**Appendix 7-B. Procedure to load articles**

Open database

Read (aticles200.csv)

For each Article

Insert (Article to database)

End For

Close database

**Appendix 7-C. Sentences tokenization and lemmatization procedure**

Open database

Read (Article)

For each Sentence

Tokenization (Sentence)

For each Token

Lemmatization (Token)

End For

Write (Sentence)

End For

Close database

**Appendix 7-D. Sentences POS tagging procedure**

Open database

Read (Sentence)

For each Sentence

For each Token

Pos\_Tagging (Token)

End for

End For

Close database

**Appendix 7-E. Sentences NER tagging procedure**

Open database

Read (Sentence)

For each Sentence

For each Token

Ner\_Tagging (Token)

End for

End For

Close database

**Appendix 7-F. Strategy mention procedure**

Open database

For each Sentence

Sentence\_Tokens = [Ner\_tag\_token]

Elements\_Strategy\_Mention = [VERB, NOUN, ADJECTIVE, ADVERB, ADVERB COMPARATIVE, ADJECTIVE COMPARATIVE, ADJECTIVE SUPERLATIVE, ADVERB SUPERLATIVE]

If len (val For val in Sentence\_Tokens If val in Elements\_Strategy\_Mention) > 0

Strategy\_Mention = Sentence

Write (Strategy\_Mention)

End If

End For

Close database

**Appendix 7-G. Candidate strategies extraction procedure**

Open database

For each Strategy\_Mention

Sentence\_Tokens = [Ner\_tag\_token]

If (Sentence\_Tokens CONTAINS “VERB” or “NOUN VERB” or “ADJECTIVE NOUN VERB” or “NOUN VERB ADVERB”)

Candidate\_Strategy = TokenSelected (Sentence\_Tokens)

Write (Candidate\_Strategy)

End If

Close database

**Appendix 7-H. Procedure to load strategies of the QEL (sales business)**

Open database

Read (QEL.csv)

For each QEL

Insert (Strategy\_QEL)

End For

Close database

**Appendix 7-I. Procedure to verify the strategies structure**

Open Database

Read (Candidate\_Strategy)

Read (Strategy\_QEL)

For each Candidate\_Strategy

Rul\_name = []

If len (Candidate\_Strategy == 1) Rul\_name.Append (VERB)

If len (Candidate\_Strategy == 2) Rul\_name.Append (NOUM VERB)

If len (Candidate\_Strategy == 3) Rul\_name.Append (NOUN VERB NOUN / ADJECTIVE NOUN VERB / NOUN VERB ADVERB)

Write (Strategy\_rule)

End For

For each Strategy\_QEL

Rul\_name = []

If len (Strategy\_QEL == 1) Rul\_name.Append (VERB)

If len (Strategy\_QEL == 2) Rul\_name.Append (NOUM VERB)

If len (Strategy\_QEL == 3) Rul\_name.Append (NOUN VERB NOUN / ADJECTIVE NOUN VERB / NOUN VERB ADVERB)

Write (Strategy\_rule)

End For

Close database

**Appendix 7-J. Procedure to weighting of strategies according to the fulfil the business heuristic rules**

Open database

Read (Strategy\_rule)

Read (Heuristic\_rule)

TRADING = ['order', 'quotation', 'stock', 'sale', 'price']

DEALING = ['sell', 'buy', 'offer', 'promotion', 'billing', 'cancel']

CRM = ['customer', 'empathy', 'user', 'ecommerce', 'e-commerce', 'omnichannel', 'omni-channel']

For each Strategy\_rule

weight1=0

If (Strategy\_rule == "VERB" or "NOUN") weight1 = 1

If (Strategy\_rule == "NOUN VERB" or "VERB NOUN") weight1 = 2

If (Strategy\_rule == "NOUN VERB NOUN” or “ADEJCTIVE NOUN VERB” or “NOUN VERB ADVERB") weight1=3

weight2=0

List = len (val for val in “TRADING” if val in Strategy\_rule)

If len (List) > 0

Strategy\_weight.Append ("TRADING")

weight2 = weight2 + List\*3

List = len (val for val in “DEALING” if val in Strategy\_rule)

If len (List) > 0

Strategy\_weight.Append ("DEALING")

weight2 = weight2 + List\*3

List = len (val for val in “CRM” if val in Strategy\_rule)

If len (List) > 0

Strategy\_weight.Append ("CRM")

weight2 = weight2 + List\*3

weight = (weight1 + weight2) / 12

Write (Strategy\_weight)

End For

Close database

**Appendix 7-K. Procedure to formalizing the user strategies of sales business**

Open database

Read (Strategy\_weight)

For each Strategy\_weight

If (weight > 0.3)

Write (User\_Strategy)

End If

End For