

MEDICAL DATA VISION CO., LTD. (3902 JP)

A DATACENTRIC COMPANY WITH A MEDICAL BIG DATA ASSET THAT COVERS 30% OF THE JAPAN'S POPULATION.

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NIPPON INVESTMENT BESPOKE RESEARCH UK LTD

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EXECUTIVE SUMMARY

Medical Data Vision [MDV] operates medical and healthcare data-based services that provide data solutions for hospitals. From the data collected, MDV provides pharmaceutical companies an analysis of prescriptions given on a daily basis. The firm has accumulated one of the largest medical big-data banks that specifically covers acute stage patients, both inpatients and outpatients, in Japan.

On the back of tighter government-funded medical expenses, Japan's Ministry of Health, Labour & Welfare [MHLW] launched several new policies, one of which is a new payment system based on a diagnosis procedure combination [DPC] / per-diem pay system [PDPS]. This system was launched in 2003 to tackle the ever-increasing medical costs under the then fee-for-service payment [FFPS] system. Under the FFSS system, evaluations on the quality and efficiency of treatment and care were insufficient and led to inconsistent levels of care that a patient received for the same ailments. Hospitals that voluntarily participated in the DPC/PDPS are categorised as DPC hospitals. It is mandatory for DPC hospitals to submit data in a format determined by MHLW, however, for many busy hospitals this has proved to be a cumbersome administrative burden. MDV's first step into this field started with the development of medical information systems to meet the multitude of data solutions that hospitals are required to provide. In 2006, MDV launched its first data solution for DPC hospitals that were struggling to meet MHLW's format requirements. These hospitals were categorised as DPC – Diagnosis Procedure Combination – hospitals.

While offering data solutions to DPC hospitals, MDV also worked on establishing an infrastructure to take the data and information to create medical big data. Then, (1) with consent from hospitals and patients, and (2) ensuring that all details are anonymous, MDV is able to reuse the data. For example, given the strict regulations on pharmaceutical companies' marketing activities by medical representatives [MRs], any data related to prescriptions is extremely important to them as the information can be used as a powerful tool for R&D and marketing. Therefore, the data collected by MDV's system and the analyses of that data detailing the specific use and dosage of the prescriptions is the much-needed value-added information that the pharmaceutical companies are keen to obtain.

According to research on the potential of seamless- and cloud-based medical IT and medical big data by Fuji Keizai, Japan's medical IT market is estimated to reach ¥800bil in 2025, however, the combined total revenue of companies that currently handle medical data is a far cry from that figure. The Fuji Keizai data is supposedly based on medicine shipment data and includes advertising revenue related to personal health record [PHR]. MDV's big data focuses on accumulating medical and healthcare information on 34.5mil acute-stage patients, which is equivalent to ca. 30% of the Japan's population. Yet, its total sales are only 0.6% of the potentially ¥800bil market.

There are other listed companies in Japan that are categorised as medical IT services with much larger earnings. Those companies are, by and large, are facilitators of the network between doctors and pharmaceutical companies' MRs, IT systems for medical temp-staffing, and online systems for online consultations by doctors. However, MDV's business model is solely datacentric and new products created by using that data are expected to potentially bring in higher revenue.

In FY20, RP rose 42.8% YoY to ¥1,148mil on sales of ¥4,579mil (+13.7% YoY). The earnings were less affected by COVID, thanks to the fact that ca. 60% of Data Network Service earnings is recurring revenue. Moreover, due to the nature of the business not requiring much investment, there is not long-term debt on the BS and the shareholder's equity ratio has been constantly around 80%. Without the financial leverage, the firm has achieved a ROE of 15%+ for the past two years.

In FY21, MDV plans to invest on establishing its first B2C service that enables patients to access their own medical records through the firm's patient interface system / portal. The Japanese government is promoting the Personal Health Record [PHR] initiative along with the establishment of a regional medical hub strategy. With their own medical records in hand, patients can ideally receive seamless care with any doctor at any medical facility. The company is guiding for FY21 RP of ¥1,200mil (+4.5% YoY) on sales of ¥5,400mil (+17.9% YoY) based on the following assumptions:

- 1) Flat YoY growth in all core businesses.
- 2) No earnings from new services launched in FY20.
- 3) The earnings growth driver will be the newly consolidated subsidiaries.

FY21 dividend will likely be ¥4/share (+11.1% YoY), a pay-out ratio of 20.0%.

BACKGROUND OF MDV'S GROWTH POTENTIAL

Brief Summary on Japan's Healthcare System

Japan's healthcare system is based on a social insurance system, somewhat similar to some European countries like Germany and France but is not nationalised like in the UK. Japan was the world's first country to establish a universal health insurance system for the whole nation in 1961. Currently, for people under 74 years of age, there are four types of health insurance they have access to, depending on their age and occupation.

1. Every large corporation – usually with over 800 employees – provides their own health insurance.
2. Smaller companies can join the Japan Health Insurance Association, a collective insurance entity that offers health insurance for companies that cannot provide their own health insurance.
3. The self-employed and farmers join the National Health Insurance that is organised by each local government. Public sector workers and teachers join insurance system that are organised by their associations.
4. People over 75 years are covered by the Medical System for the Elderly.

By law, everybody needs to join a healthcare insurance system. Apart from some large corporations' health insurance, most are partially funded by public funds. However, there are three other unique aspects to Japan's healthcare system. Those are:

- 1) Freedom of access
Patients can choose which clinics and hospitals to have treatment from. Patients rarely need to wait for their first consultation with a doctor. However, it is often the case that primary care patients go to large hospital without a severe condition – and one of the many reasons that hospital operations are often inefficient.
- 2) Freedom to open a new clinic and hospital
Doctors in Japan are given the freedom to open their own clinics and hospitals wherever they want. As a result, clinics and hospitals tend to be overcrowded in the highly populated area, leaving less populated areas with limited access to quality healthcare.
- 3) More private hospitals than public
There are limited numbers of publicly run hospitals and most hospitals are privately run. Of the 8,236 hospitals in Japan, ca. 19% are publicly-run¹. Hospitals and clinics are remunerated on a fee-for-service basis. Privately-run hospitals need to cover their costs; therefore, they are more motivated to treat as many patients as possible. Also, doctors are remunerated by how many patients they treat and for the specific ailments they treat, not by how skilled they are.

While the healthcare system in Japan has many benefits to patients, the aforementioned issues have been part of the current pressing problem of ever-growing healthcare costs. Various policies were introduced to tackle the problem by the Ministry of Health, Labour and Welfare [MHLW], including the annual drug price revision, the biannual revision of medical remuneration and the introduction of more rigid accounting requirements at medical institutions in 2017. On the other hand, hospitals are facing increasing demand for better care but with greater efficiency and control. Currently, more than 70% of the hospitals in Japan are loss-making.

Under the universal health insurance system, a portion of which is financed by the taxpayers, hospitals are not permitted to decide their fees. All medical fees incurred – e.g., the initial consultation fee, revisiting, inpatient care, prescriptions, radiography, diagnostics fees to name a few – are determined by the MHLW. For hospitals to sustain their business, they have to improve the efficiency of their operations.

¹ Monthly Survey of Medical Facilities, Ministry of Health, Labour and Welfare [MHLW], January 2021

Change in the Fee Payment System

There are two medical fee payment systems in Japan; (1) fee-for-service payment system and (2) diagnosis procedure combination [DPC] / per-diem payment system [PDPS], in short DPC/PDPS, which was introduced by MHLW in 2003. DPC/PDPS was designed to reduce the medical spending and monitor optimal allocation of medical resources per diagnosis. Unlike the fee-for-service basis payment system, DPC/PDPS is a comprehensive bundled remuneration system per diagnosis group.

MDV mainly targets DPC hospitals to provide data solutions, which will be explained in the Business Model section in this report. These hospitals cater to patients with acute stage conditions requiring advanced treatments. There are 1,757 DPC hospitals, or ca. 21% of the total 8,236 hospitals in Japan, as of January 2021. On the other hand, DPC hospitals accommodate 482,361 beds or ca. 32% of the 1,526,639 beds nationwide. DPC hospitals, therefore, are typically larger hospitals, including those in regional hubs, that have A&E facilities.

To be categorised as a DPC hospital by the MHLW, the hospital is mandated to submit data in the MHLW-approved format. The DPC data is far more detailed than the data extracted from receipts issued by non-DPC hospitals. MHLW's aim is to achieve better quality care by improving the transparency of treatment data which, ultimately, leads to optimise the medical fees.

MDV is the first company to provide DPC data solutions for DPC hospitals that meets the mandatory format. Data management has become an important part of running hospitals that are required to improve efficiency and exhibit self-sustainability. Currently, the number of hospitals that use MDV's Data Network Services reached ca. 800 hospitals, which form ca. 45% of the 1,757 DPC hospitals.

Awareness of the importance in evidence based medicine [EBM]

There has been an increasing awareness of the importance of Evidence based Medicine [EBM] in recent years. The concept behind EBM is to provide the best tailored care to patients with the best available scientific evidence while also taking into consideration the patient-specific circumstances, his/her will for treatment, and the hospital's circumstance such as availability of facilities, instead of solely relying on a doctor's judgement which is limited to his/her expertise and previous experiences. To practice EBM, reliable and comprehensive medical big data is a must-have. This is where MDV's ability to accumulate medical big data prevails.

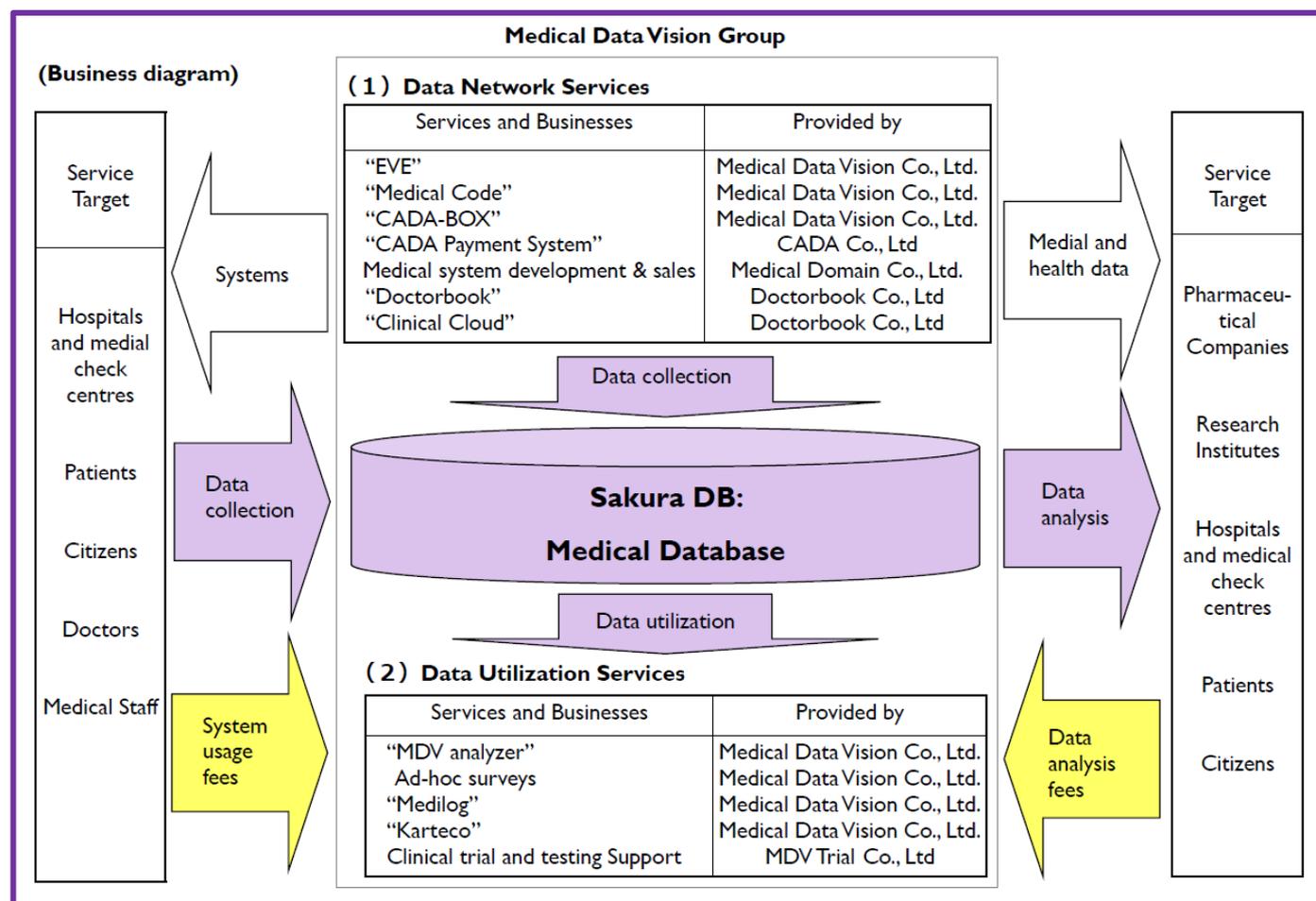
Medical big data is built with numerous types of information. For example, information such as a patient consultation with a doctor, diagnostics, prescriptions, surgery records etc generate a wide variety of data. Every day, the data that goes onto a patient's record card, the procedures and the itemised hospital invoice are all put into the data-format regulated by MHLW and submitted to the ministry daily. The real-world data [RWD] is actively used as real clinical data and is then used to create new treatments, research on new medicines, pharmacovigilance, and epidemiology research etc. MDV collects the anonymised DPC data from its Data Network Service customers with the consent from those hospitals and patients for its secondary usage, and it is then stored in its own data bank, Sakura Data Bank. As of the end of FY20, Sakura Data Bank has DPC data of 34.5mil patients, real-time medical data of 828,000 patients and health insurance data of 6.16mil patients, which altogether covers almost 30% of the Japan's population. Based on its own big data, the firm provides analytic and research services for pharmaceutical companies in its Data Utilisation Service. The big data is also a source of its new products and services.

BUSINESS MODEL

MDV's most valuable business asset is the medical big data that it has been accumulating and, with patient consent, the reuse of that data to develop and sell new products. Its business model is summarised in the diagram below. To date, the firm has built trust with hospitals to the degree that the clients trust their clinical data to the firm. Its strategy lies in consolidating anonymised medical and health data provided by doctors, hospitals, clinics, diagnostic centres etc to its data bank, and then process the data for reuse in other related fields, such as pharmaceutical companies, research institutes etc, and even patients themselves.

MDV's business model is, in simple terms, to create a value chain of medical big data made of the following five factors:

- 1) To provide solutions to support the data management of DPC hospitals for a fee (discussed below),
- 2) At the same time, collect anonymised medical and health data of patients of client hospitals. MDV has also gained consent from those medical institutions and their patients to reuse the data,
- 3) All data will be accumulated in the firm's large-scale database, Sakura Databank, and will be used to launch new products based on needs.
- 4) The data can be accessed by pharmaceutical companies and research institutions for a fee and also used to provide an ad-hoc bespoke research service.
- 5) Through a patient interface Karteco that can be linked to MDV's data solutions, each patient can access to their own medical records whenever and wherever they need.



Source: Nippon-IBR based on MDV's FY20 earnings results material

Business Segments

MDV's business is largely formed with two business pillars:

1. Data Network Service

MDV provides support to the management and administration of DPC hospitals with its data solution services. As shown in Table I below, segment revenues comprise of an initial installation fee for the data solution and a monthly subscription fee for those products. Around 55% of the segment revenue is a recurring revenue from the monthly subscription fee for the data solution services. Moreover, ca. 70% of the segment revenue is generated from the two main products, EVE and Medical Code. FY20 (Dec yr-end) segment sales was ¥1,602mil (+5.8% YoY), of which recurring sales, categorised as Maintenance Sales, generated revenue of ¥874mil (-3.5% YoY) and Initial Installation revenue earned ¥178mil (-49.7% YoY). Segment sales growth solely came from newly consolidated subsidiaries.

EVE is an introductory solution to DPC hospitals and provides analysis of the fee gap between DPC payments and fee-for-service payments. The solution also analyses KPIs such as the number of patients, number of stays per patient, and

medical resources in different departments and compares the data against other hospitals. As of the end of FY20, there were 772 hospitals using EVE.

Medical Code offers slightly more advanced solutions for hospitals to monitor more comprehensive hospital management KPIs such as COGS calculation and average treatment price per patient. The solution also helps hospital staff members to stay on top of the various management KPIs by giving unlimited access to the system. The point system provided by the MHLW is to ensure hospitals accurately charge for each service and specifically, that all services are accounted for and costed out in that process. There were 260 hospitals using Medical Code as in FY20.

The most advanced solution is CADA-BOX, which integrates patients' information accumulated on its database with existing electronic medical records and with the deferred payment system – CADA-Payment – used by patients. MDV is currently aiming to develop the medical big data value chain even further to provide patients with access to part of their own medical information through Karteco – a patient interface that can be accessed by an app or the web for free. Subscription to CADA BOX has been slow and, although launched in FY16, there are only six users (hospitals) in total, well below the firm's target of 100 hospitals at the time of launch. MDV reckons that this is because many of its clients are hesitant to share patients' medical records with the patients themselves. However, to realise MDV's vision, which is to have a world where all patients can access their medical records, management sees CADA-BOX, whose two major components are CADA payment, a system used by hospitals, and Karteco, a service used by patients to access their own medical records, as an essential system to making this transition.

While MDV provides data solution products to DPC hospitals, it also asks for consent from hospitals and patients to reuse the data that it has gathered through the aforementioned solutions in compliance with the Personal Information Protection Act and various guidelines for treating medical data. To date, the firm has got consent from DPC hospitals that are using the firm's data solution services. The size of the patient samples from those facilities totals 34.5mil patients. What is unique about MDV's big data is that it includes data from more than 50% of Japan's cancer therapeutic facilities. Furthermore, the demographic breakdown of 34.5mil patients resembles that of the Japan's entire population. 34.9% of the 34.5mil are patients above 65-year-old, 50.8% are patients between 15 and 64 years of age and 14.3% are patients below 14 years old. The data is stored in the firm's data bank, Sakura Data Bank, and can be processed to develop new services or to analyse by pharmaceutical companies. From 2020, the firm started sourcing data of Insurance Association from a third-party data provider. In FY20, total of 6.16mil patients' data was added to Sakura Data Bank from insurance associations. By having a different source of data, so not just the quantity of data but the depth of the data will likely be enhanced.

Direct competitors to MDV in Data Network Service includes Nissay IT Co., Ltd, an unlisted subsidiary of Nippon Life and Girasol, an unlisted venture specialises in data solutions for DPC hospitals. The data solution market specific to DPC hospitals is a concentrated market with only those 3 companies including MDV. In that market, based on number of hospitals gained as customers, MDV has the top market share of 45%.

On the other hand, a competitor in the collection of data from insurance associations is JDMC (4483 JP) which also operates a data analysis service for pharmaceutical companies based on the fee-for-service receipts data. MDV's differentiation lies in the coverage of DPC data which tends to include larger hospitals, acute phase patients with severe ailments, while patients of fee-for-service hospitals tend to have less severe symptoms. Furthermore, JDMC's data source comes from corporate health care insurance associations which (1) only likely captures the working population, and (2) has a narrow range of age coverage. However, it does have the advantage of gaining data on chronically ill patients as well as healthy people.

Table 1: Data Network Service: Details and Pricing for Each Product

Segment	Products	Details	Pricing
Data Network Service	EVE	<ul style="list-style-type: none"> A management analysis support system for DPC hospitals. Analysis of charges and DPC fee gap. Analysis of KPIs such as numbers of patients, numbers of stay and medical resources used by disease and by case to benchmark against other hospitals. Enables hospitals to detail out own medical treatment policy by knowing their own strength and weakness in comparison to other hospitals. 	Installation fee: ¥4mil Subscription: ¥50,000/mo.
	Medical Code	<ul style="list-style-type: none"> A more advanced management analysis support system than EVE for DPC hospitals Comprehensively Support hospital management such as hospital COGS calculation and improvement in treatment prices by utilising standardised datum such as DPC data and electronic receipt data. Unlimited user registration enables inter-hospital information sharing, promote awareness and improved actions that lead to more efficient management. 	Installation fee: ¥8.2mil Subscription: ¥100,000/mo.
	CADA-BOX	Made of two main components: <ul style="list-style-type: none"> CADA-BOX is a system used by hospitals that links electronic medical records at hospitals and the below two services. <ol style="list-style-type: none"> KARTECO, an information storage and browsing service used by patients, which is free to use for patients. CADA payment, a deferred payment service for medical treatment. 	Installation fee: ¥20mil Subscription: ¥500,000/mo.

Source: Nippon-IBR based on MDV's FY20 earnings results presentation material

2. Data Utilisation Service

Data collected through the Data Network Service, with consent, will then be reused for research and analysing services that the firm provides – mainly to pharmaceutical companies. FY20 segment revenue of ¥2,977mil came from two service products:

- MDV Analyzer, a web-based system that analyses the real-time daily prescription trends in DPC hospitals. In FY20, 20 pharmaceutical companies (+2 companies YoY) subscribed to gain an access to MDV analyzer. MDV reckons that stricter compliance on what and how medical representatives [MRs] of pharmaceutical companies restricts their physical visits for their marketing activities unless they present data-based evidence together with academic papers to promote their drugs.

Typically, pharmaceutical companies pay for the MDV analyzer subscription out of their marketing budget. In that sense, the direct competitors include companies like M3 (2413 JP) and MedPeer (6095 JP). However, the difference is that MDV offers MRs access to the analysed prescription data that can lead doctors to switch drugs while M3 provides MRs an access to its network of doctors for advertising purposes. Moreover, MDV not only generates fees from advertising, but it also gets a cut from the pharmaceutical companies' R&D costs.

Analysis that cannot be found in MDV analyzer can be supplied by:

- Bespoke research on an ad-hoc basis. In FY20, 13 pharmaceutical companies (+3 companies YoY) regularly used the ad-hoc tailored research service. While FY20 sales of MDV analyzer has a small YoY increase in sales (+6.1% YoY to ¥400mil), ad-hoc research sales soared 21.7% YoY to ¥2,506mil. A company like JMDC provides ad-hoc research services to pharmaceutical companies, however, the size of the sales is not disclosed. MDV reckons that since the data used for the service is different, it is unlikely that the two companies directly compete with each other.

Table 2: Data Utilisation Services: Details and Pricing for Each Product

Segment	Products	Details	Pricing
Data Utilisation Service	MDV analyzer	<ul style="list-style-type: none"> A web-based analytical system based on the largest medical treatment database in Japan. Pharmaceutical companies can analyse number of patients, number of days for prescription, amount prescribed based on the database. Offer a comprehensive analytical angle not just from disease and remedies but also from medical treatment such as surgery and diagnostics 	Annual fee: ¥20mil
	Ad-hoc research service	<ul style="list-style-type: none"> Provide bespoke research service to pharmaceutical companies and research institutions. Products include aggregate data reports, data sets for academic research reports, etc. 	Average price: ¥3.5~4mil per research

Source: Nippon-IBR based on MDV's FY20 earnings results presentation material

Risks to the Business Model

While MDV has a dominant position as a data solution provider to DPC hospitals, there are several potential risks to the business model to consider:

- Accidents (loss of information / data breaches) in information security.
- Changes in the universal healthcare insurance system and the introduction of the per-diem payment system [PDPS] have adversely affected hospitals' bottom lines. While such changes will likely boost demand to improve management efficiency, hence lead to deploy solutions, the medical data solutions market might be slower to grow than expected. MDV saw a decline in FY20 subscriber numbers in Data Network Service because customers could not allocate staff to handle the system and/or switch to competitors' solutions. A drop in subscriber numbers could affect future recurring revenue.
- The annual changes in remuneration for diagnosis and treatment might affect the ability of hospitals to investment or could lead to cancellation of existing subscription services.
- If government policy changes lead to the termination of the DPC systems, MDV's business might be severely compromised.

EARNINGS

FY20 Earnings Results

MDV reported FY20 RP of ¥1,148mil (+42.7% YoY) on sales of ¥4,579mil (+13.7% YoY). RP overshoot the company's estimate of ¥900mil by 27.6%. As a result, the annual dividend was revised from the original forecast of ¥3/share to ¥3.6/share. The firm's earnings proved resilient to the pandemic, thanks to the high proportion of recurring revenue in Data Network Service. Circa 60% of the segment sales is recurring revenue generated from a monthly or annual subscription fee for the service and maintenance of Data Network Service products such as EVE and Medical Code. However, flow-based revenue – when a new customer purchases those packages – was affected by restrictions to hospital visits for marketing purposes under COVID.

The steady growth in sales of the higher margin Ad-hoc services in Data Utilisation Service, improved the FY20 RPM by 5.1ppt YoY and thanks to the change in sales mix, with 65% of sales coming from Data Utilisation Service, the gross profit margin [GPM] improved by 1.2ppt YoY.

Earnings by Segments

Data Network Service

While FY20 Data Network Service revenue rose 5.8% YoY to ¥1,602mil, revenue from core products, EVE and Medical Code packages, fell 16.4% YoY to ¥1,053mil. The package revenue can be divided into (1) the initial installation revenue (flow revenue) of ¥178mil (-49.6% YoY) and (2) recurring revenue from monthly subscriptions for service and maintenance (stock revenue) which came in at ¥874mil (-3.5% YoY). The decline in package sales was offset by revenue from acquired subsidiaries such as Doctorbook and Medical Domain, which saw FY20 sales surge 184.3% YoY to ¥472mil. Doctorbook provides a membership-based medical video distribution service for doctors and dentists.

Table 3: Key Performance Indicators (KPIs) for Data Network Service Segment

Data Network Service Segment - Key Performance Indicators (KPIs)						
	FY16	FY17	FY18	FY19	FY20	YoY (%)
Total Segment Sales (¥mil)	1,438	1,571	1,467	1,514	1,602	5.81
Package Sales (¥mil)	1,416	1,456	1,308	1,259	1,053	-16.36
Initial Revenue (¥mil)	611	589	406	353	178	-49.58
Recurring Revenue (¥mil)	805	867	902	906	874	-3.53
No. of hospitals using EVE	791	799	801	802	775	-3.37
No. of hospitals using Medical Code	224	265	274	281	260	-7.47
Total number of hospitals (cumulative)	1,015	1,064	1,075	1,083	1,035	-4.43
Sales of CADA-BOX	20	75	57	57	52	-8.77
No. of hospitals using CADA-BOX	1	5	6	7	5	-28.57
Revenue from subsidiaries (Doctorbook, Medical Domain)	0	26	67	166	472	184.34
No. of patients in MDV large-scale medical database (mil patients)	17.23	21.17	25.93	29.84	34.51	15.65
No. of patients in Health Insurance data (mil patients)	0	0	0	0	6.16	n/a
No. of patients' real-time medical data (mil patients)	0	0	0	0.823	0.827	0.49
Clinical Cloud clinician accounts (a subsidiary Doctorbook)	0	0	0	22,346	33,773	51.14

Source: Nippon-IBR based on Medical Data Vision FY20 earnings results materials

Although MDV saw a drop in number of hospitals that uses the package services such as EVE and Medical Cloud, the number of patients in the database increased from 29.8mil to 34.5mil in FY20, of which ca. 850K are patients on real-time data.

MDV also started collecting data from the health insurance associations which will likely add value in Data Utilisation Service. Not just the data of DPI hospital patients, the size and variety of patients' data will then be used in the firm's Data Utilisation Service segment which provides data analysis service (MDV analyzer) and ad hoc survey service to pharmaceutical companies.

Data Utilisation Service

FY20 Data Utilisation Service segment sales grew 18.5% YoY to ¥2,977mil, with 20 pharmaceutical companies subscribing to MDV analyzer (+2 YoY) to generate sales of ¥400mil (+6.1% YoY).

The Ad-hoc Research service currently has 13 clients (+3 YoY) in FY20 and saw sales rise 21.7% YoY to ¥2,506mil. The Ad-hoc service continued to enjoy increase in demand under the pandemic. Many pharmaceutical companies reduced the number of medical representative (MRs) who market medicines to hospitals, doctors, and clinics on the back of more restrictions on how and what medicines they can promote to the medical institutions. Marketing methods have become highly technical and require a data-based approach. MDV offers ad-hoc research services on a tailored approach by using data analysis based on their database, as well as academic research papers. Since those ad-hoc services are deployed by pharmaceutical companies that promotes medicines for severe ailments such as cancers, demand for research was not largely affected by COVID.

New services (see Table 4 below)

Although earnings contribution from new services is nugatory for now, MDV aims to expand its customer base by continuously developing and launching needs-driven new products and services. In FY20, the firm launched four products such as Online Doctor Bank, MUST and Kangocchi+. Earnings from those new services will likely be realised after FY21.

Earnings by Segment (Cumulative)												
(¥mil / Dec Yr-end)	FY19				FY20						FY21	
	Q1	IH	Q3	FY	Q1	IH	Q3	FY	YoY (%)	vs. CE (%)	FYCE	YoY (%)
Total Net Sales	869	1,786	2,757	4,026	1042	2,046	3,153	4,579	13.7	-4.6	5,400	17.9
Data Network Service	359	733	1,144	1,514	404	762	1,136	1,602	5.8	-17.6	1,992	24.3
Data Utilisation Service	509	1,053	1,612	2,511	638	1,283	2,017	2,977	18.5	4.2	3,407	14.4
Recurring Profit	102	270	462	804	228	476	784	1,148	42.7	27.6	1,200	4.5
RPM (%)	11.8	15.1	16.8	20.0	21.9	23.3	24.9	25.1	+5.1pp	+6.3pp	22.2	-2.9pp
Net Profit for the parent's shareholders	68	173	311	554	151	319	527	700	26.3	16.7	800	14.3
ROE (%)				15.3				17.3			17.8	+0.5pp

Source: Nippon-IBR based on MDV's earnings results presentations

FY21 outlook

MDV is guiding for FY21 RP of ¥1,200mil (+4.5% YoY) on sales of ¥5,400mil (+17.9% YoY).

Data Network Service segment sales is forecast to rise 24.3% YoY to ¥1,992mil. Within Data Network Service, MDV assumes flat YoY growth for existing services, EVE, Medical Code and CADA-BOX. This is because sales growth to new installation dipped in FY20 due to restrictions under COVID which will likely lead to slower growth in recurring revenue. The firm also assumes that restricted marketing under the pandemic will likely continue in FY21, hence expects nugatory growth ahead. On the other hand, FY21 sales guidance for Data Utilisation Service is ¥3,407mil (14.4% YoY). The growth will mostly be seen in Ad-hoc services. Furthermore, FY21 sales includes ¥939mil (+73.3% YoY) revenue from subsidiaries.

However, the guidance does not reflect any sales from new services, even though a service like Kangochi + already has some fee-paying hospitals onboard. The entire ¥390mil increase in segment sales will likely come from subsidiaries: Doctorbook will likely see sales increase by ¥100mil and the newly consolidated System B-alpha, which develops systems such as comprehensive health management and diagnostic test support, will likely contribute ca. ¥300mil. Meanwhile, Doctorbook's Clinical Cloud, that competes with M3's MR-kun, did not gain as much traction as the firm wanted in FY20 due to restrictions on marketing under the pandemic. Doctorbook has an alliance with Medipal Holdings (7459 JP) to cultivate mainly general practitioners.

The main reason for the slower rate of growth in RP vs sales is due to the ca. ¥200mil YoY rise in investment the firm plans to make to meet the demand from the Japanese government initiative on personal health record [PHR]. COVID has triggered the government to fast track its efforts to utilise health care, medical and nursing care datum so that it can make the entire health system run more efficiently. The government's aim is to improve the quality of care that leads to the population being healthier, to provide more accurate and effective information to support communication between patients and healthcare staff in consultation, and to establish tools to gather accurate information in preparation for any other pandemic. MDV has already started supplying PHR data to patients via its integrated patient interface solution Karteco, a platform of medical information to which any patient can have an access via a smartphone app or a webpage. Ca. 30,000 patients already use the service for free.

Table 4: New Service Pipelines: Details and Pricing

Segment	Products	Details	Pricing
Data Network Service – New Services	MUST Launched FY20 Q4	<ul style="list-style-type: none"> A data solution service for small to medium-size acute and general care hospitals, and clinics. Support the hospital management by analysing the real-time medical data. By covering smaller institutions, data of outpatients and less severe ailments will be collected. A component will be linked to Karteco for patients to obtain Personal Health Record (PHR). 	<p>Guideline prices for installation: ¥50,000 for clinics and ¥100,000 for hospitals</p> <p>Monthly subscription: ¥19,800/mo for clinics and ¥29,800/mo for hospitals.</p>
	Kangochi + Launched FY20 Q3	<ul style="list-style-type: none"> Solution for analysing nursing needs Accesses nursing requirements and accurately grasps impact on hospital finances that nursing imposes. Free trial version has already been introduced to ca. 100 DPC hospitals. Moving to a monetising phase. 	Monthly subscription: ¥30,000~40,000
	Vision Launched FY20 Q3	<ul style="list-style-type: none"> A new service that visualises hospital operations on a distributable report. Comparison feature with other hospitals nationwide. Target at all kinds of hospitals including acute care hospitals, general hospitals, rehab hospitals and chronic care hospitals. 	Monthly subscription: ¥10,000
	Online Doctorbank Launched FY20 Q3	<ul style="list-style-type: none"> An online medical consultation service with evidence shared by patients. Doctors register to Clinical Cloud. As of FY20, there are 33,773 doctors registered with Clinical Cloud. MDV also has an alliance with CareNet (2150 JP) which will promote the service to its 170,000+ member doctors. The only online consultation system recommended by MHLW and permitted by the Japan Medical Association because of evidence-supported feature of the service. Patients data can be shared from MDV's other data solutions via Karteco. 	Doctor's registration fee: ¥1,000/mo + 8.2% of consultation fee

Source: Nippon-IBR based on MDV FY20 Q3 earnings results presentation material

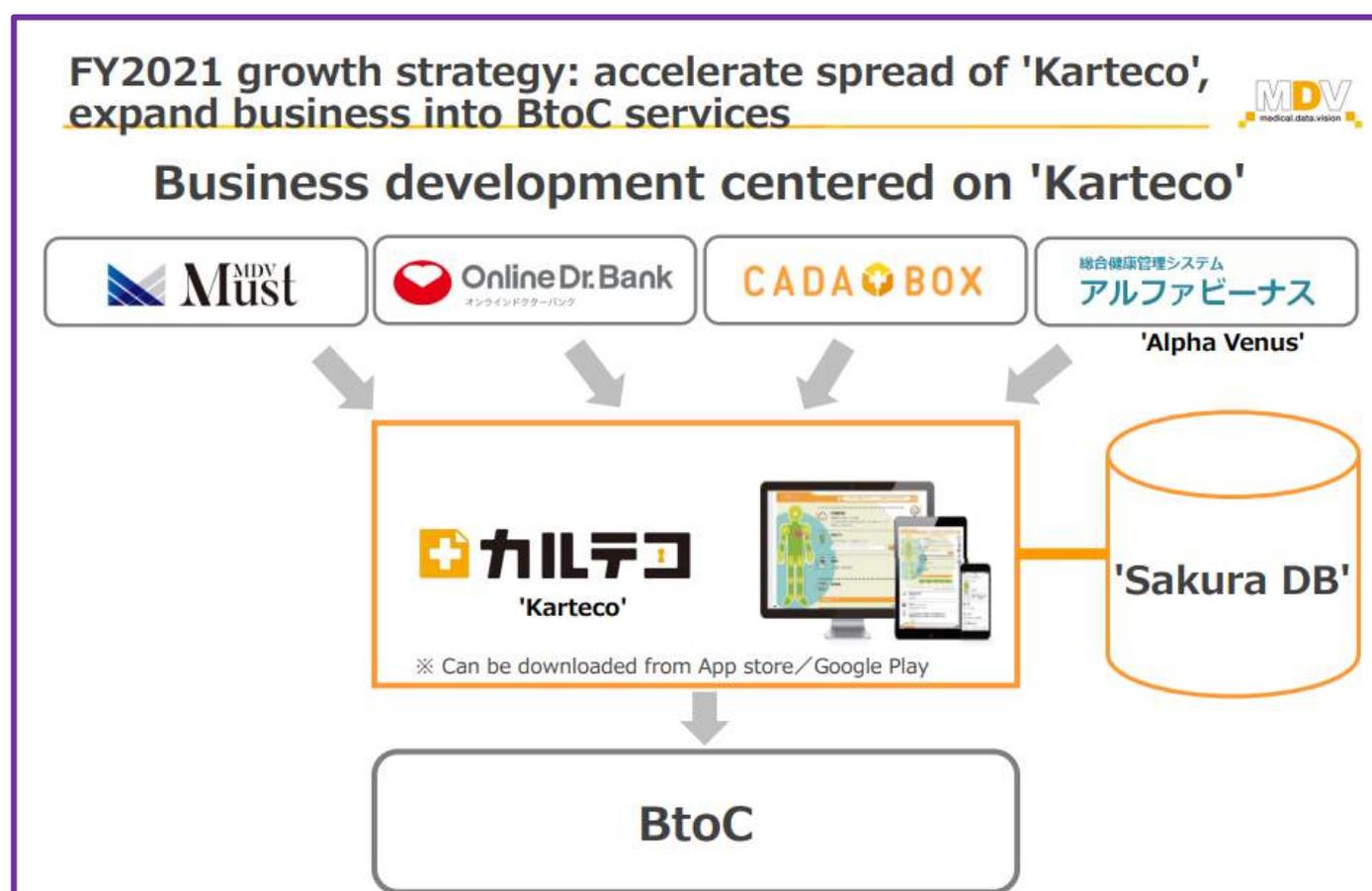
Growth Strategy in FY21

MDV aims to launch 3~4 needs-driven services per year. The FY21 growth strategy focuses on three topics;

- Expand users of Karteco and establish a B2C business to meet patients' demands for their PHR. MDV establishes Karteco as a platform for patients to have access to their information via a smartphone app or a webpage. Karteco is a patient interface system that is linked to various Data Network Service products such as Online Doctor Bank, CADA-BOX, MDV Must and Alpha Venus. Patients can access their medical information via Karteco for free. MDV's revenue source is unchanged in that it receives the fee from hospitals that use MDV's data solution services. Along with the MHLW's PHR initiatives, MDV is also able to expand its reach to patients / consumers through Karteco app.

Benefits for the patients include:

- Obtain their own health and medical data and information so they can have an online consultation with a new clinician as they are able to share their details via Karteco. An online medical consultation with the patient's medical record is the ONLY method of online consultation recommended by MHLW and the only method permitted by the Japan Medical Association – a powerful lobby group formed with clinicians.
- Access to a real-time medical data.
- Access to payment records or use deferred payments via CADA-BOX.
- Access to his/her diagnostics of check-ups via Alpha Venus.



Source: MDV's FY20earnings results presentation

2. Overseas expansion

MDV reckons that its business model is transferrable to overseas markets. However, it is still premature to discuss any details of the expansion plan.

3. Alliance with SBI Holdings [SBI] (8473 JP).

In Nov 2020, MDV's previous largest shareholder Fujifilm Holdings (4902 JP) sold its 19.4% stake to SBI, together with part of the founder's stake in the firm, which made SBI MDV's largest shareholder with a 20.68% stake (excluding treasury shares). SBI is willing to launch financial products created by utilising medical and health big data that MDV has accumulated. At the same time, the two companies aim to establish businesses that contributes to the regional healthcare network that the MHLW has been aiming to establish. On 12 April 2021, the firm announced an alliance with one of SBI's core subsidiaries, SBI Fintech Solutions, in providing various finance solutions to medical facilities. Neither company has yet disclosed any numerical target.

MDV has not yet committed to any numerical targets for the aforementioned three services.

SHAREHOLDER RETURN POLICY AND CORPORATE GOVERNANCE

MDV's management key performance indicators are 1) sales growth, 2) recurring profit margin [RPM], 3) and ROE. For ROE to improve, the firm needs to monetise the newly launched products in Data Network Service.

The company plans to pay an annual dividend of ¥4/year, at an estimated pay-out ratio of 20.0%. MDV has repurchased its own shares in the past, however, there are no current plans for a buy-back.

MDV's Board is structured with the Board of Directors (six directors including two external directors), and the Board of Auditors (four auditors including three external auditors). In total, there are five external board members out of 10 members, therefore, its ratio of the external members is higher than the 30% recommended by Japan Exchange's Corporate Governance Code. Independence of the external members has not been questioned by proxy advisory firms.

MDV has already issued basic principles of its ESG policies but has not yet disclosed any detail. However, the nature of the business which promotes digitalisation of the healthcare and medical industry in Japan and support transparency of information to advance the principle of informed content in medical treatment will largely contribute to and support the ethics of the healthcare industry.

Table 5: Management KPIs

Management KPIs						
(¥ / Dec yr-end)	FY16	FY17	FY18	FY19	FY20	FY21CE
YoY Sales Growth (%)	9.1	22.5	10.9	12.5	13.7	17.9
RPM (%)	15.8	17.5	9.8	20.0	25.1	22.2
ROE	6.7	11.9	2.2	15.3	17.3	17.8

Source: Nippon-IBR based on FY20 YUHO

FINANCIAL SUMMARY

P&L Summary										
(¥mil / Dec yr-end)	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21CE
Accounting Standard (JP)	Parent	Parent	Parent	Parent	Consol	Consol	Consol	Consol	Consol	Consol
Sales	1,167	1,530	1,950	2,413	2,632	3,225	3,577	4,026	4,579	5,400
YoY (%)	n/a	31.1	27.5	23.7	9.1	22.5	10.9	12.5	13.7	17.9
COGS	264	288	384	516	458	619	797	622	697	1,096
Gross Profit (GP)	902	1,242	1,565	1,897	2,174	2,606	2,779	3,364	3,882	4,304
GPM (%)	77.3	81.2	80.3	78.6	82.6	80.8	77.7	83.6	84.8	79.7
SG&A	841	1,032	1,305	1,614	1,743	2,037	2,428	2,554	2,736	3,053
Operating Profit (OP)	61	209	260	282	430	569	351	809	1,146	1,199
YoY (%)	n/a	241.6	24.2	8.4	52.6	32.1	-38.2	130.3	41.6	4.7
OPM (%)	5.3	1.4	13.3	11.6	16.3	17.6	9.8	20.0	25.0	22.2
Interest & dividend received	0	0	0	0	0	0	0	0	0	0
Interest payment	0	0	0	0	0	1	0	0	0	0
Investment gains & losses	0	0	0	0	0	0	0	0	0	0
Recurring Profit (RP)	62	210	248	280	415	565	351	804	1,148	1,200
YoY (%)	n/a	238.7	18	12.9	48.2	36.1	-37.9	129	42.7	4.5
RPM (%)	5.3	13.7	12.7	11.6	15.8	17.5	9.8	20.0	25.1	22.2
Pre-tax Profit	62	209	244	262	293	547	314	657	1,076	1,200
Tax costs	-29	5	108	98	115	192	253	112	374	400
Minority shareholder interest	0	0	0	0	0	0	8	8	-2	0
Net Profit (NP)	91	204	135	164	178	354	69	554	700	800
YoY (%)	n/a	123.2	-33.9	21.4	8.7	99	-80.4	702.8	26.3	14.3
Comprehensive Profit	0	0	0	0	178	354	61	545	702	800

Source: Nippon-IBR based on MDV's presentation materials and YUHOs

Balance Sheet Summary										
(¥mil / Dec yr-end)	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21CE
Accounting Standard (JP)	Parent	Parent	Parent	Parent	Consol	Consol	Consol	Consol	Consol	Consol
Current Asset	842	1,140	2,274	2,416	2,797	2,864	2,773	3,872	4,319	
Fixed Asset	195	193	376	497	394	888	1,091	1,076	1,002	
Tangible	66	76	119	97	105	173	224	233	177	
Intangible	41	31	146	194	127	476	368	356	303	
Investment and others	86	86	110	205	161	238	498	486	521	
Total Asset	1,038	1,333	2,659	2,918	3,194	3,752	3,865	4,948	5,321	
Current Liability	131	222	361	407	363	550	543	852	1,099	
Fixed Liability	17	16	25	21	20	37	43	71	84	
Net Asset	889	1,094	2,271	2,489	2,809	3,164	3,278	4,023	4,136	
Capital	350	350	883	910	981	981	992	992	992	
Capital Surplus	959	959	1,468	1,495	1,565	1,565	1,599	1,756	1,763	
Retained Earnings	-420	-215	-80	83	263	617	687	1,241	1,943	
Treasury Shares	0	0	0	0	0	0	0	0	-590	
Minority Interest	0	0	0	0	0	0	0	34	36	
Shareholders' Equity	889	1,094	2,271	2,489	2,809	3,164	3,278	3,989	4,100	
Shareholders' Equity Ratio	85.7	82.1	85.4	85.3	88.0	84.3	84.8	80.6	77.0	
Interest-bearing Debt	0	0	0	0	0	0	0	0	0	

Source: Nippon-IBR based on MDV's presentation materials and YUHOs

Cash Flow Summary										
(¥mil / Dec yr-end)	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21CE
Accounting Standard (JP)	Parent	Parent	Parent	Parent	Consol	Consol	Consol	Consol	Consol	Consol
Operating Cash Flow	43	285	206	118	196	486	120	1,202	964	
Depreciation	59	55	72	75	93	98	115	126	87	
Goodwill Amortisation	0	0	0	0	0	32	54	54	71	
Change in Sales Receivables	-102	-46	-142	-163	-173	1	-154	201	-95	
Change in inventories	5	-1	6	5	0	-144	11	0	1	
Change in Accounts Payable	0	17	21	10	-24	-3	-12	1	0	
Investment Cash Flow	-56	-153	-108	-218	-144	-739	-271	-31	-142	
Free Cash Flow	-13	132	98	-100	52	-253	-151	1,171	822	
Finance Cash Flow	0	0	1,021	52	139	-7	28	199	-589	
Cash and Cash Equivalent	547	679	1,799	1,751	1,959	1,697	1,574	2,944	3,177	

Source: Nippon-IBR based on MDV's presentation materials and YUHOs

Per-share indicators²										
(¥ / Dec yr-end)	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21CE
EPS	3.17	7.08	4.51	4.42	4.67	8.86	1.74	13.85	17.72	20.25
BPS	30.73	37.80	61.58	65.94	70.22	79.08	81.91	99.70	104.00	
Dividend	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.60	4.00

Source: Nippon-IBR based on MDV's presentation materials and YUHOs

² Per-share indicators are retro calculated based on current number of shares outstanding

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