



**UNIVERSITI KUALA LUMPUR
BUSINESS SCHOOL**

**FINAL EXAMINATION
MARCH 2025 SEMESTER**

COURSE CODE	: ECB20903
COURSE NAME	: TECHNOLOGICAL INNOVATION IN BUSINESS DEVELOPMENT
PROGRAMME NAME	: BACHELOR OF BUSINESS ADMINISTRATION (HONS) IN MANAGEMENT AND ENTREPRENEURSHIP
DATE	: 24 JUNE 2025
TIME	: 2.00 PM – 5.00 PM
DURATION	: 3 HOURS

INSTRUCTIONS TO CANDIDATES

1. Please **CAREFULLY** read the instructions given in the question paper.
2. This question paper has information printed on both sides of the paper.
3. This question paper consists of **TWO (2) Sections; Section A and Section B.**
4. Answer **ALL** questions in **Section A** and choose **ANY THREE (3)** from **Section B** .
5. Please write your answers on the answer booklet provided.
6. All questions must be answered in **English** (any other language is not allowed).
7. This question paper must not be removed from the examination hall.

THERE ARE NINE (9) PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 40 marks)**INSTRUCTION: Answer ALL questions.****Please use the answer booklet provided.****Question 1**

Criticize **FOUR (4)** external environment (external factors) is often an important source of innovation. Provide a suitable example of innovation by outsiders.

(10 marks)

Question 2

Design **FOUR (4)** reasons why large firms often have a poor record of innovation.

(10 marks)

Question 3

Plan **FOUR (4)** consideration of process needs lead to technology innovation in business.

(10 marks)

Question 4

Podcasting, blogging, online photo sharing, online video and tweeting are five technologies that are enabling a much broader set of content publishers and content consumers. Analyze the nature of all five industries above that makes them popular.

(10 marks)

SECTION B (Total: 60 marks)**INSTRUCTION: Answer THREE (3) questions ONLY.****Please use the answer booklet provided.****Question B1****Case Study: Singapore Airlines – Technology Innovation Through Strategic Alliances and Joint Ventures**

Singapore Airlines (SIA), recognized globally for premium service quality, has long positioned itself as an industry innovator, not only in customer experience but also in operational efficiency and digital transformation. In recent years, as aviation faces mounting pressure from cost volatility, sustainability demands, and technological disruption, SIA has increasingly embraced strategic alliances and joint ventures (JVs) to drive technological advancement. From forming digital innovation labs to partnering with startups and multinational tech firms, SIA's use of alliances and JVs has helped it integrate emerging technologies such as artificial intelligence, blockchain, and IoT into its business model.

Strategic Context for Innovation

SIA's innovation strategy hinges on two primary goals:

Enhancing the digital customer experience, including AI-powered personalization, mobile booking, and in-flight connectivity. Optimizing operations using data analytics, smart maintenance, and digital twins to reduce downtime and improve fuel efficiency. However, many of these technologies fall outside the traditional scope of in-house aviation R&D. To overcome capability gaps, SIA has turned to strategic collaborations.

Key Alliances and Joint Ventures

Digital Innovation Blueprint (2018): SIA launched a dedicated digital innovation lab, KrisLab, in collaboration with tech partners and universities (e.g., NUS and SMU). It invites startups and employees to co-develop and test prototypes. Partnership with Panasonic

Avionics: Enabled in-flight connectivity and entertainment system upgrades through IoT and high-speed broadband, improving customer satisfaction. Blockchain JV with Microsoft and KPMG: SIA developed a digital loyalty wallet using blockchain, enabling KrisFlyer members

to convert miles into digital tokens usable at partner merchants. This was one of the first blockchain use cases in airline loyalty programs globally.

Airline Alliances – Star Alliance: While not technology-specific, being part of Star Alliance supports digital integration of booking and check-in across partner airlines, creating seamless tech experiences for international travelers.

Challenges in Technology Commercialization

While alliances enable SIA to leapfrog in innovation, they also come with risks:

Intellectual property rights must be carefully managed.

Cultural clashes between aviation and tech/startup partners can slow progress.

Time-to-market delays due to dependency on joint decisions and complex integration.

Nonetheless, SIA has demonstrated that when alliances are well-governed, they accelerate innovation without incurring prohibitive R&D costs.

- (a) Analyze how Singapore Airlines has used joint ventures and strategic alliances to bridge technology capability gaps in its innovation strategy. Provide specific examples and explain the impact of these partnerships.

(7 marks)

- (b) Evaluate the effectiveness of Singapore Airline's use of alliances and JV's in commercializing new technologies. What factors contribute to or hinder successful technology adoption in these collaborations?

(7 marks)

- (c) Propose a new technology venture alliance for Singapore Airlines that leverages AI or green technology. Justify your proposed partnership, its structure, and expected value creation.

(6 marks)

Question B2**Blu-ray**

The home entertainment industry is emerging from a period of flux brought on by the arrival of high definition (HD) television. Nowhere has this flux been more apparent than in the DVD market. The home DVD market is worth £12.3 billion a year, but has lately contracted in the face of uncertainty surrounding the format for the new generation of high definition DVDs. There has been intense competition between two competing new formats, Toshiba's HD DVD and Sony's Blu-ray.

Toshiba was first into the market and initially seemed to have the upper hand. Its HD DVD appeared to have a number of advantages. Its discs were cheaper to produce and sales were initially strong in Japan. In the movie field Toshiba was quick to sign up Dreamworks, while in the computer games field it signed up Microsoft, maker of the best-selling X-box 360 videogames console.

However, Sony's Blu-ray now appears to have the upper hand. Its discs, though more expensive, have 25 gigabytes of storage compared to Toshiba's 15 gigabytes. Sony held back the launch of its own videogames console, PlayStation 3, and picked up much criticism from consumers at the time, precisely because it wanted to ensure that it came with Blu-ray installed. The Microsoft X-box 360 on the other hand, while it supports the HD DVD format, requires a separate plug-in HD DVD player. As sales of PlayStation 3 have now passed the 10 million mark this has helped to ensure a substantial base for Blu-ray among videogame users. By contrast only about 1 million HD DVD players have been sold and then mainly in Japan.

With the two formats competing neck and neck, Toshiba was dealt two severe blows in the early months of 2008. First, Warner Bros, the world's largest DVD producer, opted to stop selling the new style DVDs in both formats opting instead for Blu-ray alone. Warner, which accounts for about a fifth of the lucrative US DVD market, was the last big Hollywood studio producing discs in both formats. MGM, Fox, Walt Disney and Sony Pictures had already signed up to the Blu-ray format. The second major blow was the decision by Wal-Mart, the world's largest retailer, to dump HD DVD across its 4,000 stores in the US. Wal-Mart's move followed a similar decision by consumer electronics retailer Best Buy and online video rental firm Netflix.

These twin blows effectively sealed the fate of Toshiba's HD DVD and confirmed the place of Blu-ray as the dominant design for high definition DVDs. Sony's success was in sharp contrast to its experience with VCRs where its Betamax system lost out to the rival VHS system produced by arch rival JVC.

Source: Wray and McCurry (2008).

- (a) Criticize **TWO (2)** technological changes that have happened in the above case study.
(5 marks)
- (b) Relate **TWO (2)** technological innovation that creates challenges for new products based on the case study above.
(5 marks)
- (c) Analyse how Sony's strategic decisions in Blu-ray vs HD DVD battle illustrate key factors in the success or failure of technology innovation. Use examples from the case study to support your answer.
(10 marks)

Question B3**Case Study: Malaysia Airlines (MAS) and Technology Innovation****Background**

Malaysia Airlines (MAS), the national flag carrier of Malaysia, has a long-standing presence in the global aviation industry. Established in 1947 as Malayan Airways, MAS has grown into a full-service airline offering domestic and international flights across Asia, Europe, and Oceania. Despite its reputation for excellent service, MAS has faced significant challenges over the years, including financial instability, management restructuring, competition from low-cost carriers, and two tragic aviation disasters in 2014.

Digital Transformation and Innovation Strategy

In the wake of declining revenues and operational inefficiencies, MAS initiated a digital transformation journey as part of its long-term recovery plan after being delisted from the Malaysian stock exchange in 2014 and rebranded as Malaysia Airlines Berhad (MAB) in 2015. Technology and innovation were placed at the heart of this transformation.

The airline invested heavily in cloud computing, artificial intelligence (AI), mobile applications, and data analytics to streamline operations and improve the customer experience. A major component of this effort was the MHconnect program, which aimed to integrate all customer-facing and operational systems into a single digital platform.

Innovations in Customer Experience

MAS launched a revamped mobile app that allowed passengers to book flights, check in, receive real-time flight updates, and manage bookings through a user-friendly interface. A chatbot powered by AI and natural language processing was also introduced to handle customer inquiries more efficiently.

Furthermore, MAS implemented personalised marketing through data analytics, enabling the airline to offer tailored travel suggestions, promotions, and loyalty rewards to Enrich frequent flyer members based on their travel history and preferences.

Operational Innovations

On the operations side, MAS adopted predictive maintenance powered by AI and IoT sensors on aircraft, helping engineers anticipate mechanical issues before they arise. This improved fleet reliability and safety while reducing unplanned maintenance costs.

The airline also invested in automated crew scheduling, digital baggage tracking, and real-time fuel monitoring, all of which contributed to improved efficiency and cost control.

Collaborations and Ecosystem Development

MAS partnered with major tech players such as Microsoft Azure and Amadeus to modernize its backend systems and transition to cloud-based architecture. These partnerships allowed for greater scalability and security while reducing legacy system dependencies.

MAS also collaborated with regional startups to pilot solutions like contactless check-in kiosks and biometric boarding, aligning itself with the global "touchless travel" trend that emerged during and after the COVID-19 pandemic.

Outcomes and Challenges

Although MAS still faces stiff competition from budget airlines like AirAsia, the technology innovations have helped the airline stabilise financially and improve customer satisfaction. MAS continues to explore emerging technologies, such as blockchain for ticketing and sustainability-focused innovations like digital carbon tracking for passengers.

However, the path has not been without challenges. Legacy infrastructure, cultural resistance to change, and the high upfront cost of digital investments remain hurdles. Still, MAS stands as a prominent example of how traditional industries can use digital innovation to reinvent themselves.

- (a) Discover **TWO (2)** Malaysia Airlines (MAS) used digital transformation to improve both its operational efficiency and customer experience. Use specific examples from the case study.

(10 marks)

- (b) Evaluate the challenges faced by MAS in implementing its technology innovation strategy and suggest how such challenges can be mitigated.

(5 marks)

- (c) Analyze how MAS's approach to innovation demonstrates key principles of successful technology strategy in traditional industries.

(5 marks)

Question B4**Case Study: Apple Inc. – A Legacy of Technology Innovation**

Apple Inc., founded in 1976 by Steve Jobs, Steve Wozniak, and Ronald Wayne, has grown from a garage startup to one of the most valuable companies in the world. Much of Apple's success lies in its consistent ability to innovate—not just technologically, but also in terms of user experience, product ecosystems, and market strategy.

Revolution Through Innovation

Apple has introduced numerous groundbreaking products over the years.

The Macintosh (1984) was among the first personal computers to offer a graphical user interface. The iPod (2001) revolutionized digital music, while the iPhone (2007) completely transformed the mobile phone industry by combining a phone, an iPod, and an internet communicator into a single device. The iPad (2010) opened a new category in consumer electronics.

More recently, Apple has developed its own processors, starting with the M1 chip in 2020, which marked a significant shift from Intel processors in Mac computers. This in-house innovation gave Apple more control over performance, energy efficiency, and seamless integration across devices.

Design as a Core Philosophy

Apple's design philosophy is built around simplicity, minimalism, and usability. The company's industrial design team works closely with software engineers to ensure that products are intuitive and elegant. The late Steve Jobs once said, "Design is not just what it looks like and feels like. Design is how it works." This mantra is still deeply embedded in Apple's innovation process.

Ecosystem Integration

Apple's innovation isn't just limited to hardware. It has built a tightly integrated ecosystem of services—such as iCloud, iMessage, Apple Music, and the App Store—that encourage brand loyalty. Devices sync effortlessly, and user data flows securely and privately across products. This seamless experience makes it difficult for users to switch to other platforms.

Retail and Marketing Innovation

Apple's retail stores are also a result of innovation. Instead of traditional electronics outlets, Apple Stores focus on customer experience, design, and service. The stores allow customers to explore products hands-on and receive personalized technical support at the Genius Bar. Apple's advertising strategy also plays a crucial role in communicating innovation—focusing on lifestyle, design, and the emotional value of technology.

Sustainability and Future Technologies

Apple has made strides in environmental innovation. Its facilities run on 100% renewable energy, and products are made with recycled materials wherever possible. The company is also heavily investing in augmented reality (AR) and health tech, as seen in the Apple Watch's health features and the development of Apple Vision Pro, a mixed-reality headset.

- a) Analyze Apple's design philosophy that has contributed to its success in technology innovation.

(10 marks)

- b) Evaluate the role of Apple's branding and retail strategy in sustaining its position as a leader in technological innovation.

(5 marks)

- c) Evaluate how Apple's in-house innovation, such as the development of the M1 chip impacts its competitive advantage.

(5 marks)

END OF EXAMINATION PAPER