Enabling New Public Service Paradigms on Social Media Platforms – A "Social AHP" Model for Citizen-to-Citizen Services

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ABSTRACT
This work considers the Citizen-to-Citizen (C2C) service interaction, and shows how it could be implemented using a set of identified affordances and a decision model that considers social attributes. Specifically, we adapt the Analytic Hierarchy Process (AHP) to consider social attributes in choosing appropriate service provider for a C2C service request. In our opinion, insights from this work should help in moving Government Social Media policies towards the use of social media platforms for implementing C2C and other emerging services like C2G services.

CCS Concepts
• Information systems→Online analytical processing • Human-centered computing→Social media

1. Problem
The problem that we want to solve in this work is to optimize the decisions of a C2C service delivered on social media platforms. Such decisions are complex, particularly when there is a large number of users and multiple criteria involved in determining the optimal provider to deliver required services. Decision Theory affords "Multicriteria Decision Methods" that can resolve complex decision making scenarios. Our challenge here is to adapt a method called the "Analytic Hierarchical Process"; to consider social relationships among social network community members in determining the optimal service provider in a C2C service context.

2. Methodology

2.1 Social Media Affordances for Peer-services
Citizens interconnect to provide service effectively through self-organization. This opens up opportunities for "citizen-to-citizen", where government plays no main role in day-per-day activities, but may provide some facilities and play other supporting roles [1] [2]. Users at the end of the day will be able to interact or discuss by giving feedbacks or suggesting improvements by comments and likes. They can receive notifications about the provision and the opinions. Social media platforms provide the possibility of publishing service requests as posts. Citizen providers (volunteers) also can create communities or develop applications through which requesters can ask for services. With the geolocation technology, the citizens can look who is the nearer than them to provide them and can prefer if they want someone closer as proximity or someone that have direct or common relations. Table 1 summarizes the affordances of social media for citizen peer-services.

Table 1. Social media affordances for C2C service interaction

Affordances	Enabling
Manage user profile	Specify profile information Update status
Manage relations	Add new and look on the existing relations between service providers and requesters
Specify and share opinions on content	Give feedbacks and suggest improvements
Upload and broadcast media	Publish service requests Publish media about service provision
Reveal social media attributes	Receive service notifications
Manage community	Create groups
Organize event	Organize service action
Converse and chat with network	Discuss directly about service details
Location based networking	Service check-in

2.2 Multi-criteria Decision Model for Peer-Services on Social Media Platforms
We show here how a Multi-criteria Decision Model (i.e. Analytic Hierarchy Process (AHP)) can be used for optimizing the peer citizen services. The decision process considers requester, their proximity, their competence, their capacities, etc.

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AHP is one of the best Multicriteria Decision Methods, used in more than 171 applications[3]. Although, it was rarely studied in social media implementation; It was used for social media in e-land governance [4], in product intention analysis [5]. AHP was used several times; a recent use is an approach of public satisfaction index analysis of public cultural Chinese services [6]. The idea behind the proposed model is that requesters provide their general information (i.e. name, contact, and address), the details of their requests (i.e. location, type, time) and their preferences (i.e. ties with the provider, experience, competences). The service providers give their details (i.e. name, contact, address) and other information (i.e. location, skills, experience, average rating), each service has a catalogue (i.e. type, details, skills involved in delivery, average duration) (see Figure 1)

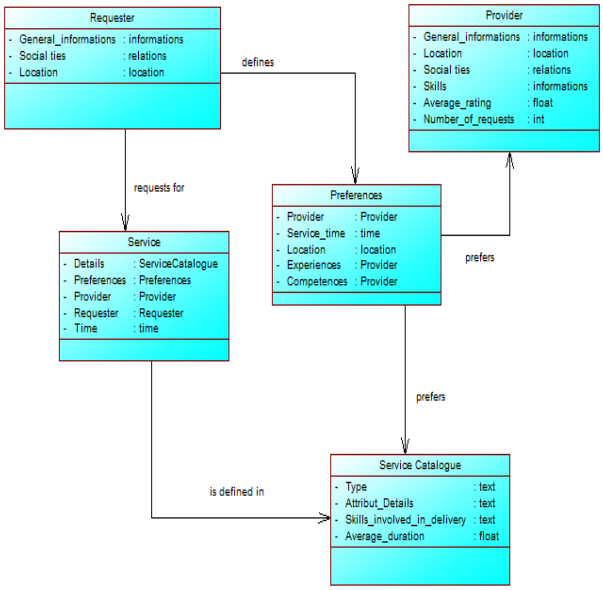

Figure 1. UML Diagram for service provision parameters

The system considers the service details and the preferences provided by the service requester (as social media user) and proceed on. Then, the selection outcomes the best provider decision and notifies him. When confirmed, the requester will be informed. Once the service is delivered, the requester will rate the provider. The provided rating will be propagated in the network and in his social profile, and displayed in the users' newsfeed, that opens possibilities of interaction. The exchanged interaction will influence them next time when requesting for the similar service details.

3. Case Study and Findings

We propose a scenario based on the ecosystem shown in the Figure 2, in which we have a network of Facebook users; where every citizen who wants to request for a service, defines his preferences by giving score for each criterion. Results, volunteers and preferences are shown in the Figure 3.

4. Conclusion

We have implemented a Multi-criteria decision method called AHP to improve the service responsiveness and the provision of timely quality services. Our argument is that the new philosophy of service provision involves complex decisions considering a complex environment as social media platforms. We advocate to the use of the Decision Theoretic models such as AHP in such paradigm through social media.

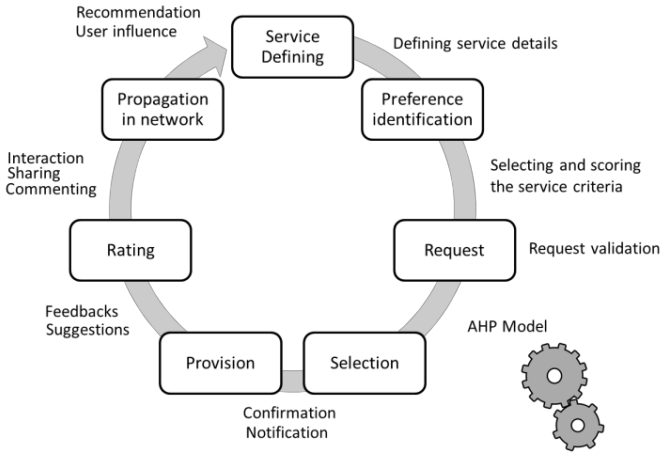

Figure 2. AHP Peer-Service Model ecosystem

	0.03	0.16	0.23	0.23	0.29	0.03	0.03		
	Name	Ties	Location	Experience	Average rating	Skills	Likes	Sum	
Jim	0.01	0.10	0.11	0.02	0.09	0.01	0.01	0.35	1.00
Paul	0.01	0.00	0.05	0.09	0.09	0.00	0.01	0.26	2.00
Anouer	0.01	0.01	0.03	0.09	0.07	0.01	0.01	0.23	3.00
Paula	0.01	0.05	0.04	0.02	0.01	0.00	0.00	0.13	4.00

Figure 3. Results of AHP process

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