Article

The Digital Revolution and the Elderly – Dealing with the Digital Divide: The Israeli Case

Abstract: The increase in life expectancy characterizing the modern age has seen humanity enter the 21st century with a digitized momentum. However, the Digital Age, with its many facets and nuances, seems to sometimes be at odds with reality as it is, in fact, not as all-inclusive as it purports to be. The technological strides made daily are based on the assumption that the synergy between progress and technology, which feeds the process of digitalization, will see the world dash forward technologically in every way, and that digitalization will improve every aspect of our lives.

This begs the question: is that truly the case, or will this race toward total digitalization leave behind entire sectors that are not familiar with the concept of a computer or an app? Are these sectors doomed to be left behind, in the proverbial cold of all other forsaken things of the Analog Age?

This paper will review Israeli society as a case study, and will present the basic concepts of the phenomenon known as the "digital revolution," the digital gaps this phenomenon entails, how Israel and other countries around the world deal with this challenge, and the social, economic, psychological, and cognitive implications this bears on the sectors affected by the digital divide. Potential solutions will also be presented, particularly with respect to the elderly.

The elderly comprise about 12% of the Israeli population, numbering some 1,350,000 people. Given their age at the onset of the digital revolution, many have found that – almost overnight – they were lagging far behind their children and younger society as a whole, and that they were slowly becoming somewhat detached from the "buzz" of the 21st century. A worse turn of events, however, was the fact that this digital gap meant that many were being cut off from essential services provided to the elderly as an age group.

Better planning and organization for the integration of the results of the technological and digital revolution could lead to a better understanding of its components. This, in turn, will lead to a better and more widespread application of the products of the digital revolution by audiences that – left unprepared for the changes to come – will find that they are excluded from the very society to which they belong.

Keywords: computers and smartphones; digital divide; digital revolution; digitation; elderly

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1. Introduction

Throughout history, humanity has undergone dramatic upheavals on the political, economic, social, communicative, cognitive, and value-based levels, all of which have profoundly changed it. Such changes both fuelled and were driven by major events such as the French Revolution and the Communist one and, of course, the Industrial Revolution, which changed the labour market and was the bedrock of the technological revolution at the heart of this essay – especially the digital revolution that has evolved from it, only to become much more formidable (Harari, 2015: 316-317, 353-358).

Revolutions, by nature, accelerate, escalate, and sometimes implode, and always trample over the weaker elements in human society (Goodman, 2021: 12, 52). This was the way of the French Revolution that – in the name of freedom trampled over the freedoms of those who opposed it – and this seems to be the way of the unfolding digital revolution that – as it powers forward – is leaving in its wake an unfathomable number of individuals globally, who are unable to keep up, thus creating the "digital gap," which is the crux of this essay.

The inability of some to bridge this gap, as this article will demonstrate, creates polarization, isolation, exclusion, and marginalization which, in turn, breed social, economic, psychological, cognitive, class, value, and certainly political gaps between those who ride the wave of progress and those who lag behind, at times to the point where they no longer have any hope of catching up (Chang et al., 2015: 66-85).

This paper will briefly present the basic definitions of the "digital revolution" and the digital gap it created. I will present several programs employed worldwide to deal with this gap, and – using Israel as a case study – I will outline the situation that elderly Israelis and other sectors face with respect to this situation. I will delve into the programs that currently exist in Israeli society, introduce the empirical data on which this paper is based, and will conclude by presenting the possible solutions for closing the digital gap.

For example, the findings of a 2022 survey by the Israeli Central Bureau of Statistics indicate that only 53% of individuals aged 65 and over used a computer, while at the age of 75 and over the number dropped to 42% (The Central Bureau of Statistics, 2022b: 269). In other words, only one out of two elderly people in Israel uses computer services, and the same is true for the general ultra-Orthodox and Arab sectors.

The digital revolution, the importance of which cannot be overstated, has placed many barriers in the path of the world's elderly population and those in Israel in particular. The new, digital world, which is on a mad dash after the next great app, has found the elderly population utterly unprepared, making the road to their potential exclusion from society as a whole a very short one.

It is our social – and humane – duty to slow the digital race down and make it as inclusive as possible for all members of society.

2. The Basics of the Digital Revolution

The concept of digitization first emerged in the 1970s, riding a wave of advanced technological developments that quickly swelled into a kind of worldwide revolution as rapidly advanced technology freed humanity from the proverbial tyranny of nature. Technology has evolved greatly until the creation of digital tools, from the computer to the tablet; and smartphones to artificial intelligence, and who knows what the future holds on this front.

There is no doubt that the digital revolution has advanced humanity, but it has also created a situation where we are – to a great extent – ruled by the technological tools we developed and if one fails to keep up, as many of the elderly do, one is doomed to be left behind. This, in turn, created a paradox: how are elderly individuals supposed to enjoy the benefits of technology if they cannot operate what is now considered its basic elements (Iancu and Iancu, 2020: 155)?

Of the multitude of concepts attributed to the digital revolution two specifically stand out and require that we, as a society, deal with their implications if we are to preserve the whole of society, even the most disadvantaged elements within it, as the digital age powers forward: *digital literacy* and the *digital divide*.

3. Digital Literacy

Digital literacy refers to an individual's ability to find, evaluate, and communicate information through typing and other media on various digital platforms. This concept transcends mere access to a digital device into a system that involves cognition, motor skills, socioeconomic status, emotional skills, and overcoming infrastructural, economic, religious, or other barriers (Eshet-Alkalai, 2004: 50-62) to know how to obtain a digital device, become familiar with its capabilities and features, and use it to its fullest potential.

Actions such as online shopping, paying bills using online platforms, and – above all – acquiring the know-how and the ability to comprehend, use, and benefit from the great knowledge that digital systems can provide are becoming increasingly crucial to one's quality of life. If an individual does not have the means or suitable infrastructure to use digital devices; if social, moral, religious, political, or conservative barriers prevent them from doing so, or if they are hindered by a lack of ability and skills to use digital platforms, then we are dealing with digitally illiterate individuals. This, in turn, creates the highly troubling concept of the "digital divide."

4. The Digital Divide

The digital divide is a social, economic, psychological, cultural, and practical gap, brought about as a result of the development of the digital world and the subsequent digital literacy it demands. This divide, or gap, represents those who – for whatever reason – lack the necessary literacy, and are therefore left behind as the rest of society advances (Van Dijk, 2009).

A digital gap is created when an individual cannot purchase, operate or use digital tools, such as a smartphone, in the environment in which he lives, for various reasons. This gap becomes dramatic in a society where all government services, for example, are only accessible through digital means, or where, even the purchase of an item as basic as a bus ticket is no longer carried out in ways that are familiar to the individual who is hindered by digital illiteracy. In cases such as these, the cause of digital illiteracy is irrelevant because the result is the same: said individual is effectively excluded from society (Ben-Natan, 2017: 2-6).

There is no doubt that those lacking in digital literacy will be considered the "new illiterate" and as a result, they are bound to quickly find themselves cut off from the world of business, culture, consumerism, and the entire economy, in the very society in which they live and function. This is sure to translate into social and economic inequality that could undermine social resilience (Gisler, 1997: 10-100).

The digital divide and the ways to deal with it – both on a global scale as a concise review focusing on the issue of old age and the digital divide, and in Israel as a case study – are at the heart of this article, as are the effects of this phenomenon on other sectors suffering from this gap, which must be eliminated without delay because it is a strategic issue in social life (Eshet-Alkalai, 2002).

Societies that fail to ready themselves for the digital age, will undermine their own robustness, and immunity (Syed-Abdul et al., 2019). Many scholars and studies point out that because the digital gap is not being addressed, we are creating the "new illiterates," and hence the new class of underprivileged and underserved individuals across all areas of social, economic, and cultural representation and engagement.

5. Aging in Israel and Worldwide: General Data and Digital Barriers

The world is growing older, life expectancy is increasing, and slowly but surely, the vision of José Saramago from his novel *Death with Interruptions* (2005) – about a world free of death – is coming true. Reaching the age of 100 is no longer extraordinary and almost 29% of the world's population falls under the accepted definition of "elderly," which, according to the United States Social Security Administration, includes anyone age 65 or older. We would therefore expect that these people – the "founding fathers" of every nation – would be treated in a way that keeps them and their interests at the top of the national and social agenda.

Israel, for example, is home to 1.35 million individuals defined as elderly, who make up about 12% of the population. In the United States, the elderly make up 19% of the population, and in Western Europe – 18%. The demographic composition of this group naturally includes individuals born in the mid-20th century and therefore it is understood that – as they are now in their 80s and 90s – they lack the skills, knowledge, and ability to adapt to a changing political, social, economic, or digital world.

The elderly across all sectors worldwide, and especially in Israel, are considerably lagging behind those who can easily make their way through the emerging digital reality. In Israel, other sectors afflicted by the digital divide include Arab Israelis and the ultra-Orthodox, who face barriers other than age as they deal with a world that is becoming increasingly digital.

Looking at these barriers, we, as a society must deal with them to bridge the digital gap and promote the type of digital literacy to usher our elders into the digital age. This is true in Israel and the world over and how these challenges are met will be detailed later in this paper.

Seven such barriers stand out especially:

1. *The financial barrier*: Some, if not most of the elderly in Israel – especially in the ultra-Orthodox sector – do not have the means to purchase a computer or a smartphone.
2. *The infrastructural barrier*: If, for example, a dilapidated neighbourhood is devoid of the proper cable or internet infrastructure, online access becomes virtually impossible.
3. *The knowledge barrier*: Most prominently, familiarity with the English language. The majority of information, instructions, references, and shopping online are conducted in English – a language in which the sectors at the heart of this paper are not proficient.
4. *The cognitive-psychological barrier*: Namely, the fear of the unknown, the unfamiliar, and the unclear is very discouraging.

5. *The conservative barrier*: That is, the inherent resistance to change or anything new is a known deterrent among the elderly, Arab Israelis, and the ultra-Orthodox sector, who are apprehensive about embracing change.
6. *The political barrier*: A reluctance to cooperate with the government. For example, in Israel, Arab Israelis are reluctant, to say the least, to use digital means that may allow the government access to their personal details.
7. *The religious barrier*: Within all sectors in Israel, if there are rabbis, qadis, or sheiks who bar the use of smartphones and other digital devices, their followers are effectively cut off from the progress the rest of society enjoys.

To fully understand this issue and its correlation to the issue of old age, we must examine five key points that will clarify how important closing the digital gap is, as without digital literacy, the exclusion of many elderly people will only grow:

1. There is a need to integrate advanced and digital technology to serve the elderly to improve their quality of life (Amorim et al., 2019: 58).
2. The advancement of technology will lead to better monitoring of elderly health, thus reducing the discrimination they face in the healthcare system (Bianchi, 2021: 43).
3. Ensuring the elderly have distance-learning options, e.g., through Zoom, thus allowing them to advance to critical worlds of knowledge and information.
4. Ensuring the elderly close the digital gap will bring them into the robust only market economy (Tun et al., 2021).
5. Ensuring the information systems that deal with the elderly are connected, thus reducing bureaucracy and affording them comprehensive services.

The issues that arise from these barriers underscore the vital – even existential – need for closing the digital gap. Efforts to that effect are being made in Israel and around the world, as the next chapter of this paper will detail.

6. Efforts Worldwide to Bridge the Digital Divide

The western world has put forth various plans to try to bridge the digital gap among the elderly. A quick review, however, shows that only a fraction of the elderly gets to benefit from these projects, which in practice do not exist on a national scale, thus failing to properly deal with the lack of digital orientation at the heart of this technological gap.

For the benefit of this article, I have used several examples of projects that demonstrate, on the one hand, the well-intentioned sentiment behind these schemes, and on the other hand, the world's inability thus far to close the digital gap completely. There is no doubt that the empirical data and numbers raise the concern that the digital gap will be diminished anytime soon.

The following examples were collected from two articles and one major report on the subject, by researchers from Hong Kong (Kwang, 2012), Israel (Nimrod, 2010), and the OECD report for 2021 (OECD, 2021). The data and examples are only part of activities that are extensive on paper but limited in scope, hence their results.

• In Singapore, for example, the Infocomm Media Development Authority – a statutory board under the Singapore Ministry of Communications and Information – has been running a program of this kind since 2010. As part of the program, 20 study in-person education centres have been opened and have so far served 200,000 elderly Singaporeans. In-

structions are based on 40 different curricula and include about 140 computer classes, with the help of study materials adapted to the elderly.

- In Ireland, a government-sponsored program called Age Action offering comprehensive computer classes has been operating since 2006 and has so far served 60,000 elderly people through libraries, community centres, and various offices.
- In 2001 in Cleveland, Ohio, the ASC3 Digital Literacy Training Center was launched offering free computer training. Stating that its mission is "to bridge the 'Digital Divide' in our inner-city communities by addressing the technology needs of mature and older adults with limited income via education, resources, and training through technology literacy and access to technology," the program, which runs out of the Ashbury Senior Computer Community Center, focuses on employment and teaches the elderly how to get a job using digital means and has so far served about 150,000 elderly Clevelanders.
- In 1986, the Senior Net Association was founded in the US, with the support of Tech giants such as Google, Microsoft, and others, to strengthen digital literacy among those aged 55 and over (note that usually, the term "elderly" is used to describe women aged 62 and over, and men aged 67 and over). Some 180 different curricula were developed as part of the program, operated across 90 centres with the help of about 6,000 volunteers, serving hundreds of thousands of Americans so far. Classes cover computer basics, using search engines and e-mail, internet safety, online buying and selling, and more.
- In 2015, the University of Michigan in the US launched a small, student-operated program for the elderly intending to mitigate internet anxiety and teach them computer skills. The program included some 200 volunteers and served about 1,000 people in the community.
- In 2004, New York City partnered with Microsoft to launch Older Adults Technology Services, a program that "engages, trains and supports older adults in using technology to improve their quality of life and enhance their social and civic engagement." In 2022 alone, the program served (Older Adults Technology Services, 2022) over 350,000 people.
- Australian telecommunications giant the Telstra Group operates a program training elderly Australians on the daily use of tablets and smartphones, through free phone sessions. This is a small program serving only several tens of thousands of people, who receive informational brochures and are educated by university and high school students.

These examples show that some efforts are being made on a local level, with the support of municipalities or tech companies and volunteers, but these are small-scale programs that fail to meet the comprehensive need to bridge the digital gap among the elderly. They further highlight the fact that there is no single central national plan to this effect anywhere in the world.

7. The Digital Challenge and Elderly Israelis

In 2002, the Israeli Central Bureau of Statistics conducted a comprehensive census that surveyed the social, economic, cultural, occupational, and other indicators of the entire Israeli population (The Central Bureau of Statistics, 2022a). The circumstances and status of the country's elderly were featured prominently in the survey, and the data that emerged concerning the grossly lacking digital literacy of the elderly, as well as among other sectors, was alarming, further underscoring the pressing need to close the digital gap.

On the issue of computer use, for example, the survey found that only 53% of those aged 65 and over used a computer. Within this group, only 60% of those aged 65 to 74 used com-

puters, while only 42% of those aged 75 and over said they used them. These numbers mean that overall, one out of two elderly Israelis does not use a computer or a smartphone, and does not have access to digital applications. Among elderly Israelis who do use a computer, 47% accessed banking services, paid bills, and dealt with various government agencies; but only about 30% practiced online shopping. These figures indicate that about half of Israel's 1.3 million elderly population are lacking digital literacy.

Delving deeper into the data of Internet users, we find that 86% of those between the ages of 55 and 74 use the Internet, but further segmentation sees this number drop to 78% among those ages 65 and over, and drop again among those over the 75, where it reaches only 50%.

Looking at ultra-Orthodox Jews, we find that already from the age of 20, some 36% do not use the Internet. This number spikes to 90% among ultra-Orthodox Jews aged 65 and over, and the same is true for the same age groups in the Arab Israeli sector, which mirrors these figures.

If we examine the use of online banking services, we find that while 47% of elderly Israelis aged 65 to 74 use these services, this number shrinks to a mere 20% in the 75 and over age group.

As for the ultra-Orthodox and Arab sectors, only 30% of Arab Israelis aged 65 and over said they use online banking services, while only 40% of ultra-Orthodox Israelis – of all ages – do the same.

Looking at the frequency of online shopping, we find that only 27% of elderly Israelis between the ages of 65 and 74 shop online – a number that drops to only 10% in the 75 and over age group. This number stands at 20% among the ultra-Orthodox and Arab sectors.

To further underscore how dramatic the digital divide is in Israeli society, I will outline the special barriers each of the three abovementioned sectors faces:

The ultra-Orthodox sector:
- 51.7% use the internet, 45.3% use e-mail, 26% use online banking and payment services, 28% access government services, and 22% shop online.
- The barriers: poor infrastructure, conservatism, isolation, difficulty producing rabbinical approval, financial hardship, and lack of basic knowledge of English.

The Arab Israeli sector:
- 83.7% use the internet, 68% use e-mail, 46% use online banking and payment services, and 44% shop online.
- The barriers: insufficient cultural and linguistic accessibility, wariness of an invasion of privacy, distrust of government services, and poor and sporadic infrastructure.
- *Elderly Israelis, 65 and over*:
- 62% use the internet, 43% use e-mail, 25% use online banking and payment services, 21% access government services, and 19% shop online.
- The barriers: insufficient access to infrastructure, limited relevant skills, difficulty meeting costs, perceptual and emotional barriers, fear of innovation, and conservatism.

This data (JDC-Eshel Dashboard for Optimal Aging, 2021; Halperin, 2022) indicates how serious the situation is, and in the next chapter, I will present projects and activities that have been and are still carried out in Israel at different levels, followed by a proposal for a national plan by which to bridge the digital gap in Israeli society as a whole.

8. Programs and schemes seeking to close
the digital gap for elderly Israelis

Dozens of programs, ventures, and projects have been carried out in Israel over the years – promoted and managed by many different entities on various levels – to bridge the digital gap among the elderly. Some of the most prominent programs among them:

- The "Or Le'Dor" ("light for the generation") program, which aims to deal with the digital divide in nursing homes, has been operating for 25 years across seven centres, mainly in Jerusalem. The program has so far served 2,000 individuals mostly through sessions designed to expose elderly Israelis in nursing homes to a variety of computer activities and especially to online distance learning options.

- The JDC-Eshel sponsored "Computers for All" program was operated by the Joint Distribution Committee and the Eshel nonprofit organization in 130 centres nationwide until 2014, during which it served some 20,000 people. Since 2014, the program has been operating more sporadically as part of localized efforts to increase access to technology and online services among the elderly, especially those who are disabled or homebound.

- The Apple Association runs a program that seeks to reduce the digital gap among women, children, and youth, especially in the Arab and ultra-Orthodox sectors – but not among the elderly. The program operates in dozens of localities through larger programs for technological and occupational training (Dror and Gershom, 2012). About 250 instructors are involved with the program, which has so far served some 100,000 people.

- The Lehava Project for Decreasing the Digital Gap in the Israeli Society is a national program established in 2001 by the Accountant General's Office at the Israeli Finance Ministry. In 2014, the Science and Technology Ministry took over the program's operations, placing a greater emphasis on imparting digital literacy (Sasson et al., 2012), including using e-mails and popular applications, accessing online shopping and government services, etc. However, this long-running scheme is a classic example of lacking implementation of a national program: this scheme operates only 330 centres nationwide, each with just two classrooms that have a total of 40 computer stations, meaning that even under the best circumstances, the program can reach only several tens of thousands of people, mainly in the periphery – not the elderly sector as a whole and not over time.

- In 2015, the University of Haifa and Stanford University partnered on a venter to promote physical activity among the elderly using tablet computers. The data collected during said physical activity was transferred to a data analysis centre and was used to design a walking trail several miles long in Haifa, to encourage walking among the elderly population.

If anything, these examples highlight the fact that there is no true, comprehensive, nationwide program in Israel to eliminate the digital divide and afford elderly Israelis their rightful place in society. I will attempt to outline the basis for such a plan in the next chapter of this paper.

9. A National Plan to Bridge the Digital Divide in Israel: Potential Course of Action

The abovementioned data and detailed shortcomings make it clear that the digital divide exists, and from a chronological-demographic standpoint, it will close in 20-25 years – if nothing else than over natural population growth versus elderly mortality (Mann, 2013). Diminishing this gap sooner requires carrying out a large-scale national operation, as shortly outlined here, with Israel as a case study.

The objective: To reduce at minimum, or better yet – eliminate – the digital gap between elderly Israelis and the rest of society within five years. This national plan will locate and teach those struggling with digital illiteracy how to use digital means.

Modus operandi: The plan will be carried out across five years, using a centralized-integrative method by which every person who can give training in the digital field will be recruited to tutor every elderly individual lacking digital literacy. Said training will be held in government-funded designated centres nationwide,

Target audience: Elderly, Arab, and ultra-Orthodox Israelis.

Tutors: This program requires major cross-sector engagement including all 11th and 12th-grade students, who will receive credits toward their matriculation exams; the members of all youth movements between the ages of 16 and 18 (when they enlist in the military); all those who do not enlist, regardless of the reason for not enlisting, who will be stationed in the relevant sectors; all university students, who will receive credits toward their degrees; and any digitally literate elder who wishes to participate in this vital effort.

10. Plan of Action

Setting up a national plan of this scope requires both considerable resources and a solid strategy and must include:

- Establishing a national directorate that will oversee district offices corresponding with Interior Ministry bureaus. These, in turn, will oversee municipal units in all localities and sectors.
- Training all potential tutors on the best ways to teach others to use computers, smartphones, and tablets.
- Launching a six-month pilot program in various-size localities in all sectors to assess the digital literacy of the target audience – elderly, Arab, and ultra-Orthodox Israelis – and partnering them with suitable tutors.
- Based on the pilot program, launching a nationwide digital literacy assessment program and setting up the appropriate training.
- Locating and leasing physical locations where the program can be held – libraries, day centres for the elderly, community centres, etc.
- Allocating powers and resources to local authorities to hold these training sessions in their jurisdiction.
- Launching a public relations campaign using all mass media outlets and social media platforms to raise awareness of the program and motivate the target audience. This campaign should also cover other aspects of exposure suitable for the target audience.

- Establishing an agency to monitor the program's performance and track the progression of digital literacy among the elderly.
- Holding periodic assessments of the process on the national level and fine-tuning it in real time.
- Holding periodic training for the tutors by teams consisting of a social worker, a psychologist, a content expert, and an expert on digital means.

While each of these action points is open to interpretation in terms of scope and development, it is high time to put this plan in motion because if anything, digital progress – and the rapidly increasing gap it has created – waits for no one.

11. Conclusion

This paper means to highlight a cardinal problem, which is characteristic of Generation Z, and which demonstrates that it is impossible to move forward to realize our dreams as a society while leaving the weaker elements in society behind. This a religious, cultural, ethical, and moral imperative to which we cannot turn a blind eye.

Digital literacy, to the extent that it is imparted to anyone who needs it, presents an advantage, an opportunity, and an instrument of progress that help improve the quality of life of all members of society and especially our elders. A classic example with which to conclude this paper is an elderly individual learning how to use an app to operate a drone that delivers medicine. For the individual who knows how to use such an application, digital literacy is a blessing. The same goes for anyone else from a disadvantaged sector, whose use of digital means allows for social mobility.

We must not "discard" our elderly, but rather we must bring them into the fold that enjoys the bounty of the technological and digital age; where digital literacy is a blessing, not a curse, and where the digital divide poses no barrier.

Conflicts of interest

The author declares no conflict of interest.

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