

Original article. Political science

UDC 327(5)

DOI: 10.31696/2072-8271-2022-4-4-57-153-165

THE DIGITAL AGENDA OF ASEAN ECONOMIC COMMUNITY 2025: A RESPONSE FROM THE SINGAPORE AIRLINES

Evgeny A. KANAEV¹

¹ IMEMO RAS, Moscow, Russia, e.a.kanaev@gmail.com,

<https://orcid.org/0000-0002-7988-4210>

Abstract: As the deadline for the establishment of the ASEAN Community to 2025 is approaching, the association attaches increasing importance to the digital dimension of the ASEAN Economic Community (AEC). Arguably, the ASEAN is far from fulfilling its goals, mostly, in regard to making Southeast Asia a unified manufacturing and doing business area. Concerning the association's plans to provide intra-ASEAN cooperation with digital support, many obstacles remain in place. In these circumstances, much will depend upon the “down-top” vector. Specifically, Southeast Asian industry and business champions, among which the company Singapore Airlines figures prominently, can lead by example. The article scrutinizes the measures implemented by the Singapore Airlines to digitalize its business activity with an emphasis on the COVID-19 pandemic period and distinguished fundamental factors behind their success. The author argues that although the experience of the Singapore Airlines is an individual example rather than a general pattern of business activity in Southeast Asia, regional companies will be increasingly introducing similar practices, or at least their major components, in the years to come.

Keywords: *ASEAN Economic Community, digital regionalism, business activity, Singapore Airlines, competitive advantages, digital transformation.*

For citation: Kanaev E.A. The Digital Agenda of ASEAN Economic Community 2025: A Response from the Singapore Airlines. *Yugo-Vostochnaya Aziya: aktual'nyye problemy razvitiya*, 2022, T. 4, № 4 (57). Pp. 153–165. DOI: 10.31696/2072-8271-2022-4-4-57-153-165

Научная статья. Политические науки

ЦИФРОВАЯ ПОВЕСТКА ЭКОНОМИЧЕСКОГО СООБЩЕСТВА АСЕАН – 2025 И ПОЛИТИКА КОМПАНИИ СИНГАПУРСКИЕ АВИАЛИНИИ

Евгений Александрович Канаев ¹

¹ИМЭМО РАН, Москва, Россия, e.a.kanaev@gmail.com,
<https://orcid.org/0000-0002-7988-4210>

Аннотация: По мере приближения срока отчетности о формировании Сообщества АСЕАН до 2025 года, Ассоциация уделяет растущее внимание цифровому измерению Экономического сообщества (ЭС) АСЕАН. Можно утверждать, что АСЕАН не в полной мере преуспела в достижении поставленных целей, главным образом, применительно к выравниванию условий осуществления производственной и коммерческой деятельности в Юго-Восточной Азии. На пути реализации планов Ассоциации по цифровой поддержке внутриасеановского сотрудничества остается множество препятствий. В таких условиях многое будет зависеть от «вектора снизу». Необходимо перенимать опыт «чемпионов отраслей» из стран азиатского юго-востока, особое место среди которых занимает компания Сингапурские авиалинии. В статье анализируются меры по цифровой трансформации бизнес-процессов, реализуемые Сингапурскими авиалиниями с акцентом на «пандемийный» период, и выявляются ключевые факторы их успешности. С точки зрения автора, хотя пример Сингапурских авиалиний является единичным, а не системным явлением коммерческих практик на пространстве Юго-Восточной Азии, в предстоящие годы деловые круги расположенных там стран будут все активнее брать на вооружение наработанный компанией опыт или его ключевые компоненты.

Ключевые слова: Экономическое сообщество АСЕАН, цифровой регионализм, деловая активность, Сингапурские авиалинии, конкурентные преимущества, цифровая трансформация.

Для цитирования: Канаев Е.А. Цифровая повестка экономического сообщества АСЕАН – 2025 и политика компании Сингапурские Авиалинии // Юго-Восточная Азия: актуальные проблемы развития, 2022, Том 4, № 4 (57). С. 153–165. DOI: 10.31696/2072-8271-2022-4-4-57-153-165

As the ASEAN Community to 2025 is ASEAN's key prospective project, its successful realization is important from a substantial and reputational perspective. In light of this, the ASEAN Economic Community to 2025 (AEC-2025) rises to special prominence. Part of ASEAN's effort to translate its vision into reality relates to increasing the participation of the business communities of its member states in order to make Southeast Asia an area of promising commercial opportunities.

Against this backdrop, a contribution from internationally renowned Southeast Asian companies, at least portraying them as examples of excellence to incentivize the regional business community to follow leaders' experience, becomes crucial.

Simultaneously, while the digital dimension in ASEAN's economic regionalism increases in significance, serious points of vulnerability are in place. If so, Southeast Asian corporate powerhouses whose experience deserves emulating must make a record of digital achievements. In this specific context, the company Singapore Airlines deserves detailed consideration.

ASEAN Economic Regionalism and Its Emerging Digital Dimension

The ASEAN economic regionalism started in the 1970s, as the association initiated its first multilateral projects. Among them, Agreement on ASEAN Preferential Trade Arrangements, Basic Agreement on ASEAN Industrial Projects and the ASEAN Finance Corporation were of particular importance. At the same time, however, they did not take off, as in the 1970s and the 1980s ASEAN's key objectives focused on political rather than on economic priorities. More than that, the international milieu within and around Southeast Asia was not conducive to implementing multilateral economic initiatives. As a result, the ASEAN member states relied upon and benefited from cooperation within Japanese-led supply-production networks rather than aimed to develop intra-ASEAN projects.

As time passed, however, the economic dimension of intra-ASEAN agenda became an important priority for the association and its member states. External and internal factors were behind that interest. Externally, integration processes in other formats, for instance, APEC and the EU, intensified, which was a challenge the association had to respond to. Internally, as the process of ASEAN expansion gained momentum, multilateral economic cooperation embracing all the newcomers became a demand of time. As a result, in the 1990s the Association launched large-scale eco-

conomic initiatives, the key being ASEAN Free Trade Area (AFTA), ASEAN Investment Guarantee Agreement and Framework Agreement on the ASEAN Investment Area.

Although those initiatives can be regarded as successful, they could not achieve their prime goal, namely, to make Southeast Asia an integrated production and commercial area. More than that, as a boom of FTA in the Asia-Pacific region started, prospects for ASEAN's fragmentation became real. In those specific circumstances, ASEAN initiated its key multilateral project, namely, the establishment of the ASEAN Community, part of which is the ASEAN Economic Community. Initially scheduled for 2015, the project was later on extended to 2025. Fundamentally, both AEC 2015 and AEC 2025 aim to make Southeast Asia a unified market and production area with minimal development gaps between its member states and fully integrated in the global economy.

The project encounters numerous difficulties. The ASEAN member states have been unable to develop intra-ASEAN global value chains (GVC). At present, GVCs are undergoing a profound transformation, which relates to their factors of development, core competences, entry barriers, forms of property, network connections etc. The association and its relevant bodies like the ASEAN Economic Community Council are outside this process, as the GVCs operating in Southeast Asia are controlled by extra-regional powers, mostly Japan (the automobile and the consumer electronics sectors) and China (the Belt and Road Initiative). The ASEAN member states have not established its own dispute-settlement centers of excellence: the experience of SIAC has not been converted into ASEAN International Arbitration Center¹.

Nevertheless, the association realizes a vital necessity to provide its multilateral economic initiatives with digital support. The goals of the ASEAN Economic Community, both AEC-2015 and AEC-2025, were and are difficult, if not completely unrealistic, to achieve without intensifying digital cooperation between the ASEAN member states, as the scale factor had been missing. In the mid-late 2010s, the Digital Silk Road as part of the PRC's Belt and Road Initiative gained momentum. Perhaps most importantly, the ASEAN member states realized high vulnerability of their critical infrastructure against cyber-attacks. An effective response to those challenges needs to be premised on multilateral rather than individual efforts.

In this context, the association intensified digital cooperation between its member states (although ASEAN started to explore this niche in the early 2000s). Notable initiatives include ASEAN Agreement on Elec-

tronic Commerce (2019) and the subsequent Work Plan on the Implementation of E-Commerce Agreement (2021), the Bandar Seri Begawan Roadmap: an ASEAN Digital Transformation Agenda to Accelerate ASEAN's Economic Recovery and Digital Economy Integration (2021) and ASEAN Digital Masterplan 2025 (ADM-2025). In specific terms, ADM-2025 declares that ASEAN aims to be “a leading digital community and economic block, powered by secure and transformative digital services, technologies and ecosystem”, while the desired outcomes and enabling actions range from “an increase in the quality and coverage of fixed and mobile broadband infrastructure” to “a digitally inclusive society in ASEAN”².

The progress has been hampered by numerous factors. To begin, physical infrastructure and data governance in Southeast Asia remain underdeveloped. At the goal-setting level, the association did not specify whether a digital single market (if any) corresponds to the goal of making Southeast Asia an integrated area of industrial and commercial activity. For instance, should the ASEAN digital single market be established before or simultaneously with measures to make Southeast Asia a single market and a single production base or an integrated and highly cohesive economy? Gaps in ICT infrastructure include the intra-country (rural areas vs cities) and the inter-country (for instance, Singapore vs Laos) coverage, speed (in 2020, to download information using the same phone in Singapore is ten times faster than in Cambodia³), affordability, security and reliability and other parameters of the broadband connection are significant. From an e-commerce perspective, well-developed logistics is obligatory, while in Southeast Asia the last-mile delivery has traditionally been a serious problem. Finally, digital payment solutions remain in their infancy, although the fintech sector is gaining momentum in the region⁴.

The problem is aggravated by the external factor, as Southeast Asia is squeezed between two projects – the US-led Indo-Pacific Economic Framework (IPEF) and the Digital Silk Road as part of the Chinese mega-strategy Belt and Road Initiative (BRI).

With regard to IPEF, several points warrant consideration. It cannot be adopted to ASEAN prospective plans, as this initiative includes seven ASEAN member states (Laos, Cambodia and Myanmar did not join it). As IPEF is not a classic FTA with market access conditions, its participants lack a strong incentive to support IPEF with digital instruments. It remains unclear how IPEF will maintain interactions with the ASEAN-led RCEP. In addition, China's absence in IPEF adds to politicization of this initiative and, by extension, of economic regionalism in the Asia-Pacific region with negative implications for RCEP. Finally, IPEF does not aim to build trans-

national infrastructure across Southeast Asia (as well as support it with digital instruments), which further decreases its relevance to the association.

Regarding the Belt and Road Initiative, the situation is different. Beijing, at least from a vision perspective, does not aim to split ASEAN's unity (invite some countries to participate and ignore others). On the contrary, as China-ASEAN initiatives demonstrate, the PRC prioritizes cooperation with ASEAN as a whole. Chinese companies participate in multi-lateral digital projects, like, for instance, ASEAN Smart Cities Network or China-ASEAN Information Harbor. Importantly, China aims to integrate the Digital Silk Road with the Health Silk Road, linking both with constructing industrial and social infrastructure across Southeast Asia. As a result, ASEAN member states become more competitive, while gaps between their levels of development are narrowing. An important aftereffect relates to prospects for upgrade of GVC-related tasks, which also requires huge financial allocations in trans-national infrastructure. If so, China's assistance is truly invaluable.

Nevertheless, the political implications should not be disregarded. From an instrumental perspective, China expands its influence across Southeast Asia. For instance, dialogue with ASEAN, China links negotiations on the South China Sea issue with laying underwater cables across this maritime area. China's "Internet Plus" policy adds to ASEAN's vulnerability.

As a result, Southeast Asia needs its own digital success stories. Part of this task accounts for using the experience of companies that have become industry champions and are implementing large-scale and successful digitalization programs. Undoubtedly, this practice needs expanding to other Southeast Asian companies.

Singapore Airlines as an Industry Champion

The company Singapore Airlines (SIA) is a remarkable success story of Southeast Asia's corporate sector. The company has an outstanding record of achievements⁵, while its brand is a synonym of supreme service quality.

The company has an extraordinary history. In 1972, it became independent from the Malaysian airlines and encountered a serious problem: lack of domestic market. In those circumstances, the company had to operate in the international market facing tough competition. As at present hardly a year passes without SIA's gaining prestigious professional awards, the company can be rightfully regarded as an industry champion.

This outcome has been predetermined by SIA's ability to combine contradictory, if not mutually exclusive, strategies. On the one hand, the company implements the differentiation strategy based on improving functional characteristics of its services. On the other hand, the company employs the cost leadership strategy based on cost saving management. According to M. Porter, this "stuck in the middle" position is disadvantageous, as either strategy mentioned focuses on different instruments: investment, management, corporate culture, staff incentives, etc.⁶ At the same time, however, the experience of Singapore Airlines demonstrates that a synergy is possible. Several points are noteworthy in this regard.

SIA's practices of person-power training is twice as long as the industry average. An emphasis on quality results in an increase in passenger loyalty, and, by extension, on a high customer retention rate. As part of the program Staff Ideas in Action (under the same abbreviation – SIA), the employees are encouraged to offer new ideas. If a proposal does not take off, no sanctions are imposed, as it is considered a "smart failure". If an idea turns out successful, its author is duly rewarded. As a result, SIA's management regularly receives valuable and inspirational ideas.

The person-power rotation within the company takes place every two or three years. Because of this, divisional managers clearly understand what their colleagues in other departments really care about. As a result, new ideas and new ways of translating them into reality appear. This allows the management to improve the quality of service systematically and save on scale while broadening a scope of innovations.

SIA has one of the youngest aircraft fleets in the industry. This results in low costs for the aircraft maintenance and repair, as well as in low fuel consumption. More than that, new aircraft have a higher usage rate: in the first half of the 2010s, one SIA aircraft flew 13.7 hours a day, while the average industry indicator was 11.3 hours a day⁷.

The brand of one of the best world airline carrier allows SIA to enjoy added advantages in interacting with suppliers. As a rule, the latter make concessions on in-flight meals, drinks etc., in order to have a partnership with SIA as a valuable reputational asset.

SIA's person-power is efficient and hard working. Notably, money is not the only motivating factor, as Asian values prioritize the collective good over individualism. SIA's famous and globally recognizable brand attracts graduates from Singaporean top educational centers. From a financial respective, another factor matters: having worked in SIA for several years, an employee can easily get a job in an American or a European airline company with a higher salary.

Despite many professional awards and top positions in international rankings, SIA's headquarters is located in an ordinary airport hangar, and the interior lacks luxury. It also allows the company to implement the cost-saving strategy.

All the factors considered suggest that SIA's approach focuses on supreme quality, while everything that the customer does not see falls under the cost-saving strategy. Challenging M.Porter's views, this approach resonates perfectly with Asian values. Eventually, it formed foundations for SIA's success story. In the context of SIA's strategy, the following points are noteworthy.

The key value SIA creates is self-improvement beyond expectations. The company is ready to constantly increase the quality of its services and emphasizes collectivism as the central component of Asian values. The consumer expectations that the company meets account mostly for social harmony. An exceptional quality of service is seen through the prism of traditional Asian socio-cultural perception, as even the smallest details must be perfect. The target audience is highly educated middle class and part of the category of afflients. As East Asian countries focus on the middle class formation as an important pillar of social stability, SIA's emphasis on social harmony is in demand across the region.

Concerning the key consumer motives, the following are noteworthy. The security motive matters, as the passenger safety is among SIA's key priorities. This is exemplified by SIA's aircraft fleet, as well as wide seats associated with safety and high quality. The social motive deserves mentioning, as SIA has a well-recognized brand and many professional awards. Judging by information from open sources, the company has never worked with celebrities with poor reputation, which raises the consumer's self-esteem. Lastly, the discovery motive matters, as the company is a pioneer in many areas of service: from food and entertainment to assistance to passengers with physical disabilities. A combination of the afore-presented factors suggests that SIA creases a new consumer value.

On the whole, the company Singapore Airlines successfully implements a hybrid strategy that synergizes quality leadership with cost saving management and that is supplemented by convenience and proximity to customer. Although contrary to the traditional marketing paradigm, this strategy resonates well with grass-root business trends, at least in the Asia-Pacific region, premised on Asian values.

The Singapore Airlines: a Digital Perspective

SIA started its digital journey long before the COVID-19 pandemic. A milestone event took place in September 2014, when the Social Media Engagement Unit, operating in the 24/7 format, was established. SIA maintains its Facebook pages in seven languages (English, French, German, Italian, Spanish, Turkish and Indonesian). In 2017, the company integrated Singapore Airlines and Silkair's (a branch of the Singapore Airlines Group) Weibo accounts, which aimed to attract Chinese customers. In 2018, the Digital Innovation Blueprint was adopted. Its implementation is in synergy with the Singaporean government's plan to make the country the largest tourism and innovation hub in the Asia-Pacific region. In January 2019, the company opened the digital innovation laboratory Krislab, the main tasks of which include research in blockchain technologies, augmented reality and artificial intelligence⁸.

In developing its digital instruments before the pandemic, SIA partnered with universities, research and professional training centers. Notable examples include the Agency for Science, Technology and Research (A*STAR), the Singapore Economic Development Board (EDB), Civil Aviation Authority of Singapore and the National University of Singapore. Joint activities included research projects, seminars and round table talks aimed at upgrading the company's digital instruments of revenue management, person-power training, improving the service efficiency and optimizing the aircraft maintenance⁹.

After the COVID-19 pandemic started, SIA undertook a number of steps to upgrade its digital instruments. The company identified around one hundred customer touchpoints important from a service quality perspective. The measures undertaken by the Singapore Airlines fall into three broad categories.

The first category relates to the time before travelers arrive at the airport. In fact, the Singapore Airlines became the first air company that implemented a digital health verification process based on the IATA Travel Pass Framework¹⁰. As their flights approach, passengers can schedule or re-organize their individual check-in or immigration entry processes. Additionally, passengers can use SIA's "Manage Booking" function to obtain relevant information on pre-departure procedures and requirements. Lastly yet importantly, travelers can choose newspapers, menu items etc., to be given them when on board, while duty-free goods can be ordered digitally and delivered both on board or to home addresses¹¹.

The second category of measures focuses on the digitalization of Changi Airport that lost 98% of its passenger traffic as the pandemic started¹². In those circumstances, a set of timely steps – from contactless kiosks and printing baggage tags by scanning QR codes to re-organizing self-service buffet at SilverKris Lounge – was implemented. Notably, the digital factory known as DIVA (the abbreviation means digital, innovation, ventures and analytics) in cooperation with companies in and around Changi Airport run projects related to cutting edge computing, artificial intelligence and the internet of things¹³. Those partners provided DIVA with niche skills, including agile coaching, software engineering and data analytics.

The last category encompasses is about onboard and after flight services. Trying to minimize contacts with high-touch points, SIA developed ways to connect travelers' mobile devices to its entertainment system KrisWorld. After the flight, travelers may stay in touch with the company through Kris+ app, which allows collecting miles, using loyalty programs etc.

A milestone event in the Singapore Airlines' digital journey took place in January 2022, when SIA and the National University of Singapore (NUS) established the Digital Aviation Corporate Laboratory¹⁴. Its activity includes the following directions.

Revenue Management and Dynamic Pricing. By means of big data, price elasticity estimation, dynamic prices and similar instruments, the company aims to optimize its revenue management system. From this perspective, notable contribution is made by NUS' Institute of Operations Research and Analytics (IORA), Business School, School of Computing, and Department of Industrial Systems Engineering and Management that provide high-quality expertise.

Transforming Competency and Skill Development. This direction aims at making professional training programs more efficient by using digital instruments like eye tracking, Augmented Reality and Virtual Reality so that optimize on-going flight stimulation processes. Those instruments are seen as complementary to the already developed programs and refresher courses.

Employee Wellness. It includes fatigue and alertness-related measures. In case efficient approaches to cabin crew fatigue mitigation and employees' productivity are developed, the company will further increase its service excellence and simultaneously employ cost-effective management techniques. This line of SIA's effort is supported by NUS' School of Computing and the Duke-NUS Medical School.

Passenger Comfort, Sleep and Cabin Service. This direction aims to further increase SIA's service excellence by using data analytics, the sleep and the behavioral science etc. Specifically, SIA aims to increase the quality of its cabin seat products (to make seats maximum comfortable), improve in-flight sleep quality instruments, re-organize factors (from light and sound to ways and time services are provided) that affect passengers' sleep. More importantly, the company strives to shift from grasping and interpreting passengers' psychophysical state to anticipating it by using big data analytics.

The efforts undertaken by the Singapore Airlines brought fruit. The company received prestigious professional awards. SIA Cabin Crew Digital Ecosystem became the leader across all industries in Singapore's 2021 Techblazer Awards (the enterprise category)¹⁵, while innovations implemented at Changi Airport received IDC's 2021 Future Enterprise Award (Special Award for Digital Resiliency) across the Asia-Pacific region¹⁶.

In sum, an upgrade of digital instruments is among top priorities of the company Singapore Airlines. In the years to come, SIA's emphasis on digital technologies is likely to become stronger due to the aftereffects of the COVID-19 pandemic and increasingly competitive business milieu in Southeast Asia and beyond.

Conclusion

The analysis of ASEAN-led regionalism, including its digital dimension, in Southeast Asia reveals that the realization of ASEAN's initiatives encounters serious obstacles. They relate not only to Southeast Asia itself, although lack of, for instance, ASEAN global value chains or legal mechanisms designed specifically for the ASEAN Economic Community undermine ASEAN's prospective plans. No less importantly, ASEAN's present efforts to develop the digital agenda of cooperation in Southeast Asia are hampered by the shortcomings that the association inherited from the pre-digital times, for instance, underdeveloped infrastructure and institutions. Those obstacles are exacerbated by an unfolding competition between the Indo-Pacific Economic Framework and the Digital Silk Road, which adds to ASEAN's vulnerability.

The company Singapore Airlines is a remarkable success story of Southeast Asia's corporate sector. The company exemplifies how different and even mutually conflicting strategies can be synergized to achieve impressive results. This is supplemented by SIA's present emphasis on developing effective digital instruments. Ample evidence, including prestigious professional awards, proves that the company is on the right track.

Although the company Singapore Airlines is an individual example rather than widespread practice, its experience, or at least its individual components, is likely to be emulated by other Southeast Asian companies. The quickly intensifying economic and commercial competition in Southeast Asia leaves them no other choice.

ИНФОРМАЦИЯ ОБ АВТОРЕ

КАНАЕВ Евгений Александрович, доктор исторических наук, ведущий научный сотрудник ЦАТИ, Национальный исследовательский институт мировой экономики и международных отношений имени Е.М. Примакова Российской академии наук, Москва, Россия

Статья поступила в редакцию 28.11.2022;
одобрена после рецензирования 02.12.2022;
принята к публикации 05.12.2022.

INFORMATION ABOUT THE AUTHOR

Evgeny A. KANAEV, DSc (History), Leading Researcher, Center for Asia-Pacific Studies, Primakov Institute of World Economy and International Relations (IMEMO RAS), Moscow, Russia

The article was submitted 28.11.2022;
approved 02.12.2022;
accepted to publication 05.12.2022.

¹ For more detail, see: Kanaev E., Strelnikova I. (2021) ASEAN Economic Community as an Area of Business Activity: Upgrading Instruments of Competitiveness // *Regions in the Contemporary World: the Global Turbulence and its Impact on Asia* / Ed. by E. Kanaev, S. Luzyanin, A. Baklanov, V. Vishnyakova. HSE University. Moscow: ФИЛИНЪ. P. 96-109.

² ASEAN Digital Masterplan 2025. URL: <https://asean.org/wp-content/uploads/2021/09/ASEAN-Digital-Masterplan-EDITED.pdf>

³ The Comprehensive Asia Development Plan 3.0 (CADP 3.0): Towards an Integrated, Innovative, Inclusive, and Sustainable Economy. ERIA CADP Research. 2022. P. 139. URL: <https://www.eria.org/uploads/media/Books/2022-CADP-3/CADP-3.0-full-report-new2.pdf>

⁴ Southeast Asia's Digital Consumers: a New Stage of Evolution. Meta Platforms, Inc., and Bain & Company, Inc., September 2022. P. 63. URL: https://www.bain.com/globalassets/noindex/2022/meta_bain_syncsea_2022.pdf

⁵ Our Awards. Singapore Airlines Group. URL: https://www.singaporeair.com/en_UK/us/flying-withus/our-story/awards/

⁶ Портер М. (2019) Конкурентная стратегия: методика анализа отраслей и конкурентов. / Пер. с англ. – 7-е изд. – М.: Альпина Паблишер. – С.73. (Porter M. (2019) *Competitive Strategy: Techniques for Analyzing Industries and Competitors* / Translated from English. – 7th Edition. – Moscow, Alpina Publisher. – P. 73. (In Russ.))

⁷ Heracleous L., Wirtz J. (2014) Singapore Airlines: Achieving Sustainable Advantage through Mastering Paradox. // *The Journal of Applied Behavioral Science*. Vol. 50. N. 2. P. 150-170. P. 157.

⁸ Singapore Airlines Opens Digital Innovation Lab in Drive to Be World's Leading Digital Airline. Singapore Airline Press Release. January 29, 2019. URL: https://www.singaporeair.com/ru_RU/ru/media-centre/press-release/article?q=en_UK/2019/January-March/ne0119-190129

⁹ Garcia M. (2018) Singapore Airlines Launches Large-Scale Digital Innovation Initiative. PhocusWire. 7 February. URL: <https://www.phocuswire.com/Singapore-Airlines-launches-large-scale-digital-innovation-initiative>; (2019) Singapore Airlines Opens Digital Innovation Lab in Drive to Be World's Leading Digital Airline. Singapore Airlines Press Release. 29 January. URL: https://www.singaporeair.com/ru_RU/ru/media-centre/press-release/article?q=en_UK/2019/January-March/ne0119-190129

¹⁰ Jun Ji-hye. Singapore Airlines becomes world's 1st to test IATA's Travel Pass. The Korea Times. 17 March 2021. URL: https://www.koreatimes.co.kr/www/tech/2021/03/774_305627.html

¹¹ How Singapore Airlines Uses Tech to Transform Each Step of the Traveler Journey. Skift. April 27, 2021. URL: <https://skift.com/2021/04/27/singapore-airlines-using-technology-transform-traveler-journey-covid-19/>

¹² Toh Ting Wei. Changi Airport Registers First Net Loss amid Dip in Passenger Numbers Owing to Covid-19. The Straits Times. August 31, 2021. URL: <https://www.straitstimes.com/singapore/transport/changi-airport-registers-first-net-loss-amid-dip-in-passenger-numbers-owing-to>

¹³ Loke J. Changi Airport Group Uses DIVA Digital Factory to Meet Global Travel Challenges alongside AWS and Accenture. AWS. January 18, 2022. URL: <https://aws.amazon.com/ru/blogs/industries/changi-airport-group-uses-diva-digital-factory-to-meet-global-travel-challenges-alongside-aws-and-accenture/>

¹⁴ New SIA-NUS Corporate Laboratory to Spur Digital Innovation In Singapore's Aviation Sector. Singapore Airlines. January 10, 2022. URL: https://www.singaporeair.com/nl_NL/nl/media-centre/press-release/article/?q=en_UK/2022/January-March/jr0122-220110

¹⁵ Techblazer Awards. 2021 Winners. URL: <https://techblazerawards.sg/Past-Winners/2021-Winners>

¹⁶ Future Enterprise Awards 2021 Winners Announced at IDC DX Summit Singapore. IDC Media Center. September 20, 2021. URL: <https://www.idc.com/getdoc.jsp?containerId=prAP48247821>