

The Clustering of Questions Effect to Tourist's Decision Making for Chatbot Design

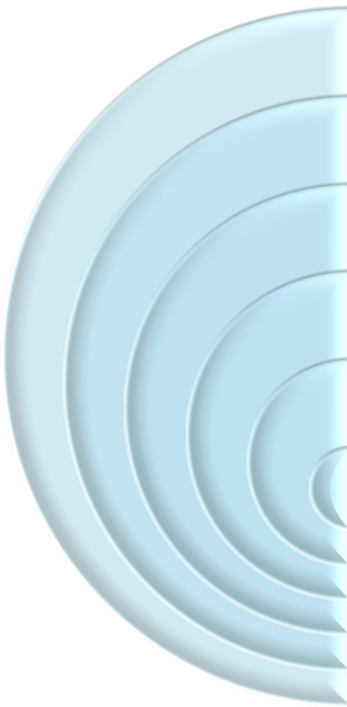


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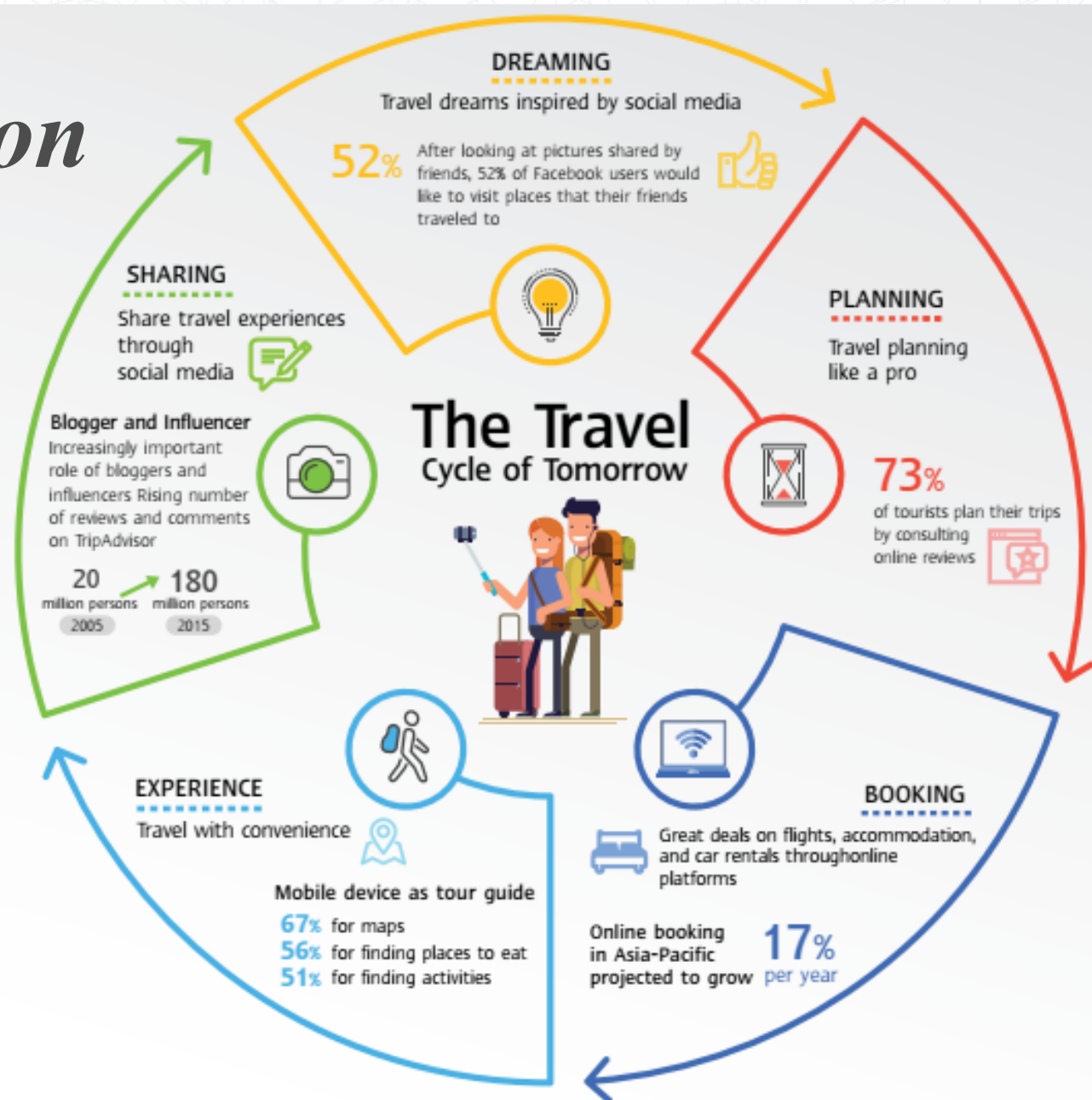
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Outline

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|----------------------------|
| ◆ Introduction |
| ◆ Theory & Related work |
| ◆ Methodology |
| ◆ Contribution |
| ◆ Experimental & Results |
| ◆ Conclusion & Future work |
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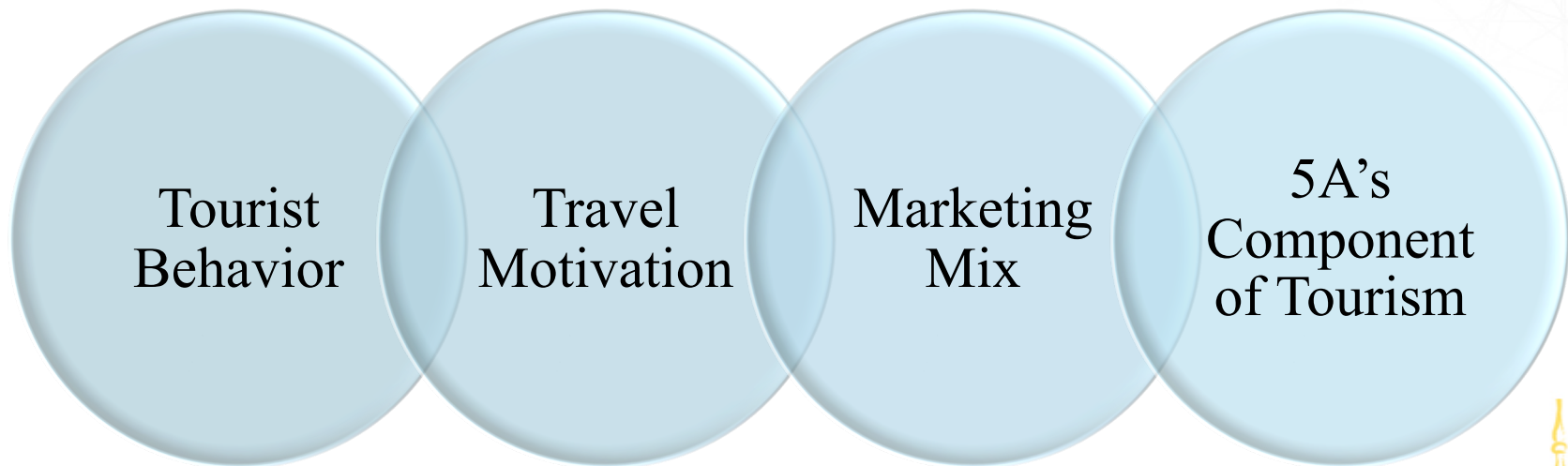
Introduction



Source: EIC analysis based on data from ITU, four-pillars.co.uk, TripAdvisor, and Bardays

Theory & Related work

- **Theory**



Theory & Related work

• Related work

2018

Wudaru, et al., Study on user's Natural Language query to database query allowing the user to extract information. The system will extract keywords and builds a SQL Query based on semantic relationships and returns the result.

2018

Nuruzzaman, et al., Presents a survey on existing chatbots and techniques applied. Their results showed that nearly 75% of customers have experienced poor customer service and generation of meaningful, long, and informative responses remains a challenging task.

2019

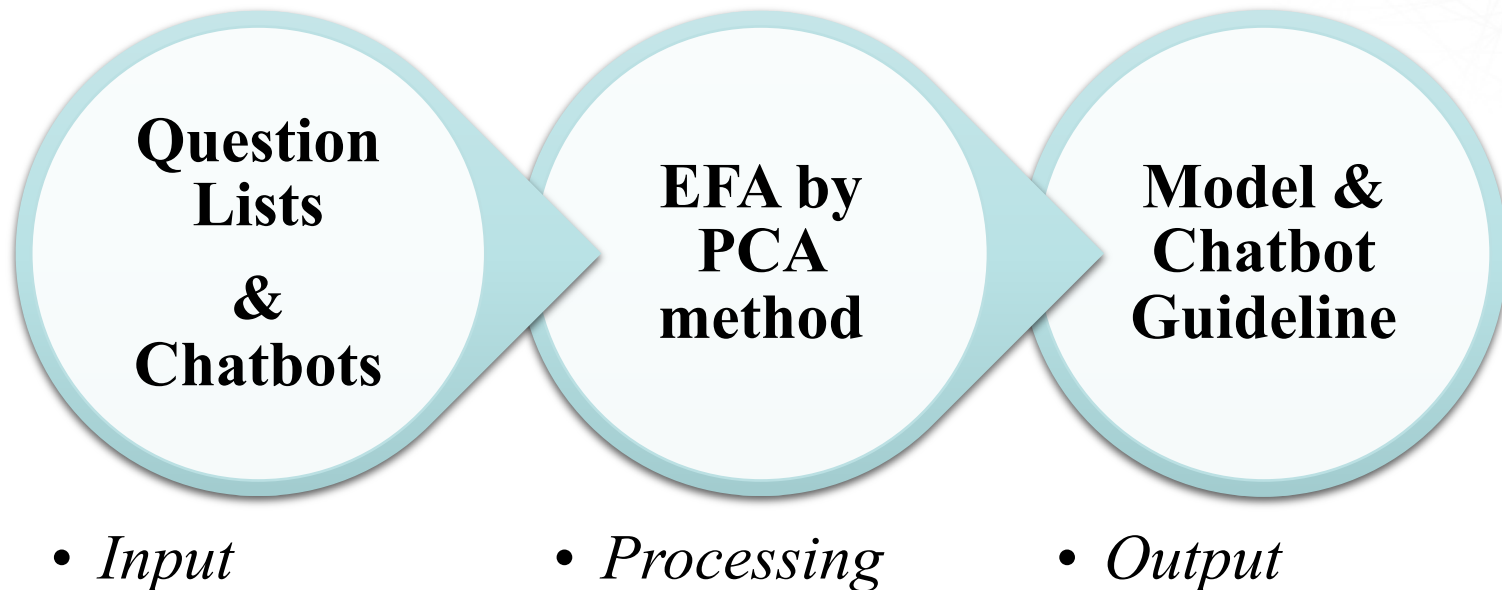
Chen, et al., Presented the importance of tourism marketing strategies and 5A's component of tourism on tourism resources and conducted effective of Hainan Province

2020

Han, et al., Study on CBT in South Korea. Their results verified the customized service and service staff's showed a positive impact on the community benefit of CBT played a salient moderating role in the relationship and provide meaningful insights to destination marketers.

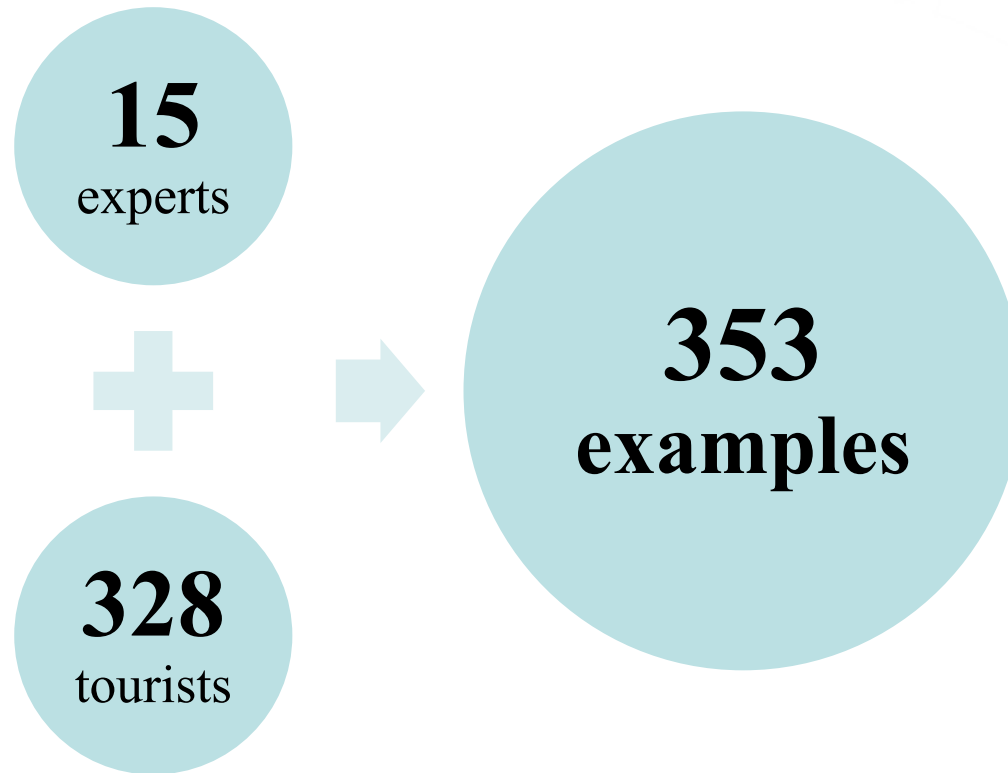
Methodology

- **Research framework**



Methodology

- Dataset



Methodology

- **Feature selection**

*Exploratory
Factor
Analysis
(EFA)*

*Principal
Component
Analysis
(PCA)*



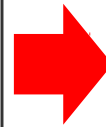
Contribution

- Analyze questions affect to tourist's decision making for chatbot design.
- Propose guidelines for questions structural design for tourism chatbot development in further work

Experimental & Results

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.982
Bartlett's Test of Sphericity	Approx. Chi-Square	25536.040
	df	1225
	Sig.	.000



Component Transformation Matrix

Component	1	2	3	4
1	.605	.557	.424	.381
2	-.657	.468	-.181	.562
3	-.434	-.112	.884	-.130
4	.115	-.677	.077	.722

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.



Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	35.898	71.797	71.797	35.898	71.797	71.797	14.336	28.672	28.672
2	2.144	4.288	76.085	2.144	4.288	76.085	12.142	24.285	52.957
3	1.342	2.684	78.770	1.342	2.684	78.770	7.567	15.134	68.091
4	1.173	2.346	81.116	1.173	2.346	81.116	6.513	13.025	81.116
5	.793	1.585	82.701						



Experimental & Results

Excellent Service [Cluster 1]

- [A37] The shop determines prices of products and services appropriately.
- [A38] The shop has the products and services variously.
- [A31] The tourist attraction has the proper and safe parking lots.
- [A34] The tourism attraction has restaurants which meet the hygiene standards and are sufficient for a number of tourists.
- [A42] The tourism attraction has knowledgeable guides/local guides.
- [A36] The tourism attraction has local and souvenir shops in the community.
- [A33] The tourism attraction has clean and standardized toilets, as well as sufficient for a number of tourists.
- [A32] The tourism attraction organizes the traffic suitably.
- [A40] The shop has products and services enough for the tourists.
- [A30] The tourism attraction has health facilities.
- [A39] The shop has efficient and standardized products and services.
- [A41] The tourism attraction has security guards for the tourists.
- [A35] The tourism attraction has unique local food to service the tourists.
- [A29] The tourism attraction has phone and internet signs thoroughly.
- [A27] local people provide services and promote the tourism nicely.
- [A28] The tourism attraction has primary facilities sufficiently.
- [A26] The community has areas to support the tourists sufficiently.
- [A23] The time for doing activities is appropriate.

Standard Facilities [Cluster 2]

- [A16] The residence is safe.
- [A15] The residence can be accessed conveniently.
- [A19] The residence type is varied.
- [A14] The residence is hygienic.
- [A18] The residence price is reasonable.
- [A13] There are facilities in the residence.
- [A9] The time used for travelling to the tourism attraction is suitable.
- [A17] There are agencies/hosts ready to provide assistance all the time.
- [A10] There are various vehicle types for travelling to the tourism attraction.
- [A7] The routes to access the tourism attraction are in good condition.
- [A6] Travelling to the tourism attraction is convenient.
- [A8] There are clear and enough signs for accessing to the tourism attraction.
- [A11] There are vehicles provided for travelling into the tourism areas such as bicycle, tricycle, E-taen Thai tractors, cart, etc.
- [A12] There are sufficient residences to meet requirements.
- [A24] The tourism activities are able to reflect the unique culture, livelihood, and local wisdom.
- [A20] The tourism activities are interesting.
- [A22] There are tourism activities that give the tourists opportunity to participate.
- [A25] The tourism activities create perceptions to the community identity.
- [A21] The tourism activities are varied.

Accuracy of Information [Cluster 3]

- [A46] The tourist attraction has the information system and websites to give information to the tourists.
- [A49] There are manuals or documents and all complete details to promote the tourism.
- [A48] The tourism activities are publicized through social media continuously.
- [A47] The tourism attraction has channels to communicate with the tourists such as Fan Page, Facebook, Line, etc.
- [A50] The guides/local guides provide good and effective information.
- [A44] The tourism attraction announces the rules and regulations to the tourists clearly.
- [A45] The agencies give good and effective suggestions and have service mind.
- [A43] The tourism attraction provides information and information center for the tourists.

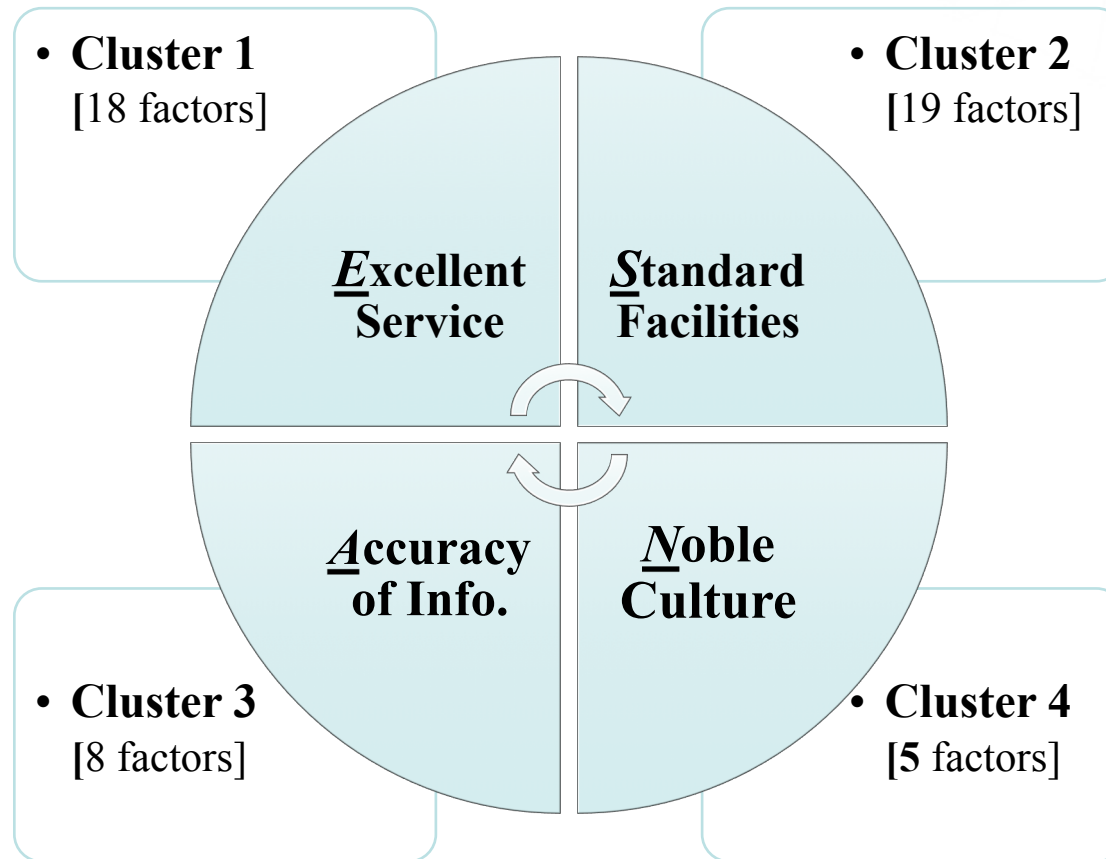
Noble Culture [Cluster 4]

- [A3] The community has the unique and outstanding tourist attraction
- [A2] The community has the locally specific identity.
- [A4] The community has the historical tourist attraction reflecting culture, livelihood, and tradition
- [A1] The community has various tourism attractions.
- [A5] The community conserves the local cultures strongly.

• 50 Question lists into 4 cluster

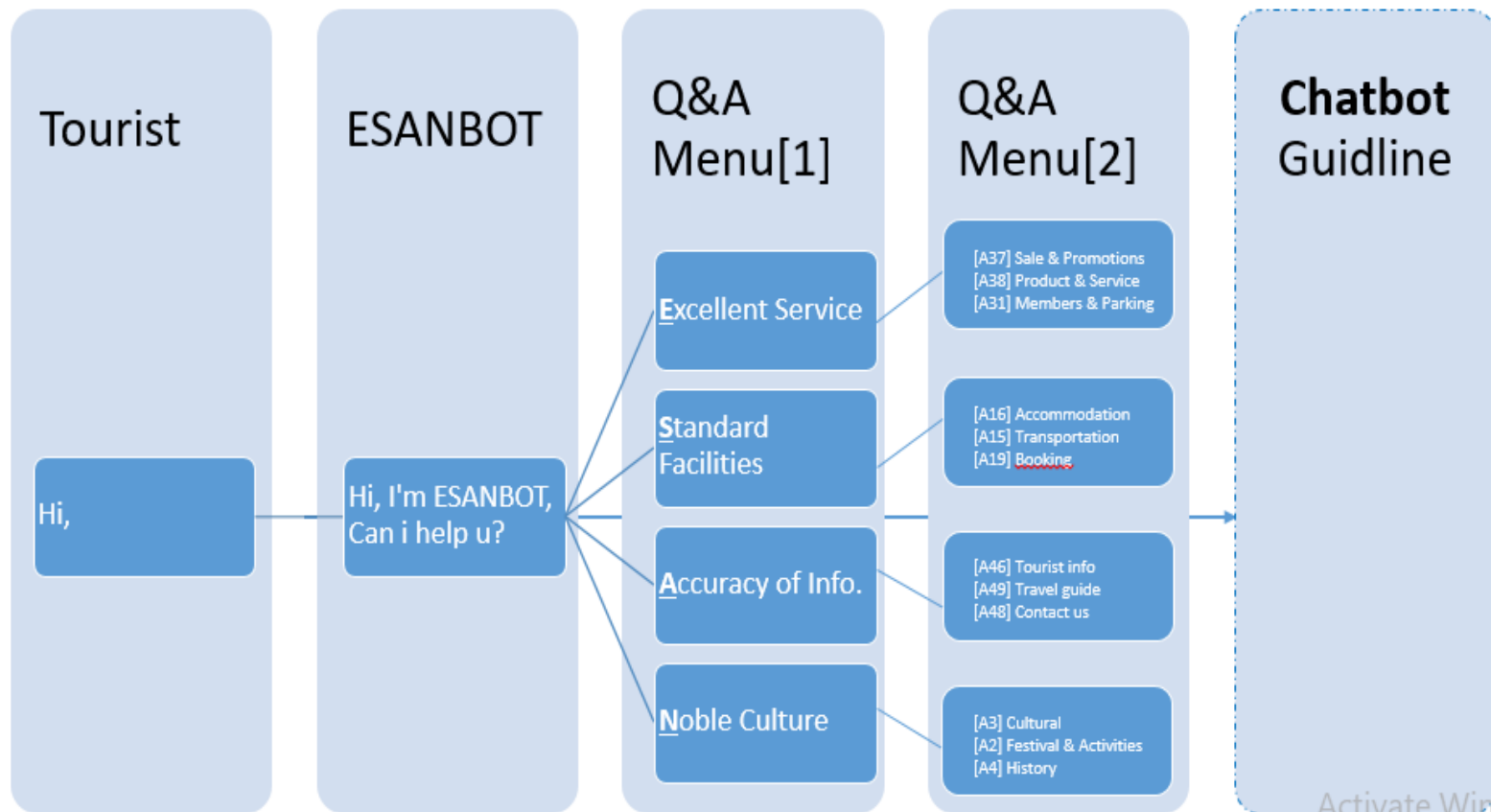
Experimental & Results

- **ESAN model**



Conclusions

- Conversational structure of ESANBOT in all 4 clusters



Future work

- Association Rule
- Tourism Recommender System/Chatbot

THANK YOU
FOR
YOUR ATTENTION

Q & A

