

Proceedings of
**2014 6th International Conference on
Information Technology and Electrical Engineering**



ICITEE 2014

**2014 6th International Conference on
Information Technology and Electrical Engineering**

**“Leveraging Research and Technology
through University-Industry Collaboration”**

**Eastparc Hotel, Yogyakarta
7-8 October 2014**



Organized by
Department of Electrical Engineering and Information Technology
Faculty of Engineering, Universitas Gadjah Mada
Jalan Grafika 2 Yogyakarta 55281, Indonesia

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Welcome Message from the General Chair

On behalf of the organizing committee, it is our pleasure to welcome you to Yogyakarta, Indonesia, for our annual conference. This is the 6th conference that is held by the Department of Electrical Engineering and Information Technology, Faculty of Engineering, Universitas Gadjah Mada. This year, the conference is differently called as Joint conference 2014 as there will be 4 parallel conferences, including:

1. ICITEE (International Conference of Information Technology and Electrical Engineering) 2014,
2. CITEE (Conference of Information Technology and Electrical Engineering) 2014,
3. RC-CIE (Regional Conference on Computer and Information Engineering) 2014, and
4. CCIO (Conference on Chief Information Officer) 2014.

The joint conference's theme is "Leveraging Research and Technology through University-Industry-Government Collaboration" emphasizes on the enhancement of research in a wide spectrum, including information technology, communication and electrical engineering, as well as e-services, e-government and information system. The conference is expected to provide excellent opportunity to meet experts, exchange information, and strengthen the collaboration among researchers, engineers, and scholars from academia, government, and industry.

In addition, the conference committee has invited five renowned keynote speakers, Prof. Marco Aiello from University of Groningen (RuG), Netherland, Prof. Einoshin Suzuki from Kyushu University, Prof. Yoshio Yamamoto from Tokai University, Prof. Jun Miura from Toyohashi University of Technology, and Prof. Kazuhiko Hamamoto from Tokai University, Japan. The conference committee also invited Tony Seno Hartono from National Technology Officer of Microsoft Indonesia and Dr. Ing. Hutomo Suryo Wasisto (Associate Team Leader in MEMS/NEMS and Sensor Group) Technische Universität Braunschweig, Germany as Invited speaker to present their current research activities.

This conference is technically co-sponsored by IEEE Indonesia Section. Furthermore, it is supported by JICA, AUN/SEED-Net, Ministry of Communication and Information Technology of The Republic of Indonesia, and King Mongkut's Institute of Technology Ladkrabang, Thailand.

As a General Chair, I would like to take this opportunity to express my deep appreciation to the organizing committee members for their hard work and contribution throughout this conference. I would also like to thank authors, reviewers, all speakers, and session chairs for their support to Joint Conference 2014.

In addition to the outstanding scientific program, we hope that you will find time to explore Yogyakarta and the surrounding areas. Yogyakarta is city with numerous cultural heritages, natural beauty, and the taste of traditional Javanese cuisines, coupled with the friendliness of its people.

Lastly, I would like to welcome you to Joint Conference 2014 and wish you all an enjoyable stay in Yogyakarta.

Sincerely,

Hanung Adi Nugroho, Ph.D.
General Chair of Joint Conference 2014

Welcome Message from the TPC Chair

On behalf of the technical program committee (TPC), we warmly welcome you to the 6th International Conference on Information Technology and Electrical Engineering (ICITEE 2014) in the cultural city of Yogyakarta, Indonesia. The committee has organized exciting technical programs for ICITEE 2014 with conference theme of "Leveraging Research and Technology through University-Industry Collaboration." As an annual International conference, ICITEE provides excellent platform to share innovative idea and experiences, exchange information, and explore collaboration among researchers, engineers, practitioners and scholars the field of information technology, communications, and electrical engineering.

All 163 submitted papers from 18 countries throughout the world went through a rigorous review process and each paper was evaluated by at least three independent reviewers in accordance with standard blind review process. Based on the results of the rigorous review process, 78 papers have been selected, which constitute the acceptance rate of 47.9%. These papers have been grouped into 5, ranging from the fields of information technology, communications, power systems, electronics, and control systems. Besides those regular sessions, ICITEE 2014 also features world-class keynote/plenary speeches and distinguish-invited speakers that reflect the current research and development trends in the aforementioned fields.

We are deeply indebted to all of our TPC members as well as our reviewers, who volunteered a considerable amount of their time and expertise to ensure a fair, rigorous, and timely review process. Many thanks should be given to our keynote and invited speakers who will share their experience in this conference. Last but not least, our sincere gratitude should be given to all authors for submitting their work to ICITEE 2014, which has allowed us to assemble a high quality technical program.

Welcome to Yogyakarta and hope you will enjoy a wonderful experience in this traditional city of Indonesia.

With best regards,

TPC Chair

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Session 1

Software Engineering,
Services and Information
Technology

Real Time Key Element Extraction for Design of In Flight Meal Services Based on Passenger's Personality Traits

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Abstract— In flight meal services is one of the most important points to judge an airline as favorite to the passengers. It is crucial to include personal trait in designing these services. Thus, this work concentrated on formulating model of in-flight meal services. First, by using Key Element Extraction (KEE), we identify passenger's personality traits in real time from social media. And then we design model formulation of in-flight meal services, by using Quantification Theory Type 1 (QTT1). The identification of passenger's personality traits in computational experiment are based on particular type such as neophobia, variety seeking selective, and variety seeking. Variants formulation for each personality traits were designed for different categories such as menu variant, originality, appearance, suitability, cordiality, punctuality and responsibility. To enabling implementation of this model, it is required to attach it to the current booking and database costumer system that running online.

Keywords— *In flight meal services; personality traits; real time; design*

I. INTRODUCTION

As air transportation industries grow, core business of the airline is bringing passengers from one place to their destinations. Also, airline businesses are in charged to give a good service during their journeys [1,2,3,4,5]. For fulfilling the passenger's requirement, airline also completing their services with set aside food what is known as term *in flight meal* [6].

In flight meal services is one of the factors on passenger's list for choosing an airline which is covering food (i.e quality, volume, menu variation, and appearance), pricing, cordiality of crew (particularly flight stewardess), getting information, ordering method, and punctuality [7]. In flight meal services is related to personality traits. This argue was reinforced by result of research that categorized the factor that was influenced tourist food consumption as cultural or religious influences, socio-demographic factors, food-related personality traits, exposure effect or past experience, and motivational factors. Due to that problem, airline must know the passenger's personality traits [8].

In today's competitive environment with rapid innovation in meal in flight, there is an increased need for fulfilling passenger's requirement in-flight meal services airline business. Airlines have a challenge to serve the right meals for right passengers on the right flight. For increasing their

competitiveness, they should implemented requirement for their own in-flight meal services systems.

Enterprise needs a data analysis in real time mode [9] belonging to in-flight meal services. Real time requirement will roam the data warehouse which have a big volume and weakened the data on business operation rapidly. Also, real time will be optimize the decision making process by supply the conceptual data [10,11,12].

To make a real time access, business process must be integrated with social media. In this case, social media defined as information media online (internet based) that enable the user for participating, sharing, and making content virtual easily. It has capability to recording social interaction in large number and real timely. Information are being unlimited by time and space. But by using social media, personality traits of costumer may be revealed for their own convenience.

Therefore this work aims to identify passenger's personality traits, and to design architectural real time key element extraction of in-flight meal services based on passenger's personality traits.

II. METHODOLOGY

In this case, the most important information is passenger's requirements. That one of the factors to influence passenger's requirement is their own personality traits. So, airline should identify personality of their passengers well. Based on that information, airline should design formulation to reveal and deploy favorable services that is suitable with their personality traits. The methodologies are in this paper presented on Figure 1.

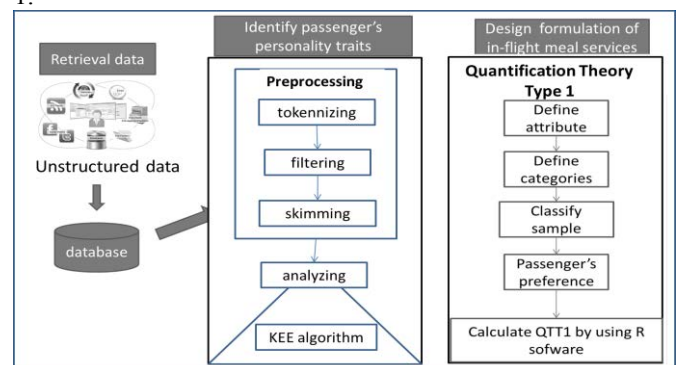


Figure 1. Research Framework

A. Preprocessing

Preprocessing is a requirement of in preparing the raw data. So it is help to comprehend the understanding of information in future steps. These stages are consisted of exchanging data from unstructured real time data to a structured data and reducing irrelevant terms [13].

B. Key Element Extraction (KEE)

KEE is an algorithm for finding *key persons* and *key terms* of a discussion by scoring passengers and terms in the context of their *significance* in discussions. Higher scored passengers are *key persons* having innovative and creative ideas or potential for producing them. Higher scored terms are *key terms* indicating or leading to innovative and creative ideas. KEE is based on the idea of mutually reinforcing relationship between passengers and terms: significant passengers are the passengers using many significant terms, and conversely, significant terms are the terms used by many significant passengers [14]. The following questions detailed each step of KEE as follows:

$$s(p_i) = \sum_{p_i t_j \in E} s(t_j) \cdot w(p_i t_j) \cdot \alpha(t_j) \quad (1)$$

$$s(t_j) = \sum_{p_i t_j \in E} s(p_i) \cdot w(p_i t_j) \cdot \alpha(t_j) \quad (2)$$

Where:

p_i : passenger i^{th} ($i=1,2,\dots,n$)

t_j : term j^{th} ($j=1,2,\dots,m$)

$s(p_i)$: Score of passengers

$s(t_j)$: Score of term ($j=1,2,\dots,m$)

$w(p_i t_j)$: Total passengers score of term

$\alpha(t_j)$: Weight of term (based on interest rate)

KEE algorithm be has as simultaneously finding key terms and key persons in network-based discussions. It formed as a network-based discussion is (1) held for enhancing innovation and creativity toward product conceptualization, (2) based on participants posting and replying messages (3) on online message boards or chat rooms. Those discussions were made several attempts with different focus groups. A discussion is represented by a weighted directed bipartite graph $G(V, E)$ where V and E are sets of nodes and weighted edges, respectively. It demande the operator of exclusive selection. Let VP be a set of passengers of the discussion on online forum, *tweeter*, or *Facebook* and VT be a set of terms used by the passengers. Thus $V = VP \cup VT$, $VP \cap VT = \emptyset$. Let denote an edge between $p_i \in VP$ and $t_j \in VT$ and its weight by (p_i, t_j) and $w(p_i, t_j)$, respectively. $W(p_i, t_j) = m$, if the participant p_i used the term t_j m times [14].

C. Quantification Theory Type I

The QTT1 is a method of qualitative and categorical multiple regression analysis allowed inclusion of independent

variables that are categorical [15]. The steps of quantification theory are following:

1. Determine the in-flight meal services attribute (X_n) ($n=1,2,\dots,7$)
2. Define the categories i of in-flight meal services attribute (X_{ni}). For example, in this case for menu variant there are 3 categories i.e vegetarian, moslem, and kosher (X_{11} , X_{12} , X_{13}).
3. Classify sample based on their attribute categories.
4. Evaluating the passenger's preferences about samples.
5. Formulating the in-flight meal services by using QTT1 on R language [15]

III. IDENTIFICATION OF PASSENGER'S PERSONALITY TRAITS

A. Preprocessing

Initially we provided data from social media are with loaded passengers posting, tagging or tweeting data about meals or services on large number of data without being limited by time. Besides that, nowadays social media became more popular for people to soulful or give expression to public about what their mind. So, without direct questioner, passenger personality traits can be known from social media based on their posting or comment. Data that derived from social media are unstructured data in the text form and multimedia content. But it isn't organized well certain in a database. In this case the observed are comments, tags, photos, post on the forum of internationally recognized Airline (for example GA Indonesia) members which is then captured by the HTML5.

HTML5 is a language that used to create web pages and a core technology of internet and basic language of designing. It adds many new syntactical features and tags that indicate website designs with special effects and awesome layouts [16]. The data obtained from cloud computing are enrolled in social media. Cloud provides a virtual computer that provides the ability for the user to operate in accordance with the requirement.

Unstructured data which obtained from social media will be treated into structured data in the form of a column matrix. In the search text in social media, the data is divided into data that provide information such as user profiles and data provide information such as the user transaction. Transaction that occurs can be either an opinion, or tags (like or dislike) of the user. Based on the data structure irregularity text, then the preprocessing process requires some initial stage which basically is to prepare so that the text can be changed to be more structured. Steps are as follows:

1. Tokenizing

Phase cut input string by each constituent word. For example, this opinion was obtained from the discussion forum (see on Table I).

2. Filtering

Filtering is the stage of taking important words from the token. The algorithm can stop list (remove unimportant words) or word list (save the important word).

TABLE I. TOKENIZING

Opinion on Forum	Token Result		
Garuda Indonesia Customer review : 17 April 2014 by P Ricky (Indonesia) Rating : 9/10  Cabin Flown Economy Value for Money  Seat Comfort  Staff Service  Catering  Entertainment  Recommended  GA189, KNO-CGK on 31 March. Flight operated by 737-800NG with registration number PK-OFR. This aircraft already had the sky interior onboard. Flight attendants were nice and friendly and greeted the passenger with traditional salam garuda. After takeoff there was a hot meal service for this 2 hours journey. The meal had 2 choices: Beef Rendang with rice or Fried Fish with rice. I choose beef and it was tasty. After the meal service the FA distributed an ice cream for dessert. This aircraft had PTV AVOD with decent movies, short films, music, and games. Will fly with Garuda again.	GA 189 KNO CGK on march flight operated by 737 800 NG with registration number PK GFR this aircraft already had the sky interior onboard attendants	were Nice and friendly greeted passenger with traditional salam garuda after take off there was a hot meal service for this 2 hours journey had choices	beef rendang rice or fried fish I tasty after FA distributed an ice cream for dessert PTV AVOD decent movies short film music games will fly again

3. Stemming

This process is the stage looking for the root word of each word filtering results. The process results in filtering and stemming stages as follows:

TABEL. II RESULT OF FILTERING AND STEMMING

Filter	Steaming	Participant
Nice traditional tasty choice	Funny unique impression variant	P1

B. Identification passenger's personality traits by using Key Element Extraction

In this step, KEE algorithm was used to identify the personality of passengers. Data that has been preprocessed, therefore it will be analyze score of each passenger $S(p_i)$. These values were then grouped following the rules:

1. If $S(p_i) > (\text{Min } S(p_i) + 2 \text{ Range } S(p_i) / 3)$, participant's personality traits is variety seeking
2. If $(\text{Min } S(p_i) + 2 \text{ Range } S(p_i) / 3) \leq S(p_i) \leq (\text{Min } S(p_i) + \text{Range } S(p_i) / 3)$, participant's personality traits is seeking variety selective
3. If $S(p_i) < (\text{Min } S(p_i) + \text{Range } S(p_i) / 3)$, participant's personality traits is neophobia

Personalities traits are psychological factors are important in influencing consumption patterns. This factor leads to passenger characteristics that influence consumption behavior. There are 2 types of passengers that food neophobia personality and variety seeking [8].

Food neophobia is a term used for people who are reluctant to try new foods and digest where feelings are more dominated for selecting food. Human beings are omnivores will try a variety of food sources but at some point will be

careful to digest food is toxic and dangerous. Therefore, neophobia food can be conceptualized relative would have a preference for food that is more familiar than the new food. Other personality types that affect the selection of food are variety seeking passengers. Variety seeking is the term used for the personality of the person who likes looking for something that is diverse (diversity) and different as a good choice in service and food. This type has the flexibility to adopt the food they consume [8].

By understanding the personality types of passengers, the airline could determine the pattern of food and service to be provided. In this study, consumers were divided into three types namely personality trait neophobia, variety-seeking selective, variety seeking. Data has been taken from social media, personality known as passenger behavior like or do not like new thing that be unstructured data input. In this paper used hypothetical data. Assuming that there were 100 participants who comment, posting, or retweet on forum of Internationally recognized Airline (for example, GA Indonesia) about in flight meal services. α is weighted of the term which obtained by using expert system software. The greater the value of α indicates that the word is more important and relevant with the personality traits.

In Table III, it was found there were 17 passengers which have personality traits neophobia, 60 passengers were variety seeking selective and the other were variety seeking. In other word, if we generate this data as dashboard of passenger's personality traits are represented on Figure 2. Based on that dashboard, airline business can predict the in flight meal services that will they serve.

TABLE III. RESULT OF KEE ALGORITHM

A	0,15	0,1	0,1	0,1	0,1	0,03	0,05	0,15	0,2	0,02	1	
Passengers (P)/Term (T)	New	Unique	Variant	Different	Impression	Cute	Funny	Challenge	Foreign	Oriental	Total S (p _i)	Personality Traits
1	0	1	0	0	0	0	1	1	0	1	47,05	variety seeking selective
2	1	1	1	0	1	0	0	1	1	1	61,25	variety seeking selective
3	1	1	1	0	0	1	1	1	1	0	67,4	variety seeking
4	0	0	1	0	0	0	0	1	1	1	68,1	variety seeking
5	0	0	1	1	0	1	0	0	0	0	62,67	variety seeking selective
6	0	0	0	0	1	0	0	1	1	1	44,74	variety seeking selective
7	1	1	0	0	0	1	1	1	0	1	44,02	variety seeking selective
8	0	1	0	1	1	0	0	0	0	0	45,82	variety seeking selective
9	1	1	1	1	0	1	1	1	1	0	45,34	variety seeking selective
10	0	0	1	1	1	1	1	1	0	1	62,57	variety seeking selective
11	0	1	0	1	0	0	0	0	0	1	53,07	variety seeking selective
12	1	0	0	0	1	1	0	1	1	0	50,94	variety seeking selective
13	0	0	1	0	0	1	0	0	0	1	59,12	variety seeking selective
14	0	0	0	0	0	0	1	1	0	0	45,87	variety seeking selective
15	0	1	1	0	1	1	0	1	1	1	43,32	variety seeking selective
16	1	1	1	0	0	0	1	0	0	0	46,65	variety seeking selective
17	0	1	0	1	1	0	0	1	1	0	37,37	Neophobia
18	1	1	0	1	0	1	1	1	0	1	38,69	Neophobia
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
90	1	0	1	1	0	0	1	1	0	1	19,32	Neophobia
91	1	1	1	1	0	0	0	0	0	0	34,52	Neophobia
92	0	0	0	1	1	0	0	1	1	0	34,62	Neophobia
93	1	0	1	0	1	0	0	1	0	1	60,39	variety seeking selective
94	0	1	0	0	0	1	0	1	1	1	69,29	variety seeking
95	1	0	0	0	1	1	0	0	1	1	54,22	variety seeking selective
96	0	0	0	1	1	0	1	0	1	1	41,37	variety seeking selective
97	1	1	1	1	1	0	0	0	1	0	38,72	Neophobia
98	1	0	1	0	0	1	0	0	0	0	51,22	variety seeking selective
99	1	1	1	0	1	0	0	0	1	1	26,87	Neophobia
100	0	1	0	0	0	1	0	1	0	0	42,8	variety seeking selective
Total t (ti)	51	47	53	50	43	49	46	45	53	53		

passenger's personality traits

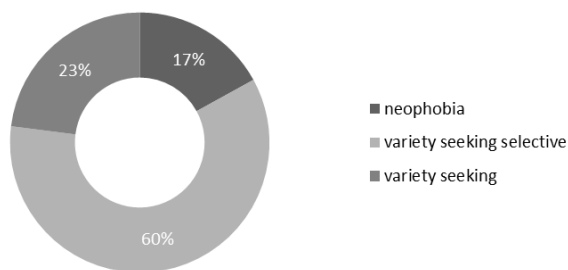


Figure 2. Dashboard Passenger's Personality Traits

IV. DESIGN OF IN FLIGHT MEAL SERVICES BASED ON PASSENGER'S PERSONALITY TRAITS

Based on the result of KEE algorithm, the passenger's personality traits were being guidance to design in flight meal services. In this case, the formulation design obtained by using Quantification theory type 1 (QTT 1).

Knowing attributes of in-flight meal services is an important step that should be done if we will formulate its design. In this paper, discussing 7 attribute on scope of our problem. Not only about meals but also about how these meals are served. The attributes about meals are including:

a. Menu variant (X_1)

Menu variant (X_1) has 3 categories which usual be on the market that is vegetarian (X_{11}) that meals haven't an animal protein; Moslem (X_{12}) that meals haven't alcohols and insurable as halal food; and Kosher (X_{13}) that food for person that have interdiction.

b. Originality (X_2)

In this case, originality that mean place where are the meals come from. Based on point of departure, Originality only derived as 2 categories namely foreign country (X_{21}) and old country (X_{22}).

c. Appearances (X_3)

Presentation of our meals with appetite for its consumption. So, airline business must pay attention about appearance. This attribute have 2 categories namely unique (X_{31}) such as using banana's leaf or another materials that refer to local wisdom; and standard (X_{32}) such as using the dishes standard.

The attributes about service are including:

a. Suitability (X_4)

Suitability decipherable as level of conformity between the images of menu and meals that be served. if they are similar then belonging to suitable category (X_{41}), and inversely as different category (X_{42}).

b. Cordiality (X_5)

In this paper, cordiality is about attitude of flight stewardess when they offer the menu. They only greeting (X_{51}) or they give more information (X_{51}).

c. Punctually (X_6)

Meals must be served on right time. Punctually has 3 categorizes that are quarter time earlier (X_{61}), middle time (X_{62}), or quarter time finish (X_{63}).

d. Responsibility (X_7)

Responsibility derived as slow respond (X_{71}) and quick respond (X_{72}).

TABLE IV. IDENTIFICATION OF IN FLIGHT MEAL SERVICES ATTRIBUTES

Type	Menu Variant	Originality	Appearance	Suitability	Cordiality	Punctually	Responsibility
i	X_1	X_2	X_3	X_4	X_5	X_6	X_7
1	Vegetarian	foreign country	Unique	Suitable	Greeting	quarter time earlier	Slow respond
2	Moslem	Old country	Standard	Different	More information	middle time	Quick respond
3	Kosher					quarter time finish	

In this paper, we use hypothetical data. Assumed that we are collecting 15 samples, and then we classify the sample based on type (categories each attributes) that be defined on table 4. And then, we evaluated their passenger's preferences per each personality traits.

45 data passengers' preferences by using semantic differential questioners. This questioner has range 1-7 (1 indicated unlike and 7 indicated like so much). The result of preferences from 15 respondents furthermore averaged. Data classify and evaluating of samples is shown on table 5.

Respondents that are used on this case as many 15 people per each personality traits. In other words, we totally collect

TABLE V. DATA EVALUATION OF SAMPLE SERVICE

No sample	CLASSIFICATION OF IN FLIGHT MEAL SERVICES							PASSENGER'S PREFERENCES		
	X_1	X_2	X_3	X_4	X_5	X_6	X_7	Neophobia	variety seeking selective	variety seeking
1	2	1	1	1	1	2	1	2,324	4,802	1,524
2	1	2	1	2	1	1	2	2,336	4,666	4,696
3	3	1	2	1	2	3	1	2,937	6,504	4,158
4	1	2	2	1	2	2	2	5,280	4,298	5,016
5	3	1	1	2	1	3	2	4,706	6,747	3,014
6	3	1	2	1	1	3	1	5,146	6,153	4,216
7	2	2	1	1	2	2	1	2,259	2,801	1,757
8	1	2	1	1	1	2	2	1,479	4,926	3,333
9	3	1	2	2	1	3	1	4,939	1,572	6,558
10	2	2	1	1	2	1	2	2,431	5,703	5,187
11	3	1	1	1	1	2	1	5,014	6,277	5,832
12	3	2	2	1	1	3	1	1,012	3,297	6,161
13	3	2	2	2	2	3	1	3,569	1,230	2,965
14	3	2	1	1	2	3	2	6,296	6,302	2,815
15	2	2	2	2	1	3	1	4,503	1,125	5,546

Data as result from questioner became an input for formulating QTT1 on R software. By using QTT1, we design of in-flight meal services. On Figure 4 represented dashboard design formulation each passenger's personality traits and table 6 are shown the coefficients each categories and PCC (Partial Correlation Coefficient) each attribute of in-flight meal services. From dashboard, we know rapidly the recommendation of developing the design formulation in flight meal that

suitable with passenger's personality traits. Every value in each category shows the influence level of attributes. We recommended the highest value of category score in each attribute. By implementation of this system, we developed in-flight meals services based on personality traits by real timely. Recommendations of design formulation are represented on table 7.

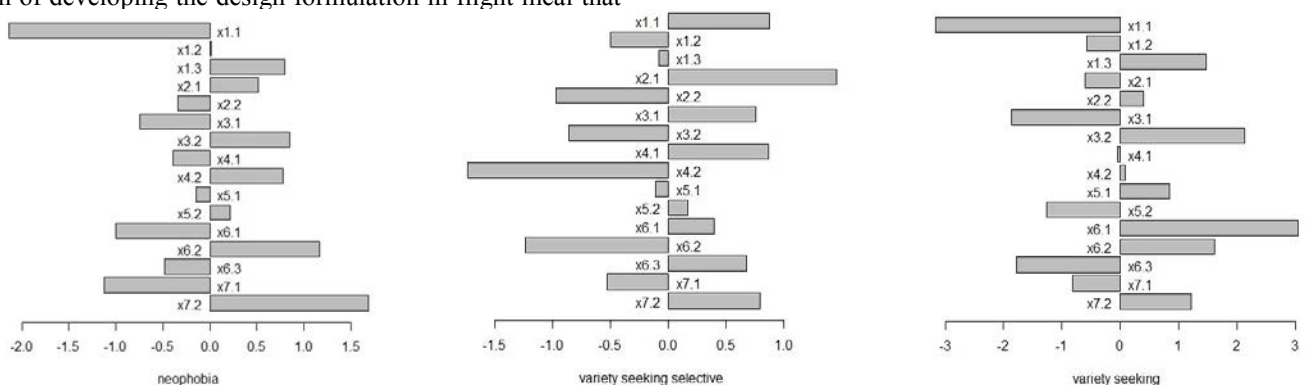


Figure 3. Dashboard Design Formulation Each Passenger's Personality Traits

TABLE VI DESIGN FORMULATION OF IN FLIGHT MEAL SERVICES EACH PERSONALITY TRAITS

Attribute of In-flight meal services		Neophobia		Variety Seeking Selective		Variety Seeking	
		Categories	PCC	Categories	PCC	Categories	PCC
x1	x1.1	-2,136	0,480	0,877	0,430	-3,162	0,706
	x1.2	0,011		-0,501		-0,567	
	x1.3	0,796		-0,079		1,470	
x2	x2.1	0,514	0,262	1,456	0,864	-0,606	0,409
	x2.2	-0,343		-0,971		0,404	
x3	x3.1	-0,746	0,461	0,754	0,625	-1,865	0,824
	x3.2	0,853		-0,861		2,131	
x4	x4.1	-0,391	0,366	0,867	0,860	-0,044	0,068
	x4.2	0,783		-1,735		0,088	
x5	x5.1	-0,142	0,120	-0,113	0,184	0,843	0,706
	x5.2	0,213		0,170		-1,265	
x6	x6.1	-1,001	0,431	0,399	0,700	3,051	0,731
	x6.2	1,165		-1,239		1,614	
	x6.3	-0,478		0,675		-1,772	
x7	x7.1	-1,126	0,564	-0,529	0,486	-8,136	0,635
	x7.2	1,689		0,793		1,220	
Constant		3,615		4,427		4,185	
R		-0,477		0,741		0,214	
R ²		0,473		0,907		0,719	

TABLE VII. DESIGN OF IN FLIGHT MEAL SERVICES EACH PERSONALITY TRAITS

Design	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇
Neophobia	Kosher	old country	Standard	different	more information	middle time	slow respond
variety seeking selective	Vegetarian	old country	Unique	Suitable	more information	quarter time finish	quick respond
variety seeking	Kosher	foreign country	Standard	different	greeting	quarter time early	quick respond

V. CONCLUSION

Passenger's personality traits have a powerful relationship with in-flight meal services. Our finding revealed the personality traits as neophobia, variety seeking selective, and variety seeking. Designed formulation of in-flight meal services are different both in menu variant, originality, appearance, suitability, cordiality, punctuality and responsibility. Implementation of this systems support the airline business could contribute for decision making to formulate passenger's requirement in flight meal services. Our recommendation are integreted this system with current booking and membership database systems.

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