

MCDM Modelling on Instant Message App Adoption by University Students: A Case Study in Taiwan

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Abstract: The Instant Message (IM) applications (app) offers users the ability to online chat online anytime and anywhere, and is surging in popularity. What are the adoption determinants of IM app when university students faced with an IM app evaluation problem? The aim of this paper is to study the adoption determinants of IM app by proposing a Multiple-Criteria-Decision-Making (MCDM) model. According to the results, among the six dimensions, “group networking” and “easy to use” are ranked as the most important dimensions in the evaluation of IM apps. The results provide insights for users, app designers and the related parties.

Key-Words: - instant message (IM), application (app), adoption, university students, Multiple-Criteria-Decision-Making (MCDM), Taiwan

1 Introduction

The Mobile revolution began when Nokia and Ericsson launched the first smart devices with multimedia features in 2000. BlackBerry contributed major advances with such innovations as push e-mail and encryption between 2001 and 2007. The launch of Apple’s iOS and Google’s Android operating systems led to a step change in the user experience with the widespread adoption of the touch screen that was easy-to-use, offered full-featured mobile Web browsing and the rapid rise of third-party application (app) ecosystems. Competition among operating systems and their app ecosystems has also triggered an explosion in device development and sales, as well as in global mobile data traffic. From shopping to sharing to socializing, apps are increasingly prevalent in many areas. The mobile experience is a whole new universe of connectivity that’s local (it’s always where you are), personal (tailored to your needs and preferences), social (all your friends are there as well)- and it’s always on. By offering continuous access to information, communication, friends, and entertainment, apps are changing the way billions of people go about their everyday lives. Sharing photos and videos on the move is now commonplace, as are tweeting, pinning, and posting. According to the data of Boston Consulting Group (BCG) (2015)[5] indicated, of Facebook (FB)’s 829 million active daily users in June 2014, 654 million (almost 80 %) were mobile users.

Instant Messaging (IM) is a type of online chat which offers real-time text transmission over the Internet. IM systems tend to facilitate connections

between specified known users (often using a contact list - also known as a buddy list or friend list). In the brave new smartphone world that we live in, more and more people are sending messages through web-based apps such as Skype, Facebook (FB) Messenger, LINE, WhatsApp and WeChat, etc. IM apps, the ability to engage in IM service from a smartphone, are surging in popularity, especially among adolescence and younger adults. According to the data of Pew Research Center, 42 % of Americans 18 years and older own a tablet. Data of Foreseeing Innovative New Digi services (FIND, 2014)[24] showed that Taiwanese individual internet usage rate is 75.3% in October 2014, with a growth rate tending to saturation. The ranking of the five main categories of internet activities is: communication, entertainment, information, financial transaction, and learning. Among the communication category, social networking and IM by app are the top two web functions that provide a bidirectional interaction mode. Traditional communication methods (home telephone and non-smart Mobil) are gradually replaced by SNS and IM app to interact with families and friends.

Trend (2013)[46] ranked top 10 popular and free IM apps as follows: FB Messenger, WhatsApp, Wechat, Kik Messenger, Snapchat, Telegram, LINE, Viber, Google Hangouts and Instagran Direct. Chinadaily (2014)[14] found the top 10 most popular IM apps in China to be: WhatsApp, Viber, Wechat, LINE, KakaoTalk, Kik, Ango, Nimbuzz, Hike and MessengerMe. At the same time AndroidPIT (2015)[3] presented the following as the best IM apps for Android is: FB Messenger,

Skype, Ango, Hangouts, Viber, LINE, BBM, Razer, Kik and WhatsApp. To sum up, the choices for users abound. Here we want to ask a question - when faced with diverse choices of IM apps, what determinants matter? The topic deserves attentions and to be discussed.

What determinants matter on IM app evaluation and adoption? Research and surveys on instant messaging (IM) are diverse. The research of Huff (2015)[28] investigated the completing of a web-based personality assessment using two devices- smartphones and computers, indicating that even though there were no differences in personality scores, there were a greater number of submission errors made when respondents completed the questionnaire on the smartphone. Cooper & Johnson (2014)[16] examined the influences on the behavior when negotiators use an audio as opposed to IM for communications. Karnowski & Jandura (2014)[19] empirically outlined three types of mobile communication usage situations, as well as three types of mobile web usage situations, to shed light on the instant at which lifestyle becomes behavior. Dolev-Cohen & Barak (2013)[21] examined effects of IMing friends and revealed that IM conversations significantly contributed to the well-being of distressed adolescents. Koutamanis, Vossen, Jochen & Valkenburg (2013)[30] focused on whether IM influences adolescents' ability to initiate offline friendships.

Zhou & Lu (2011)[51] identified the factors affecting mobile IM user loyalty. Head & Ziolkowski (2012)[26] studied how students value various mobile phone applications and tools. Ogara, Koh & Prybutok (2014)[37] examined the factors that influence social presence and user satisfaction with mobile IM. Lu & Yang (2014)[33] examined and compared the impact of task, social, and technology characteristics on users' intentions about using SNS,- which were not on web-based but computer-based. Chang, Hung, Cheng & Wu (2015)[9] explored the intention to continue using SNS-FB, but this study did not deal with FB Messenger or IM apps. The above-mentioned literatures, which sought the determinants related to on mobile phone usage, deserves referencing but they did not specially mention smartphone or IM app evaluation. Little research exists regarding the determinants for the evaluation of IM app from an integrated perspective.

Adolescence, the transition period from childhood to maturity, is a central developmental stage in human life. During that period, adolescences and young adults become closer to their peer group while moving away from their

parents [21, 44]. They are the group that accept new technology or innovation quickly and easily. From their perspectives, if you are still using text messages, you are seen as belonging to the old school. As IM is becoming a lifestyles of young adults in Taiwan, the study intends to further study and focus on the perspectives of university students.

Since exploring this issue involves at least 4-6 objectives, it can be classified as a Multiple-Criteria-Decision-Making (MCDM) problem. MCDM techniques have been used in recent years to solve a variety of decision-making problems involving evaluating and selecting multiple criteria among alternatives. The practical applications reported in the literature [10-13] have shown advantages in handling quantitative and qualitative data with this technique, and they have obtained pretty reliable results. This study applies the Analytic Hierarchy Process (AHP) to develop an evaluation model on learning achievement from the university student's perspective. The results provide a reference for users, app designers and the allied parities. This paper is organized as follows. Section 2 is the literature review on IM apps. Section 3 proposes a MCDM evaluation model and Section 4 presents the result. Finally, conclusions are drawn from the findings.

2 Literature review

2.1 Popular IM apps in Taiwan

As above-mentioned, there are at least 10 kinds of IM apps. In Taiwan the following are the common IM apps: Skype, FB Messenger, LINE, Wechat and WhatsApp.

(1) Skype

Skype, the granddaddy of video communication technology, has been around for forever and is still kicking strong. Skype is primarily used for calls; users are only able to add friends if he or she know their Skype contact name.

(2) FB Messenger

FB's official IM app has recently been made over to deliver a faster, cleaner service and interface. It's one of the most convenient messaging apps. Recently it has become possible for users to also message non-FB friends by using their phone number. Messenger allows users to access all of their FB messages without using the main app or website.

(3) LINE

LINE is a Japanese proprietary IM app that allows users to make free voice calls and messages. It's jam packed full of stickers and emoticons, and is immensely popular among teenagers and throughout

large parts of Asia. Thus, it is also nicknamed younger Skype or cooler Skype. LINE has been considered the biggest competitor to WhatsApp since it offers all the various features needed for IM.

(4) WhatsApp

WhatsApp Messenger is a cross-platform IM app that allows users to exchange messages and chat with individuals and in groups. It can use users existing contacts' phone numbers, so they don't need to add contacts manually. However, WhatsApp has charged a service fee since 2013 and maybe lost some users as a result.

(5) WeChat

WeChat, the IM app released by China's Internet giant Tencent, was first released in January 2011. Now it is the largest IM app by monthly active users. It can not only exchange contacts with people nearby via Bluetooth, but also people at random if desired (if these are open to it) and integration with SNS similar to those run by FB and Tencent QQ. Photos may also be embellished with filters and captions, and a machine translation service is available.

2.2 Determinants for IM app evaluation

(1) Related theories and models application

Theories and models in the contemporary literatures that could be applied to user's behavior when dealing with IM apps are divided into two categories:

A. Social networking.

A1) Communication Channel Expansion Theory (CCET), which posits that an individual's relevant experiences plays an important role in influencing perceptions of communication channel richness [8];

A2) Media Richness Theory (MRT), that explains the flow of information in an organization and helps users to identify the best communication channels for the most effective use of communication media [17-19, 22];

A3) Social Presence Theory (SPT), is conceptualized as the degree along some definable continuum of unsociable-sociable, insensitive-sensitive, cold-warm, and impersonal-personal [42].

A4) Social influence, is the ability of individuals to make real changes to their feelings and behaviors as a result of interaction with others who are perceived to be similar, desirable, or expert [41].

B. Technology use behavior.

B1) Theory of Reasoned Action (TRA), which takes into account the influence of social norms on the adoption decision [25].

B2) Theory of Planned Behavior (TPB), which indicates that behavior of adoption and usage of new media services is influenced not only by attitudes towards the behavior in question, but also by subjective norms and perceived behavioral control [1, 6,48];

B3) Technology Acceptance Model (TAM; Davis,1989)[20], could be regarded as a derivative of TRA, tailored to information technology (IT) contexts. While TRA is designed to explain virtually any human behavior, the goal of TAM is to provide an explanation of the determinants of IT acceptance across a broad range of end-user IT products and user populations; IT usage behavior is determined by behavioral intention, which is a function of attitude, and attitude is determined by both perceived usefulness and perceived ease of use.

B4) Unified Theory of Acceptance and Use of Technology (UTAUT Venkatesh, Morris & Davis, 2003)[47]. The UTAUT is developed based on at least four dominant theories and models: TRA, TPB, TAM, and Innovation Diffusion Theory (IDT); Rogers, 2003)[38], which explain user adoption and usage of an IT product by four factors: performance expectancy, effort expectancy, social influence, and facilitating conditions.

B5) Mobile Phone Appropriation Model (MPAM; Wirth, von Pape & Karnowaki, 2008)[49], which based on the TPB and IDT in terms of differentiating both the factors that influence new media behaviors and the actual forms of the new media behaviors. .

(2) Determinants of user's behavior

A. Social norms and social support

According to TPB [2], subjective norms refer to the pressure exerted by the social surroundings of an individual, which influence the individual to implement or not to implement the behavior in question. Social norms consist of two components: the individual's appraisal of what behaviors are expected by his/her peers, and his/her evaluation of these expectations. Perceived behavioral control refers to the extent to which an individual feels able to implement his/her behavior; it consists of both situational and internal dimensions. The situational dimension describes the extent to which an individual objectively can implement a given behavior objectively, while the internal dimension refers to whether the individual subjectively feels that he/she is able to implement the behavior.

Social support strengthens adolescents and young adults' subjective feelings that they have the means to deal with pressing events; as a result, they experience less anxiety and loneliness in intimidating or stressful situations [15]. Nowadays,

since the web is going mobile, they spend time with friends and so harness the Internet for their needs; the IM app enables them to maintain a constant connection to their peers, from their home space too. The number of communication options that the Internet offers leads to its adoption for advancing social goals and personal progress [4, 34] in such a way that users create and preserve connections with family members, friends, and colleagues- regardless of geographical or cultural restraints [26].

B. Capability and usability

Thompson, Hamilton & Rust (2005)[45] found that increasing the number of features does have a positive impact on consumers' ratings of a product's potential/value. Perceptions of product capability is important in the initial assessment of products before actual use. In fact, consumers give more weight to capability and less weight to usability in their initial product assessments. Interestingly, after product use, usability becomes more important than capability in product assessment. Usability is defined by the ISO as "the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use". One way to approach the differences between traditional computers and mobile devices is usability (Huff, 2015). Leeson (2006)[31] found that user's demographic characteristics, interface legibility, and interface interactivity influence the performance and intention of devices use.

Zhou & Lu (2011)[51] identified the factors affecting mobile IM user loyalty by integrating both perspectives of network externalities and flow experience. While network externalities included referent network size and perceived complementarity; flow experience included perceived enjoyment and attention focus. Nysveen, Pedersen & Thorbjornsen (2005a, 2005b)[35-36] and Head & Ziolkowski (2012) suggested that attitude towards use (perceived expressiveness, perceived enjoyment, perceived usefulness and perceived ease of use), which, along with normative pressure, determines users' intention to use mobile devices and services.

Zhang & Zhang (2012)[50] distinguished between two interdependent factors influencing new media behaviors: personal psychologies and location-related conditions. Karnowski & Jandura (2014)[29] conceptualize mobile web usage as influenced by user-related factors, location-related factors, and restrictions. User-related factors refer to the actual emotional state of a user [7]. Location-related factors are divided into physical environments, media access and social dynamics

[50]. Restrictions are differentiated into financial, technical, temporal and cognitive restrictions [49].

C. User satisfaction and continuance intention

Ogara et al (2014)[37] suggested that user experience, social influence, and perceived richness are important drivers for social presence and user satisfaction in mobile IM. The result of an investigation by Lu & Yang (2014)[33] indicated that task, social, and technology characteristics affected on users' intentions of using SNS. Lin, Fan & Chau (2014)[32] found that appraisal factors (such as pleasure, awareness, connectedness and system quality) were strong determinants of emotional reaction (such as user satisfaction and sense of belonging). User satisfaction and sense of belonging together positively influenced continuance intention. According to Chang et al (2015)[9], conformity tendencies and informational influence promoted the continued intention to continue using SNSs through perceived usefulness, not through normative influence. Furthermore, perceived ease of use was the primary factor that predicted whether users would continue using SNSs.

3 Methodology

3.1 Brief introduction to the Analytic Hierarchy Process (AHP)

The Analytic Hierarchy Process (AHP) is a theory of measurement presenting a technique for handling both quantifiable and intangible criteria. It was first introduced by Saaty in the 1970s, and has been widely applied to numerous areas, including decision theory and conflict resolution [39, 40]. In this study, the AHP method is used to structure the evaluation model on learning achievement of undergraduate students with elements hierarchically and to obtain the weighting values of the respective factors.

3.2 The research steps of AHP

The AHP approach is based on the following three principles: decomposition, comparative judgments, and synthesizing priorities. The first step in the current study is to identify the adoption determinants of IM app by university students. The key dimensions of the criteria for IM app adoption determinants were derived through aforementioned literature reviews and representative experts' opinions via the Delphi technique. Skulmoski, Hartman & Krahn (2007)[43] suggested that a homogeneous group needs a smaller sample (10-15). These experts included 10 professors and 5 students from 5 different colleges (management, architecture

& design, humanities & social sciences, computer sciences & informatics, and tourism). The professors all have more than 12 years of experience with teaching, tutoring, counseling and supervision at C university. The latter all have at least 2 kinds of experience over 2 years with SNS and IM usage.

Initially, the panelists were asked to rate the accuracy, adequacy, and relevance of the criteria and dimensions and to verify their content validity for evaluating determinants by using a 7-point Likert scale for each of the 20 proposed factors considered.

Considering that some apps support diverse devices, provide diverse app connection; free, dynamic and speaking stickers; photo embellished with filter & caption; game information sharing; friend-making function, such as in the capture of a phone number automatically into my friend lists, shaking, QR code scan or ID search. Thus, the panelists suggested the above-mentioned criteria should be added to the model. Thus, after a series of discussions, the following 6 main aspects for IM

app evaluation were identified and included in the analysis: group networking, easy to use, sticker attraction, audio & photo sharing, brand imagine and further friending. To reach an adequate level of detail in the analysis, these 6 dimensions were further divided into 4-5 criteria. A MCDM hierarchical model on IM app evaluation is shown in Figure 1.

In AHP, multiple paired comparisons are based on a standardized evaluation scheme. Verbal responses are converted into a 9-point linguistic scale, and the results of the pair-wise comparisons are used to construct a judgment matrix. Then, the normalized eigenvector corresponding to the maximum eigenvalue (λ_{max}) is calculated. The consistency index (C.I.) serves as the indicator of "closeness to consistency". $C.I. = (\lambda_{max} - n) / (n - 1)$, with λ_{max} as the eigenvalue for the pair-wise comparison matrix of size n . In general, if the C.I. < 0.1, the outcome may be considered as valid.

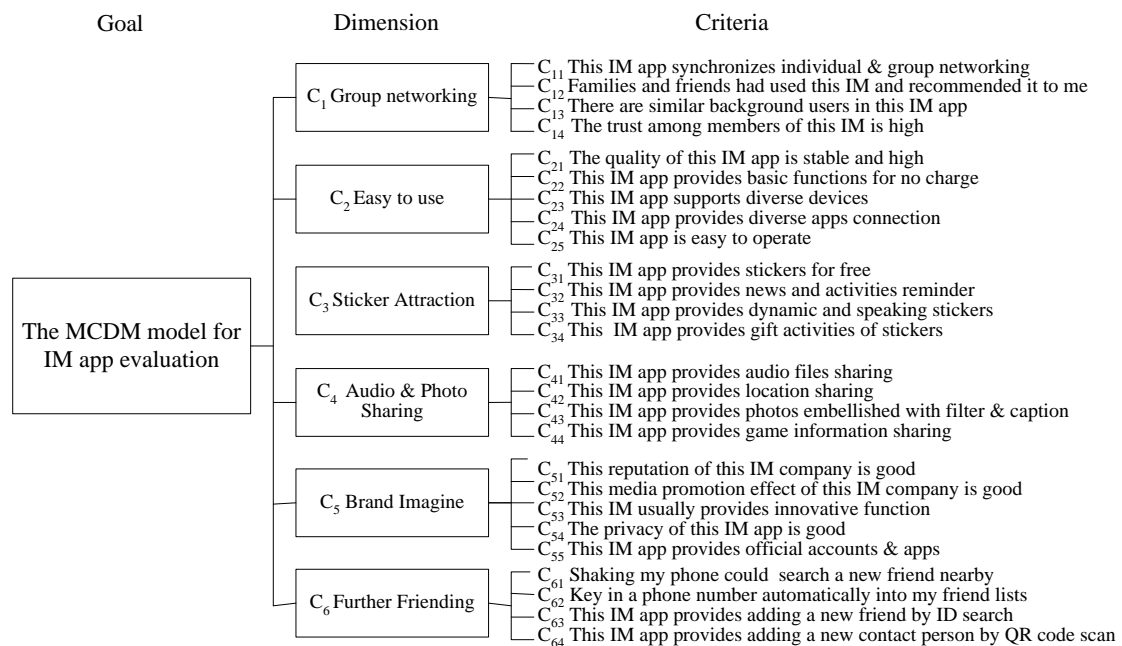


Figure 1. The MCDM model for IM app evaluation

4 A case study in Taiwan

4.1 Demographic profile

In this study, convenient samples were adopted. To investigate the viewpoints on determinants regarding IM apps evaluation for this study, 60 students of C school enrolled in an elective course "E-Commerce" of the international business (IB) department completed the questionnaire. 6 respondents were eliminated for incompleteness and 4 were not consistent with the threshold value of C.I.

Thus, 50 usable surveys were collected. The demographic profile is as follows. (1) Sex: 38% were males and 62% were female. (2) Grade: 55% were sophomores and 45% were juniors. (3) Category of IM app experienced: one was 8%, two were 38%, three were 20%, four were 8% and five and above were 26%. (4) The IM app used that I considered the best: LINE was chosen by 56%, FB Messenger was chosen by 20%, and Skype and WhatsApp each had 2% support. (5) The IM app

that I mostly used: LINE obtained 83% and FB Messenger got 17%. (6) Motivation of adoption more than two IM apps: 36% for work requirement, 34% for geographical restrictions or governmental control, 26% out of curiosity and 4% for other reasons.

4.2 Results and discussions

The weight of each surveyed respondent was executed by Expert Choice (2011)[23]. The ranking of dimension and criteria in the complete evaluation criteria hierarchy were also obtained. The average C.I. of weight factors of evaluation criteria across dimensions (C_{11}, \dots, C_{45}) is 0.034 (C.I. < 0.1), indicating the judgment of consistency index is satisfied. The weight factors and rankings of the 26 evaluation criteria from the surveyed respondents are listed in Table 2 and discussed as follow.

First, the ranking of weight factors affecting the dimensions of IM app evaluation are “group networking” ($C_1= 0.278$); “easy to use” ($C_2= 0.245$); “sticker attraction” ($C_3= 0.136$), “further friending” ($C_6= 0.122$), “audio & photo sharing” ($C_4= 0.114$) and “brand imagine” ($C_5= 0.104$). The result indicates that “group networking” is the key dimension and “easy to use” is the second most important determinant of their IM app evaluation, while “brand imagine” is the least important one. The results reveal that the student-users put emphasis on the main two function of IM app-social networking (the soft function) and usability (the hard function). Some apps provide a special or innovative function for stickers, friend lists and photos- these all belong to additional value, because almost all IM apps had provided the basic functions. In comparison with the brand imagine, the respondents prefer to accept the recommendation from their keymen (families, friends and colleagues).

Among the 26 criteria, respondents ranked the top 5 criteria for IM app evaluation as follows: “This IM app provides synchronous individual & group networking” ($C_{11}= 0.102$); “This IM app provides basic functions for no charge” ($C_{22}=$

0.070), “Families and friends have used this IM and recommended it to me” ($C_{13}= 0.070$), “The trust among members of this IM is high” ($C_{14}= 0.057$) and “The quality of this IM app is stable & high” ($C_{21}= 0.051$). The following criteria were ranked as the least important: “This IM app provides official accounts & apps” ($C_{55}= 0.016$), “This media promotion effect of this IM company is good” ($C_{53}= 0.017$) and “This IM app provides adding a new contact person by QR code scan” ($C_{64}= 0.018$) are ranked the least 3 ones. The results indicate that the respondents emphasize group networking, basic function free, and recommendation by keymen as the key factors on their IM app adoption. The media promotion effect, official accounts & apps or QR code scan, all play roles as the complementary resources. That is, intrinsic motivation, social support and social influence, are the key factors that determine the behavior of student-users. The results are consistent with the aforementioned social support and technology adoption theories. By means of IM app, users create and preserve connections with keymen regardless of geographical or cultural restraints [4, 26, 34]. Moreover, TPB, TRA, TAM, UTAUT (Venkatesh et al, 2003) and MPAM [2, 20, 25, 47, 49] - all these models indicated that social influence affected the individual’s technology product (IM app) adoption and usage. The result is also in line with their viewpoints. If the keyman or keymen had used a specific IM app, the new user tend to follow up. Although easy to use of an IM app is also an important factor but not the most important consideration. Thus, there are some results that differed from those of Chang et al (2015)[9]. Conformity tendencies and informational influence promoted the continued intention to use SNSs through perceived usefulness, and not through normative influence. Finally, except for social networking, the motivation for some users to adopt more than two IM apps was for work requirement, geographical restrictions, or governmental control, and because of curiosity.

Table 2. The results on weight and rank of the MCDM model

Dimension/ Criteria	weight of dimension	weight of criteria	ranking of dimension	ranking of criteria
C_1 Group networking	0.278		(1)	
C_{11} This IM app synchronizes individual & group networking		0.102		(1)
C_{12} Families and friends have used this IM and recommend it to me		0.070		(2)
C_{13} There are similar background users in this IM app		0.050		(6)
C_{14} The trust among members of this IM is high		0.056		(4)
C_2 Easy to use	0.245		(2)	
C_{21} The quality of this IM app is stable and high		0.051		(5)
C_{22} This IM app provides basic functions for no charge		0.070		(2)

C ₂₃ This IM app supports diverse devices	0.038	(12)
C ₂₄ This IM app provides diverse app connection	0.039	(11)
C ₂₅ This IM app is easy to operate	0.031	(8)
C ₃ Sticker Attraction	0.136	(3)
C ₃₁ This IM app provides stickers for free	0.040	(9)
C ₃₂ This app provides news & activities reminder	0.039	(10)
C ₃₃ This IM app provides dynamic & audio stickers	0.026	(19)
C ₃₄ This IM app provides gift activities of stickers	0.031	(15)
C ₄ Audio & Photo Sharing	0.114	(5)
C ₄₁ This IM app provides audio files sharing	0.036	(13)
C ₄₂ This IM app provides position sharing	0.027	(18)
C ₄₃ This IM app provides photos embellished with filter & caption	0.032	(14)
C ₄₄ This IM app provides game information sharing	0.020	(23)
C ₅ Brand Imagine	0.104	(6)
C ₅₁ This reputation of this IM company is good	0.022	(21)
C ₅₂ This media promotion effect of this IM company is good	0.017	(25)
C ₅₃ This IM usually provides innovative function	0.021	(22)
C ₅₄ The privacy of this IM app is good	0.028	(17)
C ₅₅ This IM app provides official accounts & apps	0.016	(26)
C ₆ Further Friending	0.122	(4)
C ₆₁ Shaking my phone could search a new friend nearby	0.025	(20)
C ₆₂ Key in a phone number automatically showing in my IM friend lists	0.049	(7)
C ₆₃ This IM app provides adding a new friend by ID search	0.030	(16)
C ₆₄ This IM app provides adding a new contact person by QR code scan	0.018	(24)

5 Conclusion

Motivated by the need to understand the IM usage behavior of young adults, this study aims to investigate the determinants employed by university students at C university in Taiwan for evaluating IM apps. Based on the results, we draw the following conclusions.

First, among 6 dimensions of IM app evaluation, the ranking is as follows: “group networking” ($C_1 = 0.278$); “easy to use” ($C_2 = 0.245$); “sticker attraction” ($C_3 = 0.136$), “further friending” ($C_6 = 0.122$), “audio & photo sharing” ($C_4 = 0.114$) and “brand imagine” ($C_5 = 0.104$). The result indicates that “group networking” and “easy to use” are the top two dimension, while “brand imagine” and “audio & photo sharing” are the two least important dimensions regarding their evaluation of IM apps.

Second, among the 26 criteria of IM app evaluation, the top 3 most important are: “This IM app synchronizes individual & group networking” ($C_{11} = 0.102$); “This IM app provides basic function for no charge” ($C_{22} = 0.070$) and “Families and friends have used this IM and recommended it to me” ($C_{13} = 0.070$). The result indicates that the influence of both intrinsic motivation (social support and influence) and extrinsic motivation (no charge) regarding IM app evaluation and adoption.

Most previous studies focused only on the users’ behavior when dealing with SNSs or SNS’s IM on personal computer or mobile phones, paying little attention to discover if there is a comprehensive perspective about the evaluation of

the IM apps for the smartphone evinced by university students. This study develops a MCDM model on IM app evaluation using a combination of subjective and objective criteria by adding several new factors. This approach contributes to the literature by providing an aggregate and scientific framework for university student-users’ behavior when it comes to determinants of IM app choice and adoption. This result of the proposed model, which includes 6 dimensions and 26 criteria, provides a reference for users, IM app designers and the authorities. We encourage further research to enlarge the numbers of respondents, or to apply the proposed model to analyze the smartphone users’ behavior of university students from different departments, schools or countries, thereby obtaining more generalized suggestion and reference for all interested parties.

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