

AI-Powered Digital Healthcare

: A Case Study on BodyCodi's Business Model

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Abstract

The rapid expansion of the digital healthcare industry, driven by advancements in artificial intelligence (AI) and mobile technology, has transformed traditional approaches to fitness and health management. This study examines the business model of BodyCodi, a pioneering platform that integrates cloud-based solutions, AI-powered dietary management, and operational tools to digitalize fitness center management. Using the Business Model Canvas framework, the study analyzes BodyCodi's customer segments, value propositions, revenue streams, and other key components. The study highlights how BodyCodi addresses inefficiencies in traditional fitness operations by leveraging innovative technology and strategic partnerships to enhance customer engagement and operational efficiency. Furthermore, the paper explores the implications of BodyCodi's approach in the broader context of digital healthcare and provides strategic recommendations for integrating wearable devices to deliver personalized health solutions. This study contributes to understanding how digital platforms can drive innovation in healthcare and proposes directions for future studies, including comparative analyses and empirical investigations into user experiences.

Keyword : Mobile digital healthcare, AI technology, Bodycodi, Business model

1. Introduction

Digital healthcare is a portmanteau of digital technology and healthcare, which refers to the use of digital technology for healthcare management, encompassing various health services such as mobile healthcare, digital therapeutics, and telemedicine [1]. With the proliferation of smartphones and the widespread adoption of wearable devices, the digital healthcare industry is gradually expanding. It is also a field expected to grow in the global market due to the aging population, the need for healthcare management, and improvements in medical systems [2]. The global digital healthcare market is projected to grow at an annual average rate of 18.8%, from \$152.5 billion in 2020 to \$508.8 billion by 2027 [3]. Downloads of mobile applications related to digital healthcare also surged, nearly doubling in 2020 compared to pre-pandemic levels.

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This study focuses on understanding the mobile digital healthcare market through an emphasis on the business model of a platform company called Bodycodi. Bodycodi, operated by Red Blue led by Seokhun Lee, utilizes cloud and mobile technologies as an integrated fitness platform. Founded in 2015, Red Blue was the first in Korea to commercialize member management programs via mobile reservations. Bodycodi contributes to the digitalization of the fitness industry by offering various services, including Bodycodi CRM, an integrated operational management service for fitness centers that includes functions like member management, access control, payments, and community features. Additionally, it provides services such as member and instructor-specific apps in a Software as a Service (SaaS) format [4]. Particularly, Bodycodi enhances the convenience and sophistication of digital healthcare through the use of artificial intelligence technology. It integrates FoodLens, an AI food recognition service developed by Doinglab, into its member and instructor apps to offer dietary management services. Users can take photos of their meals, and AI calculates the calories, facilitating feedback and dietary correction information sharing with assigned instructors. As of August 2023, Bodycodi serves approximately 3,000 fitness centers, with a maximum monthly transaction volume reaching 130 billion KRW and exceeding 1 million mobile app members and records an annual transaction volume exceeding 1 trillion KRW.

This study aims to examine BodyCodi's primary services and conduct an in-depth analysis of its business model. By delving into how BodyCodi effectively operates within the mobile digital healthcare market, the study seeks to highlight the company's strengths in leveraging AI technology and cloud-based solutions to digitalize the fitness industry. Moreover, it expects to provide insights into its role as a key player in the evolving digital healthcare landscape.

2. BodyCodi Service

2.1 CRM Service

Bodycodi's Customer Relationship Management system provides an all-in-one solution for fitness center operations, encompassing sales management, ticketing, reservations, class and facility usage, re-enrollment and upselling, and the management of customer churn processes. Rather than merely managing information, it integrates member-specific, instructor-specific, and administrator-specific apps into a single system, enabling efficient management of various data points [5].

Bodycodi offers three types of applications: User App, Instructor App, and Administrator App, tailored for each customer group to access necessary services. Users (fitness center members) can conveniently enter their affiliated centers using a mobile membership card, adjust class schedules with instructors,

check announcements, and utilize community features. Members can continue to communicate with instructors through this app, which is the most important aspect of customer care [6]. Instructors can manage individual and group class schedules as well as consolidate reservations and records across multiple centers comprehensively. Administrators can integrate manage all customer, schedule, and sales-staff data seamlessly, leveraging the interconnected functionality of the three apps for efficient operations.

Integrated with Bodycodi CRM, dedicated check-in devices using facial and QR code recognition authenticate members, automatically record entries linked to facility doors. POS systems are commonly used in retail, restaurants, and service-based industries to manage sales, inventory, and customer data efficiently. As shown in [Fig. 1], Bodycodi's dedicated POS system reduces inefficiencies from manually comparing past receipts and sales records, enabling members to verify payments directly, thereby eliminating potential errors and fraud.



[Fig. 1] Bodycodi CRM(SaaS) and POS system

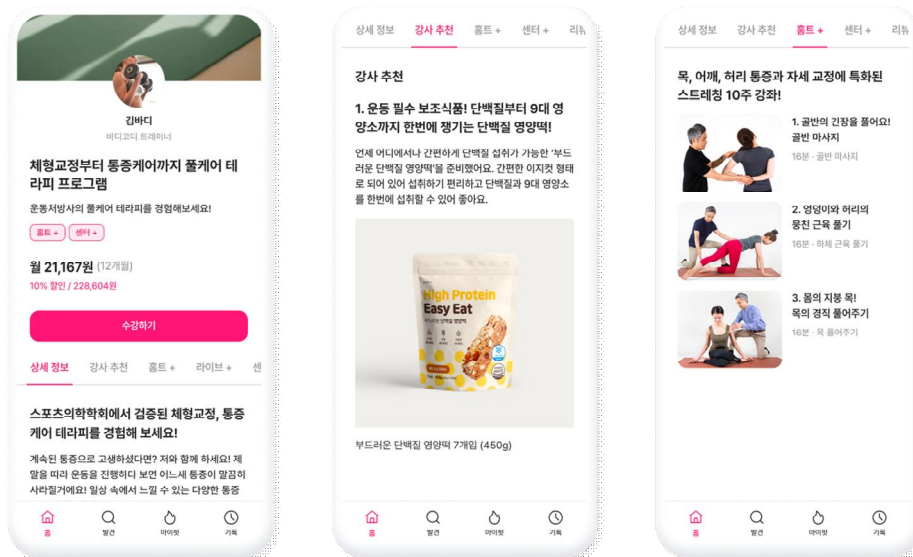
2.2 Mobile b.pay payment and marketing service

The traditional offline sales method requires customers to passively wait for them to visit the center, incurring costs such as rent and labor. However, b.pay allows for 24/7 payments, generating continuous revenue. Moreover, it enables targeted product offerings tailored to specific members, along with features like discount coupons, point accumulation, and event [7][8].

2.3 Bodycodi Plus Membership services

B.pay offers a platform where various memberships, health supplements and aids, and home training videos are bundled into programs and sold. These programs are available for a fee. For a monthly payment of 3,900 KRW, users can subscribe to Bodycodi Plus Membership, which includes benefits such as access to over 10,000 home training videos, discounts on exercise programs, and monthly coupons [9].

As shown in [Fig. 2], users can create programs by combining various products through Bodycodi CRM. They can mix three types of products: ‘Instructor Recommended’ featuring validated items like health supplements and exercise tools, ‘Center+’ which corresponds to existing b.pay vouchers sold at the center, and ‘Home Training+’ encompassing home workout videos. The shortcomings in offline classes can be reviewed through a home training video that teaches systematic and effective exercise methods, and bodycodi made it possible to provide these services without downloading an app [10].



[Fig. 2] Bodycodi Membership Service

2.4 Integrated Reward Services

The existing complex reward systems in the fitness industry often suffer from frequent errors and lengthy reconciliation processes. In contrast, Bodycodi's settlement service offers an optimized solution

tailored to the characteristics of the fitness industry. It allows for the summary of pay statements and contribution details per employee, facilitating individual and group class fee settlements. Moreover, it supports specific salary policies such as segment-based class fees, overtime pay, and VAT settings.

3. Bodycodi Business Model

This study employs a qualitative research methodology to analyze the business model of BodyCodi within the mobile digital healthcare industry. The process involved collecting data through a comprehensive review of secondary sources including academic journals, industry reports, corporate publications, and BodyCodi's official documents, such as its website, promotional materials, and customer engagement platforms. Additionally, market trend analysis and financial performance data were extracted from reliable sources to provide context to BodyCodi's operations.

The business model was analyzed using the Business Model Canvas framework with the focus on the nine key elements: Customer Segments, Value Propositions, Customer Relationships, Revenue Streams, Key Activities, Key Resources, Key Partners, Cost Structure, and Channels. Each component was examined to understand how BodyCodi delivers value, achieves operational efficiency, and sustains profitability within the digital healthcare industry [11].

Data triangulation was employed to ensure the credibility of the findings, cross-referencing information from diverse sources such as industry expert interviews, market trend analyses, and competitor case studies. Furthermore, a thematic approach was used to analyze the qualitative data, categorizing information into core themes relevant to BodyCodi's business strategy. This methodological approach enables a detailed exploration of BodyCodi's role in digitalizing the fitness industry and provides actionable insights into its strategic positioning in the broader mobile digital healthcare market.

3.1 Key Partners

Bodycodi's key partners can be broadly categorized into two groups. Firstly, they include fitness center representatives who purchase Bodycodi CRM solutions. These key customers pay for services such as member information and class schedule management, revenue and instructor salary management, among others. Secondly, Bodycodi's affiliated partners can be classified into three main categories. Payment and reservation system-related partners play a crucial role as they integrate with Bodycodi CRM's core functionalities. These partners include Toss Payments (mobile payment), Naver (reservation integration), KSNET, Payhere (POS payment integration), and Modus/GN (online contract integration). Additionally,

partners providing the technical infrastructure for health supplements sold within Bodycodi Plus are also key partners. For instance, Bodycodi collaborates with GC Green Cross to sell health supplements. GC Green Cross offers discounts on 'AllGain', a plant-based protein with exclusive distribution rights, to Bodycodi franchisees. Fitness center representatives can utilize these partnerships for customer management purposes, such as offering validated product samples to members or using them as gifts in events and promotions. Bodycodi CRM integrates with Suprema's dedicated check-in devices to provide access control solutions. Suprema specializes in AI-integrated security solutions, offering facial recognition and QR code authentication systems [12]. These systems prevent access when memberships expire, provide real-time record keeping and retrieval, and enhance sophisticated access management.

3.2 Key Activities

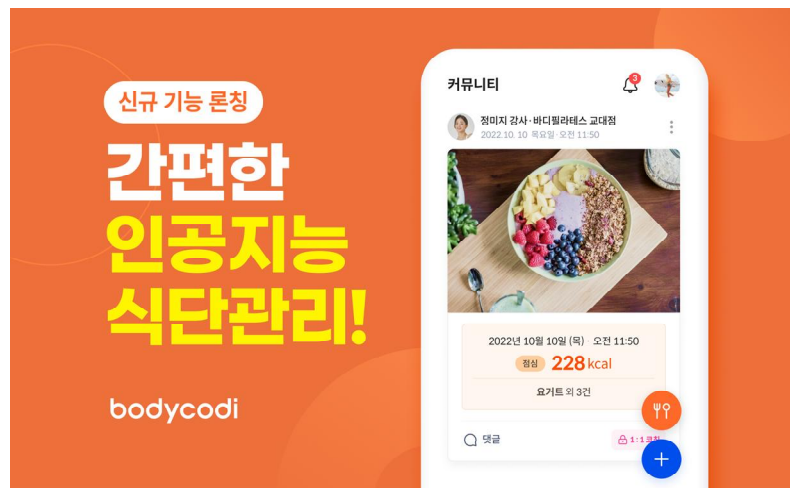
Management and enhancement of software including Bodycodi CRM are core activities for Bodycodi. It is essential to ensure smooth operation of access control systems, integration with POS systems, and functionality of member, instructor, and administrator apps [13].

Managing relationships with key customers such as fitness center representatives and affiliated partners is also a core activity for Bodycodi. Collaborative efforts with partners like Suprema, GC Green Cross, Toss Payments facilitate the operational capabilities of the Bodycodi CRM system [14].

PR and marketing are also pivotal activities for Bodycodi. These include managing the website, organizing events and promotions in collaboration with affiliated partners, conducting offline events, and delivering lectures to industry stakeholders. Bodycodi participates in offline events like SPOEX (Seoul International Sports & Leisure Industry Exhibition) to promote its products including Bodycodi CRM, serves as a certification institution for lifestyle sports instructors, and offers offline lectures such as 'Fitness Branding Strategy' at discounted rates for franchisees. This experiential marketing that combines Bodycodi's online and offline has a positive effect on consumers' customer satisfaction and purchase intention [15].

3.3 Key Resources

Operating and managing centers based on cloud facilities, Bodycodi CRM is a core resource for Bodycodi. Integrating POS systems, access control systems, and app data, Bodycodi CRM enhances operational efficiency and productivity at fitness centers, leading to increased revenue.



[Fig. 3] AI-powered Bodycodi system

Bodycodi integrates the FoodLens service, an AI-powered food recognition technology developed by Doings Lab, into its member and instructor-exclusive apps as illustrated in [Fig. 3]. By taking photos of meals, AI calculates calorie intake and facilitates sharing with assigned instructors, enabling easy feedback and dietary adjustments. This service allows instructors to provide members with more personalized care [16][17].

3.4 Value Propositions

Bodycodi addresses the challenges faced by fitness center representatives in operating and managing their centers. Traditional offline operational methods are inefficient due to time constraints, making it difficult to grasp membership sales and other revenue statuses at a glance. Additionally, calculating instructors' salaries involves complex procedures. In particular, when a worker performs a variety of jobs, such as a small sports facility, the uncertainty and complexity of the workplace increase. This uncertain work pattern of workers increases the turnover rate and makes it difficult to secure competent manpower. Therefore, an accurate and intuitive settlement system is more important [18]. Moreover, the customer management approach focused solely on acquiring new members rather than maintaining existing ones leads to cash flow issues. To tackle these issues, Bodycodi provides solutions such as integrated online and offline sales tracking, data-driven payroll and class fee settlements, management of customer retention and re-registration, real-time monitoring and adjustment of member reservation status, and encouraging center membership sales through 24/7 online payment facilities. In addition, bodycodi is more effective because it provides all of these services in intuitive and easy UX/UI [19]. These

initiatives enhance operational efficiency and increase revenue for fitness centers.

3.5 Customer Relationships

Bodycodi maintains relationships with key customers, namely fitness center representatives, by offering various service opportunities through Bodycodi CRM discounts and benefits. Existing customers (representatives) receive fee benefits such as a 20% discount for annual contract customers and an additional 20% discount for upfront payments. Additionally, offline experiential events and related education are conducted. At events like SPOEX (Seoul International Sports & Leisure Industry Expo), pre-registered visits to our booth grant fitness center representatives kiosk payment fee reduction benefits, and we support online monetization coaching [20]. Other benefits include training on successful center operation methods, short-form content utilization, and more.

3.5.1 Customers

Representatives who perceive inefficiencies in traditional fitness industry operational methods and seek to address them are Bodycodi's customers. The past fitness industry relied solely on offline operations, limiting time and complicating revenue tracking for membership and class program sales, as well as frequent errors in instructor payroll calculations, highlighting inefficiencies. However, Bodycodi enables 365/24 operation and product sales via Bodycodi CRM, accurately calculating payments without the relative inefficiencies and error-prone nature associated with previous Excel-dependent reconciliation methods.

3.5.2 Channels

Primarily, Bodycodi promotes product introductions and center program setups through its official website, blog, and social media. Detailed video guides are provided via YouTube. Furthermore, It is important to manage offline channel well because it collect specific information and knowledge from channel that can communicate directly with customers offline to better know about the market [21]. Various offline events and lectures for fitness center representatives, such as those at SPOEX, offer experiential opportunities, conveying efficient center management practices and the utility of Bodycodi products for both direct and indirect promotional effects.

3.5.3 Cost structure

Costs are broadly classified into fixed and variable categories. Fixed costs include maintenance

expenses for software systems like Bodycodi CRM, office rent, personnel costs, taxes, etc. Variable costs encompass marketing-related expenditures such as additional personnel costs incurred during offline events, event preparation expenses, and promotional item purchases.

3.5.4 Revenue streams

Bodycodi's primary revenue sources include fees paid by fitness center representatives for Bodycodi services, and b.pay service fees. Mr. Seokhoon Lee also irregularly conducts conferences such as the 'Fitness branding Strategy' [22] Revenue is further derived from fees for such sales, marketing, and fitness industry-related lectures conducted by Bodycodi.

4. Discussion

Digital healthcare industry is gradually expanding its market targeting individual consumers through mobile applications and dedicated devices due to advancements in smartphones and wearable devices. Worldwide trends such as aging populations, increasing interest in health and wellness, and widespread adoption of smart devices are driving demand. This growth is fostering the development of various healthcare functionalities implemented through mobile applications, thus promoting the growth of the digital healthcare-related mobile application market [23]. Bodycodi contributes to the digitalization of the fitness industry by offering various services, including Bodycodi CRM, an integrated operational management service for fitness centers that includes functions like member management, access control, payments, and community features. Additionally, it provides services such as member and instructor-specific apps in a Software as a Service (SaaS) format. Particularly, Bodycodi enhances the convenience and sophistication of digital healthcare through the use of artificial intelligence technology. ChatGPT Based on the analysis of the business model, the following strategic recommendations can be made. During fitness classes, fitness center members' body composition information can be measured using wearable devices, which can then be integrated with BodyCodi's AI diet management service to provide more suitable and personalized feedback to members. Physiological activity data collected through wearable devices can be utilized for individuals' health improvement, and expert feedback using this data can have positive effects on individuals. Korea has a high level of awareness that about 80% of the people are willing to provide personal information in the health care sector for public interest purposes, so it is necessary to actively utilize the people, who are the subjects of data rights, in discussions on the use of health care data for innovation in health care technology and medical services [24]. In particular, people in their 20s considered measurement and treatment without time and space constraints

as the biggest advantage of digital healthcare and chose wearable devices that can be attached to the body as products and services useful for improving personal health conditions [25]. According to related research, the collection and validation of daily life log data including activity level, weight, body mass index, muscle mass and sleep is expected to be useful for assessing disease causes and correlations, as well as for treatment [26][27]. Furthermore, research analyzing the difference in self-monitoring and feedback provision due to wearable device application indicates that providing feedback had a greater impact on weight loss and changes in body composition [28]. Considering BodyCodi's high market share, its platform facilitates easy communication between instructors and members. Therefore, collecting members' physiological activity information through wearable devices is likely to benefit BodyCodi significantly.

5. Conclusion

In conclusion, BodyCodi serves as a valuable case study for understanding the intersection of technology and healthcare. It offers insights into how platforms can drive operational transformation and innovation in the fitness industry. Its business model sets a benchmark for leveraging AI and digital tools to create value, enhance customer experiences, and promote industry-wide digitalization.

This study makes significant academic contributions by applying the Business Model Canvas framework to analyze the operations of a digital healthcare platform in order to provide insights into how AI-driven solutions and cloud-based technologies can digitalize traditional industries like fitness. By integrating strategic management theories such as Porter's Value Chain and Resource-Based View (RBV), the research also adds a multidimensional perspective to the understanding of competitive advantage in the mobile digital healthcare market. However, there remain opportunities for further exploration. Future research could expand on this work by conducting comparative studies across multiple digital healthcare platforms to identify industry-wide best practices and trends. Additionally, empirical studies incorporating user behavior analysis and feedback would deepen the understanding of how digital tools impact customer engagement and retention. Exploring the integration of emerging technologies, such as IoT and wearable devices, in digital healthcare platforms could also provide new avenues for investigation, offering a richer understanding of this rapidly evolving field.

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