MARKET RESEARCH

STATE OF DIGITAL DOWNLOADS - 2017

The State of Digital Downloads is part of Limelight Networks’ series of annual surveys that explores consumer perceptions and behaviors around digital content.
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OVERVIEW

This report highlights the results of Limelight’s latest findings in an annual series of consumer surveys of digital downloading behaviors. This third report in the series has been expanded to capture trends globally and is based on responses from consumers in France, Germany, India, Japan, Korea, the UK, and the US ranging in age, gender, and education. Key findings include:

- New applications and updates to applications are the most common type of content downloaded by consumers
- Smartphones are the primary device used to download content
- Downloading of applications and mobile phone OS updates has increased during the last year
- Movies and TV shows are streamed online more often than downloaded
- Video games, newspapers, books, and magazines are downloaded more often than physical copies are purchased
- Globally, music is downloaded for offline listening more often than it is streamed online, but behavior varies by country
- Consumers are not willing to pay to access movies and TV shows, music, applications, video games, newspapers and magazines, e-books, and updates to their phone’s OS if they can find free content elsewhere
- Most people have not yet adopted consumer Internet of Things (IoT) devices such as digital assistants, smart home hubs, and internet-connected thermostats and have no plans to deploy them in the next two years
- Most people are not concerned about security and privacy with consumer IoT devices
- Consumers noted slow download times as their primary frustration with downloading content
- People most often blame their ISP when they have issues downloading content
EXECUTIVE SUMMARY

Consumers are increasingly downloading and interacting with digital content. Television shows, movies, music, and books are now being consumed in digital format more often than ever before. We are constantly downloading new apps onto mobile devices so we can use them whenever and wherever we want. Although digital content plays an increasingly important role in our daily lives, how we use and interact with this content varies significantly between countries.

As smartphones become a more important part of our daily activities, apps for mobile devices are providing numerous ways to access information and easily accomplish tasks. Consumers are now downloading new apps and applications more frequently than they did a year ago and more often than any other type of content. In fact, new apps are downloaded 22 percent more often than music, the second most downloaded type of content. With the rising popularity of downloading apps, it’s no surprise smartphones are the primary device consumers use for downloading content.

With digital media increasingly available for downloading, streaming, and in physical form, consumers have many options to access movies and TV shows, video games, books/magazines/newspapers, and music. Globally, movies and TV shows are streamed online more often than they are downloaded. Video games are downloaded more often than DVDs are rented or purchased. Newspapers, books, and magazines are also now downloaded in digital form more often than physical copies are purchased. Music is downloaded for offline listening more often than it is streamed. However, preferences for accessing and acquiring media vary quite significantly by country, reflecting regional availability of online content and the availability and reliability of high-speed networks to stream content.

Although digital content is becoming more available, most consumers will only download content that is free. This will continue to be a challenge to content distributors who want to offer a subscription or paid content service.

Internet of Things (IoT) devices such as digital assistants, home automation hubs, and internet-connected thermostats have yet to gain widespread adoption, and most consumers have no plans to purchase them in the next two years. Although most people did not express any concerns with deploying and using these devices, more than 25 percent noted possible issues with hacking into the devices or with maintaining privacy of the data collected by the devices.

Globally, consumers noted slow download times as the most frustrating aspect of downloading content. In addition, when issues happen, they are most likely to hold their ISP responsible for the problem. However, responses varied significantly by country, reflecting the differences in infrastructure available in each country and the reliability consumers expect from their network provider.

These findings represent the aggregation of data from users in seven countries. Additional insight can be gained when comparing results from each individual country. The following report details global data as well as specific country data for many of these topics.
KEY FINDINGS

APPLICATIONS ARE THE MOST DOWNLOADED CONTENT TYPE

We surveyed 500 people each in France, Germany, India, Japan, South Korea, the US, and the UK, age 18 or older to determine their habits and opinions about downloading content.

We asked a series of questions about how often people download movies and TV shows, video games, updates to their phone’s operating system, applications, e-books, music, and newspapers and magazines.

Globally, people download new applications or updates to applications more often than any other type of content. The second most-often downloaded content was music, followed by updates to a phone’s operating system, movies and TV shows, video games, newspapers and magazines, and e-books.

<table>
<thead>
<tr>
<th>Content Type</th>
<th>Weighted Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>New applications/updates to applications</td>
<td>3.12</td>
</tr>
<tr>
<td>Music</td>
<td>2.56</td>
</tr>
<tr>
<td>Updates to my phone’s operating system</td>
<td>2.54</td>
</tr>
<tr>
<td>Movies/TV Shows</td>
<td>2.31</td>
</tr>
<tr>
<td>Video games/game updates</td>
<td>2.27</td>
</tr>
<tr>
<td>Newspapers/magazines</td>
<td>2.13</td>
</tr>
<tr>
<td>E-books</td>
<td>1.99</td>
</tr>
</tbody>
</table>

**Figure 1:** How often do you download the following types of content?

![Bar chart showing download frequency for different types of content](image1)

**Figure 2:** How often do you download new applications/updates to applications?
Figure 3: How often do you download music?

Figure 4: How often do you download updates to your phone’s operating system?

Figure 5: How often do you download movies/TV shows?
Figure 6: How often do you download video games/game updates?

Figure 7: How often do you download newspapers/magazines?
When analyzed by country, new applications are the most popular content type for downloading in each country except India, where music is downloaded most often.

<table>
<thead>
<tr>
<th>Country</th>
<th>New applications/updates to applications</th>
<th>Music</th>
<th>Updates to my phone’s operating system</th>
<th>Movies/TV Shows</th>
<th>Video games/game updates</th>
<th>Newspapers/magazines</th>
<th>E-books</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>3.03</td>
<td>2.48</td>
<td>2.60</td>
<td>2.26</td>
<td>2.41</td>
<td>2.13</td>
<td>1.76</td>
</tr>
<tr>
<td>Germany</td>
<td>3.00</td>
<td>2.37</td>
<td>2.34</td>
<td>2.04</td>
<td>2.19</td>
<td>1.94</td>
<td>1.88</td>
</tr>
<tr>
<td>India</td>
<td>3.51</td>
<td>3.68</td>
<td>3.08</td>
<td>3.23</td>
<td>2.83</td>
<td>3.48</td>
<td>2.75</td>
</tr>
<tr>
<td>Japan</td>
<td>2.89</td>
<td>1.72</td>
<td>2.15</td>
<td>1.60</td>
<td>1.88</td>
<td>1.54</td>
<td>1.48</td>
</tr>
<tr>
<td>Korea</td>
<td>3.38</td>
<td>2.88</td>
<td>2.60</td>
<td>2.67</td>
<td>2.29</td>
<td>2.15</td>
<td>1.98</td>
</tr>
<tr>
<td>UK</td>
<td>3.07</td>
<td>2.44</td>
<td>2.60</td>
<td>2.35</td>
<td>2.25</td>
<td>1.96</td>
<td>2.07</td>
</tr>
<tr>
<td>US</td>
<td>3.00</td>
<td>2.32</td>
<td>2.43</td>
<td>2.04</td>
<td>2.01</td>
<td>1.73</td>
<td>1.97</td>
</tr>
<tr>
<td>ALL</td>
<td><strong>3.12</strong></td>
<td><strong>2.56</strong></td>
<td><strong>2.54</strong></td>
<td><strong>2.31</strong></td>
<td><strong>2.27</strong></td>
<td><strong>2.13</strong></td>
<td><strong>1.99</strong></td>
</tr>
</tbody>
</table>

**Figure 8:** How often do you download the following types of content?

When reviewed by age, new applications are also the most common content download type across all age groups.

<table>
<thead>
<tr>
<th>Age</th>
<th>New applications/updates to applications</th>
<th>Music</th>
<th>Updates to my phone’s operating system</th>
<th>Movies/TV Shows</th>
<th>Video games/game updates</th>
<th>Newspapers/magazines</th>
<th>E-books</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-25</td>
<td>3.66</td>
<td>3.41</td>
<td>2.71</td>
<td>2.74</td>
<td>2.89</td>
<td>2.14</td>
<td>2.14</td>
</tr>
<tr>
<td>26-35</td>
<td>3.50</td>
<td>2.97</td>
<td>2.80</td>
<td>2.73</td>
<td>2.76</td>
<td>2.39</td>
<td>2.32</td>
</tr>
<tr>
<td>36-45</td>
<td>3.21</td>
<td>2.68</td>
<td>2.61</td>
<td>2.47</td>
<td>2.51</td>
<td>2.21</td>
<td>2.16</td>
</tr>
<tr>
<td>46-60</td>
<td>2.93</td>
<td>2.31</td>
<td>2.46</td>
<td>2.10</td>
<td>2.00</td>
<td>1.99</td>
<td>1.78</td>
</tr>
<tr>
<td>Over 60</td>
<td>2.68</td>
<td>1.96</td>
<td>2.24</td>
<td>1.84</td>
<td>1.61</td>
<td>2.03</td>
<td>1.71</td>
</tr>
<tr>
<td>ALL</td>
<td><strong>3.12</strong></td>
<td><strong>2.56</strong></td>
<td><strong>2.54</strong></td>
<td><strong>2.31</strong></td>
<td><strong>2.27</strong></td>
<td><strong>2.13</strong></td>
<td><strong>1.99</strong></td>
</tr>
</tbody>
</table>

**Figure 9:** How often do you download the following types of content?

When viewed by gender, both women and men download new applications more often than any other type of content.

<table>
<thead>
<tr>
<th>Gender</th>
<th>New applications/updates to applications</th>
<th>Music</th>
<th>Updates to my phone’s operating system</th>
<th>Movies/TV Shows</th>
<th>Video games/game updates</th>
<th>Newspapers/magazines</th>
<th>E-books</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>3.08</td>
<td>2.57</td>
<td>2.56</td>
<td>2.31</td>
<td>2.25</td>
<td>2.03</td>
<td>2.03</td>
</tr>
<tr>
<td>Male</td>
<td>3.16</td>
<td>2.54</td>
<td>2.52</td>
<td>2.32</td>
<td>2.28</td>
<td>2.22</td>
<td>1.95</td>
</tr>
<tr>
<td>ALL</td>
<td><strong>3.12</strong></td>
<td><strong>2.56</strong></td>
<td><strong>2.54</strong></td>
<td><strong>2.31</strong></td>
<td><strong>2.27</strong></td>
<td><strong>2.13</strong></td>
<td><strong>1.99</strong></td>
</tr>
</tbody>
</table>

**Figure 10:** How often do you download the following types of content?
SMARTPHONES ARE THE PRIMARY DEVICE FOR DOWNLOADING

Smartphones are the clear leader when it comes to downloading content, followed by PCs, and tablets. E-book readers and video game consoles were the least commonly used devices for downloading content.

<table>
<thead>
<tr>
<th>Device</th>
<th>Weighted Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smartphone</td>
<td>2.55</td>
</tr>
<tr>
<td>Personal computer</td>
<td>2.40</td>
</tr>
<tr>
<td>Tablet</td>
<td>1.90</td>
</tr>
<tr>
<td>E-book reader</td>
<td>1.54</td>
</tr>
<tr>
<td>Video game console</td>
<td>1.53</td>
</tr>
</tbody>
</table>

**Figure 11:** How often do you download content to the following types of devices?

**Figure 12:** How often do you download content to a smartphone?

**Figure 13:** How often do you download content to a personal computer?
**Figure 14:** How often do you download content to a tablet?

- Never: 42.7%
- Rarely (once a week or less): 32.0%
- Frequently (every few days): 17.9%
- Very often (daily): 7.4%

**Figure 15:** How often do you download content to an e-book reader?

- Never: 63.6%
- Rarely (once a week or less): 21.7%
- Frequently (every few days): 11.4%
- Very often (daily): 3.3%

**Figure 16:** How often do you download content to a video game console?

- Never: 65.1%
- Rarely (once a week or less): 20.7%
- Frequently (every few days): 10.2%
- Very often (daily): 4.0%
When viewed by country, the smartphone is the most commonly used device for software downloading except France, where the personal computer is most popular.

<table>
<thead>
<tr>
<th>Country</th>
<th>Smartphone</th>
<th>Personal computer</th>
<th>Tablet</th>
<th>E-book reader</th>
<th>Video game console</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>2.38</td>
<td>2.40</td>
<td>1.89</td>
<td>1.40</td>
<td>1.60</td>
</tr>
<tr>
<td>Germany</td>
<td>2.43</td>
<td>2.42</td>
<td>1.86</td>
<td>1.51</td>
<td>1.48</td>
</tr>
<tr>
<td>India</td>
<td>3.15</td>
<td>2.92</td>
<td>2.34</td>
<td>2.08</td>
<td>1.95</td>
</tr>
<tr>
<td>Japan</td>
<td>2.12</td>
<td>1.95</td>
<td>1.45</td>
<td>1.19</td>
<td>1.22</td>
</tr>
<tr>
<td>Korea</td>
<td>2.70</td>
<td>2.34</td>
<td>1.75</td>
<td>1.57</td>
<td>1.46</td>
</tr>
<tr>
<td>UK</td>
<td>2.50</td>
<td>2.42</td>
<td>2.12</td>
<td>1.59</td>
<td>1.61</td>
</tr>
<tr>
<td>US</td>
<td>2.56</td>
<td>2.35</td>
<td>1.89</td>
<td>1.47</td>
<td>1.40</td>
</tr>
<tr>
<td>ALL</td>
<td>2.55</td>
<td>2.40</td>
<td>1.90</td>
<td>1.54</td>
<td>1.53</td>
</tr>
</tbody>
</table>

**Figure 17:** How often do you download content to the following types of devices?

When analyzed by age, the smartphone dominates for software downloads across all age groups except 60+ where the personal computer is the most common device. Downloading on a smartphone is most common with younger demographics.

<table>
<thead>
<tr>
<th>Age</th>
<th>Smartphone</th>
<th>Personal computer</th>
<th>Tablet</th>
<th>E-book reader</th>
<th>Video game console</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-25</td>
<td>2.97</td>
<td>2.66</td>
<td>2.02</td>
<td>1.56</td>
<td>1.85</td>
</tr>
<tr>
<td>26-35</td>
<td>2.88</td>
<td>2.52</td>
<td>2.11</td>
<td>1.78</td>
<td>1.88</td>
</tr>
<tr>
<td>36-45</td>
<td>2.62</td>
<td>2.38</td>
<td>2.02</td>
<td>1.66</td>
<td>1.68</td>
</tr>
<tr>
<td>46-60</td>
<td>2.40</td>
<td>2.28</td>
<td>1.77</td>
<td>1.41</td>
<td>1.34</td>
</tr>
<tr>
<td>Over 60</td>
<td>2.14</td>
<td>2.36</td>
<td>1.72</td>
<td>1.39</td>
<td>1.14</td>
</tr>
<tr>
<td>ALL</td>
<td>2.55</td>
<td>2.40</td>
<td>1.90</td>
<td>1.54</td>
<td>1.53</td>
</tr>
</tbody>
</table>

**Figure 18:** How often do you download content to the following types of devices?

When viewed by gender, men are significantly more likely to download to a PC or video game console than women.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Smartphone</th>
<th>Personal computer</th>
<th>Tablet</th>
<th>E-book reader</th>
<th>Video game console</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>2.56</td>
<td>2.48</td>
<td>1.90</td>
<td>1.53</td>
<td>1.57</td>
</tr>
<tr>
<td>Female</td>
<td>2.53</td>
<td>2.31</td>
<td>1.90</td>
<td>1.56</td>
<td>1.49</td>
</tr>
<tr>
<td>ALL</td>
<td>2.55</td>
<td>2.40</td>
<td>1.90</td>
<td>1.54</td>
<td>1.53</td>
</tr>
</tbody>
</table>

**Figure 19:** How often do you download content to the following types of devices?
PEOPLE DOWNLOAD LESS THAN LAST YEAR

Globally, net content downloading has increased for two types of content during the last year; applications and phone OS updates.

The net increase in downloads of applications grew by 10.5 percent.

![Figure 20: How has your downloading of new applications changed over the last year?](image)

Downloading of mobile phone OS updates grew by 7 percent.

![Figure 21: How has your downloading of updates to your phone's operating system changed over the last year?](image)
All other content downloading dropped during the last year, led by a 16.3 percent net drop in downloading of e-books,

Figure 22: How has your downloading of e-books changed over the last year?

A 14.2 percent net drop in newspapers and magazines.

Figure 23: How has your downloading of newspapers and magazines changed over the last year?
A net 13.1 percent drop in downloading video games.

**Figure 24:** How has your downloading of video games/game updates changed over the last year?

A net 5.2 percent drop in movies and TV shows.

**Figure 25:** How has your downloading of movies and TV shows changed over the last year?
A net 4.3 percent decrease in downloading music.

**CONSUMERS PREFER TO ACCESS CONTENT DigitALLY**

Globally, people stream movies and TV programs online more often than downloading or renting/purchasing a physical DVD.
How do you typically obtain movies and TV shows?

Figure 28: France

Figure 29: Germany

Figure 30: India

Figure 31: Japan

Figure 32: Korea

Figure 33: UK

Figure 34: US

Downloading is the most common way to access movies and TV shows in Korea and India.

The highest streaming rate for movies and TV shows is in the US at 58.4 percent.
Globally, people download video games far more often than renting or purchasing a physical copy.

Figure 35: How do you typically obtain games?
How do you typically obtain games?

The most downloading of video games occurs in India at 68.6 percent. Renting or purchasing videogame DVDs is highest in France, at 23.0 percent. The US has the highest percentage of people who do not play video games, at 50.6 percent.

Although the size of videogame files continues to grow, faster internet speeds and incentives from game manufacturers are increasingly encouraging gamers to download video games rather than purchase physical copies.¹

Globally, books and newspapers are downloaded to read offline more often than physical copies are purchased.

Figure 43: How do you typically obtain books, newspapers, and magazines?
How do you typically obtain books, newspapers, and magazines?

- **France**
  - Download to read offline: 30.2%
  - I do not use this type of content: 39.8%
  - Purchase hard-copy: 30.0%

- **Germany**
  - Download to read offline: 37.4%
  - I do not use this type of content: 47.0%
  - Purchase hard-copy: 15.6%

- **India**
  - Download to read offline: 62.2%
  - I do not use this type of content: 14.4%
  - Purchase hard-copy: 23.4%

- **Japan**
  - Download to read offline: 21.2%
  - I do not use this type of content: 42.6%
  - Purchase hard-copy: 36.2%

- **Korea**
  - Download to read offline: 36.0%
  - I do not use this type of content: 38.2%
  - Purchase hard-copy: 25.8%

- **US**
  - Download to read offline: 37.2%
  - I do not use this type of content: 33.2%
  - Purchase hard-copy: 29.6%

India has the highest percentage of people who download books, newspapers, and magazines at 62.2 percent.

Japan has the highest percentage of people who purchase a hard-copy, at 36.2 percent.

Germany has the highest percentage of people who do not use books, newspapers, or magazines at 47.0 percent.
Globally, people download music for offline listening more often than they stream it online or purchase a physical CD.

**Figure 51:** How do you typically obtain music?
How do you typically obtain music?

India has the highest percentage of people who download music to listen offline at 68.0 percent and the lowest CD purchase rate at 3.0 percent. In Japan, purchasing CDs is still the preferred method for accessing music, with 40.5 percent purchasing physical CDs. The highest streaming rate is in France at 49.2 percent.
These differences in the preferred method of accessing content between countries can be explained by a combination of factors. For example, the infrastructure for reliably streaming content online may not be readily available in all countries. India, which has the highest rate for downloading content for offline viewing in our survey, does not have a reliable high-speed broadband infrastructure that is readily available to most consumers. Many Indians use less reliable mobile wireless networks to access content, so downloading for offline playback provides a more consistent experience than live streaming.

In other cases, there may be limited options for online content streaming in certain countries, making it less likely for people to subscribe to an online streaming service. As the major streaming content providers such as Amazon continue their expansion into more countries, the percentage of people streaming content in these countries should grow.

Finally, there are also cultural reasons for the differences in content acquisition methods. Although audio CDs have fallen out of favor in most countries, sales of CD albums and singles continue to far exceed the sale of digital music in Japan where consumers prefer physical copies.²

**CONSUMERS FAVOR ACCESS TO FREE CONTENT**

Globally, people are more willing to pay for e-books than for any other type of content. They are least willing to pay for OS updates for their smartphone.

The good news for content creators and distributors is that only a small percentage of people admitted to downloading pirated content without paying.

Globally, 45.3 percent are willing to pay to access e-books. This was the highest rate for any type of content in our survey, indicating people place a high value in being able to access specific books they want to read.

People in France are the least willing to pay for e-books at 31.0 percent. People in the US are most willing to pay at 57.3 percent.

Globally, 40.4 percent will pay to access movies and TV shows they want to watch. 54.8 percent will only download when it is free.

Figure 62: Do you pay for movies and TV shows you download?

France is the least willing to pay for movies and TV at 28.0 percent. The US is most likely to pay at 57.0 percent.

Figure 63: Do you pay for movies and TV shows you download? - France

Figure 64: Do you pay for movies and TV shows you download? - US
Globally, 43.4 percent are willing to pay to download music. 51.2 percent will only do it if it is free.

![Figure 65: Do you pay for music you download?](image)

People in the US and UK are most willing to pay for music. France and India are the least willing to pay to access music.
Globally, 22.9 percent are willing to pay to use applications that are not free. 73.9 percent who download apps will only do it when it is free.

Figure 70: Do you pay for applications you download?

France is least willing to pay for apps at 15.0 percent. Korea is most willing to pay for apps at 27.8 percent.

Figure 73: Do you pay for applications you download? - Males

Globally, 26.6 percent of men are willing to pay for apps, while only 18.8 percent of women will pay.
Globally, only 30.4 percent are willing to pay to access newspapers and magazines.

**Figure 75**: Do you pay for newspapers and magazines you download?
The US, UK, and Germany lead in willingness to pay for newspapers and magazines.

Globally 33.5 percent of men are willing to pay for newspapers and magazines, while only 26.6 percent of women will pay.
Globally, 18.8 percent are willing to pay to download an OS update for their phone.

**Figure 81:** Do you pay for updates to your phone’s operating system?

Globally, 35.4 percent are willing pay to download video games, but 59.9 percent will only do it if it is free.

**Figure 82:** Do you pay for video games you download?

Japan had the lowest percentage of people willing to pay to access video game content at 27.8 percent. The UK has the highest number of people willing to pay at 41.6 percent.

**Figure 83:** Japan

**Figure 84:** UK
IOT DEVICE USAGE REMAINS LOW

To gain insight into the level of adoption of common consumer Internet of Things (IoT) devices, we asked people questions about their current or future plans to acquire a digital assistant, smart home hub, and internet-connected thermostat.

Globally, 8.6 percent of people currently own a digital assistant such as an Amazon Alexa or Google Home Assistant. 65.6 percent have no plans to purchase one.

**Figure 85:** Do you have or are you planning to purchase an internet connected digital assistant (Amazon Alexa or Google Home Assistant)?
When viewed by age, younger people are more likely to purchase a digital assistant.

Do you have or are you planning to purchase an internet connected digital assistant (Amazon Alexa or Google Home Assistant)?

**Figure 86:** Age 18-35

![Chart showing percentage of age 18-35 respondents for digital assistant purchase intentions.]

**Figure 87:** Age 36-45

![Chart showing percentage of age 36-45 respondents for digital assistant purchase intentions.]

**Figure 88:** Age 46-60

![Chart showing percentage of age 46-60 respondents for digital assistant purchase intentions.]

**Figure 89:** Age 60+

![Chart showing percentage of age 60+ respondents for digital assistant purchase intentions.]

Do you have or are you planning to purchase an internet connected digital assistant (Amazon Alexa or Google Home Assistant)?
9.7 percent of people have a smart home hub that controls home devices such as lighting, TVs, or music players. 61.3 percent have no intention to purchase a smart home hub.

![Figure 90](image1)

**Figure 90:** Do you have or are you planning to purchase an internet-connected smart home hub (controls lighting, TV, music)?

10.3 percent reported having a smart internet-connected thermostat. 67.9 percent have no intention to purchase one.

![Figure 91](image2)

**Figure 91:** Do you have or are you planning to purchase an internet-connected smart thermostat (example, Nest)?

Although the adoption of these common IoT devices has grown over the last few years, usage continues to be low. In addition, a majority of people reported no interest in purchasing one in the future. Device manufacturers will need to continue to add new capabilities and increase their marketing efforts to increase sales to these skeptical consumers.
CONSUMERS HAVE VARYING CONCERNS ABOUT USING IoT DEVICES

39.6 percent reported having no concerns with Digital Assistants. 28.5 percent expressed concerns about security and hacking. 26.4 percent have concerns about data being collected by the digital assistant.

[Figure 92: What concerns do you have about using an internet-connected digital assistant (Amazon Alexa or Google Home Assistant)?]

40.6 percent reported no concerns about a home hub. 28.6 percent expressed concerns about security and hacking, while 23.2 percent noted concerns about data being collected by the device.

[Figure 93: What concerns do you have about using an internet-connected smart home hub (controls lighting, TV, music)?]
41.3 percent have no concerns about smart thermostat. 27.5 percent are concerned about security and hacking, while 25.0 percent noted privacy about data collected. Difficulty installing the device was cited least.

Figure 94: What concerns do you have about using an internet-connected smart thermostat (example, Nest)?

The good news for consumer IoT device manufactures is that most consumers do not have concerns about using the devices themselves. However, a significant number of people did express concerns about possible hacking into the device or privacy concerns with data being collected by the devices. These concerns will need to be addressed to encourage these consumers to adopt the devices.

CONSUMERS ARE FRUSTRATED WITH CONTENT DOWNLOADING

We asked what people find most frustrating about downloading content. Nearly one-third (29.9 percent) cited when it takes too long as their primary frustration. 24.8 percent noted when it gets interrupted and have to start over. 22.8 percent said when it doesn’t work. 22.6 percent said they don’t find it frustrating.

Figure 95: What is the most frustrating aspect about downloading content?
What is the most frustrating aspect about downloading content?

Japan had the highest number of respondents who noted downloads taking too long as their main frustration at 40.6 percent.
The US had the highest number of people citing “when it doesn’t work” as their primary frustration at 36.4 percent.
India had the highest number noting “when it gets interrupted” at 42.2 percent.
The global data reflects varying consumer experiences and the nature of the networks used in each country. Consumers in some emerging countries have a higher reliance on mobile networks that may be less reliable and require reconnecting to content downloads.³

In other countries, networks may be more stable, but slower than consumers would like.

**DOWNLOADING ISSUES ARE BLAMED ON MULTIPLE SOURCES**

Who do you blame when you have trouble downloading? 42.1 percent said they blame their ISP when they have difficulty downloading software. 32.6 percent blame the software vendor. 28.5 percent don’t blame anyone, while 25.1 percent blame the device.

![Figure 103: When you have trouble downloading, who do you hold responsible? (Please select all that apply)](chart.png)

Responses varied by country. In India, Germany, UK, and US, people hold their ISP responsible more often than other options. In France and Korea, “no one” was chosen most often. In Japan, people chose the software vendor most often.

CONCLUSIONS

TO PROVIDE CONSUMERS WITH AN OPTIMIZED CONTENT EXPERIENCE THAT GENERATES MAXIMUM RETURNS, CONTENT DISTRIBUTORS MUST CONSIDER THE FOLLOWING GUIDELINES.

MAKE IT EASY FOR CONSUMERS TO SAMPLE YOUR CONTENT
Consumers are reluctant to pay for content and will seek free options when available. Content distributors need to implement a business model that will create demand and monetize content. To demonstrate the value to consumers, allow them to access at least some portion of your content for no charge so they can sample it and determine their interest.

Allowing consumers to access content for free for a limited time makes it easy for potential customers to review your offerings and measure their interest without a financial commitment. Providing free access to a limited number of items each month before requiring payment to access additional items will also generate interest. Making a portion of your content available for free and charging for premium content provides an opportunity to convert users to paid subscriptions. Finally, advertising supported business models can also be effective if traffic is high enough to generate the required ad revenue. Whatever business model you choose, it is essential to demonstrate the value of your content to potential customers in order to maximize revenue.

MAKE CONTENT AVAILABLE ON ANY DEVICE
Content is consumed in many ways and on different devices. Smartphones are the primary device for downloading digital content, but PCs are a close second. Some people choose to download content for offline use, but others prefer to stream content or access it online. There is a tremendous benefit for content distributors who implement a workflow that makes it easy for people to access content in a way that is most convenient for them on the device of their choice.

Content should be optimized for different devices and connection speeds. To reach the widest possible audience, apps need to run on all the major mobile platforms such as iOS and Android. Video and streaming content should be created in multiple bit rates so users receive the highest quality experience for the bandwidth available. In addition, video content should be made available in multiple formats such as HLS and MPEG-DASH to ensure compatibility with as many end-user devices as possible. With so many content options available to consumers, be sure content is available on as many devices as possible to capture the highest possible audience.

DEPLOY A CDN WITH INTEGRATED ORIGIN STORAGE TO OPTIMIZE DOWNLOAD EXPERIENCES
New applications and application updates are the most downloaded content globally. Consumers continue to download apps at a faster rate than any other type of digital content. In addition, slow download times are the primary complaint with downloading content. To improve download times for applications, deploy a CDN to cache applications closer to customers. By pre-caching new software releases in the CDN prior to making them publicly available, users everywhere will be assured the fastest possible download experience as soon as the software is publicly released. Other existing software titles should be stored in CDN origin storage that is co-located with the content delivery infrastructure to provide maximum performance. Unlike storing content in traditional cloud storage systems that are separated from the CDN delivering content, when a site visitor requests content that is not already cached, the content will be retrieved from the origin storage that is co-located with the CDN, providing the fastest retrieval and delivery to the user. Make sure you also choose a storage system such as Limelight Origin storage that will also automatically make multiple copies of all the content in your library and store the copies in geographic locations you choose, pre-positioning content close to users to ensure optimal download performance.
APPENDIX – DEMOGRAPHICS

**Figure 104:** How old are you?

- 18-25: 9.8%
- 26-35: 19.0%
- 36-45: 20.9%
- 46-60: 32.1%
- Over 60: 18.1%

**Figure 105:** What is your gender?

- Female: 46.9%
- Male: 53.1%
METHODOLOGY

This survey was fielded by a third-party company with access to consumer panels in France, Germany, India, Japan, Korea, the UK, and the US. 500 responses were collected from each country for a total of 3,500 global responses. Survey responses were collected between February 6-10, 2017.

ABOUT LIMELIGHT NETWORKS

Limelight Networks Inc., (NASDAQ: LLNW), a global leader in digital content delivery, empowers customers to better engage online audiences by enabling them to securely manage and globally deliver digital content, on any device. The company’s award winning Limelight Orchestrate™ platform includes an integrated suite of content delivery technology and services that helps organizations secure digital content, deliver exceptional multi-screen experiences, improve brand awareness, drive revenue, and enhance customer relationships — all while reducing costs. For more information, please visit www.limelight.com, read our blog, follow us on Twitter, Facebook and LinkedIn and be sure to visit Limelight Connect.