itihaasa
Research and Digital

DIGITAL SOCIETY IN INDIA

A STUDY OF AN URBAN CITY, BENGALURU

February 2024

Contents

1. INTRODUCTION

Digital technologies, such as computers, smartphones, mobile apps, AI and Internet-of-Things, have profoundly impacted the way we live, work and learn. Just think of the plethora of digital devices that govern us, and the multitude of digital apps (from eCommerce to telehealth to online education and so on) that we leverage in our lives. The COVID-19 pandemic has only accentuated this trend towards greater digitalisation of governments, businesses and personal lives. All of this has led to the growth of a **Digital Society**.

According to Oxford Reference, the information society (a precursor to the term digital society, and which has been in use since the 1970s) incorporates six different aspects – i) technological, which is about an increased use of information and communication technologies; ii) economic, which focuses on the contribution of information businesses; iii) occupational, which posits that most jobs are informational rather than in manufacturing or agriculture; iv) spatial, with an emphasis on information networks; v) cultural, which stresses the growth of symbols and signs of the information age (TV, Internet etc.); and vi) theory, in which theoretical information/knowledge takes precedence over the practical. [1]

A Digital Society, according to the United Nations Development Programme (UNDP), is "a society in which digital technologies are coiled with the physical and have become completely bound up with everyday life."[2] According to the OECD, a Digital Society "extends further than the Digital Economy (which incorporates all economic activity reliant on, or significantly enhanced by the use of digital inputs) and incorporates digitalised interactions and activities not included in the GDP production boundary, such as the use of free digital platforms (including free public digital platforms)", resulting in additional consumer surplus, through the diffusion of information and knowledge.[3] Stanford researchers have proposed the concept of a digital civil society – "civil society cannot meet its aspirational roles in democracies without a much stronger understanding and adaptation to its dependence on digital data, software, hardware, and their political and economic structures — and the new opportunities and risks that come with these digital dependencies."[4]

Since the advent of its first computer in the mid-1950s, India has seen a spectacular growth of its information / digital society, which has welcomed various / varied sections of its population into its fold. As we articulate in our book, Against All Odds – The IT Story of India – "That online consumer world presented a picture of sharp contrast between the relatively affluent, westernized, largely English-speaking users on the one hand, and the much larger lot of budget conscious users on the other. A new online India emerged, one that was seeking access to blue-collar jobs and agriculture-related information and was hungry for infotainment in Indian languages."[5] What did such a society look like in 2023-24?

2. ABOUT THE SURVEY

We set out to delineate a clearer picture of a digital society in urban India. Accordingly, we conceptualized the India Digital Society Survey, after studying other surveys / indices / studies in this domain.[6] We aimed to understand how people felt about their:

Experiences with digital technologies – activities performed using digital technologies, usage of government / private digital solutions, level and sources of information about digital technologies, and so on.

Beliefs, hopes and concerns about digital technologies – safety, trust, benefits Vs risks assessment, privacy, regulations, impact on jobs, and so on.

We hypothesised that there might be differences depending on the purpose of usage of digital technologies – personal (or leisure), work, or education related; or whether they consumed or created digital content. Demographics could also make a difference, and thus a Digital Society might be experienced differently by different people – across considerations such as their socio-economic classification, gender, educational qualifications, work experience, and so on.

We decided to conduct a survey in Bengaluru. It represents a large city in India. With its thriving economy, Bengaluru accommodates a wide and varied cross-section of the population. It is also considered the IT capital of India and thus houses a large population of IT professionals who are digitally very savvy.

We are thankful to the team at Feedback Insights for partnering with us in conducting this survey.

Methodology and sampling

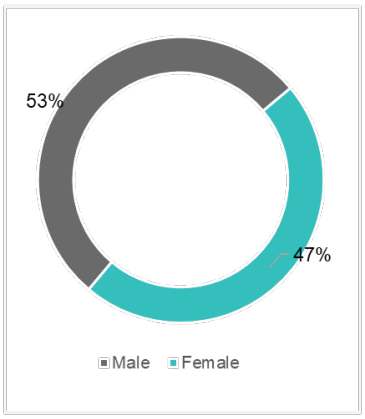
We proposed a primary quantitative household survey and accordingly, we developed a structured closed-ended questionnaire. Surveyors were trained on explaining the questions and the choices in a consistent manner, and the survey was administered in English or Kannada. The respondent to the survey was any adult member of the household. The surveys were mainly conducted face to face. However, in certain cases, the telephone or the web was used to complete the survey.

- **Random sampling of 1640 people** – We conducted a random survey in a cluster sampling method. 80 clusters were identified, with each cluster consisting of 20 household surveys. These 80 starting points were selected from the 198 wards of Bengaluru using a random number generator. Further, within the ward, the starting point was also selected randomly. A skip pattern of 2 households was adopted to avoid bias.
- **Booster sampling of 206 people** – We conducted a booster survey in a purposive sampling method. The respondents were IT professionals working in companies from the following four sectors – IT Services, Global Capability Centres – Captive IT, Global Capability Centres – R&D, and Startups.

A demographic break-up of the respondents is provided below.

Random sampling – 1640 respondents (referred to as "General public" in this report)

Gender



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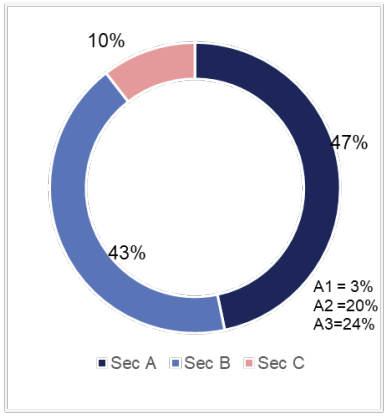
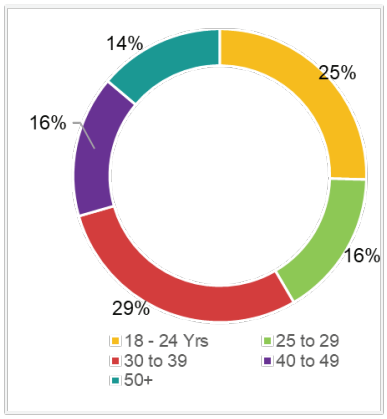


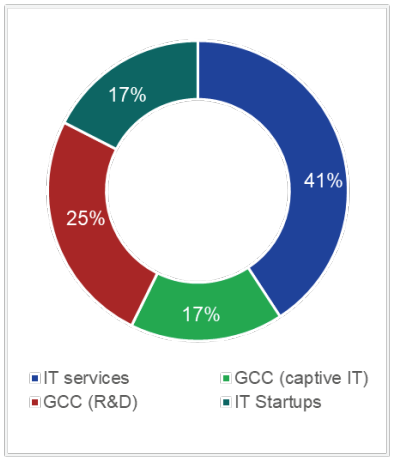
Age



Base: 1640

Booster sampling – 206 respondents (referred to as "IT experts" in this report)

Type of Company



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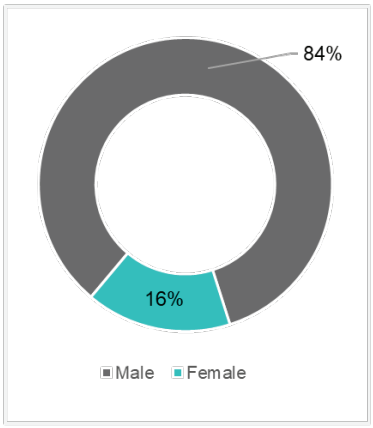
Gender



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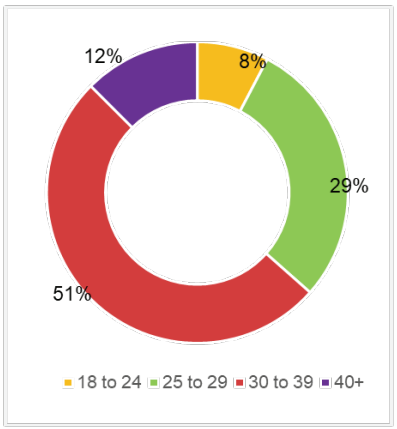
Age



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3. KEY FINDINGS

We present the key findings of our survey, across both the general public and the IT experts in the following sections:

1. Digital infrastructure
2. Digital behaviour
3. Digital usage for personal, work, and education purposes
4. Usage of government and private sector digital platforms / solutions
5. Digital hopes, beliefs, and concerns
6. Segmentation based on digital behaviour

3.1. Digital infrastructure

We wanted to understand the state of digital infrastructure, in terms of availability and usage of smartphones, laptops, tablets and feature phones; and the speed and reliability of the Internet connection in a household. Refer to Figures 1 and 2.

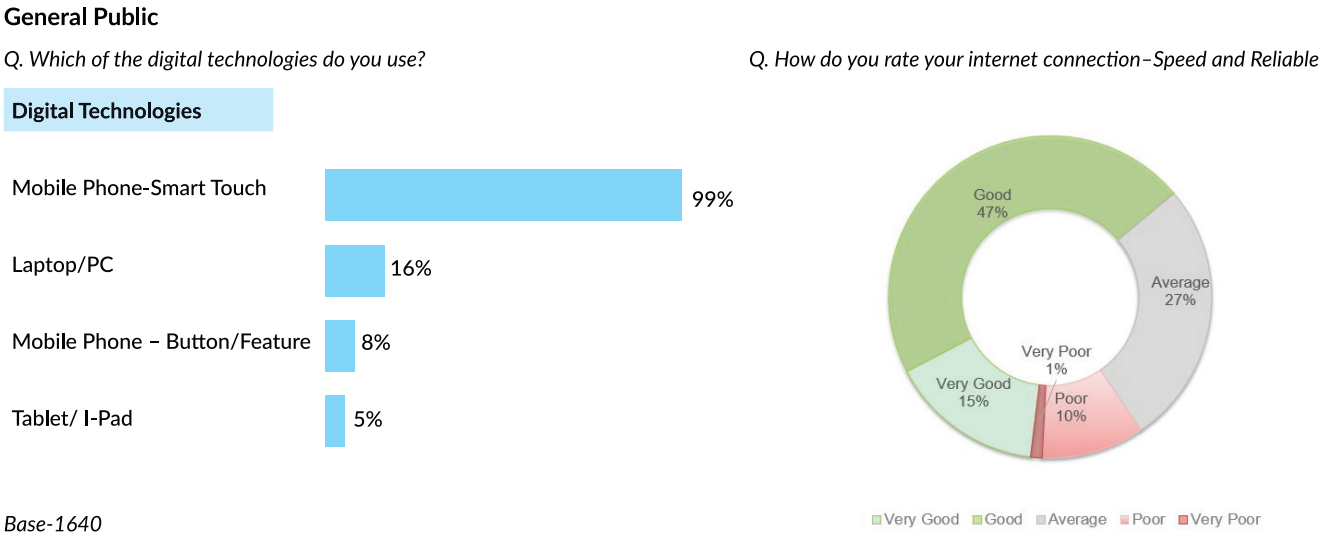


Figure 1: State of digital infrastructure (general public)

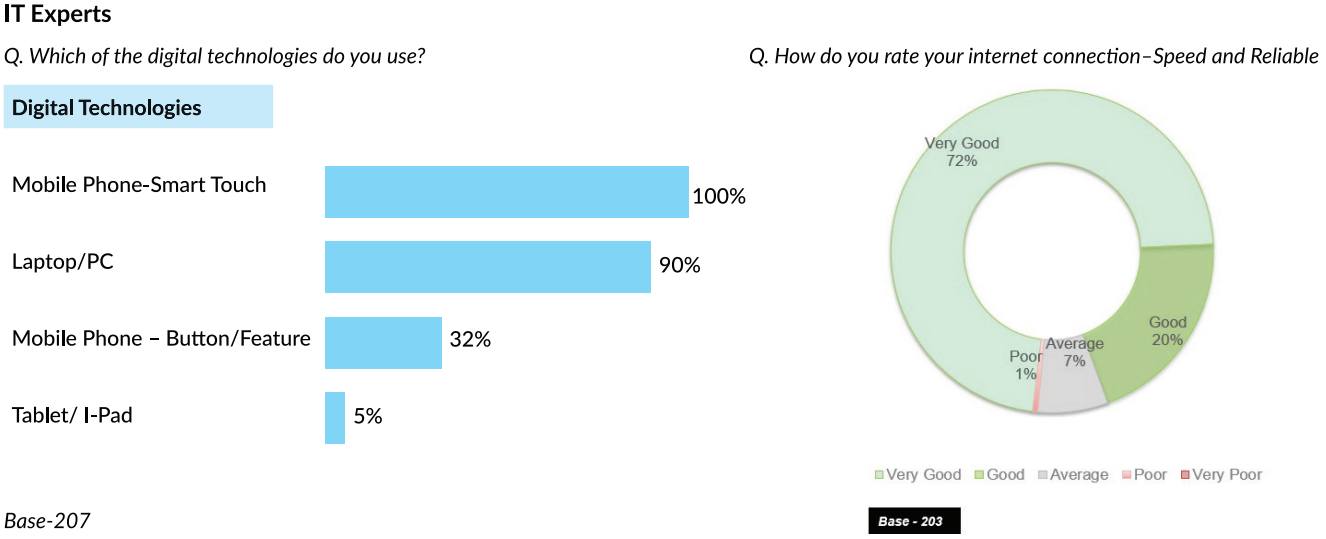


Figure 2: State of digital infrastructure (IT experts)

There is a near universal penetration of smart phones (99% in general public and 100% in IT experts). The speed and reliability of the Internet too presents a positive picture – 62% of the general public state it is very good or good, while it is true for 92% of the IT experts. Speed and reliability of the Internet connection is better among the young, educated, and those with more affordability.

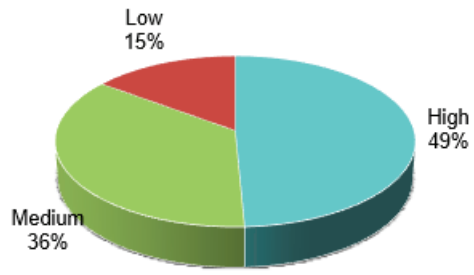
- Laptops and PCs were largely owned by men, and SEC A with 69% ownership in SEC A1.
- 1/3rd of respondents in SEC A category used a laptop.
- Feature phones usage was most among those with no formal education (44%) and SEC C (15%)
- Among those who complained that their Internet speed and reliability was poor, only 4% of those were in SEC A and 4% were graduates / post graduates, whereas 37% of those were in SEC C and 33% of those had studied less than Class 9.

3.2. Digital behaviour

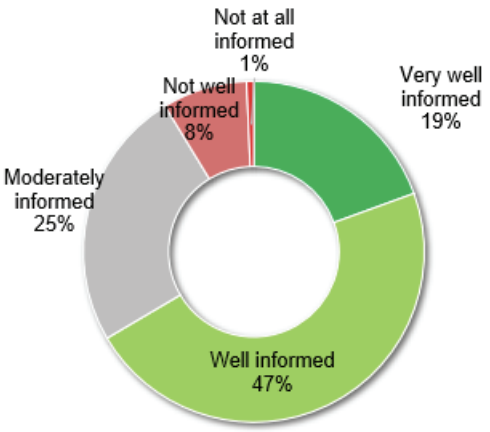
We studied people's digital behaviour – in terms of the extent to which they experience digital technologies in everyday life, how well informed and trained they are, and from where they learn about these technologies. Refer to Figures 3, 4, 5 and 6.

General Public

Q. To what extent do you experience digital technologies in your everyday life?



Q. How well informed do you feel about digital technologies

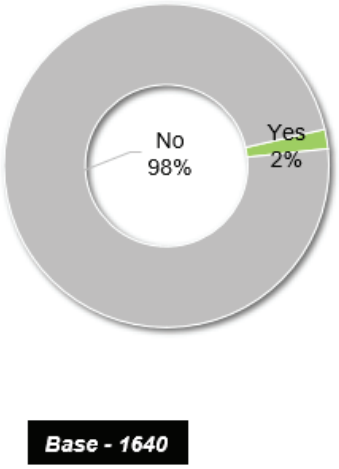


Base - 1640

Figure 3: State of digital behaviour – 1 (general public)

General Public

Q. Have you received / undergone some form of training in the last 12 months on enhancing your digital skills



Base - 1640

Q. Sources of information from which you most often learn about the latest digital technologies

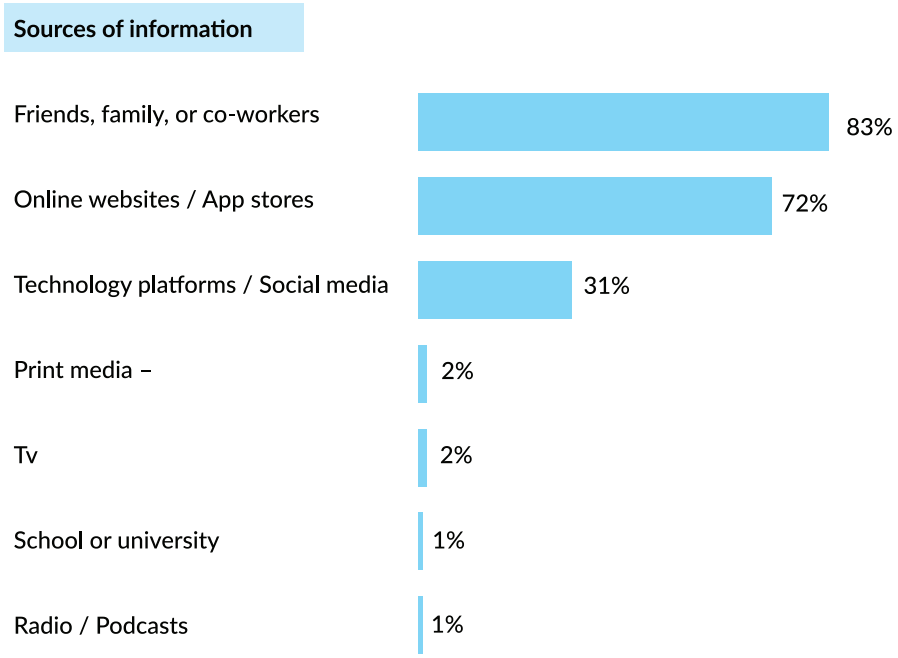
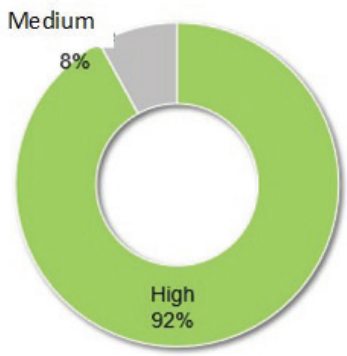


Figure 4: State of digital behaviour – 2 (general public)

IT Experts

Q. To what extent do you experience digital technologies in your everyday life?



Base - 206

Q. How well informed do you feel about digital technologies

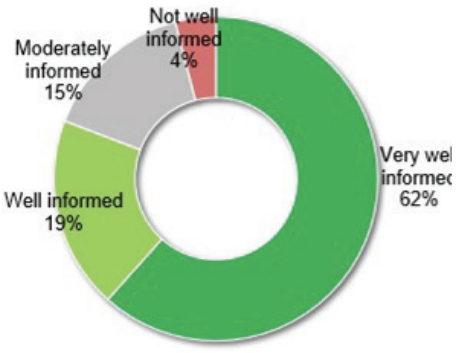


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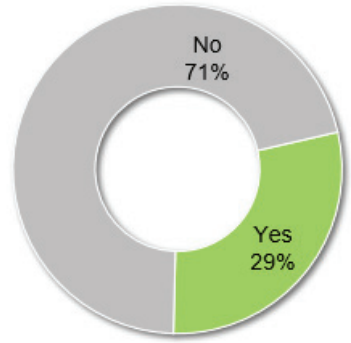
Figure 5: State of digital behaviour – 1 (IT experts)

IT Experts

Q. Have you received / undergone some form of training in the last 12 months on enhancing your digital skills



Base - 203

Q. Sources of information from which you most often learn about the latest digital technologies

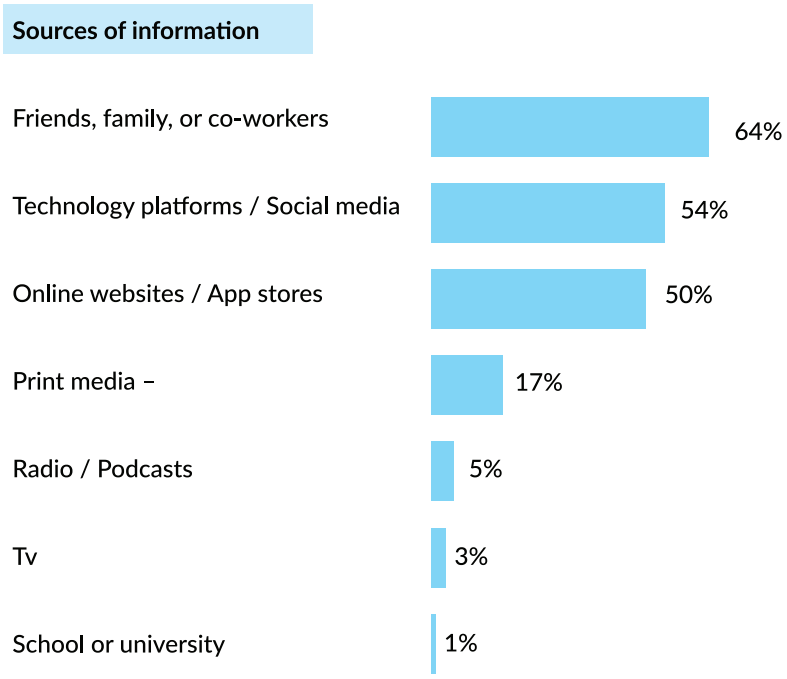


Figure 6: State of digital behaviour – 2 (IT experts)

Digital experience: As expected, digital technologies touch the lives of people in a significant way – 85% of the general public and 100% of the IT experts experience digital technologies everyday to a high or medium extent.

Digital awareness: Among the general public, the millennials generally feel well informed, and experience technology to a high extent if they can afford it. The width of digital experience is limited among the lower SECs, and those above 40, while men marginally are more confident than women.

- Adoption increases with affordability (23% SEC A – very high against 3% SEC C)
- Employment status has no major bearing on digital adoption
- Intensity of usage increases with education
- Men (55% high) experience digital more than women (42% high) across SEC
- The higher the SEC, the better informed they feel
- Men feel more informed about digital technologies than women do
- As the age increases, they feel that they are not abreast of latest technologies
- Highest training exposure among the most educated at 7%, as compared to an overall 2%. It appears that the general public do not consider a need for an organised learning approach towards digital skills.

Among the IT experts, while all of them feel they are very well or well informed about digital technologies,

those working in IT services (86%) and GCC – captive IT (86%) feel more so as compared to those working in GCC – R&D (78%) and Startups (72%). Even among the IT experts, gender seems to make a difference when it comes to the perception of being very well or well informed – 83% of males Vs 69% of females. The contrast is even more striking when we compare their feeling of being very well informed – 67% of males Vs 31% of females. We may need to study this phenomenon with more data points.

Digital training: Not surprisingly, the IT experts (29%) receive significantly more training on digital technologies than the general public (2%). The professionals in IT startups (36%) relatively score better on this front as compared to the other IT experts. But we are surprised to see that 71% of the IT experts say that they did not undergo specific training in the last year to sharpen their digital skills. We need to study this aspect further, but we believe that one reason this score is low may be because more IT experts learn on the job and do not have to take up specific or separate training on digital technologies. There is a sharp gender divide when it comes to digital skills training – 32% of males Vs 18% of females.

Sources of digital information: Among the general public, people rely most on word of mouth, from friends, family, or co-workers, for information about digital technologies, more so as we move from SEC A (79%) to SEC C (93%). For people in SEC C, online websites / app stores (82%) and word-of-mouth (93%) are the only significant sources of information. Social media/tech platforms like WhatsApp, Facebook and X (formerly Twitter) are more significant sources of information among SEC A (44% for SEC A Vs 5% for SEC C), men (36% of males Vs 26% of females), those less than 30 years (37% for those aged 18 to 29 Vs 19% for those aged 50+), and the more educated (57% for graduate / PG – professional Vs 8% for those who studies less than Class 9). Some interesting gender patterns too emerge – women rely more on people (87% of females Vs 80% of males), while more men rely on technology platforms (36% of males Vs 26% of females).

Even among the IT experts, word of mouth from friends/family/co-workers (64% for IT experts Vs 83% for general public) and tech platforms / social media (54% for IT experts Vs 31% for general public) are the most valuable sources of information on digital technologies. The older, aged 30-39 and 40+ (around 70%), rely more on word of mouth whereas the younger, aged 18 to 24, rely on social media (69%). IT startups (78%) rely much more on word of mouth as compared to the overall IT experts (64%).

Although print media such as books and magazines, newspapers, journals and radio / podcasts come lower down the order of sources of information, the female IT experts consume more of print media (28% of females Vs 17% overall IT experts and 2% general public) and podcasts (9% of females Vs 5% of overall IT experts and 1% of general public). Schools or universities rank as the lowest source of information on digital technologies among all respondents (1%).

3.3. Digital usage for personal, work, and education purposes

We studied people's usage of digital technologies across two dimensions – competence and purpose. Refer to Figure 7.

	Purpose		
Competence areas	**Personal**	**Work**	**Education**
Use/Consume digital content	▸ call, chat with friends on phone / WA etc. ▸ browse and comment on Facebook etc. ▸ watch videos for entertainment ▸ buying on e-commerce sites	▸ browse website for work ▸ use WhatsApp / emails etc. for work ▸ pay bills online ▸ use portals / applications at work	▸ watch videos for education ▸ attend online classes
Create & share digital content	▸ upload your photo (not just forwarding other's photos) ▸ create & share a video	▸ write & share a blog post ▸ collaborate and create new work products ▸ vendor creating / uploading content on e-commerce sites	▸ create a learning video ▸ create and offer a digital learning course

Figure 7: Digital usage – Competence and Purpose

Refer to Figures 8 and 9 for an analysis of digital usage for personal purposes for the general public and the IT experts.

General public – Personal

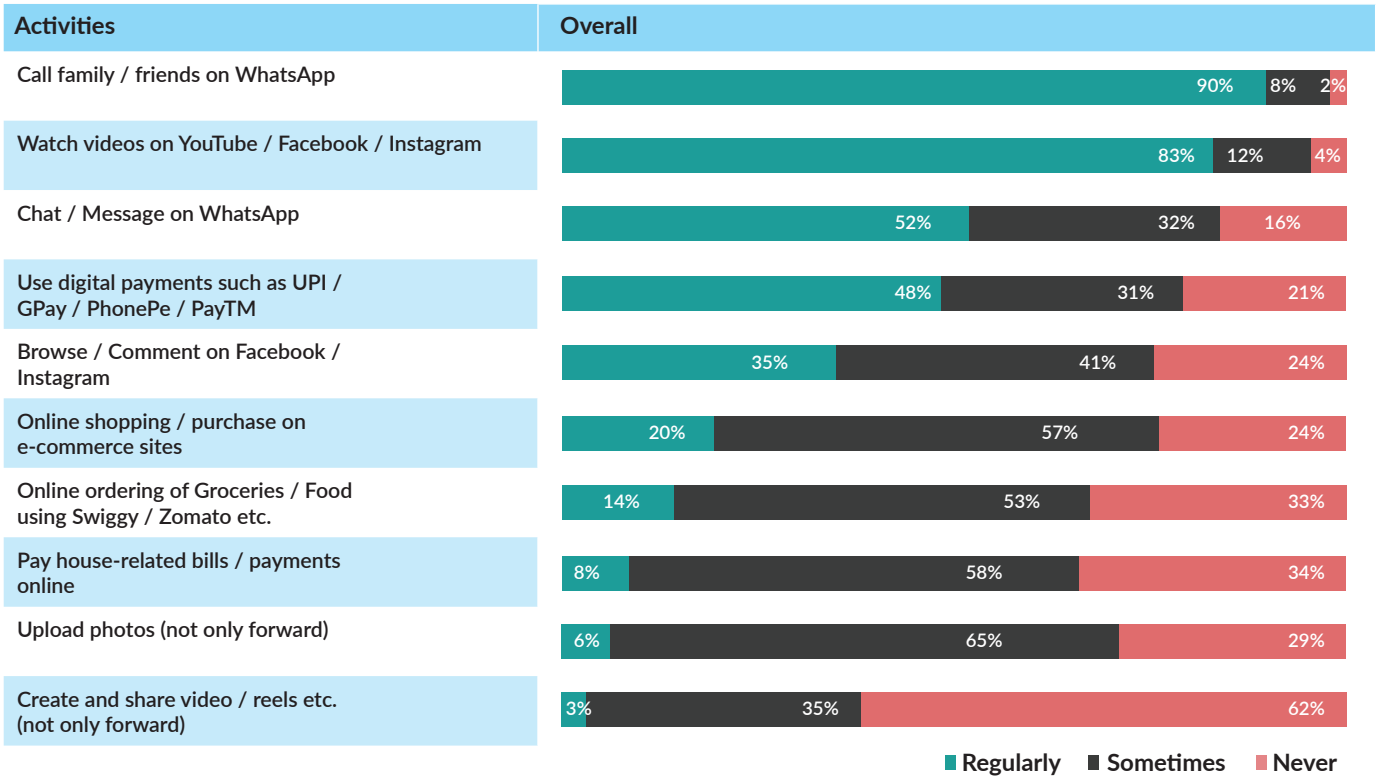


Figure 8: Usage of technology – Personal (General public)

IT Experts – Personal

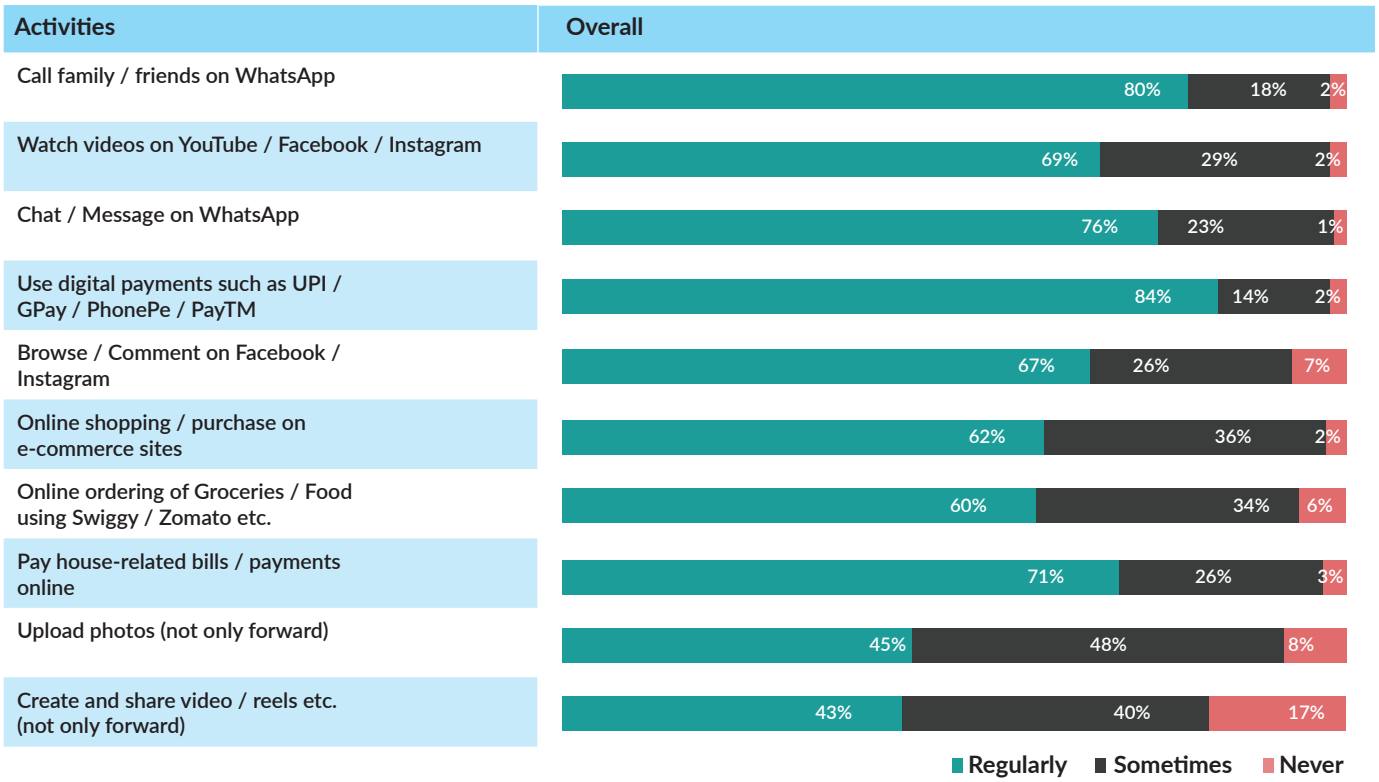


Figure 9: Usage of technology – Personal (IT experts)

Among the general public, the top two usages of digital technologies for personal purposes include calling friends / family on WhatsApp (90%) and watching videos on social media (83%). Activities like messaging on WhatsApp (52%) and using digital payments – UPI-based payment apps (48%) come a middling second. The bottom two usages of digital technologies include "digital creation" activities – upload photos (and not just forward) on digital platforms (6%), and create and share videos (3%).

We analysed differences across different demographic segments which are significantly different (at least 10% lower or higher than the corresponding overall average for the general public) for each of the personal digital-usage scenarios.

- Those aged 50-59 score significantly lower on almost all aspects (lower digital usage)
- Those who are educated with graduate / PG – professional degrees vary significantly (towards greater digital usage) on almost all aspects
- Those aged between 18-24 and 25-29 message significantly more on WhatsApp, and browse/ comment on Facebook
- Those aged 18-24 do significantly more amount of online shopping / purchasing on e-commerce sites, online ordering of groceries / food, and uploading photos on digital platforms
- There is a sharp gender difference in terms of usage of digital payment UPI-based apps – males (58%) Vs females (38%)

Among the IT experts, the usage of digital technologies for personal purposes is expectedly high across the spectrum of activities – with online payments (84%), call family on WhatsApp (80%), and message on

WhatsApp (76%) forming the top three. They participate in "digital creation" activities, with middling scores in them – upload photos (and not just forward) on digital platforms (45%) and create and share videos (43%).

Refer to Figures 10 and 11 for an analysis of digital usage for work purposes for the general public and the IT experts.

General public – Work

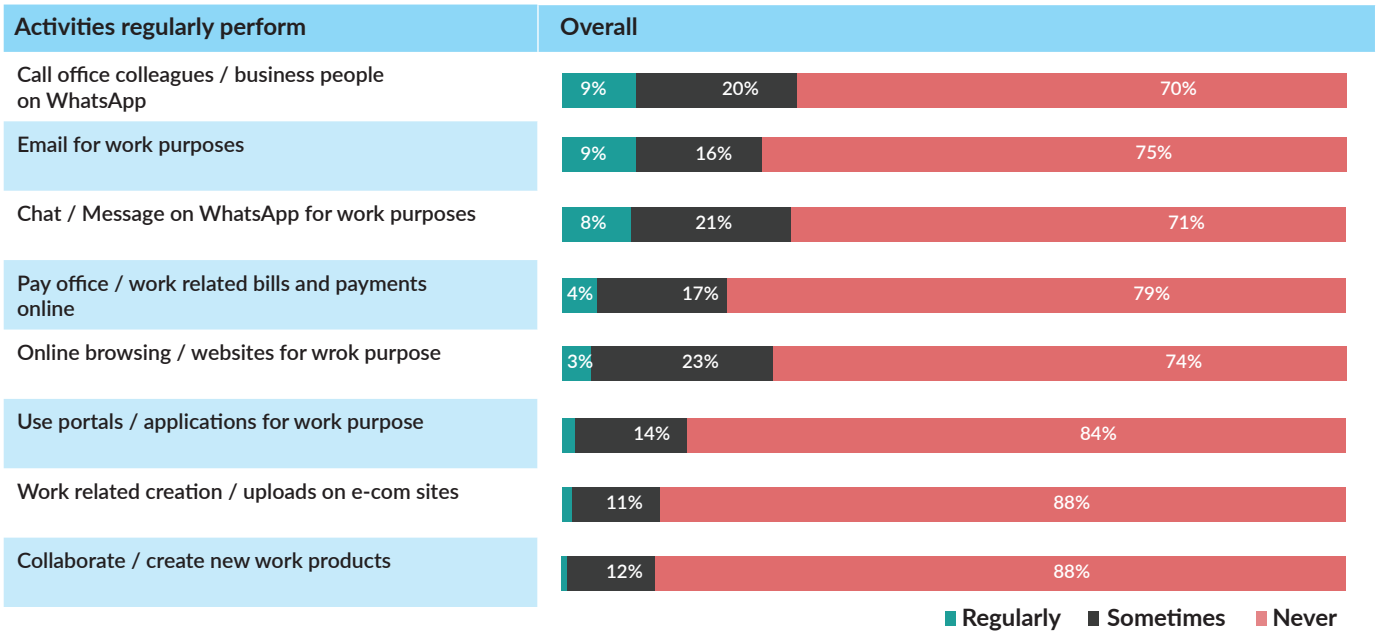


Figure 10: Usage of technology – Work (General public)

IT Experts – Work

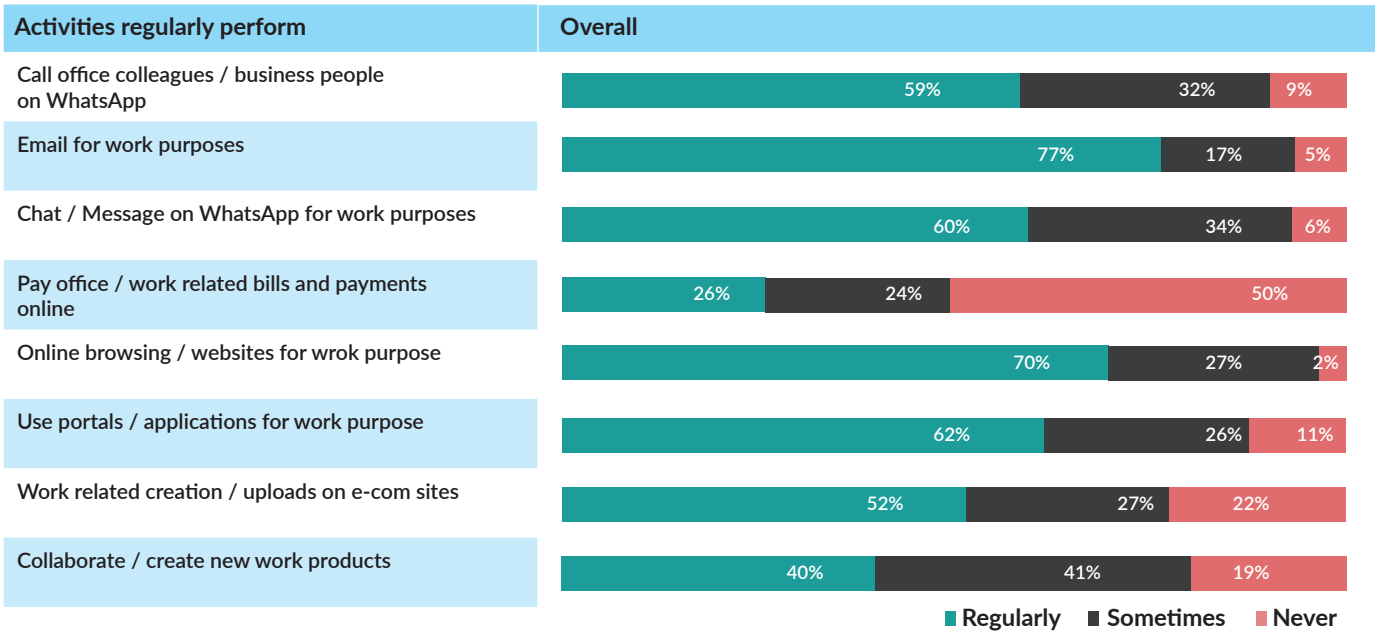


Figure 11: Usage of technology – Work (IT experts)

The emphasis on usage of digital technology for work among the general public is very muted, as only 50% of the respondents have a full-time job. Calling or messaging colleagues using WhatsApp and emailing for work form the top two activities at around only 9% adoption.

We analysed differences across different demographic segments which are significantly different (at least 10% lower or higher than the corresponding overall average for the general public) for each of the work digital-usage scenarios.

- Across almost all activities relate to simple usage of digital technologies for work (i.e., those activities not involving "digital creation"), the general public that have a full-time job show a significant reduction in answering "Never"
- Of the total respondents, 9% identify their work as business and around 13% are salaried. These two sub-categories of people show a marked difference in their adoption of digital technologies for work as compared to the rest of the general public. And this difference holds true even for "digital creation" activities.

The IT experts, as expected, leverage digital technologies for work purposes – emailing (77%) and online browsing (70%) for work constituted the top two activities. The usage of WhatsApp for work purposes is significantly lower than its usage for personal purposes. "Digital creation" activities for work come in lower even among the IT experts, with around 20% claiming they have never done those. The activity, pay office / work related bills and payments online, had the lowest adoption (50% never) – we believe that this might be because the IT experts we interviewed are not from the finance department which typically handle such payments.

Refer to Figures 12 and 13 for an analysis of digital usage for education purposes for the general public and the IT experts.

General public – Education

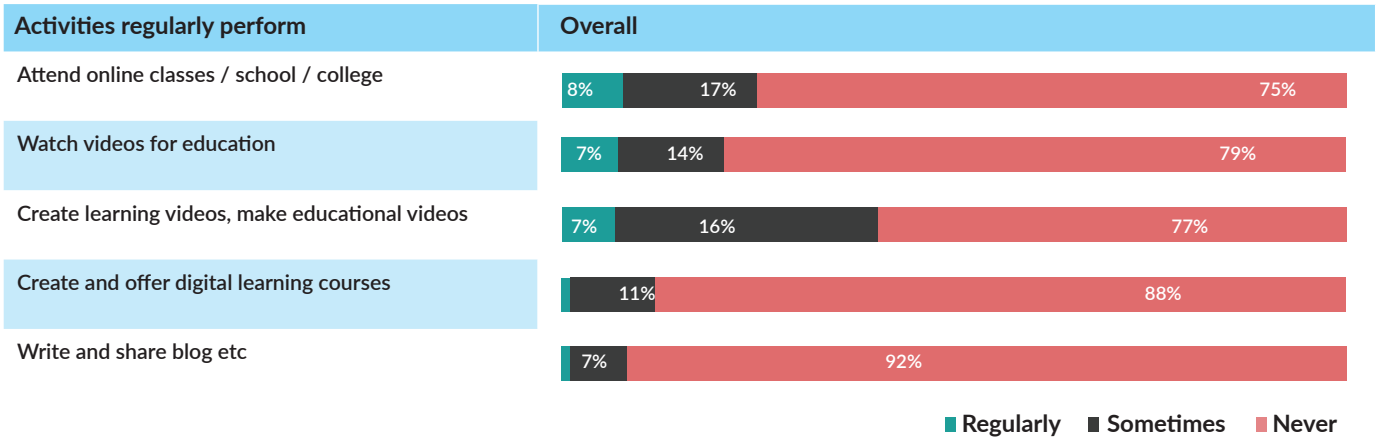


Figure 12: Usage of technology – Education (General public)

IT Experts – Education

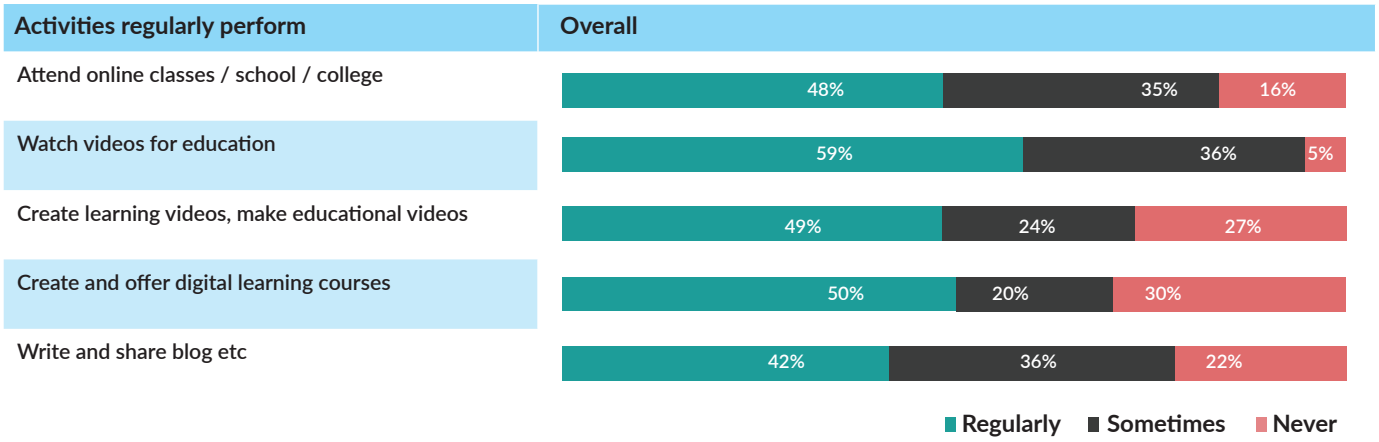


Figure 13: Usage of technology – Education (IT experts)

We analysed differences across different demographic segments which are significantly different (at least 10% lower or higher than the corresponding overall average for the general public) for each of the work digital-usage scenarios – those aged 18-24 score higher on adoption for education, those aged 50-59+ score lower than the general public average, and those with a college degree score higher.

Among the IT experts, watching videos for education is the top scorer (59%). They also show a propensity to creating learning content and offering digital educational courses (~50%).

3.4. Usage of government and private sector digital platforms / solutions

We studied people's usage of digital platforms / solutions from the government sector. Refer to Figure 14. This involved a named-recall of usage of various government platforms / solutions.

Q. We will read out some government digital technologies / platforms. Please tell me if you have used online in last 1 year

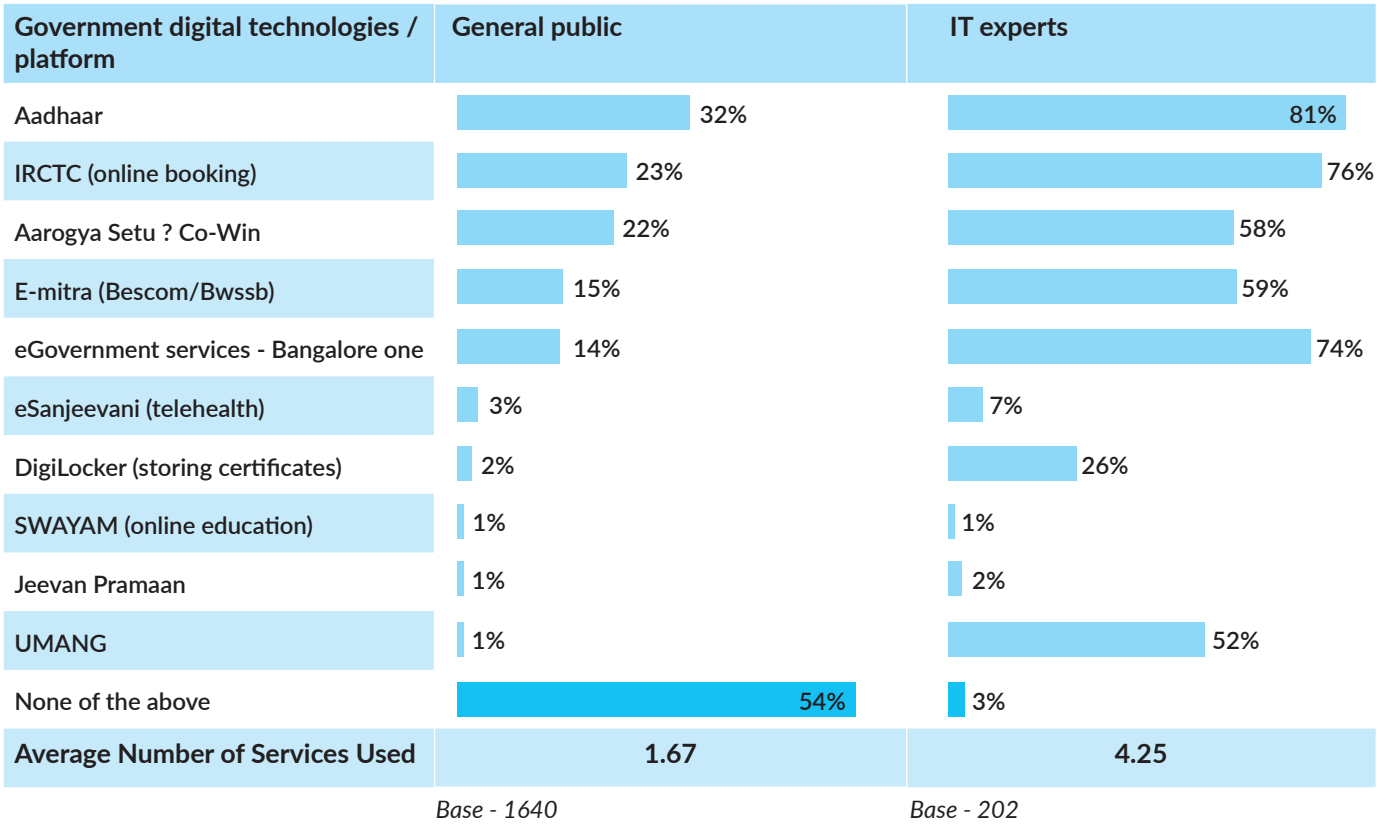


Figure 14: Usage of digital platform / solution – Government (General public and IT experts)

Among the general public, the top three government platforms used are Aadhaar (32%), IRCTC – railway ticketing (23%), and Aarogya Setu / CoWIN- healthcare apps (22%). They typically use between one and two platforms / solutions. But over half of them (54%) have never used any of these government platforms / solutions.

- 71% of SEC A1 use IRCTC, but only 13% of SEC B and 8% of SEC C do
- E-mitra (government utility payment platform) usage highest among SEC C (19%)
- Those who are in business or are salaried use platforms like Aadhaar, Aarogya Setu and IRCTC significantly more than the general public average (over 20% to 40% more)

The IT experts consume government platforms / solutions significantly more (2.5 times more) than the general public – use between 4 and 5 solutions on an average. Further 97% of them have used a government solution at least once in the last year. Aadhaar (81%), IRCTC (76%) and Bangalore One – eGovernment services (74%) are the top three solutions. There is a much higher adoption of UMANG among the IT experts as compared to the general public – one conjecture is that UMANG was popular among the techies during the times of COVID-19 vaccination as an alternate entry point to booking vaccination slots.

We studied people's usage of digital platforms / solutions from the private sector. Refer to Figure 15. We asked at a category level and provided named-recall of popular private platforms / solutions. For instance, video & entertainment (YouTube, Netflix, Hotstar, MX Player, JioSaavn, etc.)

Q. Which of the following categories of digital technologies / platform (from private sector) have you used in last 1 year

Private digital technologies / platform	General public	IT experts
Video & Entertainment	95%	79%
Payments	70%	87%
Social media	70%	83%
eCommerce	68%	92%
eMail	44%	92%
Gaming related	13%	62%
Telehealth	3%	64%
Others	1%	
None of the above	4%	1%
Base	*1639*	*204*
Average Number of Services Used	**3.67**	**5.5**

Figure 15: Usage of digital platform / solution – Private (General public and IT experts)

The general public uses between three and four private platforms / applications. The most popular category is video & entertainment (95%). Next come categories such as payments (70%), social media (70%) and eCommerce (68%). We analysed differences across different demographic segments which are significantly different (at least 10% lower or higher than the corresponding overall average for the general public) for each of the personal platform's category.

- The younger people, those aged 18-24 and 25-29, consume more of categories such as eCommerce, eMail, payments and social media (around 10-15% points more than average)
- SEC A consume more of categories such as eCommerce, eMail, payments and social media (around 15% points more than average)
- SEC C and those aged 50-59+ consume lesser of almost all categories except for video & entertainment

The IT experts use between five and six private four private platforms / applications, with eCommerce (92%) and eMail (92%) being the top two categories. IT experts seem to have embraced telehealth applications (over 20 times), and gaming (nearly 5 times) much more than the general public. We do not see such a wide disparity in the adoption of other categories such as eCommerce or digital payments.

3.5. Digital hopes, beliefs, and concerns

We studied general public's hopes, beliefs and concerns regarding digital technologies. The dimensions include:

Trust	I believe that digital technologies are safe and can be trusted
Trust and Privacy	I am so concerned my data collected by apps may be misused that I review or want to review my data and privacy settings in the digital apps/ websites that I use
Privacy	I am not at all worried about my digital privacy as long as the apps are free to use (YouTube, WhatsApp, and others)
AI benefits Vs drawbacks	Products and services using AI have more benefits than drawbacks
Risks	I believe that digital technologies are very poorly assessed for risks before they are released for large scale use
Equity	I favour digital technologies because they ensure that government services are accessible to all citizens without discrimination
Regulations	I believe that we need stronger Government regulations to control digital technologies and protect citizen rights
Risks	I am worried that fake viral news on social media will only increase and create more division between social groups
AI benefits Vs drawbacks	I believe that AI and digital technologies used for work automation will overall eliminate more jobs than create them
Risks	I fear being left behind in the world because I am not adequately skilled on digital technologies

Refer to Figure 16 for the hopes, beliefs and concerns regarding digital technologies held by the general public.

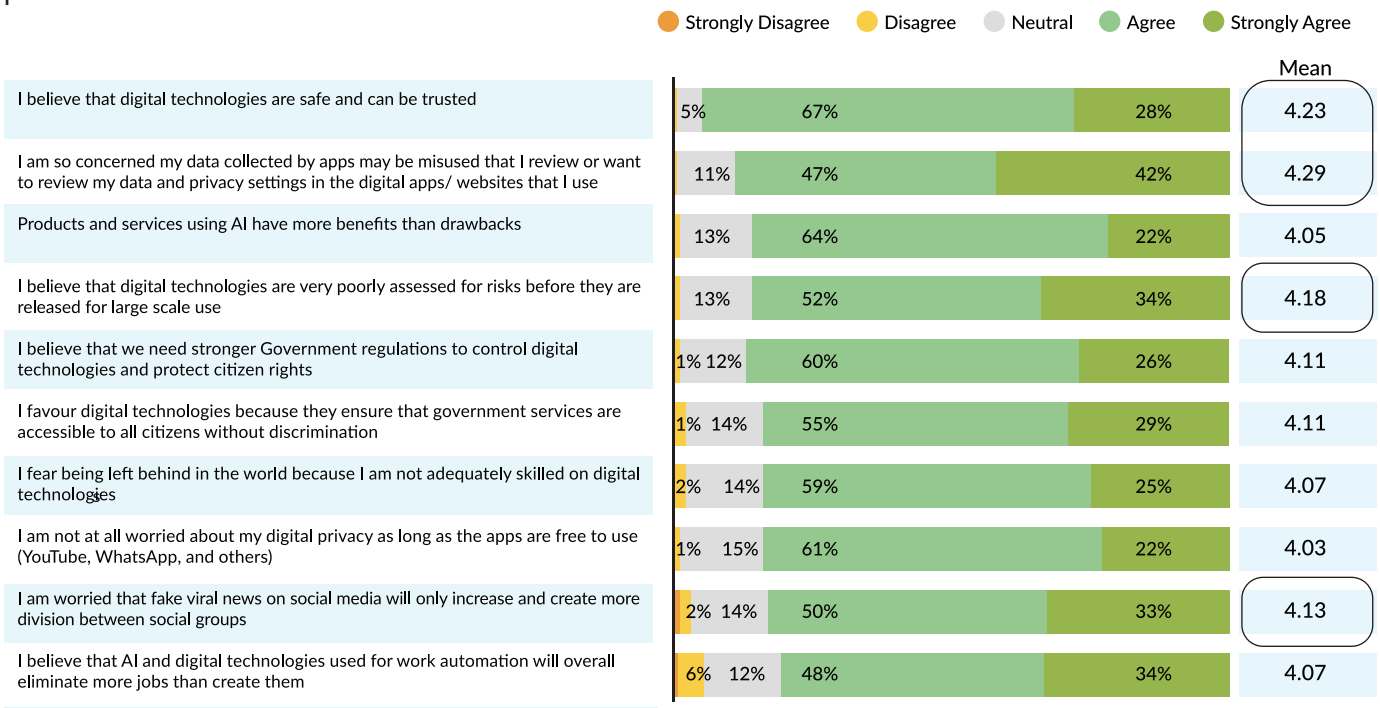


Figure 16: Hopes, beliefs and concerns held by the general public

The general public believe that that digital technologies are safe and can be trusted (95% strongly agree or agree, with an average of 4.23). They are concerned that the data collected by apps may be misused and they would like to review their data and privacy settings in the digital apps / websites that they use (89% strongly agree or agree, with an average of 4.29). This is a sophisticated belief to have and may be a result of an exposure to news and social media that highlight the misuse of data, and then spreading among the public by word of mouth. The general public are also concerned about risk assessments of digital technologies (86% strongly agree or agree, with an average of 4.18) that fake viral news will create more divisions among social groups (83% strongly agree or agree, with an average of 4.13). This seems to reflect the general belief of citizens and governments worldwide. The general public are concerned about AI eliminating jobs (81% strongly agree or agree).

- The graduates / post-graduates with professional degrees seem to be less worried about digital technologies as compared to the general public – on dimensions such as risk assessment of digital technologies, dangers of fake news, AI eliminating jobs, and the fear of being left behind
- Those in business do not feel a need for stronger government regulations. They, like the public with professional degrees, fear less about being left behind
- The positive feeling towards technology across all dimensions decreases as the age increases
- The public in SEC A1 feel positive about digital technologies on all dimensions as compared to the general public.

Refer to Figure 17 for the hopes, beliefs and concerns regarding digital technologies held by the IT experts.

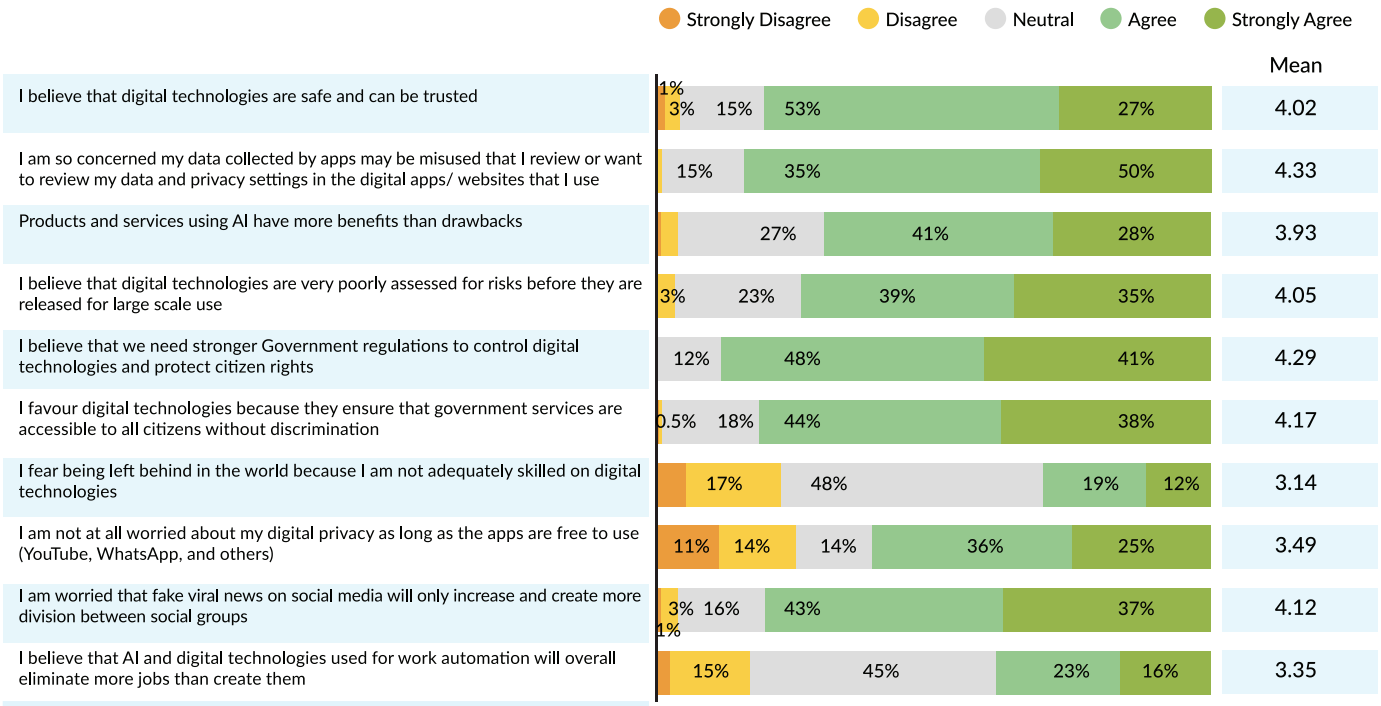


Figure 17: Hopes, beliefs and concerns held by the IT experts

The IT experts are also concerned that the data collected by apps may be misused and they would like to review my data and privacy settings in the digital apps / websites that they use (84% strongly agree or agree, with

an average of 4.33). They seem to favor Government regulation to control digital technologies and protect citizen rights (89% strongly agree or agree, with an average of 4.29). This may be an outcome of an awareness of the potential abuse of AI / generative AI. Since the IT experts seem to consume more Government services digitally, they believe that digital Government services provide access to all citizens without discrimination 89% strongly agree or agree, with an average of 4.29). They are neutral or not concerned about AI eliminating jobs (45% neutral, with an average of 3.35).

There are differences within the four categories of IT experts (on a relative scoring basis). For instance,

- Those working in GCC – R&D least believe that digital technologies are safe and can be trusted, and believe that they help in achieving greater equity of access
- Those in startups are more concerned about data misuse and digital privacy
- Those in startups and GCC – IT services feel AI brings more benefits than drawbacks, and that digital technologies are poorly assessed for risks before being released into the market
- While those working in GCCs (IT services and R&D) want greater government regulations, those in startups do not favour it
- While those in startups are the most inclined to believe that AI will eliminate jobs, those in IT services companies are the least inclined to such a view
- Those in GCCs (IT services and R&D) fear more about being left behind than those in startups and IT services companies.

A surprising aspect of the survey has been the differences between the general public and the IT experts with their hopes, beliefs and concerns regarding digital technologies. See Figure 18 for a comparison of average scores between the general public and IT experts on their hopes, beliefs and concerns regarding digital technologies.

	General Public	IT experts
I believe that digital technologies are safe and can be trusted	4.23	4.02
I am so concerned my data collected by apps may be misused that I review or want to review my data and privacy settings in the digital apps/ websites that I use	4.29	4.33
Products and services using AI have more benefits than drawbacks	4.05	3.93
I believe that digital technologies are very poorly assessed for risks before they are released for large scale use	4.18	4.05
I believe that we need stronger Government regulations to control digital technologies and protect citizen rights	4.11	4.29
I favour digital technologies because they ensure that government services are accessible to all citizens without discrimination	4.11	4.17
I fear being left behind in the world because I am not adequately skilled on digital technologies	4.07	3.14
I am not at all worried about my digital privacy as long as the apps are free to use (YouTube, WhatsApp, and others)	4.03	3.49
I am worried that fake viral news on social media will only increase and create more division between social groups	4.13	4.12
I believe that AI and digital technologies used for work automation will overall eliminate more jobs than create them	4.07	3.35

Figure 18: Comparison of the general public and IT experts on their hopes, beliefs and concerns regarding digital technologies

The general public trusts digital technologies more than the IT experts, and that AI provides more benefits than drawbacks to products / services. They are less worried about digital privacy as long as the apps are free to use. However, they do believe that AI and digital technologies will eliminate more jobs and have a greater fear of technological obsolescence (fear of being left behind).

The IT experts are more cautious – they trust digital technologies lesser, and are less sanguine about AI's benefits. They believe lesser that technologies need to be assessed for risk before release – probably because they are the ones responsible for such digital technologies in the first place! But they want more of government regulations to ensure citizen safety, a trend that we are now increasingly seeing played out in the world with respect to generative AI. The IT experts are much lesser worried about being skilled in digital technologies, and in AI eliminating more jobs than creating them.

Next, we determined how confident people felt about using digital technologies, and how they felt about the impact on their wellbeing / quality of their life. See Figures 19 and 20.

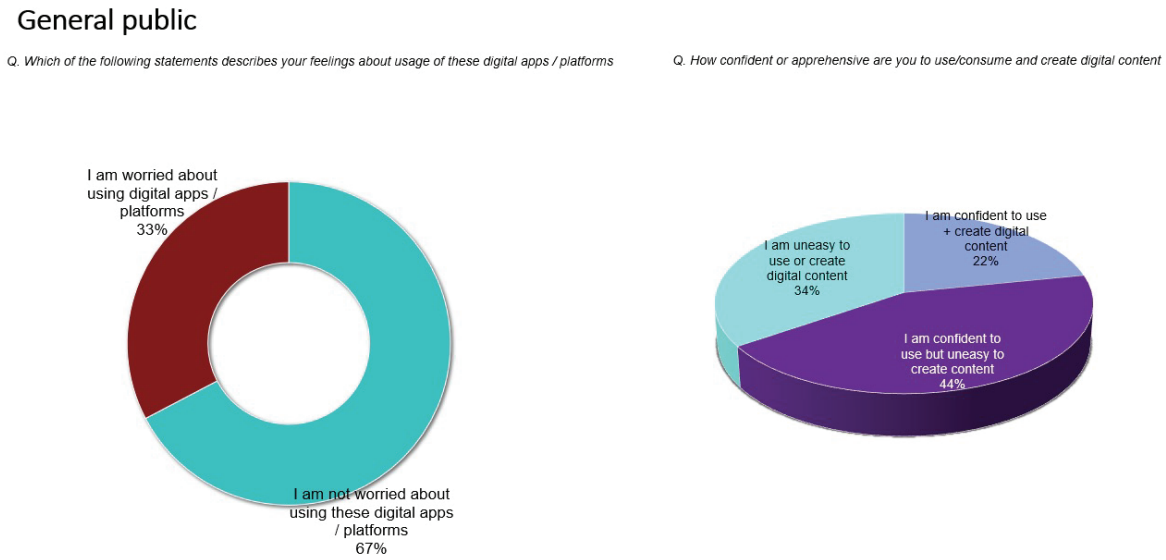


Figure 19: Feelings towards usage of digital platform / solution – General public

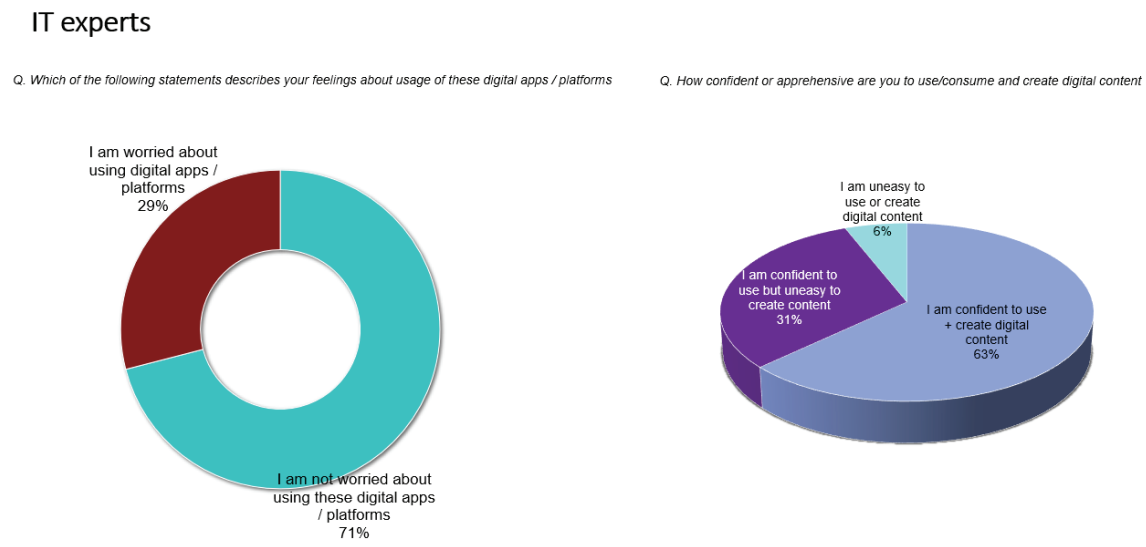


Figure 20: Feelings towards usage of digital platform / solution – IT experts

While the general public and the IT experts seem similar in their views when asked about their worries about usage of digital technologies at the highest level (67% Vs 71% not worried), their perspectives seem different when we drill down into their concern about consuming and creating digital content. 63% of IT experts are confident about both using and creating digital content whereas only 22% of the general public are similarly confident. And in the general public, 34% are uneasy about both using and creating digital content, while 44% are confident about using but uneasy about creating digital content. Thus, user content on digital media is more from IT experts than general public.

Among the general public,

- The younger, aged 18-24 and 25-29, are less worried about using digital apps (25% worried), while those aged 50-59+ are more worried (49%)
- Those who graduated with a professional degree are similarly worried about using digital apps (49% worried). Thus, with greater education comes a greater awareness of concerns in using digital apps.
- More females (40%) feel uneasy to use or create digital content than males (30%)
- The younger, aged 18-24 and 25-29, are less uneasy about using or creating digital content (~22% worried), while those aged 40-49 and 50-59+ are more uneasy (46-57%)
- 55% of those in business feel confident to use but uneasy to create, as compared to the general public average of 44%
- SEC A1 is considerably less worried about using digital apps (20% worried), and more confident to use and create digital content (60%), whereas SEC C is considerably more worried (59%), and considerably less confident about using and creating digital content (3%).

We capped this section on beliefs, hopes and concerns with understanding how people felt digital technologies were impacting their wellbeing / quality of their life. We did this by understanding a net-benefit (more advantages than disadvantages) perspective. See Figures 21 and 22.

- 67% of general public and 77% of IT experts believe that digital technologies are positively impacting the quality of their lives. But a Net Promoter Score (Top 2 – Bottom 2 scores) shows a clearer and marked difference – 54% for the general public Vs 73% for the IT experts. Thus, IT experts are much more positively inclined towards digital technologies.
- There are some interesting differences in NPS (general public NPS of 54%, IT experts NPS of 73%)
    - The segments showing higher NPS than average include those aged 18-24 (68%), graduate/PG with professional degrees (79%)
    - The segments showing lower NPS than average include those in business (21%), salaried (15%), SEC A1 (29%) and SEC C (37%)
    - Women IT experts show lower NPS than average (52%)

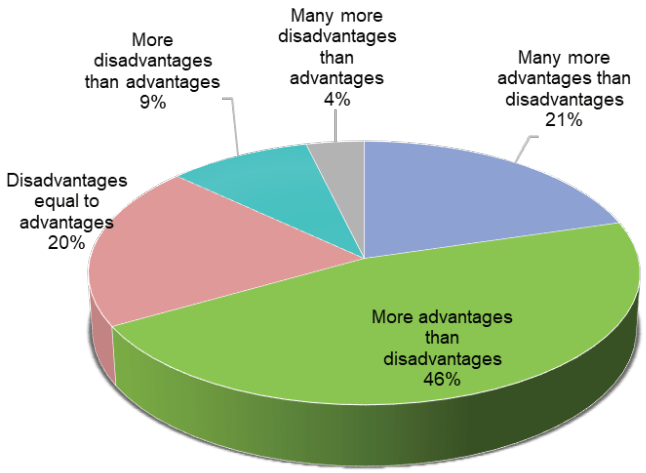


Figure 21: How do the general public believe that digital technologies are impacting the wellbeing / quality of your life

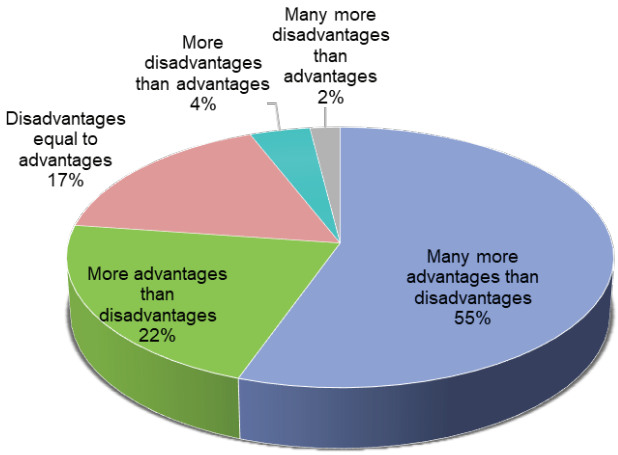


Figure 22: How do the IT experts believe that digital technologies are impacting the wellbeing / quality of your life

3.6. Segmentation based on digital behaviour

We realized that the General Public is not a homogenous group. We identified three segments based on their **intensity of involvement with digital technologies** – derived as a composite of two questions in the survey – (1) extent to which they experience digital technologies in their everyday life and (2) the digital activities they engage in.

The three segments – low intensity, medium intensity, and high intensity digital users are defined in Fig 23.

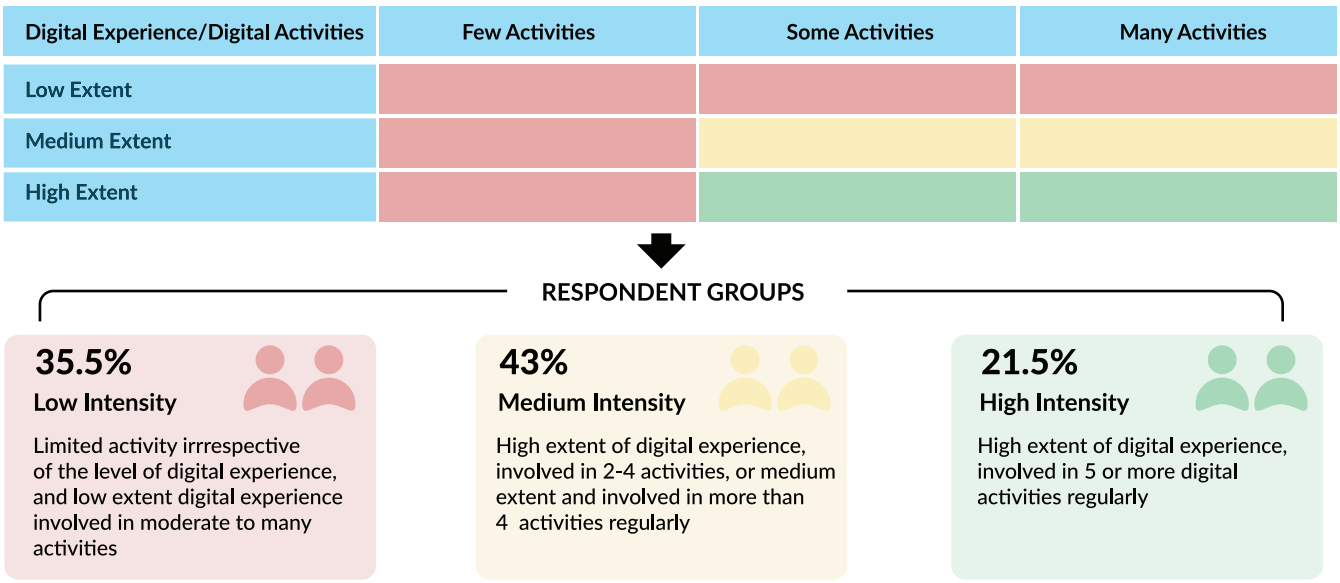


Figure 23: Three segments of the General Public based on the intensity of involvement with digital technologies.

There is a clear digital divide between these three segments based on their gender, age group, age group, education level, employment status, and socio-economic class. See Figure 24.

- Male millennials with a college degree from SEC A and either have full-time employment or are students typically constitute the high intensity users
- Male and female, across all age groups, with high school and some college degrees, students, and from SEC A or B constitute the middle intensity users
- Women over 40 years with less than high school education from SEC B or C and are home-makers or unemployed typically constitute the low intensity users.

	High Intensity Users	Medium Intensity Users	Low Intensity Users
Gender	Male	Male and Female	Female
Age Group	Millennials (18-40 yrs)	Spread across age groups	40-60 yrs
Education Level	College or professional degrees	High School and some college	High school or less
Employment Status	Full time employees and students	Students	Homemakers/retired/ unemployed
Socio Economic Class	A	A-B	B-C

Figure 24: User intensity classification based on demographics

The demographic details of the three segments are given in Figure 25.

EMPLOYMENT STATUS	OVERALL	HIGH	MEDIUM	LOW
Working Full-time	50%	69%	50%	39%
Working Part-time	1%	1%	-	3%
Student	14%	14%	20%	7%
Housewife / Homemaker	27%	13%	27%	36%
Unemployed	3%	1%	2%	5%
Retired	5%	1%	1%	10%
Total	**100%**	**100%**	**100%**	**100%**

EDUCATION STATUS	OVERALL	HIGH	MEDIUM	LOW
Illiterate / No education	1%	-	-	3%
Class 5 to Class 9	16%	1%	13%	28%
SSC /HSC	44%	36.6%	46%	47%
Some college but not graduate	12%	19%	13%	7%
UG / PG – General	21%	34%	22%	13%
UG /PG – Professional	6%	10%	7%	2%
Total	**100%**	**100%**	**100%**	**100%**

SEC	OVERALL	HIGH	MEDIUM	LOW
Male	52.8%	68%	53%	43%
Female	47.2%	32%	47%	57%
Total	**100%**	**100%**	**100%**	**100%**

AGE (YRS)	OVERALL	HIGH	MEDIUM	LOW
18-24	25%	29%	31%	16%
25-29	16%	25%	16%	11%
30-39	29%	31%	30%	27%
40-49	16%	11%	15%	20%
50-59	14%	5%	8%	26%
Total	**100%**	**100%**	**100%**	**100%**

SEC	OVERALL	HIGH	MEDIUM	LOW
SEC A	47%	69%	52%	27%
SEC B	43%	30%	41%	53%
SEC C	10%	1%	7%	20%
Total	**100%**	**100%**	**100%**	**100%**

Figure 25: Demographics across the segments

Smart phones seem all pervasive as access devices across these segments, while the laptop and desktop show a skewed distribution.

- 100% of high intensity digital users, 99% of medium intensity digital users, and 93% of low intensity digital users use a smart phone.
- 27% of high intensity digital users, 8% of medium intensity digital users, and 1% of low intensity digital users use a laptop / PC .
- 16% of low intensity digital users also use a feature phone compared to 5% of high intensity digital users.
- In comparison, 100% of IT experts use a smart phone, 90% use a laptop or a desktop computer, and 5% use a feature phone.

Figure 26 describes the digital behaviour among the three segments.

- The high intensity digital users are better informed about digital technologies than low intensity digital users. In fact, 95% of high intensity users feel they are well or very well informed about digital technologies compared to 81% of IT experts. We believe that the IT experts believe they are well or very well informed only when they understand the technology driving a digital technology. General public on the other hand typically believe they are well or very informed if they know how to use an application.

- 60% of low intensity digital users are worried about using digital technologies and 59% uneasy to use or create content. They are probably more sensitive to the cost of Internet data, or they are not adequately skilled in the digital technology.
- While friends, family and co-workers are important sources of information on digital, tech platforms and social media are the second major source of information among the high and medium intensity digital users.
- Only a small fraction of male high intensity digital users seems to obtain a formal training on digital technologies.
- Interestingly, about two-thirds of high and low intensity digital users feel advantages of digital outweigh its disadvantages, while only one-fifth of medium intensity digital users feel so. We believe that the medium intensity digital users are probably transitioning from a low to high intensity and are becoming more informed leading to some trepidation.

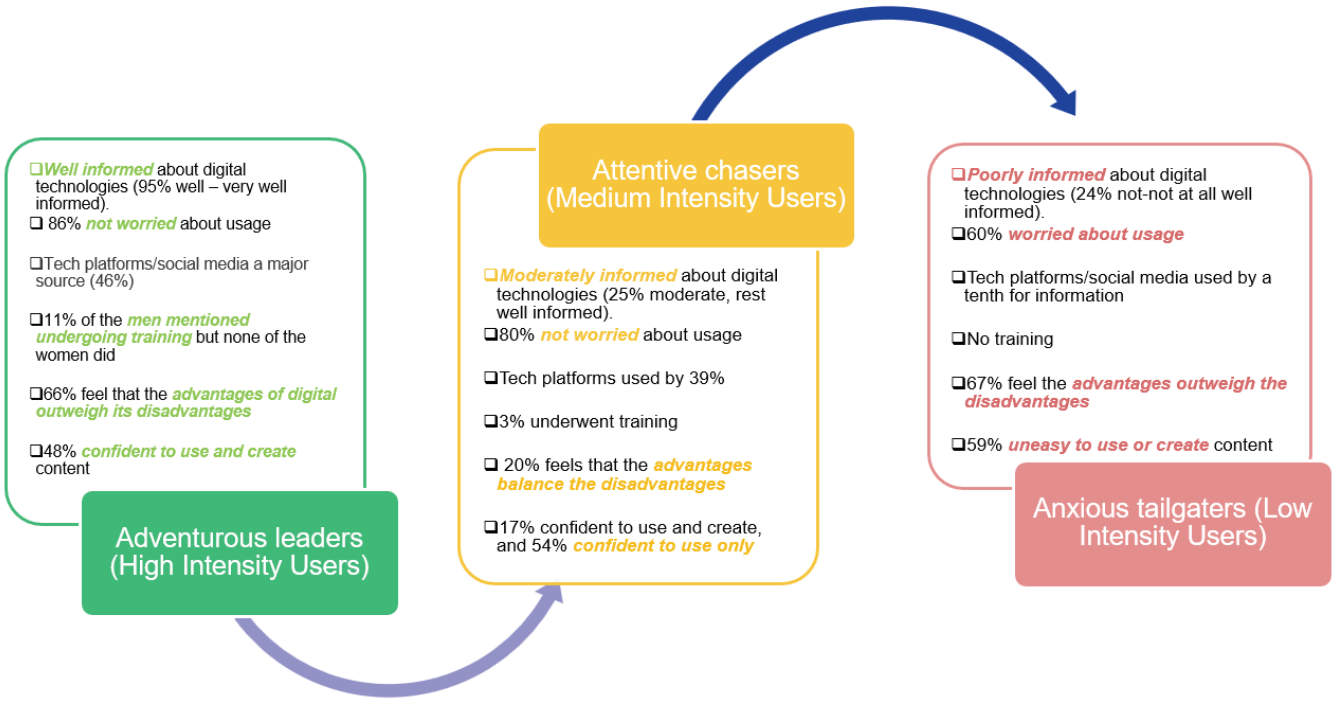


Figure 26: Digital behaviour across the segments

Figures 27 and 28 shows the usage of private and government platforms among the three segments.

- Video and entertainment, payments, and social media are the top private platforms. 80% of low intensity digital users consume video and entertainment content. While payments and social media have a greater than 90% consumption among the high intensity digital users, about 40% to 45% of low intensity digital users consume them. E-mail, the original killer app of the Internet, is clearly a laggard. In comparison, over 90% of IT experts use ecommerce and e-email, 83% use social media, and 79% consume video and entertainment.
- The government platforms are used lesser than private platforms. 81% of low intensity digital users do not use any government platforms. Aadhar, IRCTC (railway passenger reservation), and Arogya Setu are the top government platforms. Only Aadhar use by high intensity digital users is over 50%. One

of the reasons for the low usage of government platforms may be due to the availability of brick-and-mortar government centres and trusted intermediaries that help users with these functions.

- In comparison, 81% of IT experts use Aadhar, 76% IRCTC, and 74% Bangalore One services.

ACTIVITIES	OVERALL	HIGH	MEDIUM	LOW
Video & entertainment	95%	98%	99%	87%
Payments	70%	95%	83%	40%
Social media	70%	92%	81%	43%
eCommerce	68%	96%	84%	32%
eMail	44%	75%	54%	14%
Gaming related	13%	25%	15%	3%
Telehealth	3%	5%	3%	1%
Others	0.2%	1%	0.3%	0.0%
None of the above	4%	0.0%	0.0%	10%
Total	**100%**	**100%**	**100%**	**100%**

Figure 27: Use of private platforms across segments

ACTIVITIES	OVERALL	HIGH	MEDIUM	LOW
Aadhaar	32%	52%	38%	12%
IRCTC (online booking)	23%	46%	27%	5%
Aarogya Setu / Co-WIN	22%	37%	25%	7%
E-mitra (Bescom/Bwssb)	15%	21%	19%	6%
eGovernment services - Bangalore One	14%	7%	15%	8%
eSanjeevani (telehealth)	3%	7%	3%	1%
DigiLocker (storing certificates)	2%	1%	2%	0.3%
SWAYAM (online education)	1%	2%	1%	0.2%
Jeevan Pramaan	1%	1%	1%	0.3%
UMANG	0.5%	30%	0.3	1%
None of the above	54%	30%	44%	81%
Total	**100%**	**100%**	**100%**	**100%**

Figure 28: Use of public platforms across segments

The killer app is WhatsApp calls. 97% of high intensity users, 94% of medium intensity users and 81% of low intensity users regularly call on WhatsApp. These are higher than the 80% of IT experts who regularly call on WhatsApp. The 78% of high intensity digital users who use digital payments compare favourably with the 84% of IT experts who regularly use digital payments.

Only the high intensity digital users seem to regularly use email, WhatsApp chats and calls for work. The

medium and low intensity users do not seem to regularly use digital technologies for work. The use of email and WhatsApp regularly for work by IT experts is about twice that of high intensity users. This seems to indicate a divide in using digital technologies at work.

Figure 29 shows that digital adoption in education among the three segments is limited. 17% of high intensity users have regularly attended online school or college while 16% have watched videos for education. Medium and low intensity digital users do not regularly use digital technologies for education. In comparison, 59% of IT experts regularly watch videos for education. This seems to indicate a divide in how different segments use digital technologies for education.

ACTIVITIES	OVERALL	HIGH	MEDIUM	LOW
Write and share blog etc	1%	3%	0%	0.3%
Watch videos for education	7%	16%	8%	0.2%
Attend online classes / school / college	8%	17%	9%	0.5%
Create learning videos, make educational videos	7%	16%	8%	0.3%
Create and offer digital learning courses	1%	4%	1%	0.3%

Figure 29: Digital adoption in education across segments

The highest and lowest two Net Promoter Score for the beliefs, hopes and concerns for all the three segments is the same. See Figure 30.

- The highest net promoter scores are for the statements:
  - "I believe that digital technologies are safe and can be trusted" (high & medium-intensity – 96% to low-intensity – 91%), and
  - "I am so concerned my data collected by apps may be misused that I review or want to review my data and privacy settings in the digital apps/ websites that I use" (high-intensity – 96%, medium-intensity – 92% to low-intensity 79%).
  - This shows a high level of trust in digital technologies and a nuanced view of data privacy. The general awareness on data privacy could be related to the increase coverage of this topic in the media, although it may be lower for the low-intensity users.
- The lowest NPS is for the statement "I believe that AI and digital technologies used for work automation will overall eliminate more jobs than create them" (high-intensity – 84%, medium-intensity – 72% to low-intensity 71%). The fact that NPS is so high even for the lowest dimension shows that the general public is favourably inclined towards digital technologies.
- In comparison, the IT experts top concern is data privacy. Interestingly, their second biggest concern is about the stronger Government regulations to control digital technologies and protect citizen rights. AI eliminating jobs seem among the least of their concerns. As expected, the IT experts are probably more informed in the digital domain and understand the importance of Government regulations to provide guardrails for AI.

PARAMETERS	OVERALL				HIGH				MEDIUM				LOW			
	Top 2 Box	Middle Box	Bottom 2 Box	NPS	Top 2 Box	Middle Box	Bottom 2 Box	NPS	Top 2 Box	Middle Box	Bottom 2 Box	NPS	Top 2 Box	Middle Box	Bottom 2 Box	NPS
I believe that digital technologies are safe and can be trusted	95.0%	4.7%	0.4%	94.6%	96.3%	3.7%	-	96.3%	96.9%	2.7%	0.4%	96.5%	91.9%	7.6%	0.5%	91.4%
I am so concerned my data collected by apps may be misused that I review or want to review my data and privacy settings in the digital apps/ websites that I use	88.6%	10.7%	0.7%	87.9%	95.5%	4.6%	-	95.5%	91.6%	8.4%	-	91.6%	80.8%	**17.4%**	1.9%	78.9%
Products and services using AI have more benefits than drawbacks	85.5%	12.7%	1.8%	83.7%	91.5%	8.3%	0.3%	91.2%	86.4%	**12.3%**	1.3%	85.1%	80.9%	**15.8%**	3.3%	77.6%
I believe that digital technologies are very poorly assessed for risks before they are released for large scale use	86.0%	12.6%	1.4%	84.6%	92.3%	7.7%	-	92.3%	87.9%	**10.8%**	1.3%	86.6%	79.9%	**17.7%**	2.4%	77.5%
I believe that we need stronger Government regulations to control digital technologies and protect citizen rights	86.3%	12.0%	1.7%	84.6%	88.9%	9.4%	1.7%	87.2%	87.4%	**10.9%**	1.7%	85.7%	83.5%	**14.8%**	1.7%	81.8%
I favour digital technologies because they ensure that government services are accessible to all citizens without discrimination	84.2%	13.6%	2.2%	82.0%	89.5%	9.4%	1.1%	88.4%	86.5%	**11.1%**	2.4%	84.1%	78.2%	**19.2%**	2.6%	75.6%
I fear being left behind in the world because I am not adequately skilled on digital technologies	84.1%	13.7%	2.1%	82.0%	86.1%	13.1%	0.9%	85.2%	82.9%	**14.4%**	2.7%	80.2%	84.5%	**13.2%**	2.2%	82.3%
I am not at all worried about my digital privacy as long as the apps are free to use (YouTube, WhatsApp, and others)	83.0%	15.5%	1.5%	81.5%	90.9%	8.8%	0.3%	90.6%	86.4%	**12.3%**	1.3%	85.1%	74.1%	**23.4%**	2.6%	71.5%
I am worried that fake viral news on social media will only increase and create more division between social groups	83.2%	14.0%	2.8%	80.4%	88.9%	9.4%	1.7%	87.2%	79.7%	**16.7%**	3.5%	76.2%	84.0%	**13.4%**	2.6%	81.4%
I believe that AI and digital technologies used for work automation will overall eliminate more jobs than create them	81.1%	11.8%	7.1%	74.0%	87.5%	9.4%	3.1%	84.4%	79.6%	**12.5%**	7.9%	71.7%	79.0%	**12.5%**	8.4%	70.6%

Figure 30: Beliefs, hopes and concerns across segments

4. IMPLICATIONS FOR POLICY MAKERS

1. The near universal penetration of smart phones among the general public is heartening news. This is possible because of the availability of affordable smart phones in India. Policy makers should continue their policies which encourage these competitive spirits in the phone market

2. Over 60% of the general public believes that the speed and reliability of the Internet is very good or good. However, over a third of those in SEC C complain of poor Internet connectivity. Policy makers should focus on policies which encourage more competitive rates and availability of Internet across all sections of the society.

3. In our Digital Society, 85% of the general public experience digital technologies every day to a high or medium extent. But the millennials, the men and those in higher SECs seem to e better informed on digital technologies as compared to the older people, women, and those in lower SECs. Further, only 2% of the general public has undergone some form of digital training.

    - Policy makers should develop digital training programs, especially in vernacular languages, and create special programs to train the general public, especially the older people, women, and those in lower SECs.
    - Since the primary source of digital information seems to be word of mouth from friends, family, or co-workers, such digital training programs targeted at the general public will benefit all.

4. Schools or universities rank as the lowest source of information on digital technologies among all respondents (1%). Policy makers in educational institutions should take this feedback seriously and consider offering specific and experiential courses on digital technologies, on campus or online.

5. Among the general public, the top two usages of digital technologies for personal purposes include calling friends / family on WhatsApp (90%) and watching videos on social media (83%). Other online activities such as UPI-based financial payments (48%), online shopping (20%) come in lower. The least popular are “digital creation” activities – uploading photos (and not just forwarding) on digital platforms (6%), and creating and sharing videos (3%).

    - Policy makers should include in their digital training programs, training for activities such as digital payments, online shopping and so on. These could be on government platforms such as BHIM (payments), ONDC (retail) and so on. They should also encourage private digital platforms to invest in public-private partnerships for digital training and actively educate the general public on such digital activities.
    - Digital creation activities will go up only if the general public proficient in performing basic digital activities. Proficiency in digital creation may offer opportunities for specialized jobs. Hence, policy makers may focus on offering specialized courses for employment generation.

6. The adoption of digital technologies for education purposes are the lowest across all purposes for the general public (less than 8%), with only the youngsters and those with college degrees adopting it more.

- Policy makers should make a note of this trend as they design government-run online digital training programs such as SWAYAM, digital university and so on. They should focus particularly on the instructional design aspects and make these training programs compelling for adoption by the general public.
- Policy makers should also focus on popularizing digital learning through public messaging.

7. Among the general public, private digital solutions are being adopted significantly more than government ones (3-4 private Vs 1-2 government platforms / applications).

   - There is an opportunity for the government to popularize their solutions, train the general public and augment usage of their platforms.
   - At the same time, the government is also using its platforms to catalyse adoption of solutions / applications in a category. For instance, the government introduced its payment app, BHIM, first to promote digital payments. And soon the private platforms like GPay, PhonePe, PayTM and others drove much greater adoption.
   - Government should focus on platforms over which private players can provide services. Policy makers should employ this strategy as it develops digital public infrastructure / digital public goods (DPIs / DPGs) in various categories, such as Open Network Digital Commerce (ONDC) in retail and Ayushman Bharat Digital Mission (ABDM) in healthcare. Some of the basic services may be made free while premium services may be charged. This makes it affordable to all sections of Indian citizens.
   - The relatively higher adoption of government-services among the lower SECs could be due to its availability in the local language as well. The government's push towards leveraging AI (natural language processing algorithms) for language translation initiatives such as Bhashini is in the right direction.

8. The general public is cautiously optimistic about digital technologies (95% believe they are safe and trust-worthy, 89% are concerned about the data collected, 86% about risk assessments, and 83% about fake news going viral). This is very sophisticated digital behaviour.

   - Policy makers have an enormous responsibility to meet and maintain the trust of the public in digital technologies. Their focus on devising regulations pertaining to personal and non-personal data is in the right direction and meeting public expectations. Similarly, data-sharing frameworks such as DEPA are in a similarly right direction towards meeting the data concerns of the public.
   - Policy makers should take note of the fear among the public about AI eliminating jobs (81%). They should devise appropriate communication measures to allay these fears and to ensure smoother adoption of AI across industries.

5. LIMITATIONS AND FUTURE DIRECTIONS

The limitations of this study and opportunities for future studies on the Indian Digital Society are presented below.

Some of the limitations of the current study include:

- This study has attempted to be consistent with the demographic distribution as per the current realities of Bengaluru. One of the challenges is that there is no official census data for the city from recent years, and the study had to rely on other metrics to arrive at an approximate current scenario. The gender and age distributions are largely in line with the recent census.
- The SEC proportions in this study are more skewed to the higher SECs due to their natural higher inclination to participate in the survey. Higher refusals and literacy challenges made interviews with SEC D and E difficult.
- The IT experts is skewed towards males in this survey.

Opportunities for future studies include:

- The survey has been conducted only in the city of Bengaluru. To get a better understanding of the Indian Digital Society, similar studies can cover other urban and rural areas.
- An annual similar study in Bengaluru can reveal the longitudinal changes to the Digital Society.
- It would be good to compare the state of digital societies in India and other parts of the world, if comparable data is available.

6. REFERENCES

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About itihaasa Research and Digital

itihaasa Research and Digital (*www.itihaasa.com*) is a non-profit Section 8 company that aims to understand the evolution of technologies and innovation in India. We have published reports on the landscape of AI / ML research and brain science research in India. We have worked as a knowledge partner for the U.S. - India Artificial Intelligence (USIAI) initiative of the Indo-U.S. Science and Technology Forum (IUSSTF).

Kris Gopalakrishnan, co-founder Infosys, is the founder and Chairman of itihaasa Research and Digital. Our flagship project is itihaasa history of Indian IT, a first-of-its-kind free digital museum that recounts the history of Indian IT since the 1950s. This makes the incredible history of Indian IT accessible to an audience across the world and is available on (*https://itihaasa.com/History*) We have also published the book Against All Odds: The IT Story of India.

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