investors, shareholders, or financial contributors. Affordable and fast communications decrease costs for businesses, increasing profits and contributing to growth.
5. **Improving public sector services:** WhatsApp improves communications between the public and the social sector. 24% of WhatsApp users across all surveyed countries, including 41% of WhatsApp users in India, use WhatsApp to communicate with community organizations like schools or with health care providers.

Based on survey responses, we calculate the amount of discretionary consumer spending in any way touched by or associated with communications via WhatsApp. In so doing, we find that the amount of such discretionary spending ranges from $12.0 to $28.3 billion in Brazil, $9.6 to $18.0 billion in India, $4.4 to $8.0 billion in Germany, and $3.2 to $6.6 billion in

Spain.[13,14,15] Separately, yet similarly, using data from 157 countries between 2012-2015, we estimate the relationship between WhatsApp usage and GDP using panel regressions and instrumental variable approaches. The most conservative of the estimates (based on the instrumental variable analysis and taking the lower bound of the 95% confidence interval) suggests **that a five percentage point increase in WhatsApp penetration[16] is associated with the following increases in GDP**:

- $22.9 billion USD globally
- And regionally:
    - $10.6 billion in Asia
    - $5.4 billion in North America
    - $3.9 billion in Europe
    - $1.1 billion in the Middle East
    - $1.0 billion in South America
    - $0.8 billion in Africa

II. Background on WhatsApp

WhatsApp was launched in February 2009 and grew quickly in popularity.[17,18] Just four years after its launch, WhatsApp had approximately 200 million active users and a staff of 50

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13 Discretionary consumer spending is defined as spending on goods (e.g., groceries, medicine, and clothing) and services (e.g., transportation, daycare, housekeeping, and personal care) excluding rent, utilities, or mortgage.

14 The range of the share of discretionary spending associated with WhatsApp is obtained by using the minimum value of a respondent's answer and the maximum value. For example, a respondent who answered "between 25% and 49% of the total amount [involves WhatsApp]" is treated as if either 25% (to obtain a lower bound) or 49% (to obtain a lower bound) of his or her total spending were intermediated using WhatsApp. Although we report a range of estimates (based on minimum to maximum values), we believe that the lower bound figure is a closer estimate of consumer discretionary spending currently associated with WhatsApp.

15 All dollar amounts in the report are expressed in PPP 2015 constant US dollars.

16 As of October 2016, the percentage of active WhatsApp users in the four surveyed countries was 13% for India, 43% for Germany, 49% of Brazil, and 47% for Spain (see row C of Table 10).

17 WhatsApp, Inc. was incorporated by Jan Koum on February 24, 2009 in California.

18 Forbes (2014). "Exclusive: The Rags-To-Riches Tale Of How Jan Koum Built WhatsApp Into Facebook's New $19 Billion Baby" http://www.forbes.com/sites/parmyolson/2014/02/19/exclusive-inside-story-how-jan-koum-built-whatsapp-into-facebooks-new-19-billion-baby/2/#263c4d293f5f, accessed January 30, 2017.

employees.[19] In February 2014, Facebook purchased WhatsApp;[20] at the time, WhatsApp had grown to 450 million active users, and has continued to increase its number of users.

WhatsApp is a free, downloadable messaging application that allows users to communicate with each other using their phone's internet connection. (An example of the interface is shown in Figure 1.)[21] Although WhatsApp is principally used to send messages between users, it offers many other features such as group messaging, voice or video calls, contact sharing, location sharing, and sending media with audio, photos, videos, emojis, or GIF files.

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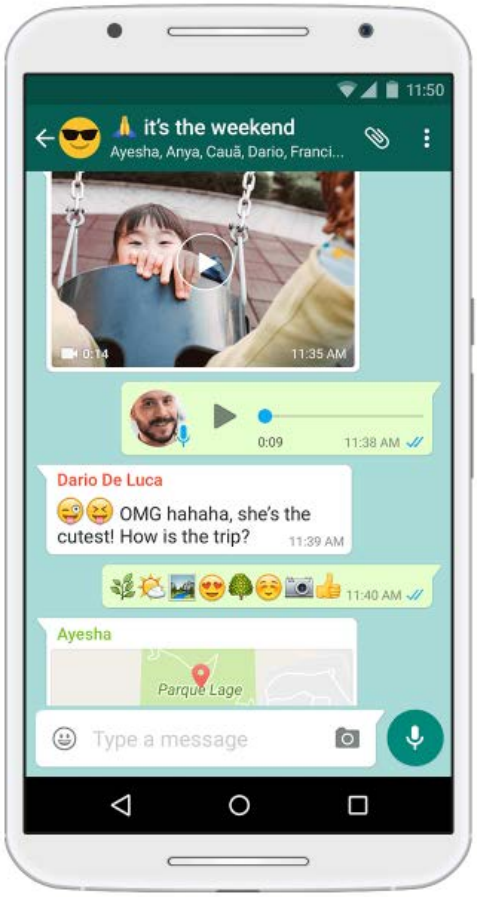
[19] Forbes (2014). "Exclusive: The Rags-To-Riches Tale Of How Jan Koum Built WhatsApp Into Facebook's New $19 Billion Baby" http://www.forbes.com/sites/parmyolson/2014/02/19/exclusive-inside-story-how-jan-koum-built-whatsapp-into-facebooks-new-19-billion-baby/2/#263c4d293f5f, accessed January 30, 2017.

[20] Forbes (2014), "Facebook Closes $19 Billion WhatsApp Deal," available at http://www.forbes.com/sites/parmyolson/2014/10/06/facebook-closes-19-billion-whatsapp-deal/#3594d351179e, accessed February 23, 2017.

[21] WhatsApp (2017). https://www.whatsapp.com/faq/en/general/21073018, accessed January 30, 2017.

Figure 1

WhatsApp Interface[22]



To date, WhatsApp has focused on consumers rather than business-to-business ("B2B") or business-to-consumer ("B2C") communications.[23] However, as will be discussed in subsequent sections, our research reveals substantial between-country variation in how people use WhatsApp. More specifically, people around the world use WhatsApp to conduct and communicate with businesses, engage in their communities, and receive public services.

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22 WhatsApp (2017). https://www.whatsapp.com/, accessed January 30, 2017.

23 Forbes (2016) "WhatsApp Is Finally Inviting Businesses Onto Its Massive Network This Year," available at https://www.forbes.com/sites/parmyolson/2016/01/18/whatsapp-businesses-free-1-billion/#5259989b6236, accessed February 24, 2017.

III. The Impact of Technological Innovations on Economic Growth and Social Welfare: A Brief Review of the Literature

This study builds on a substantial literature linking technological innovations to economic growth and social welfare. (See Table 1 below for a summary.) In particular, improved communication technology has been shown to contribute to productivity gains by facilitating more efficient use of existing resources (labor and capital supply) to produce goods and services: in other words, enabling higher levels of outputs for the same levels of inputs.

Advances in telecommunications have been shown to significantly affect economic activities. Gruber et al. (2011) estimate that mobile telecommunications contribute 0.11% to annual GDP growth for low-income countries and 0.20% for high-income countries.[24] Several other studies have found similar significant, positive effects of telecommunication advancements on economic output. Thompson and Garbacz (2007), for example, find that increases in mobile broadband penetration significantly increased GDP per household, reporting a greater effect in low-income countries relative to high income countries.[25, 26]

Improvements in broadband speed may positively affect economic output by contributing to the development of new inventions, improvements in goods and services, increased competition, and the creation of new business models (e.g., online retail stores) (Sosa, 2014).[27] Kongaut and Bohlin (2014) find that a 10% increase in broadband speed positively affects GDP

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[24] Gruber, Harald, Pantelis Koutroumpis, Thierry Mayer, and Volker Nocke. "Mobile Telecommunications and the Impact on Economic Development." *Economic Policy,* Vol. 26, No. 67 (July 2011), pp 387, 389-426.

[25] Thompson and Garbacz (2007) found that a 10% increase in mobile broadband penetration significantly increased country GDP per household by 0.7 constant 2000 dollars among all countries, and more specifically by 1.12 constant 2000 dollars for low-income countries. When comparing these effects to the average GDP per household among these two groups, these effects translate into increases of 0.001% and 0.003% in GDP per household respectively.

[26] Thompson Jr., Herbert G. and Christopher Garbacz, "Economic Impacts of Mobile Versus Fixed Broadband." *Telecommunications Policy*, Vol. 35 (2007), pp. 999-1009.

[27] Sosa, David. "Early Evidence Suggests Gigabit Broadband Drives GDP" (2014), available at http://www.analysisgroup.com/uploadedfiles/content/insights/publishing/gigabit_broadband_sosa.pdf, accessed January 30, 2017.

per capita by up to 0.8%.[28] In the U.S., Sosa (2014) finds that the introduction of gigabit broadband in select communities corresponds to a $1 billion increase in GDP.[29] A Deloitte (2012) study similarly found that a 10% substitution from 2G to 3G mobile technology penetration may increase GDP per capita growth by 0.15 percentage points.[30] Mechanisms underlying this relationship include improved job search, reduced travel times and cost, and increased productivity, all of which have implications for business productivity (Deloitte, 2012).

WhatsApp builds on and complements the innovations in communication that preceded it, including E-mail, mobile phones, text messaging, and improved broadband speed. And, by the same logic that those new technologies contributed to economic growth and development, so too should WhatsApp. We put this proposition to the test in subsequent sections.

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[28] Kongaut, Chatchai and Erik Bohlin, "Impact of Broadband Speed on Economic Outputs: An empirical Study of OECD countries", 25th European Regional Conference of the International Telecommunications Society (ITS), Brussels, Belgium, 22-25 June 2014.

[29] The author suggests that communities with widely available gigabit broadband experienced an increase in their GDP of $1billion, compared to communities in the same US states without broadly available gigabit broadband.

[30] Deloitte, "What Is the Impact of Mobile Telephony on Economic Growth? A Report for the GSM Association," (November 2012), available at http://www.gsma.com/publicpolicy/wp-content/uploads/2012/11/gsma-deloitte-impact-mobile-telephony-economic-growth.pdf, accessed January 30, 2017.

Table 1: Summary of Literature Regarding the Impacts of Technological Developments on Gross Domestic Product (GDP)

Authors	Methodology	Dependent Variable	Key Explanatory Variable (and Covariates)	Range of Impact on GDP
Gruber et al. (2011)	Regression on panel data of 192 countries from 1990 to 2007 using a production function with a system of simultaneous equations	Real GDP growth	Diffusion of mobile telecommunications defined as the ratio of the number of mobile subscribers and the population (capital, labor, stock of mobile and fixed telecommunications infrastructure)	Mobile telecommunications contribution to annual GDP growth is 0.11% for low income countries and 0.20% for high income countries
Thompson and Gabacz (2007)	Logarithmic regression on a panel of 93 countries for the years 1995 to 2003/2004 using a stochastic frontier production function with simultaneous equations	Real GDP (first stage) and reduction of productive inefficiencies (second stage)	Penetration rates of telecommunications services (capital stock, labor, human capital, time trend, developed country binary variable, economic freedom indexes)	Increasing mobile phone subscribers by 0.11% decreases the level of productive inefficiency by 2.1% in low income countries and by 1.7% in OECD countries, although the estimate for OECD countries is not statistically significant.
Sosa (2014)	Year and state fixed effects regression model on a panel of 14 MSAs in the United States	Real GDP	Binary variable for widespread availability of gigabit broadband (industry mix, geography, resource endowments, and MSA-invariant year specific GDP drivers)	Widespread availability of gigabit broadband is associated with a 1.1% increase in GDP
Kongaut and Bohlin (2014)	Logarithmic regression on a panel of OECD countries for the years 2008 to 2012 using a production function with simultaneous equations and fixed effects	Real GDP per capita	Broadband speed (penetration rate and fiber ratio of fixed broadband, GDP growth, population density, telecommunications revenue as percentage of GDP, capital, labor, economic freedom, urban population ratio, binary variable for high and low income countries)	A 10% increase broadband speed is associated with an increase in GDP per capita growth of 0.8%.
Deloitte (2012)	A logarithmic regression on a panel of 96 countries from 2008 to 2011 using an instrumental variable	GDP per capita growth	3G penetration (lag of 3G penetration, total mobile penetration, lag of real GDP per capita, government expenditure, trade volume, investment, labor)	A 10% substitution from 2G to 3G mobile technology penetration is associated with an increase of 0.15% of GDP per capita growth
Czernich et al. (2011)[31]	Logistic panel regression on OECD countries between 1996 and 2007 using production function with year and country fixed effects and an instrumental variable	Per capita GDP growth	Broadband penetration (pre-existing traditional networks, capital, labor, human capital)	A 10% increase in broadband connectivity is associated with an increase of per capita GDP of between 0.9% and 1.5%

[31] Czernich, Nina, Oliver Falck, Tobias Kretschmer, and Ludger Woessmann. "Broadband Infrastructure and Economic Growth." The Economic Journal, Vol. 121, Issue 552 (2011).

IV. Qualitative Analyses: Identifying the Mechanisms Through Which WhatsApp Affects Economic Growth

To systematically identify the mechanisms by which WhatsApp may affect economic activity, we conducted a series of focus groups and surveys in four countries: Brazil, India, Germany, and Spain. Working with local market research partners, we conducted a total of eighteen focus groups in the target countries.[32] The discussions were designed to identify the mechanisms through which WhatsApp usage may affect economic activity, as well as the vocabulary used to describe WhatsApp usage in each country. We conducted separate focus groups for respondents who use WhatsApp as **consumers** (two consumer groups for Brazil, Spain, and Germany) and those who use WhatsApp as **professionals** (two professional groups for Brazil, Spain, Germany, and India). In India, we also conducted separate focus groups for low- and high-income consumers.

We fielded surveys using Lightspeed/GMI's nationally representative panels, targeting the inbound sample according to national gender, age, and regional splits. Qualifying respondents had to pass a set of screening questions that ensured they are over 18 years of age, access the Internet, and use WhatsApp. We surveyed a total of 750 people per country, of whom 150 used WhatsApp to interact with community organizations, 150 used WhatsApp as a consumer, and 450 qualified for the business-to-business ("B2B") survey. Respondents qualifying for the B2B survey also have to be over 18 years of age, regularly access the Internet, be currently working, and use WhatsApp as part of their jobs.[33]

Additional details about the focus group and survey methodologies are provided in Appendices II and III, respectively.

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[32] Each focus group consisted of eight to ten people.

[33] Similarly, respondents recruited for the focus groups had to pass an identical set of screening questions, and focus group vendors were instructed to recruit heavy WhatsApp users especially. See Appendix II for additional details.

A. WhatsApp's Role in People's Lives

The vast majority of WhatsApp users in the four countries surveyed use WhatsApp to communicate with friends and family. Based on responses to open-ended questions, we used simple text analysis to understand sentiment toward WhatsApp. Overall, impressions are positive, with people emphasizing the convenience and speed of the platform as reasons for use, while also referencing several functionalities (i.e., "document," "video," "message," and "contact") that they find valuable. Figure 2 represents a word cloud of the 75 most commonly used words associated with WhatsApp across all respondents in India, Brazil, Spain, and Germany; the relative size of the words reflects the frequency at which they are used.

Figure 2

Words Used by Survey Respondents to Describe Why WhatsApp Is Important[34]

While WhatsApp was designed as a tool to facilitate communication between friends and family, results indicate substantial heterogeneity in use, including to conduct business, to

[34] Survey respondents who indicate that having WhatsApp as a means to communicate with businesses, service providers, community organizations, health care providers, work colleagues, supervisors, employees, customers, clients/patients, suppliers, business partners, funders/financial contributors, or investors/shareholders is either very important or important to them are asked to explain why they feel this way in their own words. This word cloud presents the top 75 words used in this context, after translating responses into English, removing stopwords (e.g., "the", "and", "a, etc.) and merging spellings (e.g., "easily" and "easier" are merged with "easy".)

participate in community groups, and to communicate with community organizations. (See Table 2 below.) Here, we also see variation at the country level: people in India and Brazil tend to use WhatsApp more frequently and for more purposes than do those in Germany and Spain, a pattern that persists across survey questions. In India and Brazil, nearly half of respondents report using WhatsApp for their jobs or businesses. (The corresponding figures for Germany and Spain range from one-fifth to one-third.) Moreover, particularly in India and Brazil, people use WhatsApp to interact with the public and social sectors; for example, in India, one-third of respondents report using WhatsApp to communicate with community organizations such as schools. In addition, in Brazil and India, 15% and 18% of respondents, respectively, communicate with health care providers via WhatsApp. According to a previous study, nearly 90% of doctors in Brazil communicate with patients using WhatsApp.[35,36] This result is supported by anecdotes from our focus groups, where participants report using WhatsApp to send photos or videos to their doctors. In so doing, they are able to obtain faster and more convenient treatment. (See focus group anecdotes D.3 to D.6 and D.13 in Appendix I.)

[35] Business Insider (August 21, 2016) "Here's How WhatsApp Could Disrupt Healthcare", available at http://www.businessinsider.com/heres-how-whatsapp-could-disrupt-healthcare-2016-8, accessed November 1, 2016

[36] Cello Health Insight. "The Digital Health Debate", available at http://www.cellohealthinsight.com/wp-content/uploads/2015/11/Digital_Health_Debate_2015.pdf, accessed February 23, 2017.

Table 2
Purposes of WhatsApp Usage by Country[1]
(Consumer Panel Respondents)[2]

Country	To communicate with friends and family[3]	For my job or business[4]	To communicate with health care providers[5]	To communicate with community organizations[6]	As a consumer[7]	None of the listed options[8]	Unsure / Don't Know
India	96%	42%	18%	33%	27%	0%	0%
Germany	97%	19%	3%	10%	7%	1%	0%
Brazil	96%	48%	15%	18%	29%	0%	0%
Spain	98%	32%	5%	13%	9%	0%	0%
All countries[9]	97%	35%	10%	19%	18%	0%	0%

Notes:
[1] Respondents were asked question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?" Respondents could select multiple responses. No respondents selected all available options.
[2] Survey respondents recruited via the consumer panel who gave valid responses regarding their age group, gender, and region, and answered "WhatsApp" in response to question QS10 "Which of the following messaging applications, if any, have you used in the past seven days?" Sample sizes were 675 for India, 1,670 for Germany, 711 for Brazil, and 1,133 for Spain, and include Consumer and SMB group respondents as well as respondents who did not qualify for either group.
[3] "As a way to communicate with friends and family" in the survey.
[4] "As a way to communicate for my main job or business" in the survey.
[5] "As a way to communicate with doctors, physiotherapists, or other health care providers" in the survey.
[6] "As a way to communicate with community organizations (schools, government offices)" in the survey.
[7] "As a consumer (communications with businesses, stores, or service providers)" in the survey.
[8] "None of the above" in the survey.
[9] Overall estimates presented in this table and in all following tables in the report are calculated as simple averages of the estimates for each country.

Sources:
[1] Survey of WhatsApp Users, February 2016.

B. Mechanisms Through Which WhatsApp May Impact The Economy

Though WhatsApp use varies across contexts, the qualitative results reveal five main mechanisms through which WhatsApp may affect economic growth:

- Lowering production costs and increasing the efficiency of internal business operations;
- Improving customer service;
- Lowering marketing costs;
- Making communications with investors more efficient; and
- Improving public sector services.

We take each mechanism in turn, describing the logic by which it might affect economic outcomes and the evidence in support of these relationships.

i. Lower Production Costs/Increased Work Efficiency by Using WhatsApp for Internal Business Communication

Similar to other communication and technology innovations, the use of WhatsApp in a workplace setting can increase worker productivity by 1) saving time and 2) improving work flow efficiency by facilitating fast communication, including the transmission of documents and images. [37] Improved worker productivity should translate to firm-level productivity gains, since employees can produce the same amount of goods and/or services at a lower cost. If these gains occur in a sufficient number of businesses (and/or across many industries), then WhatsApp may contribute to overall economic growth.

The results of the focus groups and surveys conducted in Brazil, Spain, India and Germany suggest that WhatsApp helps employees save time and improve their efficiency. In particular, focus group participants report using WhatsApp group chats and messaging to communicate quickly with colleagues and to set up meetings. (See Section A of Appendix I, as well as anecdotes A.5, A.7, and A.8.) Some examples include the following:

- Remote communication: A transport business owner in India uses WhatsApp to communicate instantly with his delivery drivers, who are otherwise hard to reach when they are on the road. (See anecdote A.2.)
- Sending documents: A business owner in India uses WhatsApp to send copies of product designs to the salespeople while an e-commerce supervisor mentions sharing pictures and files with colleagues regularly to improve work efficiency. (See anecdotes A.1 and A.4.) Similarly, an administrative department worker in Spain uses WhatsApp to send reports or pictures of budgets, explaining that this is much more convenient and efficient than using a fax or postal services. (See anecdote A.3.)

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[37] See, for example, Atms, "Internal communication: greater productivity with WhatsApp," available at https://atms.at/en/blog-post/internal-communication-greater-productivity-whatsapp, accessed February 25, 2017; Forever Digital (2016) "Is WhatsApp the new way to manage client & internal communications?," available at https://www.foreverdigital.co.uk/whatsapp-new-way-manage-client-internal-communications/, accessed February 25, 2017; Elcom (2016) "Communication Tools Used in Modern Day Business," available at https://www.elcomcms.com/resources/blog/communication-tools-used-in-modem-day-business, accessed February 25, 2017.

When asked why they use WhatsApp to communicate with colleagues, focus group participants in all four countries state that it is quick, saves them time, and is much more convenient than email or traditional phone calls in many contexts. (See anecdotes A.1, A.2, A.7, A.8, and A.9.)

Survey results indicate that the focus group anecdotes could be indicative of generalizable trends. Specifically, 25% of respondents use WhatsApp to interact with colleagues, supervisors, and/or other employees.[38] Among this group, the common uses of WhatsApp in the workplace include setting up or confirming meetings or phone calls (59%), planning future tasks or work (61%), asking questions about projects, products, or services (60%) and sending or receiving documents (42%). (See Table 3 below.)

[38] Among those survey respondents recruited via Lightspeed/GMIS's nationally representative consumer panels who use WhatsApp.

Table 3
Purpose of Work-Related Communications via WhatsApp[1]
(B2B Survey – Internal Communications)[2]

	India (N = 150)	Germany (N = 150)	Brazil (N = 150)	Spain (N = 150)	Overall (N = 600)
To plan future tasks or work	63%	53%	67%	58%	61%
To set up or confirm meetings / phone calls	61%	68%	60%	46%	59%
To ask questions about projects	69%	31%	47%	41%	47%
To send or receive documents	65%	25%	42%	36%	42%
To brainstorm or discuss ideas	38%	39%	29%	49%	39%
To ask questions about products or services offered by our employer or business	37%	19%	33%	27%	29%
Other	1%	1%	1%	2%	1%
None of the above	0%	5%	3%	3%	3%
Unsure / Don't know	0%	0%	1%	1%	1%

Notes:

[1] Respondents were asked question QB1_6 "When communicating with WhatsApp with [work colleagues, supervisors and/or employees], which of the following options, if any, is generally the purpose of the communication?" and were able to select multiple answer options. The exact wording of the question depended on which of the answer options "work colleagues," "supervisors", and "employees" a respondent picked on question QS14, "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?" A total of nine respondents in India, two in Germany, ten in Brazil, and three in Spain selected all available answer options.

[2] To be eligible for the B2B Survey on WhatsApp usage for internal communications, respondents answered "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?", "Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?" and "work colleagues," "supervisors," or "employees" when asked question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?" Respondents eligible for multiple surveys were assigned using a least fill method.

Sources:

[1] Survey of WhatsApp Users, February 2016.

People not only use WhatsApp frequently in the workplace, but also perceive it as associated with productivity gains. Of the respondents surveyed on this usage, 63% state that communicating via WhatsApp with work colleagues, supervisors, and/or other employees saves them time or increases their productivity during the day. In this group, 48% reported that their WhatsApp use saved them one hour of time or more in the seven days preceding the survey administration, and 81% indicate that using WhatsApp to communicate with colleagues is important or somewhat important to them. (See Table 4 below.) On all three questions (relating to productivity gains, time saved, and importance), people in Brazil and India are more likely to say that WhatsApp provides value in the workplace than are those in Germany and Spain.

Table 4
Importance of Having WhatsApp as a Means to Communicate for Work-Related Purposes[1]
(B2B Survey – Internal Communications)[2]

	India (N = 150)	Germany (N = 150)	Brazil (N = 150)	Spain (N = 150)	Overall (N = 600)
Very important	64%	22%	44%	27%	39%
Somewhat important	25%	48%	41%	52%	41%
Neither unimportant nor important	7%	23%	9%	13%	13%
Somewhat unimportant	3%	5%	5%	5%	5%
Not important	2%	1%	1%	1%	1%
Unsure/Don't know	0%	1%	0%	1%	1%

Notes:
[1] Survey respondents were asked the question "Being able to communicate with [work colleagues, supervisors and/or employees] by using WhatsApp is... for you?". The exact wording of the question depended on which of the answer options "work colleagues," "supervisors," and "employees" a respondent picked on question QS14, "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?"
[2] To be eligible for the B2B Survey on WhatsApp usage for internal communications, respondents answered "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?", "Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?" and "work colleagues," "supervisors," or "employees" when asked question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?" Respondents eligible for multiple surveys were assigned using a least fill method.

Source:
[1] Survey of WhatsApp Users, February 2016.

ii. Increased Sales/Revenues Related to More Responsive Client/Customer Service via WhatsApp

Many businesses use WhatsApp not just to communicate internally, but also to communicate with customers, clients, or patients. By shifting customer service to WhatsApp, businesses may lower their labor costs or attract more customers who value the convenience of the platform. Thus, WhatsApp use may lead to increased sales and revenue gains.[39]

[39] There could be a substitution effect as the use of WhatsApp becomes part of how businesses compete with

Focus group participants in all four countries indicate that WhatsApp is frequently used to quickly and easily interact with service providers, including mechanics, barbers, lawyers, and appliance maintenance technicians. (See anecdotes B.6, B.7, B.9, and B.12.) Anecdotes were diverse, and included the following:

- A cosmetics business owner in India uses WhatsApp to send links of its inventory catalog, or of specific products, to customers. (See anecdote B.1.)
- A business owner in India sends pickup or delivery receipts to customers via WhatsApp. (See anecdote B.3.)
- A customer in Spain receives WhatsApp messages from a driving school to schedule driving lessons. (See anecdote B.5.)
- Respondents in Brazil report ordering food, setting up appointments with hairdressers or manicurists, and contacting appliance maintenance services through WhatsApp. (See anecdotes B.6 and B.7.)
- Consumers in Germany communicate with maintenance services, order fruits and vegetables in bulk or order restaurant food deliveries via WhatsApp, at times using voice messages to avoid typing. (See anecdotes B.12-B.14.)
- Overall, participants repeatedly mention that WhatsApp enables vendors and business to provide customers or clients with high quality service. (See anecdotes B.6, B.7, B.9, B.10, and B.12.)

Consistent with the anecdotal evidence from the focus groups, 18% of survey respondents use WhatsApp to communicate with businesses, stores, or service providers, ranging from 7% in Germany to 29% in Brazil. Of this group, 51% spent more than one hour communicating with businesses using WhatsApp in the seven days preceding the administration of the survey, with more frequent B2C communication reported in India and Brazil.[40] Of customers who use

one another as consumers may switch from a business that does not use WhatsApp to another that offers the convenience of communicating with them via WhatsApp. For the purposes of this study, we do not attempt to measure this substitution effect, which is outside of the scope of the survey.

[40] See also Appendix V, Table 4 for a summary of the amount of time respondents spent doing various tasks, measured at the median

WhatsApp to communicate with stores or businesses, 82% report that being able to do so is either important or somewhat important. Stated reasons include being able to contact businesses or service suppliers after business hours, saving time by avoiding phone calls, getting fast answers to inquiries, and having a written record of a conversation.

Consumers use WhatsApp to communicate with businesses for a variety of purposes, the most common including confirming an appointment or reservation (43%), placing an order or making a purchase (41%), or asking for information on products or services (e.g., price, inventory, return policy) (36%). (See Table 5 below.) When asked to state the purposes for which they use WhatsApp, the responses from businesses largely echo those that consumers provide. (See Table 6 below.) Focus group respondents who use WhatsApp to communicate with customers report using WhatsApp because it allows them to reach more people (particularly those that are hard to contact by phone), and to save time by contacting many clients at once.

Table 5
Purpose of WhatsApp Communications with Businesses or Service Providers[1]
(Consumer Survey – C2B Communications)[2]

	India (N=150)	Germany (N=151)	Brazil (N=150)	Spain (N=150)	Overall (N=601)
Make or confirm an appointment or reservation	50%	39%	39%	42%	43%
Place an order or make a purchase	51%	25%	45%	43%	41%
Ask for information on products or service (e.g., price, inventory, return policy)	45%	21%	43%	33%	36%
Ask about or set up delivery services	39%	24%	33%	32%	32%
Ask about location or opening hours	37%	25%	38%	26%	31%
Respond to a promotion or an offer	35%	18%	24%	27%	26%
Provide feedback on products or services	37%	17%	24%	21%	25%
Other	2%	3%	2%	3%	2%
None of the above	4%	15%	6%	6%	8%
Unsure / Don't know	2%	5%	1%	3%	3%

Notes:

[1] Survey respondents were asked question Q1_6 "In the past seven days, did you contact businesses or service providers using WhatsApp to…?" and were able to select multiple answer options. A total of 4 respondents selected all available answer options.

[2] To be eligible for the Consumer Survey on WhatsApp usage as for C2B communications, respondents answered "As a consumer (communications with businesses, stores, or service providers)" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?" Respondents eligible for multiple surveys were assigned using a least fill method.

Table 6
Purpose of Businesses' Communications with Customers, Clients, or Patients via WhatsApp[1,3]
(B2B Survey – External Customer and Supplier Communications)[2]

	India (N = 93)	Germany (N = 107)	Brazil (N = 84)	Spain (N = 85)	Overall (N = 369)
To set up or confirm an appointment or a reservation	52%	71%	37%	40%	50%
To provide information on prices of [products/services][4]	49%	23%	55%	35%	41%
To establish a first contact	37%	62%	36%	26%	40%
To promote [products/services]	56%	17%	40%	21%	34%
To provide information not related to prices of [products/services]	40%	31%	29%	25%	31%
To provide information about a delivery service	42%	20%	33%	31%	31%
To conduct surveys or ask for feedback on [products/services]	33%	12%	20%	9%	19%
Other:	3%	1%	1%	6%	3%
None of the above	0%	2%	1%	2%	1%
Unsure / Don't know	0%	0%	1%	4%	1%

Notes:

[1] Respondents were asked question QB2_6A "When communicating with WhatsApp with [customers/clients/patients], which of the following options, if any, is generally the purpose of the communication?" and were able to select multiple answer options. The exact wording of this question was populated depending on which of the options "customers" or "clients/patients" each respondent had selected when answering question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?" One respondent each in Brazil and Spain selected all available answer options.

[2] To be eligible for the B2B Survey on WhatsApp usage for external communications with customers and suppliers, respondents answered "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?", "Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?" and "customers," "clients/patients," or "suppliers" when asked question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?" Respondents eligible for multiple surveys were assigned using a least fill method.

[3] Question QB2_6A was shown to respondents who answered "customers" or "clients/patients" on question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?"

[4] Populated with the respondent's answer to question QB3 "Thinking of your main job or occupation, does your business or employer sell/offer…?" The available options were "products," "services," and "products and services."

How does WhatsApp affect customer service when businesses are the clients? Of the respondents who use WhatsApp for their job, 24% state that they use WhatsApp to communicate with suppliers. Moreover, 52% state that over 40% of their last ten purchase transactions from vendors or suppliers involved communicating via WhatsApp.[41] B2B survey respondents mention using WhatsApp with suppliers to confirm an appointment or delivery (61%), discuss or negotiate prices of purchases (48%), and discuss non-price related information about purchases (47%). Half of respondents believe that communicating with suppliers using WhatsApp results in lower costs for their employers or business, and 77% think that using WhatsApp saves them time or increases their productivity. Overall, 89% mention that being able to communicate with suppliers via WhatsApp is either important or somewhat important. (See Table 7 below.) Illustrating this point, a focus group participant in Brazil who owns a small women's shoe shop describes how he communicates using WhatsApp mainly with suppliers, which he finds more personal than via E-mail. Doing so helps him build stronger relationships, which he leverages to negotiate and obtain more favorable contracts. (See anecdote B.11.)

[41] Respondents who stated they were aware of their business or employers' purchases in 2016 were asked how many of the last ten purchase transactions involved WhatsApp.

Table 7
Importance of WhatsApp to Communicate with Suppliers[1]
(B2B Survey –Supplier Communications)[2]

	India (N = 58)	Germany (N = 44)	Brazil (N = 66)	Spain (N = 65)	Overall (N = 233)
Very important	53%	39%	58%	29%	45%
Somewhat important	47%	34%	36%	58%	44%
Neither unimportant nor important	0%	18%	2%	9%	7%
Somewhat unimportant	0%	5%	3%	3%	3%
Not important	0%	5%	2%	0%	2%
Unsure/Don't know	0%	0%	0%	0%	0%

Notes:

[1] Survey respondents were asked the question "Being able to communicate with suppliers by using WhatsApp is… for you?"

[2] To be eligible for the B2B Survey on WhatsApp usage for external communications with customers and suppliers, respondents answered "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?"; "Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?"; and "Customers," "Clients/patients," or "Suppliers" when asked question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?" Respondents eligible for multiple surveys were assigned using a least fill method.

iii. Lower Marketing Costs Through the Use of WhatsApp as a Promotional Tool

In addition to providing customer service via WhatsApp, businesses are also using the platform to promote or advertise products or services. Mobile advertising is one of the fastest-growing advertising formats (Bart et al., 2014; Tsend and Teng, 2016),[42] and studies have shown that people are more likely to carefully read ads that are transmitted through a messaging service such as WhatsApp than through traditional mediums (Tsend and Teng, 2016). Because WhatsApp is free to use[43] and operates at a large scale, using it to advertise may decrease promotional costs for businesses and thus increase their profits.

[42] Tseng, Fan-Chen and Teng, Ching-I. "Carefulness Matters: Consumer Responses to Short Message Service Advertising." *International Journal of Electronic Commerce,* Vol. 20, No.4 (Summer 2016), pp 525-550 and Bart, Yakov, Stephen, Andrew T, and Sarvary, Miklos. "Which Products Are Best Suited to Mobile Advertising? A Field Study of Mobile Display Advertising Effects on Consumer Attitudes and Intentions." *Journal of Marketing Research*, Vol. LI (June 2014), pp. 270-285.

[43] Downloading the application is free of charge, but there are costs associated with its use due to the fact that many WhatsApp users rely on cellular data to access the application in areas without Wi-Fi, which may incur user costs.

Focus group interviews suggest that promoting new inventory to existing customers via WhatsApp is a capability that certain business owners are exploring, use, and may wish to build on. (See Appendix I, Section C.) The following anecdotes provide some examples:

- A footwear retail store manager in India sends pictures of footwear designs to advertise his products to customers via WhatsApp, communicating with customers after asking their permission during a phone conversation to follow up with them via WhatsApp, which saves him from asking for or using customer E-mail addresses and large E-mail distribution lists. He also uses the application as an unobtrusive way to update customers with various types of offers or store discounts. (See anecdote C.1.)
- In Spain, real estate agencies exchange pictures of properties with sellers or buyers via WhatsApp. (See anecdote C.3.)
- Customers forward pictures of products they like or promotions via WhatsApp to friends and other acquaintances who might be interested in them. (See anecdotes C.2 and C.7.)

Among survey respondents who communicate with businesses using WhatsApp, 26% responded directly to a promotion or offer in the seven days preceding the survey's administration. Moreover, 34% of employees or business owners who use WhatsApp to interact with customers report using it to promote goods and/or services.[44]

An additional advantage of WhatsApp advertisements over those shared through traditional mediums (e.g., billboards, fliers) is the ease with which they can be disseminated. In fact, 72% of survey respondents who use WhatsApp to communicate with businesses reported forwarding messages received from business at least once in the seven days preceding the survey's administration, amplifying the reach of ads beyond their originally targeted audience.

[44] This percentage varied by country. For example, it was 56% in India and 21% in Spain.

iv. More Efficient Communications with Investors and Financial Contributors

Previous research finds that "ICT capability is viewed as an important source of innovation for small firms, because it allows firms to become efficient in maximizing benefits from different processes related to gathering vital information about the market and customers, reducing entry barriers to new markets, and coordinating relationships with external actors" (Vinit and Örtqvist, 2015).[45,46] Advancements in ICT – including WhatsApp - may therefore influence a firm's access to external resources, by enabling or facilitating relationships with funders, investors, or business partners. Streamlined and hastened interactions between businesses and investors may lead to more funding and, as a result, greater long run growth.

Across all four countries, 10% of qualified survey respondents use WhatsApp to communicate with business partners, investors, shareholders, or financial contributors. The most common purposes for these interactions include: setting up or confirming meetings (67%), discussing future work (63%), or providing information on products or services (62%). Further, among this group, 51% of respondents agreed that communicating with investors or business partners via WhatsApp results in lower costs for their employers or business, and 75% state it saves them time or increases their productivity. (See Table 8 below.) Overall, 88% believe that communicating with investors or business partners via WhatsApp is either important or somewhat important.

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45 ICT stands for Information and communications technology.

46 Parida, Vinit and Daniel, Örtqvist. "Interactive Effects of Network Capability, ICT Capability, and Financial Slack on Technology-Based Small Firm Innovation Performance," *Journal of Small Business Management*, 2015 53(S1), p. 279.

Table 8
Cost and Time Savings from Using WhatsApp to Communicate with Business Partners, Financial Contributors, and Investors
(B2B Survey – External Investor Communications)[1]

	India (N=150)	Germany (N=150)	Brazil (N=150)	Spain (N=150)	Overall (N=600)
Costs[2]					
Has led to lower costs for my employer or business	66%	41%	66%	31%	51%
Has made no difference on costs for my employer or business	23%	49%	28%	55%	39%
Has led to higher costs for my employer or business	10%	3%	2%	8%	6%
Unsure / Don't know	1%	6%	4%	5%	4%
Time and Productivity[3]					
Saves me time or increases my productivity during the work day	80%	65%	84%	71%	75%
Makes no difference on my work productivity during the work day	17%	31%	13%	22%	21%
Slows me down or decreases my productivity during the work day	3%	2%	3%	7%	4%
Unsure / Don't know	0%	1%	0%	1%	1%

Notes:

[1] To be eligible for the B2B Survey on WhatsApp usage for external communications with business partners, funders, and investors, respondents answered "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?", "Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?" and "business partners," "funders/financial contributors," or "investors/shareholders" when asked question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?" Respondents eligible for multiple surveys were assigned using a least fill method.

[2] Survey respondents were asked the question "Communicating with [business partners, funders / financial contributors and/or investors / shareholders] using WhatsApp...?" and offered the answer options "Has led to lower costs for my employer or business," "Has made no difference on costs for my employer or business," "Has led to higher costs for my employer or business," and "Unsure / Don't know." The exact wording of the question depended on which of the answer options "business partners," "funders/financial contributors," and "investors / shareholders" a respondent picked on question QS14, "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?"

[3] Survey respondents were asked the question "Communicating with [business partners, funders / financial contributors and/or investors / shareholders] using WhatsApp…?" and offered the answer options "Saves me time or increases my productivity during the work day," "Makes no difference on my work productivity during the work day," "Slows me down or decreases my productivity during the work day," and "Unsure /

Don't know." The exact wording of the question depended on which of the answer options "business partners," "funders/financial contributors," and "investors / shareholders" a respondent picked on question QS14, "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?"

v. Improvements in Public and Social Sector Services Due to WhatsApp

The introduction of WhatsApp has not only affected the private sector, but also the public and/or nonprofit sector, including health care centers, education institutions, and government offices. Improvements in social welfare that result from WhatsApp are likely to have positive economic spillovers, and thus deserve some attention here.

Focus group participants in all four countries indicate that WhatsApp is frequently used to interact with doctors, school teachers, volunteer organizations, and public institutions. (See anecdotes D.1, D.2, D.3, D.5, D.6, D.7, D.8, and D.11.) Examples of anecdotes include the following:

- A teacher in India uses WhatsApp to inform parents about their children being absent from school or send homework. (See anecdote D.1)
- A patient in India sends pictures of a skin condition to his doctor via WhatsApp, who is then able to prescribe a treatment. (See anecdote D.3)
- A citizen in Spain informs the City Hall via WhatsApp that the dumpsters on his or her street are defective. (See anecdote D.7)
- A citizen in Brazil uses WhatsApp to inform a radio station about a traffic accident. (See anecdote D.9)
- A citizen in Germany uses WhatsApp to schedule training times with his fellow sports club members. (See anecdote D.12)

Across the four surveyed countries, 10% of WhatsApp users use WhatsApp to communicate with health care providers.[47] This communication may help lower health care costs and reduce

[47] In particular, in India, 18% of WhatsApp users communicate with health care providers via WhatsApp. For Spain, Germany and Brazil, the percentages are respectively 5%, 3%, and 15%.

wait times by connecting people with their health care providers and, in some cases, facilitating diagnostics through the exchange of pictures and messages. WhatsApp may also contribute to improving access to healthcare if patients who would typically not be able to travel to consult a doctor can now obtain diagnostics and treatments at home through WhatsApp. Focus group participants in India, for example, mention receiving lab test results, diagnostics, and medical prescriptions via WhatsApp. (See anecdotes D.3, D.4, D.5, and D.6.)

Furthermore, 19% of survey respondents use WhatsApp to communicate with community organizations (e.g., schools, government offices, and community or religious centers). According to focus group participants, teachers use WhatsApp to communicate with parents of students. (See anecdotes D.1, D.2, and D.10.) Participants also mention using WhatsApp to communicate with volunteer organizations (e.g., to obtain reminders of events), with the city hall (e.g., to report some activity or complain about a service), or to communicate with the police. (See anecdotes D.6, D.7, D.9, and D.11.)

Table 9
Communications with Organizations via WhatsApp[1]
(Consumer Survey – Communications with other organizations)[2]

	India (N = 97)	Germany (N = 126)	Brazil (N = 82)	Spain (N = 103)	Overall (N = 408)
Schools / universities / libraries	62%	35%	59%	64%	55%
Community / activity centers	56%	21%	21%	22%	30%
Government offices / public transit	24%	6%	18%	15%	16%
Religious centers (e.g. a church, synagogue, mosque, or temple)	11%	5%	30%	5%	13%
Other[4]	16%	6%	9%	4%	9%
None of the above	4%	21%	7%	10%	10%
Unsure / Don't know	0%	2%	1%	1%	1%

Notes:
[1] Respondents were asked question QC2_5 "In the past seven days, what types of community organizations did you communicate with using WhatsApp?" and were able to select multiple answer options. No respondents selected all available answer options.
[2] To be eligible for the Consumer Survey on WhatsApp communications with community organizations and health care providers, respondents answered "As a way to communicate with community organizations (schools, government offices)" or "As a way to communicate with doctors, physiotherapists, or other health care providers" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?" Respondents eligible for multiple surveys were assigned using a least fill method.
[3] Question QC2_5 was shown to respondents who selected the answer option "As a way to communicate with doctors, physiotherapists, or other health care providers" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?" Respondents could also qualify for the consumer survey on WhatsApp community organizations and health care providers by answering "As a way to communicate with doctors, physiotherapists, or other health care providers" on the same question; however with the exception of one respondent who selected both options and was assigned into the community organizations sub-survey via a least fill method, these respondents were not shown Question QC2_5. The answers of this respondent are excluded in the table above.
[4] Includes answer options "Health care centers / hospitals," "Emergency services (e.g., police or fire stations)," and "Other." Respondents who chose "Other" had the option of entering the organization they communicated with as a free text response.

Sources:
[1] Survey of WhatsApp Users, February 2016.

V. Economic Impact Estimates of WhatsApp Usage

Results from the focus groups and surveys indicate that WhatsApp may affect economic growth through a variety of mechanisms. But what is the magnitude of the effect? To estimate the economic effect of WhatsApp, we employ two complementary approaches. The first relies on our survey results, which we use to estimate consumer discretionary spending in any way touched by or associated with WhatsApp in each of the four countries surveyed. By focusing on discretionary spending (i.e., spending that excludes mortgage, rent, and utilities), we are able to obtain an estimate of the percentage of consumer transactions that involve

communications via WhatsApp. The second approach relies on a series of econometric models that assess the relationship between WhatsApp penetration and GDP. This modeling approach allows us to estimate the economic activity (measured as GDP) that is associated with WhatsApp usage. This approach complements our survey and focus group research by analytically exploring WhatsApp's effect on GDP both globally and regionally.[48]

A. Estimating the Influence of WhatsApp on GDP: Survey-Based Approach

The survey results allow us to approximate the portion of consumer spending associated with WhatsApp (i.e., spending and transactions that involved communications via WhatsApp) for each of our key countries where surveys were conducted. Consumer survey respondents were asked to estimate the percentage of their transactions with businesses or service providers that are intermediated using WhatsApp in some way. We focus on discretionary spending because (1) focus group research indicates that WhatsApp related spending is primarily discretionary and (2) it is less prone to measurement error (i.e. people are more aware of how WhatsApp intermediates discretionary spending relative to non-discretionary spending).

Estimating the amount of discretionary spending intermediated by WhatsApp communications requires three steps. First, we calculate the percentage of discretionary spending attributable to WhatsApp among WhatsApp users. To do this, we use the survey data to estimate the share of WhatsApp users in each country that use WhatsApp as a consumer, and then take our survey-derived estimate of the share of discretionary spending that is intermediated by WhatsApp in any way (among respondents who use WhatsApp as a consumer). By multiplying (i) the upper and lower bounds of the share of discretionary spending amongst WhatsApp users that use WhatsApp as a consumer by (ii) the share of WhatsApp users who use WhatsApp as a consumer,[49] and then by (iii) the share of WhatsApp

[48] A key limitation of this approach is that the models only assesses macroeconomic-level economic impacts, not social impacts (e.g., social effects driven by improvements in communications with community organizations), which are much more difficult to accurately identify and measure.

[49] This share is calculated based on data collected from nationally representative consumer panels via our survey's screener questions.

users in the country's overall population, we obtain a range of consumer spending that is intermediated by WhatsApp in some way at the country level.[50,51] In order to extrapolate this share to an estimate of discretionary spending associated with WhatsApp, we use national accounts data to determine the percentage of GDP associated with consumer discretionary spending. [52,53] Table 10 below displays this calculation for each country.

However, before turning to this table, we can take India as an example to help illustrate the calculation described above:

- Survey results suggest that among WhatsApp users who communicate with businesses or service providers, on average, 15%–29% of discretionary consumer spending is intermediated through WhatsApp.[54,55]

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50 Specifically, the options were "None," "Between 1% and 24% of the total amount," "Between 25% and 49% of the total amount," "Between 50% and 74% of the total amount," "Between 75% and 99% of the total amount," "100% of the total amount," and "Unsure/Don't know." "Unsure/Don't know" responses are treated as equal to "None."

51 The range of the share of discretionary spending associated with WhatsApp is obtained by using the minimum value of a respondent's answer and the maximum value. For example, a respondent who answered "between 25% and 49% of the total amount [involves WhatsApp]" is treated as if either 25% (to obtain a lower bound) or 49% (to obtain a lower bound) of his or her total spending were intermediated using WhatsApp. We calculate a country's upper and lower bounds by multiplying the number of respondents in each category by the upper and lower bounds for that group's share of spending associated with WhatsApp, and then dividing the result by the number of respondents in that country. Although we report a range of estimates (based on minimum to maximum values), we believe that the lower bound figure is a closer estimate of consumer discretionary spending currently associated with WhatsApp.

52 All inbound clicks on the survey were balanced according to the most up-to-date age, gender, and region demographic data from each country to ensure representative results. As a sensitivity analysis, we re-weight the survey data and find that our results do not change – further confirming the representativeness of our results.

53 Given India's low Internet penetration rate (22% of the population in 2015 according to the Pew Research Center), we restricted our sample of Indian respondents to those aged 18 to 45 and weighted them according to the national population gender, age and regional splits for that age group. We believe this data is representative of India's online population. See Pew Research Center, "Profile of Indian Internet Users," April 5, 2016. Available at http://www.pewresearch.org/fact-tank/2016/04/06/global-tech-companies-see-indias-vast-offline-population-as-untapped-market/ft_16-04-06_indiainternet_users/, accessed February 22, 2017.

54 Discretionary consumer spending is defined as spending on goods (e.g., groceries, medicine, and clothing) and services (e.g., transportation, daycare, housekeeping, and personal care) excluding rent, utilities, or mortgage.

55 The range of the share of discretionary spending associated with WhatsApp is obtained by using the minimum value of a respondent's answer and the maximum value. For example, a respondent who answered "between 25% and 49% of the total amount [involves WhatsApp]" is treated as if either 25% (to obtain a lower bound)

- When taking into account the share of individuals who do not communicate with businesses or service providers via WhatsApp in India, this number corresponds to 0.5% to 1.0% of discretionary consumer spending (excluding housing-related expenditures such as rent/mortgage and utilities) for India's entire population.[56]
- Based on India's total discretionary spending, this range is equivalent to PPP USD (2015) $9.6 to $18.0 billion, which translates to approximately 0.12%–0.23% of India's GDP in 2015.

Applying this method in each of the four countries in which we conducted surveys, we obtain the following estimates of WhatsApp-associated consumer spending in 2015:

- Brazil: $12.0 – $28.3 billion in consumer spending, or 0.38%–0.88% of GDP.
- India: $9.6 – $18.0 billion in consumer spending, or 0.12%–0.23% of GDP.
- Germany: $4.4 – $8.0 billion in consumer spending, or 0.11%–0.20% of GDP.
- Spain: $3.2 – $6.6 billion in consumer spending, or 0.20%–0.41% of GDP.

These results, which are summarized below in Table 10, are aligned with the econometric estimates presented in the following section.

or 49% (to obtain a lower bound) of his or her total spending were intermediated using WhatsApp.

[56] See Table 10 for computational details. To obtain the 0.5% to 1.0% range, we multiply the share of the population that uses WhatsApp (row C) by the share of WhatsApp users that use WhatsApp as a consumer (row D) and by the share of discretionary spending by people who use WhatsApp as consumers that is intermediated by WhatsApp (row E).

Table 10
Consumer Spending Associated with WhatsApp[1]

	India	Germany	Brazil	Spain	Note
WhatsApp Users					
Active WhatsApp users in October 2016	160,000,000	35,000,000	100,000,000	22,655,000	[A]
Population in 2016	1,266,883,598	80,722,792	205,823,665	48,563,476	[B]
Share of population that uses WhatsApp	13%	43%	49%	47%	[C]
Data from Survey					
Share of WhatsApp users that use the app as consumers	27%	7%	29%	9%	[D]
Share of discretionary spending by people who use WhatsApp as consumers that is intermediated by WhatsApp	15% – 29%	10% – 18%	8% – 19%	11% – 22%	[E]
Share of total discretionary spending that is intermediated by WhatsApp	0.5% – 1.0%	0.3% – 0.5%	1.1% – 2.7%	0.4% – 0.9%	[F]
National Accounts Data					
Discretionary spending (in billions)	$1,821	$1,512	$1,056	$742	[G]
Gross Domestic Product in 2015 (in billions)	$7,998	$3,924	$3,199	$1,621	[H]
Results					
Consumer Spending associated with WhatsApp (in billions)	$9.6 – $18.0	$4.4 – $8.0	$12.0 – $28.3	$3.2 – $6.6	[I]
Share of Year 2015 GDP intermediated by WhatsApp	0.12% – 0.23%	0.11% – 0.20%	0.38% – 0.88%	0.20% – 0.41%	[J]

Notes and Sources:

[A] The figure for India is from http://mashable.com/2016/11/15/whatsapp-160-million-monthly-active-users-india/, the figure for Germany from http://www.horizont.net/medien/nachrichten/Sky-Sport-News-HD-Schon-20.000-Nutzer-empfangen-Nachrichten-per-Whatsapp-135770, and the figure for Brazil from http://www.aljazeera.com/news/2016/05/brazil-whatsapp-ban-affects-100-million-users-160503101425550.html. The figure for Spain is calculated by multiplying the 23 million active users of mobile applications in Spain in the year 2014 by the 98.5% of mobile application users who used WhatsApp. Both of these figures are taken from http://www.julianmarquina.es/en-espana-hay-23-millones-de-usuarios-activos-de-aplicaciones-moviles/.

[B] Population estimates for the year 2016 from the CIA World Factbook.

[C] = [A] / [B].

[D] Based on survey responses: The share of survey respondents in each country who state that they use WhatsApp and who use WhatsApp to communicate with businesses or service providers.

[E] Based on survey responses. Consumers who stated they were aware of how much they spent on goods and services excluding their rent or mortgage and utilities were asked the question "You spent $X in the past seven days on goods (e.g., groceries, medicine, and clothing) and services (e.g., transportation, daycare, housekeeping, and personal care) excluding your rent, utilities, or mortgage. To the best of your knowledge, what portion of these purchases involved communicating for any purpose with a business or service provider by using WhatsApp?" Answer options were "None," "Between 1% and 24% of the total amount," "Between 25% and 49% of the total amount," "Between 50% and 74% of the total amount," "Between 75% and 99% of the total amount," "100% of the total amount," and "Unsure/Don't know." For each category, we calculate the value using both the minimum and the maximum of that category (e.g., a respondent who answered "between 25% and 49% of the total amount" is treated as if either 25% or 49% of his or her total spending were intermediated using WhatsApp) as to estimate lower and upper bounds. "Unsure/Don't know" responses are treated as equal to "None."

[F] = [C] * [D] * [E].

[G] Total consumer spending, excluding spending on housing and utilities. Figures for Brazil and India are 2010 figures from the World Bank Global Consumption Database (http://datatopics.worldbank.org/consumption/) grown by the average GDP growth for 2010-2015. Figures for Spain and Germany are figures for 2015 from the OECD Final Consumption Expenditure of Households (https://stats.oecd.org/Index.aspx?DataSetCode=SNA_TABLE5). All figures are reported in Year 2015 International Dollars, using conversion figures derived from the World Bank International Comparison Program database, World Bank national accounts data, and OECD National Accounts data files.

[H] Gross Domestic Product is reported in constant 2015 international dollars representing purchasing power parity. Sources: World Bank World Development Indicators.

[I] = [F] * [G]. All figures are reported in Year 2015 International Dollars.

[J] = [I] / [H].

B. Estimating the Influence of WhatsApp on GDP: Econometric Approach

The approach presented in the previous section does not allow us to calculate WhatsApp's potential economic impact outside the four countries for which we have nationally representative surveys. To overcome this constraint, we next estimate the relationship between WhatsApp usage and GDP using data for 157 countries from 2012-2015,[57] controlling for a range of macroeconomic factors that may confound this relationship.

[57] The following 157 countries with a complete set of data are included in the panel model: Afghanistan, Albania, Algeria, Angola, Antigua And Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bhutan, Bolivia, Botswana, Brazil, Brunei, Darussalam, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Central African Republic, Chad, Chile, China, Colombia, Comoros, Dem. Rep. of Congo, Rep. of Congo, Croatia, Cyprus, Czech Republic, Côte D'Ivoire, Denmark, Dominica, Dominican Republic, Ecuador, Egypt, Arab Rep., El Salvador, Equatorial Guinea, Estonia, Ethiopia, Fiji, Finland, France, Gabon, The Gambia, Georgia, Germany, Ghana, Greece, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Korea, Rep., Kuwait, Lao Pdr, Latvia, Lebanon, Liberia, Lithuania, Luxembourg, Macau, Macedonia, Madagascar, Malawi, Malaysia, Mali, Malta, Mauritius, Mexico, Moldova, Mongolia, Montenegro, Morocco, Mozambique, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russian Federation, Rwanda, Saudi Arabia, Senegal, Serbia, Seychelles, Singapore, Slovak Republic, Slovenia, South Africa, Spain, Sri Lanka, St. Kitts And Nevis, St. Lucia, St. Vincent And The Grenadines, Sudan, Suriname, Swaziland, Sweden, Switzerland, Tajikistan, Tanzania, Thailand, Timor-Leste, Togo, Trinidad And Tobago, Tunisia, Turkey, Uganda, Ukraine, United Kingdom, United States, Uruguay, Vanuatu, Vietnam, Yemen Rep., Zambia, Zimbabwe.

Challenges to estimating WhatsApp's effect on GDP include omitted variable and endogeneity biases. The former is problematic if we exclude a variable from the analysis that is both correlated with WhatsApp penetration and also GDP, while endogeneity bias is a concern if WhatsApp penetration both causes and is simultaneously caused by changes in GDP.

To account for these potential issues, we estimate a number of models, including multivariate regressions (with fixed and random effects) and instrumental variable analyses. Across all specifications, the results are robust: according to even the most conservative estimates, a five percentage point increase in WhatsApp penetration implies more than $22.9 billion USD in GDP gains for countries included in the sample.[58]

i. Empirical Specification

Our dataset consists of 157 countries from 2012 to 2015. For each country-year, we regress GDP on WhatsApp penetration, both normalized by population. Data on the dependent variable are obtained from the World Bank, while data on the independent variable were provided by WhatsApp.

To account for omitted variable bias, we include a number of controls in our analysis. In Robert Barro's seminal paper on the macroeconomic determinants of GDP growth, he includes measures of education, public health, government consumption, infrastructure investment, market distortion, and political instability. We control for each of these factors in our analysis.[59] Our empirical strategy is also informed by the literature on the relationship

[58] All dollar amounts are expressed in PPP 2015 constant US dollars. We report the estimates based on the regression coefficient estimates' lower bound of the 95% confidence interval to be conservative.

[59] Unfortunately, two of Barro's control variables are not available for countries as recently as 2015. While we do perform a sensitivity based on this specification that produces results that are consistent with our primary results, the data constraints reduce our dataset significantly. We therefore modify the traditional controls to remove public health and education variables. The public health control for fertility-mortality rates is highly correlated with secondary education rates. We also run a sensitivity including this public health control (and thus capturing the majority of the variation which would otherwise be explained by the omitted education control). This sensitivity test does not show any significant difference from the results presented in Table 12.

between technology diffusion and infrastructure. Following Czernich et al. (2011), we account for broadband use, since it is likely correlated with both WhatsApp penetration and GDP.[60] In addition, to isolate the effect of WhatsApp usage from the more general impact of mobile phone penetration, our model controls for mobile phone subscriptions, a technique that is also used in other studies measuring the effects of mobile communication innovations. (See, for example, Thompson and Garbacz, 2007; Deloitte, 2012; and Kongaut and Bohlin, 2014.)[61] Finally, since technology may disseminate more quickly and easily in densely populated areas, we control for urban and population density. (See, for example, Lui and San, 2006; and Klasen and Nestmann, 2006.)[62] To account for any remaining unobserved heterogeneity across time, we include year fixed effects.[63]

We first use OLS to estimate the following model:

$$\begin{aligned} Y_{GDP/Cap_{t,c}} = \ \alpha \ &+ \overset{+}{\widehat{\beta_1}} X_{WA/Cap_{t,c}} + \overset{-}{\widehat{\beta_3}} X_{GOV-EX_{t,c}} + \overset{+}{\widehat{\beta_4}} X_{CAP-FORM_{t,c}} + \overset{-}{\widehat{\beta_5}} X_{CPI_{t,c}} \\ &+ \overset{+}{\widehat{\beta_6}} X_{RULELAW_{t,c}} + \overset{+}{\widehat{\beta_7}} X_{BBAND_{t,c}} + \overset{+}{\widehat{\beta_{10}}} X_{MOBILE/Cap_{t,c}} + \overset{+}{\widehat{\beta_8}} X_{URBAN_{t,c}} \\ &+ \overset{+}{\widehat{\beta_9}} X_{POP-DENSITY_{t,c}} + \lambda D_t + \varepsilon_{t,c} \end{aligned}$$

60 See, Czernich, Nina, Oliver Falck, Tobias Kretschmer, and Ludger Woessmann. "Broadband Infrastructure and Economic Growth." *The Economic Journal*, Vol. 121, Issue 552 (2011), pp. 505-530.

61 See, Thompson Jr., Herbert G. and Christopher Garbacz, "Economic Impacts of Mobile Versus Fixed Broadband." *Telecommunications Policy*, Vol. 35 (2007), pp. 999-1009; Deloitte, "What Is the Impact of Mobile Telephony on Economic Growth? A Report for the GSM Association," (November 2012), available at http://www.gsma.com/publicpolicy/wp-content/uploads/2012/11/gsma-deloitte-impact-mobile-telephony-economic-growth.pdf, accessed January 30, 2017, and Kongaut, Chatchai and Erik Bohlin, "Impact of Broadband Speed on Economic Outputs: An empirical Study of OECD countries", 25th European Regional Conference of the International Telecommunications Society (ITS), Brussels, Belgium, 22-25 June 2014.

62 See, Klasen, Stephan and Nestmann, Thorsten, "Population, population density and technological change," *Journal of Population Economics*, 19(3), July 2006, pp. 611-26; Liu, Meng-chun and San, Gee, "Social Learning and Digital Divides: A Case Study of Internet Technology Diffusion," *Kyklos*. 59(2), 2006, pp. 307-21.

63 The variables from the World Indicator Dataset includes: $Y_{GDP/Cap_{t,c}}$, $X_{BBAND_{t,c}}$, $X_{URBAN_{t,c}}$, $X_{POP-DENSITY_{t,c}}$, $X_{GOV-EX_{t,c}}$, $X_{CAP-FORM_{t,c}}$, $X_{CPI_{t,c}}$. The variable from the World Governance Indicators is $X_{RULELAW_{t,c}}$. $X_{WA/Cap_{t,c}}$ and $X_{MOBILE-PEN_{t,c}}$ are from WhatsApp and ITU, respectively.

where t indices years and c countries, and:[64]

- $Y_{GDP/Cap_{t,c}}$ is a country's GDP in year t in country c, converted to millions of constant 2015 international dollars using purchasing power parity rates divided by the corresponding total population (i.e., essentially GPD per person).[65]
- $X_{WA/Cap_{t,c}}$ is the ratio of active monthly WhatsApp users divided by the total population,[66] which is expected to be positively associated with GDP per capita, given WhatsApp's role in enhancing communications for firms and individuals.
- $X_{GOV-EX_{t,c}}$ is the general government final consumption expenditure as a percent of GDP.[67]
- $X_{CAP-FORM_{t,c}}$ is the gross capital formation as a percent of GDP,[68] which represents infrastructure investment.
- $X_{CPI_{t,c}}$ is inflation as measured by the consumer price index.[69]
- $X_{RULELAW_{t,c}}$ is a worldwide governance indicator for the rule of law measuring the extent to which agents have confidence in and abide by the rules of society.[70]

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64 Explanations of the expected relationship of each variable with GDP are based on Barro (1991), Ulku (2004), and Czernich et al. (2011).

65 This variable is calculated by converting annual GDP in local currency for each country to 2015 local currency, and then converting that into international dollars using purchasing power parity rates for each country in 2015. The following World Bank variables were used in this calculation: http://data.worldbank.org/indicator/NY.GDP.MKTP.KN; http://data.worldbank.org/indicator/NY.GDP.MKTP.CN; http://data.worldbank.org/indicator/PA.NUS.PPP; http://data.worldbank.org/indicator/ SP.POP.TOTL.

66 WhatsApp data are reported monthly per country as the average number of active WhatsApp users over a 30-day period. For our annual panel regression analysis we take the 30-day average of active users as of December each year. For our annual 2SLS regression analysis we use January 2012 data as a proxy for December 2011 values such that when we control for lagged WhatsApp penetration in the first stage of this model we can still estimate the regression for the same 2012-2015 timer period.

67 The World Bank defines general government final consumption expenditure as including "all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditure on national defense and security, but excludes government military expenditures that are part of government capital formation." See http://data.worldbank.org/indicator/NE.CON.GOVT.ZS.

68 The World Bank defines Gross Capital Formation as "Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales, and 'work in progress.'" See http://data.worldbank.org/indicator/NE.GDI.TOTL.ZS.

69 See http://data.worldbank.org/indicator/FP.CPI.TOTL.ZG.

70 This variable "Reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence." See http://info.worldbank.org/governance/wgi/pdf/rl.pdf.

- $X_{BBAND_{t,c}}$ is the number of fixed broadband subscriptions per 100 people.[71]
- $X_{MOBILE/Cap_{t,c}}$ is the ratio of mobile and cellular telephone subscriptions relative to the total population.[72]
- $X_{URBAN_{t,c}}$ is the proportion of people living in urban areas relative to the total population.[73]
- $X_{POP-DENSITY_{t,c}}$ is midyear population divided by land area in square kilometers.[74]
- D_t denotes year t dummy variables, representing year fixed effects.

ii. Panel Model Regression Results

Table 11 presents the results from a series of models estimating WhatsApp's effect on GDP per capita: a simple regression of GDP per capita on WhatsApp penetration (column 1), a regression in which year fixed effects are included (column 2), a regression in which macroeconomic factors are incorporated (column 3), and, finally, a regression that includes additional variables related to technological diffusion (column 4). Consistently, we find a positive and statistically significant relationship between WhatsApp penetration and GDP per capita. (To account for serial correlation in the error term, we also estimate a first differenced model. That is, we regress the annual difference between GDP per capita and lagged GDP per capita on the equivalent transformation for all other control variables in the model. The results are qualitatively similar to those reported in Table 11.)

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71 See http://data.worldbank.org/indicator/IT.NET.BBND.P2.

72 This variable relies on the mobile cellular telephone subscription, which "refers to the subscriptions to a public mobile telephone service and provides access to Public Switched Telephone Network (PSTN) using cellular technology, including number of pre-paid SIM cards active during the past three months." See http://www.itu.int/en/ITU-D/Statistics/Documents/publications/handbook/2010/TelecomICT_Indicators_Definition_March2010_for_web_E.pdf, at p. 4.

73 See http://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS.

74 See http://data.worldbank.org/indicator/EN.POP.DNST.

Table 11
GDP Panel Regression Results
Dependent Variable: GDP per Capita

	[1]	[2]	[3]	[4]
WhatsApp Users per Capita	3,296***	3,030***	4,487***	3,373**
Government Expenditure (% GDP)			-4,151	-6,274
Gross Capital Formation (% GDP)			-5,411	-3,901
Inflation, Consumer Prices (%)			-1,120	-1,582
Rule of Law Index			5,248***	2,231**
Urban Population (%)				47,575***
Population Density				2.139***
Broadband Subscribers per 100 People				157.6*
Mobile Phone Subscriptions per Capita				-1,024
Constant	19,074***	19,112***	21,394***	-7,545**
Year Fixed Effects	N	Y	Y	Y
Observations	673	673	589	572
Number of Countries	174	174	160	157
R-Squared	0.288	0.276	0.505	0.595

Notes:
[1] GDP per capita is in constant 2015 international dollars representing purchasing power
[2] All models include random effects, and specifications [2] - [4] include year fixed effects.
[3] *** represents statistical significance at the 1% level. ** represents statistical significance at the 5% level. * represents statistical significance at the 10% level.
[4] Number of observations vary between models due to specification differences and data availability.

Sources:
WhatsApp, WhatsApp Active Monthly User Data; The World Bank, World Development Indicators, January, 2017, available at: http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators; The World Bank Group, Worldwide Governance Indicators, January 2017, available at: http://info.worldbank.org/governance/wgi/index.aspx#home; ITU, Mobile Cellular Subscription Data, January 2017, available at: http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx.

iii. Two-Stage Least Squares ("2SLS") Regression Results

The models estimated above may be subject to endogeneity bias: that is, while WhatsApp may cause GDP growth, the reverse may also be true. Put another way, the results in the previous

section indicate a correlation between these two variables, but they do not necessarily identify a causal relationship.

One approach to removing the bias introduced in the presence of endogeneity is two-stage least squares ("2SLS"). Here, we regress the independent variable on an exogenous "instrument", in this case, a set of variables that predict WhatsApp use but that have no independent relationship to GDP. (This is called the "first-stage.") The resulting estimates are designed to represent the exogenous portion of WhatsApp penetration: that is, the portion of the variable that causes GDP to increase *only* through WhatsApp. In the second stage, we then regress the dependent variable, GDP, on estimates obtained in the first stage. To the extent one's instruments are valid, then it is possible to identify the causal impact of WhatsApp penetration on GDP.

Valid instruments must satisfy two conditions: First, they should be strongly correlated with the endogenous independent variable (sometimes referred to as relevance.) Second, the instruments must have no effect on the outcome variable (GDP per capita in this case) other than through their impact on WhatsApp usage, conditional on the set of control variables included (the "exclusion restriction"). [75] We identify three instruments that we believe are likely to satisfy these conditions:

1. Lagged WhatsApp Usage: WhatsApp usage per capita in time *t-1*.
2. Online freedom: As measured by a series of indicators measuring online freedom, obtained from Freedom House's Freedom on the Net reports.[76] Specifically, for each

[75] Angrist, Joshua D. and Pischke, Jorn-Stephen. *Mostly Harmless Econometrics: An Empiricist's Companion*, Princeton University Press, 2009, pp.113-133.

[76] Freedom House (2015), "Freedom on the Net," available at https://freedomhouse.org/sites/default/files/FOTN%202015%20Full%20Report.pdf, accessed February 7, 2017; Freedom House (2014), "Freedom on the Net," available at https://freedomhouse.org/sites/default/files/FOTN_2014_Full_Report_compressedv2_0.pdf, accessed February 7, 2017; Freedom House (2013), "Freedom on the Net," available at https://freedomhouse.org/sites/default/files/resources/FOTN%202013_Full%20Report_0.pdf, accessed February 7, 2017; Freedom House (2012), "Freedom on the Net," available at https://freedomhouse.org/sites/default/files/resources/FOTN%202012%20-%20Full%20Report_0.pdf, accessed February 7, 2017; Freedom House (2011), "Freedom on the Net," available at https://freedomhouse.org/sites/default/files/FOTN2011.pdf, accessed February 7, 2017.

country year, we collected the following information:

- $X_{FNI_{t,c}}$: annual, country-specific Freedom of the Net Index values.
- $X_{Restrict_{t,c}}$: an indicator for whether a given country had any restrictions on social media or communication apps in a given year.
- $X_{WA-Block_{t,c}}$: an indicator for whether WhatsApp was known specifically to have been blocked for some period in that country during the past year.
- $X_{WA-Arrest_{t,c}}$: an indicator for whether WhatsApp was associated with any arrests made in a given country and year.
- $X_{WA-Restrict_{t,c}}$: a combined indicator based on the WhatsApp blocks and WhatsApp arrests for any restriction specific to WhatsApp.

Table 12 below presents the second stage results of our 2SLS regressions, in which lagged WhatsApp users per capita, a lagged Freedom of Net Index, a lagged restriction on social media indicator, and a lagged restriction on WhatsApp (either blocks or associated arrests), are used as instruments in Specification 1A. In Specification IB, we simplify the set of instruments included to test the sensitivity of our regression to our definition of a "block"; in particular, we use only lagged WhatsApp users per capita and a lagged dummy variable that takes on a value of 1 if there existed either a restriction on WhatsApp usage or other social media platforms. In addition, this specification omits the Freedom of the Net Index variable as an instrument, since it is only sometimes significant (in sensitivities not reported here.) In both Specifications 1A and 1B, we find a positive coefficient on WhatsApp usage, with significance at the 5% level for these preferred specifications.[77]

[77] Note that due to data unavailability in our instrumental controls this IV analysis is limited to only 55 countries.

Table 12
Two-Stage Least Squares Regression Results
Dependent Variable: GDP per Capita

	Preferred Specifications		Sensitivities on Preferred Specifications				
	[1A]	[1B]	[2]	[3]	[4]	[5]	[6]
WhatsApp Users per Capita	1,736**	1,703**	1,733**	5,865**	3,342**	1,723**	1,714**
Government Expenditure (% GDP)	7,208	7,221	7,211	2,958	-6,014*	7,212	7,220
Gross Capital Formation (% GDP)	-1,967	-1,953	-1,968	-3,142	-5,528*	-1,961	-1,962
Inflation, Consumer Prices (%)	-1,036	-1,032	-1,036	-1,619	-1,360	-1,035	-1,033
Rule of Law Index	2,559***	2,553***	2,559***	3,429***	3,531***	2,556***	2,557***
Urban Population (%)	31,684***	31,697***	31,682***	28,911***	44,549***	31,690***	31,687***
Population Density	5.825***	5.828***	5.825***	5.317***	2.272***	5.826***	5.827***
Broadband Subscribers per 100 People	203.2***	203.2***	203.3***	235.4***	159.4**	203.2***	203.4***
Mobile Phone Subscriptions per Capita	592.7	587.6	592.3	1,236	-1,017	590.7	589.5
Constant	-5,778*	-5,780*	-5,777*	-5,023	-5,455	-5,779*	-5,778*
First-Stage Variable Coefficient Estimates							
Lagged WhatsApp Users per Capita	0.9203***	0.9214***	0.9242***		0.844***	0.9183***	0.9249***
Lagged Indicator: Any Restriction on WhatsApp	-0.0108		-0.0091				
Lagged Indicator: Restriction on Social Media	0.0004		0.0037	0.0267		0.0043	
Lagged Freedom of Net Index	0.0007						
Lagged Indicator: Any Restriction on Social Media or WhatsApp		0.0019					0.001
Indicator: Any Restriction on Social Media or WhatsApp							-0.005
Indicator: Any Restriction on WhatsApp						0.0038	
Indicator: Blocking of WhatsApp				0.0794**			
Indicator: Arrests based on WhatsApp				0.0598**			
Lagged Indicator: Arrests based on WhatsApp				0.0619			
Indicator: Restriction on Social Media				-0.0027			
First-Stage F-Statistic for Joint Significance	193.74***	346.04***	270.14***	2.98**	381.5***	229.99***	235.51***
Hansen J-Statistic P-Value	0.469	0.805	0.299	0.439	0.000	0.439	0.817
Year Fixed Effects	Y	Y	Y	Y	Y	Y	Y
Observations	170	170	170	173	547	170	170
Number of Countries	55	55	55	55	154	55	55
R-Squared	0.763	0.763	0.763	0.785	0.626	0.763	0.763

Notes:
[1] GDP per capita is in constant 2015 international dollars representing purchasing power parity.
[2] Specifications include year fixed effect for 2013-2015.
[3] *** represents statistical significance at the 1% level. ** represents statistical significance at the 5% level. * represents statistical significance at the
[4] Number of observations vary between models due to specification differences and data availability.
[5] All specifications rely on the imputed dataset where the 2011 December data for the monthly active WhatsApp user are proxied using the 2012 January data.

Sources:
WhatsApp, WhatsApp Active Monthly User Data; The World Bank, World Development Indicators, January, 2017, available at: http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators; The World Bank Group, Worldwide Governance Indicators, January 2017, available at: http://info.worldbank.org/governance/wgi/index.aspx#home; ITU, Mobile Cellular Subscription Data, January 2017, available at: http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx; Freedom House, Freedom on the Net Reports, 2011-2015, available at: https://freedomhouse.org/report/freedom-net/freedom-net-2016.

To confirm the appropriateness of these instruments in Specifications 1A and 1B, we conduct two standard statistical tests, both of which indicate that these are valid instruments. In particular, to confirm the relevance of our instruments, we calculate F-stats for the joint significance of the instruments. This measurement evaluates whether all included instruments are significantly different than zero. (We obtained F-statistics equal to 194 for Specification 1A

and 364 for Specification 1B, which are much greater than the rule-of-thumb cutoff for weak instruments of 10.00.) In addition, to test instrument exogeneity (through an overidentification test), we calculate the Sargan-Hansen statistic. This measurement assists in confirming exogeneity, assuming that at least one instrument is exogenous. This test returns high p-values indicating that the null hypothesis that these instruments are exogenous to GDP per capita cannot be rejected.

While we believe that Specifications 1A and 1B are best suited to address concerns of endogeneity in WhatsApp's usage effect on GDP, we also conduct several sensitivities to this analysis to address potential concerns regarding whether the instruments used in our preferred specifications satisfy the exclusion restriction. In particular, as shown in Specifications 2 - 6, we experiment with including alternate instruments that are similar in spirit to the instruments in Specifications 1A and 1B, and/or excluding certain combinations of instruments. In doing so, we find consistently high F-statistics and high Hansen statistic P-values, which further confirms the reasonableness of our set of instruments. These sensitivities yield consistently positive and significant point estimates for our measure of WhatsApp penetration in the second-stage results. And finally, we assess the sensitivity of our results to including a measure of health and social well-being: in this case, a measure of fertility and mortality. In doing so, our results are almost identical to those presented above in Table 12.

VI. Conclusion

This report evaluates the extent to which WhatsApp has contributed significantly to economic growth in those countries where it is used, with a particular focus on four high WhatsApp usage countries: Brazil, India, Germany, and Spain. Our estimates, as detailed in this report, rely on several complementary methods, including (1) qualitative focus group interviews in each of the four countries; (2) a quantitative usage survey of consumers, employees, and business owners in each of the four countries; and, (3) statistical modeling.

Based on responses from the focus groups and surveys, we identify five mechanism through which WhatsApp may affect economic outcomes, including (1) lowering production costs and

increasing the efficiency of internal business operations, (2) improving customer service, (3) lowering marketing costs, (4) making communications with investors more efficient, and (5) improving public sector services. Results from the surveys also allow us to compute the proportion of consumer discretionary spending associated with WhatsApp. In so doing, we find that in 2015 WhatsApp is related to 0.38% – 0.88% of GDP in Brazil, 0.12% – 0.23% of GDP in India, 0.11% – 0.20% of GDP in Germany, and 0.20% – 0.41% of GDP in Spain.

Furthermore, using macroeconomic-level statistical modeling, we estimate the aggregate economic impact of WhatsApp usage on GDP. By exploiting cross-country and temporal variation in WhatsApp use, our econometric results suggest that a five percentage point growth in WhatsApp usage implies an additional PPP USD (2015) $22.9 billion in global GDP.

WhatsApp is still a relatively new telecommunication innovation, and as such, its potential to affect how information is shared and how businesses and communities operate is still developing. Our study identifies multiple mechanisms through which WhatsApp affects micro-level economic transactions, and it is quite likely that new ones will develop as WhatsApp is further integrated into day-to-day economic activity. In only the short time period studied in this report, from 2012 through 2015, the estimate of WhatsApp's impact is already significant and if its usage and adoption is allowed to continue to grow, as other technology and telecommunication advancements have in the past, then the economic benefits from WhatsApp will likely continue to increase as well.

Appendix I: Focus Group Anecdotes

A. Lower production costs/increased work efficiency by using WhatsApp for internal business communication

A.1 Professionals focus group participant from New Delhi, India

[Respondent:] "There is huge time saving. We used to sit at the mail before, handling three different clients earlier. But here, you send one message and it gets sent to all of them. You don't have to make personal calls neither do you have to send mails. Your work gets done INSTANTLY."

[Respondent:] "Earlier, I had to send my salesman with a hard copy of the designs to look for customers. Today, that has reduced. I don't have to send anyone personally."

[Respondent:] "And then you have to keep repeating on every phone call- I have these many pieces of this design, these many of that design and so on…but now, I can simply frame one message and WhatsApp to all. Don't have to write double-double."

[Respondent:] "When you call people, it actually wastes more time. But you don't waste that much time in messaging."

[Teacher:] "In my case, I have to tell parents what all we did with the kids in school. Instead of repeating 100 times, I merely click pictures and post them on the WhatsApp group. When the parents have time, they will check I out on their own. This saves my time also. I don't have to read individual messages and reply to each person. And they will also check the work when they have time."

A.2 Professionals focus group participant from New Delhi, India

[Transport business owner:] "My drivers also have WhatsApp."

[Moderator:] "So, you use WhatsApp for business purposes. Do you use it for groups also?"

[Transport business owner:] "Yes. Just as I get reports of my drivers coming, I forward them. We have formed drivers groups also."

[Moderator:] "What is the exchange on drivers group?"

[Transport business owner:] "The drivers basically keep us informed that at present, I am having my lunch here. Or, this is where I have reached. In case he is not reachable by phone, I can always message him to ask him, where are you? Till where have you done the delivery? He will message me that in half an hours' time, I will do the delivery. He will send me copies and I will do OK and send them to him. All this has made the process very fast."

A.3 Professionals focus group participant from Barcelona, Spain

[Administrative Department Worker:] "Being able to attach pictures on WhatsApp has saved me a lot of time. Before, if I had to send a report, if it was immediate, via fax or urgent postal service. Whereas this way they take a picture and I have it in order to send a budget…"

A.4 Professional Respondents from Barcelona, Spain

[Moderator:] "what's the differential value of WhatsApp?"

[E-Commerce supervisor:] "speed and immediacy"

[Textile Production monitor:] "I send pictures, share files, letting my colleagues know if they have to do something"

[Moderator:] "which one is the strongest value?"

[Textile Production monitor:] "immediacy and knowing the other person has read the message and it's going to reply soon"

[Consultant:] "communication, you know they're going to see it and read it, and they're answering. And you're not disturbing, because maybe if you call and they're busy…"

[Cultural event organizer:] "communicating with customers, suppliers….speed, explanations, information"

[Beautician:] "I send offers, I use it all the time to remind appointments, I know they've read it and they don't reply if they can't. Especially that"

A.5 Professionals focus group participant from Sao Paulo, Brazil

[Building management salesman:] "Well, if you leave for a meeting, you can look at your WhatsApp and see if there is someone else there you need to talk to. You can have that conversation in route to your meeting. And then, when you arrive at your meeting, you have everything more or less lined up already. It will me more of an officializing of things, looking each other in the eye and signing of documents. It is a lot more convenient."

A.6 Professionals focus group participant from Sao Paulo, Brazil

[Moderator:] "[…] working in healthcare, how do you communicate with patients, suppliers, etc.?"

[Speech therapist:] "The first contact is always by phone, when patients call to make their first appointment. After that, usually WhatsApp. To communicate with colleagues, too. I use Facebook to be aware of innovations and WhatsApp to exchange ideas, discuss cases and talk to patients."

A.7 Professionals focus group participant from Berlin, Germany

[VR Production manager:] "If I call someone and cannot reach him, a colleague, and it was not so much work, then I write him a WhatsApp, because experience shows that no one is listening to his mailbox and sometimes I do not feel or know I'm not accessible then and if he calls back me, then we cannot discuss. If colleagues sitting in meetings where they should not open their laptop or quickly read something."

A.8 Professionals focus group participants from Berlin, Germany

[Respondent:] "For appointments discussions it does go quite fast and you do not have an extra phone calls but you send it, then and then so and so much time here and there. Even if you can not even call then they send someone a message, for this email takes too long. To search out the address, to write the email, and then to say at 12 wherever."

[Respondent:] "It's just a short communication, it is short, concise and fast."

[Respondent:] "And without regard to the formalities."

A.9 Professionals focus group participant from Berlin, Germany

[Temp agency manager:] "It is interesting with almost 150 employees, the Monday morning. Classically it was always so, Monday morning at least 20 people are calling in sick. 8:15 am to 10:00 I cannot be reached by phone and then I have 20 WhatsApp Messages."

[Moderator:] "Then that's a direct reduction in workload."

[Temp agency manager:] "Yes, I do not need the conversation because I'm interested in actually getting that the person is sick, can they come, they cannot come, then I would not have the medical history which does not interest me, is nothing to me and I find WhatsApp practical. The employee is sick, I have to inform the company, in a short way and then hope that I have the yellow papers two days later."

B. Increased sales/revenues related to more responsive client/customer service via WhatsApp

B.1 Professionals focus group participant from New Delhi, India

[Cosmetics business owner:] "I run cosmetics business and there are images to be sent. There are company catalogues and there are images in it. If I want the person to see the catalogue, then I send him/her the link. Then the entire catalogue goes to him. And, if a person wants only a specific item to see, like, a compact or a lipstick, then I will send just that. I will do it through WhatsApp."

B.2 Professionals focus group participant from New Delhi, India

[Respondent:] "For me, if I have to give hard copy to customers, I will have to visit five people. But here, on WhatsApp, I send a message and everybody gets it. And if they have any issue, they will ask and get it clarified on WhatsApp itself. Any doubts they have will be cleared on WhatsApp."

B.3 Professionals focus group participant from New Delhi, India

[Transport business owner:] "I own a transport business in which we mostly use WhatsApp. There is order pickup and delivery. There are copies of the challans.[78] There is a delivery order also. We have to forward both to the client. When my clients are new, then I add them. But before that, I call them and hold a meeting with them. But this is only in the beginning. Afterwards, all my reports and communication happens only through WhatsApp."

[Moderator:] "But then why don't you use the mail for sending the images of challans etc.?"

[Transport business owner:] "That's because, I may not be in the office the whole day. I may also be in the field. This is an easy way. Each person has the WhatsApp. And I know that each person checks when he gets a message. And it is instant. When you call someone, you don't know whether the person is busy, or sitting in a meeting or so on. So, it is better to send him a

[78] A "challan" is a receipt. See https://en.oxforddictionaries.com/definition/challan, accessed February 26, 2017.

message. So, this becomes a convenient mode."

[Moderator:] "You click pics?"

[Transport business owner:] "Yes. I click and then I forward it to them."

[Moderator:] "How frequently would you do this?"

[Transport business owner:] "It will depend upon the delivery."

B.4 Low Income Consumer focus group participant from New Delhi, India

[Respondent:] "My boutique is there so I send him that show me how does that dress look like and that time she shows me that dress on video."

B.5 Consumer focus group participants in Barcelona, Spain

[Respondent:] "in my case, the driving school sends me the lessons by message. 'You have a lesson available right now'. It also sends it by e-mail by I'm not waiting for it, if they send it to the cellphone…"

[Moderator:] "with SMS? Why not with WhatsApp?"

[Respondent:] "they do it on WhatsApp, my driving school…"

[Respondent:] "the veterinary clinic sent me appointment reminders on WhatsApp"

B.6 Consumer focus group participants in Sao Paulo, Brazil

[Moderator:] What kind of professional people have you notices are working the most with WhatsApp?

[Respondent:] "Mid-level professionals, a pizza place that can take your order through WhatsApp, mechanics, if your car breaks down you can message them for something that is an emergency, the bakery where we order coffee from at work, that kind of situation, that kind of professional who makes their contact available. "

[Moderator:] Yes, a megastore supermarket like Extra does not have that agility...

Felipe: Yes, larger merchants, I have noticed, do not provide that kind of access.

[Respondent:] "It is as he said, the small and medium sized companies, at least in my neighborhood. Hairdresser, manicurist, mechanics, pizza places..."

[Moderator:] The hair salon? How does that work?

[Respondent:] "You message them, 'do you have an opening in your schedule?' 'Yes, I do'!"

[Moderator:] (pointing at other respondent) "Do you use it like that? That kind of services?"

[Respondent:] "The barber shop works like that too. "

[Moderator:] "Now, imagine that! The barber, manicurists, pizzeria, mechanics...."

[Respondent:] "I am in the habit of shopping at Mercado Livre. And at Mercado Livre, no matter what you buy, when you finalize your purchase they will provide you with the contact of the selling person. From then on, you can forget about Mercado Livre. You can solve everything via WhatsApp. Recently I bought something, I had a problem with the merchandise, and through WhatsApp, contacting the sales person directly, he sent me my tracking code, I told him how

much it would cost to return the merchandise, he gave me my purchase number, the proof of deposit to my account, we solved everything on WhatsApp, Mercado Livre was left totally out of it."

B.7 Consumer focus group participant in Sao Paulo, Brazil

[Respondent:] "I had an appliance maintenance guy, for stove and fridge, that I though was very clever. I located him through WhatsApp, and he had a special photo, something really nice, that he sent people through WhatsApp. And then, after he serviced my home, he sent me a message asking me if everything was working, after a while, and then when the warranty was going to expire he sent me another message saying that my warranty was going to expire and asking me if I needed service before that. And I thought to myself, that is someone who provides a great service."

B.8 Consumer focus group participant in Sao Paulo, Brazil

[Respondent:] "I have a group of building administrators who are my clients. The ones that I provide support to. Sometimes, I take a link from the Internet, and I forward it to my beauty administrators through WhatsApp. And the positive feedback is 100%. At the least they thank you for the tip. So, they are always answering through WhatsApp. If I send them e-mail, half of them will not answer. But with WhatsApp it is incredible. They may view the message at 2p.m., but when they get home, at 10 p.m. they will answer you. 'Thank you'. And you can see they viewed the message. I believe that is a lot stronger than email."

B.9 Professional focus group participant in Sao Paulo, Brazil

[Lawyer:] "Another important thing, as she mentioned, is that the phones ring increasingly less because the messages are coming straight to our hands. There is also the matter of cost, since everyone has a packet data service, so you just send your message from anywhere and people are constantly with their phones on their hands all the time. You send the necessary files and you bypass a lot of bureaucracy.

[Moderator:] "How is that?"

[Lawyer:] "In the past - as I mentioned I am a lawyer - you used to call your client's office, leave a message with the secretary and they would get back to you when possible. Today the secretaries have less work to do, because you call the client directly. Wherever I am, the messages are coming."

B.10 Professional focus group participant in Sao Paulo, Brazil

[Business manager at a hostel:] "At the hostel, for example, sometimes a guest makes a reservation and realizes that they will catch a plane in Turkey and arrive in Brazil at 3am and they need a safe way to get to the hostel because there is no public transportation at this time. So they need a transfer and they say "I need to know now, because my flight leaves in 50 minutes and I won't have internet access until the plane lands in São Paulo". I have to use WhatsApp to calm him down; I give him our driver´s WhatsApp contact and tell him where they should meet. Even if I have been able to confirm the service but don´t have all the details before they board, I can send them messages while they are flying and once they land and have Wi-Fi connection they can check all the data, so it really depends on the urgency."

[Moderator:] "[…] to satisfy my curiosity, do you communicate with clients abroad using

WhatsApp without any problems?"

[Business manager at a hostel:] "Yes."

[Moderator:] "So, it is indeed an app used worldwide."

[Engineer]: "I have been to Congo, and they use it there, too."

B.11 Professional focus group participant in Sao Paulo, Brazil

[Small women shoe shop owner:] "WhatsApp helped me the most not with my customers but with my suppliers. As all conversations on WhatsApp are personal, something that didn't happened with e-mail. I got in touch with a supplier, we started talking, and we bonded. I needed a product that he didn't work with, but as we bonded he gave me the contact of another supplier, and I had a great demand for that product, but I did not have a specific supplier that allowed me to meet this demand, and that saved me, it was essential for me, this contact that I got."

[Moderator:] "It made it easier for you to negotiate with the supplier."

[Small women shoe shop owner:] "Exactly. And it was a new contact which I did not have before. He gave me a new contact and it opened many doors to me, thanks to this contact."

B.12 Consumer focus group participant in Berlin, Germany

[Respondent:] "So I recently used WhatsApp as our thermal bath was broken. Since I called the plumber who wanted to know exact facts of the spa… I have photographed the thing, sent it there to him and he said he comes and brings the spare parts right away. That worked, that was important."

B.13 Consumer focus group participant in Berlin, Germany

[Respondent:] "I communicate with a fruit vendor, because we always order carrots and beetroot for the horse and that is always different, and then I write Monday I need 20 kilos in the week, they were delivered and 10 kilos of apples and 2 kilos of beetroot. Next week the same. That all goes on WhatsApp. Because if I had to call.... This is so simple and yet informative. If I had to call that would annoy me more. Since you have to imagine only and say what it is and so you know immediately what the issue is, I do not need to explain so much. It is faster, more informative and coming to the point.

B.14 Consumer focus group participant in Berlin, Germany

[Respondent:] "And then I do not call my favorite Asians, but I write just a WhatsApp, voice message 'Hey here's the [Name] that and the street, I would like S1, S5, S8' and then he says briefly 'OK comes in this or that time' and ready."

[Respondent:] "Cool."
[Respondent:] "This of course is practical."

C. Lower marketing costs through the use of WhatsApp as a promotional tool

C.1 Professionals focus group participant from New Delhi, India

[Footwear salesman:] "I run a business of footwear. I need designs so I need to communicate with people. Suppose someone is contacting me for the first time, he will call me of course, and ask me, 'Sir, what all options do you have?'"

[Moderator:] "But how do those people come to know about you?"

[Footwear salesman:] "We keep giving out ads. Then, I send the pics of the designs. I also send them any new designs that come in, any offers or discounts that are going on. We keep on updating him. If some day you need anything, we can help you. We take the customer's permission and we add him."

[Moderator:] "Have you made a group of customers?"

[Footwear salesman:] "Yes. Besides, we also have created one group of the staff where we mention who is coming, who is going to remain absent or at what time some employee is to come."

[Moderator:] "How frequently would you send these pics?"

[Footwear salesman:] "It could be once in week too. But basically, it is not fixed. When the designers send us new designs, we update them. It isn't really fixed that we will do it once in a week or once in 15 days."

[Moderator:] "And what about information on discounts and schemes?"

[Footwear salesman:] "Yeah, that will happen when something like that comes up."

[Moderator:] "But then why did you choose the option of WhatsApp?"

[Footwear salesman:] "When a person calls me, I will not ask him his e-mail ID for sending him pics. I merely ask him, do you have WhatsApp on this number? And these days, everybody has. So it is more convenient."

C.2 Low Income Consumer focus group participant from New Delhi, India

[Moderator:] "So, who sends you these photos of jeans?"

[Respondent:] "The sellers."

[Moderator:] " Who are these sellers?"

[Respondent:] "These people offer at slightly discounted rates because they procure it directly from the companies. Like normally, we buy from the shops, right? So they will cost around 1400-2000. But if we as three to four friends buy them together, then it works out at lower prices. For the seller too, he is able to sell off in bulk, so he also gets a discount."

[Moderator:] " Is this jeans seller added on to your friends group?"

[Respondent:] "No. I talk to him one to one."

[Moderator:] "Then you send to your friends?"

[Respondent:] "Yes, then I send to my friends the pictures that he has sent."

[Respondent:] "My friend had also added me to one group, where a retailer posts images of new shoes and offers them to us at a very good price. Suppose I have liked something but I am getting it for a higher price, I send the picture to this seller. He will then offer it to me at a price that he procures it from the manufacturer."

C.3 Consumer focus group participant in Barcelona, Spain

[Respondent:] "I had an apartment for sale and sometimes, instead of calling me, real state agencies directly address you with WhatsApp. "Hey, I've seen you're selling, can you send some pictures?"

[Moderator:] "and what do you see?"

[Respondent:] "If I don't have it stored, there's a number but no picture. Since I know I'm selling, real state agencies contact me, so I realize it's a real state agency. At first it could bother me"

[Moderator:] "it can seem intrusive"

[Respondent:] "it can seem intrusive but when it comes to sending pictures and saying a few things is quicker than anything else"

C.4 Professionals focus group participant in Barcelona, Spain

[Electrical material importer:] "for instance, if some salesman is with a customer and asks me about electrical boxes, or things like that, they ask for pictures, measurements, even though some are on the catalogue"

[Moderator:] "doesn't people look at the catalogue anymore?"

[Electrical material importer:] "It seems harder, many times the call about things that are on the catalogue and you have to…"

[Moderator:] "sure, maybe it's easier"

[Electrical material importer:] "I don't know, but sure, I don't know how everybody else is regarding technologies. Sometimes just to avoid open it they call me, for more specific things as well"

[Moderator:] "orders, coordinating deliveries…"

[Electrical material importer:] "Yes, sending the online catalogue, because it's big and sending it via e-mail, compressed"

C.5 Consumer focus group participants in Sao Paulo, Brazil

[Moderator:] "Ok. and how about the approach? I mean, we have been talking a lot about what you do, what you say, how you do it, school groups, but what about the approach that companies have? I mean how are companies approaching you as consumers? Via WhatsApp? What have you been getting, how is it?"

[Respondent:] "Weak."

[Moderator:] "Weak?"

[Respondent:] "Yes, weak. "

[Respondent:] "Yes, mostly we are the ones looking for it. We are the ones that look for the services. I mean, one of the things that we like about WhatsApp is that there is not a lot of advertising. We use it according to what we want. We are not compelled to watch ad movies or anything like that. The use is according to what you want it. And that is how I believe companies have to act. Making a channel available and letting us get into contact with them. "

[Moderator:] "But (respondent) said it is kind of weak. It is a lot more in that sense of you visiting a website, locating a mechanic, and you contacting them through WhatsApp and then the relationship starts?"

[Respondent:] "Yes."

[Moderator:] "But the reverse approach of someone for example offering you clothing, or offering you a service or something like that... how is that?"

[Respondent:] "For example, I am part of a group where someone I work with also sells shoes. He made a group with people who work with us and he offers his merchandise. But I think it is like this: it is someone that he knows, or that you know, that is part of a group and then he offers his services. But these are all small companies. Not with big companies. With big companies you are the one who has to look for them. But these small ones, selling apparel and shoes..."

[Moderator:] "Are you part of any groups like that? Or maybe part of a hobby group? Someone who shares things pertaining to hobbies? Products or consumption like the things she is talking about?"

[Respondent:] "in my case, as someone was mentioning that they were contacted by a company that provided a service or something like that, I have a few service providers, for example my chiropractor, who sends me a message every 3 months asking me if everything is okay, if I'm doing any better, or not, so that if it is the case I can schedule an appointment. "

[Moderator:] "So he keeps a contact channel open with you?"

[Respondent:] "And some WhatsApp groups for Narguile products, and Narguile smoking… Tennis groups as well."

C.6 Consumer focus group participants in Sao Paulo, Brazil

[Respondent:] "I like samba. So for example, I get stuff from Mangueira Bar. From the very first time I went there they have my contact, so they send me their weekly schedule through WhatsApp. So I know who is going to be there singing, if ladies get discounts, I get all the information..."

[Moderator:] "Have you ever attended an event that you learned about from those ads?"

[Respondent:] "Yes. I have gone. I knew a certain person would be singing and I wanted to be there. And then you message them and they will answer you. I wanted to know how much the tickets were going to be and the time. They also tell you information if you are having a birthday, if you want to have a party there..."

[Respondent:] "But is that individual messaging or are you part of a... what is it that they call

it? It is an individual mailing but it has a special name..."

[Respondent:] "Transmission group..."

[Respondent:] "That is it, transmission group. But then it is an individual message right?"

[Respondent:] "Yes. You sent it to thousands of people, but they get it individually. You send it 70 at a time, but each person gets an individual message."

C.7 Consumer focus group participant in Sao Paulo, Brazil

[Respondent:] "One of these days I was at Wal-Mart and I saw some promotions there that where really good, and I started taking pictures and sending it to people. I remembered that someone had commented with me they wanted something, and it was really cheap, and so I took a picture and sent it with a 'look'!"

C.8 Consumer focus group participant in Berlin, Germany

[Respondent:] "I have also done this with small boutiques where I have contact, where I bought something, where I had a complaint. However, they sent me photos, like we have this new, would you like to have that? Because when I was there they spoke to me, So you want to have the newest stuff over WhatsApp, to always be up to date and I'll send them to you then and so really get things sent to me from time to time."

C.9 Professionals focus group participant in Berlin, Germany

[Photographer:] "That's about more long-standing client where you either have an access on their business mobile phones or so and there are just so on the short official channels because it is easy, fast, made inquiries. Have you now and then time, 10 am, short appointment or something like that and then phoning when is it possible thereafter then again discuss around a bit more specifically and first it always goes first to a feeling whether I'm available."

[Moderator:] "And this small request which is then so by messenger or is rather than by email?"

[Photographer:] "The goes sometimes by WhatsApp or then maybe rather have less over an email but with long-standing and familiar customers will then also talk over WhatsApp. If something is already agreed that one is close to a deadline and have agreed a meeting that then perhaps again appear small changes that I then also again get a short message, meeting point is now there and here or something."

[Moderator:] "Why is this so natural for WhatsApp?"

[Photographer:] "Since it is simple and straightforward from the handling and so with the settings that can even pop the messages discreetly so if you have the phone somewhere and then you see that there is a message has come and it is also simply so many."

D. Improvements in public and social sector services due to WhatsApp

D.1 Professionals focus group participant from New Delhi, India

[Teacher:] "In my case, I have most of my communication through WhatsApp as if some student is absent for two three days, then I talk to the parent through WhatsApp and ask the

reason why the kid isn't coming to school and if it is okay. Sometimes, there is some homework and I send that too, through WhatsApp."

D.2 Consumer focus group participant in New Delhi, India

[Respondent:] "The kids nowadays aren't made to write in diaries or book what they have to do in summer holidays but instead they get all that information on WhatsApp group. There are details about making collage or model. Everything is mentioned from materials required to how to do it. If we are having a query then we can even ask that on the group. The class teacher is there in that group."

D.3 Consumer focus group participant in New Delhi, India

[Moderator:] "Where else it is used? Has anyone contacted doctor by using chat options?"

[Respondent:] "Yes I have. I was once getting a lot of itching. It was late night at around 12:30 am. At that time I cannot find any doctor so I messaged my doctor so he asked me to send pictures. I sent him pictures and then he prescribed me medicines. Luckily the medicines which he mentioned were there in the house. I had to use a gel. My swelling was increasing, if it was not for the doctor it would have increased all the more."

[Moderator:] Okay and how frequently do we chat with doctors?

[Respondent:] If we message the doctor unnecessarily then he will not respond.

[Respondent:] When we have a serious medical condition at that time we contact him.

[Respondent:] When we have medical emergency at that time we contact him.

[Moderator:] So generally you message the doctor only during critical emergency times.

[Respondent:] We message sometime to fix appointments."

D.4 Consumer focus group participant in New Delhi, India

"[Moderator:] Okay now we will talk about chemists. How do you interact with chemists? How do you communicate with them and what do you communicate with them.

[Respondent:] We don't make a group with chemists. When we want to talk to them we directly talk to them.

[Respondent:] We directly send the chemists picture of what doctor has prescribed.

[Respondent:] Yeah many times we just send the picture of the bottle that we want because many a times we don't know the spelling or we don't know the pronunciation. Then they tell us about it availability and we go and buy it from the store.

[Respondent:] No we get home delivery from the chemists as well. We give them a list of medicines that we require and tell them to do home delivery."

D.5 Consumer focus group participant in New Delhi, India

"[Respondent:] We get connected with doctor. Suppose I have some prescription and I have already met him once then I can message him that this is the problem what we should do in this case.

[Moderator:] But what is the benefit?

[Respondent:] Means we don't have to go there, we don't have to take their appointment and

wait for them."

D.6 Consumer focus group participant New Delhi, India:

"When my husband had got fractured he was very frustrated. And take him to the doctor and get him back was the biggest problem. So I had taken doctor's number and at night it was paining very badly. So I made him chat with the doctor. And he called us there. and he said that might be he is not moving his thump. So push it and do exercise of it. so it will be fine. Otherwise there is no other medicine for it and we can't give anything extra for this. We did this through video calling only."

D.7 Consumer focus group participant in Barcelona, Spain

[Respondent:] "I've used it with the city hall, I don't live in Barcelona but in Mataró, and there's an available WhatsApp in case you see some mishap on the street or happening to you, and I've used it. The dumpsters on my street, one didn't work, I wrote the address and the next day it was fixed."

[Moderator:] "did they reply?"

[Respondent:] "yes, I wrote the issue and they replied they were notifying the appropriate department. With the service for old furniture collection, they tell you their schedule"

D.8 Consumer focus group participant in Barcelona, Spain

[Respondent:] "I volunteer at two organizations, and one of them has been carrying out an action for a week, it's called 'Checkpoint', and I have a poor memory, and they constantly send reminders, always via messaging, WhatsApp, I don't know how they do it, if they program it, but I get WhatsApp saying 'remember today you have to…'"

D.9 Consumer focus group participants in Sao Paulo, Brazil

[Moderator:] "I am thinking. Have you ever used WhatsApp to warn people about something? Or to call the police?"

[Respondent:] "Yes."

[Respondent:] "Yes."

[Respondent:] "I have"

[Moderator:] "What did you do?"

[Respondent:] "Air traffic accident... "

[Respondent:] "I send a WhatsApp to Sul América traffic sometimes..."

[Moderator:] "To warn them about traffic?"

[Respondent:] "Yes, when there is an accident or something like that. Or I send a WhatsApp to Band News FM."

D.10 Professionals focus group participants in Sao Paulo, Brazil

[Moderator:] "Your kid's school has it."

[Taxi Driver:] "If he does not show up, they send me a WhatsApp saying your son has missed class on this date"

[Moderator:] “He is sharing the point of view of a daddy, right? So you can say my son is good he's at school”

[Taxi Driver:] “I didn't receive anything I'm okay, it is fine, but if I receive your son has missed class, I didn`t lose him in the way... When there is parents’ meeting I received through WhatsApp. No more papers, everything is through WhatsApp”

D.11 Professionals focus group participants in Sao Paulo, Brazil

[Moderator:] “Do you use an app such as WhatsApp to communicate with the police to inform something, or a public institution such as the city government.”

[Legal office assistant:] “The subway, there are several pictures on the subway to inform, not so much on the buses.”

[Moderator:] “you were going to say something”

[Transport management assistant:] “I have used in the subway to inform, it was a problem with noise, too much noise, I was coming back from the University, and the guy was drunk, I informed using the app, WhatsApp and it was fast”

[Moderator:] “How was it?”

[Transport management assistant:] “It worked”

[Moderator:] “Did a person come?”

[Transport management assistant:] “Yes, the subway guard.”

D.12 Consumer focus group participants in Berlin, Germany

[Respondent:] “That's right. In the mail I observe me that it is as immediately so formal. This all takes longer. With WhatsApp is quick, so friendly and it is shorter.”

[Moderator:] “Even if one is not so friendly with the person.”

[Respondent:] “Yes. It's faster. Yes. Since you also use more abbreviations. In my old sports club, we discussed training times via WhatsApp, and that would be by mail much more complicated to many people, because none of the others know if he has read it.”

D.13 Professionals focus group participants in Sao Paulo, Brazil

[Moderator:] “So you don't need to call to schedule the appointment. Has any of you used WhatsApp, or any message app to schedule a doctor's appointment?”

[Respondent:] “I have.”

[Moderator:] “I've heard that today there are appointments through WhatsApp, have you heard of that?”

[Respondent:] “Yes there are some physicians that they see privately…[unintelligible]”

[Moderator:] “Have you ever had a doctors' appointments through WhatsApp?”

[Respondent:] “I've done that for my dog, there was a lump on her face and I sent her the picture and she said it was nothing but you want to take her here for a surgery we can remove it surgically.”

[Moderator:] “So it was a pre-consultation?”

[Respondent:] "I didn't have to call there and it was straight with the doctor."

E. Discussion of mobile payments in India

E.1 Professionals focus group participants from New Delhi, India

[Moderator:] "You all have Paytm?"[79]

[Respondent:] "Yes."

[Moderator:] "Do you ever link that and WhatsApp?"

[Respondent:] "No."

[Moderator:] "Has it ever happened that you have booked a cab and you are sending cab details through WA?"

[Respondent:] "No, no."

[Respondent:] "You can shop via Paytm but there is no option to share it through WhatsApp."

[Moderator:] "Linking Paytm with WhatsApp and forwarding it- have you done something like that?"

[Respondent:] "No. how can I make the payment? All my clients are on WhatsApp. But if it is done, the transaction will become much easier."

[Moderator:] "As of now, how do you make the payments?"

[Respondent:] "Through cash."

[Respondent:] "I make my payments by Paytm also."

[Respondent:] "First of all, while you are doing business, your payments are transferred into the clients' accounts by cheque."

[Respondent:] "Paytm will be instant transfer, so if we could have something through WhatsApp also."

E.2 Consumer focus group participants from New Delhi, India

[Moderator:] "Okay have you ever used some Paytm feature and used it on WhatsApp? "

[Respondent:] "Not at all."

[Respondent:] "Nope."

[Moderator:] "Have you ever sent a payment bill or memo to friend or someone?"

[Respondent:] "We take screenshots of that."

[Respondent:] "Yeah we take screenshots."

[Moderator:] "Okay but I am asking do you send any payment mad in Paytm or Free charge on WhatsApp."

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[79] Paytm is a mobile commerce platform. See Paytm (2017) "About Us," available at https://paytm.com/about, accessed February 26, 2017.

[Respondent:] "We take a screenshot of that and send it on WhatsApp."

[Respondent:] "Yeah it is a sort of proof that we send to our friends. It is a proof that we have made payment to them."

[Moderator:] "Okay does this happen in reality?"

[Respondent:] "Yeah it does happen in the case of friends."

[Moderator:] "Okay."

[Respondent:] "It takes 2-3 days normally for a transaction to get complete. So this is like a proof that we have done the banking transaction."

[Moderator:] "Okay now this was between your friends but do you use net banking with your business community?"

[Respondent:] "Yes we do."

[Moderator:] "Give me an example."

[Respondent:] "In Paytm application people ask for IFSC code. The details they are asking is much lesser as compared to what details they ask in net-banking application. Net banking application shouldn't be mixed with Paytm application and they both are different things."

[Moderator:] "Okay."

[Respondent:] "Net banking is something which every person can rely on because Paytm is approved by RBI but yet it is not of some particular bank or something."

[Moderator:] "Okay so he has given us a brief comparison between Paytm versus net banking. Now forget about Paytm. Give me a scenario where you have forwarded something related to net banking on WhatsApp."

[Respondent:] "I said that we do screenshot."

[Moderator:] "Screenshot of what?"

[Respondent:] "My salary had got delayed because of demonetization. Then I inquired with salary department so they sent me a screenshot that they have sent me payment. I felt that they haven't made the payment. It was showing pending in the screenshot."

[Moderator:] "Okay what was the screenshot about?"

[Respondent:] "It was the screenshot about the banking application. It had my details and all."

E.3 Low Income consumer focus group participant from New Delhi, India

[Respondent:] "My friend had also added me to one group, where a retailer posts images of new shoes and offers them to us at a very good price. Suppose I have liked something but I am getting it for a higher price, I send the picture to this seller. He will then offer it to me at a price that he procures it from the manufacturer."

[Moderator:] "When you place your order, how do the goods reach you?"

[Respondent:] "He couriers them to me. I send him my address. I pay through Paytm. Or, cash on delivery."

E.4 Professionals focus group participants from Mumbai, India

[Moderator:] "She talked about Uber and Ola and what about Paytm?"

[Respondent:] "Now a day there is a boom."

[Moderator:] "Paytm is used for the payment to Uber and Ola and to whom else?"

[Respondent:] "Now a days used for the payment of vegetables, electricity bill."

[Moderator:] "Are you paying by Paytm?"

[Respondent:] "No not yet started. I use Paytm but it's for more over my utility bill kind of things and not for the payment to my vendors or clients because it has its limitations."

[Moderator:] "So is a mobile app?"

[Respondent:] "No it is a recharge. Actually it is a Paytm of recharge and a kind of net banking. And it is more to do with utility bills."

[Moderator:] "Ok anything else we pay through Paytm?"

[Respondent:] "Insurance payment can be done."

E.5 Professionals focus group participant from Mumbai, India

[Respondent:] "You can pay your salary with it and he or she can send it where were they want. It is a very fast process if you go cashless actually. If I want to use Paytm for payment then the other person should have that App in his mobile too and he too should be familiar to the Paytm App and also there is a disadvantage in it. Suppose if I want to transfer amount from Paytm to my bank then it charges interest of 4% which is very huge limitation. The charges are also very high. Banking Apps currently it is free but later they will charge for the entire thing. Service charge is applied which is charged once in a year. Receipt ant has to have that App. There is 1.5% transfer charge is there. And it depends on company to company. Now JIO has started e-wallet so their charges are different."

E.6 Low Income consumer focus group participants from Mumbai, India

[Moderator:] "Ok do you have billing and money apps?"

[Respondent:] "Yes we use Paytm app."

[Moderator:] "Ok so what all happens there?"

[Respondent:] "Mobile bills, light and water bills."

[Respondent:] "Movie tickets."

E.7 Low Income consumer focus group participants from Mumbai, India

[Moderator:] "Are you using Paytm?"

[Respondent:] "Yes."

[Moderator:] "Since when you stated recently or you were using it before also?"

[Respondent:] "No started it recently. It was there before also but now more in use. Because previously it was not available in many shops, but now it's available in many shops also, even a vegetable seller also has it. It's there in medical shop also."

[Moderator:] “So you pay medical bill through Paytm?”

[Respondent:] “Yes.”

Appendix II: Focus Group Methodology

Overview: As part of the estimation of the potential economic impact of WhatsApp in the key countries (Brazil, Germany, India, and Spain), Analysis Group, working with local market research partners, carried out eighteen focus group interviews to learn about how people use WhatsApp. [80] We designed these discussions to identify mechanisms through which WhatsApp usage impacts economic activity, as well as the vocabulary used to describe WhatsApp usage in each country.

Local market research partners conducted the focus group interviews in each country, recruiting participants according to screening criteria provided by Analysis Group. [81] We conducted separate focus groups for respondents who use WhatsApp as consumers (two consumer groups for Brazil, Spain, and Germany) and those who use WhatsApp as professionals (two professional groups for Brazil, Spain, Germany, and India). Due to the high level of income inequality in India, we decided to further divide consumers into lower income consumers and middle-to-high income consumers, in order to capture any variation in WhatsApp usage that might be due to socioeconomic status (four consumer groups). By conducting two focus groups per respondent category, we were able to ensure that all our key exploratory research questions were addressed while allowing the discussions to evolve naturally.

Questions:

A. Questions for Business Owners and Professionals Using Messaging Applications

General Questions:

1. How do you communicate with workers within your business, with business partners, colleagues, or clients/patients? In person? By email? By phone? Using messaging apps?
2. Can you describe a situation related to work where you used a messaging app to communicate?
    a. Who do you message with for work?
    b. How often?
    c. What makes you decide to message?
    d. Which messaging apps do you use in a work context and why?

[80] The vendors were BDI Research in Spain, Hopp & Partner in Germany, Idealis Pesquisa in Brazil, and Impetus Research in India.

[81] Vendors were asked to recruit respondents who used WhatsApp in the last seven days to communicate with either businesses or service providers or to communicate for their jobs or businesses. Among the qualified respondents, vendors prioritized those who identified themselves as frequent users, and to the extent possible tried to form groups with participants from different backgrounds (demographic and professional).

3. How does using messaging apps within your work, with work partners, or with clients/patients compare to other ways of communicating (e.g., email, phone, in person)?
4. In general, what benefits have you observed from using a messaging app? (Possible probes: Saved time? Saved money? Increased sales? How?)
5. In the context of work, do you use messaging apps jointly with other apps for certain tasks? If so, can you explain in what capacity?
6. Is there anything else you would like to say about the use of messaging apps in the context of your work?

Additional Probing Questions Specific to WhatsApp

1. [*Ask if WhatsApp not described in questions above*] You mentioned using WhatsApp. Can you describe a situation related to work where you used WhatsApp to communicate? Do you use WhatsApp jointly with other apps at work? If so, which ones and for what purpose?
2. Do you also use WhatsApp for your personal use? If so, how? How does this differ from work-related use?

B. Questions for Consumers Using Messaging Applications to Interact with Businesses or Community Organizations (e.g., Schools, Healthcare Centers, Government Offices, Police)

General Questions:

1. How do you generally communicate with businesses or community organizations such as schools, healthcare centers, or government offices? In person? By email? By phone? Using messaging apps?
2. Can you describe a situation where you used a messaging app to communicate with a business or a member of a community organization (e.g., a doctor, teacher, government office worker)?
    a. What types of businesses or community organizations do you typically message?
    b. How often?
    c. What makes you decide to message them?
    d. Which messaging apps do you use to communicate with businesses or organizations and why?
3. When communicating with businesses or community organizations (e.g., schools, healthcare centers, or government offices), how does using messaging apps compare with other ways of communicating with them (email, phone, in person)?
4. In general, what benefits have you observed from using a messaging app to interact with businesses or community organizations?
5. Is there anything else you would like to say about the use of messaging apps when interacting with businesses and community organizations?

Additional Probing Questions Specific to WhatsApp

1. [*Ask if WhatsApp not described in questions above*] You mentioned earlier using WhatsApp. Can you describe a situation where you used WhatsApp to communicate with a business or a community organization?
2. With what types of businesses or community organizations do you interact with using WhatsApp specifically?
3. Do you use WhatsApp jointly with other apps to interact with businesses or community organizations? If so, which ones and how?
4. Do you also use WhatsApp to communicate with friends or family? If so, how? How does this differ from using it to communicate with businesses and community organizations?

Administration: Each focus group was conducted with eight participants and lasted from an hour to ninety minutes. All local market research vendors provided a live video stream link to the focus group so that an Analysis Group team member fluent in the local language could follow the discussion to ensure that the discussion plan was followed as closely as possible without restricting the natural flow of the conversations. Analysis Group received transcripts in English and in the local language.[82] WhatsApp was provided with a memo containing an English translation of all of the focus group transcripts.

[82] We requested transcripts in English for all focus groups, and transcripts in the local language for all focus groups except two in Spain.

Appendix III: Usage Survey Methodology

Analysis Group designed a usage survey to asked respondents about their use of WhatsApp in communicating for their jobs or with stores and service providers. The survey was launched in Brazil, Germany, India, and Spain. To ensure that we captured the heterogeneity in use we identified from the focus groups, we divided respondents into five categories: (1) consumers who use WhatsApp to communicate with businesses and service providers, (2) consumers who use WhatsApp to communicate with community organizations, (3) employed people who use WhatsApp professionally to communicate with within their firms, (4) employed people who use WhatsApp to communicate with clients or providers outside their firms, (5) employed people who use WhatsApp to communicate with shareholders and funders.[83]

The surveys were pretested and peer-reviewed internally at Analysis Group in English. After minor changes to the surveys were administered online in five languages: Portuguese, German, Hindi, English and Spanish. We contracted Lightspeed GMI, a panel provider, to program and launch the survey in all countries. After pretesting with a minimum of 10 people per country, the surveys were launched between February 4 and 8, 2017 and were in the field for 8-12 days (depending on the country) until February 15, 2017. The survey instrument was pretested in the five languages by respondents who were blind to its purpose to ensure that the questions were clear, after translation.[84] Some linguistic modifications were made according to the pretesters' feedback, and the instrument was pretested again.

After completion of in-language pretesting, the English survey programmer instructions, as well as the German and Spanish-language surveys were externally peer reviewed by academics with marketing and country-relevant backgrounds. After minor incremental edits, the surveys were approved for launch.

In order to generalize the results of our survey to the population in each country, we balanced the inbound sample according to national gender, age and regional splits.[85] Qualifying respondents were selected from the inbound representative sampling frame, and had to pass a set of screening questions that ensured they were over 18 years of age, accessed the Internet, used WhatsApp for at least one of the five reasons stated above, and in the case of the three professional groups, that they were working at the time of the survey (see Table V.1 in Appendix V for details).

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83 We provided respondents the possibility to select "As a way to communicate with friends and family" as the only option if that is how they use WhatsApp, to avoid demand effects.

84 The survey instrument was pretested at least five times in each language, and ten times in English.

85 A balanced inbound sample guarantees that the population that responds to the survey invitation is balanced, but not necessarily the number of completes.

After the required number of responses was achieved for all countries (300 completes from the consumer group and 450 completes for the professional group for each country) the data were analyzed. As a sensitivity analysis, we also re-weighted the general population results, and found that our results did not change.[86] The survey programmer's instructions follow below.

Appendix IV: WhatsApp Usage Survey Programmer Instructions

[PROGRAMMER NOTES IN BOLD CAPS AND BRACKETS]

<u>QUOTAS</u>
MINIMUM 750 COMPLETES TOTAL PER COUNTRY: INDIA, BRAZIL, SPAIN, AND GERMANY

- **300 IN THE CONSUMER GROUP**
- **450 IN THE SMALL MEDIUM BUSINESS (SMB) GROUP**

EACH OF THESE TWO MAIN GROUPS ARE FURTHER SUBDIVIDED INTO SUBGROUPS (2 SUBGROUPS FOR THE CONSUMERS AND 3 SUBGROUPS FOR SMB) WITH A TARGET OF 150 COMPLETES PER SUBGROUP PER COUNTRY

THERE ARE FIVE SURVEY SUBGROUPS:

- **CONSUMERS**
  - **CONSUMER GROUP 1 (SECTION II.B)**
  - **CONSUMER GROUP 2 (SECTION II.C)**
- **SMALL MEDIUM BUSINESS (SMB) GROUP**
  - **SMB1 (SECTION III.B)**
  - **SMB2 (SECTION III.C)**
  - **SMB3 (SECTION III.D)]**

[NO SURVEY TITLE TO BE DISPLAYED TO RESPONDENTS]

Notes to respondents in italics.

I. Introduction and Screening

[86] Given India's low Internet penetration rate (22% of the population in 2015 according to the Pew Research Center), we restricted our sample of Indian respondents to those aged 18 to 45 and weighted them according to the national population gender, age and regional splits for that age group. We believe this data is representative of India's online population. See Pew Research Center, "Profile of Indian Internet Users," April 5, 2016. Available at http://www.pewresearch.org/fact-tank/2016/04/06/global-tech-companies-see-indias-vast-offline-population-as-untapped-market/ft_16-04-06_indiainternet_users/, accessed February 22, 2017.

[SHOW QS0 IN INDIA]

QS0. What language do you prefer to take this survey in? / (Question text in Hindi)

1. English / ("English" in Hindi)
2. Hindi / ("Hindi" in Hindi)

Thank you for your willingness to participate in our study. The responses you give to our questions are very important to us. If you don't know an answer to a question or if you don't have an opinion, please indicate this in your response.
Your answers will be kept in confidence. The results of this study will not be used for commercial purposes.
When you are ready to get started, please click the ">" button.

[">" BUTTON TAKES RESPONDENT TO QUESTION QS1]

[EACH QUESTION ON A NEW PAGE UNLESS OTHERWISE SPECIFIED]

QS1. Please enter the code exactly as it appears in the image below, and then click ">" to continue.

[INSERT CAPTCHA]

[">" BUTTON TAKES RESPONDENT TO QUESTION QS2]

QS2. Are you…? (*Select one only*) **[RANDOMIZE ALL BUT THE LAST OPTION, EXCLUSIVE]**

- ⦿ Male
- ⦿ Female
- ⦿ Prefer not to answer **[TERMINATE]**

QS3. Are you…? (*Select one only*) **[EXCLUSIVE]**

- ⦿ Under 18 **[TERMINATE]**
- ⦿ 18 - 24
- ⦿ 25 - 34
- ⦿ 35 - 49
- ⦿ 50 - 64
- ⦿ 65 or older
- ⦿ Prefer not to answer **[TERMINATE]**

QS4. In which region of **[INSERT BASE COUNTRY. OPTIONS INCLUDE BRAZIL, GERMANY, SPAIN, OR INDIA]** do you primarily reside? (*Select one only*) **[EXCLUSIVE]**

[USE OPTIONS LISTED BELOW FOR BRAZIL (GEOGRAPHIC REGIONS AND THEIR RESPECTIVE STATES]

- ⦿ Southeast (Espírito Santo, Minas Gerais, Rio de Janeiro, São Paulo)

- ⦿ Central-West (Goiás, Mato Grosso, Mato Grosso do Sul, Distrito Federal)
- ⦿ Northeast (Alagoas, Bahia, Ceará, Maranhão, Paraíba, Pernambuco, Piauí, Rio Grande do Norte, Sergipe)
- ⦿ North (Acre, Amapá, Amazonas, Pará, Rondônia, Roraima, Tocantins)
- ⦿ South (Paraná, Rio Grande do Sul, Santa Catarina)
- ⦿ Unsure / Don't know **[TERMINATE]**

[USE OPTIONS LISTED BELOW FOR GERMANY (STATES), ORDER ALPHABETICALLY]

- ⦿ Baden-Württemberg
- ⦿ Bayern
- ⦿ Berlin
- ⦿ Brandenburg
- ⦿ Bremen
- ⦿ Hamburg
- ⦿ Hessen
- ⦿ Niedersachsen
- ⦿ Mecklenburg-Vorpommern
- ⦿ Nordrhein-Westfalen
- ⦿ Rheinland-Pfalz
- ⦿ Saarland
- ⦿ Sachsen
- ⦿ Sachsen-Anhalt
- ⦿ Schleswig-Holstein
- ⦿ Thüringen
- ⦿ Unsure / Don't know **[TERMINATE]**

[USE OPTIONS LISTED BELOW FOR SPAIN, ORDER ALPHABETICALLY]

- ⦿ Andalucia
- ⦿ Aragon
- ⦿ Canarias
- ⦿ Cantabria
- ⦿ Castilla y Leon
- ⦿ Castilla-la Mancha
- ⦿ Cataluna
- ⦿ Comunidad de Madrid
- ⦿ Comunidad Foral de Navarra
- ⦿ Comunidad Valenciana
- ⦿ Extremadura
- ⦿ Galicia
- ⦿ Illes Balears
- ⦿ La Rioja
- ⦿ Pais Vasco
- ⦿ Principado de Asturias
- ⦿ Region de Murcia
- ⦿ Unsure / Don't know **[TERMINATE]**

[USE OPTIONS LISTED BELOW FOR INDIA, ORDER ALPHABETICALLY]

- ⦿ Delhi
- ⦿ Andhra Pradesh
- ⦿ Assam
- ⦿ Bihar and Jharkhand
- ⦿ Chattisgarh
- ⦿ Gujarat
- ⦿ Haryana
- ⦿ Jammu & Kashmir
- ⦿ Karnataka
- ⦿ Kerala
- ⦿ Madhya Pradesh
- ⦿ Maharashtra and Goa
- ⦿ Orissa
- ⦿ Punjab
- ⦿ Tamil Nadu
- ⦿ Uttar Pradesh
- ⦿ West Bengal, Andaman & Nicobar Islan
- ⦿ Other
- ⦿ Unsure / Don't know **[TERMINATE]**

QS5. Which devices have you used to access the Internet in the past month? *(Select all that apply)* **[RANDOMIZE ALL BUT THE LAST THREE OPTIONS] [DEVICE USED TO ACCESS SURVEY WILL ALSO BE CAPTURED]**

- ❒ Desktop computer
- ❒ Portable computer (e.g. laptop, notebook, netbook)
- ❒ Smartphone
- ❒ Tablet
- ❒ Washing machine **[TERMINATE]**
- ❒ Other: _____
- ❒ Unsure / Don't know **[EXCLUSIVE, TERMINATE]**
- ❒ I don't access the Internet **[EXCLUSIVE, TERMINATE]**

QS6. **[QUESTION QS6 REMOVED FROM SURVEY]**

QS7. Which of the following applications, if any, have you used on your phone, tablet, or computer in the past seven days? (*Select all that apply*) **[RANDOMIZE ALL BUT THE LAST OPTION]**

- ❒ Social media applications (e.g., Facebook, Instagram, Snapchat)
- ❒ Music applications (e.g., Google Play Music, Apple Music)
- ❒ Messaging applications (e.g., Telegram, WeChat, Facebook Messenger, WhatsApp) **[MUST SELECT TO CONTINUE]**

- ❒ Game applications (e.g., Pokémon Go, Minecraft, Angry Birds, Candy Crush)
- ❒ File syncing applications (e.g., Dropbox, Google Drive, SugarSync)
- ❒ None of the above **[EXCLUSIVE, TERMINATE]**

QS8. How often do you use messaging applications (e.g., Facebook Messenger, WhatsApp, Telegram, Wechat)? (*Select one only*) **[EXCLUSIVE]**

- ⦿ Daily or almost every day
- ⦿ At least once a week (but not every day)
- ⦿ Less often than once a week
- ⦿ I never communicate with others using messaging applications **[TERMINATE]**

QS9. Thinking of yesterday, how much of your day did you spend communicating with others using messaging applications (e.g., Facebook Messenger, WhatsApp, Telegram, WeChat)? (*Select one only*) **[EXCLUSIVE]**

- ⦿ Less than 10 minutes yesterday
- ⦿ Between 10 minutes and 30 minutes yesterday
- ⦿ Between 31 minutes and 1 hour yesterday
- ⦿ For more than 1 hour yesterday

QS10. Which of the following messaging applications, if any, have you used <u>in the past seven days</u>? *(Select all that apply)* **[RANDOMIZE ALL BUT THE LAST TWO OPTIONS]**

- ❒ WhatsApp **[MUST SELECT TO CONTINUE]**
- ❒ Viber
- ❒ Telegram
- ❒ BBM
- ❒ Google Hangouts
- ❒ Facebook Messenger
- ❒ Line
- ❒ Hike
- ❒ Imo
- ❒ Skype
- ❒ iMessage
- ❒ WeChat
- ❒ Other: _____
- ❒ None of the above **[EXCLUSIVE, TERMINATE]**

QS11. You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp <u>in the past seven days</u>? (*Select all that apply*) **[RANDOMIZE ALL BUT THE LAST TWO OPTIONS. IN ORDER TO QUALIFY FOR THE CONSUMER GROUP, RESPONDENTS MUST SELECT AT LEAST ONE OF (1) "AS A WAY TO COMMUNICATE WITH COMMUNITY ORGANIZATIONS" OR (2) "AS A**

CONSUMER" OR (3) "AS A WAY TO COMMUNICATE WITH HEALTH CARE PROVIDERS." IN ORDER TO QUALIFY FOR THE SMB GROUP, RESPONDENTS MUST SELECT "AS A WAY TO COMMUNICATE FOR MY JOB OR BUSINESS"]

- ❒ As a way to communicate with friends and family
- ❒ As a way to communicate for my main job or business **[MUST SELECT TO CONTINUE FOR <u>SMB GROUP</u>]**
- ❒ As a way to communicate with doctors, physiotherapists, or other health care providers **[ONE OF TWO OPTIONS THAT COULD BE SELECTED TO CONTINUE FOR <u>CONSUMER GROUP 2</u>]**
- ❒ As a way to communicate with community organizations (schools, government offices) **[ONE OF TWO OPTIONS THAT COULD BE SELECTED TO CONTINUE FOR <u>CONSUMER GROUP 2</u>]**
- ❒ As a consumer (communications with businesses, stores, or service providers) **[MUST BE SELECTED TO CONTINUE FOR <u>CONSUMER GROUP 1</u>]**
- ❒ None of the above **[EXCLUSIVE, TERMINATE]**
- ❒ Unsure / Don't know **[EXCLUSIVE, TERMINATE]**

[ELIGIBLE FOR CONSUMER GROUP IF RESPONDENT CHOSE (1) "AS A WAY TO COMMUNICATE WITH COMMUNITY ORGANIZATIONS" OR (2) "AS A CONSUMER" OR (3) "AS A WAY TO COMMUNICATE WITH HEALTH CARE PROVIDERS" IN QS11 UNTIL A QUOTA OF 300 IS REACHED. ELIGIBLE FOR SMB GROUP IF RESPONDENT CHOSE "AS A WAY TO COMMUNICATE FOR MY JOB OR BUSINESS" IN QS11 UNTIL A QUOTA OF 450 IS REACHED. IF RESPONDENT QUALIFIES FOR BOTH GROUPS, USE THE "LEAST FILL METHOD" UNTIL QUOTAS FOR BOTH GROUPS ARE ATTAINED, THEN TERMINATE.]

QS12. Which of the following best describes your current employment status? (*Select one only*) **[EXCLUSIVE; RANDOMIZE ALL BUT THE LAST TWO OPTIONS]**

- ⦿ Employed by someone else **[SKIP TO QUESTION QS13]**
- ⦿ I own my own business (self-employed)
- ⦿ Student **[TERMINATE IF ELIGIBLE FOR SMB GROUP ONLY]**
- ⦿ Retired **[TERMINATE IF ELIGIBLE FOR SMB GROUP ONLY]**
- ⦿ Not currently employed **[TERMINATE IF ELIGIBLE FOR SMB GROUP ONLY]**
- ⦿ Other _____**[TERMINATE IF ELIGIBLE FOR SMB GROUP ONLY]**
- ⦿ Unsure / Don't know **[TERMINATE]**

[IF RESPONDENT CHOSE "EMPLOYED BY SOMEONE ELSE" IN QS12, CONTINUE TO QUESTION QS13. OTHERWISE, EITHER SKIP TO QUESTION QS14 FOR SMB GROUP OR SKIP TO QUESTION QC1 FOR CONSUMER GROUP.]

QS13. At your main job or work occupation, you are…? (*Select one only*) **[EXCLUSIVE; RANDOMIZE ALL BUT THE LAST TWO OPTIONS]**

- ⦿ A manager / supervisor

- ⦿ An employee
- ⦿ A contractor
- ⦿ Other:_____
- ⦿ None of the above
- ⦿ Unsure / Don't know

[IF RESPONDENT CHOSE "AS A WAY TO COMMUNICATE FOR MY JOB OR BUSINESS" IN QS11, CONTINUE TO QUESTION QS14. OTHERWISE, SKIP TO QUESTION QC1.]

QS14. **[QUESTION INTENDED ONLY FOR THOSE WHO ARE ELIGIBLE FOR SMB GROUP]**
In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes? (*Select all that apply*) **[RANDOMIZE ALL BUT THE LAST TWO OPTIONS]**

- ❒ Work colleagues
- ❒ Supervisors
- ❒ Employees
- ❒ Customers
- ❒ Clients / patients
- ❒ Suppliers
- ❒ Business partners
- ❒ Funders / financial contributors
- ❒ Investors / Shareholders
- ❒ None of the above **[EXCLUSIVE, TERMINATE]**
- ❒ Unsure / Don't know **[EXCLUSIVE, TERMINATE]**

ASSIGN RESPONDENTS TO ONE OF THE 8 SUBGROUPS BELOW, IF ELIGIBLE FOR MORE THAN ONE – USE LEAST FILL LOGIC:

<u>CONSUMER GROUP 1</u> - IF THEY ANSWERED "AS A CONSUMER" IN QS11. – 150 RESPONDENTS

<u>CONSUMER GROUP 2 -</u> IF THEY ANSWERED "AS A WAY TO COMMUNICATE WITH COMMUNITY ORGANIZATIONS" OR "AS A WAY TO COMMUNICATE WITH HEALTH CARE PROVIDERS" IN QS11. – 150 RESPONDENTS

<u>CONSUMER GROUP 2 -</u> RECORD ANSWER TO QUESTION QS11 TO BE REFERENCED IN SECTION II.B AND IV (AS A TEXT PLACEHOLDER "ORGANIZATIONS X" ENTIRELY IN LOWER CASE LETTERS). IF RESPONDENT ANSWERED "AS A WAY TO COMMUNICATE WITH COMMUNITY ORGANIZATIONS", LET "ORGANIZATIONS X" STAND FOR "COMMUNITY ORGANIZATIONS". IF RESPONDENT ANSWERED "AS A WAY TO COMMUNICATE WITH HEALTH CARE PROVIDERS", LET "ORGANIZATIONS X" STAND FOR "HEALTH CARE PROVIDERS". IF RESPONDENT ANSWERED "AS A WAY TO COMMUNICATE WITH HEALTH CARE PROVIDERS" AND "AS A WAY TO COMMUNICATE WITH COMMUNITY ORGANIZATIONS", USE THE LEAST FILLED

METHOD TO LET "ORGANIZATIONS X" STAND FOR EITHER "COMMUNITY ORGANIZATIONS" OR "HEALTH CARE PROVIDERS".

<u>GROUP SMB1 (OWNERS OR MANAGERS):</u> IF RESPONDENT CHOSE:
1.[(1) "WORK COLLEAGUES" OR (2) "SUPERVISORS" OR (3) "EMPLOYEES" IN QS14] AND 2.["AS A WAY TO COMMUNICATE FOR MY JOB OR BUSINESS" IN QS11] AND 3.[ARE EITHER (1) SELF- EMPLOYED (ANSWERED "I OWN MY OWN BUSINESS (SELF-EMPLOYED)" TO QS12) OR (2) MANAGERS/SUPERVISORS (ANSWERED "A MANAGER / SUPERVISOR" TO QS13).]

<u>GROUP SMB2 (OWNERS OR MANAGERS):</u> IF RESPONDENT CHOSE:
1.[(1) "CUSTOMERS" OR (2) "CLIENTS / PATIENTS" OR (3) "SUPPLIERS" IN QS14] AND
2.["AS A WAY TO COMMUNICATE FOR MY JOB OR BUSINESS" IN QS11] AND
3.[ARE EITHER (1) SELF- EMPLOYED (ANSWERED "I OWN MY OWN BUSINESS (SELF-EMPLOYED)" TO QS12) OR (2) MANAGERS/SUPERVISORS (ANSWERED "A MANAGER / SUPERVISOR" TO QS13).]

<u>GROUP SMB2 -</u> RECORD ANSWER TO QUESTION QS14 TO BE REFERENCED IN SECTION III.C AND IV (AS ATEXT PLACEHOLDER "CATEGORY Y" ENTIRELY IN LOWER CASE LETTERS). IF RESPONDENT ANSWERED "CUSTOMERS" AND / OR "CLIENTS / PATIENTS", LET "CATEGORY Y" STAND FOR EITHER "CUSTOMERS" OR "CLIENTS / PATIENTS" OR "CUSTOMERS AND / OR CLIENTS / PATIENTS" DEPENDING ON THE ANSWER(S) SELECTED IN QS14. IF RESPONDENT ANSWERED "SUPPLIERS", LET "CATEGORY Y" STAND FOR "SUPPLIERS". IF RESPONDENT ANSWERED BOTH "SUPPLIERS" AND AT LEAST ONE OF "CUSTOMERS" AND "CLIENTS / PATIENTS", USE THE LEAST FILLED METHOD TO ASSIGN RESPONDENT TO ONE OF THE TWO SUBGROUPS: (1) THE SUBGROUP WHERE "CATEGORY Y" STAND FOR EITHER "CUSTOMERS" OR "CLIENTS / PATIENTS" OR "CUSTOMERS

AND/OR CLIENTS / PATIENTS" DEPENDING ON THEIR ANSWER TO QS14 AND (2) THE GROUP WHERE CATEGORY Y STANDS FOR "SUPPLIERS".

BELOW IS A TABLE TO ILLUSTRATE:

ANSWER TO QS14	"CATEGORY Y" STANDS FOR:
"SUPPLIERS"	"SUPPLIERS"
"CUSTOMERS"	"CUSTOMERS"
"CLIENTS / PATIENTS"	"CLIENTS / PATIENTS"
"CUSTOMERS" AND "CLIENTS / PATIENTS"	"CUSTOMERS AND CLIENTS / PATIENTS"
"SUPPLIERS" AND "CUSTOMERS"	USE LEAST FILLED METHOD TO SELECT EITHER "SUPPLIERS" OR "CUSTOMERS"
"SUPPLIERS" AND "CLIENTS / PATIENTS"	USE LEAST FILLED METHOD TO SELECT EITHER "SUPPLIERS" OR "CLIENTS / PATIENTS"
"SUPPLIERS" AND "CUSTOMERS" AND "CLIENTS / PATIENTS"	USE LEAST FILLED METHOD TO SELECT EITHER "SUPPLIERS" OR "CUSTOMERS AND CLIENTS / PATIENTS"

GROUP SMB3 (OWNERS OR MANAGERS): IF RESPONDENT CHOSE:
1.[(1) "BUSINESS PARTNERS" OR (2) "FUNDERS / FINANCIAL CONTRIBUTORS" OR (3) "INVESTORS / SHAREHOLDERS" IN QS14] AND
2.["AS A WAY TO COMMUNICATE FOR MY JOB OR BUSINESS" IN QS11] AND
3.[ARE EITHER (1) SELF- EMPLOYED (ANSWERED "I OWN MY OWN BUSINESS (SELF-EMPLOYED)" TO QS12) OR (2) MANAGERS/SUPERVISORS (ANSWERED "A MANAGER / SUPERVISOR" TO QS13).]

GROUP SMB1 (EMPLOYEES): IF RESPONDENT CHOSE:
1.[(1) "WORK COLLEAGUES" OR (2) "SUPERVISORS" OR (3) "EMPLOYEES" IN QS14] AND 2.["AS A WAY TO COMMUNICATE FOR MY JOB OR BUSINESS" IN QS11] AND
3.[ARE NEITHER (1) SELF- EMPLOYED (ANSWERED "I OWN MY OWN BUSINESS (SELF-EMPLOYED)" TO QS12) NOR (2) MANAGERS/SUPERVISORS (ANSWERED "A MANAGER / SUPERVISOR" TO QS13).]

GROUP SMB2 (EMPLOYEES): IF RESPONDENT CHOSE:
1.[(1) "CUSTOMERS" OR (2) "CLIENTS / PATIENTS" OR (3) "SUPPLIERS" IN QS14] AND
2.["AS A WAY TO COMMUNICATE FOR MY JOB OR BUSINESS" IN QS11] AND
3.[ARE NEITHER (1) SELF- EMPLOYED (ANSWERED "I OWN MY OWN BUSINESS (SELF-EMPLOYED)" TO QS12) NOR (2) MANAGERS/SUPERVISORS (ANSWERED "A MANAGER / SUPERVISOR" TO QS13).]

<u>GROUP SMB3 (EMPLOYEES):</u> IF RESPONDENT CHOSE:
<u>1.</u>[(1) "BUSINESS PARTNERS" OR (2) "FUNDERS / FINANCIAL CONTRIBUTORS" OR (3) "INVESTORS / SHAREHOLDERS" IN QS14] AND
<u>2.</u>["AS A WAY TO COMMUNICATE FOR MY JOB OR BUSINESS" IN QS11] AND
<u>3.</u>[ARE NEITHER (1) SELF- EMPLOYED (ANSWERED "I OWN MY OWN BUSINESS (SELF-EMPLOYED)" TO QS12) NOR (2) MANAGERS/SUPERVISORS (ANSWERED "A MANAGER / SUPERVISOR" TO QS13).]

SMB GROUP – 450 TOTAL
CONSUMER GROUP – 300 TOTAL

[RECORD ANSWERS SELECTED IN QS14 TO BE USED IN CERTAIN QUESTIONS IN SECTIONS III.B (FOR GROUP SMB 1), III.C (FOR GROUP SMB 2), AND III.D (FOR GROUP SMB 3). INSTRUCTIONS WILL EXPLICITLY STATE WHEN TO USE ANSWERS FROM QS14.]

[SKIP TO QUESTION QB1]

II. WhatsApp Application Usage Questions for CONSUMERS

[QUESTIONS IN SECTION II ARE INTENDED FOR RESPONDENTS IN CONSUMER GROUPS 1 AND 2 ONLY.]

A. General Usage Questions

Thank you for your willingness to participate in our study. You will be asked some questions about your use of WhatsApp. Please try to answer all questions to the best of your ability. We are interested in your opinions. There are no right or wrong answers. We encourage you to check your recorded conversations on WhatsApp if you are uncertain about an answer.
If you do not have an opinion or are unsure, please do not try to guess – simply select the "Unsure / Don't know" option.

[SHOW QC1 ON SAME SCREEN AS INSTRUCTIONS ABOVE. SHOW QUESTION BENEATH INSTRUCTIONS]

QC1. Do you understand these instructions and agree with participating in this survey? (*Select one only*) **[EXCLUSIVE]**

- ⦿ Yes
- ⦿ No **[TERMINATE]**
- ⦿ Uncertain **[TERMINATE]**

QC2. In the past seven days, how much time did you spend using WhatsApp to communicate <u>with anyone in any context</u>? (*Select one only*) **[EXCLUSIVE]**

- ⦿ Less than 1 hour in the past seven days
- ⦿ Between 1 and 5 hours in the past seven days

- ⦿ Between 6 and 10 hours in the past seven days
- ⦿ Between 11 and 19 hours in the past seven days
- ⦿ 20 hours or more in the past seven days
- ⦿ Unsure / Don't know

[RANDOMLY ASSIGN RESPONDENTS IN EACH CONSUMER GROUP INTO ONE OF THE FOLLOWING TWO SUBGROUPS:

(1) ROTATION GROUP A: ORDER ANSWER OPTIONS FROM LARGEST (OR MOST FREQUENT / IMPORTANT) TO LOWEST (OR LEAST FREQUENT / IMPORTANT)

(2) ROTATION GROUP B: ORDER ANSWER OPTIONS FROM LOWEST (OR LEAST FREQUENT / IMPORTANT) TO LARGEST (OR MOST FREQUENT / IMPORTANT)

THIS SUBGROUPING ONLY AFFECTS QUESTIONS WITH THE FOLLOWING INSTRUCTIONS: "ROTATE ORDER ACCORDING TO ROTATION GROUPS A OR B"]

B. Questions for Consumer Group 1 (Regarding Communication with Businesses or Service Providers)

[QUESTIONS IN SECTION II.B ARE INTENDED FOR RESPONDENTS IN CONSUMER GROUP 1 ONLY. IF RESPONDENT IS IN CONSUMER GROUP 2, PROCEED TO SECTION II.C]

QC1_3. In the past seven days, how much time did you spend communicating in any way (email, in-person, telephone, SMS texting, etc.) with businesses (e.g., stores) or service providers (e.g., law firm, babysitter, cleaning service)? *(Select one only)* **[EXCLUSIVE]**

- ⦿ Less than 1 hour in the past seven days **[AUTOSELECT FIRST OPTION IN QC1_4 AND SKIP TO QC1_5]**
- ⦿ Between 1 and 5 hours in the past seven days
- ⦿ Between 6 and 10 hours in the past seven days
- ⦿ Between 11 and 19 hours in the past seven days
- ⦿ 20 hours or more in the past seven days
- ⦿ Unsure / Don't know **[SKIP TO QC1_5]**

QC1_4. In the past seven days, you mentioned that you spent **[INSERT ANSWER TO QUESTION QC1_3 WITHOUT "IN THE PAST SEVEN DAYS"]** communicating with businesses or service providers in any way. In the past seven days, how much time did you spend using WhatsApp specifically to communicate with them? *(Select one only)* **[EXCLUSIVE; DO NOT ALLOW ANSWER TO CONTRADICT THE ANSWER TO THE PREVIOUS QUESTION BY LIMITING THE MAXIMUM VALUE TO THE VALUE RECORDED IN QC1_3]**

- ⦿ Less than 1 hour in the past seven days
- ⦿ Between 1 and 5 hours in the past seven days
- ⦿ Between 6 and 10 hours in the past seven days
- ⦿ Between 11 and 19 hours in the past seven days

- ⦿ 20 hours or more in the past seven days
- ⦿ Unsure / Don't know

QC1_5. In the past seven days, what types of businesses or service providers have you communicated with using WhatsApp? *(Select all that apply)* **[RANDOMIZE ALL BUT THE LAST THREE OPTIONS]**

- ❒ Department / apparel stores (e.g., book, clothing, footwear, or jewelry stores)
- ❒ Banks / financial institutions
- ❒ Electronics / computers / telephone providers
- ❒ Home-related services (e.g., baby sitters, mechanics / car dealers, electricians, cleaning services)
- ❒ Entertainment (e.g., restaurants, bars, cinemas, sports events, toy stores)
- ❒ Health / beauty (e.g., pharmacies, physiotherapists, beauty / hair salons)
- ❒ Food (e.g., markets, grocery stores)
- ❒ Transportation providers (e.g., public transit, taxi companies, train/airline companies)
- ❒ Professional services (e.g., accountants, lawyers)
- ❒ Travel / Tourism services (e.g. travel agents, tour companies)
- ❒ Other: _____
- ❒ None of the above **[EXCLUSIVE]**
- ❒ Unsure / Don't know **[EXCLUSIVE]**

QC1_6. In the past seven days, did you contact businesses or service providers using WhatsApp to…? (*Select all that apply*) **[RANDOMIZE ALL BUT THE LAST THREE OPTIONS]**

- ❒ Place an order or make a purchase
- ❒ Ask about location or opening hours
- ❒ Ask for information on products or service (e.g., price, inventory, return policy)
- ❒ Ask about or set up delivery services
- ❒ Make or confirm an appointment or reservation
- ❒ Provide feedback on products or services
- ❒ Respond to a promotion or an offer
- ❒ Other: _____
- ❒ None of the above **[EXCLUSIVE]**
- ❒ Unsure / Don't know **[EXCLUSIVE]**

QC1_7A. What was the last type of business or service provider you communicated with using WhatsApp? **[EXCLUSIVE]**
[RESTRICT TO SELECTED ANSWER OPTIONS IN QC1_5; Plus option "Unsure / Don't Know"]

QC1_7. Thinking of the last business or service provider you contacted using WhatsApp, how often did you use WhatsApp to communicate with it in the past seven days? (*Select one only*) **[EXCLUSIVE]**

- ⦿ I communicated with it using WhatsApp less than 50% of the time
- ⦿ I communicated with it using WhatsApp 50% of the time or more frequently
- ⦿ I only communicated with it using WhatsApp

QC1_8. Of the messages you received via WhatsApp from businesses or service providers in the past seven days (e.g., regarding promotions or details on pricing), have you forwarded any to the following people? (*Select all that apply*) **[RANDOMIZE ALL BUT THE LAST THREE OPTIONS]**

- ❒ A family member
- ❒ A friend
- ❒ A work colleague
- ❒ Other
- ❒ I have not forwarded any messages**[EXCLUSIVE; SKIP TO QC1_10]**
- ❒ Unsure / Don't know **[EXCLUSIVE; SKIP TO QC1_10]**

QC1_9. How often in the past seven days have you forwarded information (e.g., promotions or details on pricing) received from a business or service provider using WhatsApp? (*Select one only*) **[ROTATE ORDER ACCORDING TO ROTATION GROUPS A OR B, EXCLUSIVE]**

- ⦿ One occasion
- ⦿ Between 2 and 5 occasions
- ⦿ Between 6 and 10 occasions
- ⦿ More than 10 occasions
- ⦿ Unsure / Don't know **[ANCHOR LAST]**

QC1_10. Being able to communicate with a business or service provider by using WhatsApp is… for you? (*Select one only*) **[ROTATE ORDER ACCORDING TO ROTATION GROUPS A OR B, EXCLUSIVE]**

- ⦿ Not important
- ⦿ Somewhat unimportant
- ⦿ Neither unimportant nor important
- ⦿ Somewhat important
- ⦿ Very important
- ⦿ Unsure / Don't know **[ANCHOR LAST; SKIP TO QC1_12]**

QC1_11. You stated that being able to communicate with businesses or service providers using WhatsApp is **[INSERT ANSWER TO QUESTION QC1_10 WITH FIRST LETTER LOWER CASE].** Why do you say that? **[OPEN-ENDED TEXT BOX]**

- ⦿ Unsure / Don't know **[EXCLUSIVE]**

QC1_12. Are you aware of how much you spent on goods (e.g., groceries, medicine, and clothing) and services (e.g., transportation, daycare, housekeeping, and personal care) excluding your rent, utilities, or mortgage in the last seven days? If possible, please check your recorded transactions on your credit card statement or bank statement if you are uncertain about the answer. (*Select one only*) **[EXCLUSIVE]**

- ⦿ Yes
- ⦿ No **[SKIP TO F1]**
- ⦿ Unsure / Don't know **[SKIP TO F1]**

QC1_13. In the past seven days, how much did you spend on goods (e.g., groceries, medicine, and clothing) and services (e.g., transportation, daycare, housekeeping, and personal care) excluding your rent, utilities, or mortgage? If possible, please check your recorded transactions on your credit card statement or bank statement if you are uncertain about the answer. **[OPEN-ENDED; ADAPT CURRENCY SYMBOL FOR EACH COUNTRY BASE; ACCEPT INTEGERS RANGING FROM 1 TO 1,000,000,000]**

- ⦿ $ _____ **[RECORD AMOUNT TO INSERT IN NEXT QUESTION]**
- ⦿ Unsure/Don't know **[EXCLUSIVE; SKIP TO F1]**

QC1_14. You spent **[INSERT RECORDED AMOUNT WITH LOCAL CURRENCY SYMBOL]** in the past seven days on goods (e.g., groceries, medicine, and clothing) and services (e.g., transportation, daycare, housekeeping, and personal care) excluding your rent, utilities, or mortgage. To the best of your knowledge, what portion of these purchases involved communicating for any purpose with a business or service provider <u>by using WhatsApp</u>? (*Select one only*) **[EXCLUSIVE]**

- ⦿ Less than half of the total amount
- ⦿ Half of the total amount or more **[SKIP TO QC1_16]**
- ⦿ Unsure / Don't know **[SKIP TO F1]**

QC1_15. You mentioned that less than half of your purchases on goods and services in the past seven days involved communicating for any purpose with a business or service provider <u>by using WhatsApp</u>. To the best of your knowledge, what portion was it? (*Select one only*) **[EXCLUSIVE]**

- ⦿ None
- ⦿ Between 1% and 24% of the total amount
- ⦿ Between 25% and 49% of the total amount
- ⦿ Unsure / Don't know

[SKIP TO QUESTION F1]

QC1_16. You mentioned that at least half of your purchases on goods and services in the past seven days involved communicating for any purpose with a business or service provider by using WhatsApp. To the best of your knowledge, what portion was it? (*Select one only*) **[EXCLUSIVE]**

- ⦿ Between 50% and 74% of the total amount
- ⦿ Between 75% and 99% of the total amount
- ⦿ 100% of the total amount
- ⦿ Unsure / Don't know

[SKIP TO QUESTION F1]

C. Questions for Consumer Group 2 (Regarding Communication with Community Organizations)

[INSTRUCTIONS: QUESTIONS IN SECTION II.C ARE INTENDED FOR RESPONDENTS IN CONSUMER GROUP 2 ONLY.]

QC2_3. In the past seven days, how much time did you spend communicating in any way (email, in-person, telephone, SMS texting, etc.) with **[ORGANIZATIONS X]**? (*Select one only*) **[EXCLUSIVE]**

- ⦿ Less than 1 hour in the past seven days **[AUTOSELECT FIRST OPTION IN QC2_4 AND SKIP TO QC2_5]**
- ⦿ Between 1 and 5 hours in the past seven days
- ⦿ Between 6 and 10 hours in the past seven days
- ⦿ Between 11 and 19 hours in the past seven days
- ⦿ 20 hours or more in the past seven days
- ⦿ Unsure / Don't know **[SKIP TO QC2_5]**

QC2_4. In the past seven days, you mentioned that you spent **[INSERT ANSWER TO QUESTION QC2_3 WITHOUT "IN THE PAST SEVEN DAYS" AND WITH FIRST LETTER LOWER CASE]** communicating with **[ORGANIZATIONS X]** in any way. In the past seven days, how much time did you spend using WhatsApp specifically to communicate with **[ORGANIZATIONS X]**? (*Select one only*) **[EXCLUSIVE; DO NOT ALLOW ANSWER TO CONTRADICT THE ANSWER TO THE PREVIOUS QUESTION. THE VALUE FROM QC2_3 IS THE MAXIMUM]**

- ⦿ Less than 1 hour in the past seven days
- ⦿ Between 1 and 5 hours in the past seven days
- ⦿ Between 6 and 10 hours in the past seven days
- ⦿ Between 11 and 19 hours in the past seven days
- ⦿ 20 hours or more in the past seven days

⦿ Unsure / Don't know

[IF [ORGANIZATIONS X] STANDS FOR "HEALTH CARE PROVIDERS", SKIP QUESTION QC2_5 AND PROCEED TO QUESTION QC2_6]

QC2_5. In the past seven days, what types of community organizations did you communicate with using WhatsApp? (*Select all that apply*) **[RANDOMIZE ALL BUT THE LAST THREE OPTIONS]**

- ❒ Schools / universities / libraries
- ❒ Health care centers / hospitals
- ❒ Community / activity centers
- ❒ Government offices / public transit
- ❒ Religious centers (e.g. a church, synagogue, mosque, or temple)
- ❒ Emergency services (e.g., police or fire stations)
- ❒ Other: _____
- ❒ None of the above **[EXCLUSIVE; SKIP TO QC2_6]**
- ❒ Unsure / Don't know **[EXCLUSIVE; SKIP TO QC2_6]**

[IF RESPONDENT ANSWERED "NONE OF THE ABOVE" OR "UNSURE / DON'T KNOW" TO QC2_5, THEN KEEP PLACEHOLDER [ORGANIZATIONS X] AS IS. OTHERWISE, USING THE LEAST FILLED METHOD, SELECT AN ANSWER FROM THE ONES PROVIDED IN QC2_5 TO REPLACE PLACEHOLDER [ORGANIZATIONS X] AND USE IN THE FOLLOWING QUESTIONS WHERE INDICATED.]

QC2_6. You mentioned communicating with **[ORGANIZATIONS X]** using WhatsApp. Thinking of the last time you communicated with them, why did you communicate with them? **[OPEN-ENDED TEXT BOX]**

⦿ Unsure/Don't know **[EXCLUSIVE]**

QC2_6.B. **[QUESTION QC2_6B REMOVED FROM SURVEY.]**

QC2_7. Thinking of all your interactions with **[ORGANIZATIONS X]**, how often did you use WhatsApp to communicate with them in the past seven days? (*Select one only*) **[EXCLUSIVE]**

- ⦿ I contacted them using WhatsApp less than 50% of the time
- ⦿ I contacted them using WhatsApp 50% of the time or more frequently
- ⦿ I only contacted them using WhatsApp

QC2_8. In the past seven days, of the messages you received via WhatsApp from **[ORGANIZATIONS X]**, have you forwarded any to the following people? (*Select all that apply*) **[RANDOMIZE ALL BUT THE LAST THREE OPTIONS]**

- ❒ A family member
- ❒ A friend
- ❒ A work colleague
- ❒ Other
- ❒ I have not forwarded any messages **[EXCLUSIVE, SKIP TO QC2_10]**
- ❒ Unsure / Don't know **[EXCLUSIVE, SKIP TO QC2_10]**

QC2_9. How often in the past seven days have you forwarded information that you received from **[ORGANIZATIONS X]** using WhatsApp? (*Select one only*) **[ROTATE ORDER ACCORDING TO ROTATION GROUPS A OR B, EXCLUSIVE]**

- ⦿ One occasion
- ⦿ Between 2 and 5 occasions
- ⦿ Between 6 and 10 occasions
- ⦿ More than 10 occasions
- ⦿ Unsure / Don't know **[ANCHOR LAST]**

QC2_10. Being able to communicate with **[ORGANIZATIONS X]** by using WhatsApp is… for you? (*Select one only*) **[ROTATE ORDER ACCORDING TO ROTATION GROUPS A OR B, EXCLUSIVE]**

- ⦿ Not important
- ⦿ Somewhat unimportant
- ⦿ Neither unimportant nor important
- ⦿ Somewhat important
- ⦿ Very important
- ⦿ Unsure / Don't know **[ANCHOR LAST, SKIP TO F1]**

QC2_11. You stated that being able to communicate **[ORGANIZATIONS X]** using WhatsApp is **[INSERT ANSWER TO QUESTION QC2_10 WITH FIRST LETTER LOWER CASE].** Why do you say that? **[OPEN-ENDED TEXT BOX]**

- ⦿ Unsure / Don't know **[EXCLUSIVE]**

[SKIP TO QUESTION F1]

III. WhatsApp Application Usage Questions for BUSINESS OWNERS or WORKERS

[QUESTIONS IN SECTION III ARE INTENDED FOR RESPONDENTS IN GROUPS SMB1, SMB2, AND SMB3 ONLY.]

A. General Usage Questions

Thank you for your willingness to participate in our study. You will be asked some questions about your use of WhatsApp. Please try to answer all questions to the best of your ability. We are interested in your opinions. There are no right or wrong answers. We encourage you to check your recorded conversations on WhatsApp if you are uncertain about an answer.
If you do not have an opinion or are unsure, please do not try to guess – simply select the "Unsure / Don't know" option.

[SHOW QB1 ON SAME SCREEN AS INSTRUCTIONS ABOVE. SHOW QUESTION BENEATH INSTRUCTIONS]

QB1. Do you understand these instructions and agree with participating in this survey? (*Select one only*) **[EXCLUSIVE]**

- ⦿ Yes
- ⦿ No **[TERMINATE]**
- ⦿ Uncertain **[TERMINATE]**

QB2. In the past seven days, how many hours did you work at your main job or occupation? **[OPEN-ENDED NUMERIC, ACCEPT RANGE OF 1 TO 100 HOURS]**

- ⦿ [ ] hours worked.
- ⦿ Unsure/Don't know **[EXCLUSIVE]**

QB3. Thinking of your main job or occupation, does your business or employer sell/offer…? **[EXCLUSIVE, RANDOMIZE ALL BUT THE LAST THREE OPTIONS]**

- ⦿ Products (consumer goods such as clothing, food items, or electronics or goods intended for other businesses such as raw materials or machines)
- ⦿ Services (activities provided by professionals such as doctors, consultants, beauticians, electricians, lawyers, dentists, cleaning services, hospitality, etc.)
- ⦿ Products <u>and</u> services
- ⦿ None of the above
- ⦿ Unsure/ Don't know

[RECORD ANSWER TO QB3 TO BE USED IN CERTAIN OF THE FOLLOWING QUESTIONS (WITH FIRST LETTER LOWER CASE). IN PARTICULAR, RECORD ANSWER AS "PRODUCTS" IF RESPONDENT ANSWERED "PRODUCTS (CONSUMER GOODS SUCH AS CLOTHING, FOOD ITEMS, OR ELECTRONICS OR GOODS INTENDED FOR OTHER BUSINESSES SUCH AS RAW MATERIALS)" IN QB3. RECORD ANSWER AS "SERVICES" IF RESPONDENT ANSWERED "SERVICES (ACTIVITIES PROVIDED BY

PROFESSIONALS SUCH AS DOCTORS, CONSULTANTS, BEAUTICIANS, ELECTRICIANS, LAWYERS, DENTISTS, CLEANING SERVICES, ETC.)" IN QB3. IN ALL OTHER CASES, RECORD ANSWER AS "PRODUCTS AND / OR SERVICES."]

QB4. In the past seven days, how much time did you spend using WhatsApp to communicate with anyone in any context? (*Select one only*) **[EXCLUSIVE]**

- ⦿ Less than 1 hour in the past seven days
- ⦿ Between 1 and 5 hours in the past seven days
- ⦿ Between 6 and 10 hours in the past seven days
- ⦿ Between 11 and 19 hours in the past seven days
- ⦿ 20 hours or more in the past seven days
- ⦿ Unsure / Don't know **[SKIP QB1_5/QB2_5/QB3_5 (DEPENDING ON GROUP]**

[RANDOMLY ASSIGN RESPONDENTS IN EACH SMB GROUP INTO ONE OF THE FOLLOWING TWO SUBGROUPS:

(1) ROTATION GROUP A: ORDER ANSWER OPTIONS FROM LARGEST (OR MOST FREQUENT / IMPORTANT) TO LOWEST (OR LEAST FREQUENT / IMPORTANT)

(2) ROTATION GROUP B: ORDER ANSWER OPTIONS FROM LOWEST (OR LEAST FREQUENT / IMPORTANT) TO LARGEST (OR MOST FREQUENT / IMPORTANT)

THIS SUBGROUPING ONLY AFFECTS QUESTIONS WITH THE FOLLOWING INSTRUCTIONS: "ROTATE ORDER ACCORDING TO ROTATION GROUPS A OR B"]

B. Questions for Group SMB1 (Regarding Within Firm Communication with Colleagues, Supervisors, or Employees)

[QUESTIONS IN SECTION III.B ARE INTENDED FOR RESPONDENTS IN GROUP SMB1 ONLY. IF RESPONDENT IS IN GROUP SMB2, PROCEED TO SECTION III.C. IF RESPONDENT IS IN GROUP SMB3, PROCEED TO SECTION III.D]

QB1_5. In the past seven days, you mentioned that you spent **[INSERT ANSWER TO QUESTION QB4 WITHOUT "IN THE PAST SEVEN DAYS" AND WITH FIRST LETTER LOWER CASE]** communicating using WhatsApp with anyone in any context. In the past seven days, how much time did you spend using WhatsApp to communicate with **[INSERT SELECTED ANSWER(S) IN QS14 WITH FIRST LETTER LOWER CASE. OPTIONS INCLUDE "WORK COLLEAGUES", "SUPERVISORS", AND/OR "EMPLOYEES"]** for work-related purposes? *(Select one only)* **[EXCLUSIVE; DO NOT ALLOW ANSWER TO CONTRADICT THE ANSWER TO QB4. THE VALUE FROM QB4 IS THE MAXIMUM ALLOWED.]**

- ⦿ Less than 1 hour in the past seven days **[AUTO SELECT IF ANSWERED OPTION 1 IN QB4 AND SKIP TO QB1_6]**

- ⦿ Between 1 and 5 hours in the past seven days
- ⦿ Between 6 and 10 hours in the past seven days
- ⦿ Between 11 and 19 hours in the past seven days
- ⦿ 20 hours or more in the past seven days
- ⦿ Unsure / Don't know

QB1_6. When communicating using WhatsApp with **[INSERT SELECTED ANSWER(S) IN QS14 WITH FIRST LETTER LOWER CASE. OPTIONS INCLUDE "WORK COLLEAGUES", "SUPERVISORS", AND/OR "EMPLOYEES"],** which of the following options, if any, is generally the purpose of the communication? (*Select all that apply*) **[RANDOMIZE ALL BUT THE LAST THREE OPTIONS]**

- ❒ To set up or confirm meetings / phone calls
- ❒ To plan future tasks or work
- ❒ To send or receive documents
- ❒ To ask questions about projects
- ❒ To ask questions about products or services offered by our employer or business
- ❒ To brainstorm or discuss ideas
- ❒ Other_____
- ❒ None of the above **[EXCLUSIVE]**
- ❒ Unsure / Don't know **[EXCLUSIVE]**

QB1_7. Thinking of the last person you contacted at work a using WhatsApp (for a work-related reason), how frequently have you communicated with this person using WhatsApp, compared to other methods such as email, in-person meetings, telephone, and SMS texting in the past seven days? (*Select one only*) **[EXCLUSIVE]**

- ⦿ I communicated with them using WhatsApp less than 50% of the time
- ⦿ I communicated with them using WhatsApp 50% of the time or more frequently
- ⦿ I only communicated with them using WhatsApp

QB1_8. Communicating with **[INSERT SELECTED ANSWER(S) IN QS14 WITH FIRST LETTER LOWER CASE. OPTIONS INCLUDE "WORK COLLEAGUES", "SUPERVISORS", AND/OR "EMPLOYEES"]** using WhatsApp…? (*Select one only*) **[EXCLUSIVE, ROTATE ORDER ACCORDING TO ROTATION GROUPS A OR B, ANCHOR LAST]**

- ⦿ Has led to lower costs for my employer or business
- ⦿ Has made no difference on costs for my employer or business
- ⦿ Has led to higher costs for my employer or business
- ⦿ Unsure / Don't know **[ANCHOR]**

QB1_9. Communicating with **[INSERT SELECTED ANSWER(S) IN QS14 WITH FIRST LETTER LOWER CASE. OPTIONS INCLUDE "WORK COLLEAGUES", "SUPERVISORS", AND/OR "EMPLOYEES"]** using WhatsApp…? (*Select one only*)

[EXCLUSIVE, ROTATE ORDER ACCORDING TO ROTATION GROUPS A OR B, ANCHOR LAST]

- ⦿ Saves me time or increases my productivity during the work day
- ⦿ Makes no difference on my work productivity during the work day **[SKIP TO QB1_11]**
- ⦿ Slows me down or decreases my productivity during the work day **[SKIP TO QB1_11]**
- ⦿ Unsure / Don't know **[ANCHOR; SKIP TO QB1_11]**

QB1_10. Compared with other ways of communicating (by telephone, in person, by e-mail, etc.), how much time, if any, have you saved by using WhatsApp to communicate with **[INSERT SELECTED ANSWER(S) IN QS14 WITH FIRST LETTER LOWER CASE. OPTIONS INCLUDE "WORK COLLEAGUES", "SUPERVISORS", AND/OR "EMPLOYEES"]** in the past seven days? (*Select one only*) **[EXCLUSIVE]**

- ⦿ Less than 30 minutes in the past seven days
- ⦿ 30 minutes to less than 1 hour in the past seven days
- ⦿ 1 hour to less than 2 hours in the past seven days
- ⦿ 2 hours to less than 5 hours in the past seven days
- ⦿ 5 hours to 10 hours in the past seven days
- ⦿ More than 10 hours in the past seven days
- ⦿ Unsure / Don't know

QB1_11. Being able to communicate with **[INSERT SELECTED ANSWER(S) IN QS14 WITH FIRST LETTER LOWER CASE. OPTIONS INCLUDE "WORK COLLEAGUES", "SUPERVISORS", AND/OR "EMPLOYEES"]** by using WhatsApp is… for you? (*Select one only*) **[ROTATE ORDER ACCORDING TO ROTATION GROUPS A OR B, EXCLUSIVE]**

- ⦿ Not important
- ⦿ Somewhat unimportant
- ⦿ Neither unimportant nor important
- ⦿ Somewhat important
- ⦿ Very important
- ⦿ Unsure / Don't know **[ANCHOR, SKIP TO QB13]**

QB1_12. You stated that being able to communicate with **[INSERT SELECTED ANSWER(S) IN QS14 WITH FIRST LETTER LOWER CASE. OPTIONS INCLUDE "WORK COLLEAGUES", "SUPERVISORS", AND/OR "EMPLOYEES"]** using WhatsApp is **[INSERT ANSWER TO QUESTION QB1_11 WITH FIRST LETTER LOWER CASE].** Why do you say that? **[OPEN-ENDED TEXT BOX]**

- ⦿ Unsure / Don't know **[EXCLUSIVE]**

[SKIP TO QUESTION QB13 IN SECTION III.E]

C. Questions for Group SMB2 (Regarding Outside Firm Communication with Customers, Clients, Patients, or Suppliers)

[QUESTIONS IN SECTION III.C ARE INTENDED FOR RESPONDENTS IN GROUP SMB2 ONLY. IF RESPONDENT IS IN GROUP SMB1, PROCEED TO SECTION III.E. IF RESPONDENT IS IN GROUP SMB3, PROCEED TO SECTION III.D]

QB2_5.In the past seven days, you mentioned that you spent **[INSERT ANSWER TO QUESTION QB4 WITHOUT "IN THE PAST SEVEN DAYS" AND WITH FIRST LETTER LOWER CASE]** communicating using WhatsApp with anyone in any context. In the past seven days, how much time did you spend using WhatsApp to communicate with **[CATEGORY Y]** for work-related purposes? *(Select one only)* **[EXCLUSIVE; DO NOT ALLOW ANSWER TO CONTRADICT THE ANSWER TO QB4. THE VALUE FROM QB4 IS THE MAXIMUM ALLOWED.]**

- ⦿ Less than 1 hour in the past seven days **[AUTO SELECT IF ANSWERED OPTION 1 IN QB4 AND SKIP TO QB2_6]**
- ⦿ Between 1 and 5 hours in the past seven days
- ⦿ Between 6 and 10 hours in the past seven days
- ⦿ Between 11 and 19 hours in the past seven days
- ⦿ 20 hours or more in the past seven days
- ⦿ Unsure / Don't know

[PROCEED WITH QUESTIONS QB2_6.A AND QB2_7.A IF [CATEGORY Y] STANDS FOR "CUSTOMERS" OR "CLIENTS / PATIENTS" OR "CUSTOMERS AND / OR CLIENTS / PATIENTS". PROCEED WITH QUESTION QB2_6.B AND QB2_7.B IF [CATEGORY Y] STANDS FOR "SUPPLIERS".

QB2_6.A. When communicating with WhatsApp with **[CATEGORY Y]**, which of the following options, if any, is generally the purpose of the communication? (*Select all that apply*) [**RANDOMIZE ALL BUT THE LAST THREE OPTIONS]**

- ❒ To promote **[INSERT ANSWER TO QB3. OPTIONS INCLUDE "PRODUCTS", "SERVICES", OR "PRODUCTS AND/OR SERVICES"]**
- ❒ To provide information on prices of **[INSERT ANSWER TO QB3. OPTIONS INCLUDE "PRODUCTS", "SERVICES", OR "PRODUCTS AND/OR SERVICES"]**
- ❒ To provide information not related to prices of **[INSERT ANSWER TO QB3. OPTIONS INCLUDE "PRODUCTS", "SERVICES", OR "PRODUCTS AND/OR SERVICES"]**

- ❒ To set up or confirm an appointment or a reservation
- ❒ To provide information about a delivery service
- ❒ To conduct surveys or ask for feedback on **[INSERT ANSWER TO QB3. OPTIONS INCLUDE "PRODUCTS", "SERVICES", OR "PRODUCTS AND/OR SERVICES"]**
- ❒ To establish a first contact
- ❒ Other: _____
- ❒ None of the above **[EXCLUSIVE]**
- ❒ Unsure / Don't know **[EXCLUSIVE]**

QB2_7.A. How frequently in the past seven days have you communicated with **[CATEGORY Y]** by using WhatsApp? (*Select one only*) **[EXCLUSIVE]**

- ⦿ I communicated with them using WhatsApp less than 50% of the time
- ⦿ I communicated with them using WhatsApp 50% of the time or more frequently
- ⦿ I only communicated with them using WhatsApp

[SKIP TO QUESTION QB2_9]

QB2_6.B. When communicating with WhatsApp with <u>suppiers</u>, which of the following options, if any, was the purpose of the communication in the past seven days? (*Select all that apply*) **[RANDOMIZE ALL BUT THE LAST THREE OPTIONS]**

- ❒ To discuss or negotiate prices of **[INSERT ANSWER TO QB3. OPTIONS INCLUDE "PRODUCTS", "SERVICES", OR "PRODUCTS AND/OR SERVICES"]**
- ❒ To discuss non-price related information about **[INSERT ANSWER TO QB3. OPTIONS INCLUDE "PRODUCTS", "SERVICES", OR "PRODUCTS AND/OR SERVICES"]**
- ❒ To confirm an appointment or a delivery
- ❒ To establish a first contact
- ❒ Other: _____
- ❒ None of the above **[EXCLUSIVE]**
- ❒ Unsure / Don't know [**EXCLUSIVE]**

QB2_7.B. How frequently in the past seven days have you communicated with <u>suppliers</u> by using WhatsApp? (*Select one only*) **[EXCLUSIVE]**

- ⦿ I communicated with them using WhatsApp less than 50% of the time
- ⦿ I communicated with them using WhatsApp 50% of the time or more frequently
- ⦿ I only communicated with them using WhatsApp

QB2_8.Communicating with **[CATEGORY Y]** using WhatsApp…? (*Select one only*) **[EXCLUSIVE, ROTATE ORDER ACCORDING TO ROTATION GROUPS A OR B, ANCHOR LAST]**

- ⦿ Has led to lower costs for my employer or business

- ⦿ Has made no difference on costs for my employer or business
- ⦿ Has led to higher costs for my employer or business
- ⦿ Unsure / Don't know **[ANCHOR]**

QB2_9.Communicating with **[CATEGORY Y]** using WhatsApp…? (*Select one only*) **[EXCLUSIVE, ROTATE ORDER ACCORDING TO ROTATION GROUPS A OR B, ANCHOR LAST]**

- ⦿ Saves me time or increases my productivity during the work day
- ⦿ Makes no difference on my work productivity during the work day **[SKIP TO QB2_11]**
- ⦿ Slows me down or decreases my productivity during the work day **[SKIP TO QB2_11]**
- ⦿ Unsure / Don't know **[ANCHOR, SKIP TO QB2_11]**

QB2_10.Compared with other ways of communicating (by telephone, in person, by e-mail, etc.), how much time, if any, have you saved by using WhatsApp to communicate with **[CATEGORY Y]** in the past seven days? (*Select one only*) **[EXCLUSIVE]**

- ⦿ Less than 30 minutes in the past seven days
- ⦿ 30 minutes to less than 1 hour in the past seven days
- ⦿ 1 hour to less than 2 hours in the past seven days
- ⦿ 2 hours to less than 5 hours in the past seven days
- ⦿ 5 hours to 10 hours in the past seven days
- ⦿ More than 10 hours in the past seven days
- ⦿ Unsure / Don't know

QB2_11.Being able to communicate with **[CATEGORY Y]** by using WhatsApp is… for you? (*Select one only*) **[ROTATE ORDER ACCORDING TO ROTATION GROUPS A OR B, EXCLUSIVE]**

- ⦿ Not important
- ⦿ Somewhat unimportant
- ⦿ Neither unimportant nor important
- ⦿ Somewhat important
- ⦿ Very important
- ⦿ Unsure / Don't know **[ANCHOR, SKIP TO QB13]**

QB2_12.You stated that being able to communicate with **[CATEGORY Y]** using WhatsApp is **[INSERT ANSWER TO QUESTION QB2_11 WITH FIRST LETTER LOWER CASE].** Why do you say that? **[OPEN-ENDED TEXT BOX]**

- ⦿ Unsure / Don't know **[EXCLUSIVE]**

[SKIP TO QUESTION QB13 IN SECTION III.E]

D. Questions for Group SMB3 (Regarding Outside Firm Communication with Investors, Shareholders, or Business Partners)

[QUESTIONS IN SECTION III.D ARE INTENDED FOR RESPONDENTS IN GROUP SMB3 ONLY. IF RESPONDENT IS IN GROUP SMB1, PROCEED TO SECTION III.E. IF RESPONDENT IS IN GROUP SMB2, PROCEED TO SECTION III.E]

QB3_5. In the past seven days, you mentioned that you spent **[INSERT ANSWER TO QUESTION QB4 WITHOUT "IN THE PAST SEVEN DAYS" AND WITH FIRST LETTER LOWER CASE]** communicating using WhatsApp with anyone in any context. In the past seven days, how much time did you spend using WhatsApp to communicate with **[INSERT SELECTED ANSWER(S) IN QS14 WITH FIRST LETTER LOWER CASE. OPTIONS INCLUDE "BUSINESS PARTNERS", "FUNDERS / FINANCIAL CONTRIBUTORS" AND/OR "INVESTORS / SHAREHOLDERS"]** for work-related purposes? (*Select one only*) **[EXCLUSIVE; DO NOT ALLOW ANSWER TO CONTRADICT THE ANSWER TO QB4. THE VALUE FROM QB4 IS THE MAXIMUM ALLOWED.]**

- ⦿ Less than 1 hour in the past seven days **[AUTO SELECT IF ANSWERED OPTION 1 IN QB4 AND SKIP TO QB3_6]**
- ⦿ Between 1 and 5 hours in the past seven days
- ⦿ Between 6 and 10 hours in the past seven days
- ⦿ Between 11 and 19 hours in the past seven days
- ⦿ 20 hours or more in the past seven days
- ⦿ Unsure / Don't know

QB3_6. When communicating with WhatsApp with **[INSERT SELECTED ANSWER(S) IN QS14 WITH FIRST LETTER LOWER CASE. OPTIONS INCLUDE "BUSINESS PARTNERS", "FUNDERS / FINANCIAL CONTRIBUTORS" AND/OR "INVESTORS / SHAREHOLDERS"]**, which of the following options, if any, is generally the purpose of the communication? (*Select all that apply*) **[RANDOMIZE ALL BUT THE LAST THREE OPTIONS]**

- ❒ To send or receive documents
- ❒ To set up or confirm meetings / phone calls
- ❒ To plan tasks or work in the future
- ❒ To provide updates on the business
- ❒ To provide information on **[INSERT ANSWER TO QB3. OPTIONS INCLUDE "PRODUCTS", "SERVICES", OR "PRODUCTS AND/OR SERVICES"]**
- ❒ To discuss finances
- ❒ To discuss investments
- ❒ Other: _____
- ❒ None of the above **[EXCLUSIVE]**
- ❒ Unsure / Don't know **[EXCLUSIVE]**

QB3_7. How frequently in the past seven days have you communicated with **[INSERT SELECTED ANSWER(S) IN QS14 WITH FIRST LETTER LOWER CASE. OPTIONS INCLUDE "BUSINESS PARTNERS", "FUNDERS / FINANCIAL CONTRIBUTORS" AND/OR "INVESTORS / SHAREHOLDERS"]** by using WhatsApp? (*Select one only*) **[EXCLUSIVE]**

- ⦿ I communicated with them using WhatsApp less than 50% of the time
- ⦿ I communicated with them using WhatsApp 50% of the time or more frequently
- ⦿ I only communicated with them using WhatsApp

QB3_8. Communicating with **[INSERT SELECTED ANSWER(S) IN QS14 WITH FIRST LETTER LOWER CASE. OPTIONS INCLUDE "BUSINESS PARTNERS", "FUNDERS / FINANCIAL CONTRIBUTORS" AND/OR "INVESTORS / SHAREHOLDERS"]** using WhatsApp…? (*Select one only*) **[EXCLUSIVE, ROTATE ORDER ACCORDING TO ROTATION GROUPS A OR B, ANCHOR LAST]**

- ⦿ Has led to lower costs for my employer or business
- ⦿ Has made no difference on costs for my employer or business
- ⦿ Has led to higher costs for my employer or business
- ⦿ Unsure / Don't know **[ANCHOR]**

QB3_9. Communicating with **[INSERT SELECTED ANSWER(S) IN QS14 WITH FIRST LETTER LOWER CASE. OPTIONS INCLUDE "BUSINESS PARTNERS", "FUNDERS / FINANCIAL CONTRIBUTORS" AND/OR "INVESTORS / SHAREHOLDERS"]** using WhatsApp…? (*Select one only*) **[EXCLUSIVE, ROTATE ORDER ACCORDING TO ROTATION GROUPS A OR B, ANCHOR LAST]**

- ⦿ Saves me time or increases my productivity during the work day
- ⦿ Makes no difference on my work productivity during the work day **[SKIP TO QB3_11]**
- ⦿ Slows me down or decreases my productivity during the work day **[SKIP TO QB3_11]**
- ⦿ Unsure / Don't know **[ANCHOR, SKIP TO QB3_11]**

QB3_10. Compared with other ways of communicating (by telephone, in person, by e-mail, etc.), how much time, if any, have you saved by using WhatsApp to communicate with **[INSERT SELECTED ANSWER(S) IN QS14 WITH FIRST LETTER LOWER CASE. OPTIONS INCLUDE "BUSINESS PARTNERS", "FUNDERS / FINANCIAL CONTRIBUTORS" AND/OR "INVESTORS / SHAREHOLDERS"]** in the past seven days? (*Select one only*) **[EXCLUSIVE]**

- ⦿ Less than 30 minutes in the past seven days
- ⦿ 30 minutes to less than 1 hour in the past seven days
- ⦿ 1 hour to less than 2 hours in the past seven days
- ⦿ 2 hours to less than 5 hours in the past seven days
- ⦿ 5 hours to 10 hours in the past seven days
- ⦿ More than 10 hours in the past seven days
- ⦿ Unsure / Don't know

QB3_11. Being able to communicate with **[INSERT SELECTED ANSWER(S) IN QS14 WITH FIRST LETTER LOWER CASE. OPTIONS INCLUDE "BUSINESS PARTNERS", "FUNDERS / FINANCIAL CONTRIBUTORS" AND/OR "INVESTORS / SHAREHOLDERS"]** by using WhatsApp is… for you? (*Select one only*) **[ROTATE ORDER ACCORDING TO ROTATION GROUPS A OR B, EXCLUSIVE]**

- ⦿ Not important
- ⦿ Somewhat unimportant
- ⦿ Neither unimportant nor important
- ⦿ Somewhat important
- ⦿ Very important
- ⦿ Unsure / Don't know **[ANCHOR, SKIP TO QB13]**

QB3_12. You stated that being able to communicate with **[INSERT SELECTED ANSWER(S) IN QS14 WITH FIRST LETTER LOWER CASE. OPTIONS INCLUDE "BUSINESS PARTNERS", "FUNDERS / FINANCIAL CONTRIBUTORS" AND/OR "INVESTORS / SHAREHOLDERS"]** using WhatsApp is **[INSERT ANSWER TO QUESTION QB3_11 WITH FIRST LETTER LOWER CASE].** Why do you say that? **[OPEN-ENDED TEXT BOX]**

- ⦿ Unsure / Don't know **[EXCLUSIVE]**

[SKIP TO QUESTION QB13 IN SECTION III.E]

E. Questions for Groups <u>SMB1, SMB2 and SMB3</u>

QB13. At your main job or work occupation, are you aware of any of the following amounts for 2016? (*Select all that apply*) **[RANDOMIZE ALL BUT THE LAST TWO OPTIONS]**

- ❒ Amount of sales conducted by your employer or business
- ❒ Amount of purchases conducted by your employer or business (e.g., from vendors or suppliers)
- ❒ Amount spent on marketing / advertising by your employer or business
- ❒ Amount of funding/investments obtained by your employer or business
- ❒ None of the above **[EXCLUSIVE, SKIP TO F1]**
- ❒ Unsure / Don't know **[EXCLUSIVE, SKIP TO F1]**

[IF THE RESPONDENT SELECTED "AMOUNT OF SALES CONDUCTED BY YOUR EMPLOYER OR BUSINESS" IN QB13, PROCEED WITH QUESTIONS QB14 TO QB15 AND SKIP ALL OTHER QUESTIONS IN THIS SECTION.

IF THE RESPONDENT SELECTED "AMOUNT OF PURCHASING CONDUCTED BY YOUR EMPLOYER OR BUSINESS" IN QB13, PROCEED WITH QUESTIONS QB16 TO QB17 AND SKIP ALL OTHER QUESTIONS IN THIS SECTION.

IF THE RESPONDENT SELECTED "AMOUNT SPENT ON MARKETING / ADVERTISING BY YOUR EMPLOYER OR BUSINESS" IN QB13, PROCEED WITH QUESTIONS QB18 TO QB21 AND SKIP ALL OTHER QUESTIONS IN THIS SECTION.

IF THE RESPONDENT SELECTED "AMOUNT OF FUNDING/INVESTMENTS OBTAINED BY YOUR EMPLOYER OR BUSINESS" IN QB13, PROCEED WITH QUESTIONS QB22 TO QB25 AND SKIP ALL OTHER QUESTIONS IN THIS SECTION.

IF THE RESPONDENT SELECTED MORE THAN ONE OF THESE FOUR OPTIONS, USE THE "LEAST FILL METHOD" TO ASSIGN A SET OF QUESTIONS TO ANSWER: QUESTIONS RELATED TO SALES (QB14 TO QB15), PURCHASES (QB16 TO QB17), MARKETING/ADVERTISING (QB18 TO QB21), OR FUNDING/INVESTMENTS (QB22 TO QB25).]

QB14. To the best of your knowledge, in 2016, what was the amount of sales at your main job or work occupation? If possible, please check your sales records to provide an accurate amount. **[OPEN-ENDED; ADAPT CURRENCY SYMBOL FOR EACH COUNTRY BASE; ACCEPT INTEGERS RANGING FROM 1 TO 1,000,000,000]**

- ⦿ $ _____ in sales in 2016
- ⦿ Unsure / Don't know **[EXCLUSIVE]**

QB15. How many of your last 10 sales transactions would you say involved any type of communication with customers/patients using WhatsApp (e.g., for advertising, to provide information on products or services, to confirm orders or inventory)? (*Select one only*) **[EXCLUSIVE]**

- ⦿ No sales transactions
- ⦿ 1 to 3 sales transactions
- ⦿ 4 to 6 sales transactions
- ⦿ 7 to 9 sales transactions
- ⦿ All sales transactions
- ⦿ Unsure / Don't know

[SKIP TO QUESTION F1]

QB16. To the best of your knowledge, in 2016, what was the amount of purchases (e.g. from vendors or suppliers) at your main job or work occupation? If possible, please check your purchase records to provide an accurate amount. **[OPEN-ENDED; ADAPT CURRENCY SYMBOL FOR EACH COUNTRY BASE; ACCEPT INTEGERS RANGING FROM 1 TO 1,000,000,000]**

⦿ $ _____ in purchases in 2016

⦿ Unsure/Don't know **[EXCLUSIVE]**

QB17. How many of your last 10 purchase transactions (e.g. with vendors or suppliers) would you say involved any type of communication using WhatsApp (e.g., to ask or provide information about products or to confirm orders or inventory)? (*Select one only*) **[EXCLUSIVE]**

⦿ No purchase transactions
⦿ 1 to 3 purchase transactions
⦿ 4 to 6 purchase transactions
⦿ 7 to 9 purchase transactions
⦿ All purchase transactions
⦿ Unsure / Don't know

[SKIP TO QUESTION F1]

QB18. To the best of your knowledge, in 2016, how much did your employer or business spend on marketing and/or advertising? If possible, please check your marketing and/or advertising records to provide an accurate amount. **[OPEN-ENDED NUMERIC; ADAPT CURRENCY SYMBOL FOR EACH COUNTRY BASE; ACCEPT INTEGERS RANGING FROM 1 TO 1,000,000,000]**

⦿ $ _____ in marketing / advertising in 2016

⦿ Unsure / Don't know **[EXCLUSIVE]**

QB19. To the best of your knowledge, in 2016, what portion of the total spending on marketing and/or advertising involved WhatsApp to promote products or services?(*Select one only*) **[EXCLUSIVE]**

⦿ Less than half of the total spending
⦿ Half of the total spending or more **[SKIP TO QB21]**
⦿ Unsure / Don't know **[SKIP TO F1]**

QB20. You mentioned that less than half of your total spending on marketing and/or advertising involved WhatsApp to promote products or services. To the best of your

knowledge, what portion of the total spending on marketing and/or advertising involved WhatsApp to promote products or services? *(Select one only)* **[EXCLUSIVE]**

- ⦿ None
- ⦿ Between 1% and 24% of the total spending
- ⦿ Between 25% and 49% of the total spending
- ⦿ Unsure / Don't know

[SKIP TO QUESTION F1]

QB21. You mentioned that at least half of your total spending on marketing and/or advertising involved WhatsApp to promote products or services. To the best of your knowledge, what portion of the total spending on marketing and/or advertising involved WhatsApp to promote products or services? (*Select one only*) **[EXCLUSIVE]**

- ⦿ Between 50% and 74% of the total spending
- ⦿ Between 75% and 99% of the total spending
- ⦿ 100% of the total spending
- ⦿ Unsure / Don't know

[SKIP TO QUESTION F1]

QB22. To the best of your knowledge, in 2016, what was the total amount of funds/investments that your employer or business obtained from (either foreign or local) investors, business partners, or financial contributors? If possible, please check your funding/investment records to provide an accurate amount. **[OPEN-ENDED NUMERIC; ADAPT CURRENCY SYMBOL FOR EACH COUNTRY BASE, ACCEPT INTEGERS RANGING FROM 1 TO 1,000,000,000]**

- ⦿ $ _____ in funding / investments in 2016
- ⦿ Unsure / Don't know **[EXCLUSIVE]**

QB23. To the best of your knowledge, in 2016, what portion of the total amount of funds/investments that your employer or business obtained from (either foreign or local) investors, business partners, or financial contributors involved communications using WhatsApp in any way? (*Select one only*) **[EXCLUSIVE]**

- ⦿ Less than half of the total amount of funds/investments
- ⦿ Half of the total amount of funds/investments or more **[SKIP TO QB25]**
- ⦿ Unsure / Don't know **[SKIP TO F1]**

QB24. You mentioned that less than half of the total amount of funds/investments that your employer or business obtained from (either foreign or local) investors, business partners, or financial contributors involved communications using WhatsApp. To the

best of your knowledge, what portion of this total amount of funds/investments involved communications using WhatsApp in any way? *(Select one only)* **[EXCLUSIVE]**

- ⦿ None
- ⦿ Between 1% and 24% of the total amount of funds/investments
- ⦿ Between 25% and 49% of the total amount of funds/investments
- ⦿ Unsure / Don't know

[SKIP TO QUESTION F1]

QB25. You mentioned that at least half of the total amount of funds/investments that your employer or business obtained from (either foreign or local) investors, business partners, or financial contributors involved communications using WhatsApp. To the best of your knowledge, what portion of this total amount of funds/investments involved communications using WhatsApp in any way? (*Select one only*) **[EXCLUSIVE]**

- ⦿ Between 50% and 74% of the total amount of funds/investments
- ⦿ Between 75% and 99% of the total amount of funds/investments
- ⦿ 100% of the total amount of funds/investments
- ⦿ Unsure / Don't know

[SKIP TO QUESTION F1]

IV. Concluding / Follow-up questions

F1. **[FOR ALL RESPONDENTS]** Which of the following features, if any, does WhatsApp offer? (*Select all that apply*) **[RANDOMIZE ALL BUT THE LAST TWO OPTIONS]**

- ❒ Text messaging to one person
- ❒ Group text messaging
- ❒ Voice calling
- ❒ Video calling
- ❒ Sharing contacts
- ❒ Tag a person using '@' and their name
- ❒ Sending media (photos, videos, GIFs)
- ❒ Sending voice messages
- ❒ Sending documents
- ❒ End-to-end encryption
- ❒ Compatibility with virtual reality goggles
- ❒ None of the above **[EXCLUSIVE]**
- ❒ Unsure / Don't know **[EXCLUSIVE]**

F2.A **[FOR RESPONDENTS IN CONSUMER GROUP 1 ONLY]** What additional WhatsApp feature(s), if any, would be helpful to communicate with businesses or service providers? **[OPEN-ENDED TEXT BOX]**

- ⦿ No additional features **[EXCLUSIVE]**
- ⦿ Unsure / Don't know **[EXCLUSIVE]**

F2.B **[FOR RESPONDENTS IN CONSUMER GROUP 2 ONLY]** What additional WhatsApp feature(s), if any, would be helpful to communicate with **[ORGANIZATIONS X]** ? **[OPEN-ENDED TEXT BOX]**

- ⦿ No additional features **[EXCLUSIVE]**
- ⦿ Unsure / Don't know **[EXCLUSIVE]**

F2.C **[FOR RESPONDENTS IN SMB1 GROUP ONLY]** What additional WhatsApp feature(s), if any, would be helpful to communicate with **[INSERT SELECTED ANSWER(S) IN QS14 WITH FIRST LETTER LOWER CASE. OPTIONS INCLUDE "WORK COLLEAGUES", "SUPERVISORS", AND/OR "EMPLOYEES"]** at your main job or occupation? **[OPEN-ENDED TEXT BOX]**

- ⦿ No additional features **[EXCLUSIVE]**
- ⦿ Unsure / Don't know **[EXCLUSIVE]**

F2.D **[FOR RESPONDENTS IN SMB2 GROUP ONLY]** What additional WhatsApp feature(s), if any, would be helpful to communicate with **[CATEGORY Y]** at your main job or occupation? **[OPEN-ENDED TEXT BOX]**

- ⦿ No additional features **[EXCLUSIVE]**
- ⦿ Unsure / Don't know **[EXCLUSIVE]**

F2.E **[FOR RESPONDENTS IN SMB3 GROUP ONLY]** What additional WhatsApp feature(s), if any, would be helpful to communicate with **[INSERT SELECTED ANSWER(S) IN QS14 WITH FIRST LETTER LOWER CASE. OPTIONS INCLUDE "BUSINESS PARTNERS", "FUNDERS / FINANCIAL CONTRIBUTORS" AND/OR "INVESTORS / SHAREHOLDERS"]** at your main job or occupation? **[OPEN-ENDED TEXT BOX]**

- ⦿ No additional features **[EXCLUSIVE]**
- ⦿ Unsure / Don't know **[EXCLUSIVE]**

[QUESTIONS F3 TO F6 ARE TO BE ANSWERED BY ALL RESPONDENTS]

F3. What is the highest degree or level of school you have completed? (*Select one only*) **[EXCLUSIVE]**

- ⦿ No schooling completed
- ⦿ Some elementary school, no degree
- ⦿ Elementary school
- ⦿ Some high school, no degree
- ⦿ High school graduate or equivalent
- ⦿ Some college or university, no degree
- ⦿ College / University graduate
- ⦿ Post-graduate / professional degree
- ⦿ Unsure / Don't know

[IF RESPONDENT ANSWERED TO QS12 "EMPLOYED BY SOMEONE ELSE" OR "I OWN MY OWN BUSINESS (SELF-EMPLOYED)'', PROCEED WITH QUESTIONS F4 AND F5. OTHERWISE, SKIP TO QUESTION F6]

F4. What industry or work sector best describes your primary area of employment (regardless of your actual position)? (*Select one only*) **[EXCLUSIVE, ORDER ALPHABETICALLY, ANCHOR LAST, ANSWER OPTIONS VARY BY BASE COUNTRY]**

[USE OPTIONS BELOW FOR SPAIN, GERMANY, AND BRAZIL]

- ⦿ Agriculture, forestry and fishing
- ⦿ Mining and quarrying
- ⦿ Manufacturing
- ⦿ Electricity, gas, steam and air conditioning supply
- ⦿ Water supply; sewerage, waste management and remediation activities
- ⦿ Construction
- ⦿ Wholesale and retail trade; repair of motor vehicles and motorcycles
- ⦿ Transportation and storage
- ⦿ Accommodation and food service activities
- ⦿ IT and telecommunication
- ⦿ Media and marketing
- ⦿ Financial and insurance activities
- ⦿ Real estate activities
- ⦿ Professional, scientific and technical activities
- ⦿ Administrative and support service activities
- ⦿ Public administration and defense
- ⦿ Education
- ⦿ Health care and social assistance
- ⦿ Arts, entertainment and recreation
- ⦿ Tourism
- ⦿ Other **[ANCHOR LAST]**

[USE OPTIONS BELOW FOR INDIA]

- ⦿ Aerospace and Defense: Products Maintenance and Services
- ⦿ Chemicals: Agriculture Plastics Fibers and Coatings
- ⦿ Computer Hardware: PC Data Storage Networking and Peripherals
- ⦿ Computer Software and Services: Entertainment Database Networking and Data Processing
- ⦿ Consumer Products - Durables: Appliances Lawn Garden Toys Jewelry and Photography
- ⦿ Consumer Products - Non-Durables: Apparel Personal Care Office Supplies and Luxury Goods
- ⦿ Diversified Services: Security Human Resources Rentals and Customer Service
- ⦿ Drugs and Pharmaceuticals: Manufacturing Discovery Vitamins and Diagnostics
- ⦿ Electronics and Miscellaneous Technology: Semiconductor Scientific and Technical Instruments and Distribution
- ⦿ Energy - Oil and Gas: Exploration Production Services and Distribution
- ⦿ Financial Services: Accounting, Asset Management Banking Investment Firms Mortgage Banking and Services
- ⦿ Food Beverage Tobacco and Agriculture
- ⦿ Health Products/Medical and Healthcare Services: Medical Instruments Home Care Practices and Distribution
- ⦿ Insurance: Life Accident Title and Reinsurance
- ⦿ Leisure: Travel Lodging Gaming Sports Teams and Restaurants
- ⦿ Manufacturing and Construction
- ⦿ Marketing Market Research Advertising and Journalism/PR
- ⦿ Materials Construction Wood Products and Waste Management
- ⦿ Media: Broadcasting Movies Publishing Internet and Online
- ⦿ Metals and Mining
- ⦿ Timber/Fishing
- ⦿ Real Estate
- ⦿ Retail
- ⦿ Specialty Retail
- ⦿ Telecommunications
- ⦿ Transportation: Airlines Trucking Shipping Rail Bus and Taxi
- ⦿ Transport Equipment: Automotive Trucks RV Rail and Boats
- ⦿ Utilities
- ⦿ Biotechnology
- ⦿ Schools and Educational Services
- ⦿ Association/Non-Profit
- ⦿ Government - local, regional provincial (non-education)
- ⦿ Government - national, federal
- ⦿ Other **[ANCHOR LAST]**

F5. How many employees work for your employer or your business? (*Select one only*) **[EXCLUSIVE]**

- ⦿ One employee (I am self-employed)
- ⦿ 2-5 employees
- ⦿ 6-10 employees
- ⦿ 11-25 employees
- ⦿ 26-50 employees
- ⦿ More than 50 employees

F6. People vary in the amount they pay attention to these kinds of surveys. Some take them seriously and read each question, whereas others go very quickly and barely read the questions at all. If you have read this question carefully, please select "5" below. *(Select one only)* **[EXCLUSIVE]**

- ⦿ 0 – Not at all
- ⦿ 1
- ⦿ 2
- ⦿ 3
- ⦿ 4
- ⦿ 5
- ⦿ 6 – Very
- ⦿ Other (please specify) _____

[INSERT PANEL 'THANK YOU' PAGE HERE]

[END OF SURVEY]

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Appendix V: Survey Result Tables
Table V.1
Survey Response Statistics

	India		Germany		Brazil		Spain	
	Consumer Panel[1]	**B2B Panel[2]**	**Consumer Panel[1]**	**B2B Panel[2]**	**Consumer Panel[1]**	**B2B Panel[2]**	**Consumer Panel[1]**	**B2B Panel[2]**
Clicked on Survey Link	1,005 (100%)	1,000 (100%)	3,180 (100%)	4,165 (100%)	1,012 (100%)	932 (100%)	1,596 (100%)	3,652 (100%)
Total WhatsApp Users[3]	675 (67%)	699 (70%)	1,670 (53%)	2,656 (64%)	711 (70%)	737 (79%)	1,133 (71%)	2,768 (76%)
Total Qualified Completes[4]	331 (33%)	420 (42%)	332 (10%)	420 (10%)	345 (34%)	405 (43%)	285 (18%)	466 (13%)
Disqualified	544 (54%)	468 (47%)	2,533 (80%)	2,998 (72%)	512 (51%)	365 (39%)	1,102 (69%)	1,927 (53%)
Did not provide gender, age, or region[5]	5 (0%)	2 (0%)	4 (0%)	3 (0%)	8 (1%)	1 (0%)	4 (0%)	5 (0%)
Does not access the Internet using a WhatsApp-capable device[6]	129 (13%)	162 (16%)	169 (5%)	245 (6%)	60 (6%)	56 (6%)	121 (8%)	370 (10%)
Does not communicate via messenger applications[7]	111 (11%)	69 (7%)	1,001 (31%)	923 (22%)	143 (14%)	77 (8%)	206 (13%)	309 (8%)
Does not use WhatsApp[8]	21 (2%)	23 (2%)	120 (4%)	131 (3%)	29 (3%)	20 (2%)	39 (2%)	61 (2%)
Does not use WhatsApp for purpose of interest[9]	255 (25%)	187 (19%)	1,175 (37%)	1,670 (40%)	252 (25%)	184 (20%)	649 (41%)	1,135 (31%)
Not employed and no consumer usage[10]	11 (1%)	8 (1%)	51 (2%)	9 (0%)	12 (1%)	13 (1%)	70 (4%)	17 (0%)
No relevant job usage and no consumer usage[11]	0 (0%)	1 (0%)	1 (0%)	8 (0%)	2 (0%)	2 (0%)	6 (0%)	13 (0%)
Disqualified for another reason[12]	23 (2%)	24 (2%)	63 (2%)	18 (0%)	18 (2%)	25 (3%)	77 (5%)	34 (1%)
Exceeded Quota	63 (6%)	59 (6%)	98 (3%)	537 (13%)	81 (8%)	116 (12%)	115 (7%)	1,113 (30%)
Self-Termination[13]	67 (7%)	53 (5%)	217 (7%)	210 (5%)	74 (7%)	46 (5%)	94 (6%)	146 (4%)

	India	Germany	Brazil	Spain
Qualified Completes	751 (37%)	752 (10%)	750 (39%)	751 (14%)
Consumer Survey – C2B Communications	150 (7%)	151 (2%)	150 (8%)	150 (3%)
Consumer Survey – Communications with other organizations	150 (7%)	150 (2%)	150 (8%)	151 (3%)
B2B Survey – Internal Communications with colleagues	150 (7%)	150 (2%)	150 (8%)	150 (3%)
B2B Surveys – External Communications with Customers and Suppliers	151 (8%)	151 (2%)	150 (8%)	150 (3%)
B2B Survey – External Investor Communications	150 (7%)	150 (2%)	150 (8%)	150 (3%)

Notes:

[1] Respondents recruited via a panel of consumers that is representative at the national level.

[2] Respondents recruited via a panel of Business-to-business (B2B) survey takers.

[3] Respondents who selected the answer option "WhatsApp" on question QS10 "Which of the following messaging applications, if any, have you used in the past seven days?", regardless of whether they qualified for the survey or not.

[4] Respondents who qualified and completed the entire survey assigned to them.

[5] Respondents who answered "Unsure / Don't know" on one of the screener questions QS2-QS4 asking the respondent to indicate their gender, age, or region of residence.

[6] Respondents who answered "Unsure / Don't know," "I don't access the Internet," or "Washing machine" on question QS5 "Which devices have you used to access the Internet in the past month?". The answer option "Washing machine" served as an attention check.

[7] Respondents who did not select the answer option "Messaging applications (e.g., Telegram, WeChat, Facebook Messenger, WhatsApp)" on question QS5 "Which of the following applications, if any, have you used on your phone, tablet, or computer in the past seven days?"; or selected "I never communicate with others using messaging applications" on question QS8 "How often do you use messaging applications (e.g., Facebook Messenger, WhatsApp, Telegram, WeChat)?"

[8] Respondents who did not select the answer option "WhatsApp" on question QS10 "Which of the following messaging applications, if any, have you used in the past seven days?"

[9] Respondents who did not select any of the options "As a way to communicate for my main job or business," "As a way to communicate with doctors, physiotherapists, or other health care providers," "As a way to communicate with community organizations (schools, government offices)," or "As a consumer (communications with businesses, stores, or service providers)" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?"

[10] Respondents who did not qualify for either consumer survey, and chose any options other than "Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?"

[11] Respondents who did not qualify for either consumer survey, and selected one of the options "None of these" or "Unsure / Don't know" on question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?"

[12] Respondents who were disqualified for speeding or for attempting to take the survey more than one time.

[13] "Self-termination" refers to respondents who abandon the survey prior to completion.

Sources:

[1] Survey of WhatsApp Usage, February 2016.

Table V.2
Messaging Applications Used by Country[1]
(Consumer Panel Respondents)[2]

	India (N = 942)	Germany (N = 2,966)	Brazil (N = 949)	Spain (N = 1,507)	Overall[3] (N = 6,364)
WhatsApp	71.7%	56.3%	74.9%	75.2%	69.5%
Viber	8.7%	2.5%	3.8%	1.1%	4.0%
Telegram	4.6%	2.6%	7.1%	7.4%	5.4%
BBM	1.5%	0.2%	0.6%	0.2%	0.6%
Google Hangouts	22.1%	2.1%	8.2%	2.6%	8.7%
Facebook Messenger	57.1%	27.6%	61.4%	37.6%	45.9%
Line	4.8%	0.6%	1.4%	3.5%	2.6%
Hike	15.3%	0.3%	0.3%	0.1%	4.0%
Imo	14.2%	0.3%	1.9%	0.1%	4.1%
Skype	32.0%	11.1%	22.8%	15.5%	20.3%
iMessage	4.6%	3.9%	6.8%	2.5%	4.4%
WeChat	10.8%	0.7%	2.7%	0.8%	3.8%
Other	1.2%	1.2%	1.1%	0.9%	1.1%
None of these	0.2%	0.2%	0.1%	0.1%	0.2%

Notes:

[1] Respondents who indicated that they had used a WhatsApp-capable device to access the Internet in the past month in question QS5 and that they used messaging applications to communicate with others online in questions QS7 and QS8 were asked question QS10 "Which of the following messaging applications, if any, have you used in the past seven days?" and could choose multiple answer options. No respondents selected all available options.

[2] Survey respondents recruited via the consumer panel who gave valid responses regarding their age group, gender, and region.

[3] Overall estimates presented in this table and in all following tables in the report are calculated as simple averages of the estimates for each country.

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.3
WhatsApp User Demographics[1]
(Consumer Panel Respondents)[2]

Country	Median Age	% Female
India (N=675)	37	48.4%
Germany (N=1,670)	45	52.6%
Brazil (N=711)	37	52.7%
Spain (N=1,133)	44	51.0%

Notes:

[1] Based on demographic information from the panel provider.

[2] Survey respondents recruited via the consumer panel who gave valid responses regarding their age group, gender, and region, and answered "WhatsApp" in response to question QS10 "Which of the following messaging applications, if any, have you used in the past seven days?"

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.4
Median Hours Spent Using WhatsApp in the Past Seven days[1]
(All Qualified Survey Respondents)

	All Countries		India		Germany		Brazil		Spain	
	Overall	Specific	Overall	Specific	Overall	Specific	Overall	Specific	Overall	Specific
Consumer Group Survey Respondents										
Users who communciate with businesses or service providers via WhatsApp[2]	1-5	1-5	6-10	1-5	1-5	<1	6-10	1-5	1-5	<1
Users who communciate with community organizations or health care providers via WhatsApp[3]	1-5	<1	1-5	1-5	1-5	<1	6-10	<1	1-5	<1
SMB Group Survey Respondents										
Users who communicate with colleagues, supervisors, or employees via WhatsApp for work-related purposes[4]	1-5	1-5	1-5	1-5	1-5	<1	6-10	1-5	1-5	<1
Users who communicate with suppliers via WhatsApp for work-related purposes[5]	6-10	1-5	1-5	1-5	1-5	<1	6-10	1-5	1-5	<1
Users who communicate with customers, clients, or patients via WhatsApp for work-related purposes[6]	1-5	1-5	1-5	1-5	1-5	<1	6-10	1-5	1-5	<1
Users who communicate with business partners, funders/financial contributors, or investors/shareholders via WhatsApp for work-related purposes[7]	6-10	1-5	6-10	1-5	1-5	1-5	6-10	1-5	6-10	1-5

Notes:

[1] To estimate their overall WhatsApp usage, survey respondents were asked "In the past seven days, how much time did you spend using WhatsApp to communicate with anyone in any context?" For this question and all other questions about the amount of time spent using WhatsApp, respondents could choose between the answer options "Less than 1 hour in the past seven days," "Between 1 and 5 hours in the past seven days," "Between 6 and 10 hours in the past seven days," "Between 11 and 19 hours in the past seven days," "20 hours or more in the past seven days," and "Unsure / Don't know."

[2] Respondents in this group were asked "In the past seven days, you mentioned that you spent (n) hours communicating with businesses or service providers in any way. In the past seven days, how much time did you spend using WhatsApp specifically to communicate with them?"

[3] Respondents in this group were asked "In the past seven days, you mentioned that you spent (n) hours communicating with [community organizations/health care providers] in any way. In the past seven days, how much time did you spend using WhatsApp specifically to communicate with [community organizations/health care providers]?" The exact wording of this question was populated with "community organizations" or "health care providers", depending on whether respondents chose "As a way to communicate with community organizations (schools, government offices)" or "As a way to communicate with doctors, physiotherapists, or other health care providers" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?" Respondents who answered both of these options were assigned into a group using a least fill method.

[4] Respondents in this group were asked "In the past seven days, how much time did you spend using WhatsApp to communicate with [work colleagues, supervisors and/or employees] for work-related purposes?" The exact wording of the question depended on which of the answer options "Work colleagues," "Supervisors," and "Employees" a respondent picked on question QS14, "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?"

[5] Respondents in this group were asked "In the past seven days, how much time did you spend using WhatsApp to communicate with suppliers for work-related purposes?"

[6] Respondents in this group were asked "In the past seven days, how much time did you spend using WhatsApp to communicate with [customers/clients/patients] for work-related purposes?" The exact wording of this question was populated depending on which of the options "Customers" and "Clients/patients" each respondent had selected when answering question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?"

[7] Respondents in this group were asked "In the past seven days, how much time did you spend using WhatsApp to communicate with [business partners, funders / financial contributors and/or investors / shareholders] for work-related purposes?" The exact wording of the question depended on which of the answer options "Business partners," "Funders/financial contributors," and "Investors / shareholders" a respondent picked on question QS14, "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?"

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.5
WhatsApp Interactions for Work Purposes[1]
(Consumer Panel Respondents)[2]

Interacted with …	India (N = 238)	Germany (N = 243)	Brazil (N = 299)	Spain (N = 264)	Overall (N = 1,044)
Work colleagues	81%	82%	78%	77%	79%
Supervisors	42%	42%	31%	20%	33%
Employees	73%	25%	39%	30%	42%
Customers	52%	30%	30%	41%	38%
Clients / patients	35%	7%	46%	14%	25%
Suppliers	34%	9%	31%	23%	24%
Business partners	40%	21%	33%	10%	26%
Funders / financial contributors	16%	4%	6%	2%	7%
Investors / shareholders	16%	2%	6%	2%	7%
None of these	1%	0%	2%	2%	1%
Unsure / Don't know	0%	0%	0%	0%	0%
All of the above	11%	1%	5%	2%	5%

Notes:

[1] Survey respondents were asked "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?", and could name multiple answer options. Twenty-five respondents in India, 3 respondents in Germany, 15 respondents in Brazil, and 5 respondents in Spain selected all available answer options.

[2] Survey respondents recruited via the consumer panel who gave valid responses regarding their age group, gender, and region, answered "WhatsApp" in response to question QS10 "Which of the following messaging applications, if any, have you used in the past seven days?"; "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?"; and "Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?"

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.6
Cost and Time Savings from Using WhatsApp for Work-Related Internal Communications
(B2B Survey – Internal Communications)[1]

	India (N = 150)	Germany (N = 150)	Brazil (N = 150)	Spain (N = 150)	Overall (N = 600)
Costs[2]					
Has led to lower costs for my employer or business	59%	23%	47%	20%	37%
Has made no difference on costs for my employer or business	27%	63%	45%	67%	51%
Has led to higher costs for my employer or business	10%	1%	2%	0%	3%
Unsure / Don't know	5%	13%	6%	13%	9%
Time and Productivity[3]					
Saves me time or increases my productivity during the work day	80%	47%	77%	49%	63%
Makes no difference on my work productivity during the work day	15%	45%	18%	43%	31%
Slows me down or decreases my productivity during the work day	3%	3%	4%	4%	4%
Unsure / Don't know	2%	5%	1%	3%	3%

Notes:

[1] To be eligible for the B2B Survey on WhatsApp usage for internal communications, respondents answered "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?"; "Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?"; and "Work colleagues," "Supervisors," or "Employees" when asked question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?" Respondents eligible for multiple surveys were assigned using a least fill method.

[2] Respondents were asked the question QB1_8 "Communicating with [work colleagues, supervisors and/or employees] using WhatsApp...?" and offered the answer options "Has led to lower costs for my employer or business," "Has made no difference on costs for my employer or business," "Has led to higher costs for my employer or business," and "Unsure / Don't know." The exact wording of the question depended on which of the answer options "Work colleagues," "Supervisors," and "Employees" a respondent picked on question QS14, "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?"

[3] Respondents were asked the question QB1_9 "Communicating with [work colleagues, supervisors and/or employees] using WhatsApp...?" and offered the answer options "Saves me time or increases my productivity during the work day," "Makes no difference on my work productivity during the work day," "Slows me down or decreases my productivity during the work day," and "Unsure / Don't know." The exact wording of the question depended on which of the answer options "Work colleagues," "Supervisors," and "Employees" a respondent picked on question QS14, "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?"

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.7
Importance of Having WhatsApp as a Means to Communicate for Work-Related Purposes[1]
(B2B Survey – Internal Communications)[2]

	India (N = 150)	Germany (N = 150)	Brazil (N = 150)	Spain (N = 150)	Overall (N = 600)
Very important	64%	22%	44%	27%	39%
Somewhat important	25%	48%	41%	52%	41%
Neither unimportant nor important	7%	23%	9%	13%	13%
Somewhat unimportant	3%	5%	5%	5%	5%
Not important	2%	1%	1%	1%	1%
Unsure/Don't know	0%	1%	0%	1%	1%

Notes:

[1] Survey respondents were asked the question "Being able to communicate with [work colleagues, supervisors and/or employees] by using WhatsApp is... for you?". The exact wording of the question depended on which of the answer options "Work colleagues," "Supervisors," and "Employees" a respondent picked on question QS14, "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?"

[2] To be eligible for the B2B Survey on WhatsApp usage for internal communications, respondents answered "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?"; "Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?"; and "Work colleagues," "Supervisors," or "Employees" when asked question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?" Respondents eligible for multiple surveys were assigned using a least fill method.

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.8
Businesses and Service Providers Consumers Communicate with via WhatsApp[1]
(Consumer Survey – C2B Communications)[2]

	India (N = 150)	Germany (N = 151)	Brazil (N = 150)	Spain (N = 150)	Overall (N = 601)
Entertainment (e.g., restaurants, bars, cinemas, sports events, toy stores)	41%	25%	39%	35%	35%
Health / beauty (e.g., pharmacies, physiotherapists, beauty / hair salons)	39%	28%	39%	29%	34%
Food (e.g., markets, grocery stores)	54%	21%	27%	25%	31%
Professional services (e.g., accountants, lawyers)	37%	17%	42%	19%	29%
Department / apparel stores (e.g., book, clothing, footwear, or jewelry stores)	42%	21%	25%	24%	28%
Banks / financial institutions	39%	23%	23%	27%	28%
Electronics / computers / telephone providers	36%	27%	21%	27%	28%
Home-related services (e.g., baby sitters, mechanics / car dealers, electricians, cleaning services)	43%	25%	25%	17%	27%
Transportation providers (e.g., public transit, taxi companies, train/airline companies)	37%	15%	18%	19%	22%
Travel / Tourism services (e.g. travel agents, tour companies)	35%	19%	14%	17%	21%
Other:	4%	3%	5%	8%	5%
None of the above	1%	11%	3%	5%	5%
Unsure / Don't know	1%	3%	1%	2%	1%

Notes:

[1] Respondents were asked question QC1_5 "In the past seven days, what types of businesses or service providers have you communicated with using WhatsApp?" and were able to select multiple answer options. One respondent each in India and Brazil selected all available answer options.

[2] To be eligible for the Consumer Survey on WhatsApp usage as for C2B communications, respondents answered "As a consumer (communications with businesses, stores, or service providers)" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?" Respondents eligible for multiple surveys were assigned using a least fill method.

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.9
Importance of WhatsApp as a Means to Communicate with Businesses or Service Providers[1]
(Consumer Survey – C2B Communications)[2]

	India (N = 150)	Germany (N = 151)	Brazil (N = 150)	Spain (N = 150)	Overall (N = 601)
Very important	61%	20%	54%	37%	43%
Somewhat unimportant	28%	44%	37%	45%	39%
Neither unimportant nor important	7%	23%	3%	9%	10%
Somewhat unimportant	4%	8%	5%	6%	6%
Not important	0%	5%	1%	2%	2%
Unsure/Don't know	0%	0%	0%	0%	0%

Notes:

[1] Survey respondents were asked question QC1_10 "Being able to communicate with a business or service provider by using WhatsApp is... for you?"

[2] To be eligible for the Consumer Survey on WhatsApp usage as for C2B communications, respondents answered "As a consumer (communications with businesses, stores, or service providers)" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?" Respondents eligible for multiple surveys were assigned using a least fill method.

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.10
Purpose of Businesses' Communications with Suppliers via WhatsApp[1,3]
(B2B Survey – External Customer and Supplier Communications)[2]

	India (N = 58)	Germany (N = 44)	Brazil (N = 66)	Spain (N = 65)	Overall (N = 233)
To confirm an appointment or a delivery	74%	75%	18%	78%	61%
To discuss or negotiate prices of [products/services][4]	59%	25%	73%	35%	48%
To discuss non-price related information about [products/services]	67%	45%	41%	35%	47%
To establish a first contact	36%	55%	24%	9%	31%
Other:	0%	0%	3%	2%	1%
None of the above	0%	0%	2%	3%	1%
Unsure / Don't know	0%	0%	0%	0%	0%

Notes:

[1] Respondents were asked question QB2_6B "When communicating with WhatsApp with suppliers, which of the following options, if any, was the purpose of the communication in the past seven days?" and were able to select multiple answer options. Eight respondents in India, four in Germany, two in Brazil, and one in Spain selected all available answer options.

[2] To be eligible for the B2B Survey on WhatsApp usage for external communications with customers and suppliers, respondents answered "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?"; "Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?"; and "Customers," "Clients/patients," or "Suppliers" when asked question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?" Respondents eligible for multiple surveys were assigned using a least fill method.

[3] Question QB2_6B was shown to respondents who answered "Suppliers" on question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?"

[4] Populated with the respondent's answer to question QB3 "Thinking of your main job or occupation, does your business or employer sell/offer...?" The available options were "Products," "Services," and "Products and service?"

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.11
Cost and Time Savings from Communicating with Customers and Suppliers via WhatsApp
(B2B Survey – External Customer and Supplier Communications)[1]

	India (N = 151)	Germany (N = 151)	Brazil (N = 150)	Spain (N = 150)	Overall (N = 602)
Costs[2]					
Has led to lower costs for my employer or business	52%	41%	65%	29%	47%
Has made no difference on costs for my employer or business	34%	44%	29%	57%	41%
Has led to higher costs for my employer or business	9%	2%	3%	5%	5%
Unsure / Don't know	5%	13%	3%	9%	7%
Time and Productivity[3]					
Saves me time or increases my productivity during the work day	82%	71%	83%	59%	74%
Makes no difference on my work productivity during the work day	13%	22%	15%	32%	20%
Slows me down or decreases my productivity during the work day	3%	6%	2%	3%	4%
Unsure / Don't know	1%	1%	1%	5%	2%

Notes:

[1] To be eligible for the B2B Survey on WhatsApp usage for external communications with customers and suppliers, respondents answered "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?"; "Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?"; and "Customers," "Clients/patients," or "Suppliers" when asked question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?." Respondents eligible for multiple surveys were assigned using a least fill method.

[2] Survey respondents were asked the question "Communicating with [customers/clients/patients/suppliers] using WhatsApp...?" and offered the answer options "Has led to lower costs for my employer or business," "Has made no difference on costs for my employer or business," "Has led to higher costs for my employer or business," and "Unsure / Don't know." The exact wording of this question was populated depending on which of the options "Customers," "Clients/patients," or "Suppliers" each respondent had selected when answering question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?"

[3] Survey respondents were asked the question "Communicating with [customers/clients/patients/suppliers] using WhatsApp...?" and offered the answer options "Saves me time or increases my productivity during the work day," "Makes

no difference on my work productivity during the work day," "Slows me down or decreases my productivity during the work day," and "Unsure / Don't know." The exact wording of this question was populated depending on which of the options "Customers," "Clients/patients," or "Suppliers" each respondent had selected when answering question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?"

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.12
Importance of WhatsApp to Communicate with Customers and Suppliers[1]
(B2B Survey – External Customer and Supplier Communications)[2]

	India (N = 151)	Germany (N = 151)	Brazil (N = 150)	Spain (N = 150)	Overall (N = 602)
Very important	62%	36%	58%	31%	47%
Somewhat unimportant	36%	38%	35%	56%	41%
Neither unimportant nor important	2%	20%	3%	9%	8%
Somewhat unimportant	1%	2%	3%	3%	2%
Not important	0%	3%	1%	1%	1%
Unsure/Don't know	0%	0%	1%	0%	0%

Notes:

[1] Survey respondents were asked the question "Being able to communicate with [customers/clients/patients/suppliers] by using WhatsApp is... for you?" The exact wording of this question was populated depending on which of the options "Customers," "Clients/patients," or "Suppliers" each respondent had selected when answering question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?"

[2] To be eligible for the B2B Survey on WhatsApp usage for external communications with customers and suppliers, respondents answered "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?"; "Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?"; and "Customers," "Clients/patients," or "Suppliers" when asked question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?" Respondents eligible for multiple surveys were assigned using a least fill method.

Sources:

[1] Survey of WhatsApp Users, February 2016.

Table V.13
Sales Transactions Intermediated by WhatsApp
(B2B Survey)[1]

	India (N = 74)	Germany (N = 63)	Brazil (N = 53)	Spain (N = 47)
Sales in 2016[2]				
Mean	$8,776,306	$166,570,505	$6,342,955	$31,401,330
Median	$795,345	$12,938,569	$162,536	$1,499,450
Share of last ten sales transactions intermediated by WhatsApp[3]				
0 sales transactions	7%	43%	4%	26%
1-3 sales transactions	31%	30%	26%	32%
4-6 sales transactions	31%	16%	25%	19%
7-9 sales transactions	14%	2%	30%	13%
10 sales transactions	11%	2%	13%	2%
Unsure / Don't Know	7%	8%	2%	9%

Notes:

[1] To be eligible for any of the B2B Surveys on WhatsApp usage for work purposes, respondents answered "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?" and"Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?" Respondents eligible for multiple surveys were assigned using a least fill method.

[2] Survey respondents who indicated they were aware of the total amount of sales their employer or business had in the year 2016 were asked the question QB14 "To the best of your knowledge, in 2016, what was the amount of sales at your main job or work occupation? If possible, please check your sales records to provide an accurate amount." Figures are converted into Year 2015 International Dollars using PPP factors from the World Bank.

[3] After entering a sales figure in response to question QB14, survey respondents were asked the question QB15 "How many of your last 10 sales transactions would you say involved any type of communication with customers/patients using WhatsApp (e.g., for advertising, to provide information on products or services, to confirm orders or inventory)?"

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.14
Purchase Transactions Intermediated by WhatsApp
(B2B Survey)[1]

	India (N = 66)	Germany (N = 41)	Brazil (N = 50)	Spain (N = 48)
Purchases in 2016[2]				
Mean	$2,214,870	$29,433,545	$2,925,424	$25,450,779
Median	$111,937	$331,227	$48,761	$299,890
Share of last ten purchase transactions intermediated by WhatsApp[3]				
0 purchase transactions	11%	32%	0%	23%
1-3 purchase transactions	33%	29%	22%	35%
4-6 purchase transactions	24%	32%	24%	19%
7-9 purchase transactions	21%	7%	42%	17%
10 purchase transactions	11%	0%	10%	2%
Unsure / Don't Know	0%	0%	2%	4%

Notes:

[1] To be eligible for any of the B2B Surveys on WhatsApp usage for work purposes, respondents answered "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?" and "Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?" Respondents eligible for multiple surveys were assigned using a least fill method.

[2] Survey respondents who indicated they were aware of the total amount of sales their employer or business had in the year 2016 were asked the question QB16 "To the best of your knowledge, in 2016, what was the amount of purchases (e.g. from vendors or suppliers) at your main job or work occupation? If possible, please check your purchase records to provide an accurate amount." Figures are converted into Year 2015 International Dollars using PPP factors from the World Bank.

[3] After entering a purchases figure in response to question QB16, survey respondents were asked the question QB17 "How many of your last 10 purchase transactions (e.g. with vendors or suppliers) would you say involved any type of communication using WhatsApp (e.g., to ask or provide information about products or to confirm orders or inventory)?"

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.15
Share of People Who Use WhatsApp as Consumers Who Forwarded Messages from Businesses or Service Providers to ...[1]
(Consumer Survey – C2B Communications)[2]

	India (N = 150)	Germany (N = 151)	Brazil (N = 150)	Spain (N = 150)	Overall (N = 601)
A family member	67%	41%	47%	45%	50%
A friend	65%	39%	43%	46%	48%
A work colleague	51%	30%	20%	27%	32%
Other	9%	5%	3%	3%	5%
Did not forward any messages from businesses or service providers	10%	32%	31%	33%	26%
Unsure / Don't know	1%	1%	5%	1%	2%
Forwarded Messages from Businesses to Anyone[3]	**89%**	**67%**	**65%**	**66%**	**72%**

Notes:

[1] Survey Respondents were asked question QC1_8 "Of the messages you received via WhatsApp from businesses or service providers in the past seven days (e.g., regarding promotions or details on pricing), have you forwarded any to the following people?" The question allowed for multiple responses. A total of 49 survey respondents in India, 21 in Germany, 17 in Brazil, and 22 in Spain forwarded messages they received from businesses or service providers to family members, friends, and work colleagues.

[2] To be eligible for the Consumer Survey on WhatsApp usage for C2B communications, respondents answered "As a consumer (communications with businesses, stores, or service providers)" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?" Respondents eligible for multiple surveys were assigned using a least fill method.

[3] Survey Respondents who forwarded messages from businesses or service providers to at least one person.

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.16
Frequency of Forwarding Messages Received from Businesses or Service Providers via WhatsApp in the Past Seven Days[1]
(Consumer Survey – C2B Communications)[2]

	India (N = 133)	Germany (N = 101)	Brazil (N = 97)	Spain (N = 99)	Overall (N = 430)
One occasion	9%	24%	3%	9%	11%
Between 2 and 5 occasions	41%	39%	51%	46%	44%
Between 6 and 10 occasions	30%	22%	23%	27%	25%
More than 10 occasions	20%	9%	16%	10%	14%
Unsure / Don't know	1%	7%	7%	7%	5%

Notes:

[1] Survey Respondents were asked question QC1_9 "How often in the past seven days have you forwarded information (e.g., promotions or details on pricing) received from a business or service provider using WhatsApp?"

[2] To be eligible for the Consumer Survey on WhatsApp usage for C2B communications, respondents answered "As a consumer (communications with businesses, stores, or service providers)" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?" Respondents eligible for multiple surveys were assigned using a least fill method.

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.17
Median Amount of Marketing Spending Intermediated Using WhatsApp
(B2B Survey)[1]

	India (N = 67)	Germany (N = 43)	Brazil (N = 60)	Spain (N = 51)
Survey Results				
Median amount of marketing spending in 2016[2]	$20,620	$12,939	$3,522	$14,995
Share of spending associated with WhatsApp[3]	18.0%	15.6%	20.0%	9.2%
Imputed median amount of marketing spending associated with WhatsApp in 2016	$3,709	$2,013	$704	$1,379

Notes:

[1] To be eligible for any of the B2B Surveys on WhatsApp usage for work purposes, respondents answered "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?" and"Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?" Respondents eligible for multiple surveys were assigned using a least fill method.

[2] Based on survey responses. Respondents who had indicated in question QB13 that they were aware of the total amount of marketing spending by their employer or business in 2016 were asked question QB18 "To the best of your knowledge, in 2016, how much did your employer or business spend on marketing and/or advertising? If possible, please check your marketing and/or advertising records to provide an accurate amount." Figures were converted into Year 2015 International Dollars using PPP factors from the World Bank.

[3] Based on survey responses. Respondents who stated the total amount their business or employer had spent on marketing in 2016 were asked the question QB19 "To the best of your knowledge, in 2016, what portion of the total spending on marketing and/or advertising involved WhatsApp to promote products or services?" Respondents were first asked whether more or less than half of their marketing spending was associated with communications via WhatsApp, and then asked for narrower estimates in questions QB20 and QB21. Answer options were "None," "Between 1% and 24% of the total amount," "Between 25% and 49% of the total amount," "Between 50% and 74% of the total amount," "Between 75% and 99% of the total amount," "100% of the total amount," and "Unsure/Don't know." For each category, we calculated using the minimum of that category (e.g., a respondent who answered "between 25% and 49% of the total amount" was treated as if 25% of the total marketing spending by their employer or business were intermediated using WhatsApp). "Unsure/Don't know" responses were treated as equal to "None."

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.18
Mean Amount of Marketing Spending Intermediated Using WhatsApp
(B2B Survey)[1]

	India (N = 67)	Germany (N = 43)	Brazil (N = 60)	Spain (N = 51)
Survey Results				
Mean amount of marketing spending in 2016[2]	$191,725	$418,520	$243,688	$417,607
Share of spending associated with WhatsApp[3]	18.0%	15.6%	20.0%	9.2%
Imputed mean amount of marketing spending associated with WhatsApp in 2016	$34,482	$65,114	$48,738	$38,403

Notes:

[1] To be eligible for any of the B2B Surveys on WhatsApp usage for work purposes, respondents answered "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?" and "Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?" Respondents eligible for multiple surveys were assigned using a least fill method.

[2] Based on survey responses. Respondents who had indicated in question QB13 that they were aware of the total amount of marketing spending by their employer or business in 2016 were asked question QB18 "To the best of your knowledge, in 2016, how much did your employer or business spend on marketing and/or advertising? If possible, please check your marketing and/or advertising records to provide an accurate amount." Figures were converted into Year 2015 International Dollars using PPP factors from the World Bank.

[3] Based on survey responses. Respondents who stated the total amount their business or employer had spent on marketing in 2016 were asked the question QB19 "To the best of your knowledge, in 2016, what portion of the total spending on marketing and/or advertising involved WhatsApp to promote products or services?" Respondents were first asked whether more or less than half of their marketing spending was associated with communications via WhatsApp, and then asked for narrower estimates in questions QB20 and QB21. Answer options were "None," "Between 1% and 24% of the total amount," "Between 25% and 49% of the total amount," "Between 50% and 74% of the total amount," "Between 75% and 99% of the total amount," "100% of the total amount," and "Unsure/Don't know." For each category, we calculated using the minimum of that category (e.g., a respondent who answered "between 25% and 49% of the total amount" was treated as if 25% of the total marketing spending by their employer or business were intermediated using WhatsApp). "Unsure/Don't know" responses were treated as equal to "None."

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.19
Share of People Who Use WhatsApp as Consumers Who Forwarded Messages from Community Organizations or Health Care Providers to ...[1]
(Consumer Survey – Communications with other organizations)[2]

	India (N = 150)	Germany (N = 150)	Brazil (N = 150)	Spain (N = 151)	Overall (N = 601)
A family member	56%	14%	32%	32%	33%
A friend	52%	23%	36%	33%	36%
A work colleague	28%	8%	20%	14%	17%
Other	5%	7%	5%	2%	5%
Did not forward any messages from businesses or service providers	16%	56%	37%	44%	38%
Unsure / Don't know	2%	5%	3%	3%	3%
Forwarded Messages to Anyone[3]	**82%**	**39%**	**60%**	**54%**	**59%**

Notes:

[1] Survey respondents were asked question QC2_8 "In the past seven days, of the messages you received via WhatsApp from [community organization], have you forwarded any to the following people?" The exact wording of this question was populated with the response to question QC2_5 for respondents who selected "As a way to communicate with community organizations (schools, government offices)" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?", or with "health care providers" if they had selected "As a way to communicate with doctors, physiotherapists, or other health care providers" on the same question. Respondents who answered both of these options were assigned to a group using a least fill method. The question allowed for multiple responses. A total of 24 survey respondents in India, 4 in Germany, 11 in Brazil, and 13 in Spain forwarded messages they received from businesses or service providers to family members, friends, and work colleagues.

[2] To be eligible for the Consumer Survey on WhatsApp communications with community organizations and health care providers, respondents answered "As a way to communicate with community organizations (schools, government offices)" or "As a way to communicate with doctors, physiotherapists, or other health care providers" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?" Respondents eligible for multiple surveys were assigned using a least fill method.

[3] Survey respondents who forwarded messages from community organizations or health care providers to at least one person.

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.20
Frequency of Forwarding Messages Received from Community Organizations or Health Care Providers via WhatsApp in the Past Seven Days[1]
(Consumer Survey – Communications with other organizations)[2]

	India (N = 123)	Germany (N = 59)	Brazil (N = 90)	Spain (N = 81)	Overall (N = 353)
One occasion	14%	19%	23%	25%	20%
Between 2 and 5 occasions	45%	54%	50%	49%	50%
Between 6 and 10 occasions	28%	15%	14%	12%	18%
More than 10 occasions	13%	8%	9%	9%	10%
Unsure / Don't know	0%	3%	3%	5%	3%

Notes:

[1] Survey respondents were asked question QC2_9 "How often in the past seven days have you forwarded information that you received from [community organization] using WhatsApp?" The exact wording of this question was populated with the response to question QC2_5 for respondents who selected "As a way to communicate with community organizations (schools, government offices)" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?", or with "health care providers" if they had selected "As a way to communicate with doctors, physiotherapists, or other health care providers" on the same question. Respondents who answered both of these options were assigned to a group using a least fill method.

[2] To be eligible for the Consumer Survey on WhatsApp communications with community organizations and health care providers, respondents answered "As a way to communicate with community organizations (schools, government offices)" or "As a way to communicate with doctors, physiotherapists, or other health care providers" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?" Respondents eligible for multiple surveys were assigned using a least fill method.

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.21
Importance of WhatsApp to Communicate with Community Organizations or Health Care Providers[1]
(Consumer Survey – Communications with other organizations)[2]

	India (N = 150)	Germany (N = 150)	Brazil (N = 150)	Spain (N = 151)	Overall (N = 601)
Very important	45%	25%	42%	32%	36%
Somewhat unimportant	43%	41%	43%	50%	44%
Neither unimportant nor important	9%	21%	5%	9%	11%
Somewhat unimportant	3%	10%	7%	5%	6%
Not important	1%	3%	3%	2%	2%
Unsure/Don't know	0%	1%	1%	2%	1%

Notes:

[1] Survey respondents were asked question QC2_10 "Being able to communicate with [community organization] by using WhatsApp is... for you?" The exact wording of this question was populated with the response to question QC2_5 for respondents who selected "As a way to communicate with community organizations (schools, government offices)" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?", or with "health care providers" if they had selected "As a way to communicate with doctors, physiotherapists, or other health care providers" on the same question. Respondents who answered both of these options were assigned into a group using a least fill method.

[2] To be eligible for the Consumer Survey on WhatsApp communications with community organizations and health care providers, respondents answered "As a way to communicate with community organizations (schools, government offices)" or "As a way to communicate with doctors, physiotherapists, or other health care providers" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?" Respondents eligible for multiple surveys were assigned using a least fill method.

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.22
Purpose of Investor Communications via WhatsApp[1]
(B2B Survey - External Investor Communications)[2]

	India (N = 150)	Germany (N = 150)	Brazil (N = 150)	Spain (N = 150)	Overall (N = 600)
To set up or confirm meetings / phone calls	69%	77%	60%	62%	67%
To plan tasks or work in the future	71%	59%	57%	64%	63%
To provide information on [products/services]	71%	53%	71%	52%	62%
To send or receive documents	68%	51%	54%	50%	56%
To provide updates on the business	73%	23%	45%	27%	42%
To discuss finances	37%	25%	25%	31%	30%
To discuss investments	43%	18%	19%	22%	26%
Other	0%	1%	2%	1%	1%
None of the above	0%	0%	1%	0%	0%
Unsure / Don't know	0%	1%	0%	0%	0%

Notes:

[1] Respondents were asked question QB5 "When communicating with WhatsApp with [business partners, funders / financial contributors and/or investors / shareholders], which of the following options, if any, is generally the purpose of the communication?", and were able to select multiple answer options. The exact wording of the question depended on which of the answer options "Business partners," "Funders/financial contributors," and "Investors / shareholders" a respondent picked on question QS14, "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?" A total of 16 respondents in India, 4 in Germany, 11 in Brazil, and 5 in Spain selected all available answer options.

[2] To be eligible for the B2B Survey on WhatsApp usage for external communications with business partners, funders, and investors, respondents answered "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?"; "Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?"; and "Business partners," "Funders/financial contributors," or "Investors/shareholders" when asked question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?." Respondents eligible for multiple surveys were assigned using a least fill method.

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.23
Importance of Having WhatsApp as a Means to Communicate with Business Partners, Financial Contributors, and Investors[1]
(B2B Survey - External Investor Communications)[2]

	India (N = 150)	Germany (N = 150)	Brazil (N = 150)	Spain (N = 150)	Overall (N = 600)
Very important	67%	38%	57%	36%	49%
Somewhat important	29%	40%	34%	53%	39%
Neither unimportant nor important	3%	15%	5%	8%	8%
Somewhat unimportant	1%	5%	3%	3%	3%
Not important	1%	1%	1%	1%	1%
Unsure/Don't know	0%	1%	0%	0%	0%

Notes:

[1] Survey respondents were asked question QB3_11 "Being able to communicate with [business partners, funders / financial contributors and/or investors / shareholders] by using WhatsApp is... for you?" The exact wording of the question depended on which of the answer options "Business partners," "Funders/financial contributors," and "Investors / shareholders" a respondent picked on question QS14, "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?"

[2] To be eligible for the B2B Survey on WhatsApp usage for external communications with business partners, funders, and investors, respondents answered "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?"; "Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?", and "Business partners," "Funders/financial contributors," or "Investors/shareholders" when asked question QS14 "In the past seven days, with which of the following people, if any, did you communicate with using WhatsApp at your main job or work occupation for work-related purposes?" Respondents eligible for multiple surveys were assigned using a least fill method.

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.24
Median Funding Acquired and Intermediated Using WhatsApp
(B2B Survey)[1]

	India (N = 76)	Germany (N = 42)	Brazil (N = 52)	Spain (N = 39)
Median amount of funding acquired in 2016[2]	$153,178	$129,386	$119,193	$149,945
Share of funding associated with WhatsApp[3]	33.5%	12.4%	23.3%	20.8%
Median amount of acquired funding associated with WhatsApp in 2016	$51,355	$16,019	$27,827	$31,219

Notes:

[1] To be eligible for any of the B2B Surveys on WhatsApp usage for work purposes, respondents answered "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?" and "Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?" Respondents eligible for multiple surveys were assigned using a least fill method.

[2] Based on survey responses. Respondents who had indicated that they were aware of the total amount of funding or investments acquired by their employer or business in question QB13 were asked question QB22 "To the best of your knowledge, in 2016, what was the total amount of funds/investments that your employer or business obtained from (either foreign or local) investors, business partners, or financial contributors? If possible, please check your funding/investment records to provide an accurate amount." Figures are converted into Year 2015 International Dollars using PPP factors from the World Bank.

[3] Based on survey responses. Respondents who stated the total amount of funds or investments their business or employer had acquired in 2016 in question QB22 were asked question QB23 "To the best of your knowledge, in 2016, what portion of the total amount of funds/investments that your employer or business obtained from (either foreign or local) investors, business partners, or financial contributors involved communications using WhatsApp in any way?" Respondents were first asked whether more or less than half of their acquired funding was associated with communications via WhatsApp, and then asked for narrower estimates in questions QB24 and QB25. Answer options were "None," "Between 1% and 24% of the total amount," "Between 25% and 49% of the total amount," "Between 50% and 74% of the total amount," "Between 75% and 99% of the total amount," "100% of the total amount," and "Unsure/Don't know." For each category, we performed calculations using the minimum of that category (e.g., a respondent who answered "between 25% and 49% of the total amount" was treated as if 25% of the total funds or investments acquired by their employer or business were intermediated using WhatsApp). "Unsure/Don't know" responses were treated as equal to "None."

Source:

[1] Survey of WhatsApp Users, February 2016.

Table V.25
Mean Funding Acquired and Intermediated Using WhatsApp
(B2B Survey)[1]

	India (N = 76)	Germany (N = 42)	Brazil (N = 52)	Spain (N = 39)
Mean amount of funding acquired in 2016[2]	$2,558,467	$13,432,808	$21,778,673	$12,223,425
Share of funding associated with WhatsApp[3]	33.5%	12.4%	23.3%	20.8%
Mean amount of acquired funding associated with WhatsApp in 2016	$857,760	$1,663,110	$5,084,483	$2,544,980

Notes:

[1] To be eligible for any of the B2B Surveys on WhatsApp usage for work purposes, respondents answered "As a way to communicate for my main job or business" on question QS11 "You mentioned using WhatsApp in the past seven days. For which of the following purposes, if any, did you use WhatsApp in the past seven days?" and "Employed by someone else" or "I own my own business (self-employed)" on question QS12 "Which of the following best describes your current employment status?" Respondents eligible for multiple surveys were assigned using a least fill method.

[2] Based on survey responses. Respondents who had indicated that they were aware of the total amount of funding or investments acquired by their employer or business in question QB13 were asked question QB22 "To the best of your knowledge, in 2016, what was the total amount of funds/investments that your employer or business obtained from (either foreign or local) investors, business partners, or financial contributors? If possible, please check your funding/investment records to provide an accurate amount." Figures are converted into Year 2015 International Dollars using PPP factors from the World Bank.

[3] Based on survey responses. Respondents who stated the total amount of funds or investments their business or employer had acquired in 2016 in question QB22 were asked question QB23 "To the best of your knowledge, in 2016, what portion of the total amount of funds/investments that your employer or business obtained from (either foreign or local) investors, business partners, or financial contributors involved communications using WhatsApp in any way?" Respondents were first asked whether more or less than half of their acquired funding was associated with communications via WhatsApp, and then asked for narrower estimates in questions QB24 and QB25. Answer options were "None," "Between 1% and 24% of the total amount," "Between 25% and 49% of the total amount," "Between 50% and 74% of the total amount," "Between 75% and 99% of the total amount," "100% of the total amount," and "Unsure/Don't know." For each category, we performed calculations using the minimum of that category (e.g., a respondent who answered "between 25% and 49% of the total amount" was treated as if 25% of the total funds or investments acquired by their employer or business were intermediated using WhatsApp). "Unsure/Don't know" responses were treated as equal to "None."

Source:

[1] Survey of WhatsApp Users, February 2016.