MSBA 301 Final Project

Performance Management Analysis on Supply Chain Department

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Executive Summary

In this paper, our group comprehensively analyzes Performance Management in a surveillance company named Hikvision. Established in 2001, Hikvision provides various products including digital video servers, video recorders and so on. After it is officially listed in Shenzhen Stock Exchange in China, it aims at international market, especially North America. Nowadays, it has reached more than $20 billion USD profit in 2018. However, Hikvision's Supply Chain Department faces serious challenge after it stepped into the US market. Therefore, our group is going to analyze the problems in its Supply Chain Department and try to set up KPIs to improve the performance in Supply Chain Department. Then, we will build up a mock-up Balanced Scorecard with specific metric to solve all the problem we've mentioned in Supply Chain Department. After proposing Balanced Scorecard, we will analyze the data based on Automation Tool to see how it helps Hikvision and provides suggestions to improve Performance Management. At the end of the paper, we are going to make a conclusion of how our Performance Management Plan would be helpful to Hikvision and how to start the implementation. Finally, we are going to gain the approval from Hikvision's management to implement our Performance Management Plan.

Overview on the Landscape of Company

Introduction

Our group decided to analyze Hikvision which is a developing surveillance camera company in the United States. We will focus on the Supply Chain Department as our project objective. Hikvision originally established in 2001 in Hangzhou, China. Aiming to be the leader of this industry, Hikvision provides various products such as digital video servers, digital video recorders, network video and so on. After officially listed on SME Board in Shenzhen Stock Exchange in China, Hikvision reached into the global market, especially in North America. USA branch was found in 2007 with three distributions and 300 employees. In September 2018, Hikvision reached more than $20 billion USD in the market capitalization with over 18,000 employees and 40 subsidiaries or shareholding companies over the world. The ultimate goal of Hikvision is to "Empower vision for the security and growth of the world", which is the company's vision stated on the official website. As to the mission statement, Hikvision aims to provide the best service and product quality to "explore innovative ways to better perceive and understand the world, to empower vision for decision-makers and practitioner, and work together to enhance safety and advance sustainable development of the world".

We summarized Hikvision's product strategy as the following two aspects: key features/differentiators and market demand. Hikvision's latest innovation in video image analytics systems improves the accuracy of detective technology by effectively avoiding false alarms. Moreover, the products are remarkable on movement detection, facial recognition, and behavioral analysis. As to market demand,

Hikvision provides multiple options to meet all the customer's need. Detailed information and guidance are posted online for every product including model introduction, the image sensor, lens and so on.

Hikvision aims to provide a high-quality service supporting by its professional team as its service strategy. According to historical data, there are 9,300 employees with more than $300 million investment was put in the R&D department in order to ensure the service quality.

Five Force Model Analysis

Here we use Five Force Model to analyze surveillance market and the competitors. Although there are increasing companies stepping into this industry within three decades, the industry still keeps a low threat of new entrants due to its high-standard technical barrier.

On the other hand, Hikvision has powerful bargaining power from its suppliers based on its powerful Supply Chain Department. The Supply Chain Department includes five main components: raw material suppliers, manufacturers, distributors, retailers and logistics. With the world-class reputation, Hikvision attracts large number of suppliers with relatively close relationship. Compared to other Supply Chain Department in similar companies, Hikvision gains competitive advantage from the suppliers on guaranteed quality and low cost. In sum, Hikvision's bargaining power from its suppliers is relatively high.

As to the threat of substitutes, Hikvision gain a powerful competitiveness in R&D compared to other competitors, which makes the competitors harder to take Hikvision's place. Hikvision retains stable large-scale clients such as banks and government.

Meanwhile, it gains a great bargaining power of buyers due to the increasing demand in the US. Surveillance products are one of the necessary approaches to protect public security. With great technology

development made on image processing, data transmission and real-time networking, huge potential demand is generating by individual security awareness on life security and property security. A research (pcmag.com, 2018) we found shows that there are more than 42% respondents willing to purchase home security products. And here SDM released a statistic data in June 2018 (see Appendix A) listing the top share of revenue comes from integrated non-residential systems. We can see that the security system integrated with non-residential system generated 34% and 42% share of revenue in 2017 and 2016, respectively. Security system applied with video surveillance generated 19% and 18% share of revenue in 2017 and 2016, respectively.

Hikvision also has relatively low threat on rivalry because of the scale economy and competitive strategy segmentation. A&S Magazine lists the revenue ranking on worldwide surveillance companies in 2016 (see Appendix B). It shows that Hikvision gained $4,624 million profit while Bosch, one of the strong competitors form German listing on the second, only made half profit as $2,146 million in the same year.

KPI Process Using BSI Framework

According to Deloitte's article titled *Performance Management in Supply Chain and Operations – Steering value chain activities towards exceptional performance,* it stated that "key performance (KPIs) are intended to structure the desired information in different dimensions such as customer service, costs, and assets." We would like to develop the KPIs for our three major problems existing in Hikvision's Supply Chain Department.

Inventory Problem in Supply Chain Management

The first problem we are going to discuss is inventory control in Supply Chain Management. Hikvision provides various types of products trying to meet customer's need. With such amount of product lines, it is a great challenge to track all the inventory on time. And it becomes worse when inventory keeps increasing. In this circumstance, extra inventory cost will be generated due to overstocked inventory, which will have a negative impact on Hikvision's cash flow.

Inventory control problem is mainly caused by three factors. The first one is inaccurate forecasting on demand, which will cause inventory to pile up. According our research, Hikvision applies Simple Moving Average Model to forecast demand. It means that the forecasted demand is calculated by average amount based on actual sales in a fixed period, mostly three months, which is not practical because seasonality is not taken into consideration. For example, the forecasted demand in January is estimated based on the actual sales from October to December. However, the actual sales in January is highly possible lower than we estimated because the last season is the most popular shopping quarter in a year.

The second factor we are concerned is the order policy. Hikvision applies "Make-to-Order" policy in the United States, which means Hikvision will deliver the product only if there is a placed order. Actually, it is a double-edged sword for inventory costs. "Make-to-Order" effectively reduces inventory cost and holding cost in the United States. However, it causes longer lead time because of oversea transportation. In brief, we think it would be better to hold inventory in a safety level in order to make quicker response to meet customer's needs.

Return policy is the last issue we discuss here. Hikvision accepts all returned items from the distributors. For those products are not sold in time from the distributors, Hikvision agrees to refund credit with discount. It is good to maintain a close relationship with distributors, but the holding cost from these unsold items will increase, which also impacts further demand forecasting.

Taking all the problems into consideration, our group sets up KPIs aiming to reasonably manage inventory with appropriate inventory turnover ratio. We expect to gain powerful global competitive advantage by optimizing inventory and sustain sufficient capital chain. Meanwhile, we try to build up Hikvision's brand image to enhance profitability and improve customer satisfaction.

Inventory accuracy is the prior KPI we think about to solve inventory problem because it also affects other KPIs. Supply Chain Department should count the errors on a quarterly basis by each product category and provide a comparison report with previous inventory data. Based on our research, we expect the accuracy rate would be better if it reaches 95%, which means the tolerance of error is 5 per 100 units. Threshold should be set to be 8%.

Inventory turnover ratio is also a significant KPI to effect supply chain performance. It is the ratio

of Cost of Goods Sold to average inventory in a fixed period. The ratio shows inventory turnover speed on both inventory liquidity and occupied capital amount. And it should be within a reasonable proportion in order to effectively employing capital fund and strongly ensure Hikvision's short-term solvency for consistently manufacture and operation. Therefore, the higher index we have, the lower inventory level we hold, which means the higher liquidity in Hikvision's capital fund and the faster convertibility from inventory into cash and account receivable. In short, high level inventory turnover ratio indicates strong demand while low level ratio suggests our products may not meet customers' need. Here we expect the ratio to reach 85% per quarter and the threshold is set to be 10%

The last KPI we discussed is order completion rate. Our group concludes two approaches to measure the performance. First approach is the cycle time. It is the time cost from preparing the order to delivery on a daily basis. In other words, smaller cycle time indicates stronger capability of order processing and order delivery, which enhance the brand image and competitiveness in the global market. Second approach is the fulfill rate. It is the forecasting capability of deciding how much inventory we are going to hold. Higher fulfill rate means more accuracy of demand forecasting. This way, we are capable of estimating inventory replenishment. Thus, we expect the fulfill rate to reach at least 90% per quarter and the threshold is set to be 12%.

Logistics Problem in Supply Chain Management

Our group also pays attention on logistics, one of the key points in supply chain. Cost control management on fixed costs control and variable costs control is the first issue we try to solve.

To be more specific, variable cost, especially the damage costs during the oversea transportation, is the main problem we are dealing with. Although Hikvision takes the advantage of low manufacture cost in China, there is considerably extra expenses on oversea transportation compared to other local competitors in the United States. According to Hikvision's official website, it takes "Make-to-Order" policy. There might be various potential problems including order-filling errors or unchecked defective products before the shipping, potential damages such as external defacement, internal line fault or broken circuit during the oversea transportation. All of these will raise variable costs and have negative influence on customer satisfaction, or even lost customer's loyalty. Ultimately, these problems will hurt Hikvision's brand image and reputation. Therefore, how to lower the risks on oversea transportation becomes the priority issue we need to solve.

On the other hand, we try to control fixed costs within an absolute amount. Compared to variable costs, fixed costs have narrow difference between budget cost and actual cost, but we still try to put all the fixed costs into a standard level and find out an appropriate way to reduce the costs. Without such a standard fixed costs control, the actual expenses will increase without anyone takes responsibility, which will hurt logistical performance in supply chain department.

The last but not the least, on-time delivery also has significant influence on supply chain performance. Compared to other local surveillance company in the United States, Hikvision's long distance transportation makes the lead time more unpredictable due to the unexpected accidents that may happen during this long-distance shipping. Therefore, we think transportation is the top priority issue that Hikvision should solve to strengthen the performance in supply chain department.

Here we take order-filling accuracy as the primary KPI for logistic problem in Hikvision. The ratio of error orders to total order amount is the main measurement to level the performance l of logistic efficiency. By lowering this ratio, Hikvision is able to reduce unexpected variable costs from the damages or order errors during the oversea transportation. (Data Pine, NA) Based on our research, we expect that the ratio should be within 10%, but it would better lower than 5% per quarter as good performance.

Secondly, on-time delivery is another KPI to measure the logistic performance. After the products arrive in local warehouse, on-time delivery becomes more important to our customers. We want to deliver the products as fast as we can, and we want to avoid customer dissatisfaction when they may not receive the package as the time we promised. Timely updating tracking information is a good approach to monitor the orders. In this way, customers can track their orders and make their time to receive the package in advance. Not only does it improve customer satisfaction since they can receive their expected items on time, but also lowers the potential risks of package being stolen or damaged when customers are unable to check the package in person (Data Pine, NA). Here we set the threshold of on-time delivery level 15% and we expect Hikvision can reach 98% on-time delivery.

Lastly, we plan to set KPI for logistic performance on fixed cost control. Recyclable packaging material is a creative method to lower fixed cost on transportation expenses. We plan to recycle the packaging material after completing the installation or picking up from our customers if they are willing to. To put it in this way, Hikvision is able to reduce fixed costs on packaging expenses and build up great brand image as well as enterprise culture to save the world. Here we calculate the KPI on the ratio of actual packaging costs with recyclable materials to total packaging costs without recyclable materials (total item

amount plus packaging cost). (Data Pine, NA) Current threshold of recyclable ratio would be better at 10%

and we expect the ratio will be at least 25% within five years.

Information Problem in Supply Chain Management

Information problem is the last but vital problem in Hikvision's supply chain department. It is hard

to get sufficient data from end-users due to the structure (Appendix D). Distributors may keep most valued

data for self-analysis, which makes Hikvision has fewer approaches to get valued feedback from end-users.

On the other hand, it takes a long process from end-users to Hikvision, which diminishes their initiatives

and widens the gap between Hikvision and end-users. Meanwhile, employee satisfaction is another

information problem exists in Hikvision internally. Our group believe that employee is the key to

performance management. Without the cooperation among employee, business strategies and missions are

meaningless. So, employee satisfaction is another approach to improve supply chain performance in

Hikvision.

Here our group intends to enhance the satisfaction both on customer and employee solve the

information problem. Customer reviews directly indicate customers satisfaction. It is the main guidance for

potential customers who prefer to do their own research before they make the decision. Positive reviews

highlight the outstanding characteristics of the products while negative reviews make them reconsider their

possible decision. So, it is important to improve customer satisfaction by continuously tracking the feedback.

For the customers who prefer to quote directly, response time becomes critical to enhance service

performance. Online chat service is one of the strategies to retain more potential customers. Online

representatives are responsible to offer customized options and answer the question promptly. Another strategy is email marketing, which should also be taken seriously. It is an approach to keep in touch with potential customers by providing incentives and reminding them to make the decision. On the other hand, existing customers should also be considered. Service notification will be delivered to remind them about the maintenance and keep the products in good performance. Not only does it help to build up brand reputation, but also retain more loyal customers by such outstanding service.

Employee satisfaction is the foundation of organization development. High level of satisfaction encourages employees to be more passionately with their quality service, which ultimately contributes to company's performance. In brief, employee satisfaction is another key point we cannot ignore. Therefore, our group sets up the following metrics to improve supply chain performance based on customer satisfaction, response time and employee satisfaction.

We set up the monthly performance report on customer review. Positive reviews highlight the particular part of what our customers like and what they need, which is a good direction for our marketing department adjusting their marketing strategies. Negative reviews reveal our deficiencies, which helps us to improve the performance. Here our group sets the negative review tolerance at 5% for both service complaint and product complaint, which means, for example, if 5 out of 100 customers complain about our service, Hikvision should be warned to check the service quality. If the service complaints keep increase in a quarter or there is over 10% service complaint in a month, Hikvision should take measures promptly to solve the problem.

Based on our research, service notification would be better sent twice in case customers may forget

at the first time. And sales reminder would be better sent once a week. We should keep an eye on subscribers because we do not want unsubscription. For example, sales reminders include various topics. Each topic contains a lot of posts for A/B testing in order to get the best performance. In this circumstance, our group sets the threshold based on unsubscription rate. If the rate increases to 5% on one particular post, we will give up this post. However, if the rate keeps in bad performance among at least three posts in the same topic, the topic might be reconsidered. And if at least three topics are in bad performance, we should reconsider the time interval of email reminder. Meanwhile, if the click rate goes up to 30% it should be continuously used in the next year.

As to response time, chat response will be available, for example, from 10 am to 5 pm to assist customers promptly both online and by phone. In this way, we set up score evaluation system to improve our service quality. Customers who chat online or by phone will have a simple evaluation from 1 - 10 for the service. If there are three evaluation below 5 in one month, we should retrain the representative to perform better service in the future. If customers file the complaint on the representative, Hikvision should inspect the complaint and recheck his/her qualification.   Our group thinks the email response would be better within 24 hours or 48 hours. If the representative fails to respond in time, punishment will be applied: warning at the third time; increasing penalty within 8 times and get fired if the representative fails 10 times within a month.

A study conducted by Edmund (2016) stated that "job satisfaction and goal clarity are at their highest levels in cities that have a strong reinvention focus; the probability of average or below-average job satisfaction is higher in cities with a weaker reinvention focus and when goals are more ambiguous."

Multiple incentives are applied to improve employee satisfaction. Celebration awards for project completion should be considered as the basic incentives, which contributes to the unity and harmonious relationship in the company. Annual bonus will be dished out for employees who are in good performance in this year. Employee retention system is to offer loyal employees who are in their responsibility for a long time. Here we try to set up a retention ratio of three-year employees to total employees. The retention ratio is going to calculate on a year basis. we expect the ratio reach at least 80% in order to retain more loyal employees for Hikvision, and the threshold would be 8%.

Develop the Mock-up Scorecard for the Company

Purposed Mock-up Scorecard

Balanced Scorecard is a systematic strategic management system aiming to achieve company's strategy and goal and the fundamental tool for strategic management and implementation. Balancedscorecard.org introduces that BSC is used to "1) Communicate what they are trying to accomplish, 2) Align the day-to-day work that everyone is doing with strategy, 3) prioritize projects, products, and services, and 4) measure and monitor progress towards strategic targets." he main purpose is to transform the strategy of the company into concrete actions to create the competitive advantage for the company. It is important for the company to adopt this management performance system in our supply chain management. Balaji, Dinesh and Veera (2018) suggest that as a multinational company should realize that "designing a supply chain along is not enough to guarantee improvement, as managers must periodically evaluate the performance on supply chain." With the development of technology, company should leverage the supply chain management to adapt new and efficient manufacturing practices. Our proposed balanced scorecard for Hikvision supply chain management covers the following four different perspectives (see appendix E).

Financial

In Balanced Scorecard, financial aspect reflects company's business strategies and the implementation contribute to the improvement of the final business result. To improve company's financial performance, we aim to reduce inventory level by improving capital fund liquidity and maximize profitability by optimizing transportation cost.

Customer

The customers are the primary revenue source, so we pay more attention on customer satisfaction improvement. We aim to meet customers' value proposition as better as we can and demand through the provision of products and services.

Internal and Process

Our strategic objective for internal and process is to excel the operation to maximize company's profitability. The core value to drive business success is the aspect of internal and process because of its great influence on the customers.

Learning and Growth

As to Learning and Growth, it presents the company's strategies and performance management. And it reflects the developmental goals of employees' career and their potential capability to fulfill the achievements.

Proposed Automation Tool

We are focused on Hikvision's Supply Chain Department, especially on the problems of inventory, information and logistics. Automation Tool should illustrate a feature by recording inventory and evaluating logistic information to help us implement Performance Management Plan. Also, we need to analyze customer reviews to improve and adjust our business strategies.

We would like to propose two Automation Tools to be applied into our Performance Management Plan. The first one is SAP SCM. SAP SCM can manage the supply chain activities involved in sourcing raw materials from suppliers, manufacturing the product, and distributing it to retailers, and finally to the end customers. It is an advanced planning engine capable of meeting supply chain management challenges, such as supply planning, demand planning, distribution planning, production planning, and transportation planning. As we've mentioned before, inventory and logistics are the major problems in Hikvision's Supply Chain Department. The inventory management function in the SAP SCM tool is able to revolve the storage facility inventory and the physical count of the items at regular intervals. Logistics information system is also integrated in SAP SCM solution, which provides the necessary information for us to implement the performance management plan. SAP CRM is another automation tool we want to propose. Maintaining good customer relationship is vital to the continued success of the business. We can create rich customer profiles by capturing information and interactions from across the company and external sources. SAP CRM analysis is a function that is included in the CRM solution, which enables the department to gather all relevant information about the key factors to provide insights into operational processes and strategic decision-making.

Collection and Monitoring Plan

With the Automation Tools we've mentioned above, Performance Management will be more effective and efficient. The tools collect data to feed into our KPI metrics (see appendix E), and they also provide analytical reviews to the current performance and even forecast the future performance. For

example, inventory units, cost of goods sold, completion of order and more will be recorded by the software. After collecting the data, we can perform analytical review on a periodic basis to detect any unusual transactions. Alarm is created to warn any deviation from specifications at any time and thus enable the company to respond quickly to the changes.

Analysis of Data

Undoubtedly, data plays an indispensable role in current business activities. Sufficient data analysis is greatly helpful to make better business decisions. The data will be fitted into our measurement to evaluate the department's performance. First of all, data analysis allows us to greatly improve the efficiency and quality of decision-making in the supply chain management. Secondly, departments are able to optimize the reduction of unnecessary cost input based on the result from data analysis. Thirdly, data analysis enables employees to understand the daily work progress and helps managers to evaluate business performance.

Performance Improvement Plan

The performance plan we proposed may not be perfect, but we would like to continuously improve and adjust it to follow our strategy. The performance improvement plan is a systematic plan to improve the performance after receiving employees' feedback from the original performance management plan, as Kirstin (2016) stated that "in addition to conducting performance appraisals, when an employee fails to meet job expectations, supervisors should consider placing the employee on a performance improvement plan." After the plan is executed, the employees are the incentives to achieve the goal. This plan is to open a dialogue between employee and supervisor regarding the changes necessary to be made for performance

plan improvement. According to Kristin (2016), some of the elements on making a better performance management plan are 1) clearly state the goal, 2) establish a timeframe for meeting this goal, 3) develop an action plan, 4) establish the periodic intervals for review of performance with the employee, and 5) establish consequences for failure to meet and sustain improved performance, reserving the company's right to terminate employment. We propose the performance improvement plan should follow the SMART principle in order to encouraging employees to be effectively and efficiently and providing standards for the future performance assessment.

Conclusion

Performance Management reflects current situation and problems occurred in current system. The performance Management Plan is to optimize the performance in Hikvision's Supply Chain Department. In this way, the department is able to improve operational efficiency on the entire performance system. The following steps are the keys to implement the plan:

Set up Expectations. We should set up expectation on the comprehensive presentation of the data and provide support to collect the data for the plan. The entire company should understand its implementation and purpose. Goal-oriented information on target achievements should deliver to both departments and the headquarter. Employees are requested to understand their responsibility, so the procedures and results can be recorded correctly into our performance plan.

Observe Participants. We should observe the performance periodically to make sure the measurements are practical. It is important to achieve the overall strategies based on feasible measurements.

Ask for Feedback / Give Feedback. It is greatly helpful to adjust the plan by asking feedback frequently from employees and managers. Additionally, the managers should constantly give feedback on employee's performance. Joan (2016) mentioned the supervisors is expected to "give specific feedback on how the standard is being missed and how it is hurting him/her and others". In this way, potential problems are easily to be found based on the performance evaluation and reviews.

Set up Retention System. We are going to retain the employees with outstanding performance. Rewards will be available both on physical and spiritual. As Steve (2018) mentioned that we should "show respect and appreciation".

Our group proposes this Performance Management Plan aiming to solve the problems in Hikvision's Supply Chain Department. It is our comprehensive analysis based on the issues which might raise concerns impact on executive level and Hikvision's overall performance. We sincerely hope to gain your approval to implement our plan.

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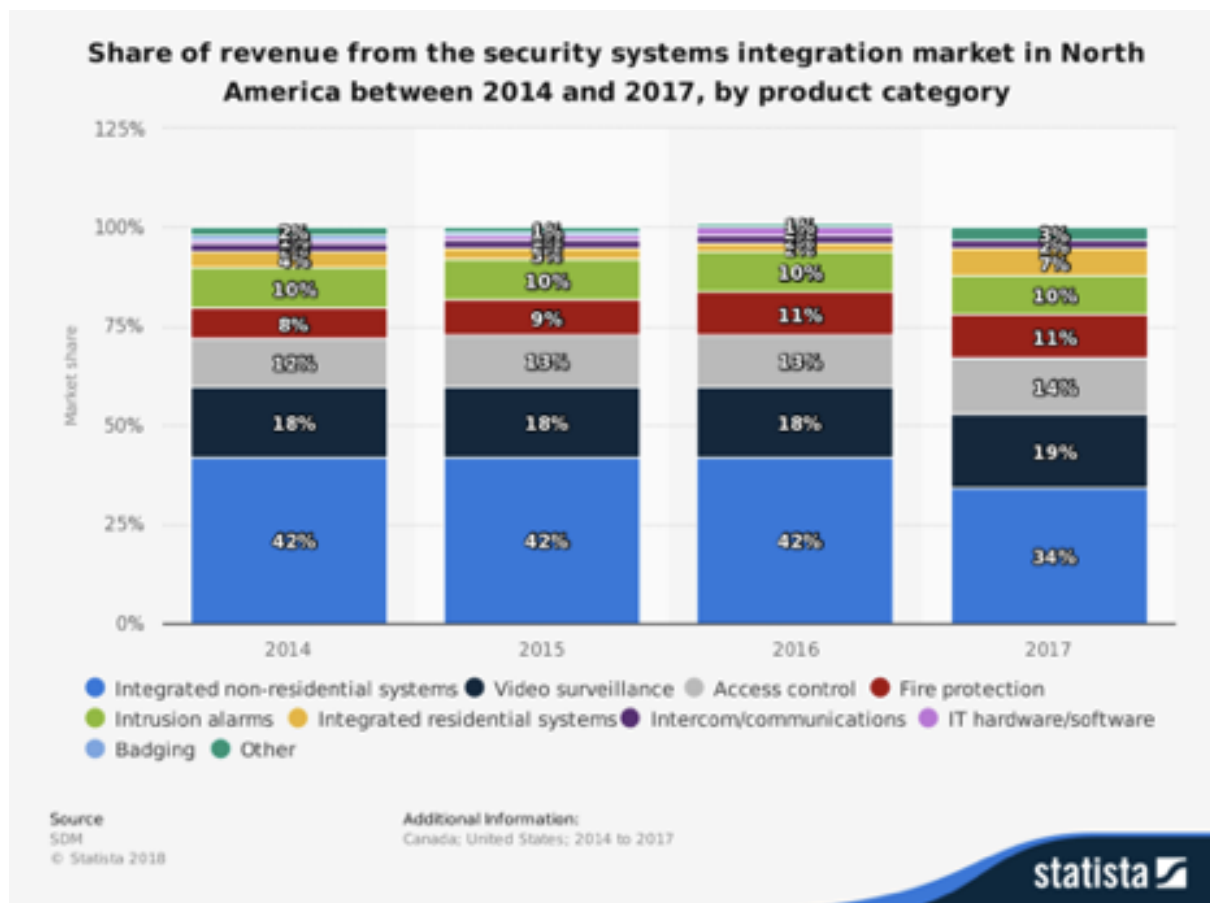
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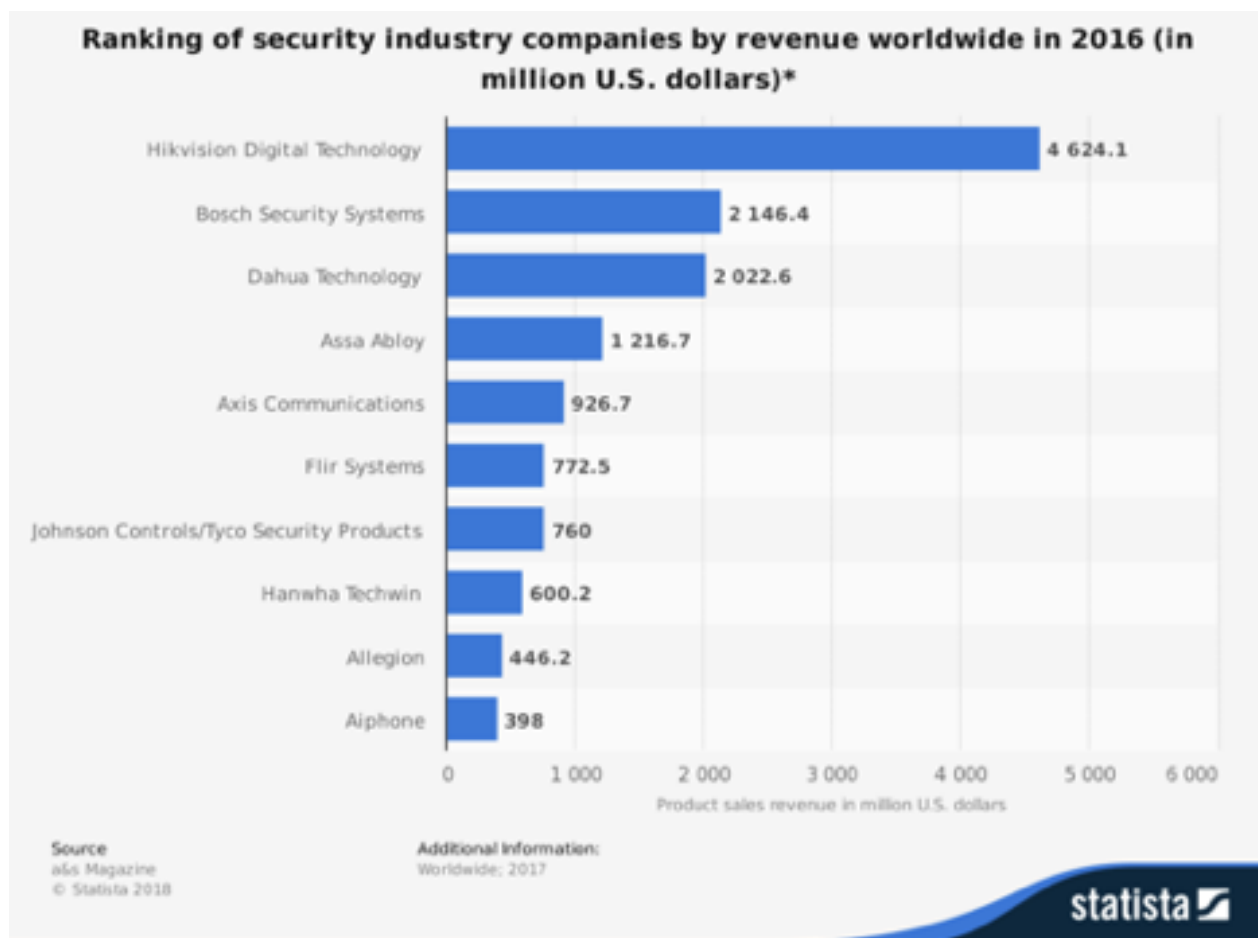Chain-Performance-Management-POV_A4_ks3_Safe.pdf

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Appendix

Appendix A - Revenue Share in North America 2014-2017

Share of revenue from the security systems integration market in North America between 2014 and 2017, by product category

Source
SDM
© Statista 2018

Additional Information:
Canada; United States; 2014 to 2017

Appendix - B Worldwide Revenue Ranking in 2016

Ranking of security industry companies by revenue worldwide in 2016 (in million U.S. dollars)*

Appendix C - Home Security Demand in the United States in 2018

Top smart home security products consumers want in the United States, as of 2018
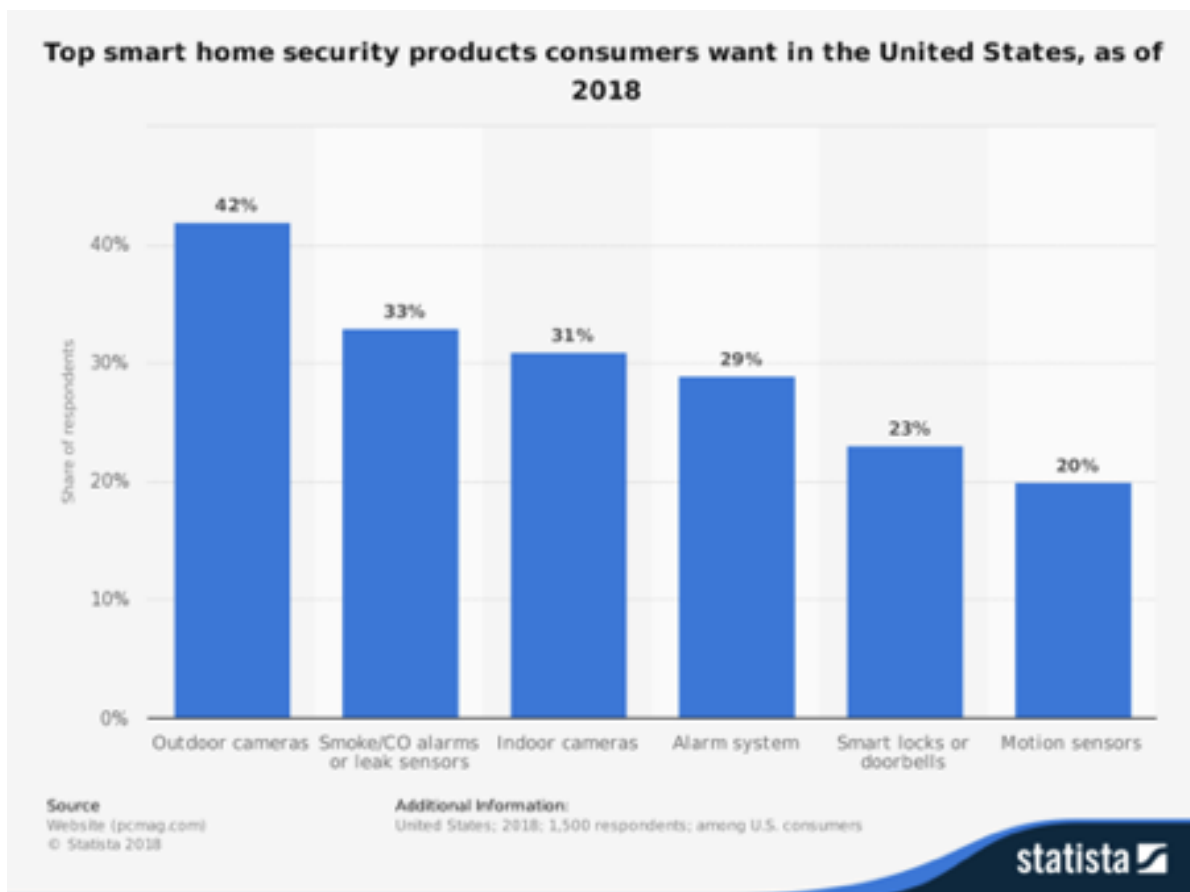
Appendix D - Response Structure in Hikvision Supply Chain Department

Response Structure
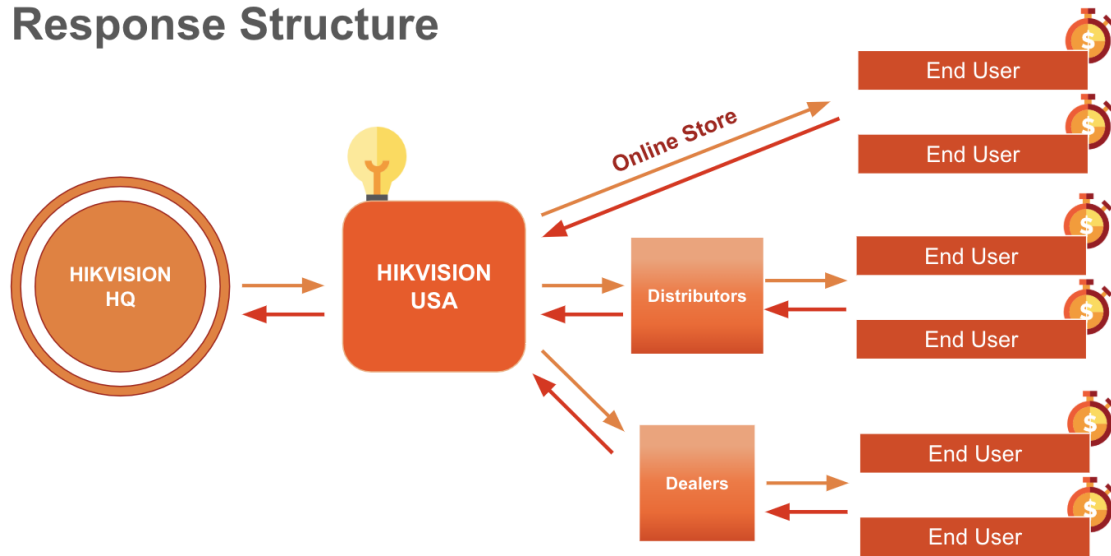
Appendix E - Balanced Scorecard

Balanced Scorecard Categories	Inc Dec +/-	Metrics	Company Location	Comments (optional)	(%,0,0.0) Data Format
Financial					
Strategic Objectives					
1. Liquidity of Capital Fund Improvement	Inc	COGS/Average Inventory	Supply Chain		%
2. Fixed Cost Control (Recyclable Packaging Material)	Inc	Actual Packaging Costs/Standard Packaging Cost	Supply Chain		%
Customer					
Strategic Objectives					
1. Negative Review Minimization	Dec	Negative Reviews/Total Reviews	Supply Chain		%
2. Service Quality Sustainability	Inc	Score Evaluation	Supply Chain		0
3. On-time Delivery	Inc	On-time Delivery Orders/Total Delivery Orders	Supply Chain		%
4. Order-filling Accuracy	Dec	Error Orders/Total Order Amount	Supply Chain		%
Internal & Processes					
Strategic Objectives					
1. Response Time Promise	Dec	Number of Response Fails in One Month	Supply Chain		0
2. Inventory Accuracy	Dec	Inventory Level in the System	Supply Chain		0
3 Lead Time Improvement	Inc	Completion Rate of Customers Orders	Supply Chain		%
Learning & Growth					
Strategic Objectives					
1. Employee Motivation Enhancement	Inc	Rate of On-time Project Completion	Supply Chain		%
2. Employee Satisfaction Improvement	Inc	Employee Satisfaction Evaluation	Supply Chain		%
3. Loyalty Employee Retention	Inc	Three-year Employees/Total Employees	Supply Chain		%