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ELKJOP Business case study

Application of data science principles on ELKJOP Business case

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1. Business Initiative

The study revolves around the leading retailer of consumer electronics in Norway named ELKJOP. ELKJOP is a large electronics retail chain owning over 414 stores across Nordics. The current market share of the company is highest among the competitors. The company has around 10,000 employees. According to their annual report company has achieved record customer satisfaction, market share, profits and turnover.

The company's objective is to become the most customer centric retail chain which is evident from steps taken by the company such as providing good after-sales service and collaboration with third party to create ease for customers. Performance management system (PMS) is vital part for measuring the company's progress toward it's goal. The business case selected for this report is what ELKJOP calls 'Customers for life' which focuses on closer relationships with all the customers before, during and after the purchase. The timeframe in this initiative is rather arbitrary but it is measured and improved continually In the company using analytics, PMS and data. The measured customer metrics are reported annually therefore the improvement timeframe can be thought of as 12 months.

2. Business Stakeholders

The first step to understanding business needs is to understand stakeholders involved, their expectations and preferably their classification according to Kano Model or some other type of ranking according to their importance.

A business process is the one which involves a structured set of activities designed to produce a specific output (Davenport 1993). For understanding of business processes, we first classify the processes as primary, support & evolution processes. Primary process are the one which involves competence & value creating processes for an organization (Andersen and Fagerhaug 2001). Support process are the ones which does not directly take part in creating a service or product but rather support the primary processes like financial or personnel management. Evolutionary processes are the ones which makes primary and support process more efficient and increases their performance. The next step is to identify customer needs which can be done by developing a QFD, Quality function deployment (QFD) is a methodology that helps translating customer needs into design requirements to ensure that the output, whether this is a product or process, meets these needs (Erdil and Arani 2019).

This step maps to Business understanding step in CRISP-DM. Following stakeholders were identified in this step:

2.1 Customers

Customers can be divided into two categories, internal and external. Internal customers can be departments like warranty claims & repairs or after sales services. External customers are the purchasers of products and services from ELKJOP. The external customers are the the most important for given business initiative, since an increase in customer base, loyalty and closeness is the key for achieving business goal. For external customers requirements could vary largely by age groups, age group of <20 years might prefer price, updated product range or webs tore design. While people of age 30-50 years might prefer value for money, customer >50 years could have entirely different requirements such as personalized service, complete solutions and quality of

product. Therefore, using CRISP-DM we should be able to track and classify customers according to their needs and measure performance of each group individually.

2.2 Suppliers

Suppliers are the key part of any retail chain and in case of ELKJOP and given business initiative they become the second most important stakeholder. A supplier needs and requirements mapping is essential in any data mining process and indicators or KPIs for measuring the performance should be of high priority in the given business case. Processes such as order management, contract conditions, and collaboration becomes the most important when measuring the supplier performance.

2.3 Owners

Owners are stakeholders who gets benefits from the operations of a company. Their main concern and requirement is market growth, smooth operations and profits. This class of stakeholders are always important for company however, in our given business initiative they are the party of most interest in success of the business initiative.

2.4 Sales Department

Sales department is responsible for many of the activities in the company such as handling warranty claims, pricing, product range, profits, alignment of business strategy and value for money requirements. In our given business initiative this is a main stakeholder which is responsible for much of factors included in given business initiative. They are responsible for acquiring external customers, suppliers and contractors which is the key for achieving the given business initiative.

2.5 Marketing

Marketing department is essential business entity in any business but it's importance in retail market is more. Given the business initiative this department is responsible for marketing products and services to potential and existing customers. Retaining existing customers is important in given business initiative.

2.6 Logistics and supply chain

These departments are thought of as most important in given economic conditions, according to Anand and Groover (2015), the competition in retail industry is no longer between companies but between supply chains. Initially ELKJOP success was based on their efficient logistics and supply chain strategies. This stakeholder becomes most important when after-sales and services are one of the requirements of given business initiative.

2.7 Complains handling department

Complain handling is one of the important stakeholders in the given initiative since customers are more likely to remain when after sales service and complain handling is efficient. After sales also depend on this department for complains forwarding and handling, the work of after sales starts after a complaint is handed over to after sales department.

2.8 Quality and operations management

This stakeholder is the root where a given product is handled and production is handled. Quality management is an important factor which influences the amount of required after sales services and thus measuring performance of operations and quality should be important in given business initiative.

2.9 Service design

Service design is a business process that designs the servicing strategy of company and given the business initiative the design of service seems important in acquiring potential customers and retaining current customers.

3. Business Entities

3.1 Customers

Customers are the main stakeholders of a company, in addition to being important they are the drivers of given business initiative. Being customer centric involves everything around customers. Measuring customer performance metrics by using customer analytics techniques and improving the insights using data driven strategies is the focus of companies involved in retail. Behavior analytics and modeling customer behavior is goal of data science projects involving customer related objective. The objective is to understand customer's preferences, customer cohorts and customer churn rate predictions. Relevant factors include demographics, age groups, price sensitivity, brand loyalty, location, and history of purchases. Acquiring customers depends on pricing sensitivity and other metric stated above, however, after sales is more sensitive to age groups, marketing, logistics, customer cohorts and service time. Customer behavior modeling and grouping them into cohorts further increases the marketing effectiveness and sales patterns. Given demographics, location, churn rate and brand loyalty improvements in customer retainment and acquisition can be analyzed on different cohorts. Since the given business initiative is measured yearly the implementation of specific initiatives depends on implementation time frame the most. Information from customers can be sourced by e-commerce platforms, POS data or loyalty programs. ELKJOP customer club program has data of more than 3.2 million members which can be a great source of data for customer analytics and initiatives.

3.2 Proximity of stores

This becomes the entity of interest since people buying behavior depends on many factors including proximity. Data about store locations and their sales and coverage (extracted from customer data) can gives insights into WHY's of sales. Online stores can be a great source of data and given the history of orders and service times this data source can be a major indicator of WHAT's of improvement. When these two data types are combined and analyzed it can give insights of what to improve and where.

3.3 Supply chain

Locations of logistic centers and warehouses and measurements of lead times or order handling and delivery can be measured from dispatch centers. Several different measurements can be done on this business entity including, time for delivery, number of deliveries per dispatch, logistics effectiveness, backlog, goods in transit, active time of warehouse employees and head count. A performance indicator

involving supply chain performance can be developed from this data and analyzed for improvements of this business entity. When supply chain data is analyzed with customer analytics it can give great insights of what drives the customers to be in certain cohorts and why do they shift and churn. Some causal analysis can be done on this data and sensitivity can be measured of effects of supply chain performance on customer retainment and acquirement.

3.4 Customer handling department

This department includes complaint and customer inquiries, it can be a great source of information of how company is performing on customer satisfaction, customer satisfaction data such as Net positive score (NPS), measures such as installing a small feedback screen at checkout counters can further increase the amount of data available. Data such as response rate, correctness score (of handling agents) , coherence (Among agents) can be measured at this business handling which can be further combined and analyzed for causality with other types measures that are measured at other business entities.

3.5 Products

ELKJOP products are important factor and customers can have different behavior for different product categories. Measurements of data among different categories can be done easily in e-commerce stores, which can produce data such as active time of visitor on certain category etc. On physically located stores density of customers can be measured at category locations along with measuring time on average customer spends in store. If density of every category is known and average customer time is known, the average time at each category can be found out. When this data source is compared it can give great insights on customers, marketing effectiveness and service metrics.

4. Use Cases

4.1 Identification of use cases

Following Use cases were identified for given business initiative:

A. Increase club members
   - Increasing club memberships directly corresponds to being more customer centric however, this indicator alone cannot be thought of as concrete.

B. Increase NPS of customers
   - Net positive promoter score developed by Bain & Co. is good measure of measuring customer satisfaction. In the given business initiative NPS can be an important criterion for measuring improvements.

C. Increase supply chain effectiveness
   - Improvement in supply chain performance can be mapped to customer retainment and attainment. Electronic retail depends on supply chain for its competitive advantage. Improvements in this metric can mean improvements in given business initiative.

D. Reduce marketing cost without compromising customer base
   - Reducing marketing cost can be mapped to improvements in customer loyalty, brand loyalty if customers remain with the company. However, this is a hard use case in given business case since reduction in marketing costs can backfire.

E. Reduce supplier costs by X% while maintaining service levels
   - Reduction in supplier costs while maintaining service levels of company is the goal of many business domains including retail. If ELKJOP utilizes this use case and benefits from reduction of costs from supplier side that can be directly mapped to reduction in pricing of products and hence due to price sensitivity it can translate to increase in customer base and being more responsive toward customers.
F. Increase online sales
   - Many of customers prefer online stores than physical stores, if online sales increase then ELKJOP can better handle orders and supply chain costs and lead times can be reduced which means being more responsive towards customers however, it does not necessarily mean being more customer centric.
G. Reduce customer churn rate by X%
   - Customer churn rate prediction and understanding is essential in increasing customer base, loyalty and being more customer centric. Questions such as WHY's, WHAT's and HOW's can lead to great insights from churn rates. Analysis of churn can lead to understanding of business initiative. Reduction in churn can directly affect being more customer centric.
H. Increase number of partnerships x% with external servicing companies
   - Partnerships with more external servicing industry can lead to better servicing time, lead times and increased supply chain effectiveness. Customers are sensitive towards many factors including these and thus this use case can be an important factor in achieving business goal.
I. Increase product category visit time by X%
   - If customers are able to visit more and spend more time at different categories at store or online then the likelihood of becoming a customer is increased and thus this use case increases customer base however, in the given business case it can be of less important since 'customer centric' does not necessarily mean more sales but rather a loyal, regular customer.
J. Increase customer satisfaction by X%
   - Increase in customer satisfaction can mean achievement of business initiative however, this alone is not strong indicator of being 'customer centric' there could be cases when satisfaction increases but customer base decreased or responses from customer recorded can be biased or during a promotion period.
K. Increase customer loyalty by X%
   - Increasing customer loyalty means more business along with being more orientated towards customer. People remain loyal with companies who fulfills their requirements as identified in stakeholder analysis.
L. Increase customer lifetime value by X%
   - Customer lifetime value is measure of how much a customer is likely to spend on products and services of a company during their active period. Increasing lifetime value of customer and indications of increasing lifetime value mean customers are likely to spend more time, money, and energy on the company and thus a company becomes more customer centric.

4.2 Prioritization of use cases on matrix

Business cases identified in the step above are plotted here for visualization according to their feasibility and value on given business initiative. The reasoning of use cases in description of use cases above.

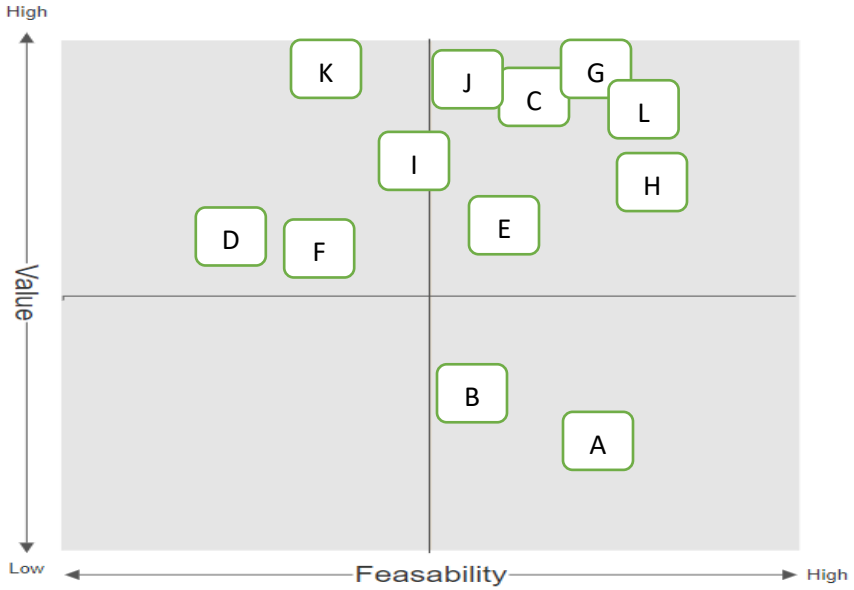

Figure 1: Prioritization matrix for use cases identified according to feasibility and value.

5. Data Sources

Use cases of C, G and L are top 3 use cases identified by mapping use cases in the matrix.

5.1 Increase supply chain effectiveness

Following data sources are of interest in this use case:

1. Inventory at hand
2. Backlog
3. Active time of employees at warehouse
4. Number of deliveries per dispatch
5. Lead time
6. Transportation data (Number of stops made in delivery, time for stops, moving time, number of touches, cost of transportation)

5.2 Reduction of customer churn rate

In the case of reduction of churn rate, following data sources were identified:

1. Customer data (Age, location, gender, spending and mode of transaction, customer retention rate)
2. Product data (Average sells, Average lifetime, average returns, percentage of warranty claims)
3. Promotion's data (Number of promotions by company, Number of offers made to at-risk customers)
4. Customer service levels.

5. Customer contacts data (Number of complaints, Number of contacts to customer service, Number of available communication channels to customers)

5.3 Increase lifetime value of customers

Lifetime value of a customer is an important factor identified in top use cases, following data sources are identified for this use case.

1. Customer data.
2. Cross selling data.
3. Personalized interactions data.
4. Marketing channels data.
5. Pricing data.
6. Delivery and return policy data.
7. Social media data.

Data Sources	Use cases		
	Increase supply chain effectiveness	**Reduction of customer churn rate**	**Increase lifetime value of customers**
Inventory	5	3	4
Backlog	4	5	3
Active time of employees	5	2	0
Lead times	5	2	4
Transportation data	4	2	0
Customer data	4	5	5
Product data	3	4	5
Customer service levels	5	3	4
Customer Contact data	0	4	5
Cross selling data	1	4	5
Personalized interaction data	0	3	5
Marketing channels data	0	4	2
Pricing data	3	5	5
Delivery and return policy data	5	4	4
Social media data	0	4	5

Table 1: Relevant data mapping for each use case (0=Not relevant, 5=Very relevant)

6. Scores

6.1 Composite customer delivery performance

This score metric is based on assumption that if customer remains loyal to company over period of a year, then performance of company can be measured on this metric. The metric comprises of supply chain performance and lifetime value. This metric captures the potential of improvement in customer retention. It acts as a what of why, for example, if a customer remains loyal to company over a year then it tells of what made the customer stay with the company. It differentiates the customers who left using second composite index which is developed below. The mathematical formulation of not a requirement however, it can be analyzed with help of data collected easily.

6.2 Churn drivers index

This is an indicator of why a customer might leave and what value did the customer bring before leaving along with possible segmentation of at-risk customers. At-risk customers are those whose attributes match those who left and can be considered at-risk customers. By comparing this index and cohorts with composite customer delivery performance cohort we can identify which behavior is more likely to move at-risk customers to a loyal customer cohort.

6.3 User satisfaction index

This index is the most important among all developed since business initiative directly can be measured with this scoring index. It consists of loyal, at-risk, and new customer cohorts. It might contain NPS score collected and using the data collection identified in the step above a robust score can be developed for whole customer base, different cohorts, demographics, locations, and mode of transactions. For example, e-commerce purchases might have more satisfaction than in-store purchasers however, in-store purchasers are more lily to stay loyal (depending on data points collected) since interaction with them is easy and getting a response is not so difficult.

Satisfied users will stay loyal, have increased lifetime value and low churn rate. Data about warranty claims, complaints, number of interactions with customer service, lead times, cross-selling completed, promotions availed and many more can be combined to make a prediction of how satisfied a user is.

6.4 Marketing effectiveness score

This score will capture how effective marketing efforts are in customer attainment, retention and what affects the churn rate and lifetime value of customers. It measures how marketing strategies affect the customer behavior. It can measure how many potential customers has been reached and how much of them converted to customers. Which campaigns are more effective in converting potential customers to regular customers and what effect did they have on lifetime value of customers?

The core can be analyzed for how a marketing strategy affected user satisfaction, which strategies reduced churn and improved customer lifetime value. It can further be analyzed on which strategy gave the most lifetime value customers. Increase in online presence and interactions, mentions can be integrated into this score to make it robust. Sentiment analysis on social media can be done to get sentiments and then classified according to running marketing strategy.

6.5 Customer perception index

Using data from customer interactions we can measure how customer perceives the company, if available data is comprehensive then it can be extended to analyze what perceptions are produced by certain interactions between company and customers. For example, a targeted social commercial can be analyzed when point of target interacts with company. Measures such as correctness, responsiveness, uniformity (according to procedures), wait times, customers attended, percentage of calls switched, negative ratings, number of active lines can be analyzed in this score to build a composite score. Metrics such as employee competence can also be integrated into this score since a customer's perception and quality of product is also dependent on how well-trained employees are.

7. Recommendations and mapping of scores

Use cases	Recommendations	Scores
Increase supply chain effectiveness	Recommend which product categories needs enhanced effectiveness	• Composite customer delivery performance • Churn drivers index
	Recommend which suppliers needs to improve performance	• Composite customer delivery performance
	Recommend logistics improvements	• Composite customer delivery performance
	Recommend employee performance improvement areas	• Composite customer delivery performance • User satisfaction index
	Recommend staffing levels at different times	• Composite customer delivery performance • User satisfaction index • Customer perception index
	Recommend inventories	• Composite customer delivery performance • Marketing effectiveness score • Customer perception index
Reduction of customer churn rate	Recommend marketing strategies	• Churn drivers index • Marketing effectiveness score • User satisfaction index
	Recommend product improvements and additions	• Marketing effectiveness score • User satisfaction index • Customer perception index
	Recommend e-commerce and store layouts	• Marketing effectiveness score • User satisfaction index • Churn drivers index • Customer perception index
	Recommend what actions to take for customer satisfaction and service level improvements	• User satisfaction index • Customer perception index
Increase lifetime value of customers	Recommend Which products to cross sell	• Composite customer delivery performance • Churn drivers index • User satisfaction index
	Recommend targeted marketing strategies	• User satisfaction index • Marketing effectiveness score • Customer perception index • Churn drivers index
	Recommend which products to have on promotions	• User satisfaction index • Churn drivers index • Marketing effectiveness score • Composite customer delivery performance

Table 2: Mapping of recommendations and scores to use cases