A Study on the Role of Business Wargaming to Formulate a Go-To-Market Strategy

Dissertation Submitted to

The IIHMR University, Jaipur

for the partial fulfillment for the award of the degree of

Master of Business Administration (MBA)

in

Hospital and Health Management

by

Dr. Sunita Kumari Patro

Under the Supervision and Guidance of

Prof. Veena Nair Sarkar

2021

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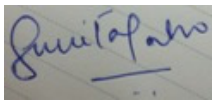
DECLARATION BY STUDENT

I hereby declare that this dissertation titled **A study on the role of business wargaming to formulate a go-to-market strategy** is the bonafide record of my original researchwork. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished workof others has been duly acknowledged in the text.



Dr. Sunita Kumari Patro
Date: 2nd July 2021

CERTIFICATE

This is to certify that Dr. Sunita Kumari Patro in partial fulfillment of the requirements for the awardof the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur has successfully completed her internship at Ethnographic Medical Research Pvt. Ltd.

Mr. Krishanu Bhattacharjee

Place:
Bangalore

Date:
2nd July 2021

Founder and CEO
Ethnographic Medical Research Pvt. Ltd
(EMeRG)

Certificate from Faculty Guide and School Dean

CERTIFICATE

This is to certify that dissertation titled **A study on the role of business wargaming to formulate a go-to-market strategy** is a record of the research work undertaken by Dr. Sunita Kumari Patro in partial fulfillment of the requirements for the awardof the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and his approach to the research study has been sincere, scientific, and analytical.

Prof. Veena Nair Sarkar
Assistant Professor
IIHMR University, Jaipur
Date: 2nd July 2021

Dr. Dhirendra Kumar
School Dean
IIHMR University, Jaipur
Date 30th June, 2021

Abstract

The study is based on a live project conducted by Ethnographic Medical Research Pvt. Ltd. for a client. EMeRG is a Medical-Technology advisory firm, which follows the latest trends medical technology through Competitor Analysis, New product launch analysis. They also conduct primary research to learn the scope of technology in emerging markets.

Aim

The study aims at see the role of business wargaming to formulate a possible go-to-market strategy for a new product launch by analysing the competitor's offerings and scenario

Methodology

With the help of this simulation exercise, a strategy for the entry of new product into the market will be developed. Historically wargaming was used as a part of military training to estimate the strategies and tactics of the opponent. the foresightedness helped in reducing casualties and economic losses. A similar approach was followed in business wargaming, where the company steps into the shoes of its competitors. Intel is gathered on the strengths, weaknesses, trends, etc., followed by the competitors. The gathered data is used by the participants in the simulation exercise.

Three significant competitors are profiled, one of which is discussed in this study. Various parameters are evaluated such as technology, digitals solutions, installed based, customer testimonials, value propositions communicated to the customers, etc.

The members of the company take on the persona of the competitors. Due to the involvement of top management levels with diverse profiles such as sales ,marketing, etc., Realistic predictions are made on the strategies that could be implemented by the competitor as a counter reaction to the product launched.

At the end of this exercise the data was assimilated which showed the brand presence of competitors in some geographical areas more than the other, customer testimonials helped in finding the key asks with the end-users, difference in technology and digital specifications

Conclusion

The wargaming helped find the current situation for a competitors. This helped the company in strategy planning for their new product. The strengths of the competitors can be utilized on R&D planning, fine tuning of value propositions etc.

However, since the exercise is dependent on the response and participation, selection of participants forms a major step towards the success of wargaming. Virtual exercises have shown to be not as effective as real-life sessions

Acknowledgement

I have received a great deal of support and guidance throughout the writing of this dissertation and the life project

I would firstly like to thank Mr. Krishanu Bhattacharjee, founder and CEO of EMeRG, for letting me be a part of a project. Your constructive feedbacks and insight on the project help me improve the final outcome, sharpen my thinking and brought my work to a higher level . I would like to thank Ms. Tanuja Khanolkar, Head of Outcomes Research, EMeRG. You has been extremely patient and approachable to clarify any and every doubt that I may have had.

I would also like to thank my faculty guide Prof. Veena Nair Sarkar, Assistant Professor at IIHMR University, Jaipur. Your detailed explanation on the framework, it's logical implementation has brought about a structure to the entire report.

And lastly, I would like to thank my parents for being ever so supportive and being the pillars of strength whenever I needed them. I would not have completed this dissertation without the help of my friends Rashika and Savan.

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CHAPTER- 1
INTRODUCTION

1.1 Introduction

Founded in 2013, EMeRG (Ethnographic Medical Research Pvt. Ltd.) addresses the paradox "innovation in isolation" within the medical technology market, with a field presence in over 48 emerging markets.

As an international medical technology research and advisory firm, EMeRG provides its clients with customer insights through ethnographic observations. The organizations' focus has provided business strategies to its clients through a customer-centric approach, voice of customer reports, and white papers spanning 15 major categories of medical devices.

The organization helped medical technology firms by providing solutions to complex business obstacles through NPI research, value proposition assessment, outcomes research, pricing research, GTM strategy, competitive intelligence, conference research, ethnographic research, and market entry assessment.

This research article is about a similar business problem addressed for a client by the organization, who for confidentiality would be addressed as MedTechFirm. The Firm has been working on the launch of a CT scanner in the performance category and wanted EMeRG to conduct business wargaming sessions using their proprietary framework to develop a go-to-market strategy.

The client is one of the top 10 revenue generating medical device and solution manufacturers in the world. They are a legacy in this field. To address some of the marketing and sales challenges, the organization approached EMeRG before the launch of their latest CT system.

The role of EMeRG in this exercise was to first prepare exhaustive data packs or gamebook. These data packs were essentially intel on the competitors available in the public domain.

Once the data packs were made, EMeRG then moderated the wargaming sessions through virtual platforms. The client's sales, marketing and scientists from the R&D department were the participants.

1.2 Background

Business wargaming

"If you know the enemy and know yourself, you need not fear the result of a hundred battles" (cf. Sun Tsu, 1989) said Sunzi in his classic work 'The Art of war' (1).

As the name suggests, wargaming was developed out of military necessities and developed historically to prepare military leaders and their officers for unforeseen situations or development on the battlefield. The planned estimation of the enemies' possible course of action by commanders helped avoid fatal decisions which would otherwise result in the unnecessary loss of soldiers, equipment, and territory. The foresightedness imparted from such exercise resulted in maximum economic benefits and substantially raised the sustainability of the military campaign. The exercise insured long term benefits by not only winning the battle but also the war.

The essence of a similar exercise, when applied in business, is known as business wargaming. Many elements in military wargaming can be transferred into the business war game such as the enemies are the competitors, the location of the war can be the market size and the marketplace the weapons and artilleries can be the assets such as people financials production process innovations raw materials

1.3 Aim of the Study

- is to understand the competitor scenario for the launch of a new product by the MedTechFirm with the help of business wargaming

CHAPTER 2

REVIEW OF LITERATURE

The following literature was gathered through secondary desk research on platforms such as,

- PubMed
- Scholarly
- Journal of Business

Apart from various research papers reviewed, a few books were also researched to get an in-dept understanding of the implications of business wargaming and the various factors which would affect the success or failure of such exercises.

Table 2.1 Summary on the reviewed literature

Author	Year	Aim	Key Findings
Oliver Schwarz (2)	2011	The purpose of this study was to introduce commercial wargaming as a technique for evaluating ex ante strategy. This article examines the relevance of commercial wargaming in finding answers to criticism of existing methodologies such as scenarios and computer-based simulations.	-Capability of business wargaming in criticizing computer based or situation-based stimulations -Ability of managers to make business strategy discissions base on the environment
Kurtz J. (3)	2000	The aim of this whitepaper was to discuss the complexity of wargaming exercises and the effect on its participants	-Experience in wargaming will lead to better results -Participant engagement necessary for the success Participants mentally fatigued after intense session -Data generated after an exercise can be overwhelming -Participant believe in the process only on seeing results
Jan Oliver Schwarz (4)	2020	The aim of the study is to, -Discuss the strategy development process with or outside the organization to a large group -The extend of impact wargaming can have in open strategy planning	-Offline wargaming had a greater impact on the overall performance of the participants -Top management, different hierarchical level involvement necessary

			-Diverse profile needed to understand strategies in different departments -Wargaming and scenario planning a part of the open strategy process, but cannot be used as the only tool
Jan Oliver Schwarz Rene Rohrbeck (5)	2013	The aim of the paper was to discuss the relevance of wargaming for corporate foresightedness	-War gaming and scenario planning a crucial step in learning out the strengths and weakness of the competitors(new/old) -Estimating their strategic moves through trend and scenario analysis such as, possible development pathways, change drivers, etc.,
Jason West Maik Chu Lincoln Crooks Matthew Bradley-Ho (6)	2018	The aim of this paper was to find substitute viewpoint in an organization to discover internal capabilities through competitive actions designed as a contingency plan to avert threats from external environment and address strategic malalignment	-Wargaming helped in understanding and visualizing internal strengths and weaknesses, which were not apparent otherwise. -Wargaming helps understand human behavior which could be difficult to duplicate in a more professional business setting
Jay Kurtz (7)	2003	The aim of the paper is to discuss the importance of wargaming in vigorous business circumstances	-Insights can be drawn in the initial stages from the data gathered -wargaming leads to actionable results -Realistic approach necessary to ensure the success of the exercise -Qualitative and Quantitative data used to make arguments
Johnson DD, McDermott R, Barrett ES, Cowden J, Wrangham R, McIntyre MH, Peter Rosen S. (8)	2006	-The aim of this study was the investigate the role of aggression, gender, etc., leading to overconfidence in wargames	-Testosterone was said to act as a mediator in creating a false sense of positive deception -Men showed prominence of over-

			confidence when compared to women
Brian Huffman	2010	-The aim of this book was to learn to recognize and react to disaster through CI (competitive Intelligence) and wargaming approach in strategic management	-The scope and depth of two problems can vary despite showing similar end results. This means incorrect reaction would be given for an incorrectly recognized problem -The reaction of participants can vary. Some may -The three steps involved in business wargaming are, first to assimilate as much data as possible about the competitor. Second would be to develop future scenarios and the possible counterarguments. The last step is for the top management seniors to replicate strategies devised and how it would be perceived by the competitors and the market

Table 2.1 Summary on the reviewed literature (continued)

CHAPTER 3
METHODOLOGY

3.1 Research Objective

Broad Objective:

- is to understand the competitor scenario for the launch of a new product by the MedTechFirm with the help of business wargaming

Specific Objectives:

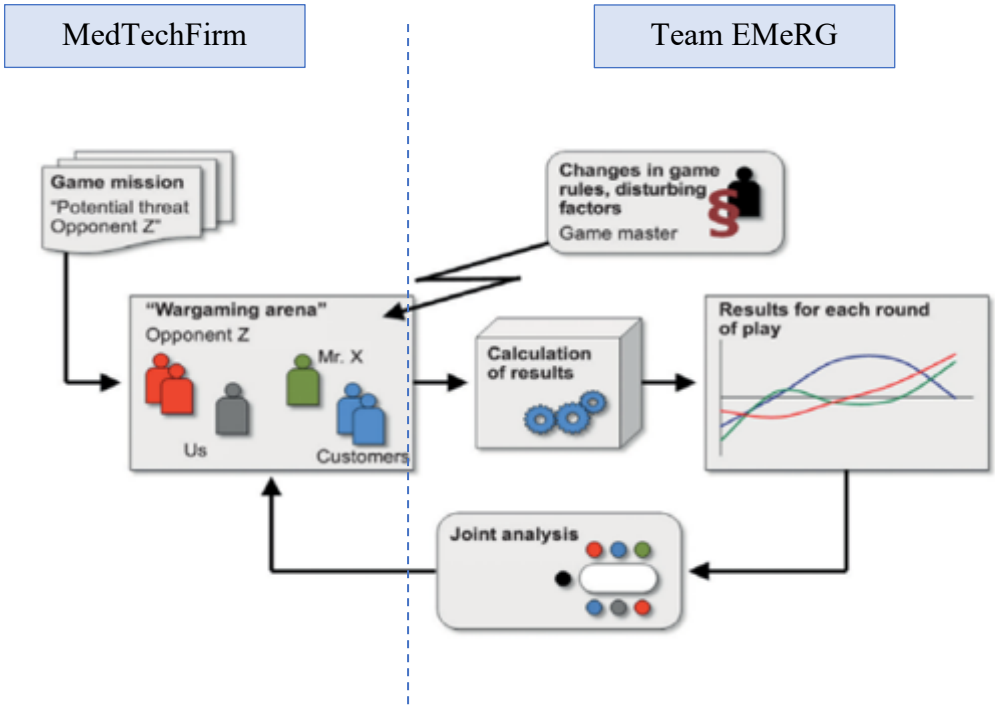
- To understand the external market environment by analyzing the current offerings of the competitors through data pack creation
- To study the use of business wargaming in formulating a go-to-market strategy

3.2 Method

The steps followed for the organization for the wargaming session is as follows,

- Identify products of the competitor's in the market with similar offerings and pricing
- Competitive data packs or gamebooks made, which is used as a tool for the wargaming sessions
- The MedTechFirm identifies participants for this activity who have the expertise and insights of not only their products but also the competitors. They are from varied backgrounds such as the sales department, marketing department, etc.,
- The wargaming session was conducted with each team wearing the persona of their competitors

Figure: 3.1 Business wargaming framework (1)



The business wargaming sessions essentially consists of the following elements,

- The company team

This team is composed of executives within the company who is conducting the wargaming session. It could either be for a new product launch or improve the existing sales and marketing strategy. The team is composed of various senior-level managers from within the company. The session is started by either executing the currently used strategy or a hypothetical strategy that the company wants to test out. They have the liberty to take the course of actions that may or may not be used in a practical situation. These could be suggestions such as a merger or an acquisition to expand their geographic reach, expansion of their product profile, etc.,

- The competitor's team

The competitor's team is made of senior-level managers from within the company. However, they would be taking the competitor's persona for the sake of this session. They would adapt to the roles of the competitors and try to predict a possible course of action. To make this session more engaging, a comprehensive ‘data pack or ‘gamebook’ is provided to the members with information on the competitor's strategy. The data pack, along with years of experience in the field helps them adapt to the competitor's persona. This makes the wargaming session more enriching and fruitful. This step is crucial, as learning the tactics and strategies of the competitors will help in formulating their own sales strategy. At least three competitors, which are most significant, are profiled in the data packs.

- The market team

This team assesses the attractiveness of the company’s product offering based on the arguments and counter-arguments put forth by the company and the competitor teams. The teams communicate their Unique selling points through presentations, to the market team. This is done through hard data, technical specifications, customer testimonials, etc.

- The control team

The control team moderates the entire wargaming session. It is made up of wargaming experts, executives from the company such as the chief executive officer(CEO), or industry experts. In this wargaming session, Team EMeRG was the control team that moderated the session. It was conducted over two days, remotely.

Apart from moderating and generating insights, team EMeRG team also prepared comprehensive and engaging data packs or gamebooks that were used by the participants to get a better understanding of the competitor products and market/sales strategy. The

MedTechFirm’s proprietary framework was used to formulate the GTM strategy, as well as long term strategic planning before and after the launch of their new CT scanners

Secondary Data Source

Three data packs of the competitor's product were prepared. For confidentiality reasons, only one such data pack would be discussed in the methodology. Competitive intelligence on Canon’s Aquilion Prime SP was assimilated using secondary data sources such as,

- Company website
- Product Boucher
- Whitepapers
- Published case studies and clinical evidence
- FDA 510k database
- Research articles
- Third-party distributor websites, sales brochures
- Company social media handles such as LinkedIn, Twitter, YouTube, etc.,
- General press, news, and magazine releases
- Tradeshow and conference analysis
- Quotations and proposals sent by Canon to hospitals

The data was gathered using keyword search on Google

3.3 INDICATORS

Comparison made of 7 board categories, which are

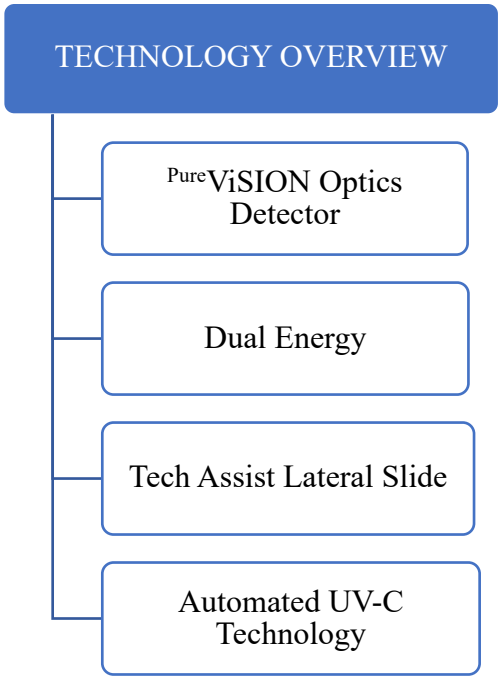
- Technology Overview
- Technical Specifications
- Digital Solutions
- Value Propositions
- Customer Testimonials
- Key Installations
- Service and Training

Product Overview

The Aquilion Prime SP is Canon’s CT scan system in the performance segment. The system received its FDA 510k clearance in October 2017 (12, 13). It was launched at the 107th RSNA held in the year 2017. It received the FDA clearance for a few software upgrades and was again introduced at the RSNA 2020 with the AiCE technology.

3.3.1 Technology Overview

Figure 3.2 Technology overview



- PureViSION optics detector and filtration technology

The detector used in the Aquilion Prime SP is manufactured from a solid ceramic ingot produced from an entire scintillator array (10). The resultant image had superior luminist properties and reduced imperfections. The precision microblade technology is used to create delineated individual detector elements, resulting in the maximum surface area made available for x-ray absorption through the creation of septs.

The size of the element was 0.5mm and it consists of 80 such rows

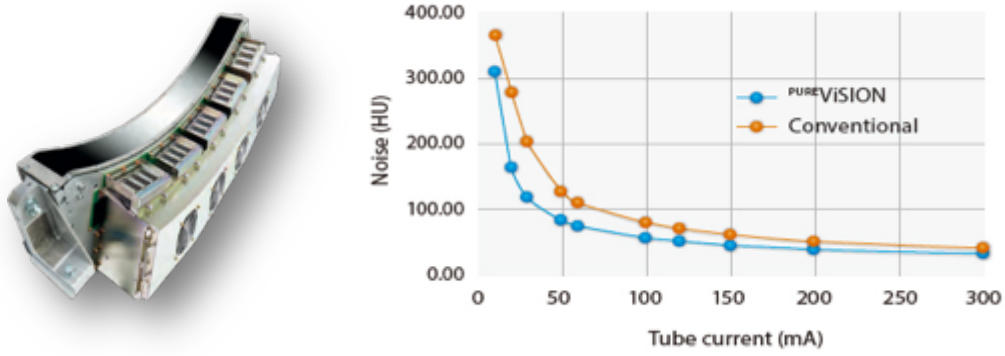


Figure 3.3 Detector element (L) and the comparison of noise v/s tube current between PUREViSION detector and a conventional detector

The CT scanner used a patient specific bean collimation technique for a more homogenous ray spectrum. This filtration technique removed low energy photons, and harder x-ray beam was created. A Low contrast anatomical or pathological features were hence more easily identifiable due to the improved low contrast detectability.

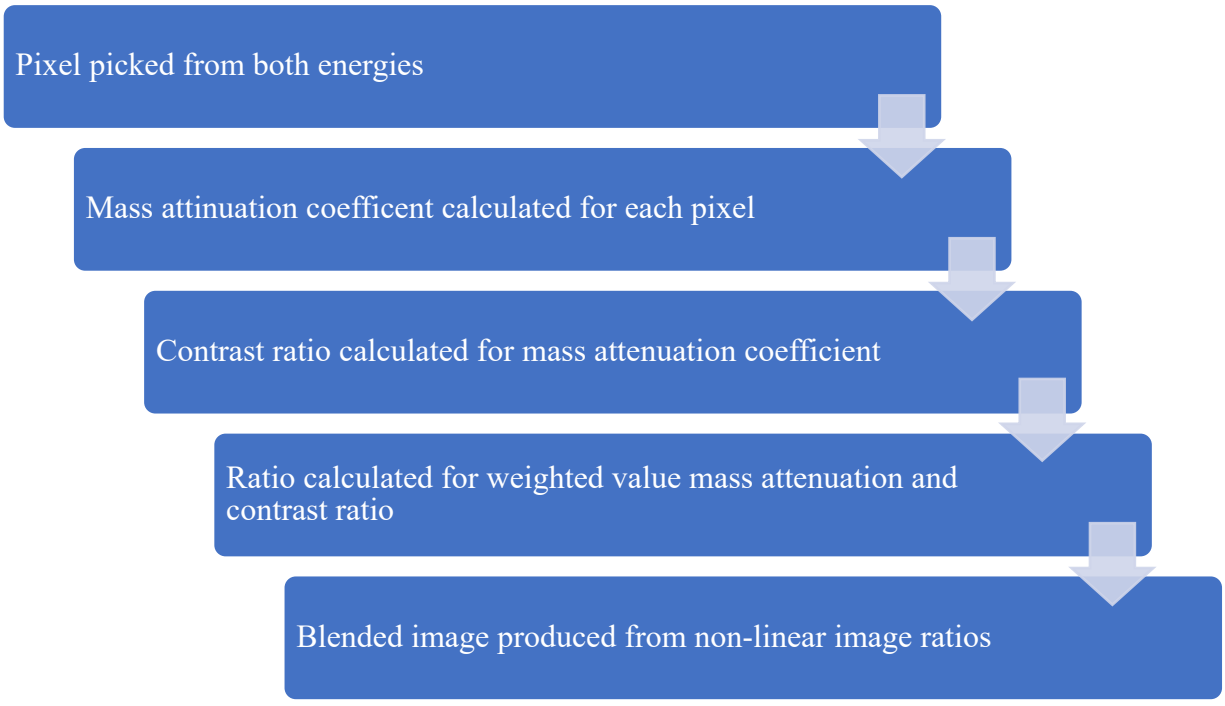
Key claims made by the company with regards to this technology-

I. 22% improvement in body imaging through low contrast detectability, which was 19% for brain imaging (10)
II. 20 to 31% reduction in radiation dose (10)
III. 13% reduction in image noise with the same dose (10)

- Dual energy

It is a type of image acquisition technique which utilizes two energies during a scan, thereby helping physicians with more data to quantify and characterize lesions and anatomy. There are different ways in which dual energy can be used in CT scanners. In Aquilion Prime SP, two rotations are required at a low and high kV (11). The mA is automatically adjusted. The process of is as follows,

Figure 3.4 Flow chart on dual energy mechanism



Some of the value propositions communicated by the company to its customers are that this technology has resulted in reduction of radiation dose and exam time, without the need for table movement.

- Tech assist lateral slide

Is a mechanical feature wherein the scanner table can be moved side by side without the involvement of the technician, with a click of a button? It allowed up to 4.2 cm movement (9) on each side. The key benefit of such a feature is the reduction in heavy lifting required by the attending team.

- Automated UV-C technology

This feature has been heavily marketed due to the current COVID-19 pandemic and health crises faced by many countries. The feature allowed the disinfection of an entire examination room in 8 to 10 minutes, which would have ideally taken about 30 minutes. This resulted in improvement of workflow and patient as well as technician safety. The UV-C technology used 254 nm wavelength lights to induce the formation of dimmers from thymine and cytosine which lead to the disruption of microbial DNA (9). This rendered the organism unable to reproduce and hence, reduced the spread of infection. The intensity, exposure time, lamp placement and air movement factors, along with a few other parameters governed the efficiency of the UV-C irradiation

3.3.2 Technology Specifications

Table 3.1 Key specifications (12, 13)

Key Specifications		
Scanner	Anatomical region	AiR 3D (whole body) AiCE (Abdomen and pelvis, chest, cardiac, extremities, brain and inner ears)
	System	360 degrees with continuous rotation
Gantry	Rotation Time	(0.23), 0.35, 0.375, 0.4, 0.45, 0.5, 0.6, 0.75, 1, 1.5, 2, 3 s
	View rate	Max 2572 view/ sec or 0.35 sec
	Generator	72kW
	Bore aperture	78 cm
	Tilt	± 30° Axial and helical scanning Gantry and remote controlled
	Gantry weight	2530 kg
Installation/Siting	Power capacity	100 – 110 kVA
	Min. installation space	14.8 m2 (short couch)
X-ray Tube	X-ray tube voltage	80, 100, 120 and 135 kV

	X-ray tube heating capacity	10 mA to 600 mA
	X-ray tube cooling rate	1386 kHU/min (Max) 1008 kHU/min (Actual)
	X-ray tube current capacity	10-500 mA (10-600 mA)
	Channel-direction (fan) angle	49.2°
	Slide-direction (cone) angle	3.8°
	Rated output	Max.72 kW
Reconstruction Speed	Helical	50- 70 fps
Reconstruction	Iterative reconstruction	AiDR 3D Enhanced
	FOV	500 mm, 700 mm
	Slices	Up to 160 slices/min
Temporal Resolution	Intrinsic temporal resolution	175 Ms
	Effective temporal resolution	35–175 Ms
Display	Console Kit	CGS- 72B (optional)
Patient Couch	Max. load	220-315 kgs/ 660 lbs.
	Max. scan range	150-200 cm
	Lowest couch height	34.6 cm
Focal Spot Size	Small	0.9 mm * 0.8 mm
	Large	1.6 mm * 1.4 mm
Image Quality	Spatial resolution	21.5 lp/cm at MTF 0%
	x-y plane spatial resolution (standard mode)	0.45 mm

	x-y plane spatial resolution (high resolution mode)	0.5 mm
	z-spatial resolution	0.45 mm
	Detector	PureVision Detector
	Detector element size	0.5 mm
	Data acquisition	896 channels * 80 rows
	Wedge Filter Types	Two types Small: FOV M Large: FOV L
	Respiratory-gating system	Available

Figure 3.1 Key specifications (continued) (12, 13)

3.3.3 Digital Solutions

Canon has offered many digital solutions for the ease of workflow for the technician from the patient positioning until its post-processing and archiving of the data.

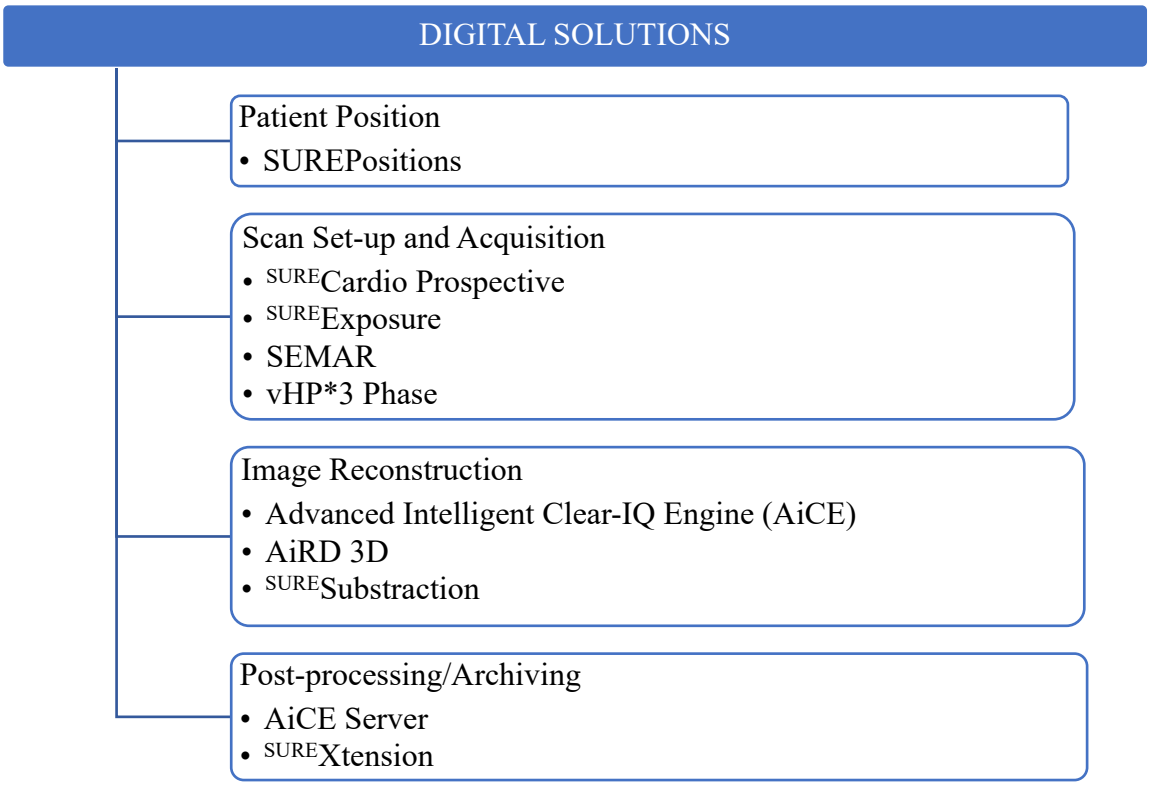


Figure 3.5 Digital solutions overview

- The SUREPosition

Performed iso-centered scanning of the patient without the need for re-centering or rescanning (9). It also enhanced the image resolution with mA modulation.

Figure 3.6 SUREPosition iso-centering (9)

- SURESubtraction (SCT) Imaging

It uses the 3D deformable registration algorithm to enhance the color mapping in iodine imaging and angiography subtraction CT.

In the angiography SCT allowed the removal of bone, calcium and other implants such as stents for enhanced visualization of blood vessel lumen and getter quantifiable data

Through the iodine mapping SCT, the digital solution allows for the detection of difference in local perfusion and differentiate calcium from iodine (14).

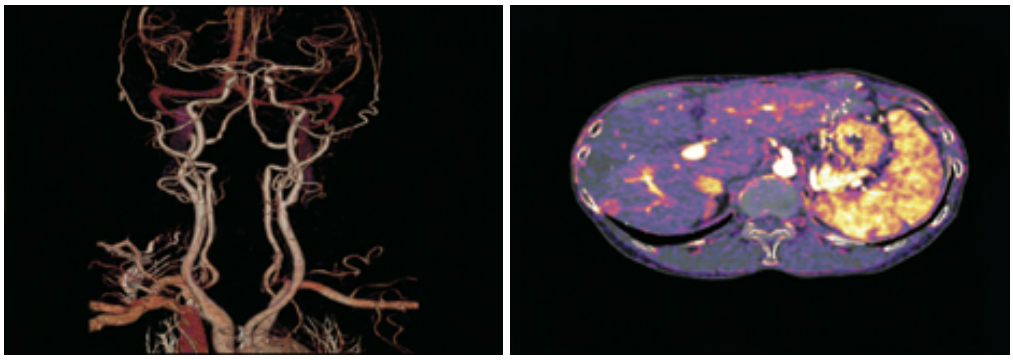


Figure 3.7 Visualization of blood vessel and iodine mapping through SURESubstraction (14)

- SEMAR (Single Energy Metal Artifact Reduction)

This solution enables the visualization of implants and supporting bones through reduction in the metal artifacts by utilizing an iterative reconstruction technology. It can be automatically incorporated in routine CT imaging without the need for a dedicated dual energy acquisition.

A prior image is created by the application of SEMAR from the metal subtracted sinogram, which then identifies intensity gradient to classify data (15) This optimized gradient intensity is applied using forward projection. The raw data bins corrupted by the metallic objects are then replaced through an algorithm in the solution which generates accurate estimations

- SURE Exposure

This digital solution optimizes the image contrast through lower kV's resulting in the reduction of image contrast required during scanning. It also modulates and decreases the tube current depending on the patient size and the area to be scanned.

Their application is of importance especially for pediatric patients, as it ensures maintaining the image quality for diagnosis while requiring the lowest dose (16) The scans are customized according to the weight of the patient, as well as their age and the imaging task

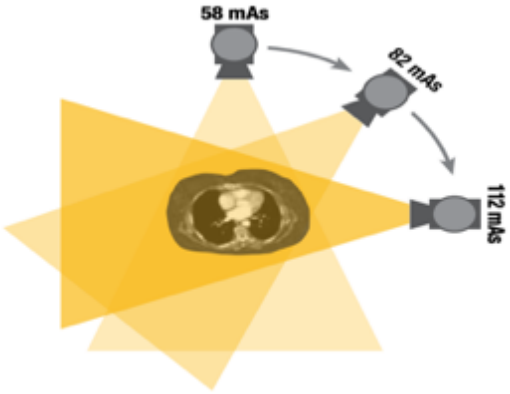


Figure 3.8 Rapid kV switching (16)

- Variable Helical Pitch with Three Phases(vHP3)

Through the ability to transition between parameters of scans depending on the body region, the solution allows for three types of scans to be performed in a single acquisition (9). Thus, resulting in a faster, less time-consuming process, lower irradiation and usage of contrast medium

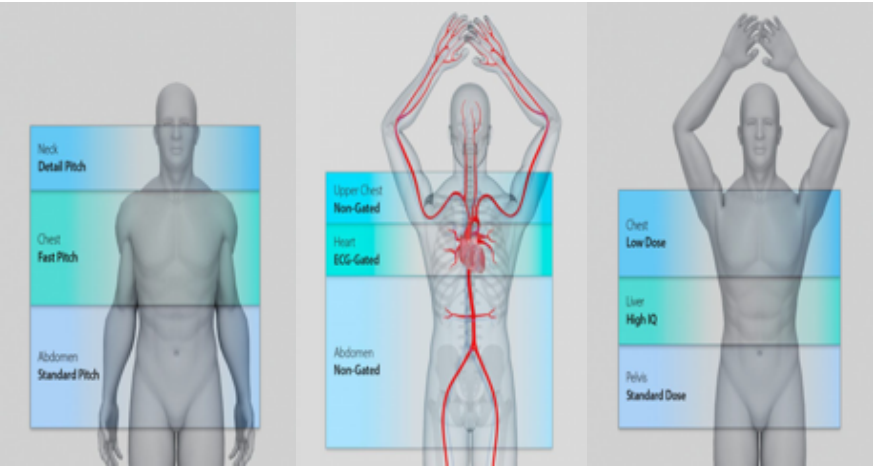


Figure 3.9 Three phase image acquisition (9)

- Advanced Intelligent Clear- IQ Engine (AiCE)

It's a deep learning reconstruction (DLR) algorithm which differentiated the noise from signals and suppresses them for better image quality. A pre-trained Deep Convolutional Neural Network is applied to this AiCE DLR which learns to program itself with new training tasks becoming more efficient and accurate (17).

- SURECardio Perspective

It is especially useful in the detection of helical arrhythmias as the system performs acquisition prospectively. The Adaptive scan mode automatically switches to continuous mode when an arrhythmia is detected. It also provided with "excellent" z-axis uniformity (9) with low contrast material dosage and short scan time.

- Quantum Denoising Software (QDS) and Boost 3D

These are image noise reducing algorithms used in the digital solutions which resulted in low contrast requirements while maintaining the image quality. QDS also reduced the quantum noise in an image while the special resolution was preserved.

Boost 3D is a tool which improved the quantum as well as structed noise to improve the quality of the image especially (16) in regions such as the shoulders where there is maximum photon attenuation.

- SUREXtension

It is a post processing solution which allowed the user to have multiple users remotely and independently by up to two users (9). However, this is an optional facility available to the users at an additional cost.

- Adaptive Iterative Dose Reduction (AiRD) 3D

It is the latest generation of the iterative reconstruction technology used by Canon and was introduced in the RSNA 2020 after the FDA (12) software approval.

The solution fine tunes raw image data to produce improved image quality, it also automatically adapts to the body region, type of examination to be performed (18). It provides functional and anatomical analysis in time resolved imaging such as myocardial perfusion, full body perfusion or brain perfusion through its dynamic scanning.

3.3.4 Value Propositions

The various value propositions communicated to the customers are through their technology and digital solutions are,

Table 3.2 Value propositions based on end-users

Radiology Technologist	• Tech assist lateral slide made CT imaging flexible • Simple and standardized protocol • Automated preparation of scan reducing scan time • Reduced staff exposure to dose calibration • Calm workplace due to automated workflow • Comfortable and easy patient positioning
Specialist or Radiologist	• Single source dual energy resulted in optimized dose • Super-high-resolution CT imaging even at standard dosage • Reduced metal artifacts without compromising image quality • Oncology imaging enabled through with detection and tracking of the tumor with ^{SURE}Substraction
Administrator/Managing Director	• Compact design eliminated the need for expensive renovation and space • Lowers cost associated with imprecise treatment • Scalable technology with in-field upgradeable from 80 slices to 160 • Increased throughput through fast scanning • Relocatable and mobile design
Patient	• Wide gantry of 78 cm allowed imaging of larger and obsess patients • Fast acquisition reduced the need for repeat scans • Less time spent in the scanner due to fast scanning • Patient not subjected to adverse effects of contract medium especially one's requiring regular scans for treatment tracking

3.3.5 Customer testimonials

Table 3.3 Summary of customer testimonials

KOL	Hospital Type	Region	Country	Year	Value Props	Discussion
Chief Radiographer Adelaide MRI (19)	Diagnostic Center	Adelaide	Australia	2021	-Reduces radiation dose for the patient while maintaining image quality for the radiologists -Reduces the number of re-scans	Discusses how Canon's Aquilion Prime AP is a gamechanger in the CT protocol with its 'great' image quality at lose dose
CT Modality Lead Radiographer Glasgow Royal Infirmary (20)	General Hospital	Glasgow	Scotland	2020	-Reduces the time taken in image acquisition in patients with A&E -Quick evaluation and treatment planning in traumata cases	Discusses the use of SEMAR technology available in the Aquilion Prime SP in trauma cases to identify metal fragments and thereby formulate an appropriate treatment plan
Lead CT Radiographer Poole Hospital NHS Foundation Trust (21)	Public Hospital	Poole	United Kingdom	2020	-User friendly -Faster scans saves time and improves workflow	Discusses the speed and ease of using Canon Aquilion Prime SP
Head of Radiology East Jeddah General Hospital (22)	Public Hospital	Jeddah	Saudi Arabia	2020	-Reduces the dose, leading to decreased patient risk to the adverse effects of contrast medium	Discusses the image quality improvements in pediatric patients with low dosage

CT Superintendent Radiographer Countess of Chester Hospital NHS Foundation Trust (23)	Public Hospital	Chester	United Kingdom	2020	-Reliable and strong service credentials of the company -Dose reduction	Discusses the speed and efficiency of acquiring a scan as well as the reliability of the company's (Canon) CT scanners
CT Lead Radiographer Salford Royal NHS Foundation Trust (24)	Public Hospital	Salford	United Kingdom	2020	-Technologists not being overburdened with high patient volume due to ease in workflow	Discusses the ease of workflow and versatility of the CT scanner
CT/MRI Superintendent Radiographer Kettering General Hospital NHS Foundation Trust (25)	Public Hospital	Kettering	United Kingdom	2019	-Brand goodwill with trusted customer support -Ease in workflow	-Discuss the ease in workflow due to the image acquisition and post processing digital solutions, especially when there is a high patient volume -Easy installation support provided by Canon
Radiology Lead Holly Private Hospital (26)	Private Hospital	Buckhurst Hill	United Kingdom	Undated	-Patient safety due to dose reduction -Improves image quality	-Discusses the image quality improvement even at low dose
CT/MRI Lead radiographer	Public Hospital	Warwick	United Kingdom	2019	-workflow automation decreasing the	-Discusses the customer support

Warwick Hospital (27)					load on the technicians	provided by Canon
Radiography Manager Dr. Gray's Hospital (28)	Public Hospital	Elgin	Scotland	2019	-Ease in image acquisition due to the large bore size of the scanner accommodating patients of all sizes -Elimination of heavy lifting required in some cases by the technologist, while keeping the patient comfortable	Discusses the features incorporated as well as the structural architecture of the scanner which eases the technologist's workflow
CT Superintendent Radiographer UCHL (29)	University Hospital	London	United Kingdom	2018	-Improves patient care -Workflow efficiency	Discusses the ability of the scanner to take "superior" image even at low doses
Imaging Services Coordinator Virginia Gay Hospital (30)	Private Hospital	Iowa	The USA	Undated	Improves patient care and image quality	Discusses the versatility of the scanner improving the work of the technologists and medical staff. The comfort of the patients due to the large bore size

Table 3.3 Summary of customer testimonials (continued)

3.3.6 Key Installations

A gradual increase in the installations of the Canon's Aquilion Prime SP was seen due 2018 and 2021.

15 of the relocatable Aquilion Prime SP CT units were specially commissioned by the NHS England and given to the NHS Foundation Trust Hospital as part of their COVID-19 recovery plan

Till 2021, US alone has over 60 installations.

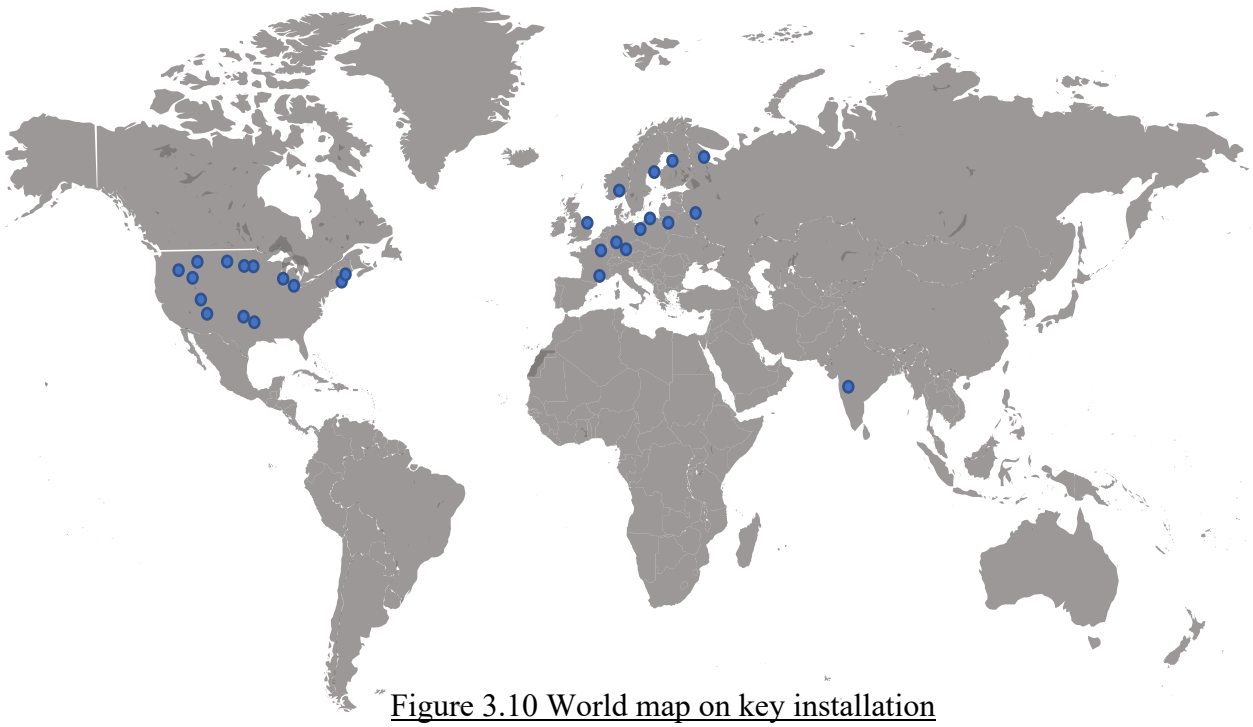


Figure 3.10 World map on key installation

3.3.7 Services and Training

Globally, Canon provides training for the engineers, technologists and specialists of its customers at the Headquarters in Japan, which has a Customer Support and training center.

There are hands-on laboratories with integrated lecture rooms at these training centers to improve the efficiency in training. (31)

These trainings centers provide,

- Dynamic classroom and computer-based training to the customers with their in-house specialists
- Advanced training tool and product information readily available
- Hospital network has virtual hospital LAN installed to practice the service work
- Advanced training in digital solutions after initial sessions to biomedical engineers

Apart from the classroom training provided, Continuum maintained through their online learning portal as well as PerformancePro which is Canon's multifaceted training program which is customized as per the needs of individual organization.

PerformancePro also provides long-term commitment as well as guarantees the if the customers are not completely satisfied with the results, they would retrain the customers at no additional charge

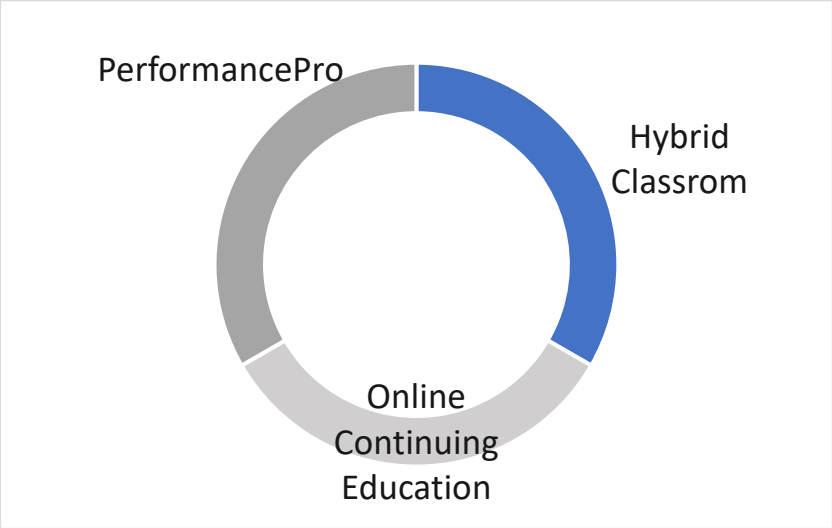


Figure 3.11 Training modes available

Training facilities available for customers in the US

Canon has the Institute of Advanced Imaging in Irvine, California which claims to be the industries one and only interactive classroom training in the United States. It provides real time experience to the technologist through training on real applications, solutions and systems. The training consists of three phases, out of which phase 1 is classroom based, whereas phase 2 and 3 is a combination of classroom and on-site training

Table 3.4 Training sessions overview (31)

Classroom Training (At Institute of Advanced Imaging, Irvine, California)	Phase I	One week of comprehensive classroom training on a variety of CT theory and practical scanning using the Canon's Aquilion Prime SP such as, -Basic to advanced CT training -Dose reduction technologies and use of reconstruction parameters -Use of post-processing digital solutions
On-site Training (at Client Location)	Phase II	-On the site training stretch across 32 to 64 hours conducted by application specialists

		-Only the technologists that attended the classroom training at the Advanced Imaging center will be allowed to be a part in this phase -Training given to up to 4 technologists
	Phase III	-Takes place approximately six to eight weeks after phase II, where 32 hours of training is provided again by an application specialist

Table 3.4 Training sessions overview (31) (continued)

Tables 3.5 Canon's Customer service solutions (31, 32)

Warranty	• During the warranty period, it provides priority service with access to dedicated Canon applications and engineering support • It includes preventative maintenance visits, labour and parts
Parts	• Storage facilities provided in locations such as in Japan, the Netherlands, Singapore, Beijing and Brazil • 24/7 parts available made available on the same day in 40 regions of the US at no additional cost • On-site servicing within 2-4 hours in the US
Remote support	• 24/7 phone support provided by InTouch centre in the US via ASSIST centre • Productivity increased through early diagnosis of problem before it affects imaging performance and its resolution via remote access to the system through InnerVision Plus.
E-watch	• Provides alerts based on the overall environment of the imaging systems room such as humidity, temperature and the changes which could potentially affect its performance • HV AC settings adjusted immediately for averting problems and maximizing performance
WakeUp Check	• A technologist runs the WakeUp check performed by the technologist using a copper phantom due to its consistent nature which provides details on kV variations, mA pulse width or any other potential problem on the system and captured by InnerVision

Canon provides its customers with service agreements and the facilities provided through this agreement varies depending on the level or type of agreement.

InTouch Full Security Agreement- is ideal for risk aversive customers who would prefer a fixed price model with a need for guaranteed response time to breakdowns. Some of the advantages of using this type of agreement of servicing are,

- Coverage hours flexible
- Phone response rapid
- Availability of maximum on-site service for equipment

InTouch In-House Agreement- The in-house technical staff of the customer is provided with training curriculum which is similar to the one given during the training of Canon's Medical System customer engineer. (31)

Some of the advantages of using the level of service agreement are,

- Diagnostic licensing key provided to the customer at no additional cost
- Access to Canon's Medical system support 24/7
- System uptime directly controlled by the customer

InTouch Flex Agreement- Ideal for customers who are willing to take some level of risk for some parts of the equipment or portion of the contract. Parts are pooled and shared in this type of arrangement. Some of the facilities provided in this type of agreement are,

Depending budget of the customer and level of service requirement, shorter or longer response time is offered to the customers. The customer staff is utilized. (32)

Master Service Agreement- Bundling of multiple medical systems and devices to provide maximum standardization and value

CHAPTER- 4
RESULTS

SWOT Analysis:

Through the wargaming exercise, intel on the strengths, weaknesses, opportunities and threats by the competitors, which in this case is Canon's Aquilion Prime SP gathered

1. Strengths:

High number of orders for the CT scanner in the UK's public sector hospitals showed that the competitor, Canon has been doing well in the public sector hospital tendering system.
Incorporation of newer innovations such as Artificial Intelligence into the reconstruction technology has been very well received by the customers.
Wide gantry of the CT scanner has enabled comfortable scanning of patients of all sizes.
As per the customer testimonials, some of the technological innovations Canon's Aquilion Prime SP are,

- Good image quality
- Wise Gantry bore
- AiCE reconstruction technology resulting in reduced noise and low dose while providing superior image quality
- Dose customization for pediatric patients has helped in patient safety and protecting them for unnecessary radiation exposure
- Metal detection through SEMAR, a very useful tool in trauma cases to identify metal fixatures

2. Weaknesses:

While the Canon provides its customers with on-site training as well as online, this has been greatly affected due to the present health crises faced worldwide. Inability to maneuver around the scanner and its digitals solutions, which are generally more difficult and have a learning curve can be cumbersome for the customers.
Lack of installed base information in the Asian and Asia Pacific region.

3. Opportunities:

The artificial intelligence and deep learning innovations are just beginning to gain popularity the medical devise fraternity. Further focus of these areas could prove to be a major win in the future.

4. Threats:

New market entrants such as the system by the client (MedTechFirm) can have better technology and innovations incorporated in them due to intel on the present customer asks.

Based on the information gathered and SWOT analysis, the war gaming exercise helped the client (MedTechFirm) by generating data driven insights from the wargaming session as well as the expertise of the participants who have been in the industry help in formulating the go to market strategy for the new product launch. The data packs helped in understanding the key asks of the customers when purchasing a product with regards to the technology at the product level as well as the servicing provided at the company level. The information on install base gave the idea of competitor penetration within a geographical area.

When an overall comparison of the three competitors are made based on digital and technological advancement, the client would be better equipped to prepare counter arguments during the sales pitch and marketing. The wargaming exercise helped in the analysis of the suppliers, customers and competitors behaviour. It also helped in risk identification in areas where there was a lack of clarity

- The wargaming exercise helped with creating a very in-depth product launch strategy, that took into account the various need-gaps, strengths and weaknesses of the competing products. This included insights around:
    - Image quality
    - CT gantry size
    - Use of AI and DL for image reconstruction
    - Use of dual-energy for complex CT procedures
    - Interventional CT capabilities for CT guided biopsies
    - AI based workflow
    - Post-processing apps for various clinical indications such as coronary, neuro / stroke, whole-body, oncology etc.

By virtue of the wargaming exercise, the MedTechFirm was able to refine its GTM strategies while taking into consideration the global and regional strengths of its key competitors. This specifically included organic sales strategies using internal salesforce as well as regional channel partners as well as inorganic growth strategies including partnerships with regional market participants as well as innovative start-ups in AI.

In addition, the communication strategy for the client was further fine-tuned. This included refinement of value proposition statement; roadmap for clinical and operational evidence to be generated across pilot customer sites and planning for product collaterals including brochures, tech specs, customer testimonial videos and press releases

CHAPTER- 5
DISCUSSION

Some of the limitations of conducting a wargaming exercise are,

- Selection of the participants. They should from diverse departments and hierarchy to be able to cover all areas of business
- Preparation of the participants by providing them with a well-structured gameplay which is intense and engaging but not overwhelming at the sometime. The level and depth of the gameplay would be determined by the data adequacy and its representation during secondary desk research
- Due to the dependence on spontaneity on the overall results of the wargaming, they are not reproducible.
- The level of engagement and behavior of the participants are of outmost importance for the success of this exercise
- While the tool can anticipate the trends or future drivers, even the most sophisticated quantitative tools will not be able to provide results with certainty

CHAPTER- 6
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