

Country-Based Evaluation of Websites for Acceptance of Email Addresses in 2020

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TABLE OF CONTENTS

Introduction	3
Overall Results	3
Results Over Time	5
Results by Type	6
ascii@ascii.newshort	6
ascii@ascii.newlong	7
ascii@chinese.ascii	8
chinese@ascii.ascii	9
chinese@chinese.chinese	10
Arabic.arabic@arabic	11
Results by Country	12
Results by Type	22
Local Results	22
Methodology	22
Margins of Error	23



Introduction

The goal of Universal Acceptance (UA) is to ensure that every domain name and email address can be used by all Internet-enabled applications, devices, and systems. This includes both new generic top-level domains (gTLDs) and Internationalized Domain Names (IDNs). While it may be assumed that these work in the same manner as legacy TLDs, that is not the case and problems with acceptance are very common. As an example, the goal is that an email such as 广场@ua-test19.com or عنوان@يو-اي-اختبار.شبكة should have the same rate of acceptance as test@ua-test19.com.

The survey of 1,000 websites was undertaken to test how well they accepted email addresses outside of the legacy TLDs or with non-ASCII characters. This is a follow-up to testing done in 2017¹ and 2019².

The 2017 and 2019 versions tested the 1,000 most popular websites in the world and provided an informative global overview of UA readiness. For this latest round of testing (conducted in late 2019 and early 2020) and referred to as “2020 testing” in this document, the UASG wanted to ascertain the acceptance rates of email addresses by websites in different countries. To do this, approximately 50 popular websites in 20 different countries were tested (direct comparisons with previous testing studies should be done with caution).

The 2020 testing provides us with overall acceptance rates of different types of email addresses for the 20 countries, and allows us to compare results between countries.

It should be noted that this testing was limited to whether a website accepts a particular email address. It does not cover whether the website can store the email address or respond to it.

Overall Results

Seven different types of email addresses were tested in all 20 countries. They were:

- | | |
|-----------------------------|--|
| 1. ascii@ascii.ascii: | test@ua-test19.com |
| 2. ascii@ascii.newshort: | test@ua-test19.bet |
| 3. ascii@ascii.newlong: | test@ua-test19.technology |
| 4. ascii@chinese.ascii: | test@普遍适用.com |
| 5. chinese@ascii.ascii: | 广场@ua-test19.com |
| 6. chinese@chinese.chinese: | 测试@普遍适用.公司 |
| 7. arabic.arabic@arabic: | عنوان@يو-اي-اختبار.شبكة |

The first email address was used as a control as it should be accepted by 100 percent of websites. If a website tested negative on the control email address (and the other six) it was deleted from the sample on the assumption that the website was malfunctioning rather than it not recognizing a valid email address. Therefore, no results are given for the .com email address as by definition for this testing it should be 100 percent.

¹ Evaluation of Websites for Acceptance of a Variety of Email Addresses, page 4; <https://uasg.tech/wp-content/uploads/documents/UASG017-en-digital.pdf>

² Global Evaluation of Websites for Acceptance of Email Addresses in 2019, page 4; <https://uasg.tech/wp-content/uploads/documents/UASG025-en-digital.pdf>



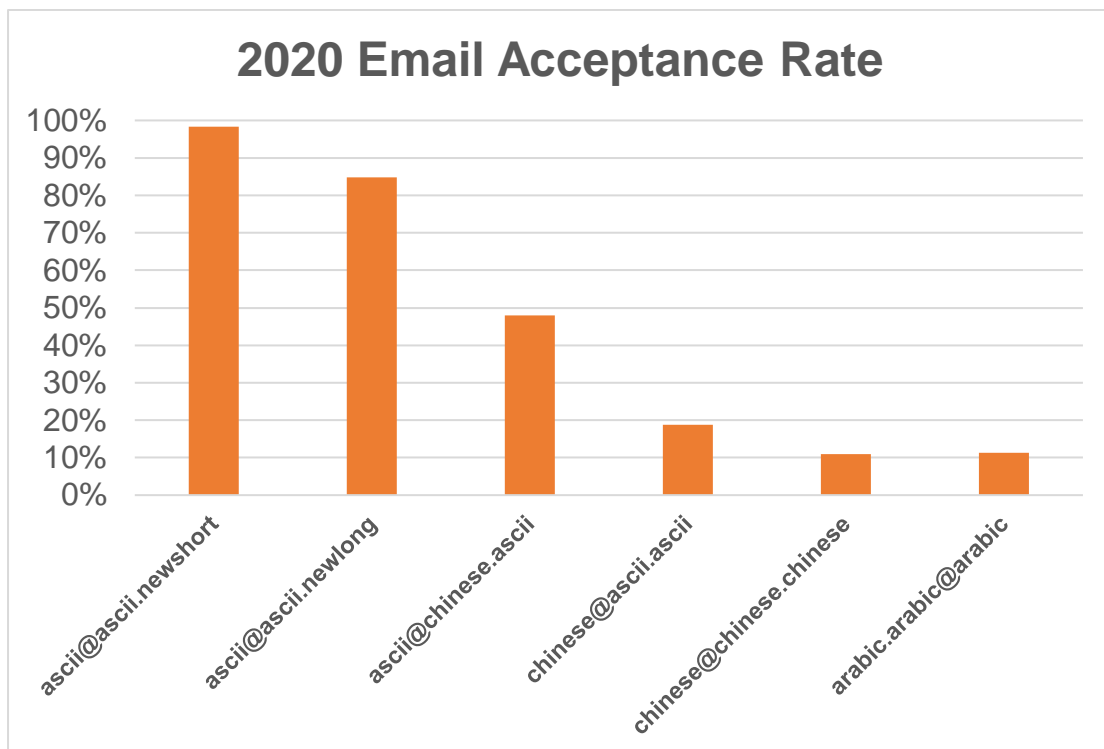
In some countries, additional tests were also done with email addresses including internationalized elements in the local script. These are indicated with formats such as `ascii@local.ascii` or `local@ascii.ascii` etc. Examples of local tests are:

- `süß@schönes.köln` (Germany)
- `לראש.תיארוך.תיארוך` (Israel)
- `সমীপ@ডাটামেন্.ভারত` (India)
- `ยูเอ@คน.ไทย` (Thailand)
- `пример@тестовая-зона.рф` (Russia)

There were a total of 1,117 websites tested over the 20 different countries. This gives a 2.9 percent margin of error with a 95 percent confidence interval.

The results are summarized in the table and chart below.

Email Type	Acceptance Rate
<code>ascii@ascii.newshort</code>	98.3%
<code>ascii@ascii.newlong</code>	84.8%
<code>ascii@chinese.ascii</code>	47.9%
<code>chinese@ascii.ascii</code>	18.7%
<code>chinese@chinese.chinese</code>	11.0%
<code>arabic@arabic.arabic</code>	11.3%





The **ascii@ascii.newshort** email address had close to 100% acceptability at 98.3% with individual country results ranging from 92% to 100%.

The **ascii@ascii.newlong** email address was rejected by around one in six websites (15.2%) with individual country results ranging from 70% to 100%.

The **ascii@chinese.ascii** email address was rejected by around one in two websites (52.1%) with individual country results ranging from 20% to 72%.

The **chinese@ascii.ascii** email address was rejected by around four out of five websites (81.3%) with individual country results ranging from 6% to 32%.

The **chinese@chinese.chinese** email address was rejected by around eight out of nine (88.0%) websites with individual country results ranging from 4% to 20%.

The **arabic@arabic.arabic** email address was rejected by around eight out of nine websites (88.7%) with individual country results ranging from 4% to 20%.

Some conclusions or assumptions from these results are:

- Around 2% of websites have a defined (and outdated) list of TLDs they will accept.
- Around 14% of websites have a rule that a TLD can't be more than three letters long.
- Around half the websites reject a non-ASCII character in the domain name part after the @ sign.
- Around 80% of the websites reject a non-ASCII character in the mailbox name before the @ sign.
- Around 90% of websites reject an email address entirely comprised of non-ASCII characters.

There were some differences in acceptability between varying scripts such as Thai and Chinese, so some sites will accept certain types of IDNs but not others. Overall, the biggest challenge appears to be blanket rejections of non-ASCII characters in an email address, especially the mailbox name.

Results Over Time

The below table compares the 2020 results to the earlier 2017 and 2019 testing results. Two important caveats should be remembered in this case:

- Different email addresses were tested (but they were of the same type).
- The websites tested in 2020 were different than previous ones as they were the 50 most popular in 20 countries rather than the 1,000 most popular globally. However, these results may still be used to compare overall trends.

Test Case	2017	2019	2020
ascii@ascii.newshort	91%	97%	98.3%
ascii@ascii.newlong	78%	84%	84.8%
ascii@chinese.ascii	45%	50%	47.9%
chinese@ascii.ascii	14%	13%	18.7%
chinese@chinese.chinese	8%	8%	11.0%
arabic.arabic@arabic	8%	7%	11.3%

There was very little movement between 2019 and 2020 with the ASCII new TLDs. The **ascii@chinese.ascii** test case declined slightly but within the margin of error. The other IDN



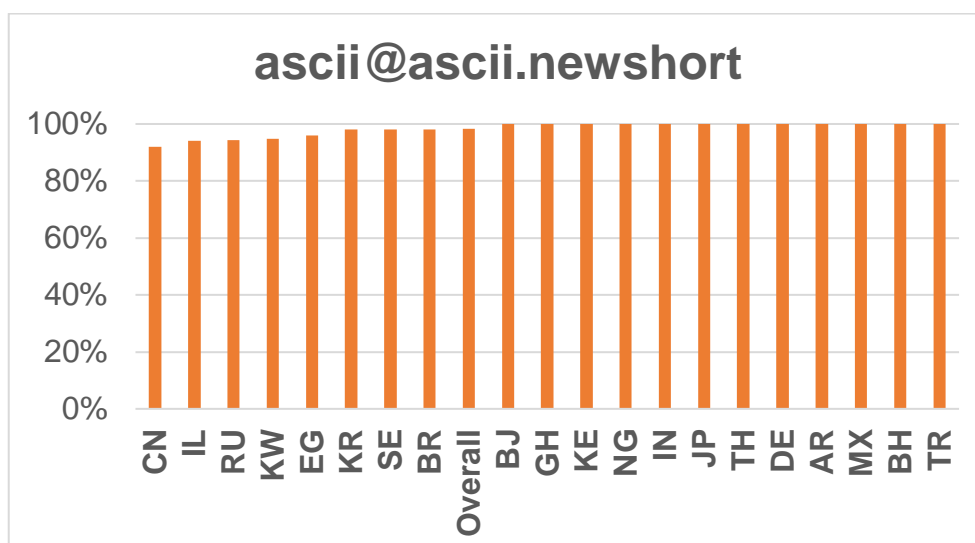
test cases all showed significant (outside the 95% margin of error) increases in acceptability, but this may be due to the different types of websites tested.

Results by Type

ascii@ascii.newshort

Country	Code	Rate
All	All	98.3%
Argentina	AR	100.0%
Bahrain	BH	100.0%
Benin	BJ	100.0%
Brazil	BR	98.0%
China	CN	92.0%
Egypt	EG	96.0%
Germany	DE	100.0%
Ghana	GH	100.0%
India	IN	100.0%
Israel	IL	94.0%
Japan	JP	100.0%
Kenya	KE	100.0%
Korea	KR	98.0%
Kuwait	KW	94.9%
Mexico	MX	100.0%
Nigeria	NG	100.0%
Russia	RU	94.3%
Sweden	SE	98.0%
Thailand	TH	100.0%
Turkey	TR	100.0%

China had the lowest acceptance rate at 92% and 12 countries had a 100% acceptance rate for email addresses with a new short (three letter) TLD.

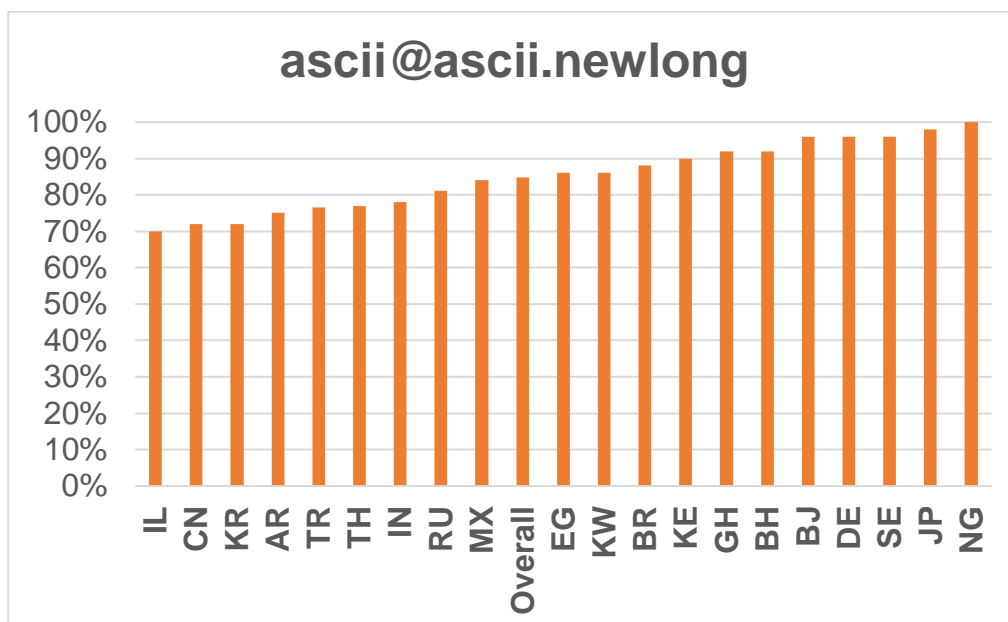




ascii@ascii.newlong

Country	Code	Rate
All	All	84.8%
Argentina	AR	75.0%
Bahrain	BH	92.0%
Benin	BJ	96.0%
Brazil	BR	88.0%
China	CN	72.0%
Egypt	EG	86.0%
Germany	DE	96.0%
Ghana	GH	92.0%
India	IN	78.0%
Israel	IL	70.0%
Japan	JP	98.0%
Kenya	KE	90.0%
Korea	KR	72.0%
Kuwait	KW	86.1%
Mexico	MX	84.0%
Nigeria	NG	100.0%
Russia	RU	81.1%
Sweden	SE	96.0%
Thailand	TH	76.9%
Turkey	TR	76.5%

Israel had the lowest acceptance rate at 70% and Nigeria had a 100% acceptance rate for email addresses with a new long (more than three letters) TLD.

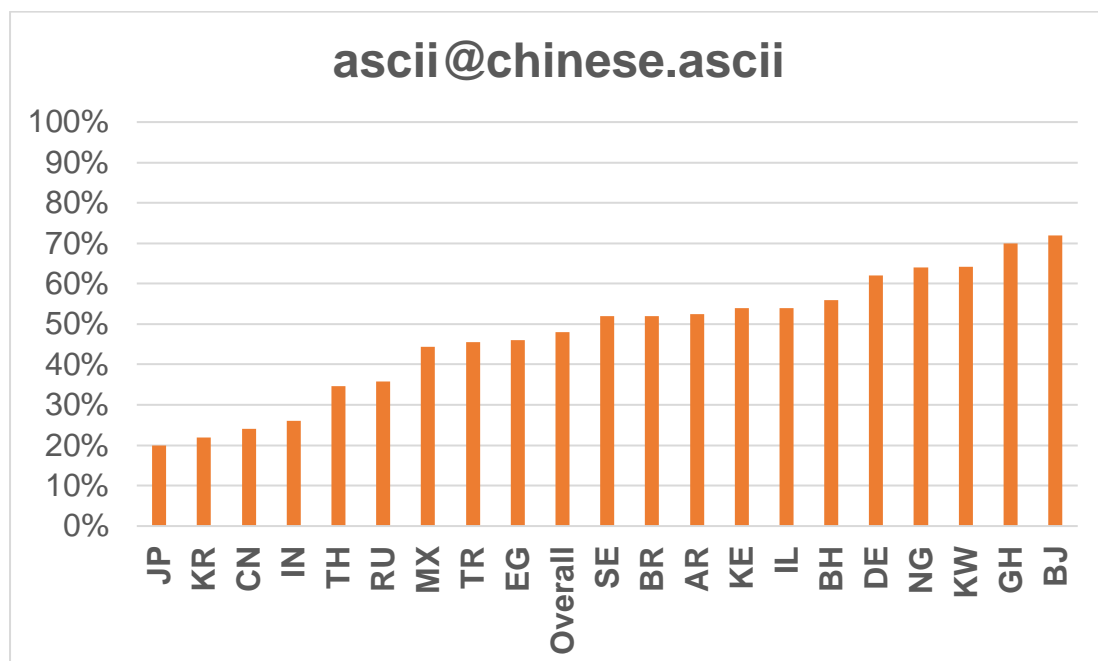




ascii@chinese.ascii

Country	Code	Rate
All	All	47.9%
Argentina	AR	52.4%
Bahrain	BH	56.0%
Benin	BJ	72.0%
Brazil	BR	52.0%
China	CN	24.0%
Egypt	EG	46.0%
Germany	DE	62.0%
Ghana	GH	70.0%
India	IN	26.0%
Israel	IL	54.0%
Japan	JP	20.0%
Kenya	KE	54.0%
Korea	KR	22.0%
Kuwait	KW	64.1%
Mexico	MX	44.4%
Nigeria	NG	64.0%
Russia	RU	35.8%
Sweden	SE	52.0%
Thailand	TH	34.6%
Turkey	TR	45.6%

Japan had the lowest acceptance rate at 20% and Benin had a 72% acceptance rate for an email address with Chinese characters in the first part of the domain name.

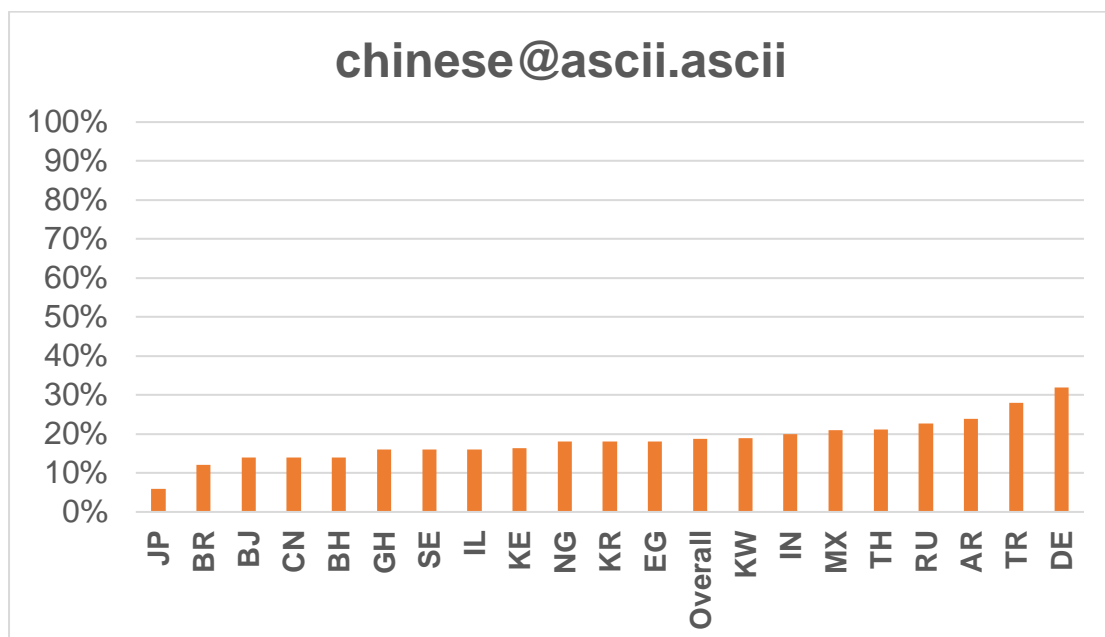




chinese@ascii.ascii

Country	Code	Rate
All	All	18.7%
Argentina	AR	23.8%
Bahrain	BH	14.0%
Benin	BJ	14.0%
Brazil	BR	12.0%
China	CN	14.0%
Egypt	EG	18.0%
Germany	DE	32.0%
Ghana	GH	16.0%
India	IN	20.0%
Israel	IL	16.0%
Japan	JP	6.0%
Kenya	KE	16.3%
Korea	KR	18.0%
Kuwait	KW	19.0%
Mexico	MX	21.0%
Nigeria	NG	18.0%
Russia	RU	22.6%
Sweden	SE	16.0%
Thailand	TH	21.2%
Turkey	TR	27.9%

Japan had the lowest acceptance rate at 6% and Germany had the highest acceptance rate at 32% for an email address that starts with Chinese characters.

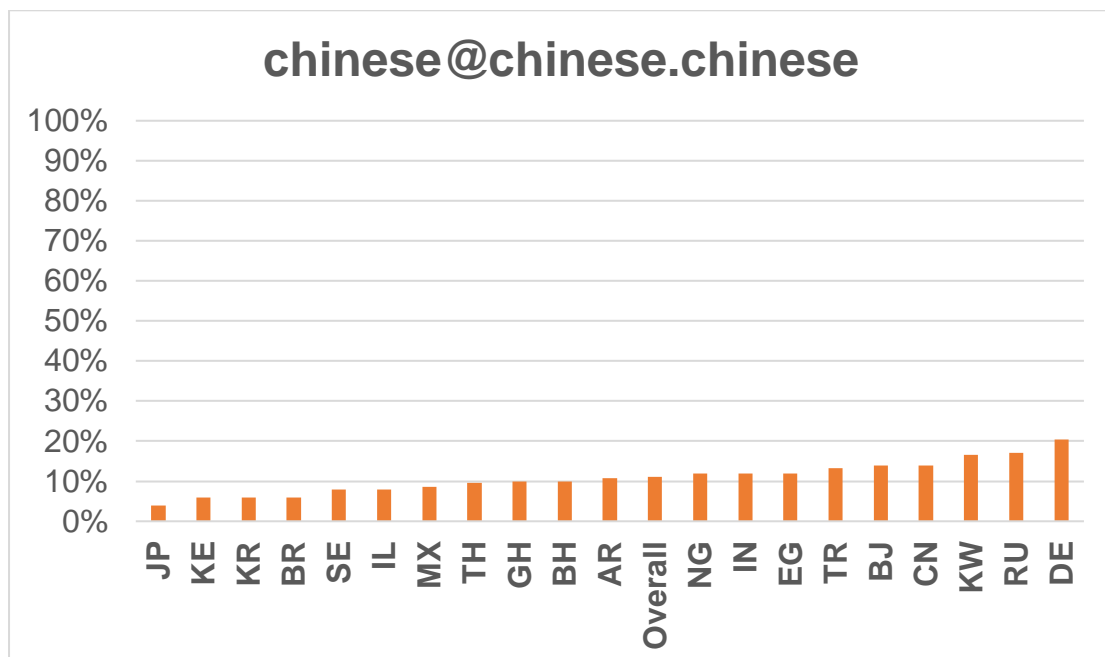




chinese@chinese.chinese

Country	Code	Rate
All	All	11.0%
Argentina	AR	10.7%
Bahrain	BH	10.0%
Benin	BJ	14.0%
Brazil	BR	6.0%
China	CN	14.0%
Egypt	EG	12.0%
Germany	DE	20.4%
Ghana	GH	10.0%
India	IN	12.0%
Israel	IL	8.0%
Japan	JP	4.0%
Kenya	KE	6.0%
Korea	KR	6.0%
Kuwait	KW	16.5%
Mexico	MX	8.6%
Nigeria	NG	12.0%
Russia	RU	17.0%
Sweden	SE	8.0%
Thailand	TH	9.6%
Turkey	TR	13.2%

Japan had the lowest acceptance rate at 4% and Germany had the highest acceptance rate at 20% for an email address entirely in Chinese characters.

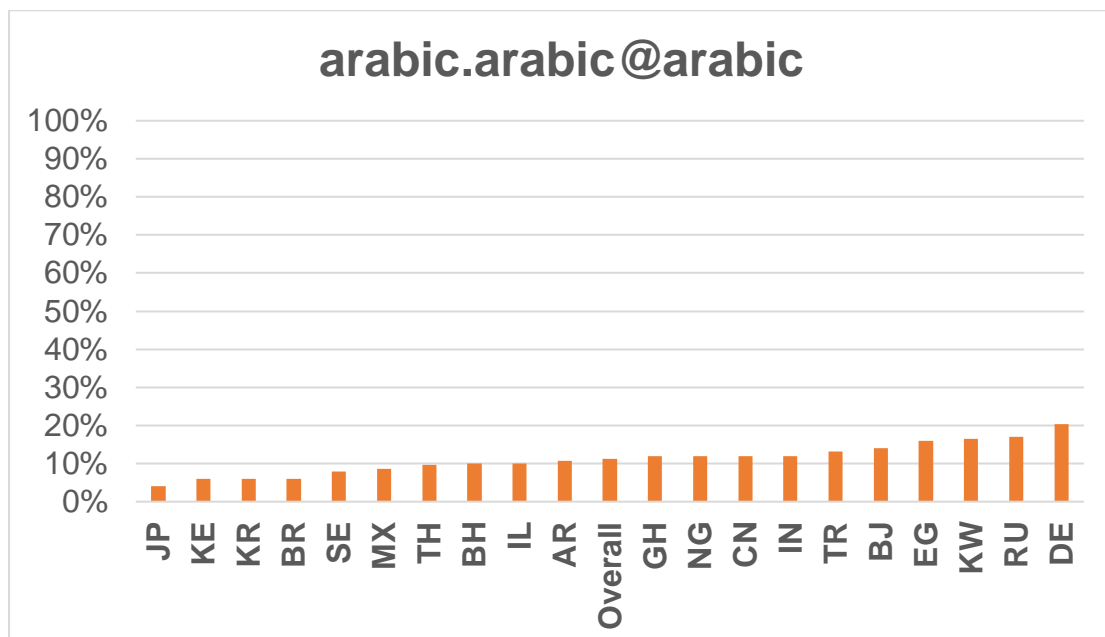




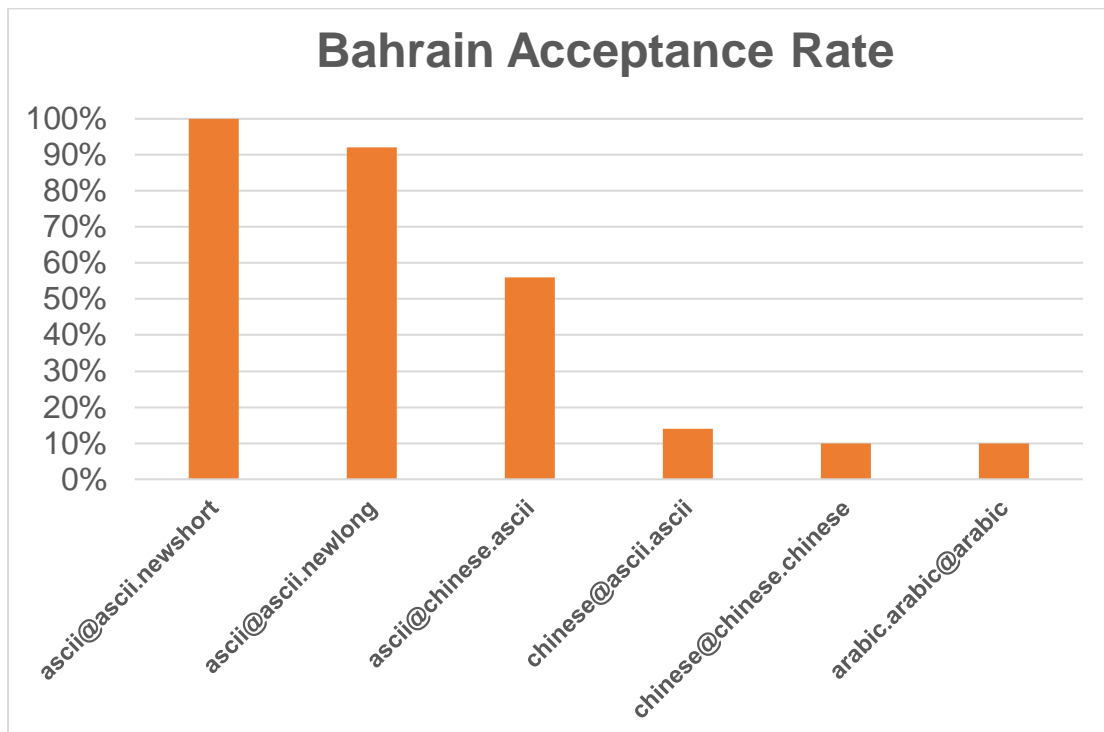
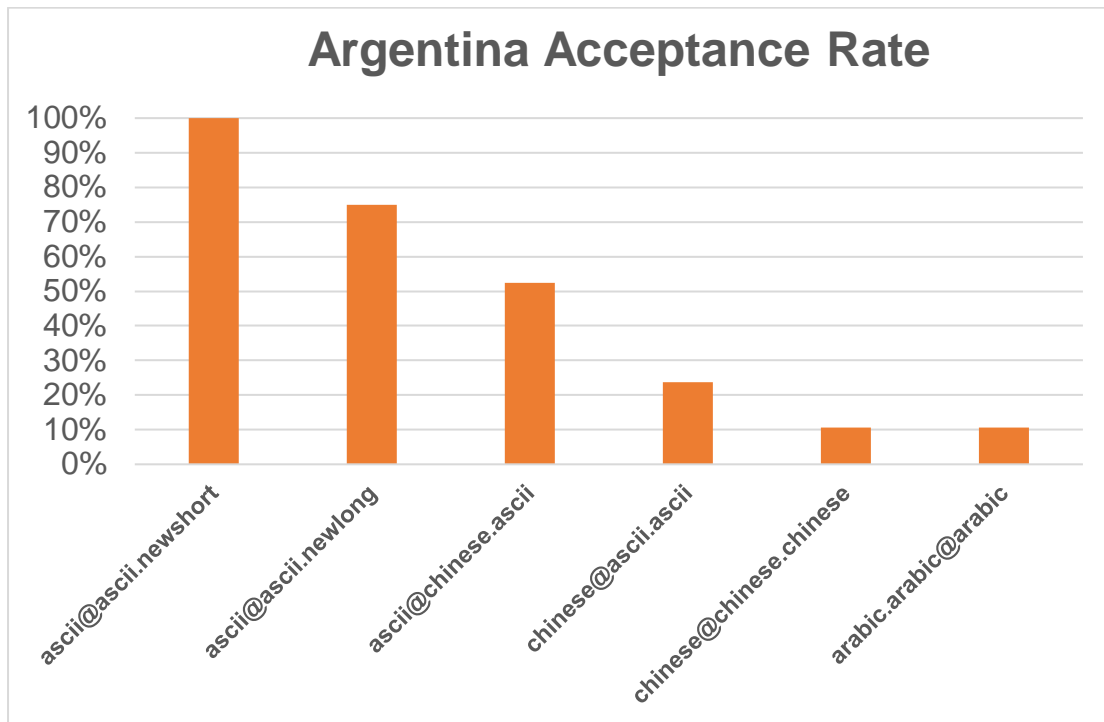
Arabic.arabic@arabic

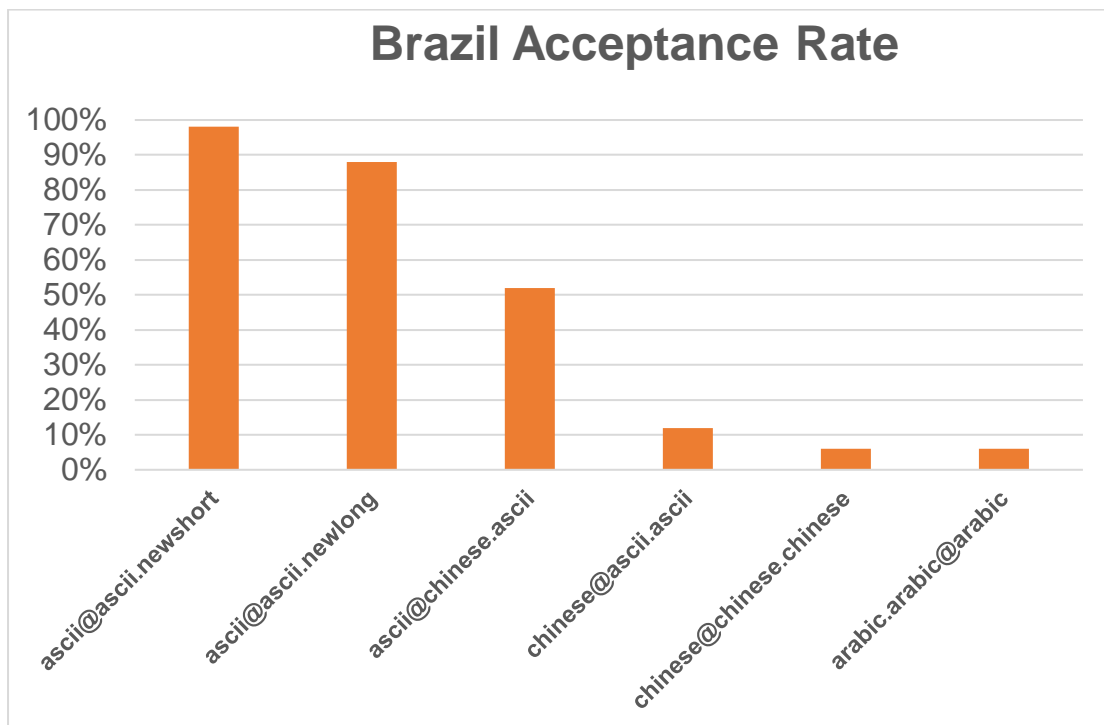
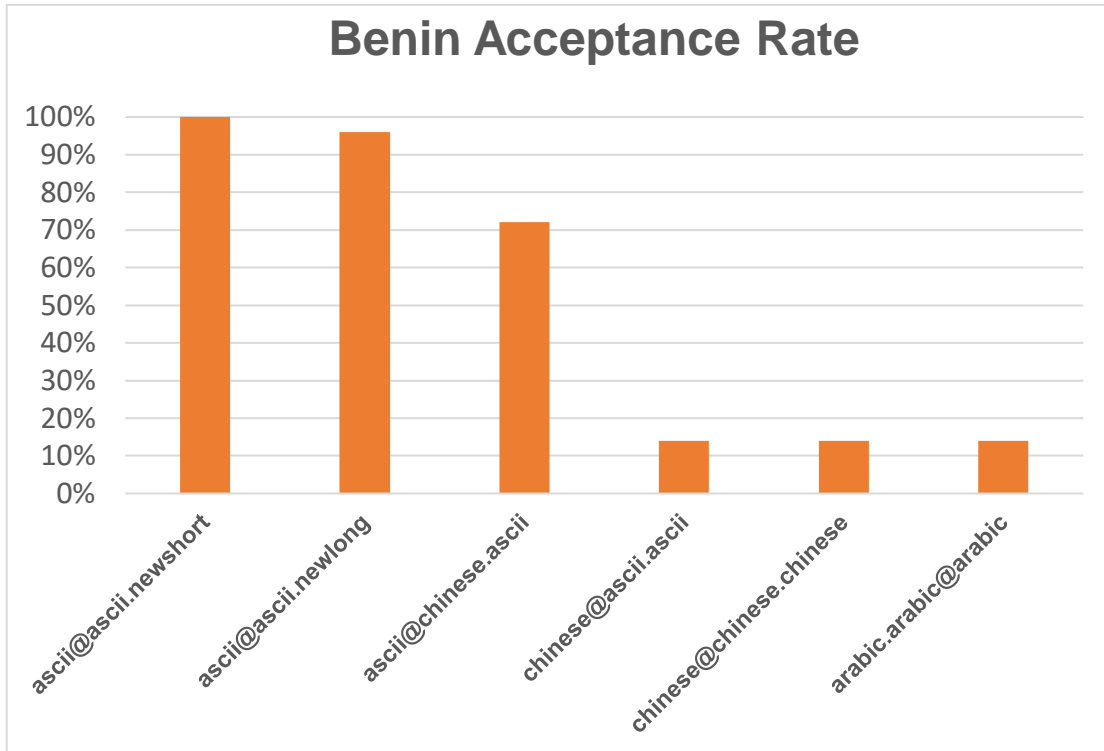
Country	Code	Rate
All	All	11.3%
Argentina	AR	10.7%
Bahrain	BH	10.0%
Benin	BJ	14.0%
Brazil	BR	6.0%
China	CN	12.0%
Egypt	EG	16.0%
Germany	DE	20.4%
Ghana	GH	12.0%
India	IN	12.0%
Israel	IL	10.0%
Japan	JP	4.1%
Kenya	KE	6.0%
Korea	KR	6.0%
Kuwait	KW	16.5%
Mexico	MX	8.6%
Nigeria	NG	12.0%
Russia	RU	17.0%
Sweden	SE	8.0%
Thailand	TH	9.6%
Turkey	TR	13.2%

Japan had the lowest acceptance rate at 4% and Germany had the highest acceptance rate at 20% for an email address entirely in Arabic characters.

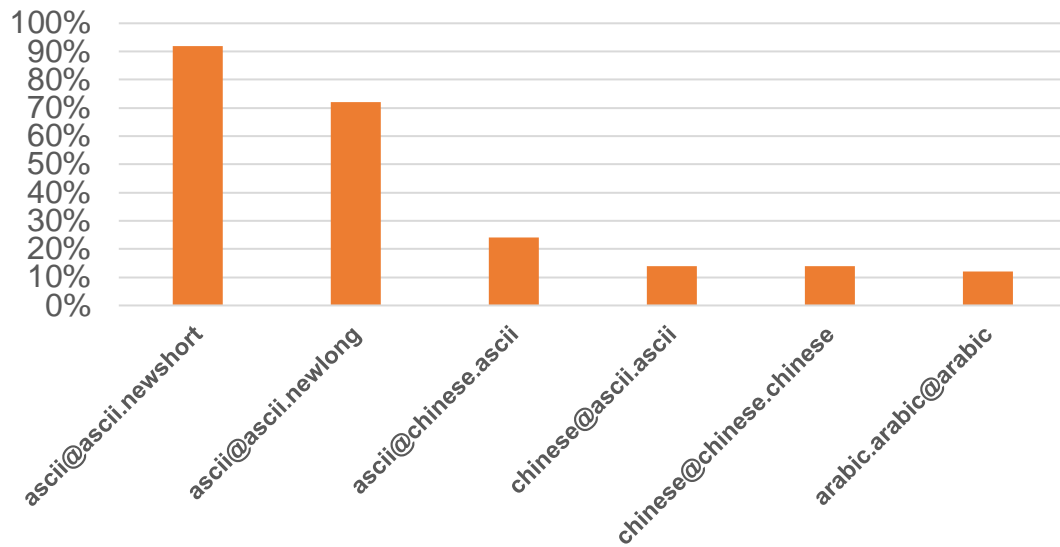


Results by Country

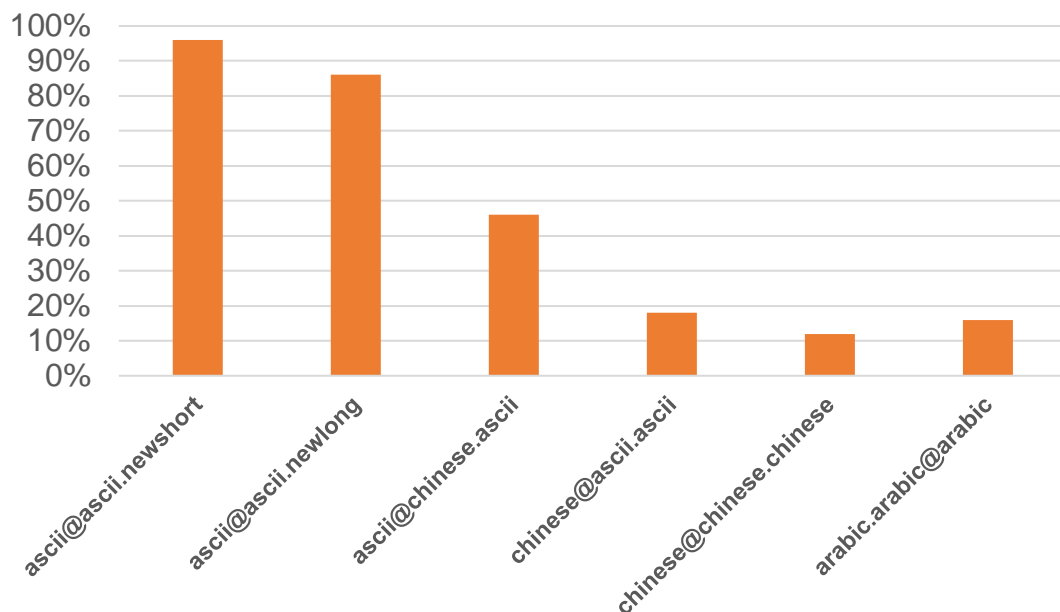




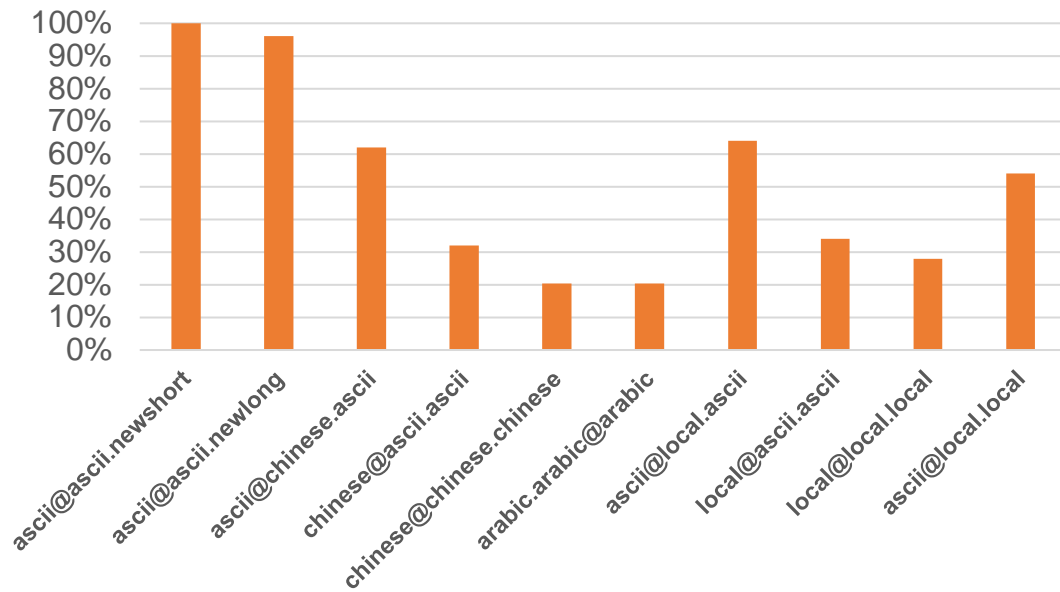
China Acceptance Rate



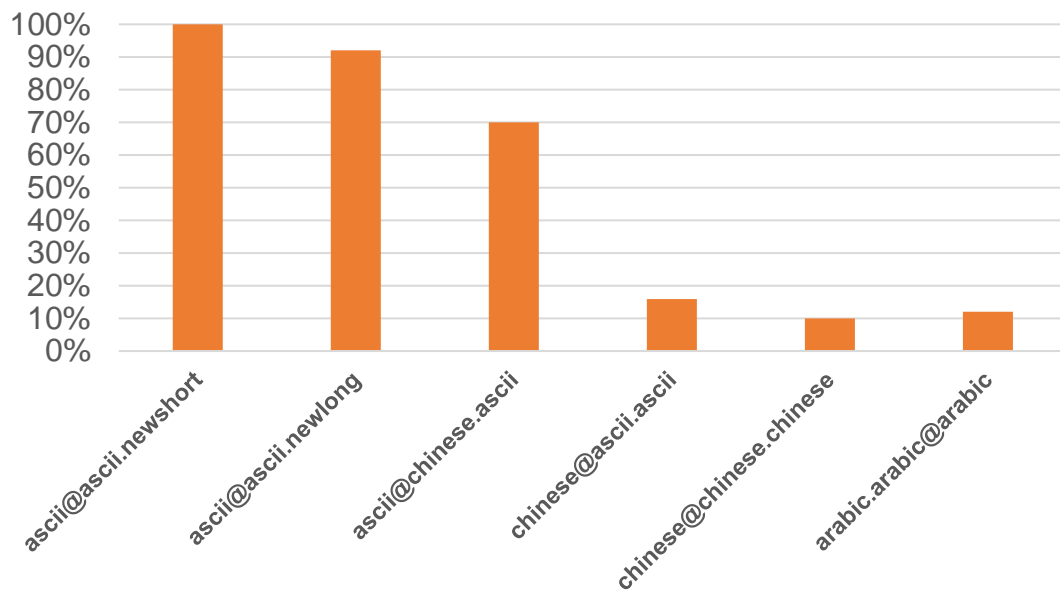
Egypt Acceptance Rate



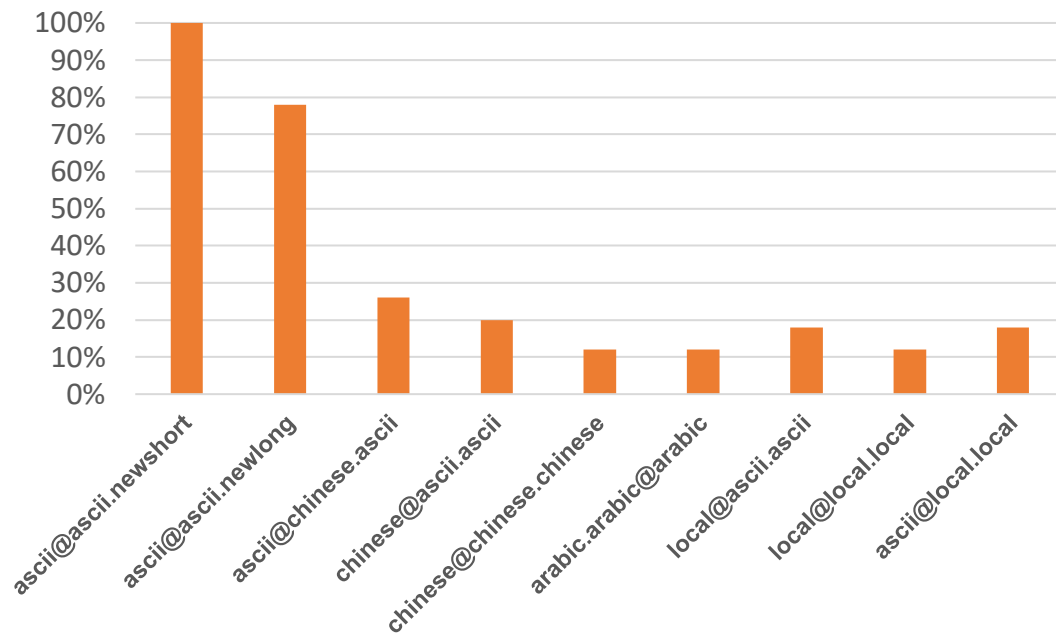
Germany Acceptance Rate



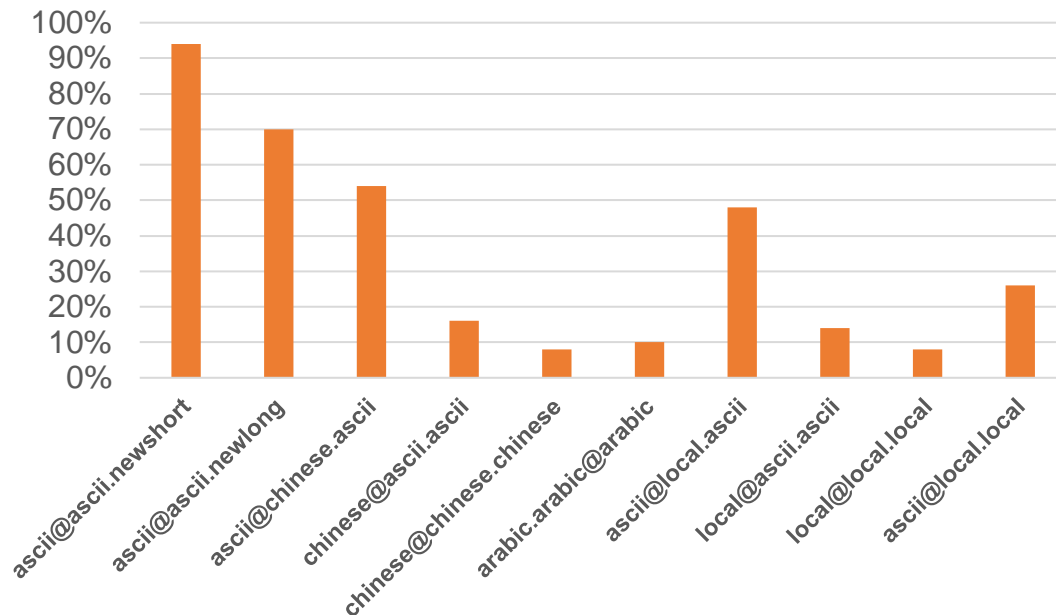
Ghana Acceptance Rate



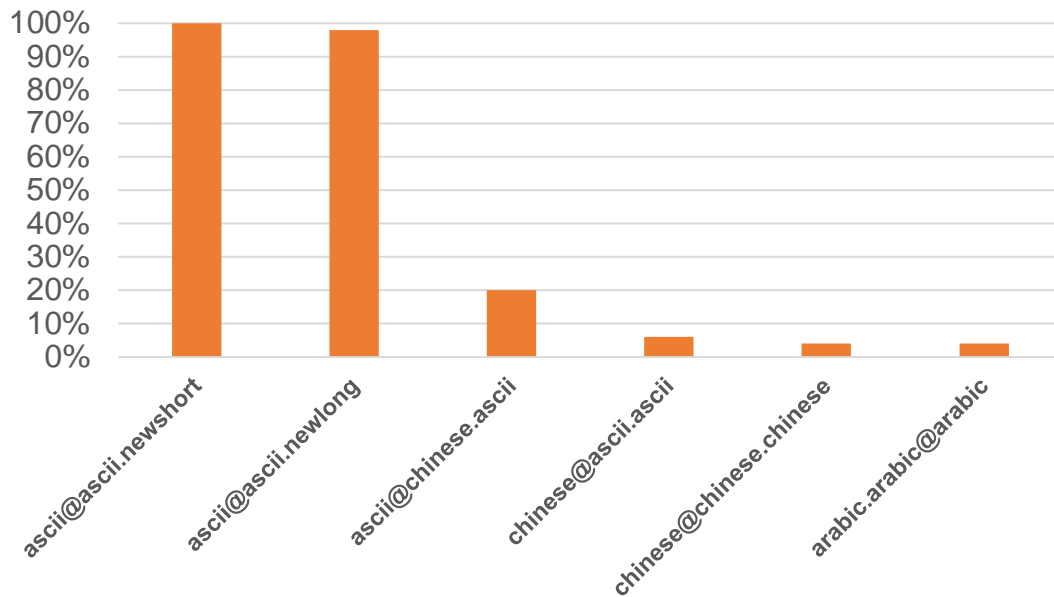
India Acceptance Rate



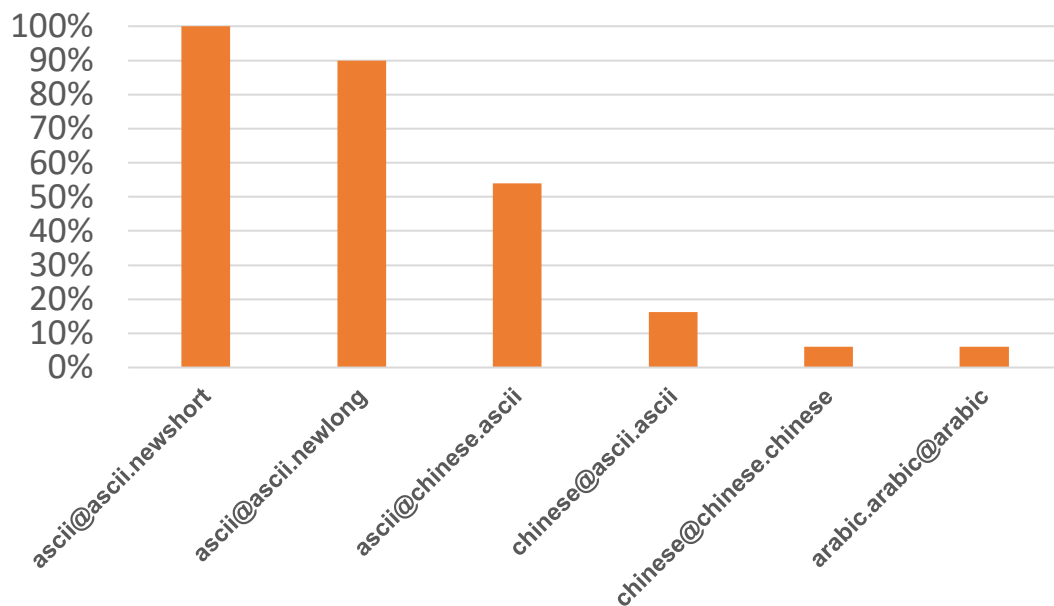
Israel Acceptance Rate



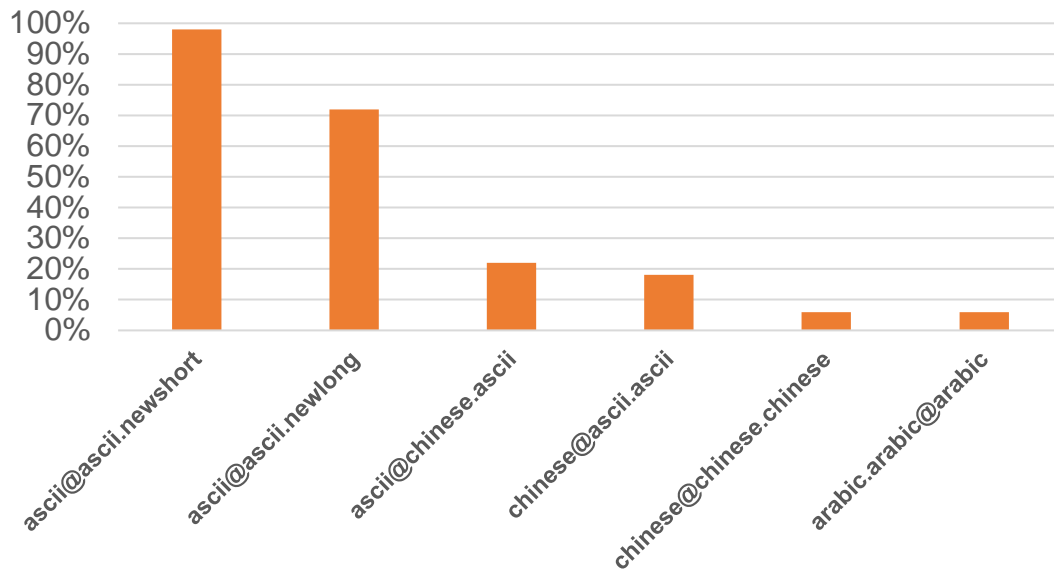
Japan Acceptance Rate



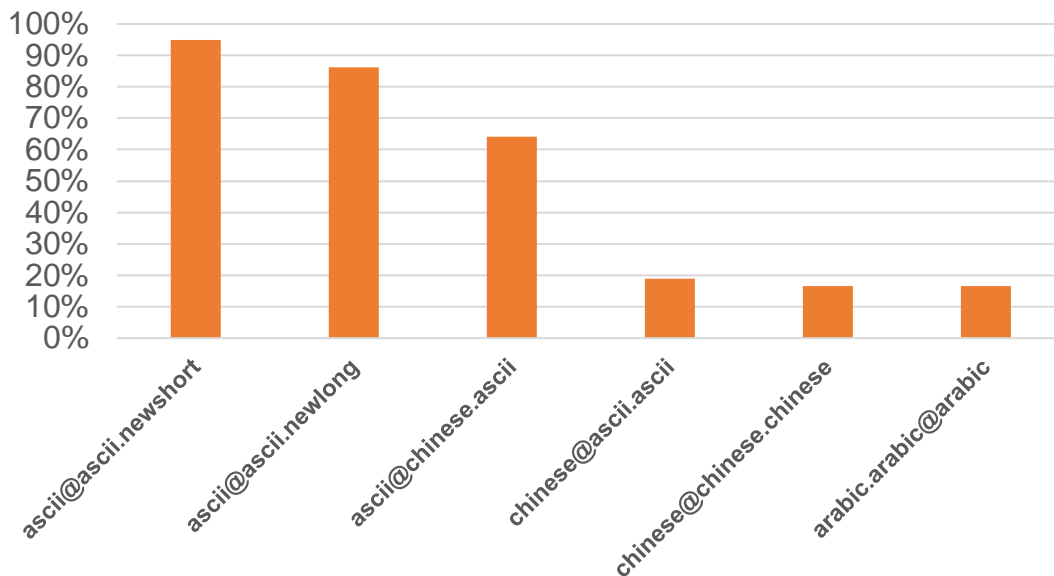
Kenya Acceptance Rate



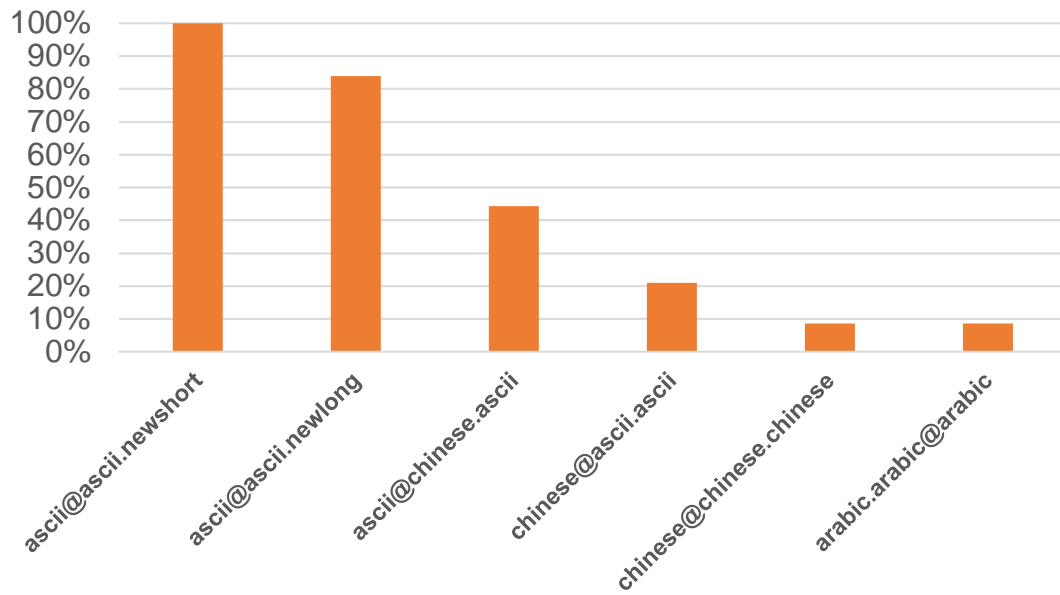
Korea Acceptance Rate



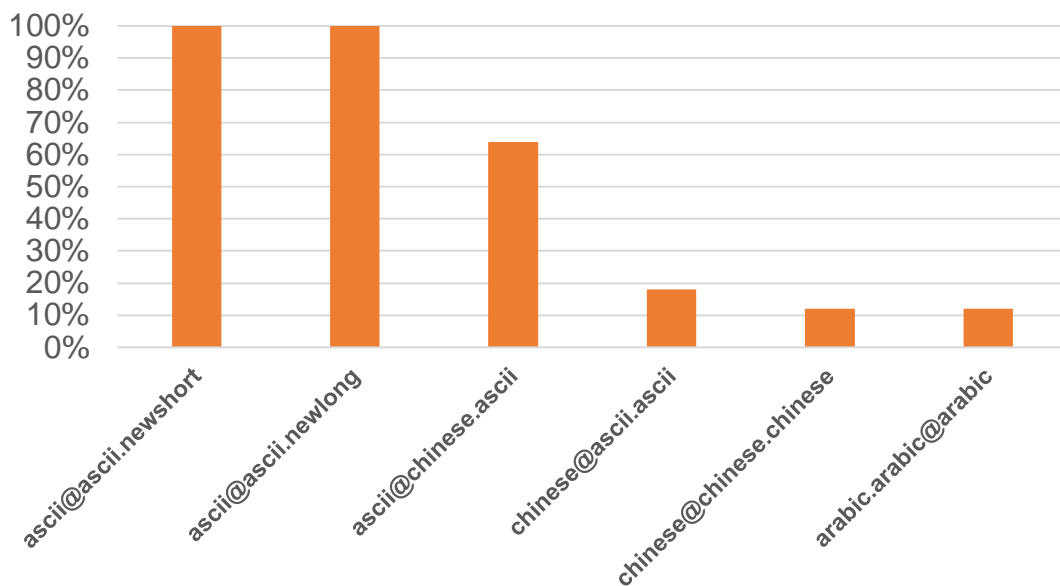
Kuwait Acceptance Rate



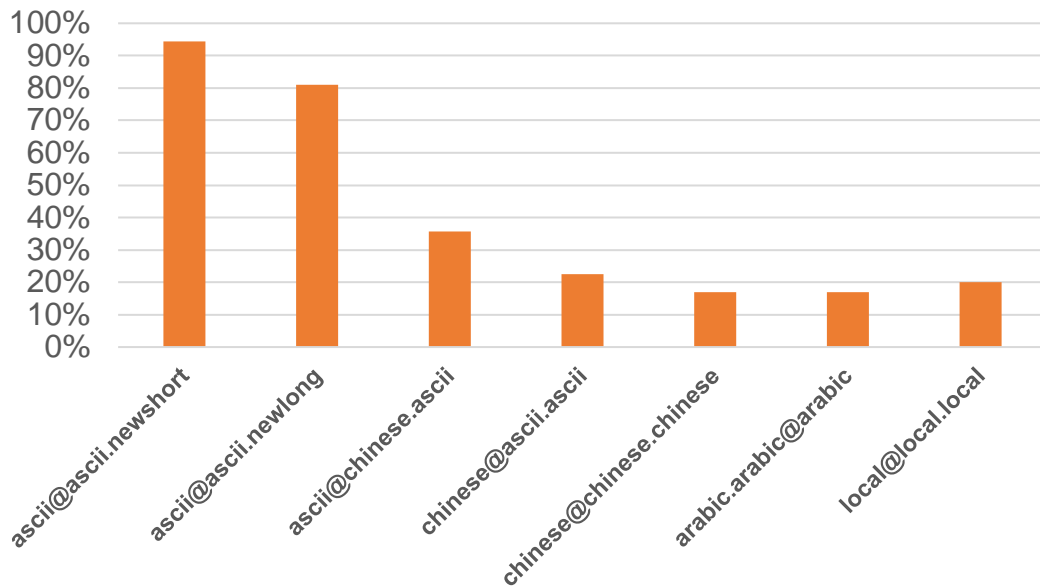
Mexico Acceptance Rate



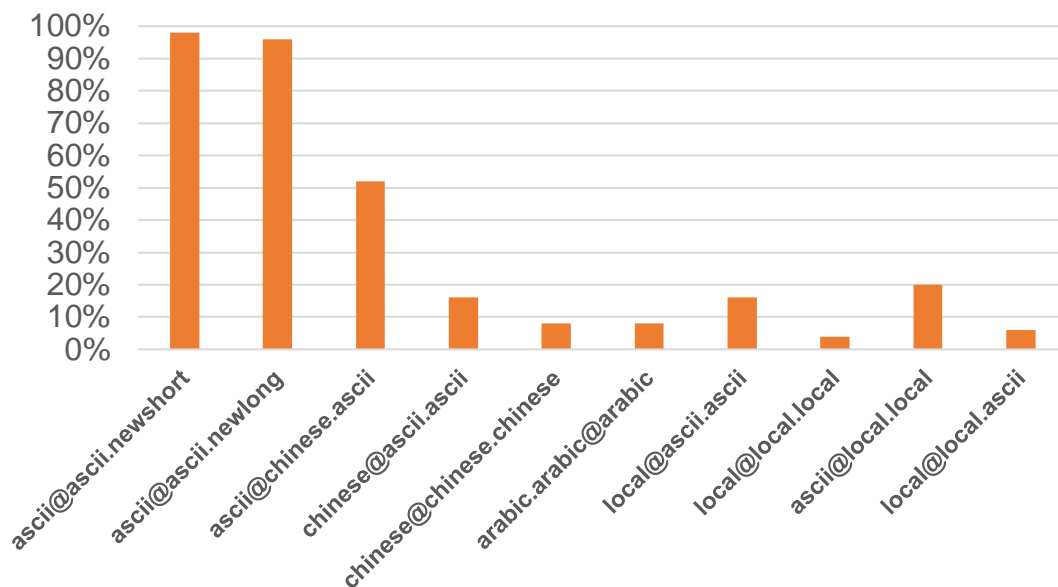
Nigeria Acceptance Rate



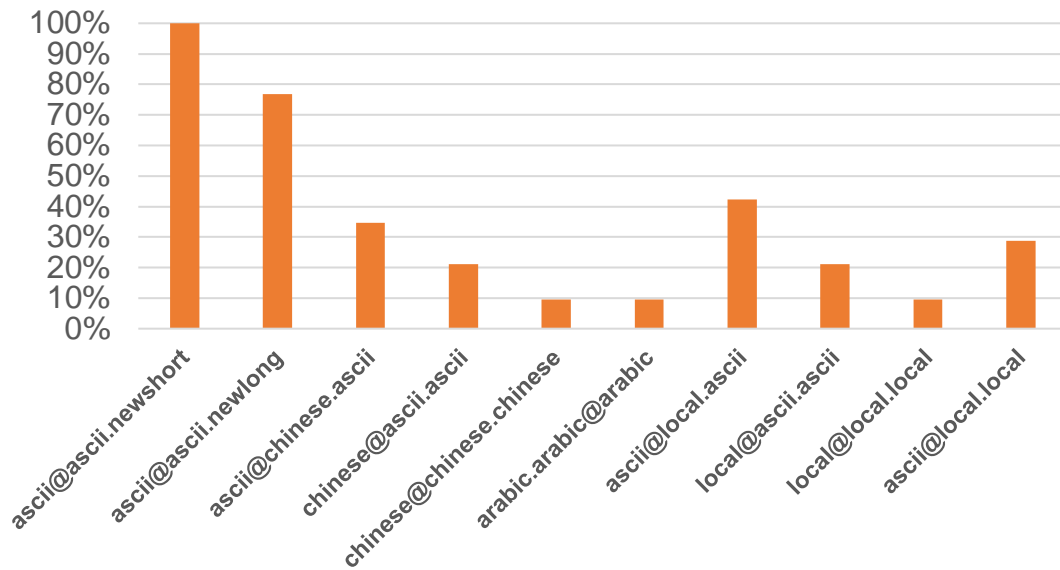
Russia Acceptance Rate



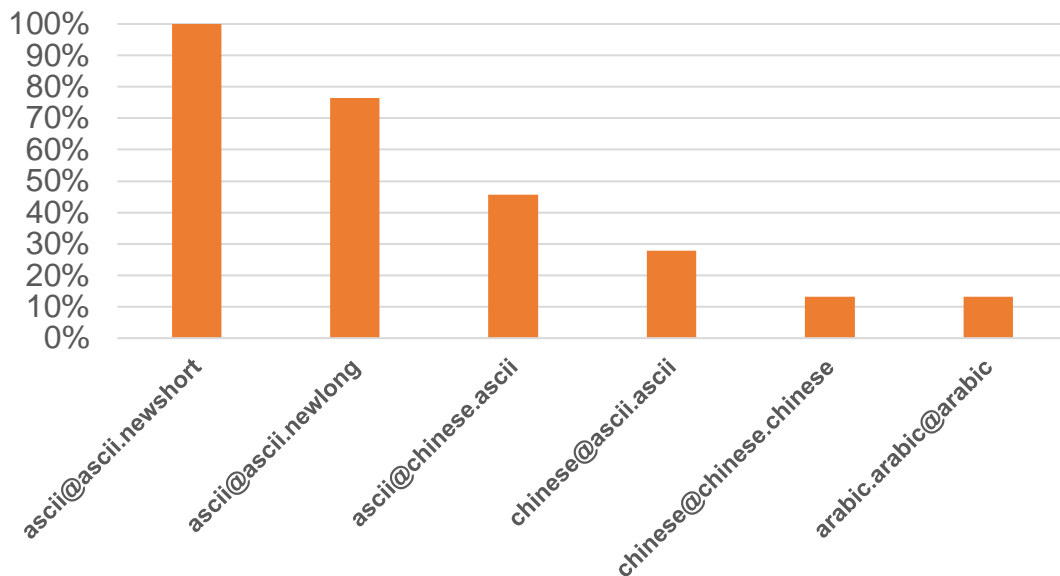
Sweden Acceptance Rate



Thailand Acceptance Rate



Turkey Acceptance Rate





Results by Type

The testing by type was done by choosing around 10 websites per country in six industries: banking, e-commerce, education, government, media, and online services. Acceptance rate results averaged across the 20 countries are shown below.

	Overall	Media	E-Commerce	Online Services	Banking	Gov't	Education
ascii@ascii.newshort	98%	98%	96%	98%	99%	99%	100%
ascii@ascii.newlong	85%	83%	84%	85%	82%	83%	85%
ascii@chinese.ascii	48%	51%	47%	46%	42%	46%	45%
chinese@ascii.ascii	19%	21%	15%	20%	24%	22%	17%
chinese@chinese.chinese	11%	12%	7%	10%	15%	15%	12%
arabic.arabic@arabic	11%	13%	7%	10%	16%	16%	12%

Overall, banking websites had the best acceptance rates of IDNs in email addresses while E-commerce had the lowest.

Local Results

In a few countries, email addresses in a local script were also tested. The percent acceptance results for these are given in the table below. The local results for Bahrain, China, Egypt, and Kuwait are from the email addresses tested in all countries.

	BH	CN	DE	EG	IL
ascii@local.ascii		24.0%	64.0%		48.0%
local@ascii.ascii		14.0%	34.0%		14.0%
local@local.local	10.0%	14.0%	28.0%	16.0%	8.0%
ascii@local.local			54.0%		26.0%
local@local.ascii					
	IN	KW	RU	SE	TH
ascii@local.ascii					42.3%
local@ascii.ascii	18.0%			16.0%	21.2%
local@local.local	12.0%	16.5%	20.0%	4.0%	9.6%
ascii@local.local	18.0%			20.0%	28.8%
local@local.ascii				6.0%	

Methodology

A list of 60 to 90 popular websites were used from each of the 20 countries. Where known, they were categorized into six industries: banking, e-commerce, education, government, media, and online services.

The sites tested are not necessarily in the native language of the respective test country, nor hosted in the local country code top-level domain (ccTLD). Many are, but some include popular global sites or local versions of global sites. The aim was to test sites most likely to be used by locals in the respective test countries.

Testing was done from November 2019 to February 2020. Seven different email addresses were tested on each website through subscription or contact forms, if available. In some countries, additional email addresses using local scripts were also tested.



For each website to be tested, a recording was made of what type of email address was accepted by the website. An acceptance was recorded if there was an explicit success message or no error message. A rejection was recorded if there was an error message or the submission wasn't accepted.

If fewer than 50 websites were able to be tested for a country then additional websites were sourced either from local sources or by using Alexa rankings³ for that country.

An email address in the .com TLD was tested as a benchmark (control) on the assumption that the email address should have a 100 percent acceptance rate. If a website rejected the .com email address, it was assumed the rejection was due to a general technical problem with the website rather than an issue with the email address, and that website was not tested further.

Margins of Error

Area	N	MoE
Overall	1117	2.9%
AR	84	10.70%
BH	50	13.90%
BJ	50	13.90%
BR	50	13.90%
CN	50	13.90%
DE	50	13.90%
EG	50	13.90%
GH	50	13.90%
IL	50	13.90%
IN	50	13.90%
JP	50	13.90%
KE	50	13.90%
KR	50	13.90%
KW	79	11.00%
MX	81	10.90%
NG	50	13.90%
RU	53	13.50%
SE	50	13.90%
TH	52	13.60%
TR	68	11.90%

The testing in this report was done by Curia Market Research, a New Zealand-based research company under contract with the Internet Corporation for Assigned Names and Numbers (ICANN).

³ The Alexa rankings are at <https://www.alexa.com/topsites/countries/>