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**THE COUNCIL OF THE CITY OF NEW YORK**

**Committee Report of the Governmental Affairs and Infrastructure Divisions**

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**Hon. Mark Gjonaj, Chair**

**COMMITTEE ON TECHNOLOGY**

**Hon. Robert Holden, Chair**

**How Technology Can Assist Small Businesses During the Pandemic**

**October 30, 2020**

1. **INTRODUCTION**

On October 30, 2020, the Committee on Small Business, chaired by Council Member Mark Gjonaj, and the Committee on Technology, chaired by Council Member Robert Holden will hold a remote hearing on “How Technology can Assist Small Businesses during the Pandemic”. Those invited to testify include the Department of Small Business Services (SBS), small business advocates, chambers of commerce, Business Improvement Districts (BIDs) and other members of the public.

1. **BACKGROUND**

In late December 2019, a new virus, SARS-CoV-2, was detected in Wuhan, China and by January 30, 2020, the World Health Organization (WHO) declared that COVID-19, the disease caused by the SARS-CoV-2 virus, was now a Public Health Emergency of International Concern (PHEIC).[[1]](#footnote-1) As of October 27, 2020, COVID-19 has infected over 43.8 million people across 215 countries and territories, and has killed over 1.1 million people.[[2]](#footnote-2) In the United States alone, there have been nearly nine million infections and over 230,000 deaths.[[3]](#footnote-3) To date, New York has had over 496,000 infections and over 33,400 deaths, many of which took place in New York City.[[4]](#footnote-4)

The progressive nature by which the virus spreads has caused governments across the globe to shutdown businesses, schools, religious and cultural institutions, and mandate various levels of social isolation. While this has helped to limit the spread of the virus, stay-at-home orders have had a catastrophic impact on economic markets, particularly small businesses that thrive from regular contact with their community and neighbors.

*Limitations on City Businesses in Response to COVID-19*

As businesses were subject to operational restrictions and New Yorkers stayed home to stop the spread of the virus, consumer spending declined in the City. In late March 2020, consumer spending dropped 44 percent year-over-year, according to Mastercard.[[5]](#footnote-5) The Manhattan Chamber of Commerce reported that foot traffic in Manhattan at the end of August was down nearly 40 percent compared to pre-COVID times.[[6]](#footnote-6) According to the research firm Opportunity Insights, small business revenues dropped over 65% in NYC in early April in comparison to January 2020.[[7]](#footnote-7) As of September 29, small business revenues were still down close to 40% in comparison to January 2020.[[8]](#footnote-8)

The drastic drop in consumer spending in the City and resulting loss in revenue for businesses has made it difficult for business owners to continue paying rent. The Hospitality Alliance surveyed over 500 restaurants, bars, nightclubs and event venues in NYC about their rent obligations in August. The resulting report found that approximately 87 percent of respondents did not pay their full rent in August, while over 60 percent of landlords did not waive rent payments for restaurants, bars and clubs.[[9]](#footnote-9) The current outlook for many small businesses is dire as they experience massive revenue declines but must continue paying the same fixed costs, such as rent, as pre-COVID times. Camilla Marcus, the owner of the restaurant “west~bourne” in Soho wrote in an op-ed about her business’ closure, “Restaurants are universally facing a simple and stark equation: our income has been cut by 75%, but most of our operating costs, including our rent, remain the same. And, there's no end of the tunnel in sight.”[[10]](#footnote-10)

Thousands of small businesses have closed in New York due to their inability to continue paying their fixed costs such as rent. According to the City Comptroller report, at least 2,800 small businesses closed permanently between March 1st and July 10th.[[11]](#footnote-11) Partnership for New York City predicts that as many as a third of the 230,000 small businesses in NYC may never reopen.[[12]](#footnote-12)

As small businesses have shut their doors, the livelihoods they generate for both employees and business owners have disappeared. The unemployment rate in the City, at 13.9 percent as of September 2020,[[13]](#footnote-13) was nearly 10 percentage points higher than the previous September,[[14]](#footnote-14) and may continue to be high even after the pandemic subsides as thousands of small businesses might permanently close. Labor statistics from the New York State Department of Labor indicate that employment in the “Food Services and Drinking Places” industries are down 43.3 percent in September 2020 as compared to September 2019,[[15]](#footnote-15) and employment in “Full Service Restaurants” is down 52.4 percent.[[16]](#footnote-16) Many “Retail Trade” businesses are also down. For example, employment in “Clothing and Clothing Accessories Stores” is down 41.2 percent,[[17]](#footnote-17) with “Clothing Stores” specifically down 53.1 percent.[[18]](#footnote-18) Employment in “Furniture and Home Furnishings Stores” is down 38.5 percent,[[19]](#footnote-19) and in “Sport. Goods, Hobby, Book, and Music Stores,” it is down 32.7 percent.[[20]](#footnote-20) Employment in the “Personal and Laundry Services” sector, which includes barbershops, hair salons and the other personal care businesses, is down 31.6 percent.[[21]](#footnote-21)

A Partnership for New York City report from July 2020 classifies an estimated 679,000 accommodation and food service jobs as vulnerable to loss – the most of any sector in the city – 58 percent coming from small businesses that employ fewer than 100 people.[[22]](#footnote-22) The closure of City businesses will leave households “struggling to feed their families and pay rent,” [[23]](#footnote-23) and the impact of job loss in the City may disproportionately affect Black, Hispanic and Asian residents. The report estimates that 40-50 percent of jobs held by people of color are at risk of loss,[[24]](#footnote-24) as opposed to 30 percent for white residents.[[25]](#footnote-25) The survival of the small business economy is essential to ensure the City can have a strong, equitable economic recovery from the financial collapse caused by the pandemic. As the City’s small business economy seeks to rebuild and survive this crisis, small businesses may look to utilize certain technological innovations to make their businesses more resilient to change.

1. **How Technology can Boost Small Businesses**
2. *Website Development and Marketing*

 A major effect of COVID-19 is that it has forced small businesses to develop a greater online presence. Prior to the pandemic, about 90 percent of commerce in the US took place in physical locations, but COVID-19 is forcing many small businesses to embrace more technology and move some of their operations online.[[26]](#footnote-26) The need for an increased digital presence is clear as so much activity has rapidly shifted online since the pandemic forced the temporary closure of so many aspects of the economy. In fact, Akamai, the internet content-delivery, cloud and cybersecurity firm reported that there was more than a 50 percent increase in daily online traffic than prior to COVID-19.[[27]](#footnote-27) Most often, the first step towards having any online presence is the development of a website. Unfortunately, many small business owners, whose businesses hadn’t previously relied on much, if any, online activity, don’t have the tools or the know-how when it comes to developing a website or marketing their business activities online.

Effective web design is now seen as crucial for any business seeking to survive during COVID-19 as a business’ website is one of the sole ways to represent and advertise its products and services, especially in light of the in-store capacity restrictions imposed by the pandemic.[[28]](#footnote-28) Even before the pandemic began, the lack of an effective online presence was seen as a major impediment to the success of many small businesses. According to a 2019 survey, approximately 40 percent of small businesses did not have a website, with 28 percent reporting that they had no plans to develop one.[[29]](#footnote-29) According to some web design professionals, the website of a business prior to the pandemic might have been simply to advertise its storefront business.[[30]](#footnote-30) However, if that business is forced to shut down temporarily or sees a long term drop of in-person business, the website now has to become the primary method by which that business reaches their customers.[[31]](#footnote-31) Therefore, it is recommended that such a website is made as effective as possible in reaching a business’ customers in order to facilitate their user experience and accurately convey the identity of the business.[[32]](#footnote-32) This has been made more crucial since the habits and expectations of online consumers have changed in the wake of COVID-19 in that such consumers have increased their online shopping activity and expect businesses to accommodate to their changing habits.[[33]](#footnote-33)

Industry professionals have indicated that a successful website will have a strong, user-friendly design followed by including intuitive navigation, visual design, sufficient content, information accessibility and branding of the business.[[34]](#footnote-34) More specifically, it has been argued that in order for any small business to effectively market themselves and compete successfully a website must:[[35]](#footnote-35) 1) have a good domain name that is easy to spell, short, memorable with the proper .com extension, not commonly used and comes at a reasonable price; 2) be part of a reasonably priced and scalable website hosting service that has good tech support; 3) prominently displays a clear description of the business with the main and footer navigation menus having an "About Us" section that is easily accessible so visitors to the site can learn more about the business; 4) implement a good content management system (CMS), which is software that creates and manages digital content (e.g. WordPress, Drupal, Squarespace) and helps a business owner maintain their site without much technical expertise; 5) choose a good e-commerce platform (discussed in further detail below) that will help facilitate a business’ desire to sell goods or services online; 6) create an interesting and engaging website user interface that uses eye catching graphics easy to read fonts and has pages that are standard for small business websites, such as home, about us, products/services, sitemap and contact us; 7) be optimized for search engines to ensure search engines index and rank the website; 8) consistently update and publish content, such as new articles, blogs or testimonials; 9) have webmaster tools installed that account for vital data to help a business analyze traffic and site performance such as the number of visitors to a site, average time spent on a site, broken links on a site and web page download time; and 10) be properly maintained by ensuring software is up to date, checking webmaster tools routinely to correct any problems and running security scans to prevent and/or correct any security breaches.

Learning web development skills can be a simple or complex task depending on the skill set of a particular small business owner. However, while in depth website development training is offered by various entities, basic web design abilities can be acquired by learning some basic skills such as HTML coding and WordPress.[[36]](#footnote-36) Some entrepreneurs have claimed that HTML knowledge helped them to efficiently build their own sites instead of paying large sums outsourcing the work, thereby allowing them to invest money in other aspects of their businesses.[[37]](#footnote-37) Other small business owners have started to make use of tools that allow them to expand their online presence with built in elements.[[38]](#footnote-38) For example, the online platform Shopify offers businesses pre-built websites where they can sell their products.[[39]](#footnote-39) The company has stated that the desire to expand online is clear as from March 2020 to April 2020, there had been a 53 percent increase in the creation of online stores using their platform.[[40]](#footnote-40) More businesses that have footing in technology have also recognized this need and have expanded their services to include offering web development services to businesses seeking to adapt during COVID-19. The company Square, for example, is primarily a mobile payments company, but has recently started offering tools for building websites and online invoicing.[[41]](#footnote-41) The pandemic has also encouraged technology firms to develop creative ways around marketing the products and services offered by traditional brick and mortar storefront business. The Digital Agency Network is another resource for website design and marketing strategies and tools, and offers information regarding various digital marketing services and web design tools and web hosting services.[[42]](#footnote-42) One recent platform is an app and web based platform called Streetify, where consumers can visit virtual storefronts, with businesses connecting through advertisements and messaging.[[43]](#footnote-43) The platform is currently available in the United States, Canada, the United Kingdom, India and Australia.[[44]](#footnote-44) Business can create an account, where they link their basic website to the platform, which will in turn create virtual stores.[[45]](#footnote-45) Users of the app and website can choose the street they wish to visit, which is mapped based on actual location, and “walk” up and down various streets where they can see virtual storefronts and click on and virtually enter any store on the street.[[46]](#footnote-46) When inside the virtual store, a visiting customer can see and make use of various offers, deals and promotions that apply to that store’s products or services.[[47]](#footnote-47) The businesses that participate in the platform can also put messages in their virtual windows, as well as announce deals, goods and services that are available and delivery options.[[48]](#footnote-48) The platform uses geo-referencing technology to attempt to recreate a more realistic experience such as turning on shop lights at night, and simulating weather conditions similar to what the location is like in real time.[[49]](#footnote-49)

Website development is typically the first major step towards having a more comprehensive digital marketing strategy, with digital marketing services having become increasingly important with more consumers engaging in economic activity from home. Digital marketing is often seen as beneficial for small business because it provides real-time data on consumer behavior that can be quickly used to adjust a business’ practices so that they are more in line with what consumers want.[[50]](#footnote-50) Some strategies for small businesses to benefit from digital marketing include:[[51]](#footnote-51) 1) as discussed above, establishing an online presence via a website; 2) advertising through social media by creating profiles on platforms such as Facebook, Instagram, and Twitter; 3) creating a robust list of contacts to market through email and maintain customer relationships; 4) using video streaming to connect to customers and highlight products and services that a business offers; 5) utilizing search engine optimization in order to make a business’ products and services more easily discoverable on search engines; and 6) utilizing pay per click advertising, which allows a business to advertise its website to users who are searching on a search engine for words related to such business, thus making such campaigns highly targeted and cost effective as the business only pays for the ad when it is clicked on.

1. *E-Commerce*

 Many small business owners view the rise of e-commerce companies as a threat to their brick-and-mortar businesses. MasterCard’s 2018 report *Brick-and-Mortar Retailers Fight Back* found that 47 percent of the retail stores surveyed felt “significant” competition from online-only companies.[[52]](#footnote-52) A spokesperson from SBS acknowledged that the growth of e-commerce is one of the biggest reasons why small businesses that are not engaged in e-commerce fail.[[53]](#footnote-53) The COVID-19 pandemic and resulting closure of non-essential businesses to in-person sales has led e-commerce to become an even more popular avenue for consumers to shop. An Adobe Analytics report on the digital economy found that total online spending in May was up 77 percent year-over-year. According to the Adobe team, “We are seeing signs that online purchasing trends formed during the pandemic may see permanent adoption.”[[54]](#footnote-54) A recent report by the United States Department of Commerce similarly found that e-commerce sales were up around 44 percent in Q2 of 2020 in comparison to Q2 of 2019, and online sales accounted for 20.8 percent of total retail spending in Q2 of 2020.[[55]](#footnote-55) According to Eric Roth, managing director at the investment firm MidOcean Partners, “Ecommerce penetration was pulled forward 2-3 years, and trends that already were here are being magnified.”[[56]](#footnote-56)

Many small businesses have been able to take advantage of the rise in e-commerce, as small business participation in the online marketplace has increased significantly since the start of the pandemic. As businesses in states across the country must comply with reduced capacity guidelines, developing an online marketplace may enable a small business to continue to increase revenue despite COVID-related restrictions. Online software, such as Shopify, Magento, BigCommerce and Wix, can be easy to use for small businesses as they integrate a store’s point-of-sale system and handle sales tax and payment methods.[[57]](#footnote-57) Other small businesses are joining online shopping platforms such as Amazon, eBay or Etsy.[[58]](#footnote-58) Etsy, an e-commerce platform that specifically connects consumers with small businesses, has drastically increased in both sellers and buyers. Etsy has 3.1 million sellers on the platform, an increase of 34 percent since last year, and over 60 million active buyers, an increase of 41 percent since last year.[[59]](#footnote-59) A study by Salesforce of small to medium sized businesses found that at least one in five businesses surveyed reported that they’ve implemented at least one of the following technology solutions in the last six months: email marketing software, customer service software, project task collaboration tools, or e-commerce. Another one in five businesses surveyed that do not currently use these solutions have plans to implement them within the next 12 months.[[60]](#footnote-60)

As online sales become a greater aspect of the consumer shopping experience, however, certain mom-and-pop shops without an online presence may face difficulty remaining competitive. This change in consumer shopping preferences may also disproportionately hurt immigrant-owned businesses and family-owned mom-and-pop shops that are less flexible to change. While takeout has historically been a staple for restaurants in Chinatown, for example, participating on third party delivery platforms is much less common for such restaurants.[[61]](#footnote-61) As immigrant and minority-owned businesses tend to be undercapitalized operations with a smaller financial cushion,[[62]](#footnote-62) they may have less of an ability to spend money and time to develop a strong online marketplace. The City Comptroller report similarly argued that small businesses, many of which operate on razor thin margins, may be upended by the acceleration of e-commerce and e-delivery.[[63]](#footnote-63)

To combat the numerous obstacles that small businesses in New York City face in establishing an e-commerce platform, Governor Cuomo launched "Empire State Digital" on October 1, 2020 to provide small businesses with resources to enable them to join the online marketplace.[[64]](#footnote-64) Empire State Development (ESD) and the Department of Financial Services (DFS) will connect small businesses in New York State with global e-commerce software companies, including Shopify, Square, Clearbanc, and Etsy.[[65]](#footnote-65) The purpose of the program is to provide small businesses access to resources and toolkits to develop e-commerce platforms, access new customer bases, and adapt to the digitalization of the economy caused by the pandemic.[[66]](#footnote-66) E-commerce software companies participating in the program are committed to providing small businesses with training on their platforms, technology and marketing support, business services and discounted pricing.[[67]](#footnote-67) According to Governor Cuomo’s announcement of the program, the partnering e-commerce companies are offering resources that are “unique to the needs of New York's small businesses.”[[68]](#footnote-68)

1. *Disinfection and sanitation tools*

 The COVID-19 pandemic has also led to a growth in the implementation and desire for technological solutions for cleaning, disinfection and prevention. These solutions vary from utilizing robotics and UVC light to contactless thermometers and hand sanitizing stations.

 UVC lighting technologies utilize ultraviolet light to disinfect surfaces by taking advantage of the ultraviolet light’s ability to damage the DNA or RNA of viruses and bacteria. Specifically, UVC light is the light wavelength found within the 100-280 nanometer (“nm”) range, and has been shown to be effective in fighting the novel coronavirus.[[69]](#footnote-69) Additional research has sought to address concerns around the negative health implications of prolonged direct UVC light exposure for humans, which led to the development of far-UVC light, which uses light in a wavelength range that has been proven safer for human exposure and effective at combating the coronavirus.[[70]](#footnote-70) Companies such as Healthe have been utilizing far-UVC lighting technologies in their products to respond to the demand for UVC disinfecting solutions that would be safer for prolonged exposure to people, with businesses like Magnolia Bakery using Healthe products at their locations.[[71]](#footnote-71)

In response to the pandemic and the need for regularly scheduled cleaning and disinfection, robotic cleaners and floor scrubbers have seen a rise in use and development. Companies like UVD Robots have placed UVC lights on robots, which can then go into rooms to disinfect them.[[72]](#footnote-72) Other companies like Thoro have developed autonomous robots that clean and disinfect floors on a regular basis.[[73]](#footnote-73)

Electrostatic handheld sprayers positively charge disinfectant solutions to ensure bonded coverage and subsequent sanitization of surfaces, leading to a more comprehensive cleaning process.[[74]](#footnote-74) These tools have seen an increased use as schools and businesses look to reopen.

Non-contact infrared thermometers have seen a rise in usage as businesses look to check the temperatures of their patrons and employees. Because fevers are a common symptom of the coronavirus, checking temperatures has been a method for businesses to prevent potentially sick people from entering their premises.[[75]](#footnote-75) Hitachi has also created a device that detects elevated body temperatures from a distance of up to 10 feet.[[76]](#footnote-76)

1. *Mobile applications and QR Codes*

During the coronavirus pandemic, businesses big and small are looking for ways to offer customers a touch-free experience.[[77]](#footnote-77) Starbucks[[78]](#footnote-78) and Taco Bell[[79]](#footnote-79) have both announced that they are speeding up the roll-out of new store formats designed to streamline mobile order pick-up. These off-premises tactics are only half of the equation for most restaurants, which are also struggling with how to rebuild dine-in sales. The Florida-based P&O Global Technologies, which focused on surveillance tech before the pandemic saw an opportunity to provide restaurants and other businesses with a COVID-safe technology-based solution and developed a Check Point Temperature Pedestal.[[80]](#footnote-80) The machine combines temperature measurement, a hands-free hand sanitizer dispenser and facial recognition to create a contactless check-point that can be connected to a door to control employee entry.[[81]](#footnote-81) The thermal camera verifies that employees aren’t running a fever, and the facial recognition feature can confirm that they are wearing a face mask before allowing them to enter. According to a company representative, the facial recognition feature would still work even if a person’s face were partially obscured -- a unique challenge of the pandemic era, due to the use of masks. The facial recognition feature can be used as a contactless method of clocking in, which is the type of touchless tech that may become part of the new normal.[[82]](#footnote-82)

Another area of restaurant technology likely to keep growing post-pandemic is touchless systems, such as QR code scanners, that eliminate the problem of spreading germs via high-touch surfaces, like menus. As restaurants reopen, a major concern is limiting the spread of the COVID-19 through surfaces, such as physical menus. The Centers for Disease Control (CDC) recommends the use of disposable or digital menus.[[83]](#footnote-83) Since printing disposable menus poses cost-related challenges for small business owners, contactless Quick Response (QR) codes menus could be a viable option. Therefore, QR Code menus may become the next normal for restaurants of all sizes.[[84]](#footnote-84)

A QR code is a specific matrix barcode (or two-dimensional code). It's a symbol, similar to a Universal Product Code (UPC) code that can be placed on any surface. The code consists of black modules arranged in a square pattern on a white background.[[85]](#footnote-85) By taking a picture of a QR code with a cellphone camera, users gain instant access to a Uniform Resource Locator (URL) that can describe a product in detail. [[86]](#footnote-86) QR codes are easy to use with smart phone cameras. Apple built a QR code reader right into the camera. Most Android phones also have a QR code reader built into the camera but if not, it could easily be downloaded.

The first QR codes were designed in 1994 for the automotive industry in Japan.[[87]](#footnote-87) Currently, the QR code system is popular outside the automotive industry due to its fast readability and greater storage capacity. It is being used in a wide variety of applications, such as manufacturing, logistics, sales applications[[88]](#footnote-88) and restaurants, as well as being used by people in their daily consumption or business promotion and advertising.[[89]](#footnote-89)

Accessibility and the low cost of producing QR codes make this technology widely available. QR generators can be downloaded at no cost.[[90]](#footnote-90) Thus, the primary investment in producing QR codes is labor. Despite the fact that staff cuts necessitated by difficult economic times have made staff time increasingly valuable, the value added by using this technological tool to improve access to information would likely offset the labor cost.[[91]](#footnote-91)

Most chains and independent restaurants have upgraded their digital systems to allow guests to safely order and pay for food without having a physical exchange with employees. The movement has led to a rebirth in QR codes, which are being used to view digital menus and pay for meals with a personal phone.[[92]](#footnote-92)

PayPal recently announced a further innovation by integrating QR codes with its payment method.[[93]](#footnote-93) Customers on PayPal’s mobile app can pay at restaurants, shops, farmers' markets or anywhere else simply by scanning a QR code with a smartphone camera. PayPal makes it easier for small merchants[[94]](#footnote-94) to offer touchless payments without needing to purchase any new equipment, so it’s bound to become a bigger player in everyday shopping.[[95]](#footnote-95)

Despite the advantages that the use of QR codes provide both businesses and consumers, cyber criminals may deter companies or customers from using QR codes. Cyber criminals can utilize a QR code to generate software and convert website links related to an online virus, a Trojan program, or illegal payment software into images of QR code, then disguise such a QR code as a commodity purchasing link or cash return link to attract online sellers to click or scan.[[96]](#footnote-96) After the user scans such a QR code, the mobile phone will be infected with a virus and the payment account information and password stored in the mobile phone will be disclosed to the criminals. In addition, cyber criminals can utilize a malicious QR code to intercept a verification code message, or to shield the alerting function regarding the balance in a bank account, thus granting access to receive a verification SMS or password to the account.[[97]](#footnote-97) Once the criminals control the account of a victim, they can quickly transfer the money in such an account by Alipay transfer, online bank transfer, purchasing virtual currency, and other forms of online consumption.[[98]](#footnote-98)

In addition, there are a number of cases involving online pornography.[[99]](#footnote-99) The perpetrators package pornographic pictures and videos into coupon links, advertisement links and other links to attract clicks, so as to increase the purchasing of pornographic products. Another issue is that QR codes are not permanent and have an expiration date. This could also lead to problems. For example Heinz's label design campaign ran from 2012 to 2014 and the domain expired in 2015. It was then snatched up by a German porn site called FunDorado, which is why in 2015 a QR code placed on a ketchup bottle led to thumbnails of sex videos.[[100]](#footnote-100)

1. *Cloud computing services*

The COVID-19 pandemic has heightened the need for small businesses to adopt digital business models—and Cloud technology can provide the agility, scalability, and innovation required for this transition. Although there have been frustrations in the transition to the Cloud, companies may accelerate their progress by building cloud-ready operating models.[[101]](#footnote-101) Using Cloud technology, users interact with Internet application and store data on these virtual servers rather than on hard drives.[[102]](#footnote-102) Now, both people and businesses often store their information not on computer hard drives, but on the Cloud.[[103]](#footnote-103)

Cloud is a generic term that refers to a network where the physical location and inner workings are abstracted away and unimportant to the usage.[[104]](#footnote-104) According to the official National Institute of Standards and Technology definition, “[c]loud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.”[[105]](#footnote-105)

Before Cloud technology, companies stored their data on hard drives, servers or data centers, physically located in their offices. Now, an increasing number of companies are taking advantage of Cloud computing services offered by providers such as Amazon, Google and others. These Cloud computing service providers allow companies to replace their expensive and aging technological infrastructure with third-party processing and storage capabilities that are accessible over the Internet.[[106]](#footnote-106)

Cloud computing services may provide savings on overhead and infrastructure costs as well as permit easy access over the Internet or a private network from any location, so that computer software and data may be readily available.[[107]](#footnote-107) Jack Wood, a regular contributor to Silicon ANGLE, in his *20 Cloud Computing Statistics Every CIO Should Know* article stated that about eighty 82 percent of companies [reportedly](http://blog.nskinc.com/IT-Services-Boston/bid/118077/7-Statistics-You-Didn-t-Know-About-Cloud-Computing) saved money by moving to the Cloud.[[108]](#footnote-108) Further, according to studies published by Forbes Magazine regarding Cloud computing technology in the United States, there has been considerable growth in the adoption of using Cloud computing technology within the past few years and there is a trend to grow even more.[[109]](#footnote-109)

The major benefits of using Cloud computing technology are accessibility and low operation cost. With Cloud computing, consumers and businesses benefit from increased accessibility to data applications, software, and other IT resources, as they can access software and applications, stored data, processing and network capabilities, and other fundamental computing resources from anywhere in the world. Moving data to the Cloud provides a company with lower operating costs.[[110]](#footnote-110) A company obtains substantial cost savings primarily because it does not have to maintain its own IT infrastructure, thereby avoiding large upfront costs to purchasing and installation of computer hardware, costs to obtain software licenses, and high yearly overhead costs for upgrades, maintenance, and system administration. Instead, the company uses the Cloud service provider's infrastructure, and the service provider takes care of managing any upgrades, maintenance and system administration in the Cloud.[[111]](#footnote-111)

 Cloud computing helps collaborate with coworkers, communicate with clients and develop products as if they were working and meeting in an office regardless of their geographical location that is essential for businesses to succeed in the new environment. It is important to note, however, that Cloud computing trends may involve an adjustment in regulatory compliance. According to Deloitte and Touche, many businesses that have rushed to embrace the cloud during the pandemic have failed to adjust their practices to meet regulatory requirements.[[112]](#footnote-112) In this respect, the pandemic has exacerbated cloud compliance issues that already existed before the coronavirus threat emerged.

1. **Concerns**
2. *Data Collection, Privacy and Cybersecurity*

The coronavirus pandemic leading to business dealings being moved online or information gathering for safe reopening, raises concerns with data privacy. As offices reopen across the United States, an increasing number of businesses have instituted health screening measures[[113]](#footnote-113) to protect their employees and customers from infection and to protect themselves from lawsuits brought by employees or customers who get infected nonetheless.[[114]](#footnote-114) The EEOC issued new guidance in March 2020 permitting mandatory testing of employees for COVID-19 before allowing them to return to the workplace and permitting testing of job applicants for COVID-19 symptoms.[[115]](#footnote-115) Moreover, in New York, businesses that offer indoor dining must strictly adhere to the State-issued guidance, which includes, among other things, temperature checks at the door for all customers, and providing personal and contact information for contact tracing.[[116]](#footnote-116) Many restaurants require their customers to provide such information on their website where they may ask additional personal information as well as collect data through their website cookies. Such information can include IP addresses, information about how the user interacts with the website, information about browsers and the device the user accessed the site with, as well as browsing activity across other sites. This gives those with access to the information insight about the individual user’s interests, shopping habits, problems they are facing and more.[[117]](#footnote-117)

As a result, massive data collection and monitoring of biometric and health data may expand exponentially in the coming years, making the protection of such data a critical issue. As the data collection and sensor-laden environment expands, and businesses use technology that makes it easy for them to gather an expanding range of biometric data about their workforce or customers and combine it with other sources of data, the potential for damage to both companies and workers or customers is likely to increase. Existing legal frameworks do too little to curb potential misuse of biometric data and health monitoring, threatening the trust relationship between employers and workers, service provides and customers.[[118]](#footnote-118) Gathering and sharing information is essential to track the spread of the virus. However, there are limits to what data needs to be shared and who should have access to it, especially when it comes to personal identifiable information, which is the most sensitive and desirable data for cyber criminals.

**D**uring the pandemic, hackers and data thieves have remained active. In an attempt to exploit workplace disruption and consumer concern, info-crooks have come up with a creative array of COVID cons designed to steal sensitive data – for example, imposter scams related to public health and contact tracing.[[119]](#footnote-119)

In fact, cyber-attacks are a growing threat for small businesses and the U.S. economy. Small businesses are attractive targets because they have information that cybercriminals want, and they typically lack the security infrastructure of larger businesses.[[120]](#footnote-120) According to a recent SBA survey, 88 percent of small business owners felt their business was vulnerable to a cyber-attack. Yet many businesses can’t afford professional IT solutions, they have limited time to devote to cybersecurity, or they don’t know where to begin.

In New York, cyber security is important not only to protect sensitive data, critical infrastructure and customer’s privacy, but also to comply with the New York’s Stop Hacks and Improve Electronic Data Security Act (SHIELD Act)[[121]](#footnote-121), which broadens the state’s data breach notification requirements and requires covered businesses to have “reasonable” data security safeguards.

The Act specifically addresses cybersecurity for small businesses.[[122]](#footnote-122) Pursuant to the Act, small businesses, shall “contain[] reasonable administrative, technical and physical safeguards that are appropriate for the size and complexity of the small business, the nature and scope of the small business's activities, and the sensitivity of the personal information the small business collects from or about consumers.”[[123]](#footnote-123) For the stated above reasons, businesses that collect data from their customers and employees must establish all necessary protections to safeguard such information.

1. *Educational trainings offered by the City*

New York City’s SBS offers free business courses to help small business owners and entrepreneurs start, operate, and grow their business.[[124]](#footnote-124) However, there are no dedicated resources to help small businesses incorporate technology into their daily operations listed on the SBS website; all technology resources related to small business are relegated to webinars and events on the SBS Eventbrite page.[[125]](#footnote-125) Once the webinar or event has concluded, there are no listed resources or educational documents available.[[126]](#footnote-126)

The New York Public Library offers resources for small businesses, including links to free recorded webinars from SCORE that cover a variety of business topics, including technology assistance.[[127]](#footnote-127)

New York City’s Economic Development Corporation (“NYCEDC”) recently relaunched an initiative to garner innovative solutions for small businesses impacted by COVID-19, partnering with SBS, The Urban Tech Hub @ Company, and CIV:LAB to crowdsource tech-enabled solutions to help small businesses recover and reopen.[[128]](#footnote-128) Additionally, NYCEDC along with SBS partnered with the Peterson Foundation, Partnership for New York City, and five Borough Chambers of Commerce to launch the “NYC Small Business Resource Network”, which includes financial guidance, legal counsel, and technology support.[[129]](#footnote-129) Businesses must sign up and submit a business profile before they can access these resources and trainings.

**V. CONCLUSION**

The Council seeks to gain a better understanding of the resources SBS is providing small businesses to help them adapt to the changing consumer marketplace. The Council is also interested in hearing from small businesses about the challenges they face in adopting new technologies to their business models, and what existing resources they have used to develop strong online presences. The Committee also welcomes the input of community groups, BIDs and other commercial organizations about the impact technology has had on the small business economy, and areas of innovation that could boost small businesses.

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