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Covid-19 has changed consumer behaviour forever and the Hong Kong banking and financial services industry urgently need to cope and adapt. Digital transformation with AI has quickly become the top priority for those that do not want to be left behind by the new wave of digitalization.

2019新型冠狀病毒徹底改變了消費者的行為，香港銀行和金融服務業亦需要迫切改變以適應這種變化。對於那些不希望被數碼化浪潮拋棄的企業來說，使用人工智能及進行數碼轉型迅速地成為當務之急。

Covid-19 has changed consumer behaviour forever and the Hong Kong banking and financial services industry urgently need to cope and adapt. Digital transformation with AI has quickly become the top priority for those that do not want to be left behind by the new wave of digitalization. “Necessity is the mother of invention,” as the old English proverb goes. With the current Covid-19 pandemic, the struggle for business survival is truly the mother of innovation and digital transformation. Warren Buffet once said, “Only when the tide goes out do you discover who’s been swimming

naked.” Many businesses suddenly find themselves quite “naked” without the use of physical sales and distribution channels, and the only way to connect with customers is digital.

The world witnessed the nearly overnight adoption of WFH (work from home), Zoom meetings, food/grocery deliveries, cashless payments, online banking/investment/insurance, and virtual events/webinars, i.e. the “new normal.” Although a large percentage of Hong Kong’s finance industry have already embarked

on their digital transformation journey, many are not far along enough to avoid negative impact from Covid-19. Besides, for digital transformation to truly benefit and support business, artificial intelligence (AI) is a crucial component. However, many in banking and financial services were still starting or in the middle of their adoption of AI and machine learning when Covid-19 happened. For those fortunate early adopters of AI, they are now reaping the rewards.

Last year has been a busy year for AI development around the

2019新型冠狀病毒徹底改變了消費者的行為，香港銀行和金融服務業亦需要迫切改變以適應這種變化。對於那些不希望被數碼化浪潮拋棄的企業來說，使用人工智能及進行數碼轉型迅速地成為當務之急。正如古代的諺語有云，「需要乃是發明之母」。企業為了在目前的新型冠狀病毒大流行中生存，確實需要創新和數碼轉型。沃倫·巴菲特 (Warren Buffet) 曾經說過：「只有當海水退潮後才能發現誰在裸泳。」疫情使許多企業突然因為沒有了實體銷售和分銷渠道而變得「赤裸裸」，而重新與消費者建立聯繫的唯一途徑就是數碼化。

全世界都目睹了在家工作、Zoom視像會議、食物及日常用品的交易運送、無現金支付、網上銀行/投資/保險，以及網上虛擬活動/網絡研討會全成了「新常態」，幾乎全部都在一夜之間被市民大眾採用。儘管香港有很大部份的金融業已經開始了數碼轉型，但許多業務還未足以避開新

型冠狀病毒所帶來的負面影響。此外，要數碼轉型做到支援企業業務並帶來真正效益，採用人工智能乃關鍵因素。可是在新型冠狀病毒出現時，許多銀行和金融服務仍處於起步階段或在學習應用人工智能及機器學習之中。而那些在較早期已採用人工智能的幸運者則在此時收成和享受回報。

2019年是全球人工智能發展蓬勃的一年，尤其是金融服務行業。我們看到大眾對人工智能的重視和認識快速增長，而香港銀行和金融服務機構對新的人工智能和數據功能的發展亦不遑多讓。採用人工智能的主要集中於聊天機械人的客戶服務、機械人投資顧問的資金管理以及流程機械人的流程自動化。儘管當時企業並未意識到這一點，但是這些人工智能的應用都為舒緩新型冠狀病毒所帶來的影響作了準備，例如因應大部份企業員工需要在家工作，市民減少外出在家抗疫的前提

“Post Covid-19 has caused CXOs to reprioritize and move up their digital transformation plans and shorten timelines.”

world, and particularly for the financial services industry. We saw rapid growth in AI awareness and understanding, as well as the development of new AI and data capabilities among banking and FSI in Hong Kong. Customer service with chatbots, money management with robo-advisors, and automation with robotic process automation (RPA) have been some of the key AI focuses. Although businesses did not realize it then, but all those AI applications paved way to alleviate the problems caused by Covid-19, such as coping with reduced staffing in the front-line

and customer service centres, as most have to work from home and customers avoided going out. Gartner previously predicted that “25% of customer service and support operations will integrate virtual customer assistant or chatbot technology across engagement channels by 2020.” I believe that prediction needs to be doubled or tripled now.

Post Covid-19 has caused CXOs to reprioritize and move up their digital transformation plans and shorten timelines. There is now a sense of urgency to have

下，於前線及在客戶服務中心工作的員工大幅減少。高德納諮詢公司曾預測「2020年將有25%的客戶服務和支援業務企業融合虛擬客戶服務助理或聊天機械人技術於其業務營運。」我認為現在這個預測數字有需要增加一倍或兩倍。

疫情亦使企業主管重新優先處理企業的數碼轉型計劃，並縮短其時間表，因企業明白到全面數碼化的迫切性和重要性，這意味著企業要使用人工智能去簡化流程及減少操作中實際員工或人手的需要。在過去一年，隨著對人工智能的認知和功能日趨成熟，以及機器學習的數據可用性逐漸提高，我相信香港銀行和金融服務業已準備好在更多業務中應用人工智能和機器學習，例如使用更複雜的人工智能如認知計算來處理更困難和更複雜的業務需求。

即使對於現已擁有聊天機械人和流程機械人系統的企業，我相信他們也將升級到更成熟的聊天機械人模式，以更自然的語言理解能力去處理日新月異的政策、法規和準則，以及運用人工智能解決更複雜的客戶問題。新型聊天機械人將具有更好的情境感知、更好的狀態且更像人類的功能。機械人投資顧問亦將變得更有智慧，

the capability to go fully digital whenever needed. That means using AI to streamline processes and reduce or eliminate humans in the loop as much as possible. With maturing of AI knowledge and capabilities over the past year, as well as improved data-readiness for machine learning, I believe the Hong Kong banking and financial services industry is well poised to deploy AI and machine learning in many more business functions, as well as use more sophisticated forms of AI, such as cognitive computing, to handle harder and more complex business needs.

可以利用更多的結構化和非結構化知識庫以及替代數據並涵蓋更多產品。在企業中亦將更廣泛的使用流程機械人，以進一步減少實際員工參與或執行單調瑣碎的工作。聊天機械人和機械人投資顧問或可進一步與流程機械人結合，以提供更全面的自助服務。

許多人認為這「新常態」將持續存在，不願改變或無法適應的企業將被取代。網上銀行和網上投資交易、網上購物和食物速遞服務的便利性，可能已對香港的消費者行為以及零售策略產生了長遠的影響。香港金融管理局(金管局)、香港保險業監管局和其他監管機構已迅速制定了新的指南和臨時措施，以應對消費者對數碼服務的新需求。新型冠狀病毒亦使香港的金融機構更致力推動人工智能技術的發展，如生物特徵人面識別和電子化「認識你的客戶」(eKYC)，以用於遙距開戶和進行簡介，並以人工智能技術打擊洗黑錢及恐怖分子資金籌集。保險公司亦迅速地結合人工智能技術和視像功能，以支援某些認可產品進行遙距銷售。

新型冠狀病毒的出現使企業急於擴展可全面數碼化而無需員工參與的產品組合。

全數碼化產品需要在整個銷售、介紹和服務過程中廣泛應用人工智能，以提供一個暢順無阻的個人化客戶體驗，滿足現代消費者對數碼化服務表現的期望。在數碼世界中，大眾期望得到回應的時間以秒計算，不是以分鐘，更絕對不可能是以日計算。潛在顧客願意用幾週時間去等保險報價的日子已經一去不復返。在亞馬遜的一項研究中，它發現網頁加載時間慢了一秒鐘，也可使亞馬遜一年的銷售收入減少16億美元。

在沒有人參與的情況下，我們需要人工智能提供的產品/服務更具人性，能自動承銷和評分/評級，並產生能變通、個人化的

定價和內容。我們應該還會看到支援和服務業將更廣泛的使用聊天機械人，它們也可能於相關流程中加入流程機械人一同使用，如自動處理索賠和其他的交易。金融服務機構也將使用人工智能去建立創建回饋循環來提高內部運營效率和效能。以人工智能來監察流程並檢測洗黑錢及恐怖分子資金籌集和欺詐檢測的異常也將被廣泛應用。

本身已實行數碼化的企業在應對新型冠狀病毒疫情此類情況時有着一定的優勢。香港最近推出的虛擬銀行和虛擬保險公司是香港金融服務機構進化史上的重要里程碑。這些新興的全數碼化企業將非常

“2019年是全球人工智能發展蓬勃的一年，尤其是金融服務行業而言。我們看到大眾對人工智能的重視和認識正快速增長，而香港銀行和金融服務機構對新的人工智能和數據功能的發展亦不遑多讓。”

Even for companies with existing chatbots and RPA systems, I believe they will be upgrading to more sophisticated forms of chatbot that are better at natural language understanding to process dynamic changing policies, regulations, and guidelines, as well as AI problem solving to resolve more complex customer issues. Newer chatbots will be context-aware, stateful and more human-like. Robo-advisors will be more intelligent, leveraging additional structured and unstructured knowledge sources and alternative data as well as covering more products. There will also be more expansive use of RPA across the entire organization to further reduce the need for human

intervention when performing mundane and routine tasks. Chatbots and robo-advisors may further be integrated with RPAs for fully digital self-service processing.

Many believe the “new normal” will be here to stay, and companies that are not willing or able to adapt will be displaced. The convenience of online banking and investment trading, together with online shopping and food delivery may have a lasting impact on consumer behaviour as well as retail strategies in Hong Kong. The Hong Kong Monetary Authority, Hong Kong Insurance Authority, and other regulatory bodies have been quick in creating new guidelines and

temporary measures to support new consumer demands for digital services. For financial institutes in Hong Kong, Covid-19 will propel growth in AI technologies like biometric facial recognition and eKYC for remote account opening and onboarding, as well as AI fraud-detection to support AML/CFT. Insurance companies are also quick to integrate AI and video chats to support non-face-to-face remote sales for certain approved products.

Because of Covid-19, companies are also rushing to expand their portfolio of products that can be offered fully digitally, without needing human interventions. Fully digital products will require

extensive use of AI throughout the sales, onboarding, and servicing process to provide a truly frictionless and personalized customer experience and satisfy modern consumer expectation on digital performance. In the digital world, people expect responses in seconds, not minutes and definitely not days. Gone are the days when potential customers are willing to wait a couple of weeks for insurance offers. In a study by Amazon, it found that even if page load time slowed down by just one second, it could cost Amazon \$1.6 billion in sales over a year.

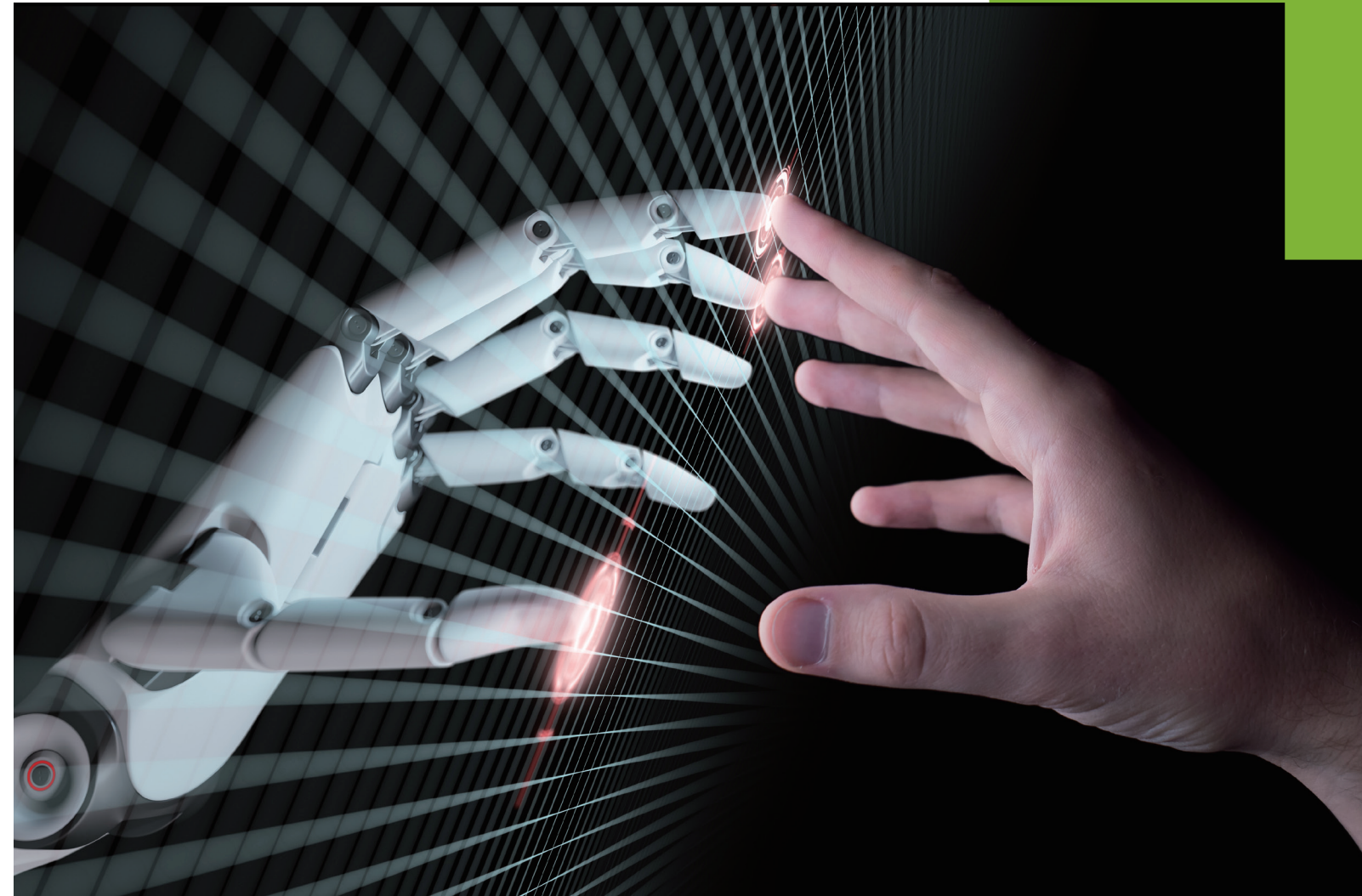
Without humans in the loop, we need AI to personalize product/service

offered and automate underwriting and scoring/rating as well as generate dynamic and personalized pricing as well as content. We will probably also see additional use of chatbots in support and servicing, invoking associated processes with RPA, such as in automated claims processing and other types of transactions. FSI companies will also use AI to create feedback loops to improve internal operational efficiencies and effectiveness. There will also be increased use of AI to monitor processes and detect anomalies/outliers for AML/CFT and fraud detection.

Companies that are born-digital are at an advantage in coping with

situations like Covid-19. Hong Kong's recent launches of virtual banks and virtual insurers are major milestones in Hong Kong FSI's evolution history. These new totally digital companies will rely heavily on technologies like AI, machine learning, blockchain, and biometrics identification, to automate and remove the need for humans in the loop. I expect the development of virtual banks and insurers, with their future market share growth, will further drive AI development in Hong Kong across the financial services industry

There will also be increased use of AI for digital marketing and customer acquisition. Without the





use of physical storefronts during a pandemic, companies need AI to identify potential customers digitally. With the enormous data available through consumer interactions in social media and digital ecosystems, AI can perform big data-driven precision-targeted marketing campaigns that pinpoint exactly the right persons to offer the right products, at the right prices and time in their life.

Hong Kong FSI is also advancing rapidly in the understanding and governance of AI ethics and related issues. Last year, the Hong Kong Monetary Authority (HKMA)

released high-level guidelines and principles relating to AI and governance, accountability, fairness, transparency, data privacy, etc. The HKMA also released an extensive whitepaper “Reshaping Banking with Artificial Intelligence” to help raise awareness as well as promote adoption of AI in the banking industry. The Hong Kong Securities and Futures Commissions (SFC) also issued guidelines on the use of AI algorithms and robo-advisors. In 2018, the Office of the Privacy Commissioner for Personal Data released a document on “Ethical Accountability Framework for Hong Kong.” Even though a lot of

groundwork has been established, this area of AI development is still an evolving topic globally, so much more work remains. With Covid-19 and as more and more tasks are delegated to AI, the issues of AI governance will become increasingly more important, particularly around potential AI biases in decision making. Take the highly reported incident last year with the Apple Card launch when its AI credit scoring algorithm supposedly exhibited gender bias, offering a male customer twenty times more credit limit than his wife who has a similar income and background profile. Companies

need to carefully examine data used for machine learning so that it not influenced by human prejudices, comprehensive, complete, and properly cleaned.

The experience of the Covid-19 pandemic will transform Hong Kong’s FSI permanently and give newfound momentum for digital transformation and AI. As one of the world’s leading financial centres, Hong Kong has already been aggressive in taking advantage of new technologies. Covid-19 has now made digital transformation and AI more of a necessity than a luxury for many companies.

“Robo-advisors will be more intelligent, leveraging additional structured and unstructured knowledge sources and alternative data as well as covering more products.”

着重使用人工智能、機器學習、區塊鏈和生物識別等技術，去自動化及減低過程中對人力的需求。我預計虛擬銀行和虛擬保險公司的發展以及它們未來市場份額的增長將進一步推動香港整個金融服務業的人工智能發展。

人工智能亦將在數碼營銷和開發客戶這範疇上被廣泛使用。在疫症期間由於不能使用實體店，企業需要人工智能來在網上尋找潛在客戶。人工智能可通過社交媒體和數碼生態系統中的消費者互動從而獲得大量數據，繼而進行由大數據驅動的精確定位營銷活動，有效並準確地瞄準合適的消費者，在適當的時間為他們提供所需的價格和的產品。

香港金融服務機構也在迅速發展對人工智能道德及相關問題的理解和治理。金管局去年發布了有關人工智能和治理、問責性、公平度、透明度、數據隱私等方面的高級指引和原則。金管局還發布了一份全面的白皮書 “Reshaping Banking with Artificial Intelligence” 以幫助提高認識並促進人工智能在銀行業中的應用。香港證券及期貨事務監察委員會也

發布了有關使用人工智能計算法和機械人顧問的指南。香港個人資料私隱專員公署亦在2018年發布了一份 “Ethical Accountability Framework for Hong Kong” 的報告。儘管已完成很多基礎工作，但人工智能開發這一領域仍在全球不斷發展、變更，因此在這方面還有更多工作要進行。隨著疫情發展，各機構分配越來越多的任務給人工智能，治理人工智能的問題——特別是在決策中可能存在的人工智能偏見將變得越來越重要。以去年蘋果信用卡 (Apple Card) 推出時發生的事件為例，其人工智能信用評分計算法表現出性別偏見，為一名男性顧客所提供的信用額度是其妻子（兩人收入和背景類似）的20倍。企業必須仔細檢查用於機器學習的數據，以使其在不受人為偏見影響下，是全面完整的和沒有受任何影響的數據。

新型冠狀病毒大流行將永遠改變香港金融服務業，並為數碼轉型和採用人工智能注入新動力。作為世界領先的金融中心之一，香港已經積極利用新技術。對許多公司而言，疫情已使數碼轉型和人工智能變成必需品，而再也不是奢侈品。

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