

2. REQUIREMENTS PROCESS SPECIFICATION

1. GENERAL DESCRIPTION OF BUSINESS PROCESS

- a) A general description of the business process and a description of the performance metrics generated by this process, and possible current analytical problems.

Management of return is a business process that goes as follows: a person can buy clothes in two ways - online or in a specific store. In both options, the customer receives a receipt that allows him/her to return the bought item within 30 days. The person can either go back to the previously visited store or ship the package to us via package locker. The person receives a refund in the form in which he made the purchase - cash or a refund to a bank account. If we receive a return we check the condition of the clothes (e.g. if they are dirty, ripped, etc) and if the person is allowed to make a return. If everything's alright then we return the money back to the customer and take the returned item to the laundry and then again to the magazine for further sale. If something went wrong with the return process or clothes are unacceptable, we do not return the money. In order to consider a return by "Outspire", the return form must be completed. Such a form requires providing personal data that is necessary for the process of taking into consideration the return, and the reason for the return, most often the reasons will be listed with the option of selecting one or more (e.g. undersized/oversized sizing, the product does not match the one on the website, the item came damaged, etc). The customer can also provide a reason not included in the previously mentioned list.

The main goal of the "Outspire" is to achieve the lowest possible number of returns. To achieve this goal the CEO of the company assumes monthly returns decrease to about 5% of all sold products. Another goal considering the returns is to minimize by 10% the number of returned items in shops where the average number of returns per month exceeds the average number of returns for all shops.

- b) Typical questions

What is the average number of returns during a particular month over the last 3 months?

What percentage of the returned clothes were in bad/normal/good condition each month from the past 12 months?

What percentage of returned items went back again to the sale in the last 3 months?

What kind of items were the most frequently returned in the previous year?

After what time usually are the clothes returned after the purchase (in days) in the last month?

Are there more returns on female or male clothes in accordance to last year?

What loss has been generated by products that didn't go back again to the sale in the last 3 months?

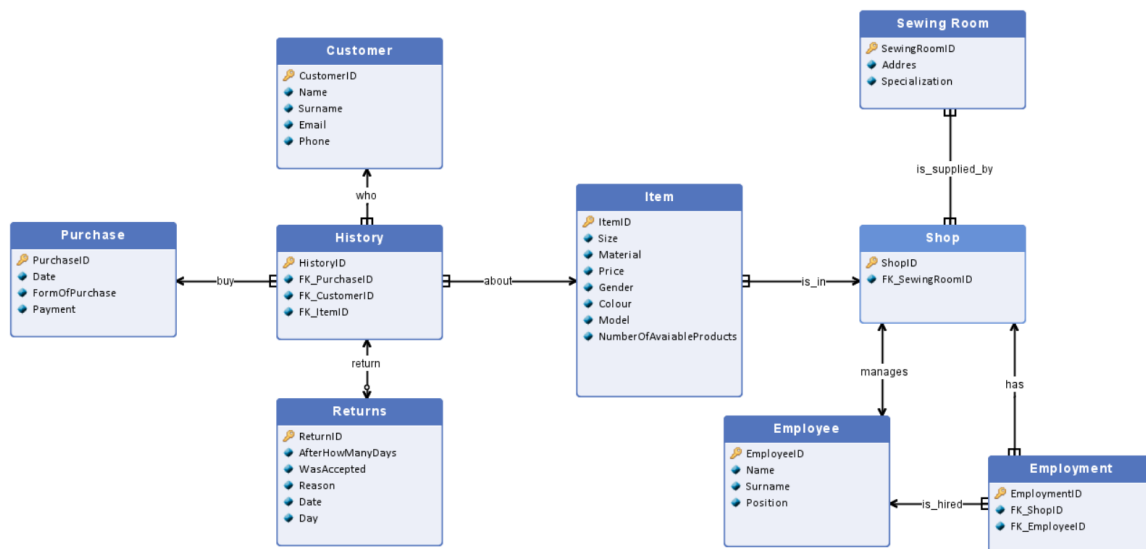
What percentage of customers thinks that the return process was easy during last year?

- c) Data

All data about returns is extracted from the return system – “ReturnMaster”. The return system stores information about the seller making the transaction (thanks to logging in), the transaction number, the items purchased within this transaction, the price for which the item was purchased, information about each customer, including their name, contact information, purchase history and return history. Moreover, the payment method (card or cash) is settled. This Data Source would allow the online clothing shop to easily track customer returns and use this information to improve their business processes and customer service. In addition, data about employees and cloth stores are stored in the EXCEL sheet.

2. DATA SOURCES STRUCTURES

Relational Data Source:



| ITEM | | |
|-----------|-------------------------------------|--|
| Attribute | Attribute type | Description |
| ItemID | numerical | primary key |
| Size | char - only capital letters S, M, L | size of the item: S - small, M - medium, L - large |
| Material | string characters up to 20 digits | type of material the product is made of |
| Price | Decimal (two digits precision) | Price in PLN (with the grosz precision) |
| Gender | only two values: male, female | gender for which the product is aimed for |

| | | |
|---------------------------|-----------------------------------|--|
| Colour | string character up to 20 digits | the main colour(s) of which the product is made of |
| Model | string characters up to 20 digits | model of product e.g. a dress, a T-shirt |
| NumberOfAvailableProducts | integer number from range 0...25 | amount of given item in particular shop |

| SEWING ROOM | | |
|------------------|-----------------------------------|---|
| <i>Attribute</i> | <i>Attribute type</i> | <i>Description</i> |
| SewingRoomID | Numerical | PK – identification number |
| Address | string characters up to 20 digits | sewing room location |
| Specialization | string characters up to 20 digits | which products are mainly produced there |
| FK_ShopID | Numerical | FK pointing at the shop that is supplied by a sewing room. Implementation of many to many relationship between the shop and sewing room. |

| RETURNS | | |
|------------------|-----------------------------------|---|
| <i>Attribute</i> | <i>Attribute type</i> | <i>Description</i> |
| ReturnID | Numerical | PK – identification number |
| AfterHowManyDays | Numerical | after how many days product was returned after purchase |
| WasAccepted | Nominal | Yes/No |
| Reason | string characters up to 20 digits | Reason of the return |
| Date | DateTime | Date of return |
| Day | string characters up to 20 digits | Day of the week |

| EMPLOYEE | | |
|------------------|-----------------------------------|---------------------------------------|
| <i>Attribute</i> | <i>Attribute type</i> | <i>Description</i> |
| EmployeeID | Numerical | PK – identification number |
| Name | string characters up to 20 digits | name of the person |
| Surname | string characters up to 20 digits | surname of the person |
| Position | string characters up to 20 digits | position in which the person is hired |

| CUSTOMER | | |
|------------------|-----------------------------------|----------------------------|
| <i>Attribute</i> | <i>Attribute type</i> | <i>Description</i> |
| CustomerID | Numerical | PK – identification number |
| Name | string characters up to 20 digits | name of the customer |
| Surname | string characters up to 20 digits | surname of customer |
| Email | string characters up to 20 digits | email address of customer |
| Phone | numerical | phone number of customer |

| PURCHASE | | |
|------------------|--------------------------------|--|
| <i>Attribute</i> | <i>Attribute type</i> | <i>Description</i> |
| PurchaseID | Numerical | PK – identification number |
| Date | DateTime | date of the purchase |
| FormOfPurchase | two values: stationery, online | the form in which purchased was made - in stationery shop or online via web page |
| Payment | Two values: cash, card | Cash/Card |

| SHOP | | |
|------|--|--|
|------|--|--|

| <i>Attribute</i> | <i>Attribute type</i> | <i>Description</i> |
|------------------|-----------------------|--|
| ShopID | Numerical | PK – identification number |
| FK_SewingRoomID | Numerical | FK pointing at the sewing room that made clothes for that shop. Implementation of many to many relationship between the sewing room and shop. |

| EMPLOYMENT | | |
|-------------------|-----------------------|---|
| <i>Attribute</i> | <i>Attribute type</i> | <i>Description</i> |
| EmploymentID | Numerical | PK – identification number |
| FK_ShopID | Numerical | FK pointing at the shop that employment is made with. Implementation of one to many relationship between the shop and employment. |
| FK_EmployeeID | Numerical | FK pointing at the employee that employment is considered. Implementation of one to many relationship between the employee and employment. |

| HISTORY | | |
|------------------|-----------------------|--|
| <i>Attribute</i> | <i>Attribute type</i> | <i>Description</i> |
| HistoryID | Numerical | PK – identification number |
| FK_PurchaseID | Numerical | FK pointing at the purchase that was done. Implementation of one to many relationship between the purchase and history. |
| FK_CustomerID | Numerical | FK pointing at the |

| | | |
|-----------|-----------|--|
| | | customer. Implementation of one to many relationship between the customer and history. |
| FK_ItemID | Numerical | FK pointing at the item. Implementation of one to many relationship between the item and history. |

| SUPPLIED_BY Implementation of n to n relationship between Sewing Room and shop meaning a shop is supplied by the sewing room. It is identified by two foreign keys of Shop and Sewing Room tables. | | |
|--|-----------------------|--------------------------------|
| <i>Attribute</i> | <i>Attribute type</i> | <i>Description</i> |
| FK_ShopID | Numerical | FK Shop, the part of PK |
| FK_SewingRoomID | Numerical | FK Sewing room, the part of PK |

EXCEL

Sheet 1: Information about clothes stores. Each line describes one store

Column A - Clothes shop identification number (numeric, 0 decimal precision)

Column B - street, house number (text)

Column C - postal code (text)

Column D - City (text)

Sheet 2: Information about employees hired in clothes shops. Each line describes one employee.

Column A - identification number of the clothes store in which employee is employed (numeric, 0 decimal precision)

Column B - employees PIN (PIN number)

Column C - date of birth (in the format YYYY-MM-DD, example 2002-04-04)

Column D - age

Column E - contract type (Two values: order/ employment)

3. SCENARIOS OF ANALYTICAL PROBLEMS

What are the reasons for returns?

- I. What is the number of returns during the analyzed month compared to the previous one?
- II. What percentage of returned items went back again to the sale in the analyzed month?
- III. Are there more returns on female or male clothes in a particular year?

- IV. Is there a relation between the shop and the number of returns to this shop in a given month?
- V. In which cities the stores accept the most returns in a given month?

When can we observe the most returns?

- I. In which cities there are more than average number of returns on weekends during the last 6 months?
- II. After how many days the items are returned after purchase to shops in the last 2 months?
- III. In which cities there are more than average number of returns per month in comparison to the same month in the previous year?
- IV. Compare average number of returns on particular working days in last week.
- V. Is there an average number of returns bigger/smaller the week after Christmas in comparison to the week before last year?

4. DATA NEEDED FOR ANALYTICAL PROBLEMS

Analytical problem: What are the reasons for returns?

- I. What is the number of returns during the analyzed month compared to the previous one?
 - number of returns in given month - *Database*, table *Returns*, column *Date*
 - analyzed month - *Database*, table *Returns*, column *Date*
- II. What percentage of returned items went back again to sale in the analyzed month?
 - went back again to sale - *Database*, table *Returns*, column *WasAccepted*
 - in the analyzed month - *Database*, table *Returns*, column *Date*
- III. Are there more returns on female or male clothes in a particular year?
 - female clothes - *Database*, table *Item*, column *Gender*
 - male clothes - *Database*, table *Item*, column *Gender*
 - a particular year - *Database*, table *Returns*, column *Date*
- IV. Is there a relation between the shop and the number of returns to this shop in a given month?
 - shop - excel, sheet 1
 - number of returns - *Database*, table *Return* (count IDs)
 - in given month - *Database*, table *Returns*, column *Date*
- V. In which cities the stores accept the most returns in a given month?
 - in which city - excel, sheet 1
 - number of returns - *Database*, table *Return* (count IDs)
 - in given month - *Database*, table *Returns*, column *Date*

Analytical problem: When can we observe the most returns?

- I. In which cities there are more than the average number of returns on weekends during the last 6 months?
 - in which cities - excel, sheet 1
 - average number of returns - *Database*, table *Return*

- on weekends - *Database*, table *Returns*, column *Day*
- last 6 months - *Database*, table *Returns*, column *Date*
- II. After how many days the items are returned after purchase to shops in the last 2 months?
 - days - *Database*, table *Returns*, column *Day*
 - in last 2 months - *Database*, table *Returns*, column *Date*
- III. In which cities there are more than average number of returns per month in comparison to the same month in the previous year?
 - which cities - excel, sheet 1
 - returns per month - *Database*, table *Returns*, column *Date*
- IV. Compare average number of returns on particular working days in the last week.
 - return on particular working day - *Database*, table *Returns*, column *Day*
- V. Were there an average number of returns bigger/smaller the week after Christmas in comparison to the week before Christmas in the last year?
 - returns in the week after/before Christmas - *Database*, table *Returns*, column *Date*

e) Is there any relation between the number of products returned in the last month and the weather conditions in that month?

- a number of products returned - *Database*, table *Returns*
- last month - *Database*, table *Returns*, column *Date*
- weather condition - there's no such information available in both data sources. The proposals for acquiring such information:
 - Google Weather
 - website: accuweather.com

f) Is there any relation between the advice given by a shop assistant and the number of returns?

- information about particular shop assistant - excel, sheet 2
- information about the advised product - *Database*, table *Item*
- whether the seller's advice resulted in lack of return of a purchased product – no such information