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A Study of Motivational Factors Associated With Peer-to-Peer (P2P) File-Sharing

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Abstract

Peer-to-Peer, also known as P2P, is an alternative to the client-server distribution model. Millions of consumers are routinely exchanging digital content files over P2P networks. The purpose of this paper is to determine the P2P constructs associated with P2P file sharing and to investigate relationships between the constructs and satisfaction and intention. A questionnaire consisted of three parts was conducted on people (N=1360) living in the province of Eskisehir, Turkey. The results of exploratory factor analysis (EFA) and multiple regression analysis revealed four valid motivation constructs (convenience, experience sharing, innovation adoption and altruism) and indicate that these constructs have directly effect on satisfaction and behavioral intention.

Keywords: Mobile marketing, Peer-to-peer, P2P, C2C, Digital distribution, File sharing, File exchange.

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1. Introduction

Peer-to-Peer applications, also known as P2P, have gained considerable attention in recent years (Hwang and Hoh, 2009). Millions of people share files illegally over P2P networks (Goel, Miesing and Chandra, 2010). In the last several years, unauthorized file sharing by college students has also gained extensive media attention and has become a major concern for the entertainment and software industries (Cuevas, 2010). However, P2P file sharing has been a debate topic since the introduction of the internet and mobile technologies. P2P is one of the most challenging issues related to file sharing behavior among consumers. The topic of P2P has received more attention since 2000's when the internet and mobile technology have been booming among young people. In recent years, wireless and mobile networks have seen significant developments and there has been much academic interest in understanding the tendency of smart phones. P2P applications have recently gained a lot of attention the academic and industrial communities (Li, Yu and Sycara, 2009). More recently, P2P gains attention among academicians in terms of user motivation and ethical considerations. The holders of mobile phones share different kind of files through the medium

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of wireless technology. Millions of consumers are routinely trading digital content files over P2P networks. Traded content includes images, audio files, software, music, TV shows, games, movies, and other documents (Hughes, Lang and Vragov, 2008). Digital content is easily replicated and copied which can lead to loss of revenue for the content owner or producer (Arora, Hanneghan and Merabti, 2005).

P2P networks afford peers (users) to share their files (music, movies, software, image, etc) with other user of the network. P2P file sharing occurs when networks of computers are used to transmit and share public or private files over the internet with one or more computer (Cuevas, 2010) or mobile phone users. The term of peer to peer is commonly used in the literature to refer that P2P exchange are a form of what has occasionally been labeled “consumer-to-consumer exchange (Plouffe, 2008). In literature, P2P refers that a user has digital media files he or she wants to share with others. According to Li, Yu, Sycara (2009), P2P system is modeled as a self-organizing distributed system, where information is highly distributed and stored by individual peers (Feng, Guo and Chiang, 2009). Further, according to Chavan (2009), P2P can be seen as an alternative to the client-server distribution model. This system encourage sharing files containing resources or data through direct exchanges between peers. The behaviors of virtually costless search, duplication, and swapping of digital files over the internet enabled by P2P networks are common among college students. These behaviors are evaluated as free rider problem (Goel, Miesing and Chandra, 2010).

P2P file sharing over mobile network has become a popular application due to the rapid growing number of mobile devices (Hwang and Hoh, 2009). One of the distinctive feature between file sharing application for the internet or desktop and mobile devices is the fact that desktop is a fixed as compared to a mobile device. Almost every phone has the feature where one Bluetooth enabled device can search for other Bluetooth enabled devices around and pair up with that device. P2P user can select a file and select the option of sending it over mobile sharing application (Chavan, 2009).

Despite the growing amount of literature and published research about the scope and application of P2P procedures that influence the choice of a particular smart or mobile phone, empirical studies on user’s motivation factors are limited. Taking into account the theoretical and research gap in the literature, the main purpose of this research is to examine the motivation factors underlying P2P file-sharing and to analyze the relationship between motivation factors and satisfaction and behavioral intention.

2. Literature Review And Hypotheses

A considerable issue in P2P file sharing is to highlight the motivation mechanisms. Various motivation mechanisms and payment schemes have been proposed to encourage consumers to share files in P2P networks (Feng, Guo and Chiang, 2009). This section aims to suggest a working definition of P2P file sharing behavior and identify a number of assumptions that can be useful guidelines of motivations factors in mobile phone context. Incentives or motivations about file sharing by mobile phones can be grouped under four categories. These categories are convenience, experience sharing, innovation adoption, and altruism. Hereafter, these four categories will be detailed in order for to set up a concrete basis for the hypotheses deployed in the research.

2.1. Convenience

The main reason that might explain why users download online file is convenient (Molteni and Ordanini, 2003). In other words, convenience and simple ease is the one of main drivers fueling the exchange the files (Plouffe, 2008). According to Chiu and Chou (2011), the main reasons for using P2P file sharing are to save money and time. These can be evaluated the sings of usefulness and convenience. As indicated by Kinnally et al. (2008), convenience or economic utility emphasize the value seen in flexible and free access to files. File sharing by P2P allows users to reduce their expenditure, including the effort, energy, time and money spent on the file purchase (Chiu and Chou, 2011). For instance, Sandulli (2007) suggests that another advantage of P2P networks comparing to CD shop was convenience. P2P users can download quickly and easily the digital files. Therefore, usefulness and convenience can be evaluated in a broader meaning. For instance, convenience contains the theme of free, usability, saving money and time, and usefulness.

2.2. Experience Sharing

Studies have shown that P2P involves experience sharing motivation in terms of sharing files. Evidently, the studies of Molteni and Ordanini (2003), Laycock (2004) suggested that P2P users can also benefit from the consumption experience of other users. P2P users contribute and feel part of a global community. In the P2P applications, the users or consumers can share opinions and experiences with other users (Sandulli, 2007). Sharing file by mobile phone, however, can be regarded as interaction style. In P2P application, a virtual face-to-face communication system can be realized among users (Kwok and Gao, 2004). Kinnally et al. (2008) proposes that social interaction represents that the role of downloading plays in subsequent conversations with friends. Entertainment is an essential part of experience sharing motivation. P2P users entertain when they share or receive an interesting video, music or image. Kinnally et al. (2008) found that entertainment or pass time is one of the motivational factors in terms of file sharing. Kinnally et al. (2008) also indicates that entertainment or experience sharing the most important and enjoyable in explaining downloading motivation. This experience is an integrated part of file sharing motivations. Additionally, this motivation factor is also associated with the internet lifestyle themes of games, hobbies and instantly entertaining, as well as consumers' being a part of online community. As indicated by Vaccaro and Cohn (2007), a sense of belonging to the online community is also related to the importance of experience sharing and influence on consumer behavior and intentions.

2.3. Innovation Adoption

Prior research suggests that innovation adoption may have a significant impact on file sharing behavior (Vaccaro and Cohn, 2007). Technology Acceptance Model (TAM) proposed by Davis (1989) indicates that perceived usefulness and ease of use will affect the use of information system. In addition, Rupp and Smith (2004) acknowledged that innovation diffusion theory can be used to explain the relatively fast adoption of P2P technology for unauthorized file sharing on internet (Vaccaro and Cohn, 2007). Widespread use of digital technological paradigm raises a new dimension about motivation of file sharing behavior of P2P users. Moreover the rapid diffusion of digital technologies may have an important effect on motivation. As mentioned by Molteni and Ordanini (2003), digital technologies tend to accelerate the flow of production and consumption. Additionally, a typical feature of file sharing motivation is related with discovering new digital files. This feature can be evaluated in domain of technology adoption. Also, curiosity is another typical feature of file downloading.

2.4. Altruism

An extensive body of literature shows that altruism is associates with supporting people and with helping to others. According to Hoffman (1981), altruism is the behavior or someone that although not beneficial or perhaps even harmful to oneself, benefits others (Kwok and Gao 2004). Kwok and Gao (2004) raises that altruism is a part of intrinsic motivation in terms of file sharing behavior. Ruffo and Schifanella (2007) expresses that empirical studies in behavioral economics argue that merely self-interested based approaches usually fail to explain the observed behavior of people. This approach indicates the relying on peers' altruism. In terms of altruistic approach, file sharing behavior is beneficial for both the creators of the files and the users. P2P file sharing is considered to be a good thing because as each new item is shared, it becomes available to other users in the network. As point out by Bhattacharjee et al. (2003), some internet users suggest that online file sharing is a beneficial distribution tool and a new marketing for artists. Gift giving perceptions by online users associate with phenomenon of altruistic behavior. As indicated by Cenite et al. (2009), a file sharing network is conceptualized as a system of social solitarity based on a structured set of gift exchange and social relationships among consumers. Additionally, according to Vaccaro and Cohn (2007), gift giving is a way of maintaining fragile relationship within a community. In the case of P2P file sharing, consumers appear to feel doing something good for the users in online community. Li, Yu and Sycara (2009) points out that in a P2P system there may exist a small portion of altruistic aspect.

From theoretical point, in most of previous studies it has been shown that the linkage between sharing file behavior and satisfaction and intention to behave in the next is often unexceptional situation. In fact, many of consumers believe that downloading files from internet is permitted and legal (Lalovic et al., 2012). Moreover, this belief can be accepted as sign of intention behavior of file sharing. College students attitudes, intentions and behaviors in the majority of previous studies (e.g. Greenfield and Walbert, 2007; Lenhart & Fox, 2000) have concluded that students

essentially viewed downloading and file sharing as “no big deal” (Cuevas, 2010). In study by d’Astous, Colbert and Montpetit (2005), attitude was found to be a strong predictor influencing behavioral intention. More recently, a research performed by Cuevas (2010) also consistently indicates that students’ behavior intention to engage in file sharing is significantly influenced by their attitude the behavior. The findings by Hennig-Thurau, Henning and Sattler (2007) suggest that in addition to the consumer’s intention to watch an illegal copy, the act of watching the copy is crucial for the impact of file sharing behavior. As indicated by Plouffe (2008), many of consumers are using P2P systems to exchange valued e-goods with another. Hence, the motivations associated with consumer satisfaction with P2P networks seem an important dependent variable (Plouffe, 2008). Combining the previous research, the researchers can conclude that motivations affecting P2P file sharing behavior are revealed as independent variables and they should be determinants on dependent variables, satisfaction and intention. In this study it is expected that the file sharing motivation constructs above mentioned positively influence satisfaction and intention and thus, the following hypotheses are stated:

H1: Motivational factors associated with file-sharing by mobile phones positively affect the satisfaction.

H2: Motivational factors associated with file-sharing by mobile phones positively affect the intention.

3. Methodology

3.1. Research and questionnaire design

In this study, a questionnaire was developed, incorporating items revealed in interviews with people who use mobile phone and share various files. The questionnaire was divided into three sections. The first part was comprised of 19 statements related to motivations toward P2P. The statements in the first part adapted from Plouffe (2008), Kinnally et al. (2008), and Sandulli (2007) and derived from Kwok and Gao (2004). The second part of the questionnaire included five items as dependent variables. The key dependent variables within this research were satisfaction and behavioral intention. There were 3 items on satisfaction and 2 items on intention behavior. These five dependent items on satisfaction and intention were adapted from Plouffe (2008). The satisfaction items were: (1) My experience with P2P file sharing has more than fulfilled my expectations; (2) I am satisfied with the P2P file sharing I have tried so far; (3) Generally speaking, I am pleased with P2P file sharing systems. The intention items were: (1) In the next, I plan to use P2P file sharing systems; (2) I am interested in continuing to use P2P file sharing systems. All of the statements were thus presented, and respondents were asked to indicate their opinions on a five-point Likert scale, ranging from “5=strongly agree” to “1=strongly disagree”. The last section of questionnaire was designed to collect demographic and file-sharing behavior of respondents.

Data analysis method used included (1) Internal consistency or reliability was based on Cronbach’s alpha (> 0.70); (2) Validity, supplied to verify the data accuracy; (3) Factor analysis, or P2P motivation factors extracted using the principal components method which were rotated through variables; (4) The Pearson coefficients was used to test the correlation significance among factors, and (5) regression analysis in relation to variables of P2P motivation based on satisfaction and behavioral intention.

3.2. Sample

To determine motivation factors related to P2P, data for this study were collected through a self-administrated questionnaire of university students in province of Eskisehir, Turkey during the period September through December 2011. Studies have shown that peer-to-peer file sharing is common among young people (Kinnally et al., 2008). As indicated by Goel, Miesing and Chandra (2010), more than half of U.S. college students frequently download music and movies illegally from P2P networks. Jones and Madden (2002) underline that college students engaged in file sharing actions in large percentage (44%) than other internet users (26%). As indicated by Plouffe (2008), university students represented an ideal population from which to form a sampling for this study for two reasons. First, from both demographic and experiential perspectives, there is no other segment of the population that is as active in terms of P2P file-sharing behavior. Second, studying university students in Turkey is logical because they assume early adopters and innovators. A self-administrated and research-aided questionnaire was distributed by surveyors. Questionnaires were answered at institutions, faculties and canteens. The researchers first briefly explained the research purpose, and then gave the questionnaires to willing participants. The time to explain the study and complete the questionnaire was

approximately 15 minutes. A total of 1500 questionnaires were distributed, 1360 of which were completely answered, resulting in a return rate of 90 percent.

Table 1 Characteristics of the respondents (N= 1360)

	Frequency	%
<i>Gender</i>		
Male	672	49.4
Female	688	50.6
<i>Age</i>		
18 and <	111	8.2
19-20	450	33.1
21-22	504	37.1
23-24	241	17.6
25 and >	54	4.0
<i>Class</i>		
Prep class	101	7.4
Junior	343	25.2
Sophomore	283	20.8
Third rate class	259	19.0
Senior	377	27.5
<i>Academic programs</i>		
Vocational school	86	6.3
Collegiate school	206	15.2
Faculty	1027	75.5
Graduate School	34	2.5
Other	7	0.5

The participants were 1360 undergraduate students (672 male and 688 female) enrolled various program at Anadolu University, Turkey. Ages ranged from 17 to 34 years. Respondents' ages were grouped as 18 and under (8.2%), 19 to 20 (33.1%), 21 to 22 (37.1%), 23 to 24 (17.6%), and over 25 (4%). With regard to the academic programs, the majority of the sample (75.5%) was faculty students at the university. The distributions of respondents by their current year of study are as follows: senior year students constituted the largest student cohort by 27.5%, followed by the juniors by 25.2%, and sophomores by 20.8%, the last group was prep class by the rate of 7.4% (see Table 1). All participants had mobile phone. Music took first place in terms of both file receiving (64.9%) and file sending (62.2%). As monthly average, majority of the participant (69.8%) reported that they send less than 4 files by phones.

4. Results

4.1. Underlying Factors of P2P File Sharing Motivations

The results of reliability are shown in Table 2. The coefficient alpha was measured to calculate the internal consistency of the data and assess the quality of the instruments (Hopkinson & Pujari, 1999). The total of scale reliability was 0.88, thus the dimensions had high coefficient scores greater than the exhorted level of 0.70 (Nunnally, 1978). As indicated by Churchill (1995), construct in the study is supposed to be theoretically related. There is a growing body of literature (e.g., Kinnally et al., 2008; Kwok and Gao, 2004; Plouffe, 2008; Rupp and Smith, 2004; Sandulli, 2007) supporting this relationship. Further, to assess nomological validity, the researchers used or adapted well-known scales (Kinnally et al., 2008; Plouffe, 2008). Additionally, evidence of discriminant validity is revealed by the fact that all of the construct intercorrelations are significantly different from 1 (Fornell and Larcker, 1981). In order to examine construct validity, reliability coefficients and the percentage of variance was examined. As also reported in Table 1, three of the four reliability coefficients exceeded the 0.70 cut-off value as recommended by Nunnally (1978). Sanzo et al. (2003) defined a factor loading exceeding 0.5 as evidence of convergent validity. As shown in Table 1, many of the factor loadings were greater than 0.5 and statistically significant which indicates acceptable item convergence on the intended construct.

Prior to factor analysis both univariate and multivariate non-normality were examined. Univariate non-normality was tested using skew and kurtosis. The extreme among all the variables in the scale was -0.988 for kurtosis and -1.046 for skewness for one variable, which was within the acceptable limits (Kline, 1998). Multivariate non-normality occurs if the joint distributions of any combination of the variables are not normal, most of which can be identified

through the inspection of univariate outliers (Nyaupane, Graefe, and Burns, 2007). In this dataset multivariate non-normality was not observed. Principal factor analysis was used to sort out and classify these variables as well as to convert them into main factors. Construct validity was tested using Bartlett’s test of sphericity and KMO revealed that the factors were highly significant the researchers concluded that these variables were suitable for a factor analysis. For the motivation variables the KMO amounted to 0.886, which indicated that the sample was adequate for factor analysis. The Bartlett Test for Sphericity (BTS) was 8423.752 ($p < 0.001$), indicating that the hypothesis variance and covariance matrix of variables as an identity matrix was rejected; therefore, the factor analysis was appropriate. To determine the minimum loading necessary to include an item in its respective construct, Hair et al. (2006) suggested that variables with loading greater than 0.40 are more important. In this study all variables met minimum loading condition (see Table 2). Principles axis factoring revealed the presence of four factors with eigenvalues exceeding 1. Together, they accounted for 57.4% of the total variance (32.3%, 10.4%, 8.4% and 6.3%, respectively). Hence, the factors related with P2P file-sharing could be examined in four dimensions. Afterwards, the factors named ‘usefulness and convenience’, ‘experience sharing’, ‘innovation adoption’ and ‘altruism’.

Table 2 Constructs and items of P2P File Sharing Motivations

<i>Constructs</i>	<i>Std. loadings</i>	<i>M</i>	<i>S.D.</i>	<i>Construct reliability</i>
<i>Convenience</i>				
P2P file sharing is convenient or useful.	0.65	3.99	0.98	0.80
P2P file sharing is faster than other traditional methods.	0.73	3.53	1.14	
I can provide every files to my friends by mobile phone	0.75	3.54	1.08	
Using P2P file sharing allows me to get many of image, music and video.	0.74	3.73	1.01	
Mobile phones are almost limitless for sharing music and videos.	0.65	3.01	1.10	
<i>Experience Sharing</i>				
With P2P file exchanging, I find myself as a part of sharing.	0.51	3.06	1.09	0.84
P2P file exchanging gives me a sense of linking with a larger group of people.	0.46	3.32	1.11	
I can share my feeling at the moment by sharing image, video or music.	0.51	3.70	1.05	
I share files as expressing my feeling at the moment.	0.76	2.95	1.15	
Although I was in different location I feel same emotion by sharing files.	0.78	3.20	1.13	
It is a good feeling to share files with my favorite friends.	0.66	3.62	1.01	
<i>Innovation Adoption</i>				
I was an early user of mobile phones.	0.68	4.02	1.04	0.72
I am usually among the first know to adopt smart phones.	0.81	3.73	1.01	
Relative to my friends, I am almost always an early adopter of mobile phones.	0.65	2.66	1.27	
I keep up with the all innovation in communication technologies.	0.76	3.60	1.05	
<i>Altruism</i>				
I like to send something to other people.	0.45	3.44	1.06	0.71
The pleasures of my friends is really interested me.	0.73	3.44	1.08	
I consider happiness of my friends as mine.	0.82	3.85	1.01	
I think I made a good thing of file sharing with my friends.	0.58	3.33	1.05	

Table 3 displays the means, standard deviations and correlation coefficients. The bivariate relationships revealed that all of the variables significantly correlated (0.21-0.60). All four factors were moderately correlated with one another. Construct-based scales were generated by summing the relevant items. By running descriptive statistics, mean and standard deviation were found for the each factor. According to the descriptive statistics, the factor of usefulness and convenience had a higher mean score (3.56) compared to the remaining three constructs.

Table 3 Correlation matrix and descriptive statistics

<i>Constructs</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
<i>Convenience</i>	1.00			
<i>Experience Sharing</i>	0.60*	1.00		
<i>Innovation Adoption</i>	0.33*	0.30*	1.00	
<i>Altruism</i>	0.36*	0.55*	0.21*	1.00
<i>M</i>	3.56	3.31	3.50	3.51
<i>SD</i>	0.80	0.79	0.82	0.79

* $p < 0.01$

4.2. Relationships between P2P Factors and Independent Variables

The tolerance indicated that there was no presence of multicollinearity problems of predictor (P2P motivational factors) variables. In order to identify the relationships between the four factors in factor analysis and independent variables that comprise satisfaction and intention behavior, a multiple regression analysis was utilized. Factor scores from the factor analysis were used as the input variables. The multiple correlation coefficient (R), coefficient of determination (R²), and F-ratio were examined to predict the goodness-of-fit for the following regression models. Table 4 is a joint display of two regression models. The first model in the table explains the relationship between the factors and satisfaction; whereas the second model expounds the relationship between the factors and intention variable.

Table 4 Regression Results on Satisfaction and Intention

	Dependent Variables					
	Satisfaction			Intention		
	Std. β	t	p	Std. β	t	p
<i>Convenience</i>	0.381	17.831	0.001*	0.377	17.610	0.001*
<i>Experience Sharing</i>	0.399	18.695	0.001*	0.468	21.858	0.001*
<i>Innovation Adaption</i>	0.329	15.425	0.001*	0.248	11.612	0.001*
<i>Altruism</i>	0.178	8.336	0.001*	0.143	6.673	0.001*
Constant		177.194	0.001*		156.618	0.001*
	R ² =0.442; Adj. R ² =0.441			R ² =0.440; Adj. R ² =0.439		
	F= 242.586*			F= 240.651*		
* p < 0.01						

As displayed in Table 4, the results of the regression models indicated that the regression models were statistically significant (for model one F = 242.586; p < 0.01, for model two F = 240.651; p < 0.01). Approximately 44% of the overall satisfaction and approximately 43% of the overall intention behavior was explained by the four factors. The regression coefficients of model one indicated that three factors associated with motivations file, experience sharing ($\beta = 0.399$; p < 0.01), convenience ($\beta = 0.381$; p < 0.01), and innovation adoption ($\beta = 0.329$; p < 0.01), exerted the strongest influence on the overall satisfaction. Similarly, as for the model two the factors of experience sharing ($\beta = 0.468$; p < 0.01), convenience ($\beta = 0.377$; p < 0.01), innovation adoption ($\beta = 0.248$; p < 0.01), and altruism ($\beta = 0.143$; p < 0.01) indicated a statistically significant relationship with the intention behavior respectively.

5. Discussion and Conclusion

The main purpose of this study was to expose the motivation factors related to P2P and to analyze the effect of these factors on satisfaction and intention behavior in the context of mobile phone in Turkey. The analysis of factor results produced four important dimensions of file sharing motivations: convenience, experience sharing, innovation adaption and altruism. This finding is similar to previous studies (e.g., Kinnally et al., 2008; Kwok and Gao 2004; Plouffe, 2008; Sandulli, 2007) which claimed that attributes of technology adaption, altruistic behavior, convenience, and moment sharing were very important.

This study has provided empirical support for the major hypotheses proposed in the theoretical assumption. Using a regression analysis, the derived beta coefficients could be used to explain the relative importance of the four perceived dimensions in terms of their contributions to the variance in the satisfaction and intention behavior of mobile technology users. The empirical results have indicated that experience sharing carried the most weight in explaining both satisfaction and intention. This indicated that current feeling sharing with friends by sending a file is the most important factor in terms of P2P file sending motivation, while usefulness and convenience rank second. In addition, the factors of innovation adaption and altruistic behavior also affect the satisfaction and intention. From the results, motivations related with file sharing have a significant impact on satisfaction and intention behavior. It is unsurprising that a relationship exists between motivational factors related with P2P file sharing and satisfaction and behavioral intention. Thus, the findings are in line with past studies by Plouffe (2008) and Greenfield and Walbert (2007).

The results of this study differ significantly from relatively similar studies performed in other countries in several aspects. Typically, studies about P2P motivations found different constructs from this study. In addition, altruistic

behavior of users indicated the mobile phones to have a significant impact. We propose that experience sharing and altruism evidenced the hidden motivational factors.

Based on the findings regarding motivational dimensions, it can be suggested that marketer and producers of music, video and image should pay more attention to the unfair or unethical aspects of P2P. These findings may allow internet or mobile network to have a better understanding of the aspects that affect perceptions of different application in various file sharing. Consequently, modern day mobile network approaches are more prone to consumer-centered solutions. From this point of view, exploring the motivation, behavior and intention of internet users toward P2P at global level become a necessity for each party. Consumer' motivations, perceptions, behaviors and intention on using various files should be matched with contemporary marketing applications.

The findings of this study provide insight into P2P users file sharing behavior and factors with respect to motivations of file sharing. However, the interpretation of findings related with motivations of P2P file sharing need to be considered within the context of the limitation in this research. Hence, there are a number of limitations and suggestions for future research related to this current study. In terms of research methodology, one limitation of this study comes from the fact that this research was conducted only in one province (Eskisehir) in Turkey. The second limitation is related to the sampling methodology. Although descriptive research calls for probability sampling, non-probability sampling was used for this study. Therefore, no assessment of sampling error was possible. Future research on P2P could be extended to include a wider demographic and geographic sample, and thus further explore the extent to which the findings are generalizable. Consequently, the results may not adequately represent the total population in Turkey. Another limitation is related to scope of the research. In this research, only P2P file exchanging on mobile phone was examined. In the future it should be combine file exchanging on computers and mobile devices. As a result, the results of this research should be interpreted in this context.

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