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1. Overview of Heineken N.V.

1.1. Background



Figure 1: Corporate Logo since 2011

Heineken N.V. Company (N.V. stands for **Naamloze vennootschap**) was established in 1864 by the **Heineken Family** in **Amsterdam**, the **Netherlands** by **Gerard Adriaan Heineken**. Until today, Heineken is still one of the **leading** beer manufacturers in the world.

1

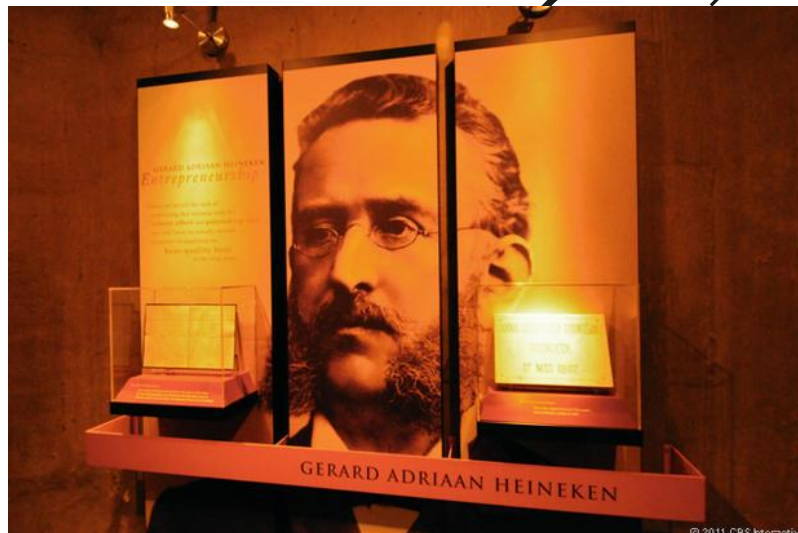


Figure 2: Founder of Heineken & Co.

Heineken N.V. has been running by the **Heineken family** for most of the operations. In the very beginning, the company built a **very high reputation** from its **high-quality** of **beer production**. Notably, **Heineken N.V.** owns beverage wholesalers in certain parts of **Europe**, which means the company not only limited to **handling beer**, but also **selling soft drinks** to taverns and restaurants.

¹ Daniel, T. (2011). *An Inside Look At the "Heineken Experience"*.

Its product portfolio includes **beer, cider, soft drinks** and other beverages. **Heineken N.V.** markets and sells its beer products under various regional, local and specialty brands such as **Amstel, Desperados, Sol, Tiger, Tecate, Red Stripe, Krušovice** and **Birra Moretti**, to mention a few. In addition, it merchandises and sells **cider brands** under **Strongbow Apple Ciders, Orchrad Thieves, Stassen, Bulmers, Old Mount** and **Blind Pig**.

It primarily distributes and sells these products through its own **wholesalers** and **pubs** and through other **third parties**. **Heineken N.V.** owns subsidiaries and operate its businesses across the globe such as in **Africa, Europe, Eastern Europe** and **Middle East, Asia Pacific** and the **Americas**.

For the **percent stake**, the **Heineken Family** occupies 50 percent ownership of **Heineken Holding N.V.** which possesses the influence over the company.²

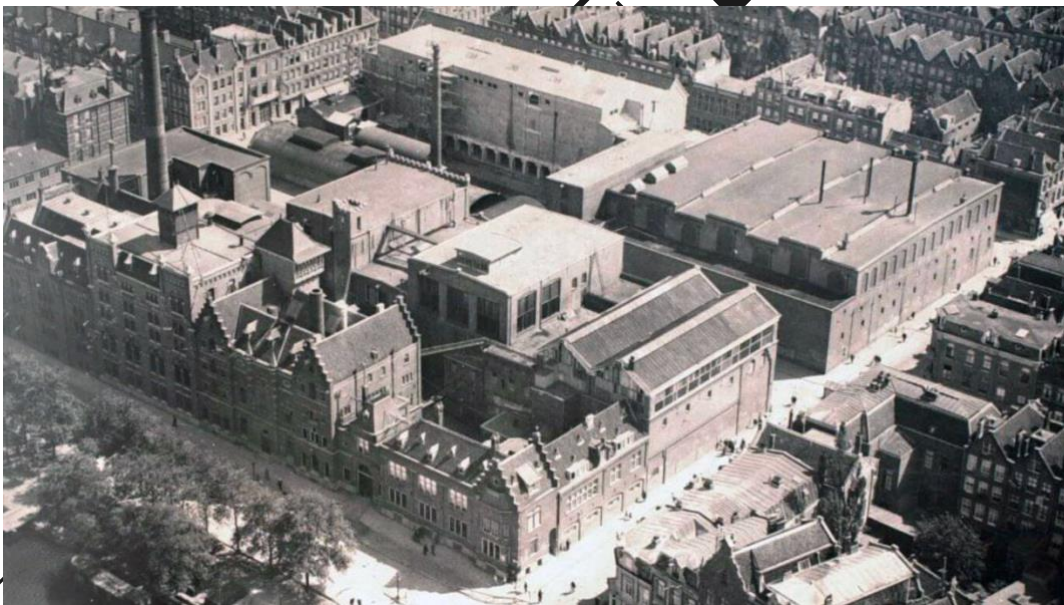
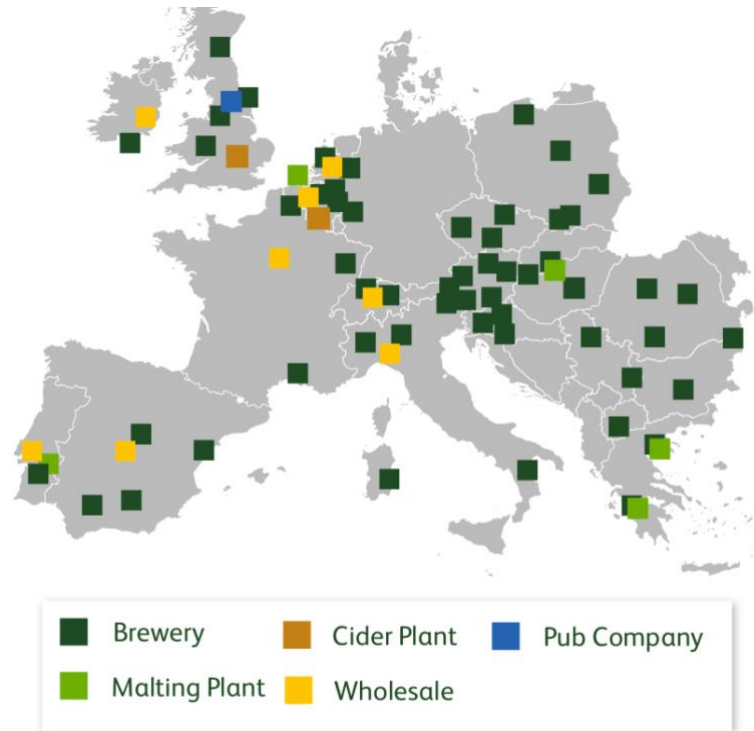


Figure 3: Historical Heritage of Heineken N.V.

² Referenceforbusiness.com. (n.d.). *Heineken N.V. - Company Profile, Information, Business Description, History, Background Information on Heineken N.V.*

³ Heinekencollection.com. (n.d.). *About : Heineken Collection Foundation.*



Extensive rationalisation over the last 15 years
having closed 42 breweries

Figure 4: Heineken N.V. Breweries Footprint



Figure 5: Heineken N.V. Original Global Brand



Figure 6: Heineken N.V. International Brands

Source: What's Brewing Seminar HEINEKEN Europe, Rediscovering Growth.⁴

⁴ Orlowski, S. (2016). *What's Brewing Seminar HEINEKEN Europe, Rediscovering Growth*.

1.1.1. Impact on Society – From Barley to Bar

This section will be discussing the contribution of **Heineken** to **UN Sustainable Development Goals**. The objective is to end **global poverty** and keep the planet **protected** to prosper.



Figure 7: UN Sustainable Development Goals

There are total of 8 steps which are (1) **Employees**, (2) **Agriculture**, (3) **Brewing**, (4) **Packaging**, (5) **Distribution**, (6) **Communities**, (7) **Customers**, and (8) **Consumers**.

(1) Employees

In this section, the company adheres to goals of **number 5, 8 and 16**. **Heineken N.V.** has over **80,000 employees** in more than 70 countries in the world. **Heineken N.V.** emphasizes **equality** to all recruitment processes which mainly to increase the number of **female representative** in the **senior levels**, which elevated to **16% from 12%**.

The **Code of Business Conduct** of **Heineken N.V.** leads their employees to **interact ethically** not only in the company, but also with **external parties** such as **stakeholders**. At the end of 2017, **anti-bribery** and **Code of Business Conduct** special training workshops that had been organized for **19,370 times** had completely by over **75,000 Heineken N.V. employees**.

In addition, the **2017 Heineken Climate** survey was responded with total **completeness of 91%**, results in both the employees and participants **engagement** scores **raised** again. Therefore, **Heineken N.V.** consistently scores **high** compared to the **external benchmark**.

Source: Heineken N.V. Annual Report 2017.⁵

⁵ Heineken N.V. Annual Report 2017. (2018).

(2) Agriculture

For this section, **Heineken N.V.** accomplishes the goals of **number 2, 6, 8 and 12**. The **beer and cider** are produced from **natural ingredients**.

The **raw materials** sourced are comprised of **hops, bitter sweet apples** and also **barley**. **Heineken N.V.** aims to achieve **50%** for the utilization of **sustainable resources** by 2020. The company has been continuously working with its **partners and farmers** to accomplish the milestone of improving **crop quality and yields**.

Besides utilizing **barley** to brew high standard beers, **rice and sorghum** are also used for the **beer production**. It significantly increases the **job opportunities** to the people especially the **livelihoods** of over **150,000** farmers are **improved**. Importantly, **Heineken N.V.** implements **Supplier Code** which makes crystal clear of **standard of responsibility** for its suppliers.

(3) Brewing

Regarding this section, the company achieves the goals of **number 6, 7, 12 and 13**. **Heineken N.V.** operate over **170 breweries, cider plants, malteries** and other production plants across the globe.

The company emphasizes on **leveraging** their **water and energy efficiency** in its **production processes**. In addition, **Heineken N.V.** is transforming to utilize **renewable energy** as its sources for **production**.

Specifically, **Heineken N.V.** has reduced **7%** of **CO2 emissions** since **2008** and at the same time, its **business volumes** have **grown** by **57%**. The company also attempts to grow their **share of renewable energy** from **14%** to **70%** between the year of **2017** and **2030** to accomplish **circular economy**. For example, **packaging waste** can be recycled into **new products** and **used grains** can be utilized for **cattle feed**. Notably, **97** of **Heineken N.V. production plants** have achieved the aforementioned milestone which ensures **zero waste to landfill**.

Source: **Heineken N.V. Annual Report 2017.**⁶

⁶ Heineken N.V. Annual Report 2017. (2018).

(4) Packaging

For this section, **Heineken N.V.** completes the goals of **number 12** and **13**. The **kegs, bottles, and cans** which fill with **HEINEKEN drinks** have an impact on the environment.

Heineken N.V. strongly emphasizes on its **packaging** by **optimizing production, transforming design**, and also **improve the recycle and re-use rates**. Particularly, the company is in process of discussion with its **packaging supplier** to **mitigating** the volume of energy required for **packaging productions**.

(5) Distribution

Within this section, **Heineken N.V.** supports **SDG 8** and **13**. Most of the **HEINEKEN products** are manufactured in the countries where the **consuming rates** are high. It can consequently **minimize the environmental impacts** the transportations of products bring.

The company is consistently **on track** with the **movement of products and suppliers**. The main goal is to **minimize** the emissions of **harmful substances** such as **CO2** in **Europe** and the **Americas**. **Heineken N.V.** always **priorities the safety** of its **contractors and employees**.

(6) Communities

In this section, **Heineken N.V.** adheres to **SDG 3, 4, 6, 8** and **15**. In 2017, the company **contributed** for an amount of approximately **11 billion Euro** in catering more than 80,000 direct jobs.

The **Heineken Africa Foundation** finances a number of projects to enrich the health of the people living nearby the breweries. Since after that, the **Foundation** has devoted **9.2 million Euro** to **104 projects**.

Heineken N.V. also donated **24 million Euro** to projects as form of **Corporate Social** including **education, ecosystem conversation** and also **culture**.

Source: Heineken N.V. Annual Report 2017.⁷

⁷ Heineken N.V. Annual Report 2017. (2018).

(7) Customers

For this section, **Heineken N.V.** reaches the **SDG 3** and **13**. The company brands are served in **restaurants, bars** and via **retailers** across the globe. The products are often **served cooled** for the **best taste**, causing the **reduction of emissions** from **refrigeration** to become a **high priority**.

However, **Heineken N.V.** financed approximately **138,000 green fridges** to its customers to better mitigate the **emissions**. In addition, the **green fridges** can minimize the **wastage of energy** and **water** when the drinks are sold.

Besides, **Heineken N.V.** encourages its customers only serve consumers of **legal drink age** to promote **responsible consumption**, and also to reduce **harmful drinking**.

(8) Consumers

In this section, **Heineken N.V.** also achieves **SDG 3** and **17**. For each day, there are millions of consumers across the globe consuming one of the **300 Heineken brands**.

The company makes available of various choices by following its **premium portfolio approach**. Particularly, the **no-alcohol categories** are fulfilling the customer demands.

The global partnership between **Heineken N.V.** and **Formula 1** has succeeded to launch a major new campaign, namely **“When You Drive, Never Drink”**. Notably, most of the **Heineken N.V.** operating companies put in over 10% of their media spend for activities related to **responsible drinking campaigns**.

Remarkably, **44 operating companies** of **Heineken N.V.** hold partnerships with local businesses to address **alcohol-related issue**.

Source: Heineken N.V. Annual Report 2017.⁸

⁸ Heineken N.V. Annual Report 2017. (2018).

1.1.2. Heineken Malaysia Shareholding Structure

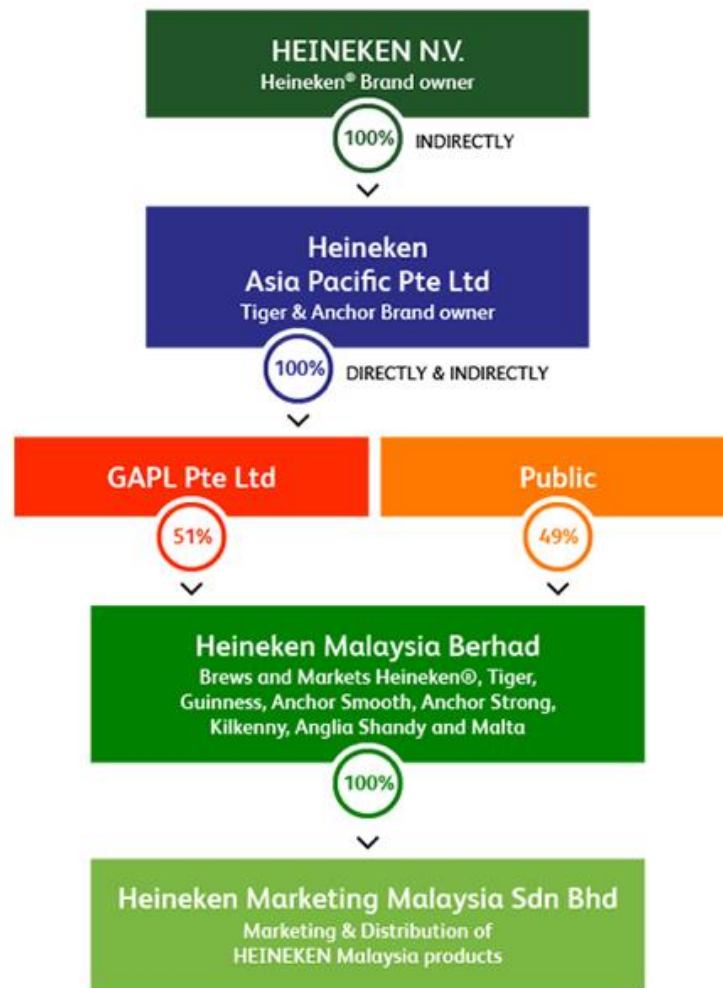


Figure 8: Shareholding Structure

GAPL Pte. Ltd. is a **manufacturing company** based in **Singapore** which was founded in **1988**. It also provides **investment services** and **asset management**.

The company markets and distributes **stout beer** in **Singapore**. Besides, its parent organization is **Heineken Asia MTN Pte. Ltd.** And is subsidized by **Heineken Malaysia Berhad**.

Source:

(1) Shareholding Structure - Heineken Malaysia Berhad.⁹

(2) GAPL Pte Ltd.¹⁰

⁹ Heineken Malaysia Berhad. (n.d.). *Shareholding Structure - Heineken Malaysia Berhad*.

¹⁰ Bloomberg.com. (n.d.). *GAPL Pte Ltd*.

1.2. Heineken N.V. Business Organization

1.2.1. Heineken N.V. Business Framework

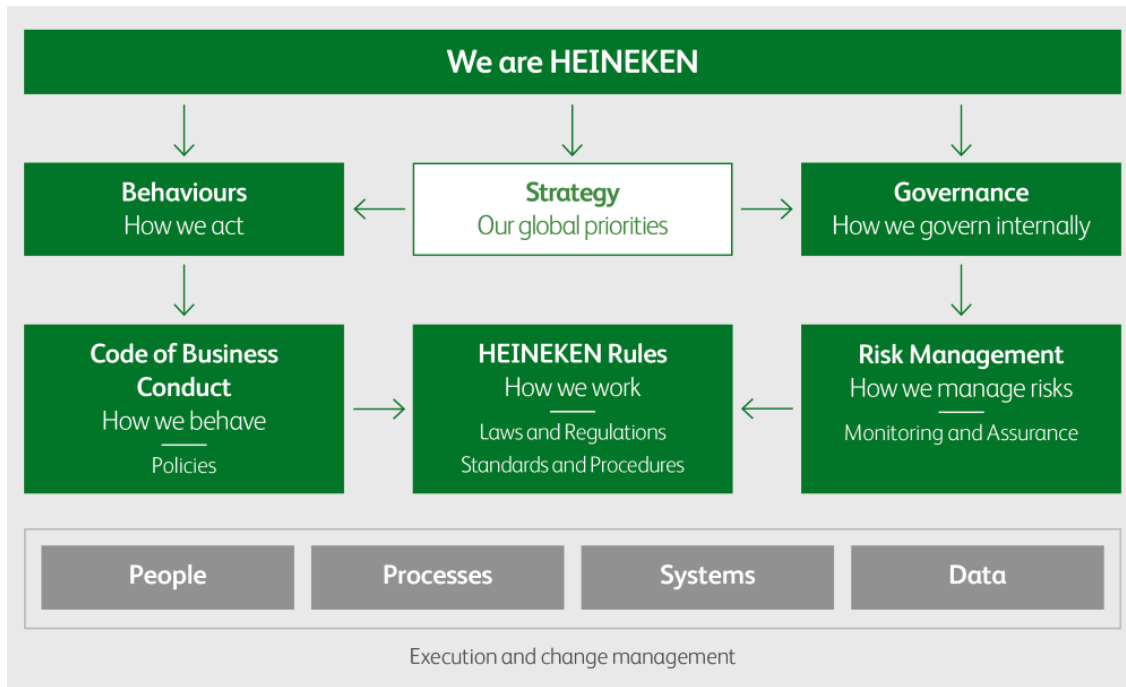


Figure 9: Business Framework of Heineken N.V.

The **Figure 9** above shows the **key elements** that **Heineken N.V.** heavily depends on to ensure **effective operation** and **long-term value creation**. At the same time, the company provides **protection** for its **people, assets and reputation**, which are all enabled by **Heineken organisational Governance**.

Underpinned by the **Behaviours framework**, it leads all employees on how to foster a culture of **collaboration and growth**, which are the **expected** and **significant** attitudes to drive **decision-making** process.

Risk Management in **Heineken N.V.** is an ongoing process sustaining the company achievement and objectives. These are based on **Heineken N.V. Code of Business Conduct** and the **Rules** in the **Risk Assessment Cycle**.

Source: The HEINEKEN Company – Risk Management.¹¹

¹¹ Theheinekencompany.com. (2019).

1.2.2. Heineken N.V. Business Priorities

Heineken deploys their **four business priorities** for action to ensure **long-term sustainability** and value creation in order to succeed in the marketplace, namely (a) **deliver top line growth**, (b) **drive end2end performance**, (c) **brew a better world**, and (d) **engage and develop our people**.



Figure 10: Heineken N.V. Business Priorities

(a) Deliver Top Line Growth

Heineken N.V. aims to lead its **premium beer** and **cider** around the world and to leverage its **brands** to the **top** or even **second tip** of the market with its well-defined **portfolio of international premium** and **local brands**.

The company also **consistently growing** strong on the path of leading the **customer demanding product** categories such as **low- and no-alcohol**, **cider**, and **craft & variety**, which have allowed **Heineken N.V.** to be more powerful on **customer penetration** and can focus on **targeting** more **households**.

Source: Heineken N.V. Annual Report 2017.¹²

¹² Heineken N.V. Annual Report 2017. (2018).

(b) Drive End2end Performance

Heineken N.V. has been leveraging its **global scale** of its business to improve its **operational efficiency** and **reliability** over all of its **production facilities**. With this strategy, it will energize **future growth** of **Heineken brands** especially its **margins**.

Specifically, it begins with the customers of **Heineken N.V.** and the aim of mitigating **non value adding cost elements**. The **goals** of this strategy is to **simplify the processes** and to **abolish duplication**. With these, **Heineken N.V.** can make full use of the benefit of being a **global scale** company.

(c) Brew A Better World

Heineken N.V. has been making **good progress** and is **one step closer** to its **2020 commitments**. The company constantly not only believe in but also executes its **sustainability plan** within its own **business strategy**, which can drive the company towards **success**.

There are two **game-changing innovation programmes** named ‘**Drop the C**’ and ‘**Every Drop**’ which aims to mitigate the **carbon emissions**, and to **keep water** from **wasting** across all of its business facilities respectively.



Figure 11: New Innovative Waste Recycling Brewery in Mexico

Source: Heineken N.V. Annual Report 2017.¹³

¹³ Heineken N.V. Annual Report 2017. (2018).

(d) Engage and Develop Our People

For **Heineken N.V.** to become the **global brewer** devoted to long-term value innovation, **engaging** and **developing** its people within the company are **essential**.

The company have confidence in the **capability**, **engagement** and **diversity** of all its people. They are the ones who drive the **continuity success** of **Heineken N.V.** company. There are also **four elements** being emphasized as its **business priority**:

- (1) Embrace culture and diversity
- (2) Encourage functional excellence and foster critical capabilities
- (3) Leverage talent pipeline
- (4) Cultivate superb business driven leaders



Figure 12: BOOST (Building Our Own Sustainable Talent)

Source: Heineken N.V. Annual Report 2017.¹⁴

¹⁴ Heineken N.V. Annual Report 2017. (2018).

1.2.3. Targeting and Segmentation



Figure 13: Heineken Drinks Appeal to Both Sexes

Heineken N.V. segmented its **consumers** into groups based on **common characteristics** so companies can market to each group **effectively** and **appropriately**.

Heineken N.V. mainly targets **young adults** range from **18-25** around the world based on **continents** and also dependent on the **government rules and regulations**. Generally, the general age set by the governments for people to buy beer and other alcoholic drinks is **16 years** to **21 years** and older.

On the other hands, **football** or **sporting events** like **Formula 1** is often associated with beer as a way to target its consumers through **partnership** and **sponsorships** such as **UEFA Champions League**, **Formula 1** or **Formula E**.¹⁵ Meanwhile, **Heineken N.V.** introduced **Jillz beer**, apple cider mixed with water, barley malt and fruit to make it **less bitter** to penetrate the **women market** especially **pregnant women**.

Heineken N.V. has also launched '**Heineken 0.0**' in **2017**. As the name suggests it has **no alcohol**, just **69 calories per bottle** to target the **younger generations** who opt for **healthier beverages**.

Source: Four challenges Heineken Needs to Overcome to Make Its Non-alcoholic Beer a Success.¹⁶

¹⁵ Theheinekencompany.com. (2019). *The HEINEKEN Company – Partnerships*.

¹⁶ Leonie, R. (2017). *Four challenges Heineken Needs to Overcome to Make Its Non-alcoholic Beer a Success*.

2. Information Systems in Heineken N.V.

2.1. SCM (Supply Chain Management)

HOPS: Heineken Operational Planning System

CPFR: Collaborative Planning, Forecasting and Replenishment

HOPS (Heineken Operational Planning System) which is a **business critical application** used in **Heineken's brewing, bottling and shipping operations**.¹⁷

Heineken N.V. used its own **SCM system** to achieve **50% reduction** in the **lead time** from **order to delivery** and **10% increase** in sales, and also **generated order and replenishment recommendations** for individual **Heineken distributors** based on criteria such as **past sales performances, seasonal trends and geography**.¹⁸

In early **1997**, **Heineken N.V.** designed the **Heineken operational planning system (HOPS)** based on **Logility's Value Chain Solution (LVCS)** demand planning application, **Heineken N.V.** was one of the **first companies** to implement a collaborative **supply chain solution**.

On top of that, **Heineken N.V.** also partnered with **Logility** to bring **some of the changes** in the new release of **LVCS (Logility's Value Chain Solution)**. This is because a **shipping container** of **Heineken beer** was the **smallest quantity** a distributor could purchase in **2001** such as **purchase of partial containers**. To be able to order Heineken brands **more frequently** and in **smaller quantities** means **distributors** potentially **retain higher profits** because there is **less spoilage** due to **beer** that has not sold before its **expiration date**.

The reason why **Heineken N.V.** implemented **HOPS** is because in **1996**, distributors and sales representatives had to plan out orders **three months ahead of delivery**, it was daunting task for them to predict the **factors** that would affect the **product sales** such as **weather, special promotions**, and **local demand fluctuations** in advance. All of this **consumed** an average of **10 to 12 weeks** which caused its **customers** to choose another supplier.

¹⁷ Cooter, M. (2019). *Heineken Speeds Up Supply Chain With Move to Private Cloud*.

¹⁸ Essays24.com. (2019). *Heineken Hops (Operational Planning System)*.

Therefore, **Heineken N.V.** implemented **HOPS** as a better way to collaborate with its **distributors**. According to supply chain manager **Tom Bongiovanni**, director of operations planning at **Heineken N.V.**, “Our goals were to improve **customer-service levels** and **reduce inventories**, while keeping all of our products consistently in stock to **distributors**”. By implementing **HOPS**, it allows the **parent company** to produce the beer **closer to the time** when they need to deliver it, so the customers can faster in receiving their **fresh products**.

Based on the results, **monthly forecasting** via the **HOPS** is much **more efficient** and **accurate** than the time-consuming process of having **district managers** faxing orders from **Heineken N.V.'s White Plains, N.Y. headquarters** to **Amsterdam**.

On the other hand, **Heineken N.V. products** are **brewed and bottled** in the **Netherlands** and **shipped** to various demand points in the **U.S.** when **distributors** place orders, the shipment leaves the **closest demand point** and the products are trucked to the **distributors**. Distributors then deliver the goods to its final destination such as **restaurants, bars and stores**.

As a result, **Heineken N.V.'s distributors** started using the **HOPS** extranet to manage the transportation **weekly**, rather than **monthly** to better managing the heavy tasks especially for the **depletion and replenishment forecasting**. **Weekly updates** make it possible for **Heineken brewers** to adjust production in response to **updated forecasts**. The transition to **weekly forecast updates** was implemented concurrently with a change in the way **distributors** take possession of their **inventory**. Instead of requiring **distributors** to bring trucks to meet the **container ships** at **ports**, **Heineken N.V.** now has the containers transported to various **independently operated regional warehouses** which called **demand points**.

The **HOPS** application now includes a **containerization module** that supports the **logistics** of **moving containers** from **ships** to **warehouses**, improved **exception management** to support **weekly depletion and replenishment reports**, and a **routing and scheduling module** that helps get container ships from **Holland** to the **U.S.** destinations as **efficiently** and **quickly** as possible.

Source: Efficiency on Tap¹⁹

¹⁹ Supply & Demand Chain Executive. (2001). *Efficiency on Tap*.

A key **advantage** of **HOPS 3.0** over the **original version** is its **flexibility** to adjust to **event-driven demand** for **Heineken N.V. products**. To quote a clear example, **fluctuations** in the demand for **Heineken N.V. brands** in the **Oakland** and **Baltimore** metropolitan areas in **mid-January** when the **Oakland Raiders** battled the **Baltimore Ravens** in the **NFL Super Bowl playoffs**.

In **Raider country**, desolate fans meant an **overstock of fresh beer** in the **Oakland warehouse**. Using the new exception **management features** of **HOPS 3.0**, **distributors** with an overstock could send the **excess inventory** onto **Long Beach** or possibly **Seattle**.

In **Raven territory**, on the other hand, the **Baltimore warehouse** might **run short** on stock and need to call upon the **Richmond warehouse** to provide **reinforcements** in time for the **victorious team's homecoming**.

So, now the **distributors** are providing **weekly inventory updates**, and this make the **HOPS data repository** is quickly becoming a **valuable information asset**.²⁰ The **HOPS database** provides an opportunity to capture **business intelligence**. Therefore, **Heineken N.V.** can utilize this **business intelligence** to select optimal locations for its **future U.S. distribution centers** so that **lead times** can be reduced.

Source: Efficiency on Tap²¹

²⁰ Jacki, B. (2018). *Case Study: Why Everyone Wants to Work for Heineken*.

²¹ Supply & Demand Chain Executive. (2001). *Efficiency on Tap*.

2.2. CRM (Customer Relationship Management)

SFA: Sales Force Automation

Heineken N.V. introduced **Sales force automation (SFA)**, which is also known as **Jeans system** into its company which developed by **FirstBIT**, **Heineken N.V.'s** IT partner. **Jeans** is an integrated application of customizable **customer relationship management (CRM)** tools that are able to automate and streamline **sales inventory, leads, forecasting, performance and analysis**.²² The main purpose of **Jeans** is to **automate operations accurately**.

Jeans application enables the **sales employees** to obtain all the **operational information** such as the distributors' **warehouse stock balance, outlet log files and number of visits** on their **mobile devices**.

Importantly, **Jeans** enables the **order execution process** of **distributors** such as receiving orders **easier** especially it can work **offline**, and **immediately** after visiting an outlet, and **Jeans** can show the **results to date and control system** at the same time.²³

Moreover, it not only reduced **processing time** but also enabled **employers** to calculate **KPI (Key Performance Indicator)** of **Heineken employees and distribution companies** through the internet.²⁴ Therefore, **Jeans application** can take control of the whole **chain of sales** and collect the **necessary information** when the intended user is verifying on **current orders, contracts, cash flow of logistics** etc.²⁵

Heineken N.V. engaged **Avanade** as **Microsoft experts** based on an existing relationship, and **Avanade** proven **delivery track record** with **HEINEKEN Global Information Services**. **Avanade** successfully showed the value of **Microsoft Dynamics CRM Online** and demonstrated its telephony functionality, as well as how the current **ERP solution** would be **integrated**. **Avanade** designed a solution to empower and provide **call center agents** with **relevant sales information**, in a **proactive and meaningful manner**.

²² Techopedia.com. (n.d.). *What is Sales Force Automation (SFA)?*

²³ Ferguson, T. (2010). *How Heineken and Hillarys Blinds Are Getting More Out of Business Data*.

²⁴ Ferguson, T. (2010). *How Heineken and Hillarys Blinds Are Getting More Out of Business Data*.

²⁵ Firstbit.ae. (2015). *HEINEKEN Russia CIO Shared the Details of the SFA Project Made in....*

On the other hand, **Heineken N.V.** also acquires **online CRM** based on the **Microsoft Dynamics 365 platform**, developed by **Millennium** in **2016**. The online tool in fact was the **first online CRM** to be utilized in **fast-moving goods segment** in **Slovakia**, attracting **present guests**. Thus, **Heineken N.V.** has gained the status of a **technological innovator**. As the very first company of selling **beer** on the **cloud**.

Account linkage between **Heineken N.V. ERP system** and **Microsoft CRM** become **automated**, which enables the employees to receive updates instantaneously whenever new customer details stream into the system. In addition, employees can access to **360-degree view** the **organization figures** and customer details on the **ERP system** such as **payment terms, depots** and **customer regions**.²⁶

The solution provided by **Microsoft Dynamics 365 platform** contributed to **multiplied speed** and **quality acceleration** when dealing with customers. The **online CRM system** significantly simplified workload of **Heineken employees** in the fields of **sales, marketing** and **customer services**.²⁷

²⁶ Avanade.com. (2015). *HEINEKEN - CRM Case Study* | Avanade Malaysia.

²⁷ Millennium. (2016). *Introduction of Online CRM for Heineken At the CRM Conference* - Millennium.

2.3. DSS (Decision Support System)

DMS: Distributor Management System

The **Distribution Management System (DMS)** which is a **collection of applications** designed to monitor and control the entire **distribution network** efficiently and reliably. The reason why **Heineken N.V.** introduced this system in the business is because **DMS** has the ability to allow the company to leverage its business to fulfil the **FMCG (Fast Moving Consumer Goods)**, **CPG (Consumer Packages Goods)** and **distribution business challenges and demands**, which resulted in improving **cost effectiveness** and increasing **profitability**.²⁸

Heineken N.V. had synergised its business with **distributors** through implementation of a comprehensive new system which calls **Distributor Management System (DMS)** to enable **seamless tracking** and **enhanced clarity**. Particularly, **DMS** provides **end-to-end coverage** of **distributors' operations, real-time reporting**, with **better visibility and tracking of stocks**. These aforementioned features drive the **decision making process** of **Heineken N.V.** especially the **key leaders** within the organization can be better in managing the operations.²⁹

One of the capabilities **DMS** in which can help **Heineken N.V.** to integrate the **sales data** into the **data warehouse** to further analyse all the **Sell In** and **Sell Out transaction**, allowing **Heineken N.V.** to have **more visibility** of the **market coverage** and **market shares** to identify **where** and **who** the **distributor** selling to.

In addition, **inventory data integration system** is also another capabilities of the **DMS**, which is able to provide **Heineken N.V.** the information of **current stocks** of the **distributors** possess **in their warehouses**. This feature ensure the **distributors** to have **sufficient stock** all the time to **support** and **supply** the **retailers**. For example, when one of the distributors is low in stock, **Heineken N.V.** is able to notify the **distributor** about the **replenishment** via this **DMS system** to **avoid out-of-stock situations**, once and for all.³⁰

²⁸ Powercomp.com.my. (n.d.). *Distribution Management System - DMS*.

²⁹ Heineken.listedcompany.com. (2019). *Heineken A New Era*.

³⁰ MC Crenergy. (n.d.). *Warehouse Inventory & Distribution Management System in Malaysia*.

Last but not emphatically least, **DMS** also can **automatically** apply the **complicated discount and promotion scheme** that involve **distributor, channels, retailers** across the whole **distribution network**, which means it can communicate **promotions** and **offers** to the **sales team** more **effectively**, granting customers **better deals** and increasing **sales** of the company. In addition, **promotional items** that are setup on the system is immediately reflected on the **Mobile Sales and Order Taking** for the customers in **real-time**, which improved the **customer user-experience**.³¹

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³¹ Croesus.com.my. (n.d.). *SAP Distribution Management System*.

3. Business Analysis of Heineken N.V.

3.1. SWOT Analysis

Heineken N.V. produces, develops and sells not only **beer** and **cider**, but also soft drinks.

The company's **geographic diversification**, **brand innovations** and **financial performance** are the major strengths, whereas **lawsuits** remains as a major area of concern.

In future, **raw material risks**, **competitive pressure** and **concerns on counterfeit products** could affect its future business operations. However, **growing demand** for beer and cider in global markets, focus on creating a **dominant market presence** in alcohol beverage market and **frequent launches** and **expansions** could provide **growth opportunities** for the company.

Strength [1] Product creativeness to accommodate with the tastes and preferences of consumers. [2] Powerful and quick financial analysis boost performance to attract potential investors. [3] Branching out widely drives the company's potential markets.	Weakness [1] Potential emerging of new legislations affect the company's market position.
Opportunity [1] Great market sales of Cider and Beer in global markets which indicate high feasibility of organizing product expansion activities.	Threat [1] Raw material hazard [2] Highly competitive in the alcohol market [3] Emerging of more counterfeit products

Figure 14: Heineken N.V. SWOT Analysis 2018

Source: Heineken N.V. SWOT Analysis³²

³² 'Heineken N.V. SWOT Analysis' (2018).

3.1.1. Strength

[1] Brand Innovation to Adjust with the Changes in Consumer Tastes and Preferences

Heineken N.V.'s broad **brand portfolio** caters to a variety of **consumer segments** within the beer market. **Innovative strategies** empowers **Heineken N.V.** to stay in touch with the rapid changes in the market which enable to gain an **competitive advantage** in providing **more tailored services** especially **products** to its customers.

Furthermore, Its **Innovator Brewhouse** is a connected innovation space for **entrepreneurs, inventors, universities, suppliers** and **great beer minds** through which it **shares and exchange** ideas with each other for developing **new and innovative products**. It also established a **cross-functional, cross-regional team** for concept **identification** and **development**.

Heineken N.V. calculates **innovation rate** as revenues generated from innovations introduced in the past **40 quarters** for a **new category**, **20 quarters** for a **new brand** and **12 quarters** for all other **innovations**, excluding packaging renovations, divided by total revenue. As a part of its innovations, the company designed and developed various new and innovative products based on the **changing market trends** and **consumer preferences**. In this regard, the company in collaboration with **Marc Newson and Krups** developed **submarine beers (SUB)** in **two-liter kegs (TORPS)** packs.

It also launched **Heineken 0.0** during **Formula 1 Grand Prix event** in **Barcelona**. **Heineken N.V.** also launched **igNITE Heineken interactive lighting bottles** and **The Club bottles** that glows and creates a bold shape for its users and are ideally suited for events and nightlife venues.

In addition, its **APB (Asia Pacific Breweries) Singapore** launched **Tiger Black** and **Tiger White premium variants** to attract young users. Under **cider brands**, **Heineken N.V.** introduced **Orchard Thieves** in five new markets. The company launched **Salone**, a **100% locally sourced sorghum beer** in **Sierra Leone**, and **Ivoire beer** in **Ivory Coast**. Such innovations give the company a unique **competitive advantage** and therefore, help in **increasing sales** across **channels** and **markets**.

Source: Heineken N.V. SWOT Analysis³³

³³ 'Heineken N.V. SWOT Analysis' (2018).

[2] Enhanced Financial Performance attracts New and Potential Investors

Heineken N.V.'s financial performance was improved during the review period. In **fiscal year 2017**, Heineken reported revenue of **EUR21,888 million** as compared to **EUR20,792 million** in **fiscal year 2016**, representing **an annual growth of 5.3%**. The growth in revenue was mainly contributed by the **strong performance in Europe, the Americas and Asia-Pacific**.

Specifically, the total sales of in the **Americas** grew by **20.3%** in **fiscal year 2017** than previous fiscal year. In addition, the company's **Asia-Pacific** and **Europe** segments also realized a good sales growth of **3.8%** and **0.9%** respectively in **FY2017**. Sales in **America** segments increased primarily due to **good performance** from its **Mexico, Brazil and Haiti** regions and due to enhanced sales growth in **Tecate and Dos Equis** brands. **Asia-Pacific** segment revenue was primarily driven by double digit volume growth in **Vietnam and Cambodia**. The revenue was further driven due to strong performance from its major markets such as **France, Italy, Spain and Portugal** in **Europe**. In **FY2017**, the **operating margin of Heineken N.V.** was **15.3%**, whereas in **FY2016**, it was **13.2%**.

Operating performance improvement reveals **Heineken N.V.** emphasizes on **efficient cost management**. In addition, **Heineken N.V.**'s **operating cost** as a percentage of sales declined from **98.7%** in **FY2016** to **84.7%** in **FY2017**. Furthermore, its **net profit margins** between **FY2016** and **FY2017** are **3.7%** and **4.5%** respectively. The **return on equity of Heineken N.V.**'s raised from **11.8%** to **14.7%** between **FY2016** and **FY2017**.

Heineken N.V. has **compelling financial performance** which provides **higher returns** to its **shareholders**, resulting in **attracting more investors** to chip in. Notably, growth in revenue allows the company to allocate ample funds for its **future growth** especially increasing its **expandability**.

Source: Heineken N.V. SWOT Analysis³⁴

³⁴ 'Heineken N.V. SWOT Analysis' (2018).

[3] **Geographic Diversification enhances its presence in Emerging and Potential Markets**

The company's operations are diversified in terms of **geographic reach**. It has presence in **190 markets** and operates and manages **165 breweries, cider plants, malteries**, and other production facilities in over **70 countries** and markets across **Europe**, the **Americas**, **Africa**, the **Middle East** and **Asia-Pacific**. It markets and sells approximately **300 local, regional, international and specialty brands**. The company is the **number one** brewer in **Europe** and holds **number two** position worldwide. In the **Africa**, the **Middle East** and **Eastern Europe**.

Heineken N.V. operates in **14 countries** such as **Tunisia, Lebanon, Algeria, Egypt, Sierra Leone, Cote d'Ivoire, Nigeria, Ethiopia, Mozambique** and **South Africa**. The company sold **72.1 mhl** of beer volumes and **10.7 mhl** of Heineken beer volumes in **Africa**, the **Middle East** and **Eastern Europe**. Approximately **33.1%** of the company's total beer volumes were sold through this region.

In **Europe**, **Heineken N.V.** manages its operations in approximately **22 countries** across **Western Europe** and **Central Europe**. These countries include **Ireland, the UK, Portugal, Spain, Belgium, France, the Netherlands, Switzerland, Italy, Austria, Croatia, the Czech Republic, Poland, Slovakia, Hungary, Romania, Serbia, Bulgaria, Slovenia** and **Greece**. The company sold **78.8 mhl** of beer volumes and **13.8 mhl** of Heineken beer volumes in **Europe**. Approximately **36.1%** of the company's **total** beer volume was sold through this region.

Heineken N.V. also conducts its business operations across the **US, Mexico, Bahamas, Haiti, Panama, Saint Lucia, Jamaica, Suriname**, and **Brazil**. The company sold **72.1 mhl** of beer volumes and **10.7 mhl** of Heineken beer volumes in the **Americas region**. Approximately **33.1%** of the company's total beer volumes were sold through this region.

A part from these, **Heineken N.V.** manages and operates its **business activities** in **17 diversified markets** in **Asia-Pacific** such as **China, Japan, South Korea, Sri Lanka, Vietnam, Philippines, Malaysia, Singapore** and **Indonesia**. The company sold **27 mhl** of beer volumes and **6.3 mhl** of **Heineken** beer volumes in **Asia-Pacific**. Approximately **12.4%** of the company's total beer volumes were sold through this region.

Source: Heineken N.V. SWOT Analysis³⁵

³⁵ 'Heineken N.V. SWOT Analysis' (2018).

Wide geographical operations of **Heineken N.V.** literally helped to diversify its customer base and to generate higher revenue. In addition, the **economic** and **financial risks** are also being mitigated by associating with the **dependencies** of specific countries or regions.

3.1.2. Weakness

[1] Lawsuits could affect the Market Position of the company

Heineken N.V. has been the **defendant** in numerous of **legal proceedings**. This in turn could affect the company's **market share** and **presence** across various potential markets. This also reduces the **confidence** of their **shareholders** and **customers** which in turn restricts the company's **future investments** and **expansion plans** in the markets where the company does not have **business presence**. For instance, in February 2017, **Macedonian Thrace Brewery (MTB)**, Greek brewery filed an **antitrust lawsuit** against the company in the **court of Amsterdam**. **Macedonian Thrace** represents approximately **six percent** of the **Greek beer market** led by flagship **Vergina beer**.

The case was stated that the company is claiming itself as a **dominant beer maker** in the **Europe** compared to its **peer groups** for the **last two decades**. It also states that the company's **Greek subsidiary Athenian Brewery SA** holds **99% of beer market** in **Europe** and in turn is trying to hamper and block the **brand image** of **MTB** and other top competitors residing in that region.

The defendant also claims that **Heineken N.V.** is also trying to impact the **sales** and **distribution channels** of the company, which is a **violation** and **disciplinary activity** against **Greek** and **European** competition laws. It is also exhibiting **false profits** and **abuses** on its peers. The company is also coercing and intimidating **distributors**, **retailers** and **wholesalers** related to its competing groups and are also planning to conquer and attract their customers. The suit sought a damage **cost of GBP100 million** and the court imposed **GBP31.5 million** as a penalty for **Athenian Brewery**.

Source: Heineken N.V. SWOT Analysis³⁶

³⁶ 'Heineken N.V. SWOT Analysis' (2018).

3.1.3. Opportunity

[1] Growing Demand for Beer and Cider in Global Markets

Heineken N.V. stands to benefit from the growing demand for **beer** and **cider**. According to an **in-house research report**, the market for global beer and cider market was valued at **US\$542,862.9 million** in **2016** and is projected to grow at a **CAGR (Compound annual growth rate)** of **5.6%** during **2016-21** to reach **US\$711,852.4 million** by the end of **2021**.

Increasing demand for **gluten-free beers**, **growing urbanization** and **increasing young population** coupled with increased disposable income are the factors behind the growth in the market. The market registered considerable growth in the recent past by focusing on **product differentiation** by launching **innovative flavors** and **formulas**, serving a **diversified customer base**.

Online trade accounted for the **largest proportion** of sales in the global beer and cider market in **2016**. Sales through this channel accounted for **59.1%** of the **total revenue**; however, sales through **hypermarkets** and **supermarkets** accounted for **18.9%** of the market's aggregate revenue, followed by **convenience stores (14.5%)**, **food and drink specialists (5.5%)** and **other (2%)**.

Asia-Pacific reported the **highest growth** in beer and cider sales. In **Asia-Pacific**, the beer and cider market was valued at **US\$173,444.3 million** in **2016**, whereas the **US market** was valued at **US\$109,931.8 million**. Beer is expected to lead with **97.9% market share** and cider accounted for the remaining **2.1% market share** in **2016**.

Source: Heineken N.V. SWOT Analysis³⁷

³⁷ 'Heineken N.V. SWOT Analysis' (2018).

[2] Focus on becoming a Market Leader in Alcoholic Beverages Market

Heineken N.V. focuses on conquering and acquiring **alcohol beverage companies** enable it to be a **leading alcohol producer** in various emerging and potential markets.

For instance, in **August 2017**, the company's subsidiary **Heineken UK** acquired **Punch Securitisation A**, that owns and operates approximately **1,900 pubs** in the **UK**. The company believes that investments in **high-quality** and **well-organized** pubs helps it to reach **diverse range of customers** and also allows it to expand its **business operations** in various new and potential markets where the company does not have any **market presence**. **Heineken UK** integrates the pubs into its existing **Star Pubs & Bars estate**, which in turn enable the company to establish itself as **country's third largest** pub business in the highly fragmented pub market.

In **June 2017**, the company acquired **Brasil Kirin Holding SA (Brasil Kirin)** from **Kirin Holdings Company**. **Brasil Kirin** primarily produces, wholesales and retails **beverages** in **Brazil**. This **acquisition** could enable the company to enhance its **distribution** and **logistics** related activities in **Brazil** and also helps it to attract **new and potential customers** residing in these markets.

In **May 2017**, the company acquired the remaining **50% stake** in **Lagunitas Brewing Company**. Since, **Lagunitas Brewing Company** starts to manage and report all of its **business activities** to **Heineken America**. Gradually, **Lagunitas Brewing Company** becomes the first leading seller for the **IPA (India pale ale) products**. It sold approximately **one mhl** of craft beer in **2016**.

Heineken N.V. is also planning to expand **Lagunitas' international presence** in various new markets such as **France, Mexico, Italy and Spain**, and also extended the **availability of the brand** in various markets including the **UK, Canada, Netherlands, Sweden and Japan**.

Source: Heineken N.V. SWOT Analysis³⁸

³⁸ 'Heineken N.V. SWOT Analysis' (2018).

[3] Frequent Product Launches and Expansion activities

Heineken N.V.'s **strategic initiatives** could help it to handle various **demand-supply fluctuations** in the market. It also differentiates the company compared to its peer groups. In **December 2017**, **Heineken Nederland B.V.** entered into a **strategic partnership** with **Sligro Food Group N.V.** for managing its beer and cider **logistics activities** in **Dutch market**. It also divested its other **wholesale operations** related to non-beer and cider product categories to **Sligro Food Group N.V.**

In **April 2017**, the company in **collaboration** with **CFAO** developed a **state-of-art brewery plant** in joint venture with **Brassivoire** in **Anyama industrial zone, Abidjan, South Africa**. The brewery is having a capacity to produce **1.6 million hectoliters per annum** through which it produces and distributes **Heineken** and **Desperados brands**. In addition, it produces **Ivoire beer** that consumes large amount of **rice**, which in turn enhances the company's **rice sector**. This helps the company to enhance its **presence** in **Cote d'Ivoire** region and also allows it to tap various growth opportunities residing in the **Africa market**.

In **February 2017**, **Heineken N.V.** announced its plan to extend its **contract agreement** with **UEFA** through which the company sponsors **UEFA Champions League** for the **next three years**. The **partnership** also includes the **UEFA Super Cup 2018, 2019 and 2020** and also helps the company to enhance the brand image of **Heineken N.V.** in various emerging and potential markets.

Source: Heineken N.V. SWOT Analysis³⁹

³⁹ 'Heineken N.V. SWOT Analysis' (2018).

3.1.4. Threat

[1] Raw Material Risks

Growing raw material costs could have a major impact on the **operational efficiency** of the company. The company uses various **raw materials** such as **barley, fruits, glass, cans**, and other **packaging materials** during the **production processes** of beer and other beverages.

In addition, the **cost of wheat**, followed by **barley** are all setting the stage that the **cost of beer** to rise. The **price of barley** has been increasing over the years primarily due to the **flourishing ethanol market**. Although the company uses forward contracts, **price fluctuations** and **non-availability** of these raw materials could have a material effect on **product costs** and the operations of the company.

[2] Competitive Pressure in the Alcohol Market

Strong competition can cause serious **impact** on **Heineken N.V.** operations. The factors that can most likely to be causing **severe** competition in the industry include **product quality, originality, brand, loyalty, and pricing**. To survive in an extreme **competitive environment**, the company has to recognize and identify the difference between its **product** and **service offerings** clearly to come out with **strategic decision** to drive its **business value**.

Major competitors of the company include **Pernod Ricard S.A., Diageo Plc, Carlsberg A.S., Anheuser-Busch InBev N.V./S.A.** and **Bacardi Ltd.** These aforementioned are companies are the **major competitors** that actively engaged in a number of **business activities** such as **expansions** and **acquisitions** to ensure coherent **business growth rate**.

For instance, in **February 2018**, **Carlsberg A/S** acquired **Olympic Brewery** in **Greece**. This allows **Carlsberg** to enhance its **market presence** in the **Greek** beer market. in **August 2017**, **Diageo Plc** acquired **tequila Casamigos**, a **premium tequila brand** in the **US**. This allows **Diageo** to develop and create a **dominant position** in the premium **tequila** market.

[3] Increased Counterfeit Products

The **huge influx** of **counterfeit products** could affect **Heineken N.V.** business operations. The emerging counterfeit goods can reduce the company's sale especially its profit margins. Customers could buy counterfeit goods with fake labels by mistake. Consequently, the customers' confidence in **Heineken N.V. brand image** will be spoiled.

According to the **International Chamber of Commerce (ICC)**, about **US\$125 billion** are lost due to **forgery** and **piracy** every year. In addition, **2.5 million** jobs can also be damaged by the **aforementioned issues**. Particularly, the **counterfeit goods** are being sold at **low price**, which adversely affecting the sales of **Heineken N.V. genuine products**.

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Source: Heineken N.V. SWOT Analysis⁴⁰

⁴⁰ 'Heineken N.V. SWOT Analysis' (2018).

3.2. Risk Management

3.2.1. Challenges with Strategic Solutions

3.2.1.1. AIMMS Supply Chain Analytics

According to Heineken's manager for **Global S&OP** and **Network Design**, before the acquisition of AIMMS, there was a **Brewing Capacity Model** which specifically designed in a **spreadsheet file** 10 years ago, and it was making full use the entire **Excel software**. The limitations were the file version management, which was **difficult** for the employees to identify the **latest file version**.

For cases of the past 10 years, when Heineken N.V. has to determine the **canning capacity** in a **certain region**, the data for all the breweries in over **20 Excel files** has to total up which was a **troublesome process**.

Solution

Therefore, Heineken N.V. has to adopt a better **decision-support tool** which called AIMMS, a powerful **Business Intelligence** tool that provides **cloud-based solution**, and supports **optimization**. It allows the company to easily optimize **business processes**, manage its investments, study **production capacity**, validate **data for each country**, and structuring and gathering data.

Furthermore, the AIMMS-based model allows Heineken N.V. to visualize demand of different countries, and based on its historical sales, the company can divide it into separate sales regions. AIMMS enables Heineken N.V. to be much easier in allocating demand to each brewery based on the demand of the market, which was painful for Heineken N.V. to manage in the past. Remarkably, Heineken N.V. can change **input parameters** and simply run the model again with just **few clicks** to generate a new model.

The capabilities provided by AIMMS enable Heineken N.V. to respond rapidly in the business environment and all the **security requirements** were in place. Instead of taking months to finish the tasks assigned, they can be done **within a few weeks** after the acquisition of AIMMS.

Source: Modeling Brewing Capacity to Drive Cost Savings at HEINEKEN.⁴¹

⁴¹ Meijer, K. (2019). *Modeling Brewing Capacity to Drive Cost Savings at HEINEKEN*.

3.2.1.2. *Distribution Channel Transformation*

The emergence of **procurement alliances** and the rise of **e-commerce distribution channels** may adversely affect the ability of **Heineken N.V.** to retain and improve **preferential terms of trade** such as **better pricing**, which resulting in **negative operating margin** to the company.

Solution

The aforementioned risk has led **Heineken N.V.** to renovate both of its **B2B and B2C e-commerce channel** and to adopt **innovative sales approach** to enhance its **business trading process**. Currently, the company has expanded the enhanced version of e-commerce channels across all **four regions, Europe, the Americas, Asia Pacific, and Africa**.

Heineken N.V. has put investments in its **business relationships** especially in developing **joint business plans** with key **distributors and retailers** to enhance the company **sales performance** via development of its **e-commerce facilities** and **CRM** at distinct levels.

Source: Heineken N.V. Annual Report 2017.⁴²

⁴² Heineken N.V. Annual Report 2017. (2018).

3.2.1.3. *Changing Consumer Preferences*

The rapid evolving of customer **behaviours** especially their **preferences** are increasing complicated for **Heineken N.V.** to adapt to. Notably, the **beer categories** have to be constantly adjusted, which requires the company to continuously invest in order to retain the **relevance** and **power** of **Heineken brands**. Otherwise, the company's **sales revenue**, **brand equity** and **market share** would be negatively affected.

Solution

In the past few years, **Heineken N.V.** has advancingly consolidating its **profit-making organization** especially its **sales capabilities** and **innovation plan**. A substantial amount of investments has been made by the company to further develop its **market** and **customer intelligence**, more **tailored products** and **services**, and **brand protection**. With these, the company can predict and respond quickly to the **rapid changing** industry environment.

Specifically, based on the report over the past few years, the **popularity** of the **handmade beer** and the emerging **low- and no-alcohol** goods have been the **trending products** in customers. These results has led **Heineken N.V.** to fully adapt to the changes by acquiring **Lagunitas brands** to add into its craft portfolio, supporting the launching of **Heineken 0.0** campaign to supplement its **low- and no-alcohol category**.

Source: Heineken N.V. Annual Report 2017.⁴³

⁴³ Heineken N.V. Annual Report 2017. (2018)

4. Business Analytics/Business Intelligence Solutions

4.1. Data Warehouse & Online Analytical Processing

Trade Census Project for Heineken N.V.

In 2015, there are two powerful competitors for **Heineken N.V.** which are SABN and Mas Ovn Course. For **Heineken N.V.** in order to stand out from the aforementioned business rivals, the **accuracy** and **volume** of data are **significant** in which will determine the winner between these 3 big companies.

R&R Software company has developed **Trade Census** project with **Heineken N.V.** to map every corner of its facilities in **Hungary** to discover all the retails. Specifically, it enables to target field **data collection** with **central monitoring, control** and **support**. It also provides **Enterprise Resource Planning** warehouse for **logistics** and **financial management** controlling.

Based on the data **Heineken N.V.** using the **database**, the company can develop out the **classification** and **routing organization** to select and target those promotion that could result the **highest potential grow**, which increases the **return of investment (ROI)**.

Trade Census provides **Heineken N.V.** the **mobility** and **business analytics system**. It helps the company to gain **high level of engagement** which is essential for achieving close to **100% data accuracy**. Importantly, the knowledge could be gained and integrated into the **Heineken N.V.** organization.

The **Trade Census** project comprises of **three phases**, starting with the **(1) planning** mainly done by the colleagues in **December** and the development of the **IT solution** carried out in **January** and **February**.

Source: Heineken.⁴⁴

⁴⁴ Árpád, C. (2016). *Heineken*.

The **(2) second phase** was the process of **numbering, Enumeration** itself carried out by **hundred-twenty sales reps** and **editors** controlled by **15 area sales managers** until the end of **March**.

The **(3) third phase** was the **analyses** and **optimization** of the collected **data set** in **April** carried out by **Heineken N.V. trade marketing department**.

The **benefits** of these aforementioned technologies bring value to **customers experience**, keep **Heineken N.V. project expenditures** and **deadlines** under control.

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Source: Heineken.⁴⁵

⁴⁵ Árpád, C. (2016). *Heineken*.

4.2. Big Data/Business Intelligence/Business Analytics/Data Mining

4.2.1. Implementation of Technologies with Outcomes

Advanced Analytical for Sales and Stock Predictions

Heineken N.V. and **Walmart** are working together on a pilot project with **Shopperception** company, which provides analytical tool to analyze **consumer behaviour** in front of shelves. The analytical tool is integrated with chips that are able to capture **metrics** of customers to generate **real-time events** in order to develop **predictive models**.

This program helped **Heineken N.V.** and **Walmart** to collect a tremendous amount of data about how **Heineken N.V. products** left the store. Importantly, brewers and retailers can evaluate all the data gathered to identify the customers who buy **Heineken drinks** as well what could be the best place and time to sell beer in stores.⁴⁶

Real-time Mobile Marketing Initiatives (Big Data/Data Mining)

Heineken N.V. has created **various partnerships** with **Facebook** and **Google** since **Heineken N.V.** has almost **24 millions fans** on **Facebook**. This provided **Heineken N.V. a lot of data** which can be utilized to develop **real-time event-driven** especially is able to **personalize marketing experiences**.

Specifically, there was the **StarPlayer** game that requires **a lot of data** of its customer base to work in real-time during the **Champions league football tournament**. In the game, the **real-world football matches** the action that happens in the game in **real-time**, making it an entirely **new experience**, because the game **depends on** what happens on the ground.⁴⁷

⁴⁶ Marr, B. (2019). *The Incredible Ways Heineken Uses Big Data, The Internet of Things And Artificial Intelligence (AI)*.

⁴⁷ Rijmenam, M. (2015). *How Heineken Interacts With Customers Using Big Data*.

Choosing Microsoft Azure (Big Data/Business Intelligence)

According to a case study by **Microsoft**, **Heineken N.V.** did not choose **Amazon Web Services** is mainly because of the **hassle** of managing server.

“With **Azure**, we didn’t have to invest in managing servers, so we could focus on delivering the most successful campaign,” says **Ewout Brendregt**, Global Center of Excellence Manager at **Heineken N.V.** company.

Microsoft Azure, a **first-class cloud platform** has a feature named **Azure Content Delivery Network** which enables to make available of **Heineken N.V. digital content** much quicker and reliable to **10.5 million consumers** across the globe.

The next year, **Heineken N.V.** faced a global campaign on **UEFA Champions League (UCL)** soccer games. Since the **UCL** campaign would require to launch simultaneously across **70 markets** and **30 languages** in **real-time**, **Heineken N.V.** wanted the technology to support **1 million users** simultaneously.

To meet these requirements, **Heineken N.V.** extended the use of **Azure** from one data center to four in **Europe** and **Asia**, and achieved **geographic redundancy** and **low latency**. The data is stored in **Azure table storage** for **asynchronous updates**. The structure of the storage consists of **10,000 partitions** achieve the necessary **scalability**. As a result, the **latency** for **gaming** reduced from **7 milliseconds** to **535 milliseconds**, which enables the players to experience **immersive real-time game-playing** across the globe.

Source: Microsoft Azure Provides Heineken Computing Power For Global Promotions.⁴⁸

⁴⁸ Tracy, P. (2016). *Microsoft Azure Provides Heineken Computing Power For Global Promotions*.

Heineken Chatbot Helper (Big Data/Business Intelligence/Business Analytics/Data Mining)

In the annual event of **Heineken City Polo** in 2019, with the help of **Oracle**, a chatbot was developed to assist people if they have **inquiries** or **problems** attending the event organized by **Heineken N.V.** company such as answering **frequently asked questions** by event participants.

The **chatbot helper** was developed under **Oracle's Artificial Intelligence (AI) platform**, which uses **machine learning** to iteratively enhance its **efficiency** and **effectiveness** by self-learning the questions asked by the consumers, in which can allow choosing better answers overtime. In technical views, the **Oracle AI** was developed utilizing **natural language understanding (NLU)**. It enables to interpret the questions and respond with an **appropriate answer**.

According to the **Wilson**, owner of the **Heineken Urban Polo events**, **participants** attending **Urban Polo events** can interact with the **chatbot helper** via **Facebook Messenger** instead of downloading a separate app, which is convenient for the **participants**. Remarkably, questions that are put into and processed by the **chatbot helper** are correctly interpreted for over **90%**.

Source: Heineken and Oracle Create Chatbot Helper for Polo Events.⁴⁹

⁴⁹ McDonald, C. (2018). *Heineken and Oracle Create Chatbot Helper for Polo Events*.

4.2.2. Benefits

Big data is a way that enable **Heineken N.V.** to make more **accurate predictions** and **decisions** when the company operates their business. The data collected and analysed can be utilized to determine the **challenge** the company might face and **business risk** to prevent.⁵⁰

Heineken N.V. uses **big data** to determine their **area's sales** in a way to improve the company **operating margins**. By using the data gathered, the company understands when to make **special competition** and **event** to attract more **customers** to boost the sales. Festivals such as Chinese New Year and Champion League.⁵¹ During these **special festivals**, **Heineken N.V.** will make some **road shows** and **events** to promote **Heineken N.V. products** that the company has previously **predicted most likely** to be favoured by its **consumers**.⁵²

Heineken N.V. can also analyse **customer buying habits** to identify what drinks are sold quicker at certain times especially in providing various **promotion events** the customers interested in to boost sales. Importantly, the **data** collected can also be utilized to analyze the reason why **Heineken N.V. products** are not selling well in certain period.

Moreover, **big data** support **Heineken N.V.** to better connected with its consumers through **social media** by running specially analysed **ad campaign**. It not only increases **awareness** of **Heineken N.V. brands**, but also encourages **customer loyalty**. Importantly, the **relationship** can be built between customers and **Heineken N.V. company**.⁵³

As a result, **Heineken N.V.** volume raised **7.7%**, its **greatest performance** over nine markets currently sell over **1 million hectolitres** of **Heineken N.V. brands**. Remarkably, volume elevated two digits in various countries like **South Africa, Nigeria, Brazil, Russia, Poland, UK, Mexico, Germany**, especially **China**. The **Heineken N.V. brands** also grew healthily across **European markets** from **Heineken N.V. Original**. To be noted, **Heineken N.V.** is now expanded to over **38 markets** and planning to **roll out** in **2019**.⁵⁴

⁵⁰ Mainwaring, S. (2017). *3 Lessons From Heineken On How to Run A Purpose-Driven Business*.

⁵¹ Eckerle, E. (n.d.). *Heineken Plans Book*.

⁵² Meijer, K. (2019). *Modeling Brewing Capacity to Drive Cost Savings at HEINEKEN*.

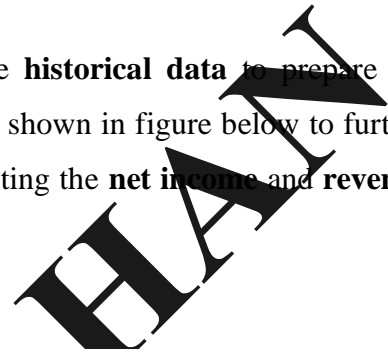
⁵³ Maytech Blog. (2018). *Drinking to the Future with a Beer and Big Data*.

⁵⁴ Theheinekencompany.com. (2019). *Heineken N.V. Reports 2018 Full Year Results*.

4.2.3. Descriptive Analytics

Based on the **historical performance** and **sales gathered** as a data for **Heineken N.V.** company, the data will be significantly vital for developing **predictive** and **prescriptive business models** in which can boost the **future sales** of the company with **strategic actionable plans**.

The **financial department** of **Heineken N.V.** will often use the **historical data** to prepare the **financial report**, included all the **growth, sales, profit and lost** as shown in figure below to further predicting the **equity, assets, liability**, and others that will be affecting the **net income and revenue** of **Heineken N.V.** company.



CONSOLIDATED INCOME STATEMENT

	Note	2018	2017*
For the year ended 31 December			
In millions of €			
Revenue	6.1	26,811	25,843
Excise tax expense	6.1	(4,340)	(4,234)
Net revenue	6.1	22,471	21,609
Other income	6.2	75	141
Raw materials, consumables and services	6.3	(13,967)	(13,261)
Personnel expenses	6.4	(3,749)	(3,550)
Amortisation, depreciation and impairments	6.6	(1,693)	(1,587)
Total other expenses		(19,409)	(18,398)
Operating profit		3,137	3,352
Interest income	11.1	62	72
Interest expenses	11.1	(493)	(468)
Other net finance income/(expenses)	11.1	(64)	(123)
Net finance expenses		(495)	(519)
Share of profit of associates and joint ventures	10.3	210	75
Profit before income tax		2,852	2,908
Income tax expense	12.1	(757)	(755)
Profit		2,095	2,153
Attributable to:			
Shareholders of Heineken Holding N.V. (net profit)		961	977
Non-controlling interests in Heineken N.V.		942	958
Non-controlling interests in Heineken N.V. group companies		192	218
Profit		2,095	2,153
Weighted average number of shares** – basic	6.7	288,030,168	288,030,168
Weighted average number of shares** – diluted	6.7	288,030,168	288,030,168
Basic earnings per share** (€)	6.7	3.34	3.39
Diluted earnings per share** (€)	6.7	3.34	3.39

*Restated to reflect the change in accounting policy on Revenue from Contracts with Customers (IFRS 15). Refer to note 4 for further details.
 ** In 2017 this applied to ordinary shares.

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

	Note	2018	2017
For the year ended 31 December			
In millions of €			
Profit		2,095	2,153
Other comprehensive income, net of tax:			
Items that will not be reclassified to profit or loss:			
Remeasurement of post-retirement obligations	12.3	221	64
Net change in fair value through OCI investments*	12.3	11	—
Items that may be subsequently reclassified to profit or loss:			
Currency translation differences	12.3	(100)	(1,485)
Reclassification of currency translation differences to profit or loss	12.3	—	59
Change in fair value of net investment hedges	12.3	(3)	26
Change in fair value of cash flow hedges	12.3	(67)	109
Cash flow hedges reclassified to profit or loss	12.3	(77)	(3)
Net change in fair value through OCI investments*	12.3	—	68
Share of other comprehensive income of associates/joint ventures	12.3	(36)	(7)
Other comprehensive income, net of tax	12.3	(51)	(1,169)
Total comprehensive income		2,044	984
Attributable to:			
Shareholders of Heineken Holding N.V.		934	445
Non-controlling interests in Heineken N.V.		914	436
Non-controlling interests in Heineken N.V. group companies		196	103
Total comprehensive income		2,044	984

*In 2017 these investments were classified as available-for-sale investments.

Figure 15: Heineken Consolidated Income Statement 2018

Source: Heineken N.V. Annual Report 2017.⁵⁵

⁵⁵ Heineken N.V. Annual Report 2017. (2018).

Based on our research, we found out that there are some **descriptive analytics** of **Heineken N.V.** which presented on **What's Brewing Seminar 2016** in **Europe**. The figures of **descriptive analytics** are shown below:

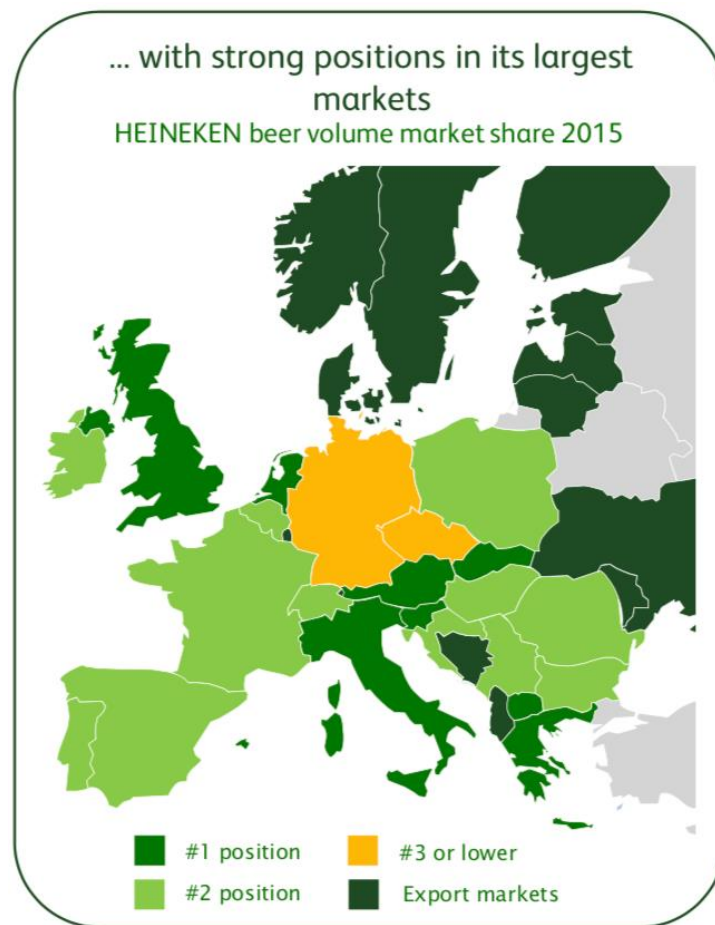


Figure 16: Heineken N.V. Beer Volume Market Share 2015

Source: What's Brewing Seminar HEINEKEN Europe, Rediscovering Growth.⁵⁶

⁵⁶ Orlowski, S. (2016). *What's Brewing Seminar HEINEKEN Europe, Rediscovering Growth*.

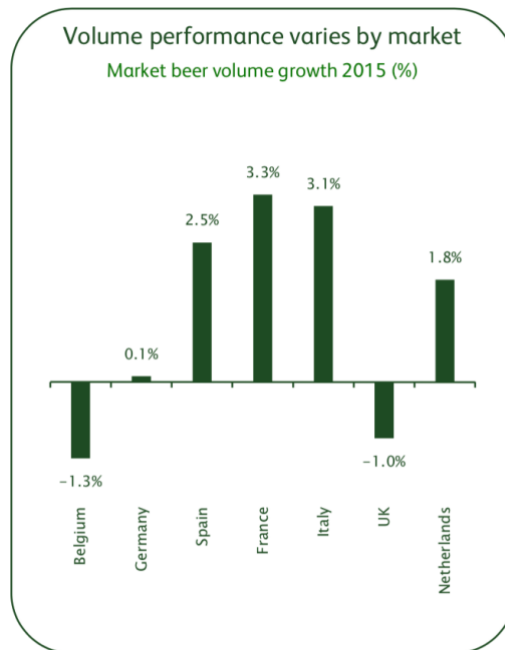


Figure 17: Heineken N.V. Master Beer Volume Growth 2015

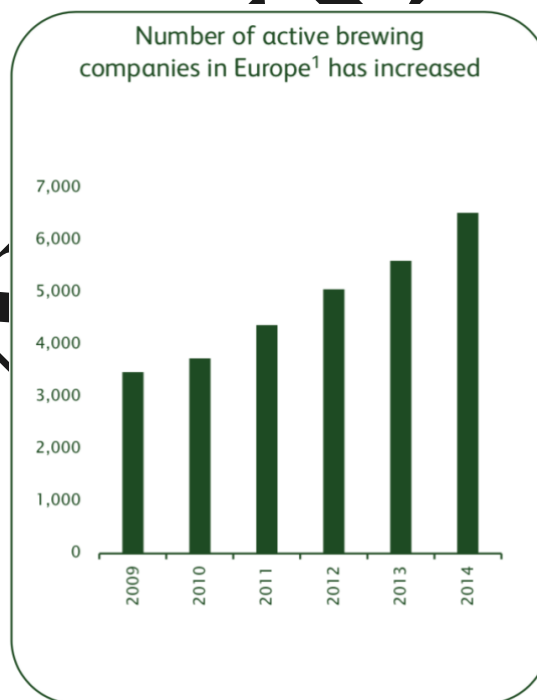


Figure 18: Active Brewing Companies in Europe from 2009 to 2014

Source: What's Brewing Seminar HEINEKEN Europe, Rediscovering Growth.⁵⁷

⁵⁷ Orłowski, S. (2016). *What's Brewing Seminar HEINEKEN Europe, Rediscovering Growth*.

4.2.4. Predictive Analytics

Heineken N.V. has been utilizing various tools to predict consumer **point of sales patterns** based on its insights such as **CPFR (Collaborative Planning , Forecasting and Replenishment)**, **customer stock level, sell-in vs sell-out data**.⁵⁸

By using the actionable insights gathered by **Heineken N.V.** over the years, the company can better in managing **vendors** by forecasting their **inventory**. The company will be able to keep up with the **rapid changes** or **demand** of the market such as **promoting a new trend of beer taste**.

For example, **Heineken N.V.** predicted the **favourable drinks** and released more of the drinks during **Chinese New Year, Christmas, Oktoberfest and FIFA** to better **targeting** the intended consumers. It can help **Heineken N.V.** to increase their **sales profitability**.

For **2019, Heineken N.V.** predicts the following aspects to be happened:

- Constant cost management and productivity initiatives
- Increase of logistic cost per hectolitre on a regular basis
- Outstanding revenues or gross sales growth driven by premiumisation
- Unpredictable changes of economic circumstances

Also anticipated the following:

Beia: Operating profit

- An operative tax rate (beia) between 27% and 28% (2018: 26.4%)
- Capital expenditures associated with equipment, property and facilities around €2 billion Euro (2018: €1.9 billion Euro)
- A standard interest rate (beia) coherent with 2018 (2018: 3.2%)

Source: Heineken Holding N.V. 2018 Annual Report.⁵⁹

⁵⁸ Rasmussens, K. (2017). *Crunching Big Data into Actionable Insights*.

⁵⁹ Heineken Holding N.V. 2018 Annual Report. (2019).

Heineken N.V. also used data such as **population density**, **regional per capita income** to determine **where** to and **which** type of beer might having a higher sales than others. **Heineken N.V.** can predict the **customers' habit** and **determine what to promote** next to the consumers.

On the other hand, **Heineken N.V.** is working with **Walmart** on a pilot project with **Shopperception**. This program helped **Heineken N.V.** to collect a tremendous amount of data about how **Heineken N.V. products** left the store. Importantly, brewers and retailers can evaluate all the data gathered to identify the customers who buy **Heineken drinks** as well what could be the best place and time to sell beer in stores.⁶⁰

Based on our research, we found out that there are some **predictive analytics** of **Heineken N.V.** which presented on **What's Brewing Seminar 2016** in **Europe**. The figures of **predictive analytics** are shown below

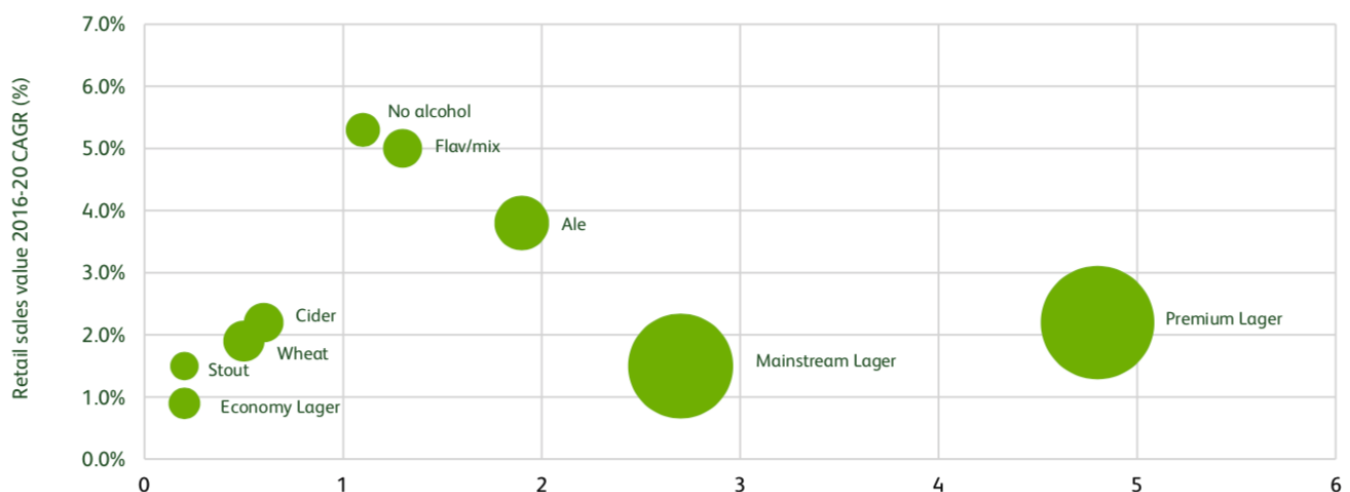


Figure 19: Retail Sales Value 2016-2020 Growth (EUR Billion)

As shown in **Figure 16**, it was the expected growth by category in which the **bubbles** represent **current category size** in **EUR billion**. The **interpretation** of the figure above is listed below:

- (1) European retail sales value **CAGR (Compound Annual Growth Rate)**
- (2) Speciality categories show the highest growth percentages
- (3) Premium Lager expected to generate the largest contribution in absolute value.

Source: What's Brewing Seminar HEINEKEN Europe, Rediscovering Growth.⁶¹

⁶⁰ Marr, B. (2019). *The Incredible Ways Heineken Uses Big Data, The Internet of Things And Artificial Intelligence (AI)*.

⁶¹ Orłowski, S. (2016). *What's Brewing Seminar HEINEKEN Europe, Rediscovering Growth*.

4.2.5. Prescriptive Analytics

Based on the descriptive and predictive analytics, **Heineken N.V.** is able to come out with better tailored solution for the company to take action on to improve its **sales revenue**. According to **Orlowski**, the **President of Heineken N.V. in Europe**, **Star Pubs & Bars** are strategically important to be targeted on in the **UK** as shown in **Figure 17** below.

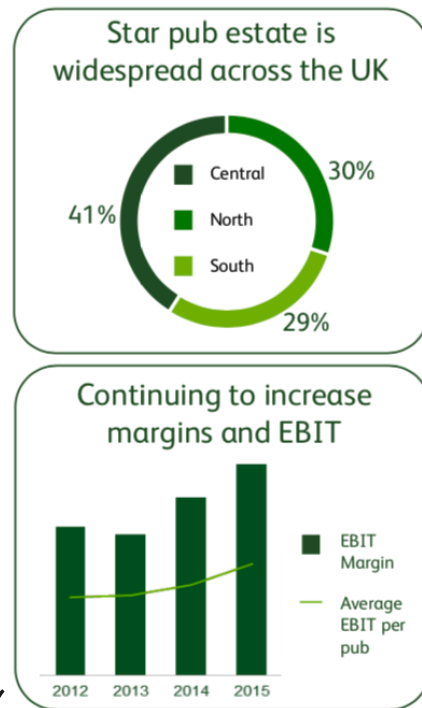


Figure 20: Analytical Information of Heineken N.V. 2015

In addition, **figure 17** indicates that the sales activities in **UK** delivered sustainable and attractive profit margin and cash return to **Heineken N.V.** company. Therefore, **Heineken N.V.** planned to unite with on trade brewing operations and to integrate unique platform for seeding innovations to increase profit of its company.

Moreover, **Heineken N.V.** wanted to produce more **commercial brewing operations** to roll out **innovations** quickly in **selected markets** to secure access to markets and to crease **consumer proximity**. It also will be more **reliable** for the company if they told a competitive advantage by expanding quicker than other competitors.

Source: What's Brewing Seminar HEINEKEN Europe, Rediscovering Growth.⁶²

⁶² Orlowski, S. (2016). *What's Brewing Seminar HEINEKEN Europe, Rediscovering Growth*.

4.3. Impact of Implementation of Business Analytics Solution for Heineken N.V.

- **SCM system** achieved **50% reduction** in the **lead-time** from **order** to **delivery** and **10% increase** in sales, and also **generated order** and **replenishment recommendations** for individual **Heineken distributors** based on criteria such as **past sales performances**, **seasonal trends** and **geography**.⁶³
- **HOPS** allows the **parent company** to produce the beer **closer to the time** when they need to deliver it, so the customers can faster in receiving their **fresh products**. Based on the results, **monthly forecasting** via the **HOPS** is much **more efficient** and **accurate**. In addition, **Heineken N.V.'s distributors** manage the transportation **weekly**, rather than **monthly** to better managing the heavy tasks especially for the **depletion** and **replenishment forecasting**. **Weekly updates** make it possible for **Heineken brewers** to adjust production in response to **updated forecasts**.⁶⁴
- **Jeans** application enables the **sales employees** to obtain all the **operational information** such as the distributors' **warehouse stock balance**, **outlet log files** and **number of visits** on their **mobile devices**. **Jeans** can also shows the **results to date** and **control system** at the same time. Moreover, it not only reduced **processing time** but also enabled **employers** to calculate **KPI (Key Performance Indicator)** of **Heineken employees** and **distribution companies** through the internet.⁶⁵ Therefore, **Jeans application** can take control of the whole **chain of sales** and collect the **necessary information** when the intended user is verifying on **current orders**, **contracts**, **cash flow** of **logistics** etc.⁶⁶
- The **online CRM system** significantly simplified workload of **Heineken employees** in the fields of **sales**, **marketing** and **customer services** in which all work on the **cloud-based platform**.^{67 68}
- **Distributor Management System (DMS)** has the ability to allow the company to leverage its business to fulfil the **FMCG (Fast Moving Consumer Goods)**, **CPG (Consumer Packages Goods)** and **distribution business challenges and demands**, which resulted in improving cost

⁶³ Essays24.com. (2019). *Heineken Hops (Operational Planning System)*.

⁶⁴ Supply & Demand Chain Executive. (2001). *Efficiency on Tap*.

⁶⁵ Ferguson, T. (2010). *How Heineken and Hillarys Blinds Are Getting More Out of Business Data*.

⁶⁶ Firstbit.ae. (2015). *HEINEKEN Russia CIO Shared the Details of the SFA Project Made in*

⁶⁷ Millennium. (2016). *Introduction of Online CRM for Heineken At the CRM Conference - Millennium*.

⁶⁸ Avanade.com. (2015). *HEINEKEN - CRM Case Study | Avanade Malaysia*.

effectiveness and increasing **profitability**.⁶⁹ It also enabled **seamless tracking** and **enhanced clarity**. Particularly, **DMS** provides **end-to-end coverage** of **distributors' operations**, **real-time reporting**, with **better visibility** and **tracking of stocks**. These aforementioned features drive the **decision making process** especially the **key leaders** within the organization can be better in managing the operations.⁷⁰ The **sales data** can be integrated into the **data warehouse** to further analyse all the **Sell In** and **Sell Out transaction**, allowing **Heineken N.V.** to have **more visibility** of the **market coverage** and **market shares** to identify **where** and **who** the **distributor** selling to. **DMS** is also able to **automatically** apply the **complicated discount and promotion scheme** that involve **distributor**, **channels**, **retailers** across the whole **distribution network**, which means it can communicate **promotions** and **offers** to the **sales team** more effectively, granting customers **better deals** and increasing **sales** of the company. In addition, **promotional items** that are setup on the system is immediately reflected on the **Mobile Sales and Order Taking** for the customers in **real-time**, which improved the **customer user-experience**.⁷¹

- **Heineken N.V.** has to adopt a better **decision-support tool** which called **AIMMS**, a powerful **Business Intelligence** tool that provides **cloud-based solution**, and supports **optimization**. It allows the company to easily optimize **business processes**, manage its investments, study **production capacity**, validate **data for each country**, and structuring and gathering data. ⁷²
- **Heineken N.V.** and **Walmart** are working together on a pilot project with **Shopperception** company. This program helped **Heineken N.V.** and **Walmart** to collect a tremendous amount of data about how **Heineken N.V. products** left the store. Importantly, brewers and retailers can evaluate all the data gathered to identify the customers who buy **Heineken drinks** as well what could be the best place and time to sell beer in stores.⁷³
- **Heineken N.V.** has created **various partnerships** with **Facebook** and **Google** since **Heineken N.V.** has almost **24 millions fans** on **Facebook**. The company is provided with **a lot of data** of its customers, and the data can be utilized to develop **real-time events** especially to personalize **marketing experiences**. ⁷⁴

⁶⁹ Powercomp.com.my. (n.d.). *Distribution Management System - DMS*.

⁷⁰ Heineken.listedcompany.com. (2019). *Heineken A New Era*.

⁷¹ Croesus.com.my. (n.d.). *SAP Distribution Management System*.

⁷² Meijer, K. (2019). *Modeling Brewing Capacity to Drive Cost Savings at HEINEKEN*.

⁷³ Marr, B. (2019). *The Incredible Ways Heineken Uses Big Data, The Internet of Things And Artificial Intelligence (AI)*.

⁷⁴ Rijmenam, M. (2015). *How Heineken Interacts With Customers Using Big Data*.

- **Microsoft Azure**, a **first-class cloud platform** has a feature named **Azure Content Delivery Network** which enables to make available of **Heineken N.V. digital content** much quicker and reliable to **10.5 million consumers** across the globe.⁷⁵
- In the annual event of **Heineken City Polo** in 2019, with the help of **Oracle**, a chatbot was developed to assist people if they have **inquiries** or **problems** attending the event organized by **Heineken N.V.** company such as answering **frequently asked questions** by event participants.⁷⁶

As a result, **Heineken N.V.** volume raised **7.7%**, its **greatest performance** over nine markets currently sell over **1 million hectolitres** of **Heineken N.V. brands**.

Remarkably, volume elevated two digits in various countries like **South Africa, Nigeria, Brazil, Russia, Poland, UK, Mexico, Germany**, especially **China**. The **Heineken N.V. brands** also grew healthily across **European markets** from **Heineken N.V. Original**. To be noted, **Heineken N.V.** is now expanded to over **38 markets** and planning to **roll out** in 2019.⁷⁷

⁷⁵ Tracy, P. (2016). *Microsoft Azure Provides Heineken Computing Power For Global Promotions*.

⁷⁶ McDonald, C. (2018). *Heineken and Oracle Create Chatbot Helper for Polo Events*.

⁷⁷ Theheinekencompany.com. (2019). *Heineken N.V. Reports 2018 Full Year Results*.

5. Recommendations of BA or BI Solutions

Throughout the world, **Heineken N.V. brands** have been revolving by the **demand of market**. The company has to capitalize on this opportunity to **continuously** enhance and optimize their operations to ensure **stakeholder satisfaction**.

Digitalization is still the trend nowadays, **Heineken N.V.** can leverage its software and services to transform data into **actionable intelligence** that informs an organization's **strategic** and **tactical business decisions**.

In **What's Brewing Seminar 2015**, **Heineken N.V.** was pleased because of the **HOPS (Heineken Operational Planning System)** enabled to optimize the planning system and made seamless distribution of **Heineken N.V. products** to over **190 countries**. Importantly, the **time for arrangement of order deliver** was tremendously cut down.

Based on our research, **Heineken N.V.** can procure services from **Targit** company, which provides **business intelligence toolsets** such as **SCM** solutions to company mainly emphasizes on distribution of products. **Targit** company provides **data visualization** to easily show the important insights generated after analysing tons of raw data. It can allow the data to tell its own story in a discussion or meeting within **Heineken N.V.** company. Importantly, it also has user-friendly **integrated dashboard** to allow workers to conveniently access from mobile devices and desktop. **Targit** company also provides **data warehouse** and **data discovery** to analyse integrated millions of data sets including **big data depositories**, **Excel spreadsheets**, and **survey forms**.⁷⁸

We believe that **Heineken N.V.** can tremendously boost up their sales if the company fully embraces **digitalization** and the **heavy usage of technologies**. It will lead **Heineken N.V.** further swiftly in the business world. It will also possibly open up new possibilities for **Heineken N.V.** provided that the company has the expertise to ensure full consumption of **business analytics solutions**.

⁷⁸ TARGIT. (2019). *Supply Chain Management End-to-end Visibility*.

6. Conclusion

Through the entire report, we have gone through a significant journey of examining not **only theoretical** but also the **intriguing business analytics information** of **Heineken N.V.** company.

Firstly, we introduced the background of **Heineken N.V.** company, the operational process in which **from Barley to Bar** and its company **shareholding structure** in **Malaysia**. In addition, we discussed **Heineken N.V.** business organization in terms of **business framework, priorities, and customer targeting and segmentation**.

Moreover, we explained the **type of information systems used** in **Heineken N.V.** company along with its **functionalities** and **benefits**. We also studied the **SWOT Analysis** of the company in details to have a clear understanding of its business situation in **2018**. Furthermore, we researched the challenges faced by **Heineken N.V.** and the **strategic solutions** the company applied to crack the issues.

Additionally, we examined the **implementation of business analytics or business intelligence** solutions which were utilized by **Heineken N.V.** to resolve its **challenges encountered** or to further improve its business operations. Particularly, the **procurement of external services** to improve its infrastructure to be **efficient** and **reliable**. Besides, we investigated the **impact** of implementation of business analytics solution for **Heineken N.V.** company.

Last but not least, we provided business analytics **recommendations** for **Heineken N.V.** in which the company can execute to enhance its company effectiveness with highly functional infrastructure to maintain its competitiveness in the markets.

This report helped to developed a **clearer understanding** of how **Heineken N.V.** fully operates its company especially the learning journey regarding **business analytics**. All of the information in this report is primarily obtained by researching through the internet.

7. References

- Árpád, C. (2016). *Heineken*. [online] Fusionrsfa. Available at: <http://fusionrsfa.eu/portfolio-item/heineken/> [Accessed 12 Apr. 2019].
- Avanade.com. (2015). *HEINEKEN - CRM Case Study / Avanade Malaysia*. [online] Available at: <https://www.avanade.com/ms-my/clients/heineken> [Accessed 10 Apr. 2019].
- Beal, V. (n.d.). *What is ETL (Extract, Transform, Load)?* [online] Available at: <https://www.webopedia.com/TERM/E/ETL.html> [Accessed 10 Apr. 2019].
- Bloomberg.com. (n.d.). *GAPL Pte Ltd*. [online] Available at: <https://www.bloomberg.com/profiles/companies/0615941D:SP-gapl-pte-ltd> [Accessed 11 Apr. 2019].
- Cooter, M. (2019). *Heineken Speeds Up Supply Chain With Move to Private Cloud*. [online] ComputerworldUK. Available at: <https://www.computerworlduk.com/it-vendors/heineken-speeds-up-supply-chain-with-move-to-private-cloud-3238951/> [Accessed 12 Apr. 2019].
- Croesus.com.my. (n.d.). *SAP Distribution Management System / Croesus IT Solutions Sdn Bhd / GST SAP BUSINESS ONE SOFTWARE*. [online] Available at: <http://www.croesus.com.my/solutions/croesus-sap-solutions/sap-distribution-management-system/> [Accessed 9 Apr. 2019].
- Daniel, T. (2011). *An Inside Look At the "Heineken Experience"*. [online] Cbsnews.com. Available at: <https://www.cbsnews.com/pictures/an-inside-look-at-the-heineken-experience/2/> [Accessed 9 Apr. 2019].
- Eckerle, E. (n.d.). *Heineken Plans Book*. [online] Available at: <https://www.ellieeckerle.com/heineken-plans-book> [Accessed 8 Apr. 2019].
- Essays24.com. (2019). *Heineken Hops (Operational Planning System) - Book Report*. [online] Available at: <https://www.essays24.com/essay/Heineken-Hops-Operational-Planning-System/12913.html> [Accessed 11 Apr. 2019].
- Ferguson, T. (2010). *How Heineken and Hillarys Blinds Are Getting More Out of Business Data / ZDNet*. [online] ZDNet. Available at: <https://www.zdnet.com/article/how-heineken-and-hillarys-blinds-are-getting-more-out-of-business-data/> [Accessed 8 Apr. 2019].
- Firstbit.ae. (2015). *HEINEKEN Russia CIO Shared the Details of the SFA Project Made in Conjunction With First BIT*. [online] Available at: <https://firstbit.ae/about/news/1106/> [Accessed 13 Apr. 2019].

- Heinekencollection.com. (n.d.). *About : Heineken Collection Foundation*. [online] Available at: <https://heinekencollection.com/en/about> [Accessed 10 Apr. 2019].
- Heineken. (2018). *Heineken / UEFA Champions League / Unmissable*. [online] Available at: <https://www.youtube.com/watch?v=fcoSX4XHra4> [Accessed 9 Apr. 2019].
- Heineken Holding N.V. 2018 Annual Report. (2019). [pdf]. Available at: <https://www.theheinekencompany.com/Information-Centre> [Accessed 9 Apr. 2019].
- Heineken.listedcompany.com. (2019). *Heineken A New Era*. [online] Available at: <https://heineken.listedcompany.com/misc/ar/ar2016.pdf> [Accessed 10 Apr. 2019].
- Heineken Malaysia Berhad. (n.d.). *Shareholding Structure - Heineken Malaysia Berhad*. [online] Available at: <https://www.heinekenmalaysia.com/shareholding/> [Accessed 8 Apr. 2019].
- Heineken N.V. Annual Report 2017. (2018). [pdf]. Available at: <https://www.theheinekencompany.com/Information-Centre> [Accessed 9 Apr. 2019].
- Heineken N.V. SWOT Analysis (2018) Heineken N.V. SWOT Analysis, pp. 1–8. Available at: <http://search.ebscohost.com.ezproxy.intlib.edu.my/2048/login.aspx?direct=true&db=bth&AN=132423116&site=ehost-live> (Accessed: 3 April 2019).
- Jacki, B. (2018). *Case Study: Why Everyone Wants to Work for Heineken*. [online] Supply Management. Available at: <https://www.cips.org/en-SG/supply-management/analysis/2018/march/case-study-why-everyone-wants-to-work-for-heineken/> [Accessed 13 Apr. 2019].
- Leonie, R. (2017). *Four challenges Heineken Needs to Overcome to Make Its Non-alcoholic Beer a Success*. [online] Marketing Week. Available at: <https://www.marketingweek.com/2017/05/19/heineken-non-alcoholic-beer/> [Accessed 9 Apr. 2019].
- Mainwaring, S. (2017). *3 Lessons From Heineken On How to Run A Purpose-Driven Business*. [online] Available at: <https://www.forbes.com/sites/simonmainwaring/2017/03/06/lessons-heineken-how-run-purpose-driven-business/#18034aca6441> [Accessed 9 Apr. 2019].
- Marr, B. (2019). *The Incredible Ways Heineken Uses Big Data, The Internet of Things And Artificial Intelligence (AI)*. [online] Available at: <https://www.bernardmarr.com/default.asp?contentID=1210> [Accessed 9 Apr. 2019].
- Maytech Blog. (2018). *Drinking to the Future with a Beer and Big Data | Maytech Blog*. [online] Available at: <https://www.maytech.net/blog/drinking-to-the-future-with-a-beer-and-big-data/> [Accessed 9 Apr. 2019].

- MC Crenergy. (2019). *Warehouse Inventory & Distribution Management System in Malaysia - MC Crenergy*. [online] Available at: <http://www.crenergy.com.my/thermes-distribution-management-system/> [Accessed 10 Apr. 2019].
- McDonald, C. (2018). *Heineken and Oracle Create Chatbot Helper for Polo Events*. [online] ComputerWeekly. Available at: <https://www.computerweekly.com/news/252447644/Heineken-and-Oracle-create-chatbot-helper-for-polo-events> [Accessed 12 Apr. 2019].
- McKenzie, D. (2016). *HEINEKEN International: Winning Efficiencies Through a Cross-Continent Data Migration*. [pdf] Available at: <http://docplayer.net/9784726-Heineken-international-winning-efficiencies-through-a-cross-continent-data-migration.html> [Accessed 9 Apr. 2019].
- Meijer, K. (2019). *Modeling Brewing Capacity to Drive Cost Savings at HEINEKEN*. [online] AIMMS SC Blog. Available at: <https://supplychainblog.aimms.com/2019/01/28/modeling-brewing-capacity-to-drive-cost-savings-at-heineken/> [Accessed 9 Apr. 2019].
- Millennium. (2016). *Introduction of Online CRM for Heineken At the CRM Conference - Millennium*. [online] Available at: <https://www.millennium-itsolutions.com/novinky/at-the-crm-conference-in-prague-we-introduced-the-heineken-online-crm-solution-for-the-very-first-time/> [Accessed 10 Apr. 2019].
- Orlowski, S. (2016). *What's Brewing Seminar HEINEKEN Europe, Rediscovering Growth*. [pdf] Available at: <https://www.theheinekencompany.com/Information-Centre?Skip=0&Take=10> [Accessed 11 Apr. 2019].
- Piccinich, M. (2018). *Heineken Leverages Humor and Heartbreak*. [online] Available at: <https://insights.digitalmediasolutions.com/articles/heineken-leverages-humor-and-heartbreak> [Accessed 10 Apr. 2019].
- Powercomp.com.my. (n.d.). *Distribution Management System - DMS*. [online] Available at: <http://www.powercomp.com.my/dms.html> [Accessed 9 Apr. 2019].
- Rasmussens, K. (2017). *Crunching Big Data into Actionable Insights*. [online] Available at: https://www.eyeon.nl/wp-content/uploads/2017/10/Crunching-Big-Data-into-actionable-insights_print-version1676-1.pdf [Accessed 8 Apr. 2019].
- Referenceforbusiness.com. (n.d.). *Heineken N.V. - Company Profile, Information, Business Description, History, Background Information on Heineken N.V.*. [online] Available at: <https://www.referenceforbusiness.com/history2/2/Heineken-N-V.html> [Accessed 9 Apr. 2019].

- Rijmenam, M. (2015). *How Heineken Interacts With Customers Using Big Data*. [online] Available at: <https://datafloq.com/read/how-heineken-interacts-with-customers-using-big-da/384> [Accessed 11 Apr. 2019].
- Rouse, M. (2018). *What is OLAP (online analytical processing)?* [online] Available at: <https://searchdatamanagement.techtarget.com/definition/OLAP> [Accessed 8 Apr. 2019].
- Supply & Demand Chain Executive. (2001). *Efficiency on Tap*. [online] Available at: <https://www.sdexec.com/home/article/10353105/efficiency-on-tap> [Accessed 11 Apr. 2019].
- TARGIT. (2019). *Supply Chain Management End-to-end Visibility*. [online] Available at: <https://www.targit.com/en/solutions/by-role/supply-chain-management> [Accessed 12 Apr. 2019].
- Techopedia.com. (n.d.). *What is Sales Force Automation (SFA)?* [online] Available at: <https://www.techopedia.com/definition/1592/sales-force-automation-sfa> [Accessed 9 Apr. 2019].
- Theheinekencompany.com. (2019). *Heineken N.V. Reports 2018 Full Year Results*. [online] Available at: <https://www.theheinekencompany.com/Media/Media-Releases/Press-releases/2019/02/2234675> [Accessed 8 Apr. 2019].
- Theheinekencompany.com. (2019). *HEINEKEN renews UEFA Champions League sponsorship*. [online] Available at: <https://www.theheinekencompany.com/Media/Media-Releases/Press-releases/2017/02/2075118> [Accessed 9 Apr. 2019].
- Theheinekencompany.com. (2019). *The HEINEKEN Company - Partnerships*. [online] Available at: <https://www.theheinekencompany.com/Brands/Partnerships> [Accessed 9 Apr. 2019].
- Theheinekencompany.com. (2019). *The HEINEKEN Company – Risk Management*. [online] Available at: <https://www.theheinekencompany.com/Investors/Financial-Information/Risk-Management> [Accessed 9 Apr. 2019].
- Tracy, P. (2016). *Microsoft Azure Provides Heineken Computing Power For Global Promotions*. [online] RCR Wireless News. Available at: <https://www.rcrwireless.com/20161014/big-data-analytics/microsoft-azure-heineken-tag31-tag99> [Accessed 9 Apr. 2019].

8. Individual Reflective Report

8.1. Chung Yee Han

From my perspective, this **business analytics research assignment** was so enjoyable yet challenging for me which I wished there are more time for me to discover more information especially reading excellent **academic journals** on certain **academic journals publication** websites such as **Springer, KDnuggets, ScienceDirect, Elsevier**, etc.

Throughout the process of researching, I found that the contents are **incredibly meaningful** to me. The interest I have on this particular business analytics subject is the **key motivation** for me to researching more about both the **theoretical** and **technical knowledge** of **Computer Science** related subject.

This **business analytics assignment** has helped me to build a solid fundamental knowledge regarding **business intelligence, business analytics, machine learning, automation, Internet of Things** that connect to the cloud-based platform. With these being said, I am clearer of what to focus on in the future, such as the **job position** and **role** in a company. I may be a lecturer as well, before doing that, I might pursue **Master** or **PhD**. Who knows, right? **Life is never easy**.

In contrast, I personally felt that I have **insufficient time** of accomplishing this assignment due to **personal inefficiency** especially on **time-management**. In addition, this semester has been a roller-coaster to me and I have learnt some lessons. Particularly, now I am more certain of what matters the most. Therefore, **adjustments** have to be made in order for me to be **mentally** and **physically** prepared for the **next short semester**.

On the other hand, to be skillful in this particular field, there are more awaits me to learn. For instance, **Statistical Learning with R, Machine Learning in Python, Pattern Recognition and Machine Learning**, etc. in which also have been intriguing me to knowing them more. As far as I know, to survive in this field, there are sacrifices to be made.

Lastly, I would like to express my **gratitude** towards my group members, **Ee Jian Pei** and **Jason Teh** who have contributed to the assignment to **make it a success**. What matters the most is the **adventure** we have gone through especially the **lesson** we have learnt from the past few weeks.

8.2. Ee Jian Pei

By completing this assignment, I have clear understanding about Heineken N.V. and how it become the globally renowned multinational brewing company nowadays. Before that, I just only know Heineken just a brand of the beer and doesn't even know where it from. After I complete this assignment, I know that Heineken N.V. is a well-known brewing company with more than 150 years of experience which is established by the Heineken Family in Amsterdam, the Netherlands by Gerard Adriaan Heineken. And now, Heineken has become the one of the leading beer manufacturers in the world. Since I am the one who focusing on the question 2, I know well about the information system which using in Heineken to carry out the supply chain management, customer relationship management and also the decision support management.

On top of that, I had learned about the business intelligence and business analytics solution during the assignment. In Heineken, they use the business intelligence solution to analysis the data from the data warehouse in order to present the business information and also the predictive views of the business operation in supporting a good decision making. While, Heineken use the business analytics to the lack of sales, product development and marketing strategies etc. Business analytics can Heineken predict what will happen in future, and give the suggestions as well as the consequences of the suggestions in order to select the best solution to achieve the business objective. Therefore, both business intelligence and business analytics solution are very significant for a company in order to lead the company to better decision making.

In a nutshell, I would like to thank my groupmates, Chun Yee Han and Jason which give me a lot of supporting by completing this assignment. Even I faced problems in this assignment, they will help and teach me how to complete it. Finally, I feel honour to have this opportunity to work with them and learn the knowledge that can bring me a lot of advantage in the future.

8.3. Jason Teh

After doing this assignment, I have a deeper understand about Heineken N.V.. Before this, I will hang out with my friend when we both are free to have a drink in the lounge or cafe. I always having beer with my friends, but I never try to know how the company works. Now, I have known more about Heineken such as its background, products, and services. Besides, after I finish this assignment, I had more understand what the business analytics of this company is since I am more focusing on doing the question 4. The Heineken company is a well-known company in the beer industry, but also facing a lot of challenge. By the way, Heineken can handle all the problem well with an experienced management and excellent leader.

Furthermore, I have learned big data is the most important for a company. Big data can help a company to do its business decision making. A right decision will lead the company to success but a wrong decision might send the company to the graves. Heineken use its big data well so the company can predict the further ways to improve its company sales by the historical data they collected. Heineken mined those data from different sources such as database, data warehouses or other information repositories and analyze it. The result will influences the next step they make but Heineken N.V. has analyze it well and make the best solution to solve its problem such as the rise of e-commerce distribution, lacks of sales, loyal customer lost etc.

Last but not least, by doing this assignment , I would like to appreciate to my teammate, Chung Yee Han and Ee Jian Pei that supported me all the time. They gave me a lot of assist so my work can complete it well. Others than that, I also would like to thanks to the contribution of Yee Han that keep integrate our assignment and make it more perfect. I have really gained some knowledge that I have never learned before.

9. Task Distribution Table

Members	Achievements
Chung Yee Han	<ul style="list-style-type: none"> • Contributed to all parts of the report. • Enhanced the overall quality of the report in term of content. • Bolded all the important words for the contents. • Responsible for filtering, proofreading and paraphrasing the entire business analytics report for multiple times. • Designed and created presentation poster in A4 size utilizing Adobe Photoshop application. • Provided guidance to all of the members on finding reliable resources and organized the report in a structured-manner. • Helped other members to fulfil the core requirements of the report such as further researching on parts that are lack of content. • Allocated tasks to each individual member.
Ee Jian Pei	<ul style="list-style-type: none"> • Bolded all the important words for the contents • Contributed in terms of content <ul style="list-style-type: none"> ○ 2. Information Systems in Heineken N.V. ○ 4. Big Data/Business Intelligence/Business Analytics/Data Mining for Heineken N.V. ○ 5. Recommendations of BA or BI Solutions. ○ 6. Conclusion ○ 8. Individual Reflective Report • Responsible for filtering, proofreading and paraphrasing <ul style="list-style-type: none"> ○ 2. Information Systems in Heineken N.V. ○ 4. Big Data/Business Intelligence/Business Analytics/Data Mining for Heineken N.V. ○ 5. Recommendations of BA or BI Solutions. ○ 6. Conclusion • Helped other members to fulfil the core requirements of the report such as further researching on parts that are lack of content.

Jason Teh	<ul style="list-style-type: none"> • Bolded all the important words for the contents • Contributed in terms of content <ul style="list-style-type: none"> ○ 4. Big Data/Business Intelligence/Business Analytics/Data Mining for Heineken N.V. ○ 5. Recommendations of BA or BI Solutions. ○ 6. Conclusion ○ 7. References ○ 8. Individual Reflective Report • Responsible for filtering, proofreading and paraphrasing <ul style="list-style-type: none"> ○ 4. Big Data/Business Intelligence/Business Analytics/Data Mining for Heineken N.V. ○ 5. Recommendations of BA or BI Solutions. ○ 6. Conclusion • Helped other members to fulfil the core requirements of the report such as further researching on parts that are lack of content.
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10. Appendix

10.1. Presentation Poster

BUSINESS ANALYTICS REPORT

By Chung Yee Han, Ee Jian Pei, Jason Teh

HEINEKEN

Introduction

Heineken N.V. was established in 1864 by the Heineken Family in Amsterdam, the Netherlands by Gerard Adriaan Heineken. Until today, Heineken N.V. is still one of the leading beer manufacturers.

Challenges Faced

- ❖ File Version Management
 - ◆ Difficult to identify the latest file version
 - ◆ Unable to determine canning capacity of regions
 - ◆ Troublesome accumulation process of filelist
- ❖ Emerging of Distribution Channels
 - ◆ Appearance of procurement alliances
 - ◆ Rise of e-commerce platforms
 - ◆ Low preferential terms of trade
 - ◆ Negative operating margin
- ❖ Changing Consumer Preferences
 - ◆ Complicated behaviours or preferences
 - ◆ Frequent adjustment of beer categories
 - ◆ Continuous of huge investment

Impacts of BA Solutions

- ✦ Personalized marketing experiences
- ✦ Produced beer closer to the time need to deliver
- ✦ Fulfilled FMCG (Fast Moving Consumer Goods.)
- ✦ Fulfilled CPG (Consumer Packages Goods)
- ✦ Seamless tracking and enhanced clarity
- ✦ Analyzed consumer buying habits
- ✦ Achieved 50% reduction lead-time from order to delivery, 10% increase in sales

References

- [1] Ferguson, T. (2010). How Heineken and Hillarys Blinds Are Getting More Out of Business Data.
- [2] Croesus.com.my. (n.d.). SAP Distribution Management System.
- [3] Marr, B. (2019). The Incredible Ways Heineken Uses Big Data, The Internet of Things And Artificial Intelligence (AI).
- [4] Meijer, K. (2019). Modeling Breweing Capacity to Drive Cost Savings at HEINEKEN.
- [5] Supply & Demand Chain Executive. (2001). Efficiency on Tap.
- [6] Firstbit.ae. (2015). HEINEKEN Russia CIO Shared the Details of the SFA Project Made in....
- [7] Millennium. (2016). Introduction of Online CRM for Heineken At the CRM Conference

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This research was undertaken as part of Computer Science students at INTI International University. All of the information is solely presented for academic purposes.

Solutions

- ✦ AIMMS (Supply Chain)
 - ◆ Cloud-based platform
 - ◆ Optimization, Visualization, Management
 - ◆ Intuitive User-interface
- ✦ E-commerce (B2B & B2C)
 - ◆ Adopted innovative sales approach
 - ◆ Expanded to four regions (Eur, Amr, AP, Afc)
 - ◆ Developed joint business plans
 - ◆ Increased sales performance
- ✦ Heineken 0.0 Campaign
 - ◆ Invested to develop customer intelligence
 - ◆ Predicted and responded to future events
 - ◆ Adapted to rapid changing environment
 - ◆ Supplied low- and no-alcohol category

Types of BA Used in Solutions

- AIMMS (BI)
- Heineken 0.0 (Big Data)
- Hein.Oper.Plann.Syst. (SCM)
 - ◆ Faster collaboration with distributors
 - ◆ Reduce processing time
 - ◆ Improved management of logistics
 - ◆ Efficient and accurate forecasting
- Sales Force Automation (CRM)
 - ◆ Automated and streamlined sales inventory
 - ◆ Reduced processing time
 - ◆ Simplified workload such as marketing
- Distributor Management System
 - ◆ Improved cost effectiveness and profitability
 - ◆ Improve customer-experience
 - ◆ Real-time reporting and better visibility
 - ◆ Tracking of stocks

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10.2. Safe Assign Report



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Company (N.V. stands for Naamloze vennootschap) was established in 1864 by the Family in Amsterdam, the Netherlands by Gerard Adriaan. Until today, is still one of the leading beer manufacturers in the world.

has been running by the family for most of the operations. In the very beginning, the company built a very high reputation from its high-quality of beer production.

Notably, owns beverage wholesalers in certain parts of Europe, which means the company not only limited to handling beer, but also selling soft drinks to taverns and restaurants.

Its product portfolio includes beer, cider, soft drinks and other beverages. markets and sells its beer products under various regional, local and specialty brands such as Amstel, Desperados, Sol, Tiger, Tecate, Red Stripe, Krušovice and Birra Moretti, to mention a few. In addition, it merchandise and sell cider brands under Strongbow Apple Ciders, Orchard Thieves, Stassen, Bulmers, Old Mount and Blind Pig.

It primarily distributes and sells these products through its own wholesalers and pubs and through other third parties. **1 OWNS SUBSIDIARIES AND OPERATE ITS**