GRADUATE STUDENTS' USE OF SOCIAL MEDIA TOOLS FOR THESIS/DISSERTATION RESEARCH

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY
MURAT DUMAN

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY
IN
COMPUTER EDUCATION AND INSTRUCTIONAL TECHNOLOGY

APRIL 2015

Approval of the thesis:

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submitted by **MURAT DUMAN** in partial fulfillment of the requirements for the degree of **Doctor of Philosophy in Computer Education and Instructional Technology Department, Middle East Technical University** by,

Prof. Dr. Gülbin Dural Ünver _____
Dean, Graduate School of **Natural and Applied Sciences**
Prof. Dr. Soner Yıldırım _____
Head of Department, **Computer Edu. and Inst. Tech.**
Asst. Prof. Dr. Gülfidan Can _____
Supervisor, **Computer Edu. and Inst. Tech. Dept., METU**
Prof. Dr. Soner Yıldırım _____
Co-Supervisor, **Computer Edu. and Inst. Tech. Dept., METU**

Examining Committee Members:
Prof. Dr. Yasemin Gülbahar Güven _____
Informatics System Dept., Ankara University
Asst. Prof. Dr. Gülfidan Can _____
Computer Education and Instructional. Tech. Dept., METU
Prof. Dr. Kürşat Çağıltay _____
Computer Education and Instructional. Tech. Dept., METU
Asst. Prof. Dr. Serdar Engin Koç _____
Computer Edu. & Inst. Tech. Dept., Başkent University
Asst. Prof. Dr. Halil Ersoy _____
Computer Edu. & Inst. Tech. Dept., Başkent University

Date: April 21, 2015

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last name: Murat DUMAN

Signature :

ABSTRACT

GRADUATE STUDENTS' USE OF SOCIAL MEDIA TOOLS FOR THESIS/DISSERTATION RESEARCH

Duman, Murat

Ph.D., Department of Computer Education and Instructional Technology

Supervisor: Asst. Prof. Dr. Gülfidan Can,

Co-Supervisor: Prof. Dr. Soner Yıldırım

April 2015, 204 pages

In this sequential mixed methods study, factors affecting graduate students' use of social media tools for thesis/dissertation research purposes were explored. First, in the quantitative part of the study, a survey was administered to 507 graduate students in the Middle East Technical University to describe their use of social media tools for thesis/dissertation research purposes. The results of the survey indicated that the graduate students highly utilized academic social networks, wikis, collaborative writing tools, file and video services. Moreover, online library catalog and academic database services were the most used social media tools. A multiple regression analysis was executed to predict their use of social media tools for thesis/dissertation purposes. Six predictors were found statistically significant. ICT use, microenvironment, weekly SMT use for thesis/dissertation, social media attitude in general, RS impact, and degree of completion variables together explained 30% of total variance.

The second phase of the study was built on the results of the quantitative phase and examined factors affecting graduate students' use of social media tools for thesis/dissertation research. Interviews were conducted with 17 participants. The findings indicated that the graduate students used social media tools mostly for keeping themselves up-to-date, literature search, discussion, and storage purposes. Moreover, social media tools enabled and facilitated the accessibility, communication, collaboration and sharing of resources and people. However, information quality issues such as information pollution, restrictions, and distractions were the biggest barriers for the adoption of these tools in the academic settings.

Keywords: Social Media, Graduate Students, Doctoral Students, Digital Scholar, Social Media Tools, Mixed Methods, Dissertation, Thesis

ÖZ

LİSANSÜSTÜ ÖĞRENCİLERİNİN TEZ ARAŞTIRMALARI AMACIYLA SOSYAL MEDYA ARAÇLARINI KULLANIMI

Duman, Murat
Doktora, Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü
Tez Yöneticisi: Yrd. Doç. Dr. Gülfidan Can
Ortak Tez Yöneticisi: Prof. Dr. Soner Yıldırım

Nisan 2015, 204 sayfa

Sıralı karma yöntem kullanılan bu araştırmada, lisansüstü öğrencilerin tez araştırmaları amacıyla sosyal medya araçlarını kullanımını etkileyen faktörler araştırılmıştır. Çalışmanın ilk kısmı olan nicel bölümde, Orta Doğu Teknik Üniversitesi'ndeki 507 lisansüstü öğrencinin tez araştırmaları amacıyla sosyal medya araçlarını kullanımını tanımlamak için bir anket yapılmıştır. Anket sonuçları lisansüstü öğrencilerinin akademik sosyal ağları, vikileri, birlikte yazma araçlarını, dosya ve vidyo servislerini fazlaca kullandıklarını göstermektedir. Ayrıca, çevrimiçi kütüphane kataloğu ve akademik veritabanı servisleri öğrenciler tarafından en çok kullanılan sosyal medya araçlarıdır. Lisansüstü öğrencilerin tez araştırmaları amacıyla sosyal medya kullanımını tahmin etmek için çoklu regrasyon analizi uygulanmıştır. Altı bağımsız değişken istatistiksel olarak anlamlı bulunmuştur. ICT kullanımı, mikroçevre, tez amacıyla haftalık sosyal medya araçları kullanımı, genel sosyal medya tutumu, araştırmacı geliştirme yeteneklerinden etki alanı ve derece tamamlama birlikte toplam varyansın %30'unu açıklamıştır.

Çalışmanın ikinci aşaması anket sonuçları ve lisansüstü öğrencilerin tez araştırmaları amacıyla sosyal medya araçlarını kullanımını etkileyen faktörler üzerine inşa edilmiştir. 17 lisansüstü öğrenci ile görüşmeler yapılmıştır. Bulgular lisansüstü öğrencilerinin sosyal medya araçlarını çoğunlukla güncel gelişmeleri takip etmek, alanyazın araştırmak, tartışma ve depolama amacıyla kullandıklarını göstermiştir. Ayrıca sosyal medya araçları kaynakların ve insanların erişilebilirliğini, iletişimini, işbirliğini ve paylaşımını kolaylaştırmıştır. Ancak, bilgi kirliliği gibi bilginin kalitesi ile ilgili sorunlar, kısıtlamalar ve dikkat dağıtıcı etmenler bu araçların akademik ortamlarda lisansüstü öğrencileri tarafından benimsenmesinde büyük engel teşkil etmekdir.

Anahtar sözcükler: Sosyal Medya, Lisansüstü Öğrencileri, Doktora Öğrencileri, Sayısal Araştırmacı, Sosyal Medya Araçları, Karma Yöntem, Tez

To my family, especially Deniz.

ACKNOWLEDGEMENTS

First and foremost, this dissertation would not have been completed without the special support, motivation and endless energy of my supervisor, Asst. Prof. Dr. Gülfidan Can. She did her best to provide feedback, and guided me through the ivory towers of the doctorate.

My sincere thanks go to Prof. Dr. Soner Yıldırım. Whenever I was stuck, he empowered me to solve even the hardest problems one by one. With the openness and hardworking, we have cleared all bacterias and microbes that surrounded us.

I would like to express my sincerest gratitude to my distinguished thesis committee; Prof. Dr. Zahide Yıldırım, Prof. Dr. Yasemin Gülbahar Güven, Prof. Dr. Kürşat Çağıltay, Asst. Prof. Dr. Halil Ersoy, Asst. Prof. Dr. Serdar Engin Koç and Asst. Prof. Dr. Yeşim Çapa-Aydın. Their invaluable support, guidance, and motivation led me to finish this process without bruises and bone fractures.

I would like to thank my colleagues from Computer Center, Ferdi Ayaydın, Levent Bayram, Melek Basmacı Top, Feride Tarkan Erdal, Ahmet Yurdakul, Nihan Ocak, Mahmut Teker, Can İz Yemişçioğlu, and Hasan Nadir Derin. They supported me all the time and tried to find an exit path even in the worst cases.

My special thanks go to my IT Support Team, Güldane Öcal, Satı Ömercan, Nevzat Demir, Gülser Cengiz, Çiçek Arslan, and Gülsüm Aygün. They were my eyes, ears, and voice when I was not around. Together, we have accomplished great things, and I wish to continue working with them.

I would also like to thank my friends in CEIT Department, Duygu Nazire Kaşıkcı, Evren Şumuer, İlker Yakın, Ömer Faruk İslim, Kadir Yücel Kaya, Deniz Selin Uzunosmanoğlu, Ozan Raşit Yürüm, Gökay Batmaz, Okan Arslan, Selcan Kilis, Gülenay Vardarlı Korgan, Hüseyin Üstün, and Tayfun Akçay. You were around me even in my darkest nights and days.

This study would not be possible without the assistance of Mustafa Bodur, Mehmet Dönmez, Sibel Doğan, Duygu Yücel, Erdal Akağaç, Esra Yeşilyurt, Buket Öztürk, Büşra Kol, Şeyma Özcan, İpek Pınar Renda. You have changed my life in a better way. Life is a camera, please smile!

My dearest friends from GİMER 2015, the participants of METU Entrepreneurship Research Center training group. You have supported and enlightened me about a new world unknown to me. I would like to thank Assoc. Prof. Dr. Adil Oran, Ahmet Kuzubaşlı, Ayşegül Kılınç, Emre Yiğit Alparslan, Onat Büyükakkuş, Cansu Perdeli, Mert Hasanoğlu, Didem Dede, Çağla Özdemir, and poet Başak Bölükbaşı.

During my "all but dissertation" phase, I have met great friends. I would like to express my sincere gratitude to Morsaleh Ranjbar Moghaddam and Merve Zelal Taştan for their friendship, even sharing their meals with me in the library.

A capricorn woman has changed my life in a better way. As I get to know her during the final phase of my Ph. D., I have started to solve my problems one by one with her support. Dear Şebnem Kınacı, thank you for your continuous motivation and positivity. I hope you can stay in my life as long as we want.

Filiz Çiçek would probably kill me if I had not included her name here. Like a Lorenz attractor, interesting people find interesting others instantaneously. I guess, we are insanely sane. You were there when I needed you and enabled me to achieve more in my life.

I am indebted to Onur Rauf Bingol. I have learned so much from him. He was like my shadow and empowered me both technically and mentally. I hope to work with him again. He has ten supercomputers' working capacity.

I would like to express my sincerest gratitude to Çağlar Tuncay, my life mentor. He enlightened me by asking questions that I have never thought of. I still don't know whether the weather is cold or I feel cold. I have learned to question all assumptions of life and the nature.

I would also like to thank my family Melek and Orhan Duman for their continuous support, guidance and prayers for me.

I also would like to thank to the people who made it possible for me to collect data from graduate students in the Middle East Technical University. I am honored to be a student of the METU. Finally, I thank all others who supported and helped me during this process. You are my anonymous heroes and heroines.

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LIST OF ABBREVIATIONS

#: Number

%: The percent sign

‰: The per thousand sign

CEIT: Computer Education and Instructional Technology

DV: Dependents variable

f: Frequency

G: Gender

HEC: Higher Education Council (YÖK)

ICT: Information and communication technologies

IT: Instructional technology

IV: Independent variable

LMS: Learning management systems

METU: Middle East Technical University

MoNE: Ministry of National Education of Turkey

MS: Microsoft

PC: Personal computer

SD: Standard Deviation

SPSS: Statistical Package for the Social Sciences

CHAPTER 1

INTRODUCTION

With the vast expansion of social media tools, researchers started to examine how these tools can be utilized in higher education. Studies focusing on the use of social media in higher education investigated how scholars can integrate social media into teaching and learning. However, most of them provided information about academicians' use of social media for general purposes instead of their use for academic research purposes. There are even fewer research studies for graduate students' use of social media for their thesis/dissertation research. The main purpose of this study is to investigate how graduate students utilize social media tools for their thesis/dissertation research.

1.1 Background of the Study

The fast advancement of information and communication technologies, especially the Internet, facilitated the academic research. Traditional Web (commonly called as Web 1.0) have provided users one-way communication (Cormode & Krishnamurthy, 2008). Contents were published through online websites and people have very limited options to have a voice in the digital space. The advancement of the new technologies and services have led users to a two-way communication era. These services enabled them acquire not only static content from the digital web but also create user-generated contents. Therefore, users have found a way to browse through the dynamic content and communicate with other users with common interests. New services enabling users to share content, communicate and collaborate with other users have emerged continuously. These new services are often referred as Web 2.0 or social media tools

(O'Reilly, 2005; Cann, Dimitriou & Hooley, 2011).

Social media tools gained some capabilities over time. As the features of Web 2.0 tools advanced discussion boards, forums, and instant messaging applications were replaced with social networking sites.

Social media have gained popularity and also affected the higher education institutions. Academic research was one of its effects that shaped the way scholars work and disseminate. With the help of Web 2.0 tools, researchers can communicate, share, and collaborate conveniently. Several studies explored higher education students' use or their attitudes toward social media tools (Liu, 2010; Browning Gerlich & Westermann, 2011; Poellhuber, Anderson & Roy, 2011). Guy (2012) reported that the use of Web 2.0 tools for general purposes is very high for higher education students and faculty. LinkedIn (2014) reported that there are more than 30 million recent college graduates and students registered in their network.

In spite of the fact that the use of social media tools between students and faculty was common, there are some studies in the literature which was found contrary findings on the use of these tools in academic research activities. As an example, Liu (2010) reported that students use social media tools for social engagement, communication, feedback, and social engagement, but only a few students use these tools for research. Moreover, faculty members' attitudes towards social media tools can be negative. There are also studies reporting that faculty members are reluctant to share their academic work on the social networking sites (Tiryakioglu& Erzurum, 2011).

Specifically about doctoral students, Carpenter, Wetheridge, Smith, Goodman, & Struijve' (2010) reported in their comprehensive study that although current doctoral students are competent users of information and communication technologies in their personal lives, they usually do not use Web 2.0 tools in their research and they are reluctant to share their results at intermediary stages. According to their 2011 report

(Carpenter, Tanner, Smith, & Goodman, 2011), doctoral students mainly used reference management tools provided by their institutions and 72% of them used at least one kind of tool to support their research. Passive use of social media tools was more common. In 2012 report, they found that doctoral students use social media in their research if it is easy to use and can be integrated into their research easily (Carpenter et al., 2012).

Several researchers examined the use and adoption of social media tools for scholarly communication. In a study where the use of social networks and online tools by researchers were examined, Van Noorden (2014) found that researcher used social media tools mostly for the dissemination of research outputs. Moreover, Procter, Williams, Steward, Poschen, Snee, Voss, and Asgari-Targhi (2010) looked for the use and adoption of Web 2.0 tools by researchers in scholarly communication practices. The results of the study also highlighted the factors associated with the researchers' utilization of these tools. However, their use of Web 2.0 tools in terms of academic research activities was not clear. While researchers and graduate students might have similar experiences of social media, studies focused only graduate students' use and adoption were limited in terms of the use of social media tools in academic research.

Facilitation of communication and increasing speed of information exchange with the Web 2.0 tools started to affect the academia and researchers, and studies were conducted to investigate the effect of these tools in higher education. In this study, the research focus were concentrated on the graduate students' use of social media tools for thesis/dissertation research in order to predict the effects of various factors on how graduate students use these tools and what their experiences are. Moreover, it is also critical to understand how and in what ways graduate students use these tools in their academic research activities.

1.2 Purpose of the Study

Although there was a growing body of literature on the use of social media tools in higher education and a handful of studies about graduate students' use of social media for personal and professional purposes, there were only few studies investigating graduate students' use of social media for thesis/dissertation research purposes. Moreover, previously mentioned studies lack the focus of using these tools for academic research purposes, as the nature of research is rather complex. Furthermore, the major studies exploring this topic collected data from students in developed countries. There are only a few studies about graduate students' experiences of using social media tools for their thesis/dissertations in developing countries with technologies still keeping up with those of developed countries.

Literature on social media tools in higher education was mostly related with the use of these tools for education, frequently in the courses by teachers. Studies conducted on this topic examined the advantages and disadvantages of social media tools, their use by educators and students. But, the research on the use of social media tools in higher education for academic research was rather limited. Specially, there are few studies related with the students' use of social media tool for thesis/dissertation research. The rationale to focus on this topic was to examine the relationship between Web 2.0 tools and academic research practices. The complex nature of research can benefit from the advantages of these tools. For example, social media tools can facilitate the scholarly activities including literature search, data collection for research and reaching participants, information exchange with other researchers, and communication with advisors and peers.

The purpose of this study is to examine graduate students' use of social media tools for thesis/dissertation research purposes. This study aimed to identify the extent to which graduate students utilize social media tools and how they use these tools in their thesis/dissertation research during their academic studies and scholarly

communication. In order to predict how various factors affected graduate students' use of social media tools for thesis/dissertation research and what were their experiences with these tools, the research questions of the study were presented.

1.3 Research Questions

The research questions of the study are:

1. How well do the graduate students' characteristics (ICT usage, age, gender, semester, general social media use, microenvironment, weekly SMT use in general, weekly SMT use for thesis/dissertation research, degree of completion, personal effectiveness domain, knowledge and intellectual abilities domain, research governance and organization domain, and engagement, influence and impact domain) predict their use of social media tools for thesis/dissertation research?

    1. a. Which characteristics are the best predictors of graduate students' use of social media tools for thesis/dissertation research?

2. How do graduate students use social media tools to support their thesis/dissertation research?

3. What are the enablers and barriers to use the social media tools for thesis/dissertation research?

1.4 Significance of the Study

This research aimed to identify the potential uses of social media tools by graduate students in their thesis/dissertation research processes. The research on social media tools in higher education for teaching and learning are growing (Poellhuber, Anderson & Roy, 2011; Wang, Chen, & Liang, 2011; Liu, 2010). However, students' use of

these tools in academic research activities were limited (Carpenter et al., 2012; Cann, Dimitriou, & Hooley, 2011). Therefore, this study aims to focus on students' use of social media tools in their academic research, especially for thesis/dissertation research. Moreover, the results of the study might contribute to fill in gaps in the literature about the graduate students' use of social media tools. Results of this study might be beneficial for policy makers, supervisors, librarians, higher education institutions and graduate students.

For policy makers, this study may help for the researcher development programs, assist in the decisions about graduate programs in parallel with the strategic plans of organizations, and better define the role of university and academia (Vitae, 2010). Understanding how graduate students utilize social media tools for academic research may help solving some of the problems of researchers such as ever increasing literature, and information overload (Priem & Hemminger, 2010). Moreover, supervisors may guide their graduate students and empower them with the right digital research tools to tackle with these problems and facilitate information exchange, production and publication of research outputs. Librarians may also make a decision of continuing subscription of printed or e-resources by analyzing the usage behavior of graduate students (Xu, Ouyang, & Chu, 2009).

Additionally, this study may make contributions to universities' faculty development programs, and researcher development programs (ÖYP). Social media and tools inherent in these platforms affected the scholarly activities in higher education (Cann, Dimitriou, & Hooley, 2011). Therefore, this study may also help understanding the characteristics and online behaviors of next generation researchers. The results and finding of this study can present guidelines and recommendations for stakeholders in higher education institutions.

1.5 Definitions of Terms

Graduate students: In this study graduate students will refer to the people who currently enrolled in a Master of Science (M.S.), Master of Science without Thesis, Doctor of Philosophy (Ph.D.), Doctor of Philosophy after Bachelor of Science programs.

Thesis/dissertation research refers to the scholarly activities conducted by graduate students in their academic degree completion related with their thesis/dissertation.

Social media refers to a collection of tools that allow users to connect, communicate, and interact with each other (O'Reilly, 2005; Kaplan & Haenlein, 2010).

Social media tools: Internet-based interactive tools used by people to gather, create, share and exchange information such as blogs, forums, social networking sites, wikis and instant messaging technologies (Cann, Dimitriou, & Hooley, 2011).

Blogging refers to the activity of writing posts and comments on a website by a writer or commonly called as blogger (Blood, 2002).

Microblogging is defined as a new kind of communication which allow users to enter shorter posts using instant messages, mobile phones, e-mail or Internet, so it decreases the requirements of time (Java, Song, Finin, & Tseng, 2007).

Social networking sites refer to a web-based environment which allows users to create own profile, articulate text, photos, videos for sharing other members, so it provides users with developing and maintaining relationships with others (Boyd & Ellison, 2007).

Academic social networks are systems based on the Web 2.0 technologies, and aim to increase connection, sharing and collaboration between scientists and researchers (Giglia, 2011).

Instant messaging refers to the message transmission between users simultaneously like conversation (Campbell et. al., 2002).

RSS, Really Simple Syndication refers to the channel or feedback mechanism of recent changes in a website which allow the users to follow the website, and become aware of last changes (Wusteman, 2004).

Wikis refer to the websites which allow users to develop and edit content, and track the changes (Grant, 2006).

Reference management tools refer to the environments which provides users with resource discovery, collaboration with other researchers, and managing the information and citation (MacMilan, 2012).

1.6 Outline of the Dissertation

In this dissertation, chapter one presents the introduction, the purpose of the study, the research questions to be answered, the significance of the study, and definition of terms.

Chapter two is a review of the literature. Recent research on social media tools, social media tools in higher education is presented.

Chapter three presents the research method, namely explanatory sequential mixed method design. Moreover, population and sample, quantitative and qualitative phases, data collection and analysis parts, the context of the study are presented.

Results and findings of the both quantitative and qualitative phases of the study are presented in Chapter 4. Multiple linear regression results and statistically significant predictors are provided in the first part. Then findings of the thematic analysis are explained. Subthemes and dimensions are listed under each theme.

Chapter 5 summarizes the results of the study and discusses the findings. Implications of the study were stated, limitations and recommendations for further research are also provided.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter addresses the related literature regarding the scope of the study bounded by the research problem and research questions articulated in Chapter One. It synthesizes and summarizes the issues about the use of social media tools in the academic research process. It highlights the students' behaviors, adoptions, and attitudes to use social media tools for academic research.

Conceptual framework which constructed the study's focus explained with its major components. After the definitions of social media and academic research process, social media for researchers and social media tools are explained. Then, the relevant studies about the use of social media tools by graduate students are reported. Finally, the gap in the literature is summarized.

2.2 Conceptual Framework

This study incorporated four components in its conceptual framework: 1) Lovitts' model of factors influencing the degree completion and creative performance (2008) 2) researcher development knowledge and skills from Vitae Researcher Development Framework (2010), 3) social media attitude, and 4) socio-demographic factors. A visual representation outlining the conceptual framework of this study was presented below.

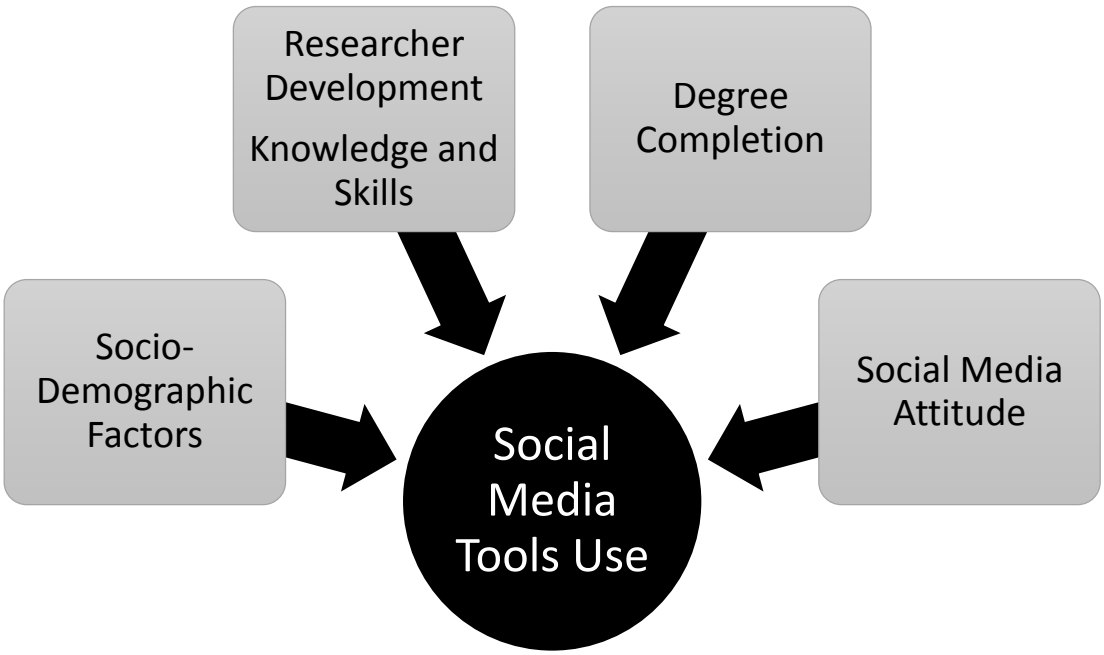

Figure 1. Conceptual Framework of Social Media Tools Use of Graduate Students

2.2.1 Degree Completion

High costs related with the graduate education and institutions' limited resources make it important to understand and investigate the factors associated with the graduate programs, and students' completion of their degree requirements on time. De Valero (2001) suggested that time to graduate degree completion increased consistently and it was due to the complex set of factors associated both with graduate students and higher education institutions. Graduate students' ability to complete the requirements of their degree in a timely manner were also examined in terms of graduate program size, financial support, relationships between students and faculty, and among peers in the literature. Therefore, institutional factors and individual characteristics of graduate students were found to be associated with degree completion (De Valero, 2001; Girves & Wemmerus, 1998). When graduate students did not get any support from their

faculty and institutions, they might not function well in terms of academically and psychologically (Hodgson & Simoni, 1995).

Graduate students have different fates in their education in terms of making independent research. Their academic degree completion and creative performance are affected by various factors. Lovitts (2008) investigated the factors influencing degree completion and creative performance of doctorate students. The author stated that doctoral students had three fates as independent researchers in their graduate education and degree completion. First one was the easy transition which included production of a high quality dissertation. Second one was the difficult transition which included the production of an acceptable dissertation with a rather small contribution to the literature. Third fate was the difficult transition and the failure to complete the requirements of a dissertation. In her study, Lovitts presented a model of the factors affecting these three fates of graduate students in their degree completion.

This model (Lovitts, 2008) included two main components: individual resources and environment. These factors organized under six major theoretical constructs and their sub constructs. Constructs and their sub constructs building the degree completion and creative performance were gathered through focus group discussion with doctoral students on the transition to independent research. The author listed the factors as following (p. 301):

- Intelligence (analytical, practical, creative),
- Knowledge (formal, informal),
- Thinking Styles,
- Personality,
- Motivation (intrinsic, extrinsic),
- Environment (macro, micro).

Environment was the one of the factors mentioned in her study that shapes the values and beliefs in the universities and faculties. Environment factor included two

components. These components were macroenvironment and microenvironment. The macroenvironment referred to the cultural context including the culture of graduate education and culture of the discipline. Teaching, training and research activities in the universities and faculties were guided by the norms, values and beliefs which were shaping the cultural context of the graduate education.

According to Lovitts (2008), microenvironment was the immediate setting that graduate students worked and interacted with their advisors, peers, faculty, and university. Microenvironment variables that included in Lovitts' framework were department, advisor, and peers and other faculty.

Since, graduate students' immediate settings might have an impact on their tools usage, in this study microenvironment variable was included, and interactions that occurred in this context were examined to predict graduate students' use of social media tools for thesis/dissertation purposes. Moreover, degree completion level of students were also included to explore factors that influence graduate students' use of these tools in academic settings.

2.2.2 Researcher Development Knowledge and Skills

Development of knowledge and skills of researchers in higher education plays a critical role. Higher education institutions and universities emphasize their development from the first year of the university (Willison, 2008). Some universities have even undergraduate level knowledge and skill development programs to prepare students to the higher levels of academia. Higher education councils also have statements in their mission and vision related with the researcher development. Thus, from their foundation, most of the institutions highlight the development of these skills to increase the number and the quality of research outputs and enhance the academic quality in the university settings.

Knowledge and skills development of researchers should be measured and regularly reviewed by higher education institutions. One of the problems in the development of models for the researchers was their lack of up-to-dateness and appropriateness in to the curriculum planning, learning and assessment approaches (Owen, Stupans, Ryan, McKauge, & Woulfe, 2010). Moreover, these models that focused on researchers did not have clear guidelines on how to implement them into current academic research activities (AGDET, 2015). Models or frameworks were developed with the support of higher education councils of countries and mostly were country-specific. For example, "National Qualifications Framework for Higher Education in Turkey" was developed by Higher Education Council of Turkey (YÖK, 2015). This framework has four program levels namely, Associate's (5^{th} Cycle), Bachelor's (6^{th} Cycle), Master's (7^{th} Cycle), and Doctorate (8^{th} Cycle). Under each level, knowledge, skills, and competences were defined. However, guidelines on how to develop these knowledge, skills, and competences were not detailed.

One of the most comprehensive frameworks in higher education was developed under the supervision of Higher Education Council of United Kingdom. Researcher Development Framework was developed by a panel of experts through interviews and focus groups over 100 researchers, specialists, and stakeholders (Vitae, 2010). Continuous reviews and improvement made it also available to be used online by the researchers and other related bodies in higher education institutions. This framework was adapted to graduate students' knowledge and skills development for the purposes of this study.

Researchers' knowledge and skills might affect their utilization of social media tools for thesis/dissertation. Thus, four domains of Vitae, Careers Research and Advisory Centre (2010) was adapted and asked to measure graduate students' level of rating on these domains. They were 1) personal effectiveness, 2) knowledge and intellectual abilities, 3) research governance and organization, and 4) engagement, influence and impact. A visual depiction of these domains was shown in Figure 2 below.

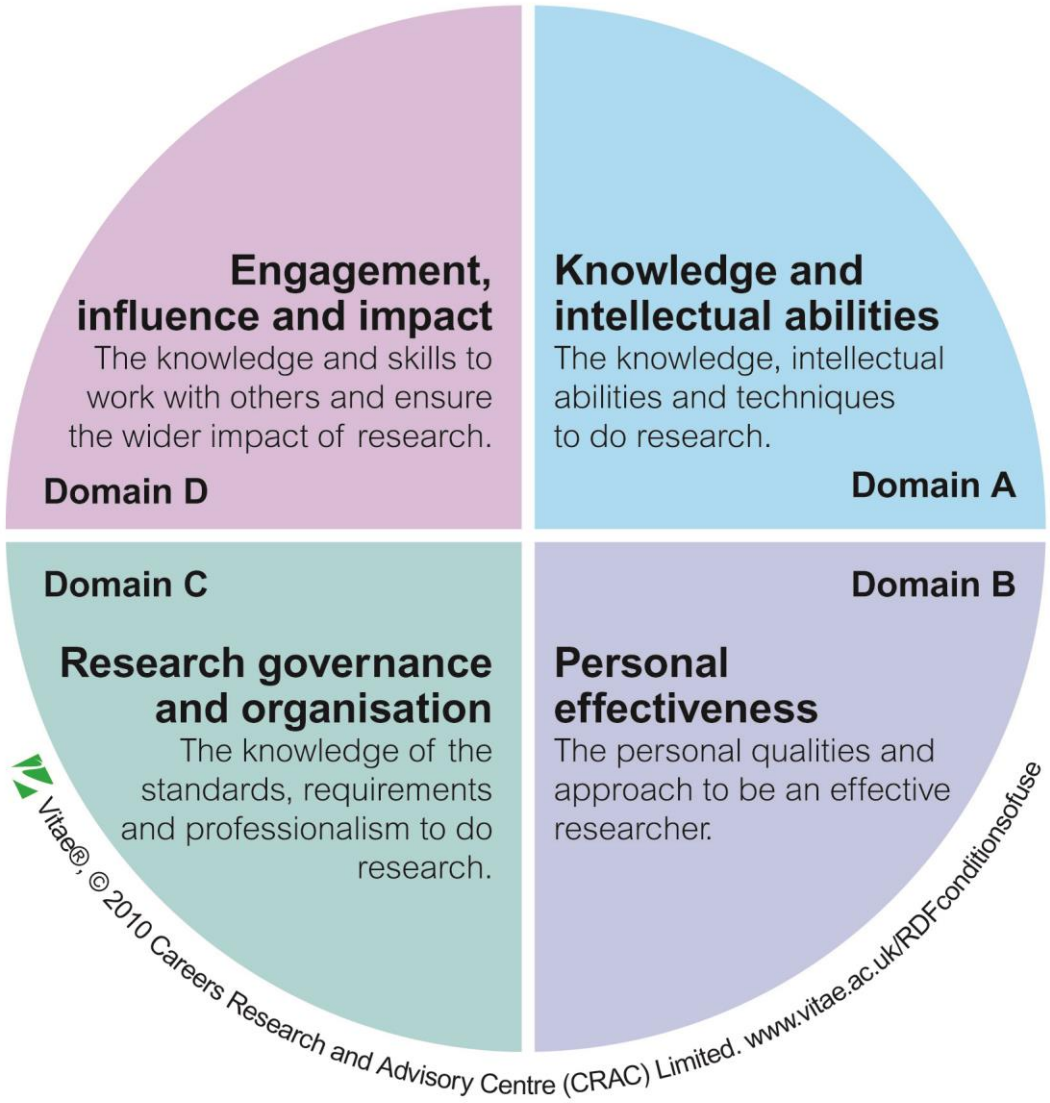

Figure 2. Researcher Development Domains. Reprinted from Vitae Researcher Development Framework, 2010, Retrieved March 30, 2015 from www.vitae.ac.uk/rdf. Copyright 2010 by Careers Research and Advisory Centre (CRAC) Limited. Reprinted with permission.

Researcher development domains presented in this study has four domains and twelve sub-domains. In these 12 sub-domains, a total of 63 items were listed to relate the necessary knowledge and skills. In the domain A, that is, knowledge and intellectual abilities knowledge base (A1), cognitive abilities (A2), and Creativity (A3) were listed to guide researchers, supervisors and related bodies to look for the presence of these

knowledge, abilities or techniques to do research. Knowledge and skills such as subject knowledge, theoretical and practical application of research methods, information seeking, information literacy and management, problem solving, innovation, intellectual insight fell within this domain (Vitae, 2010).

Domain B was related with the personal qualities of researchers, consisting the sub-domains of personal qualities (B1), self-management (B2), and professional and career development (B3). Items like career management, continuing professional development, networking, work-life balance, time management, and commitment to research were in this domain (Vitae, 2010). Inclusion of items from domains were chosen according to the item reduction analysis in this study.

The knowledge of the standards and professionalism to do research fell under the research governance and organization, Domain C. Important items for the continuation of a research, management strategies were in this category. Professional conduct (C1), research management (C2), and finance, funding and resources (C3) were the three sub-domains. Items such as infrastructure and resources, financial management, income and funding generation, project planning and delivery, and research strategy fell under these sub-domains (Vitae, 2010).

The last domain of Researcher Development Framework was the engagement, influence and impact, domain D. Working with others (D1) sub-domain consisted items like team working, people management, supervision mentoring, and collaboration. D2 sub-domain was referred as communication and dissemination and communication media, and publication was the highlighted items. Engagement and impact (D3) was the last sub-domain and included teaching, public engagement, policy, and society and culture (Vitae, 2010). In this study, knowledge and skills of graduate students were seek to examine using these four domains of researcher development framework. Questions of the quantitative phase of this study were organized and items were reduced after categorization of them within each domain.

2.2.3 Social Media Attitude

Several researchers studied the attitudes toward social media for students. Studies which focused on college students were mostly investigated the use of these tools for teaching and learning purposes. In a study by Akbari, Eghtesad, and Simons (2012) Twenty PhD students' attitudes toward using social networks were investigated in an online English course. PhD students' attitudes towards social media before and after the course were found significant and they reported that Facebook provided a high potential and was effective as an educational tool. On the other hand, Wang et al. (2011) reported negative attitude of college students when they used social media. Results of the study suggested that students would prefer to use social media for entertainment purposes, but using them and spending many hours affected their grades and academic efficiencies.

A study conducted by Browning, Gerlich and Westermann (2011) in United States of America examined the undergraduate students' perceptions and belief about social media. Social Media Affinity Scale was developed by the authors of that study to measure perceptions of social media. Authors proposed that Social Media Affinity Scale can be used to assess social media beliefs and to measure the readiness to use social media tools.

As graduate students' attitudes towards social media and social media tools may also affect their use for thesis/dissertation research purposes, this research explored their attitudes adapting several items from the Social Media Affinity Scale. One indication of attitude can be the behavior, specifically students 'weekly social media use. Therefore, in this study, students' use of social media in general and weekly social media use for thesis/dissertation research were explored.

2.2.4 Socio-Demographic Factors

Several studies examined the students' socio-demographic factors whether they had any effect on the utilization of social media tools. Lenhart, Purcell, Smith and Zickuhr (2010) investigated the use of social media in with a sample of 800 adolescents and 2,253 adults who were at the age of 18 or over using surveys. Moreover, Poellhuber, Anderson and Roy (2011) investigated the 3462 distance education students' use and interest in social media and collaboration. The results of revealed that male and younger students showed higher interests in terms of experience in social software and attitudes toward technology.

Additionally, a series of studies examined the information-seeking and research behavior of doctoral students by dividing them into two categories as Generation Y and older students (Carpenter, Tanner, Smith, & Goodman, 2011; Carpenter, Wetheridge, Smith, Goodman, & Struijve', 2010; Carpenter, Wetheridge, Smith, & Goodman, 2012). The results of these studies presented that there was no significant difference between Generation Y students and older age groups in terms of information seeking behaviors and use of research resources. Considering these possible factors that may relate students' use of social media toos in the literature, in this study students' socio-demographic factors such as age, gender, and current semester at the graduate program were also explored.

2.2.5 Synthesis of Conceptual Framework

This study aims to investigate the effects of various factors on the social media tools usage for thesis/dissertation research of graduate students. For this aim, the researcher developed a conceptual framework complementing various factors centered on the social media tools use as visually depicted in Figure 1.

This study examines the graduate students' use of social media tools for thesis/dissertation research. To better investigate and predict factors affecting the use of social media tools, various factors related with graduate students and based on the literature were included. A composite conceptual framework enabled researcher to examine the factors effecting the thesis/dissertation research in this study.

The rationale to develop a conceptual framework with four components was that thesis/dissertation research process might be related with the factors such as graduate students' research environment, attitude towards social media, academic development, and socio-demographic characteristics. The present study was conducted to investigate these factors under four components. There might be another factors apart from the ones examined in the present study. In the previous studies or frameworks, generally one of the factors were considered. Therefore, conceptual framework of the present study make it possible to study the effects on the social media tools with many factors. It might not be possible to explore them with a single theoretical background.

2.3 Social Media

In the literature, social media and Web 2.0 terms are used interchangeably by scholars (Dabbagh & Kitsantas, 2012). Therefore, the term of Web 2.0 started to be used after a conference session in 2004 (O'Reilly, 2005). O'Reilly (2005) stated that Web 2.0 does not have hard boundaries, rather can be seen as a platform that is a set of principles and practices supporting other online applications. While Web 1.0 provides one-way communication and static content management, Cormode and Krishnamurthy (2008) highlighted the important features of Web 2.0 sites differed from traditional Web. Authors stated that users became the first-class entities of the platform in Web 2.0 sites. Moreover, users can form various kinds of connections with other users such as bonding friendships, being group members, and getting real-time updates about other users by RSS feeds. Furthermore, users can interact with others via posting comments, tagging and blogging about contents, sharing photos, videos and other

forms of multimedia, and communicating with instant messaging systems built on these sites (Cormode & Krishnamurthy, 2008).

Due to its nature and complexity of methods in its communication, the concept of Web 2.0 may be understood differently (Rollett, Lux, Strohmaier, Dösinger, & Tochtermann, 2007). A more appropriate and explicit definition of Web 2.0 for academia was made by Research Information Network (RIN) scholars. Cann, Dimitriou and Hooley (2011) proposed Web 2.0 as "new generation of Web services and applications with an increasing emphasis on human collaboration." (p. 46). However, the term itself being as Web 2.0 becomes like a new version of traditional Web and may cause ambiguity to the common users of the Internet. Therefore, the term "social media" are preferred in the recent literature referring to "the online technologies and practices that people use to share opinions, insights, experiences and perspectives" (Cann, Dimitriou, & Hooley, 2011, p. 46). These technologies that facilitate collaboration and social interaction exemplified by Bryer and Zavatarro (2011, p. 327) as blogs, wikis, social networking sites, media sharing tools, and virtual worlds. Moreover, various kinds of social media tools are frequently launched. According to Go2Web20 (2014) website, currently there are more than 3000 Web 2.0 services included in their database.

Despite the growing number of tools, the lack of proper tagging and categorization could inhibit users to reach more useful services. Researchers have made some attempts to organize the vast amounts of social media tools. Safko and Brake (2009) categorized social media tools in terms of their features and functions. As a result, fifteen categories have been formed namely as social networking, publishing, photo sharing, audio sharing, video sharing, microblogging, livecasting, virtual worlds, gaming, productivity, aggregators, RSS (Really Simple Syndication), search, mobile, and interpersonal. Moreover, Rowlands, Nicholas, Russell, Canty, and Watkinson (2011) narrowed down the list in their study into eight categories being as social networking, blogging, microblogging, collaborative authoring tools for sharing and

editing documents, social tagging and bookmarking, scheduling and meeting tools, conferencing, and image or video sharing. Moreover, in a research report supported by Research Information Network (RIN), Cann, Dimitriou and Hooley (2011) organized social media tools under three main themes: communication, collaboration and multimedia as presented in Table 1 along with the examples under each category.

Table 1. Classification of Social Media Tools

Categories	Example of Social Media Tools
Communication	
Blogging	Blogger, LiveJournal, TypePad, WordPress
Microblogging	Twitter, Yammer, Google Buzz
Location	Foursquare, Gowalla, Facebook Places
Social Networking	Facebook, LinkedIn, MySpace
Aggregators	Google Reader, Netvibes, Pageflakes, iGoogle
Collaboration	
Conferencing	Adobe Connect, GoToMeeting, Skype
Wikis	PBworks, Wetpaint, Wikia
Social bookmarking	Delicious, Diigo, BibSonomy
Social bibliography	CiteULike, Mendeley
Social news	Digg, Reddit, Newsvine
Social documents	Google Docs, Dropbox, Zoho
Project management	Bamboo, Basecamp, Huddle
Multimedia	
Photographs	Flickr, Picasa, SmugMug
Video	Viddler, Vimeo, YouTube
Live streaming	Justin.tv, Livestream, Ustream
Presentation sharing	Scribd, SlideShare, Sliderocket
Virtual worlds	OpenSim, Second Life, World of Warcraft

*Adapted from Cann, Dimitriou and Hooley (2011).

The use of social media tools increases rapidly. Chen and Bryer (2012) reported that one of the social networking sites, Facebook, had more than 750 million users in 2011. This number went up to 1.19 billion monthly active users as of October 2013 (Facebook, 2014). Additionally, Facebook (2014) announced that more than 727 million people are using Facebook daily. Another social networking site, LinkedIn, which is mainly used for professional connections, has more than 259 million registered members (LinkedIn, 2014), with reference to nearly 100 million members back in 2011. LinkedIn (2014) also reported that there are more than 30 million recent college graduates and students registered in their network being the fastest growing demographic. Although registered members of social media sites are growing every day, their use for the purposes of academic practice is not satisfying. Tiryakioglu and Erzurum (2011) reported that faculty members were reluctant to share academic work including assignments and article over social networking sites due to the lack of credibility of information shared over these networks.

Lenhart, Purcell, Smith and Zickuhr (2010) examined the use of social media in the United States in a project supported by Pew Research Center. A sample of 800 adolescents between 12-17 ages and 2,253 adults who were at the age of 18 or over contributed to the study using surveys. The data were collected in several time frames. The results indicated that the use of social networking sites by teens and adults had been increased significantly over time. According to this study published in 2010, 73% of American teens used social networking websites while 55% in 2006 and 65% of them in 2008. Moreover, 47% of adults used social networking sites; Facebook being the most commonly used social networking sites among them. Among adult respondents who use social networking sites, 73% of them had at least one profile on Facebook, 48% had an account on MySpace and 14% of them registered to LinkedIn. Use of virtual worlds such as Second Life was in the last place (4%), along with 17% use of Twitter. The findings also pointed out that %30 of people used social media for sharing multimedia, whereas 15% of them for remixing and 11% of them for blogging purposes (Lenhart, Purcell, Smith & Zickuhr, 2010).

According to Rowlands and Nicholas (2005) academic literature's fast growth in size is one the problems for researchers. As the communication between scholar and publishers became easier over information technologies, production and publication of research outputs were facilitated and grown in size. This article overload enforces scholars and reviewers to spend less time on each academic content. One of the solutions used in the academia was the use of social media tools. These tools presented a new window to tackle information overload and tracking citations, and collaborating with other researchers (Priem & Hemminger, 2010).

Researchers started to use social media tools for personal and professional purposes (Procter, Williams, & Sewart, 2010). With the vast adoption of these tools, research oriented tools were also started to be adopted by scholars. In their study, Priem and Hemminger (2010) organized social media tools for research. Popular web 2.0 tools along with the tools aimed at scholars were listed with their purposes as general-use applications and scholarship-specific applications under two categories. These tools were organized as follows (Priem and Hemminger, 2010):

- Social bookmarking (e.g. CiteULike, Connotea),
- Social collection management (e.g. Mendeley, Zotero),
- Social new/recommendations (e.g. Faculty of 1000 website),
- Publisher hosted comment-spaces (e.g. PloS, British Medical Journal),
- Microblogging (e.g. Twitter),
- User-edited reference (e.g. Scholarpedia, Citizendum),
- Blogs (e.g. Research Blogging, Blogger),
- Social networks (e.g. Nature Networks, VIVOweb),
- Data repositories (e.g. DBPedia, GenBank),
- Social video (e.g. SciVee).

Although participation in social media does not contribute to the performance of the many scholars yet, researchers reported increased use of these tools for academic purposes (Carpenter, 2012; Cann, Dimitriou, & Hooley, 2011; Procter et. al, 2010).

Moreover, collaborative underpinnings and nature of web 2.0 applications enable scholars to exchange information easily and consume services without a centralized infrastructure to share data and documents with others (Kamel Boulos & Wheeler, 2007). Therefore, social media tools which have features like sharing, collaboration and organizing content online increased in use and similar web tools emerged for research. Social media tools that were counted as disconnected applications before gained capabilities with the developments in web 2.0 technologies. Applications and platforms like reference management tools, academic databases, and online library catalogs provided support for the facilitation of sharing information, research data and bibliographies among scholars (Priem & Hemminger, 2010).

Researcher can seek and manage information from various sources with the help of online research tools. Carpenter et al. (2012) highlighted that the use of research oriented social media tools by scholars increased significantly in the recent years. Researchers also started to use online tools like Mendeley and Zotero to organize and manage their references. Many scholars chose to use text based references and traditional methods to manage their references (Marshall, 2008). However, online reference management tools become more common among users. For example, as of November 2012, a popular reference management tool, Mendeley reached two million users (Mendeley, 2012), which was 100.000 users back in 2009 (O'Hear, 2009).

Rapid growth of social media tools both in content and in terms of registered users also affected the utilization of digital repositories, online libraries and academic database services. Many universities created contents and guidelines to support their researchers for effective use of their online libraries and various academic database services. In a study conducted by Xu, Ouyang, and Chu (2009), 81 academic library websites in New York State were evaluated. The results of the study revealed that %42 of library websites adopted at least one Web 2.0 tools. Although the implementation of these tools changed library to library, the characteristics of Library 2.0 were proposed. Five essentials of the new kind of academic libraries were suggested as

being open, interactive, convergent, collaborative, and participatory. Moreover, the authors also put forward the four distinct features of these services. Library 2.0 was differentiated from traditional libraries by being user oriented, socially rich, multimedia enabled, and communally innovative (Xu, Ouyang, & Chu, 2009). Adoption of Library 2.0 functionalities was also studied through the focus of knowledge management perspective. Kim and Abbas (2010) investigated the 230 academic library web sites and surveyed 184 users to understand how Library 2.0 features were adopted by different academic groups. Results of the study found that while library initiated features like RSS feeds, podcasts were widely adopted, user initiated features were low in utilization among participants. The literature on research related social media tools present that graduate students were not the main focus of these studies. Moreover, some studies were conducted by visiting websites online and surveying random participants. Asking opinions of graduate students about the research related social media tools and examining how they might be utilizing these tools were not found in the literature.

2.4 Social Media Use in Higher Education

Growing popularity and increasing use of social media tools attracted researchers to examine the opportunities in the higher education. Liu (2010) conducted a study about the use of social media tools by higher education students in United States of America. The Author investigated students' attitudes and perception towards different social media tools. These tools included Facebook, LinkedIn, Blogging, Twitter, Wiki, Podcasting, Virtual Worlds, RSS, Bulletin Board, YouTube, StumbleUpon, Netlog, Delicious, Digg, Plurk, and Jaiku. A cohort of 221 students contributed the research through an online survey, including 50 graduate students. The results highlighted that Facebook, YouTube, and Wiki were the top 3 tools that students were knowledgeable about. Among the sixteen tools, virtual world, RSS, and Twitter were the ones that students were not at all knowledgeable about. The findings also indicated that students used social media tools for social engagement (85%), for direct communications

(56%), for speed of feedback (48%), and for relationship building (47%). The Author stated that few students mentioned the educational use of these tools for research projects, learning resources, and teamwork. Only 26 of 221 students used social media tools for public research/polling (Liu, 2010).

Similarly, a study conducted by Browning, Gerlich and Westermann (2011) in United States of America examined the undergraduate students' perceptions and belief about social media. Social Media Affinity Scale was developed by the researchers of that study to measure perceptions of social media. The results of the survey of 141 undergraduate students showed that there were no significant differences between male and female students in terms of internet usage, social media usage, and beliefs about social media. Moreover, they reported that students showed a great deal of readiness for using social media tools as a medium to deliver course related resources and engage students. Authors also proposed that Social Media Affinity Scale can be used to assess social media beliefs and to measure the readiness to use social media tools (Browning, Gerlich, & Westermann, 2011).

Although these studies focused on undergraduate programs in universities, the students' use of social media tools may differ in distance education programs. Different from these studies, Poellhuber, Anderson and Roy (2011) investigated the distance education students' use and interest in social media and collaboration. 3462 completed questionnaires retrieved from the students of four large Canadian distance education institutions. The results of 90 item online questionnaire revealed that male and younger students showed higher interests in terms of experience in social software, and attitudes toward technology, noting that they are based on students' self-reported measures, and 75.3% of respondents were female. 69.5% of respondents reported that they are proficient in using social networking software, 52.9% and 33.7% of them are proficient in using video sharing and photo sharing, respectively; whereas social bookmarking (6.1%), 3D virtual worlds (6.5%), electronic portfolios (12.2%), and Twitter (12.7%) are the least experienced social software. In terms of showing interest

in using social software for learning purposes, 58.2% of students selected video sharing, social networking (52.8%), and web conferencing (42.6%) (Poellhuber, Anderson, & Roy, 2011).

Studies in the higher education regarding the utilization of social media tools have mainly focused on students' beliefs, intentions and skills on social media in everyday life. A relatively few studies examined the uptake of these tools in education for teaching and learning purposes. Furthermore, these studies mainly used quantitative methods for data collection.

2.5 The Use of Social Media in Higher Education in Turkey

There is a growing body of literature on the use of social media in higher education in Turkey. In this part, the literature review on the use of social media in higher education in Turkey is presented. Since the present study was conducted on the use of social media tools for thesis/dissertation research among graduate students of a Turkish university during their academic studies, this section of the literature review is significant to provide an overview for the study.

Tektaş (2014) analyzed the viewpoint of the students at Marmara University Technical Sciences Vocational Academy to the social media networks. In this scope, a questionnaire was applied to the students and the obtained data were analyzed to evaluate for which purposes the students use social media tools. The study explored three hypotheses that there is a significant relationship between 1) the time spent on the Internet and on the social media; 2) the gender and time spent on the social media; and 3) the time spent on the use of social media and controlling skills for social media. The results of the study indicated that students spend 76% of the time on the Internet in social media networks and that 89.6% of them were social media users for longer than two years andthey used social media for socializing and communication activities such as photo, content or video sharing.

Another study on social media use in higher education in Turkey by Akçay (2011) investigated the gratification obtained by social media use of university academic personnel, administrative personnel, and students. The sample was composed of 232 participants from Gümüşhane University and a questionnaire was conducted to collect data. The study investigated four factors as the reasons for social media use: socializing, free time activity and fun, relaxation and information, and academic reasons. The research indicated that socializing was the first gratification among university members.The second reason to use social media was for spending their past time and for fun. The fourth factor which was most related with the academic purposes was the least stated one by the participants. Moreover, the study also indicated that although those people in higher education level complained about the side effects of excessive social media use, they still continued to use it.

Aydin (2012) conducted a study specifically on Facebook, the most common social media tool, regarding its use as an educational environment. The study included six categories; users, their reasons to use Facebook, side effects, educational environment in Facebook, cultural, linguistic and educational effects of Facebook and the relationship between the variables and Facebook. Moreover, Aydin (2012) also compared Facebook use in Turkey with global use. According to the results of the survey, it was seen that most of Facebook users were university level students in Turkey. The study also investigated the reasons and effects of Facebook and the education environment related with Facebook use by concluding that Facebook has an important potential to help students for their education and for researchers and educators as well, by suggesting that they can use it as a tool to reach students.

In a similar study by Baran and Ata (2013), 2776 university students from Dokuz Eylül University were selected as participants and their Web 2.0 technology use was investigated. The study also examined a specific use rather than a general social media use in a higher education level. The purpose of thes study was to reveal university students' use frequencies, skills and to see how they get use of it in terms of education.

According to the results, Web 2.0 technology was seen as an affecting factor for the "integration of information and communication technologies to every expertise in higher education" (Baran and Ata, 2013, p.194).

Another study from literature on social media use in Turkey in higher education level was conducted by Biçer (2014) on the motivations of academicians to use social media, with Facebook case study. Mixed method was used and concurrent embedded design was selected as the research method. 10 academicians from Anadolu University were selected and the criteria were that they must be at least one-year user of Facebook and must log in Facebook at least one per everyday. The results of the study indicated that the basic motivations behind academicians' Facebook use were to communicate, for professional reasons, to be informed about news, and for fun. Moreover, when they observed their friends using Facebook, they were more motivated to use it, no matter what their reason for use it.

2.6 Social Media Use for Research

In the literature, some studies become prominent on social media use for research subject. These studies were the ones conducted by Carpenter et al. (2010; 2011; 2012), Procter et al. (2010), Cann, Dimitriou, and Hooley (2011), and Van Noorden (2014). Focus of these studies were about information seeking and research behavior, utilization of Web 2.0 tools in scholarly communications, and online collaboration of researchers.

One of the most relevant and comprehensive studies was conducted in England within three years. This longitudinal study which was supported by the British Library and Joint Information Systems Committee, (Carpenter, Tanner, Smith, & Goodman, 2011; Carpenter, Wetheridge, Smith, Goodman, & Struijve', 2010; Carpenter, Wetheridge, Smith, & Goodman, 2012) examined the information-seeking and research behavior of doctoral students. In these series of studies, doctoral students were divided into two

categories referred as Generation Y (who born between 1982 and 1994) and older students.

In their first annual report, Carpenter et al. (2010) reported the qualitative results of the 60 Generation Y doctoral students and responses to a quantitative survey of 2063 Generation Y and 3347 older doctoral students. The results of the study presented that there was no significant difference between Generation Y students and older age groups in terms of information seeking behaviors and use of research resources. However, they found significant differences between students' subject disciplines regardless of their age and current year in their graduate program. Moreover, Generation Y and older doctoral students were highly competent users of information and communication technologies in their personal lives. The majority of the users preferred online search engines like Google, Google Scholar, and e-journal articles. Furthermore, the study indicated that Generation Y doctoral students were highly influenced by their supervisors; but, not comfortable to share their research findings in the intermediate stages. The findings also indicated that most of the Generation Y doctoral students did not utilize Web 2.0 tools due to not seeing immediate results of using these technologies in their research and work habits. Lack of skills was not found significant in the utilization (Carpenter, Wetheridge, Smith, Goodman, & Struijve', 2010).

Carpenter et al. (2011) expanded the "Researchers of Tomorrow" study concentrating on use of Web 2.0 technologies, using and publishing open access resources, using resources outside of researchers' own institutions, training and support, and supervisor's role. The study included qualitative results from 47 Generation Y doctoral students and quantitative results from 2546 older doctoral students along with 2239 Generation Y doctoral students. The results indicated that Generation Y doctoral students mainly used reference management tools provided by their institutions and 72% of them used at least one kind of tool to support their research. Moreover, the findings also presented that the passive use of social media tools was more common

than their active usage as following blogs, reading wikis rather than producing and sharing content. Eight percent of students even stated that they did not use any open web or social media tool. The reason for not using and low take-up of these tools were proposed due to institutions' lack of meeting the needs of doctoral students, and lack of providing support in using technology to show their potential benefits (Carpenter, Tanner, Smith, & Goodman, 2011).

In the final report of the three-year long study, Carpenter et al. (2012) gathered the findings of this longitudinal research and reported the results of 17,113 responses to the annual surveys from 72 Higher Education Institutions of United Kingdom. The key findings indicated that doctoral students use social media in their research if it is easy to use and can be integrated into their research smoothly. Moreover, the use of social media tools for managing and retrieving research information were increased. However, tools that provide collaboration and enable scholarly communication were used scarcely along with the ones provided with the support of the institutions and the open web technology tools. In terms of information seeking and research behavior of doctoral students, this study was proposed to be the most comprehensive and longest research to date.

Another related study from the literature was conducted by Procter et al (2010). Authors reported the findings of adoption and use of social media tools in scholarly communications. About 1477 researchers from United Kingdom were participated into the survey and 56 of them were interviewed for further analysis about their perception of Web 2.0 tools. Participants, i.e. researchers from UK, consisted of academic staff and PhD students. This mixed methods study, even though authors referred the study being a composite methodology was aimed to understand current attitudes and adoption patterns, and highlight researchers' needs and problems. Quantitative results of the study revealed that about 13% of users frequently use social media tools in novel forms of scholarly communications (writing a blog, adding comments to others' blogs or online journal articles, contribution to a public or private wiki, and posting content

publicly). While 45% of 1477 participants were occasional users, a large cohort of them were non-users of Web 2.0 tools (39%). Semi-structured interviews conducted by Procter et al highlighted the factors that shaped Web 2.0 adoption. Authors suggested these factors as collaboration, local support, skills, information discovery practices, attitudes, changes in practices of peer review, and open sciences. This study was important in terms of presenting the current situation of researchers about the use and adoption of social media tools and needs of them for scholarly communication practices.

Van Noorden (2014) reported the results of a survey conducted by Nature, an international journal of science about the online collaboration of scientists. About 3579 researchers participated into the survey of Nature Publishing Group's 2014 on social networks and online tools. Researchers were asked how they use various social networks and search services related with academic research. Results of the study revealed that Google Scholar, ResearchGate, Academia.Edu, Mendeley, LinkedIn, Facebook, Google+, and Twitter were the most important tools used by researchers for various scholarly communication purposes. It was important to note that researcher used social media tools presented in the study mostly for the dissemination of their research outputs. Communication and information exchange with other scholars, keeping up-to-date with peers and colleagues, and literature search purposes were rather low.

Cann, Dimitriou, and Hooley (2011) developed a guideline for researchers on social media tools. In this report which was funded by Research Information Network (RIN, UK), authors presented the findings for how researchers communicate and collaborate using social media tools. The practical experiences of the authors and findings of ten users of social media from higher education institutions in the United Kingdom were reported in the guideline. Authors highlighted the complex nature of academic research and detailed the academic research cycle where four stages were shown to represent the production, use, and consumption of information and knowledge. Four stages of

academic research cycle model included the identification, creation, quality assurance, and dissemination of knowledge (Cann, Dimitriou, & Hooley, 2011) with the collaboration being on the center through variety of social interactions of researchers. The findings of the study indicated what social media is for researchers and how these social media tools can be used by researchers as a part of their academic research practices. Organization of social media tools according to their focus related with scholarly communication and the relationship of Web 2.0 tools with academic research cycle were important. However, limited number of interview participants and study's focus being rather wide in terms of academic research activities makes the findings of study to harder for drawing generalizations about the current use and adoption of social media tools along with researchers' views and opinions.

The literature in this field focused on the use of social media tools for researchers. Adoption and use of Web 2.0 for scholarly communication practices were studied to understand about the current situation in developed countries. However, studies that targeted only the graduate students were limited. While experiences of researchers about the use of social media tools for teaching and learning were found in these studies, the use for academic research were not investigated substantially. Research on the use of these tools for thesis/dissertation research were not encountered. Therefore, this study aims to fill this the gap in the literature.

2.7 Summary

The literature on the use of social media tools for academic research and by graduate students is still in its early stages. The studies that were examining the use of social media tools focus on teaching and learning practices. Graduate students' utilization of these tools for thesis/dissertation research practices is often neglected. One important limitation of the previously mentioned studies is the lack of a clearly identified use of these tools for academic research purposes. Another limitation is the absence of information about the graduate students' use of social media tools.

There is a growing body of literature on social media tools for researchers. However, studies mentioning their use in thesis/dissertation research activities is rather limited. This mixed methods study combines quantitative and qualitative data to investigate graduate students' use of social media tools for thesis/dissertation research. In the literature of social media tools in higher education, mixed method studies were lacking. This study aims to fill this gap in the literature.

This study may contribute to the literature in various ways. Experiences of graduate students may help decision makers to evaluate their graduate programs and social media policies. By analyzing the current situation, institutions and supervisors may guide graduate students with the right digital research tools in their thesis/dissertation research processes. Library staff may track the printed and online library subscriptions and organize their policies and expenses for graduate students. The results of this study and feedback from graduate students provide an overall perspective of social media tools usage. The effects of the various factors on social media tools use in the main research output of graduate students and graduate programs are investigated in this study.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter describes the research methodology selected to answer the research questions. The overall design of the study, participants, data sources, data collection procedures, and data analysis were presented in detail. A summary of the research design was presented at the end of this section.

This study addressed the following research questions:

1. How well do the graduate students' characteristics (ICT usage, age, gender, semester, general social media use, microenvironment, weekly SMT use in general, weekly SMT use for thesis/dissertation research, degree of completion, personal effectiveness domain, knowledge and intellectual abilities domain, research governance and organization domain, and engagement, influence and impact domain) predict their use of social media tools for thesis/dissertation research?

    1. a. Which characteristics are the best predictors of graduate students' use of social media tools for thesis/dissertation research?

2. How do graduate students use social media tools to support their thesis/dissertation research?

3. What are the enablers and barriers to use the social media tools for thesis/dissertation research?

3.2 Research Design

This study utilized mixed methods design, which was defined as the collection, analysis, and mixture of both quantitative and qualitative methods to examine a research problem (Creswell & Plano Clark, 2011). The rationale for using these research methods in combination was to obtain a better understanding of the phenomenon than either method by itself (Creswell, 2012). Mixed method design enables a researcher to utilize the strengths of both quantitative and qualitative data (Creswell, 2012).

While designing mixed methods study, some issues need to be considered by the researcher. Creswell (2012) highlighted priority, sequence and integration as important decisions when designing mixed methods study. Priority referred to the decision of which data type would be more important for the research. Sequence referred to timing of the data collection, being as concurrent or sequential. Integration referred to the decision of where mixing of the collected quantitative and qualitative data would occur in the study.

This study used explanatory sequential mixed methods design. It involved two separated but connected phases for data collection and analysis (Creswell, 2012). It was used to explain and interpret the results of a quantitative study utilizing qualitative findings. In the first phase, an online questionnaire was distributed to collect quantitative data. This quantitative phase served as a purpose to collect descriptive data for the graduate students' use of social media tools for thesis/dissertation research purposes. In addition, results of the first phase led to the purposeful selection of cases for the second phase. A qualitative approach was used in the second phase. Data of this phase was collected in the forms of semi-structured interviews. Collected data aided the researcher to understand and explain why and how some factors might affect the graduate students' use of social media tools for thesis/dissertation research purposes.

The rationale for this explanatory sequential mixed methods design was that the quantitative phase provided a general picture of the research problem, and the qualitative phase helped in explaining and interpreting the results of the first phase. A representation of the steps of this study in terms of phase, procedure, and the product was given in Table 2. Quantitative phase was sequentially made first and was used to highlight the current situation of graduate students' use of social media tools for thesis/dissertation research purposes. After the completion of the quantitative data analysis, information-rich participants were identified, an interview protocol was developed, and qualitative data were collected which may explain and enhance the results of the quantitative phase. Therefore, the priority was given to the qualitative phase of this study by examining information-rich cases with in-depth interviews and thick explanations. The integration of the results of these two phases was made in the Discussion section of Chapter 5.

Table 2. Representation of Sequential Explanatory Mixed Methods Study

Phase	Procedure	Product
1-Quantitative Data Collection	Cross-sectional online survey with graduate students	Numeric data (N=507)
2-Quantitative Data Analysis	Data screening, frequencies, SPSS Software	Descriptive statistics, frequencies, missing data
3-Cases Selection	Purposefully selected participants (N=17)	Cases (N=17)
4-Qualitative Data Collection	Individual semi-structured interviews	Text data (transcription of interviews, documents)
5-Qualitative Data Analysis	Thematic analysis, Microsoft Office Excel	Codes, dimensions, subthemes, and themes
6-Interpretation of Whole Study	Explanation of the results of the quantitative phase, Interpretation of the qualitative phase	Discussion Implications for further research

*All phases sequentially follow each other.

3.3 Population of the Study

The population of this study is the graduate students in the respectable research universities in Turkey. To specify these universities, various university ranking results were gathered. These rankings were reported annually or periodically by QS (2014), Webometrics (2014), Times Higher Education (2014), and URAP (2014) in various categories such as academic performance, reputation, research performance, presence, impact, and excellence. When listing universities from Turkey, Times Higher Education ranking 2014, the A and B++ category from URAP 2014 ranking, all 9 from

QS 2014 ranking, first 8 universities of Turkey from Webometrics 2014 ranking were accounted into rating system (see Table 3).

Table 3. Population of the Study: World Rankings of the Most Reputable Turkish Universities

Turkish Universities' Rankings	THE 2014	QS 2014	Webometrics 2014	URAP 2014
Middle East Technical University	85	401-410	484	433 (A)
Boğaziçi University	139	399	747	575 (B++)
Bilkent University	201-225	399	865	860 (B++)
Istanbul Technical University	165	501-550	660	488 (A)
Koç University	301-350	461-470	1360	1162 (B+)
Istanbul University	-	601-650	190	489 (A)
Hacettepe University	-	601-650	754	525 (B++)
Ankara University	-	701+	683	535 (B++)

From this population, Middle East Technical University (METU) was selected conveniently as sample. The rationale to select METU was its international outlook and higher research ranking. Moreover, institutional support for research, the funding resources provided by national and international projects were taken into consideration in the selection criteria. Furthermore, researcher of this study was also a graduate student in METU at the time. In order to understand social media tools usage by graduate students for thesis/dissertation research purposes, METU was considered as a representative sample of the top-notch universities in Turkey. The results derived from this study would be beneficial to other universities in terms of academic research practices for the utilization of these technologies.

Currently, there are five graduate schools in the Middle East Technical University. Graduate schools administer and offer 104 Masters and 66 Doctorate programs. Since

some graduate programs were offered both masters and doctorate degrees, in these five graduate schools, there were a total of 108 different graduate programs. Moreover, in these programs currently 4800 students were enrolled into Masters and 2900 students were enrolled in Doctorate programs for 2013-2014 Semester (METU, 2014). After Amnesty Law, for 2014-2015 Semester (METU-Registrar's Office, 2014); 5300 students were enrolled into Masters, and 4100 students were enrolled in Doctorate programs (including Ph. D. after B.S.). According to Council of Higher Education, Turkey (Yükseköğretim Kurulu Başkanlığı-YÖK, 2015), Middle East Technical University's total graduate students are listed in Table 4 below by their graduate schools in 2014-2015 academic year.

Table 4. Total Number of Graduate Students of METU by their Graduate Schools in 2014-2015 Academic Year

Graduate Schools	Master	Doctorate	Total
Natural and Applied Sciences (46 programs)	2907	1874	4781
Social Sciences (38 programs)	1327	971	2298
Informatics (9 programs)	352	212	564
Applied Mathematics (4 programs)	108	71	179
Marine Sciences (4 programs)	16	7	23
Total (101 graduate programs)	4831	2986	7817

*Adapted from YÖK, 2015; and METU, 2015.

3.4 Sampling

After the selection of the METU for data collection, to select participants for the quantitative phase, purposeful sampling was used. Purposeful sampling is one type of the non-probability sampling strategies to enable the researcher get useful information for the research questions. In this study, the researcher tried to examine particular characteristics of the population and was aware that generalizations may not be made from the sample. As a purposeful sampling technique, homogeneous sampling was used. Graduate students who are registered in the current semester in their third or

more semesters were included in this study. Being in a third or more semester indicates that graduate students were appointed thesis advisors and completed the thesis abstract system of the university, thus, had decided on their thesis/dissertation topic. Since Graduate School of Marine Sciences program and their students were located in a different city (Mersin, Turkey) and out of the main campus (Ankara, Turkey), graduate students who were registered in the programs in this graduate school were discarded from the main study.

Among 5432 graduate students who were registered to their third or higher semesters, 507 students participated in the study (Participation rate= 9.3%). The participants consisted of 267 women and 240 men with an average age of 28 with a range of 23-46 (*SD*=3.63). Data collection procedures and participant information are further provided in the following sections.

In the qualitative phase of the study, purposeful sampling was also used. Purposeful sampling refers to the intentional selection of the participants to have a better understanding of the phenomenon in question (Creswell, 2012, p. 206). In order to develop both comprehensive and a variety of perspectives, one of the types of purposeful sampling, maximum variation sampling was used. This sampling provided multiple perspectives of individuals in order to comprehend the phenomenon (Creswell, 2012).

To select participants for the qualitative phase of the study, responses from the first phase were used. After the data collection and analysis of the quantitative phase, a request to participate in the second phase of the study were sent. Invitation for the interviews was included in the Appendix G. Responses and their contact information were collected and after one week another follow-up e-mail was sent to increase chances to reach more information-rich participants in order to achieve maximum variance for the sample. Questionnaire respondents who chose to write their e-mail addresses to participate into the qualitative were exported to Microsoft Excel

spreadsheet. There were 79 e-mail addresses out of 507 survey participants by a 15.6% rate.

Among 79 volunteers, interview participants were purposefully selected. The researcher tried to balance participants in terms of gender, semester status and graduate school types so that a variety of responses can be possible. Availability for participation to the research was also another criteria. The refined list of respondents were further contacted for the time and place of the interviews. There were not any graduate student who chose to participate from the Applied Mathematics Institute. Follow-up e-mails for participation did not result in further participation. The number of participants were 17. Information about the participants were provided in detail in the following sections.

3.4.1 Participants of the Survey and Demographic Profiles of Valid Responses

In this study, demographics of the graduate students were gathered by administering Graduate Students' Experiences with Social Media Tools for Thesis/Dissertation Research Purposes Survey. The total number of graduate students who were participated in this survey was 507 out of 5432 graduate students who were registered to their third or higher semesters. The participation rate was 9.3%.

In the first section of the survey, respondents' demographic profiles were collected. They included age, gender, registered academic program, graduate school type, the semester in the program, and main source of funding. The following section between Table 5 and Table 10 show the frequencies of these data.

Table 5. Survey Responses by Age

Age	f (n=507)	Percentage
25 or under	149	29.4
26-30	260	51.3
31-35	80	15.8
36-40	11	2.2
41 or over	7	1.4
Total	507	100

Table 5 indicated that more than half of the participants of the survey were in 26-30 ages (51.3%). Students whose age were 25 or under was 29.4%. 15.8% of participants were between 31 and 35 years old. The percentages of graduate students' age 36-40, and 41 or over were 2.2% and 1.4%, respectively. Responses by gender are presented in *Table 6*.

Table 6. Survey Responses by Gender

Gender	f (n=507)	Percentage
Female	267	52.7
Male	240	47.3
Total	507	100

As it can be seen in *Table 6*, more than half of the respondents were female (52.7%), and the rest of them were male (47.3%). *Table 7* presents responses by the registered academic program.

Table 7. Survey Responses by Registered Academic Program

Registered Academic Program	f (n=507)	Percentage
M.S.	235	46.4
Ph.D.	178	35.1
Ph.D. after B.S.	32	6.3
M.A.	23	4.5
M.S. without Thesis	21	4.1
M.B.A.	9	1.8
M.ARCH.	6	1.2
M.C.P.	3	0.6
Total	507	100

Table 7 indicated that 46.4% of respondents were registered into a M.S. program, 35.1% were in Ph. D. program, 6.3% were in Ph.D. after B.S. program, 4.5% were in M.A program. Students from M.S. without Thesis program were 4.1%, M.B.A following it with 1.8%, and M. ARCH with 1.2% of total respondents. Graduate students who registered to M.C.P. program was only 0.6%. Table 8 shows responses by graduate school type.

Table 8. Survey Responses by Graduate School Type

Graduate School Type	f (n=507)	Percentage
Graduate School of Natural and Applied Sciences	299	59.0
Graduate School of Social Sciences	150	29.6
Graduate School of Informatics	42	8.3
Graduate School of Applied Mathematics	16	3.2
Total	507	100

Table 8 shows that more than half of the survey respondents were registered into Graduate School of Natural and Applied Sciences. Graduate School of Natural and Applied Sciences contains 51 different graduate programs of the total of 108 graduate

programs of the university. 29.6% of participants were registered into Graduate School of Social Sciences. Participants from Graduate School of Informatics, and Graduate School of Applied Mathematics were 8.3% and 3.2%, respectively.

Table 9. Survey Responses by Semester in the Program

Semester in the Program	f (n=507)	Percentage
3rd-4th semester	191	37.7
5th-6th semester	173	34.1
7th-8th semester	73	14.4
9th-10th semester	38	7.5
11th semester or more	32	6.3
Total	507	100

Table 9 indicated that 37.7% of survey respondents were in their third and fourth semester, 34.1% in fifth and sixth semester. The graduate students who were in their seventh or higher semester were a total of 28.2% of total respondents. Table 10 shows responses of graduate students by their main sources of funding.

Table 10. Survey Responses by Main Sources of Funding

Funding	f(n=507)	Percentage
No funding/entirely self-funded	126	24.9
Working in the private sector	114	22.5
Research/Teaching assistant in METU	112	22.1
Working in the public sector	66	13
Scholarship	53	10.5
Research/Teaching assistant in another university	36	7.1
Total	507	100

As shown in Table 10, nearly one-quarter of respondents did not have a funding or entirely self-funded. Participants who were working in the private sector and

Research/Teaching assistant in METU were 22.5% and 22.1%, respectively. The graduate students who were working in the public sector was 13%, and only 7.1% of respondents were working as a Research/Teaching assistant in another university.

3.4.2 ICT profile of the participants

In order to explore the graduate students' ICT usage profiles, one question was included in the survey. ICT use of the graduate students was asked by a 5-point Likert-type scale ranging from Never (1) to Always (5).

Table 11. Mean Scores and Standard Deviations of Survey Responses by ICT Use

ICT Use	*M*	*SD*
Desktop/Notebook/Laptop	4.68	0.59
Mobile Devices (Smartphone, Tablet PC, iPad etc.)	2.62	1.16

Results by ICT use were presented in Table 11. The results indicated that the graduate students highly utilized desktop/notebook/laptop devices (*M*=4.68, *SD*=0.59). However, their mobile device usage (*M*=2.62, *SD*=1.16) was rather low.

3.4.3 Technology use of survey respondents

In order to examine technology utilization of the survey participants, a Google Analytics tracking script were inserted into LimeSurvey system without risking anonymity of the participants. Google Analytics script collects various data from users' web browser sessions. These sessions were recorded automatically if users had not chosen to use any code/script blocking program, or their devices could not support script technology, which was, nearly all information technology devices accessing Internet support these kinds of technological features. Since these scripts could not differentiate whether a survey participant had completed the survey or not, results provided by Google Analytics reports were not equal to the number of web browser

sessions of participants. The researcher included these data to provide insight into the current IT device uses of graduate students in terms of device category and operating system. Therefore, the results presented in Table 12, Table 13, and Table 14 were gathered from a tracking script of survey website. All the other responses of the survey participants were self-reports of graduate students and collected via the survey instrument. The researcher ensured the necessary precautions to protect the anonymity of the participants in each step of the study.

Table 12. Access to Survey System by Device Category

Device Category	f (n=1018)	Percentage
Desktop	837	82.2
Mobile	146	14.3
Tablet	35	3.4
Total	1018	100

Results by operating systems were presented in Table 12. Out of 1018 total access to survey system, 82.2% of them accessed using a desktop computer. Using mobile and tablet devices only 14.3% and 3.4% of people accessed the survey system, respectively.

Table 13. Access to Survey System by Operating System

Operating System	f (n=1018)	Percentage
Windows	764	75.0
Android	97	9.5
iOS	76	7.5
Macintosh	60	5.9
Linux	18	1.8
Windows Phone	3	0.3
Total	1018	100

Results by operating systems were presented in Table 13. Three-quarters (75.0%) of total participants had a device installed a Windows operating system. Devices with Android operating system were used by 9.5% of the participants. Participants who accessed the survey system with their Macintosh operating systems installed devices were both 5.9%. The graduate students who use Linux and Windows Phone operating systems were 1.8% and 0.3%, respectively.

LimeSurvey survey template was selected to enable users accessing survey system responsively, thus supporting completion of the survey via cross-platform mobile devices like tablets, smartphones. Features such as operating systems and screen resolutions were also presented in the following tables (LimeSurvey, 2015).

Table 14. Access to Survey System via Mobile Devices by Operating System

Mobile Devices by Operating System	f (n=179)	Percentage
Android	97	54.2
iOS	76	42.5
Windows	3	1.7
Windows Phone	3	1.7
Total	179	100

As seen from Table 14, more than half (54.2%) of total participants had a device with an Android operating system. Devices with the iOS operating system were used by 42.5% of the participants. Participants who accessed the survey system with their Windows and Windows Phone operating systems installed devices were both 1.7%.

3.4.4 Interview Participants

Qualitative interviews were conducted to get rich data from the participants. In this study, 17 graduate students were interviewed to gather information on their social media tools utilization for thesis/dissertation research purposes. Demographics of the

interview participants were collected through the survey instrument and were given in Table 15.

Table 15. Interview Participants' Demographic Information

Code	Age	Gender	Graduate School	Graduate Program	Semester	Interview Duration (mm: ss)
P1	28	Male	Social Sciences	Economics	7	27:25
P2	25	Male	Informatics	Information Systems	4	21:02
P3	32	Female	Natural and Applied Sciences	Computer Education and Instructional Technology	11	18:41
P4	27	Female	Social Sciences	Science and Technology Policy Studies	7	35:43
P5	26	Male	Natural and Applied Sciences	Civil Engineering	5	23:07
P6	26	Female	Social Sciences	Asian Studies	5	15:24
P7	29	Male	Social Sciences	Elementary Science and Mathematics Education	7	31:52
P8	27	Female	Social Sciences	Area Studies	9	18:39
P9	26	Female	Social Sciences	Educational Sciences	3	16:55
P10	33	Male	Natural and Applied Sciences	Mechanical Engineering	13	18:37

Table 15. Interview Participants' Demographic Information (Cont.)

Code	Age	Gender	Graduate School	Graduate Program	Semester	Interview Duration (mm: ss)
P11	24	Male	Natural and Applied Sciences	Mechanical Engineering	3	13:50
P12	31	Female	Natural and Applied Sciences	Metallurgical and Materials Engineering	3	20:40
P13	26	Female	Natural and Applied Sciences	Computer Education and Instructional Technology	3	26:35
P14	25	Female	Natural and Applied Sciences	Biomedical Engineering	6	12:28
P15	25	Female	Social Sciences	Social Policy	6	19:41
P16	29	Male	Natural and Applied Sciences	Electrical and Electronics Engineering	3	18:52
P17	23	Male	Natural and Applied Sciences	Mechanical Engineering	7	24:34

As can be seen from the Table 15 ages of graduate students who were participated in the semi-structured interviews ranged between 23 and 33. From the total of 17 interviewees, 9 of them were Female, and 8 of them were Male. Five of the participants were in their third semester. Semester status of participants ranged from 3 to 13. According to the regulations of the university and graduate schools, all participants had specified their thesis/dissertation advisors and thesis topics. In terms of their graduate school (Institute) type, 9 of them were continuing programs in Natural and Applied Sciences, 7 of them were from Social Sciences and only 1 of them were from Informatics. Out of 79 survey participants who specified their e-mail address for the interviews of the study, the participation rate was 21.5%.

3.5 Data Collection Instruments

Axinn and Pearce (2006) stated that data collection strategies used in mixed methods studies compensate other data collection strategies and strengthens methodology of the study. In this study, the researcher used multiple data collection sources and tried to eliminate biases in the collected data. Interviews were conducted to understand how graduate students' social media use for thesis/dissertation purposes.

Steps and strategies that were executed throughout the development of the instruments were discussed in this part. The context of the study, research questions and thus, research design shaped the instruments that were used to collect data. Researcher rigorously examined to address key issues in the development of the survey instrument and interview protocol.

3.5.1 Survey

The first phase of this study was designed as a quantitative descriptive research. A survey instrument was prepared to investigate the factors associated with graduate students' use of social media tools for thesis/dissertation research purposes.

Quantitative data was collected through a survey which is developed by the researcher, named "Graduate Students' Experiences with Social Media Tools for Thesis/Dissertation Research Purposes Survey". The survey was developed based on the related literature and with the adaptation of some items from CARL/ABRC Survey (2010), Researchers of Tomorrow Survey (2009) and (2010) surveys. Items related to the graduate students' use of social media tools for thesis/dissertation research purposes were identified through the ongoing literature review, frameworks and theories on social media in higher education.

Survey items were not translated into the Turkish. First of all language of instruction was English in two universities which the versions of the survey were administered. These universities were Bogazici University and Middle East Technical University. Bogazici University data were used for the pilot study while the METU data were used for the actual results. Moreover, due to these universities' international outlook there were many international students come from other countries. Since all graduate students were obliged to write their theses or dissertations in English, a translated Turkish version of the survey items were not applied.

Following activities were performed in the development of the survey instrument:

- Questions and items were selected in line with the research questions,
- Format of the survey instrument was specified,
- Expert review of the survey was administered by six experts from various fields,
- Revision of the survey items was completed according to the reviews and feedbacks of the experts
- A pilot study was administered to test the survey instrument and examine potential issues in terms of online accessibility, clarity of items and length of the survey,
- Necessary revisions were completed after the pilot study,
- The final version of the survey instrument was developed and administered.

Items of the survey instrument were organized into four main sections. Items were selected and revised according to research questions and to better understand the current situation of graduate students' social media tools usage for thesis/dissertation research purposes. Wording and format of some items were revised and put into related main sections of the survey by changing items' focus to social media tools usage.

After the initial revisions had been completed by the researcher, a total of 6 experts from different fields were invited to evaluate the draft version of the survey. Two of them were experts in social media and informatics, other two of them were experts in the field of Instructional Technology and research staff in universities, one of them was a usability expert in Human-Computer Interaction Laboratory and one of them was a survey developer, technology expert. A draft version of the survey was sent to experts in order to gather their feedback in terms of content, technical, usability and survey development issues. Grammar and wording of the questions were also reviewed. Based on the suggestions, some social media tools, and their examples were added to the survey. Since the current survey system could not technically support two column question type, examples of social media tools were integrated into the single question column and multiple answers columns (please refer to the Appendix A). After the approval of the draft survey by experts, it was finalized and entered into LimeSurvey, an open source online survey system for data collection (LimeSurvey, 2015).

The researcher made some minor revisions in terms of readability of questions, visual themes of the survey system. Moreover, font size, font style and font color of some items were standardized throughout the survey. Main sections of the survey were split into the different screen for clarity and easy completion. Some items related to ICT usage were merged into one item due to experts' feedback. Finally, questions and related items asking for the graduate students' social media tools usage were focused on the thesis/dissertation research purposes.

The online version of the survey instrument started with the description of the survey, its aim, confidentiality and anonymity of the responses, importance of completing all questions and appreciation. Graduate students were able to start the survey by acknowledging the voluntary participation and further contact with the researcher were also included.

The final version of the survey instrument included eight demographic questions, 13 Likert-type scale questions, one multiple choice question, and four open-ended questions two of which accept entering only numbers. Survey questions and their items can be reviewed at Appendix A.

In this study, survey included four main sections:

1) **Demographics (8 questions)**:
   Age, gender, registered program type, university, graduate school, graduate program, current semester, the main source of funding.
2) **Research (4 questions):**
   Completion level of research stages, the main location of study for thesis/dissertation, frequency of desktop/computer/laptop usage for thesis/dissertation research, frequency of mobile device usage for thesis/dissertation research.
3) **Social Media Tools Use for Thesis/Dissertation (8 questions):**
   Frequency of social media tools usage in communication category, frequency of social media tools usage in collaboration category, frequency of social media tools usage in multimedia category, frequency of social media tools usage in information retrieval/management category, influencers to use social media tools, attitude towards social media in general, the hours spent using social media tools in general in a week, and the hours spent using social media tools for thesis/dissertation research purposes in a week.

4) **Research Skills (6 questions):**

   Rating of research knowledge and skills in the personal effectiveness domain, rating of research knowledge and skills in the knowledge and intellectual abilities domain, rating of research knowledge and skills in the research governance and organization domain, rating of research knowledge and skills in the engagement, influence and impact domain, open-ended comments, contact information for the participation to follow-up interviews for the second phase of the study.

In Demographics section, out of 8 questions 3 questions were of dropdown box type, 3 of them were multiple choice, and 2 of them were number-only input field. In Research section, out of 4 questions, 2 of them were Likert-type with 1-Never to 5-Always options, 1 question was multiple choice type and 1 question with 8 items was Likert-type with 0-Not Started at all to 5-Completed options.

Social Media Tools for Thesis/Dissertation section has total 8 questions. 4 of them with 23 items were Likert-type with 0-Not used at all to 5-Active use options, 2 of them were number-only input field, 1 of them was Likert-type with 1-Very Unlikely to 5-Very Likely, and 1 of them was Likert-type with 1-Strongly Disagree to 5-Strongly Agree options.

Research Skills section has 6 questions. 4 of them with 30 items were Likert-type with 1-Very Poor to 5-Very Good options, and 2 of them were free text fields.

3.5.1.1 Pilot Study for the Survey Instrument

A pilot study was conducted to ensure the reliability and the validity of the quantitative descriptive survey. A panel of experts in different areas were invited to submit feedback about the draft survey instrument. Therefore, possible researcher bias and vague questions were attempted to minimize, and suitability of the survey instrument

enhanced in the main data collection.

In order to do a pilot testing of the survey, a similar research-oriented university, namely Bogazici University, was selected as sample. After IRB approval, a list of 657 e-mail addresses was gathered through the website of the university, analyzing all graduate programs' websites. They were invited to participate voluntarily in the pilot testing phase. The first distribution of the survey instrument was sent on the second week of the October, 2014 via e-mail. After two weeks, a reminder about the survey was sent to the same e-mail addresses. At the end of the October, 2014, online survey system LimeSurvey was closed in order to prevent further entries. A total of 83 full responses out of 657 e-mail addresses were gathered through the survey system. Responses were then exported into the SPSS program. The participation rate of the pilot study was 12.6%.

A total of 83 graduate students from Bogazici University participated in the pilot study. Responses by gender and age were presented in Table 16 and Table 17 accordingly. Graduate students completed the survey in an average of 16 minutes which is close to the estimated completion time proposed by the researcher.

Table 16. Responders of the Pilot Study by Gender

Gender	f (n=83)	Percentage
Female	50	60.2
Male	33	39.8
Total	83	100

As it can be seen in Table 16, more than half of the respondents were female (60.2%), and the rest of them were male.

Table 17. Responders of the Pilot Study by Age

Age	f (n=83)	Percentage
25 or under	27	32.5
26-30	40	48.2
31-35	13	15.7
36-40	2	2.4
41 or over	1	1.2
Total	83	100

As seen from the Table 17, nearly half of the participants' age (48.2%) ranged between 26 and 30. It was followed by the participants whose ages were 25 or under with 32.5%. Thirteen participants specified their ages between 31 and 35 with 15.7%. Out of 83 graduate students, 2 of them (2.4%) were in 36-40 age range, and only 1 of them (1.2%) were 41 years old or over.

Since the pilot survey was administered via an online survey system, there were no missing data and system did not allow participants to send incomplete or unanswered items. The researcher also asked participants to report their feedback about the questions, the instrument in general, and the accessibility of the survey.

Based on the results of the pilot study some items were revised. All graduate school types and graduate programs were included in the options in the demographics section for easy completion of the survey and elimination missing data. Moreover, an "Other" option was included in some drop-down style questions in case respondent could not find the related option from the choices. After the review of the pilot survey with the experts from the instructional technology domain, ordering of some items were changed and 4 ICT related question were merged into two questions. Furthermore, after the analysis of the Google Analytics data with a survey expert, it became obvious that many participants had tried to access survey instrument via their mobile devices. Since the visual theme of the pilot survey did not completely support various mobile

device types, a responsive survey template was chosen and tested with various mobile devices, tablet PCs and computers with various screen sizes. Responsive survey template enabled survey instrument to be completed with small screens and mobile devices, and enhanced the readability of the instrument. Graduate students who tested the new template provided positive feedbacks, and incomplete rate of the survey dropped substantially.

3.5.2 Interview Protocol

Semi-structured interviews were conducted with the graduate students in METU. In order to gather descriptive information via participants' words, interviews were used as the main data collection method for the second phase of the study (Bogdan & Biklen, 2007).

An interview protocol was prepared and was reviewed by two content experts from the Instructional Technology field (see Appendix B). According to the feedbacks received, the interview protocol was revised. Two questions were merged into a general one, and the focus of questions were specified in the protocol by including thesis/dissertation research purposes. Moreover, probes were added to some questions in order to gather information rich responses and guide graduate students' responses.

The interview protocol included fifteen open-ended questions. The content of the questions was modified according to the results of the quantitative phase and focused on to answer the following qualitative research questions of the study:

1. How do graduate students use social media tools to support their thesis/dissertation research?

2. What are the enablers and barriers to use the social media tools for thesis/dissertation research?

Interview protocol included an introduction part which specified the aim of the study, confidentiality and anonymity of the participants and their information provided throughout the interview process, how the interview will be audio recorded and transcribed verbatim, how these results would be used, and their right to voluntarily participate and end the interviewing process if they felt uncomfortable. The interviewer asked if participants had any questions about the interview before starting, and appreciated their participation. Participants signed the voluntary participation form before starting.

In this study, interview protocol consisted three main sections. These three sections were listed as thesis/dissertation and academic research process, general social media, and social media tools perception, and social media tools usage for thesis/dissertation purposes. Since interview participants were entered their contact information to the survey responses, their demographics were collected via the survey instrument.

The first section of the interview protocol included five open-ended questions related to thesis/dissertation and academic research process of the participants. To better understand their academic progress questions regarding their thesis topic, semester status, thesis completion level, academic studies and outputs, how they worked or were working on their thesis from the idea generation phase to completion process, and how they had used ICT tools through their thesis/dissertation research processes.

The second section included two open-ended questions seeking for responses of participants' perception of social media and social media tools in general. These questions were asked to understand participants' daily life social media usage and which social media tools that they knew were present in terms of their perception.

The third section included eight open-ended questions in order to examine graduate students' social media tools usage for thesis/dissertation research purposes. Information rich responses were pursued for the questions asking which social media

tools, services, and websites that participants used for thesis/dissertation research purposes, their usage of social media tools under four categories being as communication, collaboration, multimedia, and information retrieval/management, their point of view on the usage of social media tools for thesis/dissertation purposes, enablers and barriers to use these tools.

At the end of the interview process interviewer appreciated their participation and support to the data collection process and gave them a small gift for the participation in the study. Participant codes were written on the document including the date, time, place, duration, and interview type whether it is face-to-face or via phone.

3.5.2.1 Cognitive Interview Process

Pilot interviews were conducted with two participants from the same population of the main study. The cognitive interviewing technique was used to collect their feedback on the interview protocol, and think aloud method was employed with the participants (Willis, 1994). One male participant and one female participant were asked to participate and provided feedback to the interview protocol. In the selection of these participants for the pilot study, the researcher ensured that they are in different fields, genders, and degrees. They were also selected for being active users of social media tools for general purposes but different levels of usage for thesis/dissertation research purposes. The interviews took an average of 22 minutes.

During the cognitive interviews and after the revisions of the interviewing process, the researcher found some errors in the interview protocol. These errors were due to wording and spelling of some terms which is different in Turkish. Some probes were included in questions in order to guide the participants better and get richer responses. Moreover, in some questions, the focus were emphasized when asking questions to the participant during the interview to eliminate uncertainty in the meaning.

The researcher and the cognitive interview participants went over the questions one by one and participants read the question aloud and reflected their thinking process about them. Think aloud procedure was administered to increase the validity and reliability of the interview protocol. Moreover, participants were also asked to identify any ambiguous word or social media tool name which they did not know before. The researcher asked participants whether any of the questions or items discomforted them.

After the completion of the cognitive interviews, the researcher refined the interview protocol and sent it to two experts from instructional technology departments from another university. They reviewed the interview protocol along with research questions and provided feedback to continue for the main data collection.

3.6 Data Collection

In this study, data collected in two phases. In the first quantitative phase, data collected was administered via an online survey instrument (Dillman, 2000). Later, the second phase of the study were conducted by an interview protocol to collect qualitative data. Using these instruments, the researcher tried to understand graduate students' social media tools usage for thesis/dissertation research. Data collection procedures for both of the phases were detailed in the following sections.

After the data collection instruments had been reviewed by experts and refined, Ethics Committee approval was requested from Institutional Review Board. To complete this procedure, which was required by the regulations of the university, voluntary participation form of the survey instrument, offline version of the survey instrument which was prepared for printing, interview protocol, and participant consent forms of the study were examined by the IRB and approval was granted. Appendix E includes the permission of the Institutional Review Board (IRB), namely METU Applied Ethics Research Center.

3.6.1 Quantitative Data Collection

In order to collect quantitative data, graduate students of Middle East Technical University were asked to participate voluntarily in an online survey. Web-based survey instrument were consisted of four parts and a series of questions in order to investigate graduate students' use of social media tools for thesis/dissertation research. To ensure the validity and the reliability of the survey instrument, a pilot study was conducted at another research university whose main language of instruction was English and that had similar characteristics to the METU. The final survey instrument which is called as "Graduate Students' Experiences with Social Media Tools for Thesis/Dissertation Research Purposes Survey" was administered using an online survey system, LimeSurvey. It was distributed via online survey system of researcher's personal website, thus provided rich information about the respondents and the participants. The online address of the final survey was sent via graduate students' e-mails and communication lists of the departments.

In the first phase of this research cross-sectional survey design was used (McMillan, 2000). The quantitative phase of this study focused on the identification of factors affecting the graduate students' use of social media tools for thesis/dissertation research purposes. Research questions for the quantitative phase were:

1. How well do the graduate students' characteristics (ICT usage, age, gender, semester, general social media use, microenvironment, weekly SMT use in general, weekly SMT use for thesis/dissertation research, degree of completion, personal effectiveness domain, knowledge and intellectual abilities domain, research governance and organization domain, and engagement, influence and impact domain) predict their use of social media tools for thesis/dissertation research?

    1. a. Which characteristics are the best predictors of graduate students' use of social media tools for thesis/dissertation research?

The main data were collected between the second and the fourth week of November, 2014, in the 2014-2015 Fall semester, at the Middle East Technical University. Participant lists of the survey were gathered using e-mail subscription lists of the departments, contacting with departments and via secretaries. After the gathering process, a total of 5432 e-mail addresses of graduate students who were registered in their third or higher academic semesters were collected. Main data were collected via sending the online survey to the e-mails of the graduate students, requesting for their voluntary participation. The survey used for the main data collection was included in Appendix A. In order to send surveys and decrease the probability of surveys' email invitation being reported as spam, two online e-mail distribution and tracking services, namely MailChimp and Madmimi, were used (MailChimp, 2015; Madmimi, 2015). Statistics regarding the distribution of the surveys were presented in Table 18 and Table 19.

Table 18. Reports of the E-mail Distribution and Tracking Service, MailChimp

Survey Send	Sent	Opened	Clicked	Average	Industry Average (Education and Training)
First Send	5000	1084	322	6.5%	1.7%
Second Send	4950	907	179	3.6%	1.7%

After the initial sent of the survey at the second week of November 2014, a less formal version of the invitation was sent after a week. After 20 days, LimeSurvey survey system was closed for participation and 521 graduate students had completed the survey.

Table 19. Reports of the E-mail Distribution and Tracking Service, Madmimi

Survey Send	Sent	Opened	Clicked	Average
First Send	432	110	24	5.6%
Second Send	432	97	20	4.6%

Since some e-mail reading clients cannot support code execution to track sent e-mails whether they were clicked or receivers copied and pasted the survey link to their web browsers manually, a URL shortening service, Bit.ly, was used in order to reach total visit of the survey link (Bit.ly, 2015). URL shortening services like Bit.ly are used to shorten web addresses and make them easy to remember for users. The survey link for this study was http://bit.ly/metusurvey. Results of the Bit.ly service report indicated that a total of 1034 clicks were engaged for the survey. A detailed number of the survey responses were presented in Table 20.

Table 20. Number of Survey Responses

Response Type	Responses	Percentage
Collected responses	814	100
Invalid - incomplete survey	293	36
Invalid - semester status is less than third	7	0.9
Invalid - incorrect university	6	0.7
Invalid - incorrect graduate school	1	0.1
Valid responses	507	62.3

A total of 814 responses were recorded by the survey system. However, since the system was collected responses anonymously, it was not possible to distinguish incomplete responses whether students' second entry from another device (mobile phone, computer or tablet) or a non-response. Seven respondents were discarded from valid responses due to their invalid semester status, and 293 were discarded since they did not complete the survey. After checking for the university input, an additional 6 of them were also removed from the data. As a result, 507 number of valid responses were yielded. Main data was exported from the LimeSurvey system and imported into SPSS program for analysis.

3.6.2 Qualitative Data Collection

In the second phase, qualitative interviews were conducted, and data were collected from graduate students. Institutional Review Board approval of METU Research Center for Applied Ethics was taken before the interviews.

Interviews were conducted with graduate students who were completed the survey instrument in the first phase and willing to participate. They had included their e-mail address for further contact for qualitative data collection phase.

After the revisions of the interview protocol, cognitive interviews were held with 2 participants. These two participants were excluded from the population. The participants of the main study were contacted before the interviews about the scheduling and were informed that interviews would be recorded and transcribed. After scheduling, one participant did not come to interview due to his increased workload. Therefore, he was excluded from the overall participant list. He also did not want to be interviewed by another medium like over the phone.

The researcher sent an e-mail to the survey respondents who were included their e-mail addresses to participate in the second phase of the study. After one week, the researcher listed the respondents' social media tools usage, semester and graduate program type to select information-rich participants. An e-mail was sent for the confirmation, date and time of the interviews to the potential participants.

Interviews were conducted by the researcher who had experience in the interviewing method. All interviews were audio-recorded with a mobile device which was capable of recording high-quality voice. The researcher checked the functionality of the recording device and ensured that it records as it should be before the interviews started. Moreover, during the interviews the researcher took notes and ensured that voice recording device was working and remaining disk space in the device was

enough (Patton, 2002).

The researcher introduced himself and explained the purpose of the study. Then, interviewees were made comfortable by explaining the voluntary participation, the anonymity of the participants, and their ability to end the interview if they felt inconvenient.

The main interviews were conducted with 17 purposefully selected participants. The average duration of interviews was 21 minutes. After the each interview had been completed, the researcher noted the end time, date, and place of the interview. Transcriptions of the interviews were also sent to participants for member checking. They reviewed the transcribed document and were able to make revisions if necessary. The researcher proceeded to the data analysis of the collected qualitative data.

3.7 Data Analysis

In this section, strategies that were followed by the researcher to analyze quantitative and qualitative data were described. In the quantitative data analysis phase, descriptive statistics and multiple regression analysis were used. Qualitative thematic analysis was used in the second part of this mixed methods study.

3.7.1 Quantitative Data Analysis

Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) program. The raw data were exported from the online survey system and imported into SPSS program. Data cleaning procedures were executed before starting any statistical analysis. Data cleaning included checking data for missing values, outliers, and ensuring data met the assumptions of statistical tests used in order to answer research questions.

In the first phase of this study, a total of 507 graduate students participated in the survey. In order to represent a population and estimate characteristics of 5432 graduate students with a 5% confidence interval, at least 359 graduate students are required (SurveySystem, 2015; Dattalo, 2008). This study satisfied the minimum sample size. In terms of survey questions, survey participants were nearly 20 times the number of items in the instrument (Creswell, 2012; Teddlie & Tashakkori, 2009).

Before data analysis, collected data were examined in terms of missing data and possible outliers. Since the survey instrument was administered via an online survey system, respondents could not be able to enter missing information. Incomplete responses were due to participants who started the survey and did not want to continue, thus closed the survey window as specified in Table 20. Moreover, some precautions were taken in some questions such as limiting the range of hours in weekly social media tools usage responses. Whenever possible, the researcher included an "Other" option to the answers and provided drop-down boxes and multiple choices for answering easily and for selecting their graduate program, graduate school type. If one of the participants forgot to fill in a question, the system gave a warning and guided participant to the related question automatically before moving onto the other page of the survey instrument. Therefore, in the quantitative data set there were no missing values.

3.7.1.1 Descriptive Statistics

In order to present graduate student's current use of social media tools for thesis/dissertation research purposes, descriptive statistics was used. The researcher used tables to format and organize findings and distributions wherever appropriate. Tables reporting descriptive statistics were supported by summaries of the graduate students' responses.

Frequency distribution tables were prepared for discrete variables indicating number, percentage, and cumulative percentage of participants. Distributions of discrete variables were listed as nominal and ordinal. Moreover, the mean and standard deviation scores for continuous variables were provided for the estimation of distribution.

3.7.1.2 Multiple Linear Regression Analysis

According to the purpose of the study, research questions to predict graduate students' social media tools usage for thesis/dissertation research were asked. Dependent variable of the study was social media tools usage for thesis dissertation purposes which was constructed with subcategories being as:

a) communication,
b) collaboration,
c) multimedia,
d) information retrieval/management.

Therefore, one multiple linear regression test was executed to predict whether independent variables had any effect on the dependent variable. Multiple linear regression analysis is used to estimate the relationship between a continuous (interval or ratio) criterion variable and a set of dichotomous (nominal or ordinal) or continuous independent variables (Field, 2009). In this study, independent variables for the multiple regression analysis were as in the following:

- graduate students' general characteristics (gender, age, graduate school type, the semester in the program),
- ICT usage,
- weekly hours of social media tools usage for thesis/dissertation research
- weekly hours of general social media tools usage
- general social media attitude,
- microenvironment,

- degree of completion of their thesis/dissertation research,
- researcher development domains (personal effectiveness; knowledge and intellectual abilities; research governance and organization; engagement, influence, and impact).

In this study, standard multiple linear regression was used with the Enter method. This method provided that all independent variables enter the analysis simultaneously. Standard multiple linear regression was considered as appropriate because there was not any study in the literature proposing other kinds of entry (hierarchical or stepwise). In order to report whether the set of independent variables collectively predicts the dependent variable, the F-test was administered. Moreover, to report the total variance explained by the set of independent variables R-squired, the correlation coefficient was used. Beta coefficients and t-test results were also provided to investigate the significance and the extent of these variables.

The researcher checked the assumptions required for the multiple linear regression analysis before administering multiple regression analysis. The steps to validate the necessary assumptions were listed as follows (Field, 2009):

- **Variable types:** Dependent variables were measured on a continuous scale (interval). There were more than two or more independent variables in each regression analysis.
- **Non-zero variance:** The predictor variables were checked for variance using descriptive statistics.
- **No perfect multicollinearity:** Correlation coefficients and VIF values were checked to assess whether two or more independent variables highly correlate with each other.
- **Homoscedasticity:** To examine whether at each level of predictors had the same variance scatter plots were used.
- **Independent errors:** Durbin-Watson test was executed to test for independence of observations.

- **Normally distributed errors:** Normal Q-Q plot of errors was checked for normality.
- **Independence:** It was assumed that all of the values of dependent variables resulted from a separate entity, independently.
- **Linearity:** Linearity of variables was assessed by examining scatterplots.

The results of the multiple linear regression analysis were presented in Chapter 4 along with the statements and tables of the statistical findings. Assumptions of the multiple linear regression were also tested before the execution and precautions about the statistical significance were taken into the consideration. Moreover, backward elimination technique was used to decrease the number of total predictors explaining the total variance (Dallal, 2012).

3.7.2 Qualitative Data Analysis

According to Merriam (1998) in a qualitative study, the researcher can collect and analyze data simultaneously. In this study, Thematic Analysis was used as a qualitative data analysis approach (Braun & Clarke, 2006). Thematic analysis is described as "a method for identifying, analyzing and reporting patterns within data." (Braun & Clarke, 2006, p. 79). The rationale for selecting thematic analysis was that it is flexible and providing clear steps for analysis. Rather than being based on a theoretical framework specified by other types of qualitative data analysis approaches, the researcher can adapt the appropriate theoretical framework to the study. This flexibility also provided detailed and information-rich description of the collected data. Thus, it provided clear steps for the researcher by carrying out coding, identifying themes within the collected data, and reporting the findings of the study in a comprehensive manner represented by themes.

Data analysis of the Phase II included the following steps described by Braun and Clarke (2006):

1) Familiarizing yourself with the data,
2) Generating initial codes,
3) Searching for themes,
4) Reviewing themes,
5) Defining and naming themes,
6) Producing the report.

In the first step of the thematic data analysis, the researcher started with the data familiarization. Verbatim transcription of the interviews were gathered from the transcribers and cross-checked with an expert independently. While familiarizing with the data, the researcher continued to collect data from other interviewees. Thus, data collection and analysis steps were carried out concurrently. The researcher listened the recording and read transcriptions continuously for searching patterns and themes in the data. Apart from taking notes on the transcriptions, the research also took notes during the recording of the interviews. With these thoughts, comments, and notes about the collected data, the researcher constantly evaluated the data and looked for deeper meanings and insights.

Generating initial codes was the second step in the data analysis process. After the data familiarization part, the researcher started to data coding. An expert from the instructional technology field also started to the coding step independently. In order to list initial codes, Microsoft Office Word's track changes and commenting features were used.

The third step in the qualitative data analysis was to search for themes. Transcriptions of 17 interviews were coded, and the researcher started to look for patterns and themes in the data for deeper meaning. As suggested by Braun and Clarke (2006) initial codes which was developed in the previous step were broadened for themes and some codes

which did not fit into these themes were still kept for further analysis. Examining the collected data for additional analysis resulted in themes and subthemes. In order to build subthemes and themes, the researcher used Microsoft Office Excel to organize and colorize the codes. In this step, the researcher used rather a flexible approach consistent with the thematic analysis to develop subthemes and main themes, and made changes when necessary in order to answer research questions effectively.

Revision of the themes was performed by an expert and the researcher back and forth. Discussion among them resulted in the revision and elimination of some themes. A few subthemes were merged into more meaningful subthemes supported by the literature. In order to explain all of the collected data, data analysis were done on two levels as proposed by Braun and Clarke (2006). Building individual themes and their cross consistency among these themes provided that qualitative data analysis for the entire data was administered appropriately.

In the fifth step, the researcher defined and named the themes. According to Braun and Clarke (2006) this step provided that the essence of each theme is identified, and all the themes become consistent. The authors also included that each theme captures the various aspects of the data. Therefore, themes and subthemes together tell a story about the data. The researcher tried his best to define themes so that in a few sentences, their meanings are conveyed clearly.

The last step in the thematic analysis was to produce a report about the data. Themes, subthemes and dimensions were defined, named, reviewed and revised when necessary to report the results. In the reporting of the findings the process were carried out rigorously. Findings were described with the help of the quotations and examples. Rich descriptions about the data also provided a robust story about the results. A concise and focused report about this qualitative data was presented in the results chapter of this study.

3.8 Validity and Reliability

It is important to decrease the error rate of instruments due to measurement issues in a research design (Creswell, 2012; Thorndike, 1997). In this study, the researcher took some steps to ensure that the instruments, the collected data, and results were valid and reliable.

For the quantitative part of the study, the validity of the survey instrument was examined in terms of content validity, internal and external validity. After the development of the draft version of the survey instrument, a panel of experts reviewed the instrument and provided feedback. Necessary revisions and refinements were made, and they approved the final version of the survey. Two experts in the field of Instructional Technology also reviewed the collected data independently.

To ensure the internal validity in the first phase, the survey instrument was pilot tested in a similar university. Moreover, research context and demographics of the participants were also provided for the purposes of external validity. Therefore, future studies on the related subject can be executed by undertaking in a similar context.

In order to measure the internal consistency of the survey instrument, Cronbach's Alpha coefficient was examined. The reliability of items in total was 92.5%. Furthermore, the results of the statistical tests and findings were examined by an expert in Instructional Technology who also had expertise in Statistics to eliminate potential risks of executing wrong statistical tests or accepting assumptions which may not be valid.

In the qualitative part of the study, it is important to discuss establishing the credibility of the research. Therefore, trustworthiness and dependability terms were used instead of reliability and validity. Lincoln and Guba (1985) stated that the establishment of trustworthiness was one of the most important factors in ensuring the credibility of a

research study. They further posited that trustworthiness constitutes credibility, transferability, dependability, and confirmability. To ensure the establishment of these criteria the researcher incorporated some strategies to strengthen the qualitative part of the study.

First of all, a draft version of the interview protocol was sent to 2 experts in the areas of social media and Instructional Technology for their feedback. After the necessary revisions and reducing the focus of the questions to social media tools for thesis/dissertation research, cognitive interviews were administered to two participants for the final version interview protocol.

All recordings of the interviews were anonymized, and the researcher made a backup of these recordings to a cloud file storage service. Then, the copies of the recordings were sent to transcribers for transcription along with a copy of the interview protocol in order to familiarize them with the questions and social media tools mentioned in the recordings. The recordings were transcribed verbatim by two transcribers and cross-checked by a trained transcriber and the researcher. This process was executed for eliminating and controlling for unheard or wrong words by transcribers in the written documents. After that, transcriptions were sent to interviewees for their corrections and approval to use these transcriptions in the study. Moreover, the researcher and an expert in qualitative studies worked independently to generate codes from the transcriptions. Generated codes were cross-checked with the expert and discussed, revised, and renamed until a consensus was reached. Thus, as proposed by Creswell (2012), the inter-rater agreement strengthened the trustworthiness of the study. Different types of data about the participants (their survey responses and interview transcriptions) enabled the researcher to perform quantitative and qualitative data triangulation.

3.9 Ethical Protection of Participants

This research was approved by the Institutional Review Board (IRB), Applied Ethics Research Center at METU. In all phases of the research, participants were informed that the participation in the study was voluntary-based, and they might leave the study anytime. Moreover, at the beginning of the survey and interview protocol, a consent form were shown and asked for the participant to agree in order to continue with the study. After the pilot study in another university, the survey instrument were revised, and application to Ethics Committee of the university were updated. The final version of the IRB approval document is in Appendix E.

Confidentiality and anonymity of the study participants were provided in many ways. Firstly, responses to the questionnaire were transferred into the SPSS without any credentials. Secondly, collected interview data were transferred into the written report by giving fictitious names to participants. Therefore, the risk of tracing back to participants from the collected data was minimized or eliminated where possible.

3.10 Assumptions

Assumptions of this study included the followings:

- Graduate students responded accurately to the data collection instruments.
- The sample of graduate students was representative of the population.
- Participants had equal access to social media tools and resources.
- The data was recorded and analyzed accurately.

3.11 Role of the Researcher

The role of the researcher in this study was as follows:

- Questionnaires and interview protocols were developed by the researcher in

the lights of related literature.

- Interviews were conducted by the researcher with the participants.
- Quantitative data were analyzed, interpreted, and discussed by the researcher.
- Qualitative data were analyzed, interpreted, and discussed by the researcher.

Apart from the role in the study, the researcher had a technical background which was important to mention. He graduated from the department of Computer Education and Instructional Technology and worked as a research assistant in that department and as a software developer in various IT related companies. Moreover, he presented in conferences and organizations about social media tools and their usage to increase productivity. He has used social media tools in his dissertation and in his academic research. His perception of the social media tools is mostly positive as he thinks these tools increase the productivity of the people. However, he thinks people still have the largest role in the process of completing the task while these tools are only useful to complete simple tasks. Throughout the research process, the researcher took precautions for any kind of bias and tried to be as open-minded as possible.

3.12 Delimitations

This research was limited to the participants from Middle East Technical University who were willing to participate and were registered to graduate programs in their third or higher semesters. The conclusions of this research could be helpful to other institutions and Higher Education Council (HEC) in projecting their future strategies about social media tools for graduate students, researchers, administrative staff, and librarians.

3.13 Summary

Chapter three covered the research methodology used in this explanatory sequential mixed methods study. It provided a detailed explanation of the steps taken to answer

research questions summarized in Table 21.

Table 21. Overview of Research Questions, Data Sources, Data Collection Instruments, Data Analysis Techniques

Research Questions	Data Sources	Data Collection Instrument	Data Analysis Techniques
R.Q.1	Purposefully selected graduate students of METU.	Graduate Students' Experiences with Social Media Tools for Thesis/Dissertation Research Purposes Survey	Quantitative Data Analysis (Descriptive statistics, Multiple Regression)
R.Q.2 and R.Q.3	Purposefully selected graduate students of METU.	Semi-structured Interview Protocol	Qualitative Data Analysis (Thematic analysis)

CHAPTER 4

RESULTS

4.1 Introduction

This study consisted of two sequential but interconnected phases. In the quantitative phase, graduate students' use of social media tools for thesis/dissertation research purposes were examined. The purpose of the second phase was to explain how graduate students use social media tools for thesis/dissertation research and understand factors affecting the successful utilization of these tools. Results of the first phase and descriptive survey contributed to qualitative second phase and interview questions were developed.

4.2 Quantitative Research Results

In this part, results of the quantitative phase were reported according to the research questions. The participants of the survey instrument were 507 graduate students. Multiple linear regression analysis was administered to predict graduate students' use of social media tools for thesis/dissertation research.

4.2.1 Descriptive Statistics

Descriptive statistics regarding the graduate students' use of social media tools for thesis/dissertation research were given in the following tables. The dependent variable of the study consisted four sub-categories regarding communication, collaboration, multimedia, and information retrieval/management. Survey responses of graduate

students by the tools they had used in the communication category was presented in Table 22.

Table 22. Survey Responses by Social Media Tools in Communication for Thesis/Dissertation Research

Tools (n=507)	Non-Use	Passive Use	Moderate Use	Active Use	*M*	*SD*
Academic social networks	118	191	110	88	1.95	1.58
Instant messaging	200	137	70	100	1.69	1.77
Social networking sites	188	147	85	87	1.65	1.72
Mailing lists	207	143	81	76	1.55	1.66
Internet discussion forums	162	217	81	47	1.47	1.41
RSS feeds	281	137	51	38	0.99	1.4
Blogging	297	162	35	13	0.72	1.08
Microblogging	364	104	24	15	0.53	1.06

Note: Scale ranges between 0 and 5. Non-Use=0, Passive Use=1-2, Moderate Use=3, Active Use=4-5

Although as presented in Table 22 that academic social networks were the most used social media tool in the communication category for thesis/dissertation research (M=1.95, SD=1.58), it is passive use. Instant messaging tools (M=1.69, SD=1.77), social networking sites (M=1.65, SD=1.72), mailing lists (M=1.55, SD=1.66), and internet discussion forums (M=1.47, SD=1.41) were also passively used by graduate students. RSS feeds (M=0.99, SD=1.4), blogging (M=0.72, SD=1.08), and microblogging tools (M=0.53, SD=1.06) were the least used tools for graduate

students' thesis/dissertation research.

Table 23. Survey Responses by Social Media Tools in Collaboration for Thesis/Dissertation Research

Tools (n=507)	Non-Use	Passive Use	Moderate Use	Active Use	*M*	*SD*
Wikis	79	165	131	132	2.38	1.56
Collaborative writing	173	123	91	120	1.96	1.82
Videoconferencing	305	123	41	38	0.92	1.43
Social bookmarking	332	98	43	34	0.83	1.39

Note: Scale ranges between 0 and 5. Non-Use=0, Passive Use=1-2, Moderate Use=3, Active Use=4-5

Similarly, as seen in Table 23, wikis (*M*=2.38, *SD*=1.56) was the most used social media tool in the collaboration category for thesis/dissertation research, however it is considered as passive use. Collaborative writing tools followed with a mean of 1.96 and standard deviation of 1.82. Videoconferencing (*M*=0.92, *SD*=1.43) and social bookmarking tools (*M*=0.83, *SD*=1.39) were the least used ones in the collaboration category.

Table 24. Survey Responses by Social Media Tools in Multimedia for Thesis/Dissertation Research

Tools (n=507)	Non-Use	Passive Use	Moderate Use	Active Use	*M*	*SD*
File services	67	80	88	272	3.32	1.79
Video services	139	163	102	103	1.97	1.67
Presentation services	197	141	86	83	1.61	1.65
Photo services	347	108	26	26	0.65	1.2
Audio/podcasting services	387	75	23	22	0.53	1.15

Note: Scale ranges between 0 and 5. Non-Use=0, Passive Use=1-2, Moderate Use=3, Active Use=4-5

Table 24 indicated that file services (*M*=3.32, *SD*=1.79) was the most used social media tool in the multimedia category for thesis/dissertation research and it is considered as moderate use. Second of all, video services (*M*=1.97, *SD*=1.67) and presentation services (*M*=1.61, *SD*=1.65) were utilized by graduate students and their use is passive. Photo services (*M*=0.65, *SD*=1.2) and audio/podcasting services (*M*=0.53, *SD*=1.15) were the least used tools in the multimedia category.

Table 25. Survey Responses by Social Media Tools in Information Management/Retrieval for Thesis/Dissertation Research

Tools (n=507)	Non-Use	Passive Use	Moderate Use	Active Use	*M*	*SD*
Online library catalog	23	57	64	363	3.91	1.46
Academic database services	43	57	58	349	3.78	1.62
Reference management	167	118	70	152	2.14	1.95
Learning management systems	218	138	61	90	1.55	1.75
Survey systems	247	114	49	97	1.45	1.77
Project Management	410	65	14	18	0.41	1.05

Note: Scale ranges between 0 and 5. Non-Use=0, Passive Use=1-2, Moderate Use=3, Active Use=4-5

As can be seen in Table 25, online library catalog (*M*=3.91, *SD*=1.46) and academic database services (*M*=3.78, *SD*=1.62) were the most used social media tools in information management/retrieval category for thesis/dissertation research and it is considered as active use. Additionally, reference management tools were utilized with a mean of 2.14 and a standard deviation of 1.95. The use of learning management systems (*M*=1.55, *SD*=1.75) and survey systems (*M*=1.45, *SD*=1.77) were passively utilized. Project management (*M*=0.41, *SD*=1.05) was the least used tool by graduate students in information management/retrieval category for thesis/dissertation research purposes.

Regardless of category, the most active use of social media tools for research were online library catalog (*M*=3.91, *SD*=1.46), academic database services (*M*=3.78, *SD*=1.62). File services (*M*=3.32, *SD*=1.79) are moderately used and Wikis (*M*=2.38, *SD*=1.56) were used passively.

As for multiple regression analysis, assumptions of the multiple regression were controlled before executing the analysis as they had been mentioned in Chapter 3. Descriptive statistics for the independent variables and their Cronbach alpha were shown in Table 26. The skewness and kurtosis of each variable were examined along with their histograms. The skewness of weekly social media tools usage in general (skewness = 1.89) and weekly social media tools usage for thesis/dissertation purposes (skewness = 3.23) were moderately positively skewed, violating the normality assumption (Field, 2009). Therefore, their log transformations were computed to reduce the skewness. The subsequent multiple linear regression analysis were conducted to investigate whether transformed and untransformed variables made a significant difference in the overall variance explained. Since, they were not found to make a significant effect on the overall variance, untransformed values were reported (Field, 2009).

Table 26. Descriptive Statistics and Cronbach Alpha of Independent Variables

Variable	Number of Items	*M*	*SD*	*α*
Research skills in intellectual abilities	9	3.65	.64	.90
Microenvironment	8	2.98	.92	.88
Research skills in impact, engagement, and influence	8	3.18	.76	.88
Degree of completion	8	2.46	1.26	.91
Research skills in personal effectiveness	7	3.07	.67	.82
Social media attitude in general	6	3.24	.93	.89
Research skills in research governance and organization	6	2.98	.67	.82
ICT use	1	3.65	.67	-
Weekly SMT use in general	1	14.27	13.80	-
Weekly SMT use for thesis/ dissertation research	1	5.16	8.54	-
Age	1	28.02	3.63	-
Gender	1	1.47	0.50	-
Semester	1	5.50	2.58	-

Independent variables used for the predicting graduate students' use of social media tools for thesis/dissertation research were described below.

- **Research skills in intellectual abilities:** Mean score for the ratings of graduate students' self-reported current performance on research skills in the intellectual abilities domain.
- **Microenvironment:** Score of 8 items adapted from Lovitts (2008).

- **Research skills in impact, engagement, and influence:** Mean score for the ratings of graduate students' self-reported current performance on research skills in impact, engagement, and influence domain.
- **Degree of completion:** Score of graduate students' completion status of the requirements of their graduate programs.
- **Research skills in personal effectiveness:** Mean score for the ratings of graduate students' self-reported current performance on research skills in personal effectiveness domain.
- **Social media attitude in general:** Graduate students' general social media attitude asked by 6 items adapted from Ellison, Steinfield, and Lampe (2007).
- **Research skills in research governance and organization:** Mean score for the ratings of graduate students' self-reported current performance on research skills in research governance and organization domain.
- **ICT use:** Score of graduate students' current information and communication technologies use.
- **Weekly SMT use in general:** Weekly total hours that graduate students use social media tools in general.
- **Weekly SMT use for thesis/dissertation research:** Weekly total hours that graduate students use social media tools for thesis/dissertation research.
- **Age**
- **Gender:** Gender of graduate students (Male, Female).
- **Semester:** Current registered semester status of graduate students.

Thirteen variables described above were included in multiple linear regression analysis for the Model 1. Since there were a few studies regarding to graduate students' use of social media tools for thesis/dissertation purposes, these predictor variables were included in multiple regression analysis and executed to find the significant ones for prediction.

4.2.2 Multiple Linear Regression

A standard multiple linear regression analysis was executed to answer quantitative research questions of the study. The following research questions were investigated to predict graduate students' social media tools usage for thesis/dissertation purposes:

1. How well do the graduate students' characteristics (ICT usage, age, gender, semester, general social media use, microenvironment, weekly SMT use in general, weekly SMT use for thesis/dissertation research, degree of completion, personal effectiveness domain, knowledge and intellectual abilities domain, research governance and organization domain, and engagement, influence and impact domain) predict their use of social media tools for thesis/dissertation research?

    1. a. Which characteristics are the best predictors of graduate students' use of social media tools for thesis/dissertation research?

The order of the entry for the variables was not determined and priori hypotheses had not been made. Therefore, a direct method was used in standard multiple regression analysis. The thirteen predictor variables produced an adjusted R^2 of .30 ($F(13,493) = 17.42$, $p < .05$) for the prediction of social media tools use for thesis/dissertation research variable. The proposed model was statistically significant and explained 30% of the total variance in the dependent variable. The unstandardized regression coefficients and standardized regression coefficients are summarized in Table 27.

Table 27. Summary of Multiple Regression Analysis for Predicting Graduate Students' Social Media Tools for Thesis/Dissertation Research

Variables	B	SE B	β
ICT Use*	.27	.05	.23
Weekly SMT Use for Thesis/Dissertation*	.02	.01	.20
Microenvironment*	.15	.04	.17
Social Media Attitude in General*	.13	.04	.16
RS Impact*	.15	.06	.14
Degree of Completion*	.06	.03	.09
RS Personal Effectiveness	.06	.06	.05
RS Intellectual Abilities	.04	.07	.03
RS Research Governance	.02	.06	.02
Age	-.00	.01	-.01
Weekly SMT Use in General	-.00	.00	-.02
Gender	-.05	.06	-.03
Semester	-.01	.02	-.04

* $p<.05$

Concerning individual relationships between predictor variables and dependent variable, age (t=-.32, p=.75), gender (t=-.82, p=.41), semester (t=-.72, p=.47), weekly SMT use in general (t=-.40, p=.70), RS personal effectiveness (t=.94, p=.35), RS intellectual abilities (t=.62, p=.53), and RS research governance (t=.39, p=.70), were not able to significantly predict students' social media tools use for thesis/dissertation research.

On the other hand, independent variables as ICT use (t=6.02, p=.00), weekly SMT use for thesis/dissertation research (t=3.88, p=.00), microenvironment (t=4.27, p=.00), social media attitude in general (t=3.53, p=.00), RS impact (t=2.61, p=.01), and degree of completion (t=2.16, p=.03) were able to statistically significantly predict the dependent variable.

In order to answer the second research question regarding the best predictor for the graduate students' social media tools use for thesis/dissertation research, highest standardized regression coefficient value (β) was obtained from the multiple regression analysis model. ICT use was the strongest predictor (β = .23), followed by weekly SMT use for thesis/dissertation research (β = .20), microenvironment (β = .17), social media attitude in general (β = .16), RS impact (β = .14), and degree of completion (β = .09) (see Table 27).

To simplify the multiple linear regression model, additional executions were done. Many multiple regression models contain variables that do not display statistically significant predictive capability. The stepwise procedure is one of the approaches used for the simplification of multiple regression equations. Backward elimination technique was used in this study. Backward elimination technique has some advantages over other stepwise procedures. In a multiple regression equation, a set of variables may predict a significant portion of variance, even though, any subset of these variables may not. Therefore, backward stepwise technique enabled the researcher examining the joint predictive capability of independent variables (Dallal, 2012).

Table 28. Simplifying Multiple Linear Regression Model by Backward Elimination

Model #	# of Predictors	Eliminated Predictor	Adjusted R^2	Sig.
Model 1	13	-	.297	.000
Model 2	12	Age	.298	.000
Model 3	11	RS Research Governance	.299	.000
Model 4	10	Weekly SMT Usage in General	.300	.000
Model 5	9	RS Intellectual Abilities	.301	.000
Model 6	8	Semester	.301	.000
Model 7	7	Gender	.302	.000
Model 8	6	RS Personal Effectiveness	.300	.000

Model 8 was used to predict the graduate students' use of social media tools for thesis/dissertation research with 6 statistically significant predictors. These six independent variables were ICT use, weekly SMT use for thesis/dissertation, microenvironment, social media attitude in general, RDS impact, and degree of completion. The six predictor variables produced an adjusted R^2 of .30 ($F(6,500) = 37.06$, $p < .05$) for the prediction of social media tools use for thesis/dissertation research variable. The proposed model was statistically significant and explained 30% of the total variance of the dependent variable which was the same score explained by Model 1. The correlation matrix for the predictor variables were presented in *Table 29*.

Table 29. Correlation Matrix of Predictors for Model 8

Correlation	ICT use	SMT use	Micro[b]	Social media attitude in general	RDS impact	Degree of completion
ICT use	-	.009*	-.076*	-.112*	-.060*	-.030*
SMT use[a]	.009*	-	-.179*	-.195*	.044*	-.125*
Micro[b]	-.076*	-.179*	-	-.131*	-.179*	.062
Social media attitude in general	-.112*	-.195*	-.131*	-	-.055*	.037*
RDS impact	-.060*	.044*	-.179*	-.055*	-	-.272*
Degree of completion	-.030*	-.125*	.062	.037*	-.272*	-

a. Weekly SMT use for thesis/dissertation

b. Microenvironment

* $p<.05$

4.3 Summary of Quantitative Research Results

An online survey instrument was administered to 507 graduate students to investigate their current social media tools usage. The scale ranges between 0 and 5 (Non-Use=0, Passive Use=1-2, Moderate Use=3, Active Use=4-5). The results indicated that although their use is passive, in the communication category, academic social networks were the most utilized social media tool by graduate students (M=1.95, SD=1.58). Additionally, in collaboration category, wikis (M=2.38, SD=1.56) and collaborative writing tools (M=1.96, SD=1.82) were moderately used. The graduate students used file services (M=3.32, SD=1.79) and video services (M=1.97, SD=1.67) in multimedia for their thesis/dissertation research. Moreover, online library catalog (M=3.91, SD=1.46) and academic database services (M=3.78, SD=1.62) were the most used social media tools in information management/retrieval category. Finally, reference management tools (M=2.14, SD=1.95) was moderately utilized by graduate students.

A multiple linear regression analysis was executed to predict the graduate students' use of social media tools for thesis/dissertation research with 13 predictors. Initially, these independent variables were entered into regression analysis with enter method. Then, through backward elimination technique non-significant predictors were removed from the subsequent analyzes. Both Model 1 and the final regression model (Model 8) which had 6 predictors explained 30% of total variance in the population. ICT use (t=6.02, p=.00), weekly SMT use for thesis/dissertation research (t=3.88, p=.00), microenvironment (t=4.27, p=.00), social media attitude in general (t=3.53, p=.00), RS impact (t=2.61, p=.01), and degree of completion (t=2.16, p=.03) were able to statistically significantly predict the graduate students' use of social media tools for thesis/dissertation research. The results of the quantitative part helped the researcher to prepare interview protocol and organization of qualitative phase of the study.

4.4 Qualitative Research Results

In this part, the results of the thematic data analysis were presented. Qualitative data analysis of interviews yielded to a number of themes about the data. Patterns and themes describing the essence of graduate students' experience of social media tools for thesis/dissertation purposes were shown in Table 30.

Table 30. Themes Emerging from Thematic Analysis

Theme	Explanation
Awareness	Interview participants' points of view on social media and social media tools
Communication	The graduate students' usage of social media tools for communication
Collaboration	The graduate students' usage of social media tools for collaboration
Multimedia services	The graduate students' usage of social media tools for multimedia
Information retrieval and management	The graduate students' usage of social media tools for information retrieval and management
Enablers for utilization	Interview participants' thoughts about the advantages of social media tools for thesis/dissertation research
Barriers to adoption	Graduate students' reasons of reluctance to use the social media tools in their academic research.
Proposals on Social Media Tools	The suggestions of participants for increasing awareness of social media tools in the higher education

Themes listed in Table 30 were divided into several subthemes and reported in the following sections. The themes and subthemes that were identified during the thematic coding were explained by including the quotations of the interview participants.

Seventeen participants' identities were changed to P1 through P17 respectively to protect their anonymity.

4.4.1 Theme: Awareness

Table 31 presents the subthemes under the theme of awareness and provides a point of view of the graduate students' awareness of social media and social media tools. The number of participants were also listed under each subtheme and dimension.

Table 31. Theme – Awareness

Subthemes	Dimensions	Mentioned by Number of Participants
Tools		
	Social Networking Sites	14
	Microblogging	10
	Multimedia Services	9
	Professional Networking Sites	7
	Instant Messaging	3
	Online Discussion Forums	3
	E-mail	1
Perception		
	Facilitator	8
	Risk	7
	Distinctive Features (Characteristics)	8

Interview results revealed that graduate students' view of social media tools can be categorized under the following subthemes: a) tools that graduate students see as social media tools and b) graduate students' perception of social media.

Types of tools: The graduate students' responses specified that they perceive a variety of tools as social media tools. Most graduate students (n=14) mentioned that they think social media tools are similar to social networking sites, especially Facebook. They pointed out that these network groups and platforms address a variety of interest groups. The graduate students said:

> "When one said social media tools, I think of something similar to the network groups. Network groups, which are similar to Facebook and addressing a variety of interest groups, comes to my mind." (P1)
>
> *"Sosyal medya araçları denildiğinde bana şeyler geliyor işte hani bu network grupları geliyor. Facebook… falan tarzında farklı ilgi gruplarına hitap eden network grupları geliyor aklıma."* (P1)

> "For me, social media is a platform like Facebook... eventually you create an account, put your photograph and write some of your information and vice versa." (P2)
>
> *"… bir platform olarak yine böyle facebook ... işte sonuçta bir hesap oluşturduğun, fotoğrafını koyduğun, kendi bilgilerini biraz girdiğin öyle bir şey benim için sosyal medya."* (P2)

Additionally, most of the graduate students (n=10) mentioned that they know microblogging as social media tools. Twitter was the most stated social media tool, and its name and brand were recognized as the category's own name, microblogging. The graduate students noted:

> "The sites that everyone uses … twitter … usually they come to my mind." (P16)
>
> *"Herkesin kullandığı hani temel siteler ... twitter ... var onlar geliyor genelde."* (P16)

> "I recall some brands, names, twitter … I use all of them." (P3)
>
> *"Markalar geliyor, isimler geliyor, twitter ... Hepsinde takılıyorum."* (P3)

Moreover, the graduate students (n=9) pointed out that they recognize social media tools as multimedia services. Photo services like Instagram and video services like YouTube were recognized as social media tools. The graduate students said:

> "Next is … Instagram. Especially, Instagram is a bit more important mostly but more information sharing … especially I see that among young adults, Instagram usage is more than other platforms." (P7)
>
> *"Ardından … instagram geliyor. Özellikle çoğu zaman Instagram biraz daha önde geliyor, ama daha fazla bilgi paylaşımı … özellikle üniversite çağındaki insanlarda Instagram'ın diğer platformlardan şu sıralar daha çok kullanıldığını görüyorum."* (P7)

> "It is Youtube and similar platforms that we can communicate by the ways of visual, audio and text." (P10)
>
> *"Youtube geliyor. Bu tip hem görsel hem sesli hem de yazılı olarak iletişim kurabildiğiniz ortamlar."* (P10)

Furthermore, the graduate students (n=7) thought that they perceive social media tools as professional networking sites. Through this networking sites, they develop new connections, connect with the people from the same professional domain. They noted:

> "… networks that can allow professional connections, similar to academic search and similar to platforms which connect people from the same industry comes to my mind." (P14)
>
> *"… profesyonel iş bağlantıları kurmaya yarayan ağlar , yine böyle akademik arama amaçlı kurulan böyle aynı alanda çalışan insanların bir arada toplandığı platformlar bunlar geliyor."* (P14)

Additionally, three graduate students mentioned about the instant messaging tools, seeing them as SMT. One of them stated:

> "WhatsApp is also a social media tool for me." (P7)
>
> *"WhatsApp da benim için bir sosyal medya aracı."* (P7)

Apart from these kinds of tools, the graduate students (n=3) pointed out that online discussion forums were known as social media tools, especially Eksisozluk, a national online discussion forum. The graduate students noted:

"You can find people who had worked on that topic before by looking at their posts, especially in Ekşisözlük while you exchange information with them." (P15)

"Daha önce o konuda çalışmış kişileri bulabiliyorsunuz yazdıklarına bakarak, özellikle Ekşisözlükte oluyor bu o kişilerle fikir alışverişinde bulunurken." (P15)

Moreover, one graduate student mentioned about perceiving e-mail as SMT. Student (P10) stated that "platforms that we can communicate in any way, such as from this e-mail address …" / *"...her türde işte bu e-postadan olsun ... iletişim kurabildiğiniz ortamlar."*

Graduate students' perception of social media and social media tools: The graduate students' responses showed that they perceived social media and tools that were present in these environments differently. Three dimensions were found as a result of the thematic analysis. Most of the graduate students (n=8) mentioned that they perceived social media as a facilitator. They pointed out that social media facilitates the socialization of people and decrease the time to communicate with others. The graduate students stated:

> "Social media fulfills the missing part in the communities that has problems in getting socialized. For example … A student may want to communicate a faculty member in another university. This helps so much." (P11)
>
> *"Sosyal medya bence sosyalleşmesi sıkıntılı olan toplumlarda bir eksiği dolduruyor. Örneğin ...başka bir üniversitede görev yapan bir akademisyene ulaşmak zorunda olan bir öğrenci de olabilir çok büyük imkanlar sunuyor."* (P11)
>
> "Previously, it takes long time to bring information among society's members, but now this time can be less." (P3)

"Eskiden bir kişinin yaptığı bir şeyin toplumun diğer bireylerine ulaşması için çok uzun zaman alırken şimdi daha kısa sürede olabiliyor." (P3)

Additionally, the graduate students (n=7) pointed out the risks social media inherit. The graduate students mentioned the distractive characteristics of social media, being a time-consumer, and limited to academic works. Additionally, fake profiles and deceptive information in social media were highlighted. They noted that:

"For the academic works, it is limiting and time-consuming environment. If you want to do some academic stuff, various links can direct to some other places. It can distract you. So, I think that it prevents you to work efficiently." (P10)

"... akademik ortam için bana göre çok kısıtlı ve aynı zamanda da zaman kaybettirici bir ortam olarak görünüyor. Yani akademik bir şey yapmaya çalıştığınızda sizi işte o sosyal ortamdaki farklı bağlantılar, farklı yerlere yönlendirebiliyor. Dikkatinizi dağıtabiliyor. Yani etkin bir şekilde çalışmanızı engelliyor diye düşünüyorum." (P10)

"Children can be addicted to computers in very small ages. If we think about the social media, children between 8 and 10 years have Facebook accounts. They do not know how to use the social media. They do not know what to share with who. They upload a photo, and they possibly think that the photo is likable, but someone else can use the photo for abusive purposes. They are not aware of these possibilities. This is bad for children. If we think for the adults, although they show themselves absolutely introvert in the social media, they can have completely different personality. This can cause psychological problems." (P2)

"Çocuklar çok küçük yaşta bilgisayara bağımlı hale geliyor. Bu sosyal medya olarak düşündüğümüzde 8-10 yaşındaki çocukların facebook hesapları var. Sosyal medyayı nasıl kullanacaklarını bilmiyorlar. Kiminle ne paylaşacaklarını bilmiyorlar. Bir fotoğraf yüklüyor, aslında o fotoğrafın

sempatik olduğunu düşünüyor olabilir ama başka birisi o fotoğrafı başka amaçlar için de kullanabilir. Bunların farkında değiller. Çocuklar için kötü bir şey. Büyükler için düşünürsek, sosyal medyada içine çok kapanık biri de olsa insan kendini çok farklı gösterebilir. Psikolojik sorunlara bile yol açıyor olabilir." (P2)

Moreover, the graduate students (n=8) mentioned about the distinctive features of social media and social media tools. They recognize social media as a platform that provides personalization communication, crowd-sourcing, up-to-date and accurate information, sharing, and interaction. They commented that:

"You should make choices in communication tool: A little bit social but carries something from yourself and allows personalization." (P4)

"Birazcık böyle sosyal ama senden de bir şeyler taşıyan kişiselleştirebildiğin bir iletişim aracı, tercihler yapabiliyorsun." (P4)

"Any event, which can be even snowing, or a big accident or news related to election during that time, occurs very fast and updated in the social media and because it is more like crowd-sourcing, I believe the accuracy of the news is high. I believe that news coming from social media is more accurate because it is hard to control what people post." (P7)

"... herhangi bir olay, yani bir karın yağması bile olabilir ya da büyük bir kaza ya da seçim zamanı seçimle ilgili bir haber olabilir, bunların hepsi sosyal medyada daha hızlı ve güncel geliyor ve biraz daha CrowdSourcing olduğu için doğruluğu daha da yüksek geliyor. Sosyal medyada yönlendirme daha zor olduğu için daha doğru geliyor bana." (P7)

"Social media expresses sharing at maximum. If I share, others will also share … sharing, interaction." (P13)

"Sosyal medya benim için paylaşım ifade ediyor en fazla. Benim de bilgi paylaşmam benimle de bilgilerin paylaşılması anlamına geliyor ... Paylaşım,

etkileşim." (P13)

4.4.2 Theme: Communication

Table 32 presents the subthemes under the communication theme and provides a standpoint of the graduate students' thoughts on social media tools for communication used in their thesis/dissertation research. The number of participants were also listed under each subtheme and dimension.

Table 32. Theme – Communication

Subthemes	Dimensions	Mentioned by Number of Participants
Type of Tools		
	Social Networking Sites	14
	Online Discussion Groups	8
	Blogging	7
	Academic Networking Sites	6
	Microblogging	5
	Instant Messaging	4
	RSS Services	2
Purpose of Usage		
	Keeping up-to-date	15
	Discussion	10
	Seeking Help	6
	Supervision	4
	Sharing	3
	Data Collection	2

The results of the interviews showed that communication oriented social media tools were used for various purposes. The following two subthemes were described: a) types of tools graduate students use and b) graduate students' purposes of using these tools in their thesis/dissertation research.

Types of tools: The graduate students' responses indicated that they were avid users of social media sites for research purposes in order to exchange information with others. Most of the graduate students (n=14) stated that they visited social networking sites for various purposes. Platforms like LinkedIn and Facebook were some examples they mentioned in their interviews. The graduate students explained:

> "LinkedIn helped me to contact valuable resources, such as DuPont, easily, especially I have very limited time to search for an in-person contact during my thesis studies. For example, I contacted a responsible of Turkey branch from LinkedIn METU Alumni group." (P1)
>
> *"Özellikle şimdi yoğun olarak çalıştığım tezim üzerinde mesela Linkedin'in bana çok büyük bir katkısı oldu. DuPont dünyanın en büyük kimya şirketlerinden bir tanesi. Şu anda bizim yeryüzünde yenilik dediğimiz kullandığımız günlük kullandığımız birçok şeyin mucidi onlar ve bu kadar büyük bir şirketle iletişime geçmek çok zordu. O yüzden Türkiye ofisindeki insanın ODTÜ ağından Linkedin üzerinden [firmaya] erişme imkanı buldum."* (P1)

> "I talked with people using social media tools, Facebook, and it helped me to talk with people. I used a lot." (P6)
>
> *"Internet üzerinden kişilerle görüştüm sosyal medya araçlarıyla, Facebook, kişilerle görüşmemde çok faydalı oldu, çok kullandım."* (P6)

Additionally, most of the graduate students (n=8) mentioned that online discussion groups were the places they sought help, ask questions and communicate with other researchers in their domain. They pointed out that Google Groups and StackOverflow

online discussion board helped them in their thesis/dissertation research. The graduate students noted:

> "I used Google Groups. There were small forums related to software, and I used them." (P7)
> *"Google'ın gruplarını kullandım. Yazılımlara özel açılmış ufak [tartışma] forumlar vardı onları kullandım."* (P7)

> "StackOverflow was the most helpful website among others. Q&A section, I like the answers people wrote when the topics went deeper." (P17)
> *"... StackOverflow ... bunların hepsinden çok daha faydalı olan bir site oldu benim için, soru sorup cevaplama kısmı, insanların genelde konular biraz daha derinleştikçe daha güzel cevaplar verdiği için çok yararlı olduğunu düşündüm."* (P17)

Moreover, the graduate students (n=7) pointed out that they visit blogs of colleagues and institutions for reading or gathering thesis related information. They communicated passively rather than posting on other blogs. The graduate students said:

> "There are some blogs that I follow." (P3)
> *"Takip ettiğim bloglar var."* (P3)

> "I have investigated somebody's blog, and I specifically analyzed one of them. Because, he generally posts algorithms on point cloud processing. I have also sent messages to him." (P7)
> *"Birinin blogunu incelemiştim, özellikle birinin blogunu araştırmıştım. Çünkü o nokta bulut işleme ile ilgili algoritmalar yayınlıyordu sürekli. Ona bir iki mesaj atmışlığım var."* (P7)

Furthermore, the interview participants (n=6) mentioned that professional network opportunities in academic networking sites were used by them in order to communicate

with significant others in their academic domain, where information exchange by other types of media might not be possible or fast enough. The graduate students noted that:

> "ResearchGate is ... for example, there are discussion topics, and you can follow that topic or the answers. For example, you like and want to join a researcher, it is possible to follow his activities similar to Twitter. Due to its academic focus, ResearchGate takes on more valuable potential." (P4)
>
> *"Ama ResearchGate ın şey oluşu yani böyle tartışma konuları var mesela o konuyu ya da o sorunun cevaplandırılmasını takip edebiliyorsunuz ya da işte sevdiğin ve takip etmek istediğin bir araştırmacı var diyelim, Twitterda follow eder gibi ResearchGate'deki aktivitelerini follow edebiliyorsun. Orası [ResearchGate] sadece akademik odaklı olduğu için bence değerli bir potansiyel yatıyor."* (P4)

> "After you told me academic social networks, I want to add Academia.edu right now. I use Academia.edu actively." (P15)
>
> *"Bir de Academia.edu'yu eklemek istiyorum şimdi siz akademik sosyal ağlar deyince fark ettim. Academia.edu'yu da aktif bir şekilde kullanıyorum."* (P15)

Responses of the graduate students (n=5) showed that they used microblogging and benefited from its features, especially Twitter. They pointed out that following institutions' or experts' Twitter accounts helped them keep up-to-date in their field. Moreover, they have used local microblogging platforms of other countries to gather information and collect data for their thesis/dissertation. They commented that:

> "For example, some schools that I follow announce their working papers via Twitter. As a result, instead of directly looking at their website, I can follow these papers while I am looking for other daily activities on Twitter." (P4)
>
> *"Yani Twitter'da bazı takip ettiğim okullarım ... son çıkan working paperlarını oradan duyuruyorlar. Dolayısıyla direkt siteye gidip bakmaktansa Twitter'da başka günlük şeylere bakarken onları da görebiliyorum, öyle takip ediyorum."* (P4)

"I have several accounts from the Chinese social media. I can actively use all of them, for example, Weixin (so is micro-message)." (P6)

"Benim Çin sosyal medyası ile ilgili hesaplarım var ... weixin (yani micro-message) filan onları da aktif bir şekilde kullanıyorum." (P6)

Moreover, some of the graduate students (n=4) pointed out that they used instant messaging tools for thesis/dissertation related purposes. WhatsApp and Gtalk were the most commonly used social media tools by graduate students. The participants shared their thoughts on that:

"I use WhatsApp to communicate with my thesis advisor." (P2)

"Tez danışmanımla iletişim için WhatsApp kullanıyorum." (P2)

"I messaged with WhatsApp previously and I also used Gtalk for messaging and video talk." (P7)

"WhatsApp'la mesajlaştığım oldu, Gtalkla mesajlaşıp görüştüğüm oldu." (P7)

Finally, two graduate students responded that they use RSS services regularly to follow researchers. One of them commented that:

"I use RSS frequently. I subscribed the feeds using some services, and I mostly use these." (P1)

"Benim RSS servisleri sürekli kullandığım bir şey. Yani orada abone olduğum birkaç yer vardır. Orayı [RSS servisleri] sürekli kullanıyorum." (P1)

Purposes of usage: The graduate students' responses showed that there were various types of usage for communication purposes. Most of the graduate students (n=15) mentioned that they utilized social media tools to keep them up-to-date with academic news, thesis related subjects and other institutions in their domain. They commented on that:

"I can hear from other people, and sometimes it allows me to reach others that I cannot be contacted." (P4)

"İşte insanlardan haberdar olabiliyorum ama bazen de normal hayatta kontak halinde olmadığım şeylere de benim ulaşmamı sağlıyor." (P4)

"For Facebook and Twitter, I follow such a methodology: Because I study 'Far East,' I follow official Twitter accounts of famous universities that work in the field of Asian Studies. As a result, I can hear about the newest projects, research, and hot topics from Facebook or Twitter." (P8)

"Facebook ve Twitter üzerinden şöyle bir yöntem izliyorum. Ben uzak doğu çalıştığım için işte Asya çalışmaları ile ilgili ünlü üniversitelerin araştırma merkezlerinin ... bir twitter hesabı varsa resmi hesapları buraları takip ediyorum. Böylelikle buralarda yapılan araştırmalardan yayınlanan yayınlardan işte yapılan projelerden ya da son dönemde tartışılan konulardan bir şekilde Facebook ya da Twitter üzerinden haberdar oluyorum." (P8)

Additionally, the graduate students (n=10) mentioned that they use social media tools for discussing issues with colleagues, peers, and their advisors. They pointed out that asking questions to experts in the field using their blogs or videoconferencing with them provided feedback and made them unstuck while working on their research. They noted that:

"Sometimes I find an opportunity to contact with specialists directly for my thesis. Alternatively, I move forward with the help of blog posts and comments of some other specialists in a topic I stuck." (P14)

"Bazılarında tezimle ilgili alanda uzman kişilerle birebir iletişime geçme imkanım oldu. Ya da takıldığım bir konuda, bir bloga yazıp yine uzman kişilerden aldığım cevapların yönlendirmesiyle ilerlemem söz konusu oldu." (P14)

"I used Skype to take and share opinions with others." (P17)

"Skype'ı kullandım onların görüşlerinin almak onlarla görüşler paylaşmak için." (P17)

Moreover, the interviews participants (n=6) reflected that they sought help using social media tools. Online discussion groups, forums related to their domain or software they used for their academic research were a few services they asked questions and got replies. The graduate students commented:

> "I used this forum [CFD Online] previously for investigating parameters in my analysis, see anybody used these parameters before, confirm these parameters are true and take other's opinions." (P10)
> *"Yani bu kullandığım forumu [CFD Online] da yapmış olduğum analizlerdeki bazı parametreleri daha önceden kullanan deneyen var mı, onları doğrulamak ya da öneri almak için kullanmıştım."* (P10)

> "I used Google Groups and Google Forms to take information from various code writing communities." (P17)
> *"Onu [Google Groups] kullandım çok fazla değişik kod yazan grupların google forumların, google gruplarını kullandım bilgi almak için."* (P17)

Furthermore, the graduate students (n=4) stated that their utilization of social media tools was for supervision. Asking research related questions or getting feedback from their advisors enabled them to use these kinds of tools for communication purposes. They stated:

> "I use Facebook, WhatsApp to communicate with my thesis advisor." (P2)
> *"Tez danışmanımla iletişim için Facebook, WhatsApp kullanıyorum."* (P2)

> "Because I have limited chance to see my thesis advisor face to face, I write to him to get feedback. If I want to ask about something else, I write him from Facebook." (P3)
> *"Geri bildirim alacaksam da her zaman yüzyüze görüşme fırsatım olmadığından hocama yazıyorum. Başka bir fikir soracaksam da Facebooktan yazıyorum."* (P3)

Responses of graduate students (n=3) showed that they used various tools to share information with others. As they pointed out that sometimes shared material was an original contribution of the graduate student and occasionally information they chose to share with their peers and followers. They commented:

> "As I publish my studies also, not an official publishing, after I did a small study I share it on the social media." (P7)
>
> *"... çalışmalarımı ben de yayınladığım için, yayın derken resmi değil, ufak bir çalışma yaptığımda bunu sosyal medyada paylaşıyorum."* (P7)

> "You have a friend network and I can also share with them on Facebook." (P4)
>
> *"Bir çevren var bir arkadaş grubun var onlarla paylaşımlarımı orada [Facebook] da yapabiliyorum."* (P4)

Finally, two of graduate students stated that they utilized social media tools to collect data on their research. They noted that:

> "I got lots of information from Chinese personal blogs, as my topic is people and group's opinions; I got this info from Weibo." (P6)
>
> *"Çinli kişisel bloklardan çok fazla bilgi edindim ki benim konum kamu görüşü halkın görüşü olduğu için, tabii ki oradaki halkın, grupların görüşlerini Weibo üzerinden edindim."* (P6)

> "I collected data using Facebook. For example, I shared a link to a survey, or I sent invitations to people I can interview using instant messaging tools." (P13)
>
> *"Oradan [Facebook] çeşitli veriler toplamış oldum. Mesela bir anket bağlantısı paylaştım veya görüşebileceğime inandığım kişilere anlık mesajlaşma araçlarını kullanarak davet yolladım."* (P13)

4.4.3 Theme: Collaboration

Table 33 presents the subthemes and dimensions under the theme of collaboration and provides responses of the graduate students' on social media tools for collaboration in their thesis/dissertation research. The number of participants were also listed under each subtheme and dimension.

Table 33. Theme – Collaboration

Subthemes	Dimensions	Mentioned by Number of Participants
Type of Tools		
	Videoconferencing	7
	Wiki	7
	Collaborative Writing	4
Purpose of Usage		
	Discussion	6
	Literature Search	5
	Supervision	3
	Sharing	2
	Data Collection	1

The results of the interviews showed that graduate students use social media tools for collaboration in their academic studies. The following two subthemes were explained: a) types of tools graduate students use and b) graduate students' purposes of using these tools in their thesis/dissertation research.

Types of tools: The graduate students' responses indicated that social media tools were also used to collaborate with others during their academic research process. Most of the graduate students (n=7) stated that they used videoconferencing tools. The graduate students explained:

"I used Skype for video conferencing. Sometimes, I used the video conferencing tool of Facebook as well as using Gtalk. I used GTalk for the purpose of communicating with my advisors as a part of my thesis." (P13)
"Video konferans olarak da Skype kullandım. Bazen Facebook'un içindekini de kullandığım oldu, hatta GTalk da kullandım. GTalk'ı da uzun süre danışmanlarımla falan iletişim kurmak için kullandım o da tezimde kullandığım bir şeydi." (P13)

"Once again, I communicated with people on internet through Skype and social media tools." (P6)
"Yine internet üzerinden kişilerle görüştüm Skype ve diğer sosyal medya araçlarıyla." (P6)

Additionally, most of the graduate students (n=7) mentioned that Wikis were the initial source for literature search. Wikipedia was the most used social media tool to understand fundamental concepts and examine various thoughts about the idea being investigated for their academic research. The graduate students noted:

"I check Wikipedia in any case. Of course, there is further information, but to understand the basic concepts such as definitions even if the information might be wrong or defected, I check out Wikipedia in the beginning." (P4)
"Ya illaki bir wikipedia'ya bir bakarım. Yani daha ötesi var ama başlangıç olarak o nasıl tanımlıyor, eksik veya yanlış bile olsa oraya bir bakıyorum ne demişler diye." (P4)

"I frequently use Wikis, because you can easily reach accumulative/collected, general and integrated framework even though they are not trustable information sources … as I said it was impossible to use for official purposes, but I can get commonly accepted ideas from wikis easily." (P12)
"Wikileri çok fazla kullanıyorum çünkü her ne kadar güvenilir bilgi kaynakları olmasalar da genel ve toparlanmış, bütünleşik bir çerçeveye en kolay onlarla

ulaşıyorsunuz … dediğim gibi resmi anlamda kullanmak zaten mümkün değil ama genel geçer fikirleri ben en kolay wikilerden alıyorum." (P12)

Moreover, the graduate students (n=4) pointed out that they benefited from collaborative writing features which some tools inherit. They mentioned about Google Docs and its features like tables, forms, creating surveys, and working synchronously with other people on a document. The graduate students said:

"I use Google Documents. If I want to work on tables and forms with the people who are away, I create surveys on the Google Docs." (P13)

"Google'ın dokümanlarını kullanıyorum, Tabloları, formları [aracılığıyla] birileriyle çalışacaksam uzaktaki kişilerle … yine Google Docs'tan anketler oluşturabiliyorum." (P13)

"I communicate with my advisor on Google Docs. My advisor does corrections and sends them to me via Google Docs." (P1)

"Google [Docs] üzerinden yazışıyoruz [danışmanımla] düzeltmeleri oradan yapıyor. Önerilerini oradan gönderiyor." (P1)

Purposes of usage: The graduate students' responses showed that there were various types of usage for collaboration purposes. Most of the graduate students (n=6) mentioned that they discussed thesis/dissertation related subjects over social media tools for collaboration. They commented on that:

"First, I and a subject-matter expert shared things on the e-mail. Then, we discussed them on Skype." (P13)

"Hani bir şeyleri paylaşıp e-mailden daha sonra onun [Skype] üzerinden çeşitli discussionlar yaptık konu alanı uzmanıyla." (P13)

"For finalizing the availability of applications for my thesis … I used Gtalk for messages and meetings." (P7)

"Uygulamaların benim tezime yönelik kullanılabilirliğini kesinleştirmede …

Gtalkla mesajlaşıp görüştüğüm oldu." (P7)

Additionally, the graduate students (n=5) mentioned that they use social media tools for literature search. Wikis were used to gather initial ideas on a subject before diving into academic discussion. They noted that:

"Sometimes, I come across a new concept. I can get the fundamental information related to the concept without academic debates and in a simplest way via wikis." (P15)

"... bazen daha önce karşılaşmadığım bir kavram çıkıyor karşıma, onunla ilgili en temel bilgiyi en basit şekliyle çok fazla akademik tartışmalara boğulmadan wikiler üzerinden elde edebiliyorum." (P15)

"I used wikis … I mostly pay attention to the links on the main subject." (P6)

"Wikileri kullandım ... oradan daha çok konunun altında bağlantılar oluyor onlara çok dikkat ediyorum." (P6)

Moreover, the responses of the graduate students (n=3) showed that supervision was also a reason for using social media tools. They used Google Docs to collaborate with their thesis advisors for their academic research. One participant said:

"In a same way, I collaborate with my advisor on Google Docs." (P1)

"Tez hocamla da aynı şekilde google docs'da ortaklaşa çalıştığımız oluyor" (P1)

Furthermore, the interviews participants (n=2) reflected that sharing over collaboration tools was important. One of them commented:

"I use Google Docs… If I work with people who are away." (P13)

"Google'ın dokümanlarını kullanıyorum ... birileriyle çalışacaksam uzaktaki kişilerle." (P13)

Finally, one graduate student reported that she collected their research data over social media tools. She noted that "While collecting data, I used Skype to communicate not only with my advisor but also with a subject-matter expert." (P13) / *"Sadece danışmanımla değil yani konu alan uzmanıyla da yani veri toplarken de Skype'ı kullanmış oldum."* (P13)

4.4.4 Theme: Multimedia Services

Table 34 presents the subthemes and dimensions under the theme of multimedia services and provides a point of view of the graduate students' responses to social media tools for multimedia in their thesis/dissertation research. The number of participants were also listed under each subtheme and dimension.

Table 34. Theme – Multimedia Services

Subthemes	Dimensions	Mentioned by Number of Participants
Type of Tools		
	File	11
	Presentation	2
	Photo	1
	Video	1
Purpose of Usage		
	Storage	11
	Sharing	5
	Presentation	2

The results of the interviews showed that graduate students utilized multimedia services for various purposes. The following two subthemes were explained: a) types of tools graduate students use and b) graduate students' purposes of using these tools in their thesis/dissertation research.

Types of tools: The graduate students' responses indicated that they used specific multimedia services. Most of the graduate students (n=11) stated that file services were used in their thesis/dissertation research. The graduate students explained:

> "I keep these [data of my thesis] on Google Drive in order to create a shared environment." (P2)
>
> *"Bunların hepsini [tez verilerimi] Google Drive'da tutuyorum ortak bir ortam olması için."* (P2)

> "I generally use Dropbox to share things." (P3)
>
> *"Dropbox üzerinden paylaşımlarda bulunuyorum."* (P3)

Moreover, the graduate students (n=2) pointed out that presentation services were used during academic research oriented activities such as presenting research information to their advisors. The graduate students said:

> "I use Slideshare…I used to use Prezi." (P3)
>
> *"Slideshare kullanıyorum ... Prezi kullanmıştım."* (P3)
>
> "Moreover, I used presentation tools such as PowerPoint and Prezi." (P7)
>
> *"Bir de sunum araçları, PowerPoint, Prezi onları kullandım."* (P7)

Additionally, one of the graduate students mentioned that they follow photo services, especially Instagram. The graduate student noted:

> "I use Instagram very fondly … Somebody from the far end of the world like from Australia does an experiment as I do. The same things happen in different places all over the world, and Instagram presents it visually." (P5)
>
> *"Instagram'ı çok severek kullanıyorum ... dünyanın herhangi bir yerinde birisi benim yaptığım deneyi Avusturalyada yapıyor. Aynı şeyler dünyanın farklı yerlerinde yapılıyor ve onu sana görsel olarak sunuyor."* (P5)

Finally, one interview participant reported that he used video services to gather information about his thesis topic. He noted:

"It is also based on YouTube… how the procedure that I carry out was done before… It is presented verbally and visually." (P5)

"Youtube temelli o da … benim yürüttüğüm prosedür daha önce nasıl yapılmış … görsel ve sesli olarak benim karşıma sunuluyor." (P5)

Purposes of usage: The graduate students' responses showed that storage was the main purpose of using multimedia services. Most of the graduate students (n=11) mentioned that they used file services for storing their academic research documents. Online file services like Dropbox and Google Drive were used to prevent the loss of thesis related documents, and Slack was used to archive academic documents among peers. They commented on that:

"I take advantage of it [Slack], because it is accumulative environment by over time. You can store your data and comments. You can keep current Word and Excel documents on there, information transfer takes place there." (P4)

"Onun [Slack] ben faydasını görüyorum çünkü orası zaman içinde biriken bir şey de oluyor hani bazı bilgileri de orda depoluyorsun, yorumlarını depoluyorsun. Elindeki Word, Excel doküманları orada saklıyorsun, bir bilgi transferi gerçekleşiyor orada." (P4)

"After finishing introduction part of my thesis, a thief broke into my house and my computer was stolen. I sadly hadn't backed up it [the thesis]. So, I use Dropbox in a very active way nowadays. Even, I keep the files of my thesis just on it at the moment." (P15)

"Ben tezimin introduction kısmını yazdıktan sonra evime hırsız girdi ve bilgisayarım çalındı ve ben onu [tezimi] yedeklememiştim kahretsin ki o yüzden Dropbox'ı çok aktif bir şekilde kullanıyorum. Hatta tez dosyamı şu an sadece onun üzerinde saklıyorum." (P15)

Additionally, the graduate students (n=5) mentioned that they use social media tools for sharing. They pointed out that sharing presentations over Prezi and sending

documents over Dropbox and Google Drive help them save both resources and time. They noted that:

> "I used Prezi in order to share conference slides. Some other people also shared slides on Prezi as I did." (P3)
>
> *"Konferans için slaytları paylaşmak için Prezi kullanmıştım. Başkaları da oradan paylaşmıştı. Ben de oradan paylaşmıştım."* (P3)

> "I put the documents that were necessary for presentation of the thesis [on Google Drive]. When I went to see my advisor, I reached the documents either on the computer of my advisor or on the phone and showed them to my advisor." (P7)
>
> *"Tez için danışmanıma yapmam gereken sunumları da oraya koyup [Google Drive] tez danışmanımın yanına gittiğimde orada herhangi bir bilgisayarda, hocanın bilgisayarı da olabilir telefon da olabilir, oradan açıp gösterdiğim de oluyor."* (P7)

Finally, two graduate students pointed out that they used social media tools for presentation purposes. Sharing the screenshots of the product they worked for their thesis saved time and facilitated the information exchange with the thesis advisor. One of them commented

> "I was adding screen copies and small video recordings into presentation content to show them instead of opening the raw data and showing them directly. It was difficult to reach the workstation without [computer] anyway." (P7)
>
> *"Doğrudan veriyi açıp göstermek yerine ki veriyi açmam workstation [bilgisayar] olmayınca çok zor oluyordu. Öyle ekran kopyaları, ufak video kayıtlarını alıp sunum içeriğine koyup öyle gösteriyordum."* (P7)

4.4.5 Theme: Information Retrieval and Management

Table 35 presents the subthemes and dimensions under the theme of information retrieval and management and provides thoughts of the graduate students' social media tools use for information retrieval and management purposes. The number of participants were also listed under each subtheme and dimension.

Table 35. Theme – Information Retrieval and Management

Subthemes	Dimensions	Mentioned by Number of Participants
Types of Tools		
	Online Academic Databases	13
	University Library Catalog	11
	Reference Management	11
	Project Management	6
	Learning Management Systems	3
Purpose of Usage		
	Literature Search	15
	Organizing References	11
	Tracking Progress	6

The results of the interviews showed that graduate students use social media tools for information retrieval and management. The following two subthemes were explained: a) types of tools graduate students use and b) graduate students' purposes of using these tools in their thesis/dissertation research.

Types of tools: The graduate students' responses indicated that they accessed thesis/dissertation related information via various services. Most of the graduate students (n=13) stated that they used online academic databases. Academic databases provided by universities and international organizations were highly used by them for

literature search. The graduate students explained:

> "Academic databases, I use all of them which are provided by METU and Istanbul University. As I said, for thesis database, I used mostly ProQuest, EBSCO, ERIC and ScienceDirect." (P13)
> *"Akademik veri tabanları, onların tamamını kullanıyorum. ODTÜ'nün sağladıklarını, İstanbul Üniversitesi'nin sağladıklarının hepsini. En çok kullandıklarıma gelince dediğim gibi tez veri tabanı olarak Proquest, EBSCO, ERIC, ScienceDirect kullanıyorum."* (P13)

> "For searching, I used Google Scholar, Web of Science and Scopus." (P10)
> *"Arama için de Google Scholar, Web of Science, Scopus bunları kullandım."* (P10)

> "I used Scopus widely, but later I can say that I used and liked Google Scholar more than Scopus." (P17)
> *"Scopus kullandım geniş ölçekli olarak ama Scopustan daha çok sonra Google Schoolar'ı daha çok kullandığımı daha çok beğendiğimi söyleyebilirim."* (P17)

Additionally, most of the graduate students (n=11) mentioned that they often initiate their literature search from the university library catalog. Since interviewed participants were registered in Middle East Technical University, their access to databases was sometimes limited to their university and near universities. The graduate students noted:

> "I use all databases that I can reach like METU and Bilkent Library, which are related to my field of course." (P8)
> *"ODTÜ Kütüphanesini ya da Bilkent Kütüphanesini işte erişebildiğim tüm veritabanlarını kullanıyorum tabii kendi alanımla ilgili olanları."* (P8)

> "I can say that access from METU Library to the other libraries." (P11)
> *"ODTÜ'nün kendi kütüphanesinden diğer kütüphanelere erişim*

diyebilirim." (P11)

Moreover, the graduate students (n=11) pointed out that they use reference management tools to manage or organize their citations and references. They highly used reference management tools to organize references and proposed the usage of tools like Mendeley and Zotero. The graduate students said:

"I use Mendeley, which is absolutely useful program." (P2)
"Mendeley kullanıyorum. Kullanışlı bir program kesinlikle." (P2)

"Moreover, I use Zotero. I think it is the number one." (P3)
"Ayrıca Zotero kullanıyorum. Zotero bence bir Numara." (P3)

Furthermore, the responses of the participants (n=6) showed that some of them manage their thesis progress as a project and use project management/tracking tools. Tools like Asana and Trello were utilized by graduate students for making to-do lists and tracking their thesis/dissertation progress. They commented:

"About thesis, I use a program called Asana. It is a very good program and helps me about the start and finish the projects." (P1)
"Tezle ilgili olarak mesela benim kullandığım Asana diye bir program var. ... Çok iyi bir program yani bir proje başlatıp bitirme konusunda epey yardımcı oluyor bana" (P1)

"Moreover I start to use Trello. I created an account and opened a topic about my thesis." (P2)
"Ayrıca Trello kullanmaya çalışıyorum. Orada bir hesap oluşturdum my thesis diye de bir başlık açtım." (P2)

Finally, interview participants (n=3) mentioned that they utilized learning management systems, most of the time in a passive participation style. One of them noted:

"There are websites which give online lessons about my data analysis work; I use them. Lastly, I took a course from Coursera." (P3)

"Yapmak istediğim analiz çalışmalarıyla ilgili online ders sunan siteler var onlardan faydalanıyorum, en son Coursera'dan ders aldım." (P3)

Purposes of usage: Graduate students benefit from information retrieval and management tools. Most of the graduate students (n=15) mentioned on using these tools for literature search, which is a crucial part of academic research. They commented on that:

"Except Scopus and Google Scholar, I used our library service, mostly for the former research. I used the school library for things that I do not find PDF versions on the internet." (P17)

"Scopus ve Google scholar dışında bir de okulumuzun işte kendi kütüphane servisinden ... araştırıp daha çok eskiye yönelik, PDF hali internete çıkmamış şeyleri okul kütüphanesinden kullandığım oldu." (P17)

"Simply Google Scholar, we can search article on there. I use METU Library's electronic databases subscriptions, books, and theses." (P4)

"İşte en basiti Google Scholar oradan makale arayabiliyoruz. ODTÜ'nün kütüphane veri tabanını kitap olur tez olur onları kullanıyorum." (P4)

Additionally, the graduate students (n=11) mentioned that they use social media tools to organize their references during the writing phase of their academic output. They noted that:

"I collected all articles in a folder while writing the literature part of my thesis. I uploaded them on Mendeley. I can check directly in Mendeley rather it takes authors properly. I can reach references from Mendeley that I gave in the Word document. It sorts alphabetical order by itself. It is very convenient for me." (P2)

"Bulduğum makaleleri, tezin literatür kısmını yazarken bir klasöre topladım.

Hepsini de Mendeley yükledim. Mendeley'de direkt kontrol ediyorum yazarlarını düzgün almış mı diye. Word belgesinde verdiğim referansı direkt mendeleyden çekebiliyorum. Alfabetik sıraya göre sıralamasını da kendisi yapıyor. Çok büyük rahatlık sağlıyor," (P2)

"I took the content of the thesis, read and marked important points then put on bookmarks. I used Mendeley in this way." (P7)

"Tezin içeriğini alıp kendim okuyup orada şurayı almam lazım diye işaretleyip, bookmark atıyordum. Mendeley'i öyle kullandım." (P7)

Finally, some of the responses of the interview participants (n=6) reflected that they use these kinds of tools for tracking their thesis/dissertation research progress. Tools like Trello were used instead of taking notes with pen and paper. One of them explained that:

"I use Trello for to do list which I prepared for myself. Instead of taking notes or writing on paper, I use Trello." (P3)

"Trello kullanıyorum, todo listelerimi orada yazıp, kendime atadığım. Her yere not almak, defter tutmak yerine Trello kullanıyorum." (P3)

4.4.6 Theme: Enablers for Utilization

Table 36 presents the subthemes under the theme of enablers for utilization of social media tools for thesis/dissertation research. The number of participants were also listed under each subtheme.

Table 36. Theme – Enablers for Utilization

Subthemes	Mentioned by Number of Participants
Facilitator	14
Aid to Research	11
Time and Resource Saver	4

The results of the interviews showed that graduate students communication oriented social media tools were used for various purposes. Three subthemes emerged from thematic data analysis: a) facilitator b) aid to research and c) time and resource saver.

Facilitator: The graduate students' responses indicated that social media tools have some advantages. Most of the graduate students (n=14) stated that social media tools act as a facilitator in terms of increasing accessibility, communication, collaboration, and sharing. The graduate students explained:

> "I am optimistic about it. It is very useful for collaboration and interactivity. It can be used for communication during the initial stages, especially in data collection and thesis planning stages. Some information about the thesis progress can be shared by your colleagues and thesis advisor. It is possible to use it in such way, as I am using it, and I am planning to use it for my doctorate studies." (P13)
>
> *"Çok olumlu düşünüyorum. Öncelikle paylaşım, etkileşim için çok yararlı olduğunu düşünüyorum. İletişim kurmak için gerek veri toplama sürecinde gerekse tezin organize edilmesi sürecinde yani bütün planlama sürecinde kullanılabilir. Paylaşımlar yapılabilir tezle ilgili. Paylaşımından veri toplama sürecine kadar organizasyonuna planlanmasına kadar danışmanla bile planlanmasına kadar onların hepsinde kullanılabileceğini düşünüyorum ve kullanıyorum, kullandım ve kullanmayı da düşünüyorum doktorada yoğun bir şekilde."* (P13)

> "Had to seek in the paper stack, on the other hand with just one touch via digital information can be assessed with a single click. Accessibility is also nice, and I can find this information, when I become online. I do not necessarily have to have that book in my library in my house, or I do not have to be physically in the library." (P15)
>
> *"... kağıt yığını arasında aramak var birde dijital bir bilginin üzerinden hemen tek tuşla, tek tıkla ulaşabilmek var yani erişilebilirlik de güzel ayrıca şey de*

güzel internetin olduğu her yerde ben bu bilgiye ulaşabilirim. İlla evimde durup kitaplığımdaki o kitabın elimde olması gerekmiyor ya da o anda kütüphanede bulunmam gerekmiyor fiziki olarak." (P15)

"You can get the right links to this type of tool that instantly at one at the far places of world, if people doing similar work with you in a way, you would be able to communicate with him or the possibility of a joint work execution. In the past such a thing was certainly not possible; I think it is beneficial to humanity." (P12)

"Bu tip araçlarla siz doğru bağlantıları da sağlayabilirseniz anlık olarak yani bir insan ne biliyim dünyanın bir ucunda sizinle benzer bir çalışmayı yapıyorsa bir şekilde onunla iletişim kurmayı başardıysanız ya da ortak bir çalışma yürütme imkanınız olur ki önceden böyle bir şey kesinlikle mümkün değildi, insanlığa faydalı olduğunu düşünüyorum." (P12)

Aid to Research: Additionally, the graduate students (n=11) mentioned that social media tools aid to their academic research. They pointed out that ability to search for keywords in the digital documents was a big helper. Moreover, reference management programs like Endnote, Mendeley, and Zotero helped them organize their citations, keep up-to-date their reference lists and share with other colleagues. The graduate students noted:

"That kind of reference programs [Endnote] makes academic human life easier. I think something like this is indispensable when we consider the future of the technological improvements. Because I see my teacher, I look at references written in old-fashioned, collecting them in one place can be updated in one place and then you can reach it at any time, I think this provides big ease." (P1)

"O tarz referans programları [Endnote] bence akademik insanın hayatında birçok şeyi kolaylaştırdığı gibi bundan sonraki teknolojileri gelişecek teknolojileri düşündüğümüz zaman vazgeçilmezi gibi birşey bence. Çünkü hocalarımdan görüyorum eski usül yazılan referanslara bakıyorum bunların

hepsinin bir yerde toplanması bunların hepsinin bir yerde güncellenebilmesi ve sonra istediğiniz anda oradan geri çekebilmeniz bence çok büyük kolaylık." (P1)

"With our existing technology and by keywords, we can find our way in the world, our direction, whatever we want." (P4)
"Şuanda elimizdeki teknoloji ile keywordler ile dünyada yolumuzu, yönümüzü, istediğimizi onunla buluyoruz." (P4)

"As a result, the contribution of such tools for academic work is too big and I think that makes the world a much smaller for us." (P3)
"Sonuç olarak akademik çalışmalara yönelik bu tür araçların katkısının çok ve dünyayı bizim için daha küçük hale getirdiğini düşünüyorum." (P3)

Time and Resource Saver: Moreover, the graduate students (n=4) pointed out using social media tools they could save time and resources. One participant could not have collected their data if she did not use Chinese social media tools. Moreover, in terms of facilitating access to other people both in the professional and academic fields, provided a great time-saving. Rather than utilizing traditional information exchange ways, the graduate students benefited the increasing accessibility and faster communication of these tools. They said:

"It helped in a very large part of my thesis. As I said from the very beginning until the very end, I have no opportunity to go to a field study currently in China. I had a chance to talk only through social media or using the internet." (P6)
"Benim tezimin çok büyük bir kısmında yardımcı oldu açıkçası hani en başından en sonuna kadar dediğim gibi şu anda Çine gidip bir saha çalışması yapma imkanım yok benim sadece sosyal medya üzerinden görüşme şansım vardı ya da internet kullanarak." (P6)

"I gain benefit from it, especially beneficial for quick access to the people. They do not always have the features to support the academic work you do, but sometimes even talk to a human being, even to get his views, I think important jobs or for example in a place like Twitter, I'm talking to myself, you can view the world's leading software developers if you have them contact directly, they are useful things I think." (P17)

"Bana bazı zamanlarda fayda sağladığını özellikle insanlara çabuk ulaşım konusunda fayda sağladığını düşünüyorum. Tabi her zaman sizin yaptığınız akademik çalışmayı destekleyecek şekilde özelliklere sahip olmuyor bunlar ama bazen konuşmak bile, bir insanla onun görüşlerini alabilmek bile bence önemli işler veya mesela twitter gibi bir adreste siz eğer şuan dünyanın sayılı, kendim için konuşuyorum, dünyanın sayılı program yazılımcılarıyla görüşebiliyorsanız onlara direkt olarak ulaşabiliyorsanız bunlar faydalı şeyler diye düşünüyorum." (P17)

4.4.7 Theme: Barriers to Adoption

Table 37 presents the subthemes under the theme of barriers to adoption of social media tools for thesis/dissertation research. The number of participants that mentioned about this theme were also listed under each subtheme.

Table 37. Theme – Barriers to Adoption

Subthemes	Mentioned by Number of Participants
Information Quality Issues	9
Distractions	7
Lack of Knowledge and Skills	6
Restrictions	6
Cultural Issues	5
Trust Issues	2
Technical Difficulties	1

Information Quality Issues: During the interviews, participants mentioned about the barriers to using social media tools in their thesis/dissertation research. The graduate students (n=9) stated that information quality issues were the major problem related to the social media tools. Information pollution, duplicate information, missing texts or links, and reliability of information were the barriers to graduate students using them for academic research. The graduate students explained:

> "For example, complicated information occurs in everywhere in a small pieces. It consists of duplicate or missing information. Then you get distracted while organizing them. This can cause you to turn away." (P4)
> *"Mesela komplike bilginin parça parça her yerde oluşu, duplike bilgilerin oluşu, eksik bilgilerin oluşu yada işte bunları organize edeceğim derken sen bölünüyorsun böyle farklı uygulamalara falan onlar caydırabilir."* (P4)

> "The first thing that comes to my mind is information pollution in social media. Information pollution, which makes it difficult while reaching it." (P10)
> *"Aklıma ilk olarak gelen şey bilgi kirliliği sosyal medyada. Yani bilgiye ulaşmaktaki, bilgiye ulaştırmayı zorlaştıran bilgi kirliliği."* (P10)

> "People can make false declarations, they may say that they know it but maybe they do not know or information cannot be under controlled. I think it may be intense of information pollution." (P16)
> *"İnsanlar tabi yanlış beyanlarda bulunabiliyor orada şunu biliyorum der bilmiyor olabilir yada kontrol edilemiyor olması her bilginin. Bilgi kirliliğinin yoğun olması olabilir diye düşünüyorum."* (P16)

Distractions: Additionally, the interview participants (n=7) pointed out that distractions prevented them to use these social media tools effectively. These distractions were due to taking too much time, information pollution, and advertisements. Thus, they were affected and spent more time to filter out useful information among the worse ones. The graduate students explained:

"I think it takes too much time if you do not set it up properly on some issues; it seriously takes too much time. My teacher, whom I do not want to give his/her name, spends almost 10 hours on Facebook in a day since met with it. His posts are mostly academic, not about cat pictures. He shares article, shares data. He writes a comment about the data. He enters Facebook in the morning and spends almost 10 hours on there." (P1)

"Bence çok zaman alıyor bazı konularda eğer bunun ayarını düzgün yapmazsanız gerçekten ciddi zaman alıyor yani. Benim ismini vermeyeceğim bir hocam facebook ile tanıştığından itibaren gününün 10 saatini orda geçiriyor. Bunun çoğunluğu da akademi yani paylaştığı şeyler genellikle kedi resmi filan değil. Makale paylaşıyor, veri paylaşıyor. Veri üzerine bir yorum yazılıyor. Bir bakıyorum hoca sabah girmiş neredeyse 10 saat orda harcıyor yani." (P1)

"The worst thing for me is information pollution and it easily takes people's attention to another side." (P10)

"Ama yani benim en çok hoşuma gitmeyen yanını söyleyeyim. Bilgi kirliliği ve insanın dikkatini başka taraflara çok kolay çekebilmesidir." (P10)

Lack of Knowledge and Skills: Moreover, the graduate students (n=6) mentioned about the issues regarding the lack of knowledge and skills. The tools which are hard to use or complicated were a disadvantage to users. Moreover, people who do not know how to use these tools or did not experience them before were reluctant to use these kinds of tools. The graduate students explained:

"Tools, which have complicated usage, effect even more. If the person do not use it, whether s/he is old or young or s/he did not experience it or don't know how to use it, may be a problem. You are trying to explain, but it is on their hand whether to use it or not." (P13)

"Biraz daha kullanımı komplike olan araçlarda daha da çok etkiliyor hani o kişi kullanmıyorsa yaşlı da olsa genç de olsa deneyimi yoksa veya kullanmayı

bilmiyorsa birazcık sorun oluyor. Anlatmaya çalışıyorsunuz ancak yine de kullanıp kullanmamaları kendi ellerinde olduğu için değişebiliyor kullanım durumu." (P13)

"My teachers, especially older ones, are not able to use social media because of not know how to use it." (P5)
"Ama benim hocalarım özellikle yaşlı hocalar kendileri de açıkçası sosyal medyayı bilmediği için onların da o şekilde engeli var kullanmıyorlar." (P5)

Restrictions: Furthermore, responses of the students (n=6) reflected that there were some restrictions due to external parties. The graduate students mentioned that the ban of social media tools, the fees for downloading or reading articles made them restrain from using these tools. The graduate students explained:

"In my thesis, I had no chance to reach Chinese social media from Turkey about my topic. I asked to open an account to me from a friend who was living there. I got difficulties only in this issue." (P6)
"Benim tezimde konumla ilgili olarak Çin sosyal medyasına Türkiye'den ulaşma şansım yoktu hani çok zorlandım. Orada bulunan bir arkadaşımdan rica ettim hesap açmak için ben bir tek bu konuda zorlandım." (P6)

"For instance, I find an article, but it is not free, I cannot download it. The money issue can cause a challenge in economic terms." (P11)
"Mesela bir makale ile karşılaştım fakat indiremiyorum ücretsiz değil, para kısmı, ekonomik açıdan bir zorluk getirebilir." (P11)

"In the end, we have seen events up to the prohibition of Twitter in this country, which means, social media tools have certain effects." (P5)
"Bunun sonunda Twitter'ın yasaklanmasına kadar bu ülkede gelişen olaylar gördük demek ki belli bir etkisi var [sosyal medya araçlarının]." (P5)

Cultural Issues: Additionally, the participants in interviews (n=5) expressed that cultural issues were barriers to adoption of social media tools. According to them, characteristics of different cultures affected the use of social media tools. Students reflected that in Turkey, social media tools are commonly used for hedonic purposes, and they prefer face to face communication. The graduate students explained:

> "We just discussed it with my teacher; he said that you Turks were not get used to using it. I do not know whether we did not get adjust it or we prefer to talk face to face, to be obvious, I think it is not useful in academic way. So I did not use video presentation yet about my thesis." (P1)
>
> *"Daha dün tartıştık hoca ile Türkler siz alışmamışsınız dedi bu tarz şeylere. Bilmiyorum alışmadık ondan mı yoksa biz karşılıklı oturmayı seviyoruz ondan mı. Ben akademide bunun çok işe yaradığını pek düşünmüyorum açıkçası. Yani gördüğüm bu görüntülü sunum o yüzden de tezimle ilgili hiç kullanmadım şuana kadar."* (P1)

> "I think, people mostly going on there to have fun, not for serious work. I do not use Facebook for serious works." (P11)
>
> *"İnsanlar daha çok hani eğlenmek için filan oraya giriyorlar daha ciddi bir iş için değil diye düşünüyorum. Hani bende genelde ciddi bir şey için girmiyorum facebooka kullanmıyorum."* (P11)

Trust Issues: Moreover, the graduate students (n=2) expressed their concerns about trust in social media. Safety of online information and data security were the biggest concerns of graduate students regarding their academic research. Some students were reluctant to share their thesis related documents on cloud systems due to lack of trust into these kinds of system. The graduate students explained:

> "Data security is also very important. For example, I do not upload everything to the virtual environment because I do not trust some things. For instance, my Wunderlist account has been hacked once. Moreover, you can forget the password, these are critical points on it." (P4)

"Tabi veri güvenliği de çok önemli, böyle her şeyi mesela sanal ortama aktarıp ben çok güvenmiyorum da çok bazı şeylere. Mesela wunderlist hesabım uçtu bir kere benim. Bir şifresini unutabilirsiniz, başkasının eline geçebilir öyle kritik mevzular da var." (P4)

"I do not use cloud system because I do not find it safe. My thesis documents are my private." (P5)

"Bulut sistemini genelde kullanmayı sevmiyorum, güvenli bulmuyorum. Şuanda benim özelim sonuçta onlar [tez dokümanları]." (P5)

Technical Difficulties: Finally, one of the interview participants mentioned about the technical difficulties. Infrastructural challenges like delayed video and sound, unclear voice, lagging connections impacted the utilization of social media tools especially in synchronous information exchange. He stated:

"Once we made a presentation to a university connecting by teleconference, but I do not think it is an effective way to do things in this way. The presentation is something else, or maybe our infrastructure is not has enough capacity. Lagging images, not clear English, microphone problem issues…" (P1)

"Bir üniversiteye telekonferans ile bağlanıp bir sunum yapmıştık ama ben açıkçası bunun böyle yapılaması gereken şeyler dışında çok etkili olduğunu düşünmüyorum açıkçası. Çünkü sunum dediğimiz olay başka bir şey ya da bizim bilmiyorum altyapımız uygun değil buna. Çünkü laglı gelen görüntü, anlaşılmayan ingilizce, mikrofonlarda ki problem …" (P1)

4.4.8 Theme: Proposals on Social Media Tools

Table 38 presents the subthemes under the theme of proposals on social media tools. The number of participants and their percentage were also listed under each subtheme.

Table 38. Theme – Proposals on Social Media Tools

Subthemes	Mentioned by Number of Participants
Course	3
Guideline	3
Training	3
Website	1
Professional Communities	1

Course: The graduate students (n=3) stated that courses on social media or part of a course would be beneficial for university students. They pointed out that courses on using social media tools for academic research or some modules in research methodologies course would be useful for graduate students. The graduate students explained:

> "Maybe, it can be added to some courses and give additional information to them, especially research courses related to thesis writing and reference finding or efficient research techniques. Something you found may not as effective and suitable as somebody else's share." (P9)
>
> *"Belki derslerin bir kısmına eklenebilir özellikle tez yazmayla ilgili research tarzı derslerde referans bulmasıyla ilgili ya da etkili araştırma yöntemleri bunlarla ilgili bilgi verilmeli diye düşünüyorum. Herkesin kendi bulduğu şey çok etkili bir şey olamayabiliyor ama başkasının paylaştığı bir şey size çok daha uygun bir şey çıkıyor."* (P9)

> "It will be better to have a course on this topic. Because there are really good tools. Even if the one is from CEIT, he may not be used these tools or even doesn't know it at all. It will be a good opportunity for them to open a course regarding these topics." (P13)
>
> *"Ya bu konuda ders bir ders olsa gerçekten çok iyi olur. Çünkü gerçekten çok iyi araçlar var. BÖTE'ci olsa bile bunu gerçekten hiç kullanmayanlar var veya adından bile haberdar olmayanlar var. Bu konuda şey yapmak gerçekten*

imkanların tezinde onlara çok büyük kolaylık sağlayacaktır. Çeşitli dersler açılabilir bence." (P13)

Guideline: Additionally, some of the graduate students (n=3) mentioned that guidelines should be provided to students, staff and advisors on using social media tools effectively for academically oriented purposes. These guidelines may indicate the effective usage of these tools, some platforms which institutions have subscriptions, thus can be freely accessed or best practices to utilize these tools for academic research. The graduate students noted:

"Because at first, students learn about these tools from their advisors, there should be some procedure like 'share information about these tools with their students. Because students directly contact with them, or METU-Mail and platforms similar to ODTUClass can be used to inform students. This information may be written on a website or something like academic writing center or some research center and people can be directed to these places." (P17)

"İnsanlar bunları öncelikle danışmanlarından öğreniyorsa üniversite hocalarına yönelik işte sizin bunları çalıştığınız öğrencilerle paylaşmanız gerekiyor gibisinden bir şeyler olabilir. Çünkü insan direkt maruz kaldığı kişi genellikle danışmanı oluyor veya okulun ilk kayıt olduğu zaman veya okuldan gelen maillerle sonuçta herkes kendi metumailini bir şekilde kullanıyor veya ODTÜ bazında düşünürsem ODTÜclass gibi farklı şekillerde insanlara ulaşılıp bunların insanlara anlatılabileceğini düşünüyorum. Bir internet sitesi aracılığıyla olur bir akademik yazım merkezi gibi bir şey olur araştırma merkezi gibi veya buralara daha çok yönlendirilmeyle olabilir diye düşünüyorum yani." (P17)

"I want somebody to inform related students about the usage of social media tools. For example, students know better than instructors in these topics." (P9)

"Kullanımları ile ilgili öğrencilerin bilgilendirilmesini istiyorum. Mesela

öğrenciler hocalardan çok daha fazla biliyor da bu konuda [sosyal medya araçları." (P9)

Training: Moreover, the interview participants (n=3) pointed out that university or other organizations could provide training opportunities. They mentioned that it would be beneficial for students to get information rich seminars on social media tools and short duration trainings with the organization of their institutions. The graduate students said:

"Because everyone has different levels of knowledge in social media and computers. There can be some preliminary seminars, for a week or a few days. I believe these will be useful for increasing efficiency and help people." (P12)
"Çünkü herkesin sosyal medya ve bilgisayar aşinalığı birbirinden farklı oluyor böyle bir ön şey yapılabilir, belki bir haftalık belki 1-2 günlük seminer gibi, ben böyle bir şeyin faydası olacağını düşünüyorum. Hem verimliliği arttırmak hem de insanların işini kolaylaştırmak için." (P12)

"METU can organize courses for the real things that can work in the professional world. Social media is one of them." (P4)
"İş dünyasında esas işine yarayacak olan şeylere de yönelik eğitimler verebilir ODTÜ. Sosyal medya da bence bunlardan bir tanesi." (P4)

Website: Furthermore, one of the graduate students suggested that web site on using social media tools might be a good resource for new students. This kind of interactive website can provide information about the social media tools and their example usage for thesis/dissertation research purposes. Therefore, students can get an initial idea before actually using these tools. The student commented:

"There can be a practical website operated by academicians and it can introduce several social media tools and users of these tools can comment on these topics. I believe it will be really helpful." (P13)
"Bu konuda bilmiyorum mesela akademisyenlerden şey olabilir, uygulamalı

bir web sitesi olabilir. Yani en azından bunların tanıtıldığı kullanan insanların yorum yazabileceği falan bence çok faydası olabilir." (P13)

Professional Communities: Finally, one participant commented that professional communities should be built on social media tools. She noted:

"More professional, maybe a pool by means of academics can be created or err... more likely to bring academicians and students together for research purposes, and it can become widespread." (P6)

"Daha profesyonel belki akademik anlamda bir pool [ortak alan] yapılabilir ya da nasıl söylesem daha çok akademisyenlerin, öğrencilerin araştırma amaçlı toplandıkları bir araya geldikleri gruplar olabilir, daha çok yaygınlaşabilir." (P6)

4.5 Summary of Qualitative Research Findings

Using the results of the quantitative part of the study, an interview protocol was developed, and semi-structured interviews were conducted with 17 participants to answer qualitative research questions. Thematic analysis of qualitative data emerged 8 themes listed as in the following:

- Awareness,
- Communication
- Collaboration
- Multimedia Services
- Information Retrieval and Management
- Enablers for Utilization
- Barriers to Adoption
- Proposals on Social Media Tools

These 8 themes and 25 subthemes described the graduate students' experiences and thoughts on using social media tools for thesis/dissertation research. A total of 46

dimensions resulted in these subthemes and themes. The graduate students used social media tools mostly for keeping up-to-date, literature search, discussion and storage purposes. Moreover, social media tools enabled and facilitated the accessibility, communication, collaboration and sharing of resources and people. However, information quality issues like information pollution, restrictions, and distractions were the biggest barriers to adoption of these tools in the academic settings.

4.6 Summary of the Findings

Chapter four of this study included the presentation of the results derived from the explanatory sequential mixed methods design. In the first quantitative part of the study, graduate students from Middle East Technical University were invited to participate into an online survey instrument to understand their current uses of social media tools for thesis/dissertation research. Quantitative survey results indicated that proposed regression model explained the 30% of the variance for predicting graduate students' use of social media tools for thesis/dissertation research purposes.

Results of the survey instruments contributed to the second part of the study. The collected data was used to finalize interview protocol and to refine the focus of the qualitative research questions. Qualitative interviews were administered to 17 participants. Thematic analysis was used in order to analyze the collected qualitative data. Results of the second part yielded eight main themes. These themes, their subthemes, and dimensions were discussed in Chapter 5 with consideration of quantitative findings and related literature.

CHAPTER 5

DISCUSSION, CONCLUSION, AND IMPLICATIONS

5.1 Overview

This chapter discusses the findings of the study in the light of research questions, highlights the findings according to the literature, explains the implications of the findings, and make some recommendations for further research.

The purpose of this study was to examine the graduate students' experiences of social media tools for thesis/dissertation research. The quantitative data were collected with a survey instrument to investigate the graduate students' use of social media tools in their academic research activities. The qualitative data were collected through semi-structured interviews with the graduate students to examine how they utilize the social media tools, enablers of usage, and barriers to adoption of these technologies.

The explanatory sequential mixed methods design approach was chosen as a research methodology to examine the graduate students' social media tools usage. First, in the quantitative phase of the study, a survey instrument was administered to 507 graduate students of the Middle East Technical University to collect data on their utilization of social media tools. Descriptive statistics were used to present the results of the students' usage of social media tools. To investigate which characteristics predict the social media tools use for thesis/dissertation research purposes, a multiple linear regression analysis was employed.

Second, in the qualitative phase, semi-structured interviews were administered to graduate students who chose to participate second phase of the study. Their views on the utilization of social media tools, use of these technologies related with their graduate program were investigated. Qualitative interviews were conducted with 17 graduate students considering their gender, graduate program, semester, survey results and their willingness to participate voluntarily in the second phase. Thematic analysis was conducted to analyze the collected qualitative data. Resulting themes, subthemes, and dimensions were presented along with direct quotations of graduate students.

5.2 Major Findings and Discussion

The findings from both quantitative and qualitative parts of the research are discussed in this section according to social media tools for thesis/dissertation research, enablers for utilization of social media tools and barriers to adoption of these tools.

5.2.1 Graduate Students' Use of Social Media Tools and Related Factors

The results of the multiple linear regression analysis revealed that there were statistically significant factors for predicting the graduate students' use of social media tools for thesis/dissertation research. These were ICT use, weekly SMT use for thesis/dissertation research, microenvironment, social media attitude in general, impact knowledge and skills from researcher development domain, and degree of completion.

As a result of the present study, it was found out that ICT use had the most important effect on predicting the graduate students' use of social media tools for thesis/dissertation research. Most of the studies reported that information and communication technologies and Internet usage increased among adolescent and adults over time (Lenhart, Purcell, Smith, & Zickuhr, 2010; Carpenter, Wetheridge, Smith, & Goodman, 2012). It can be argued that the utilization of these technologies

and developments enable graduate students to apply their knowledge and skills also in their research practices. However, their usage should be carefully considered as some students might have negative attitudes towards using them (Al-Sharqi, Hashim, & Kutbi, 2015). Despite the negative attitudes on social media tools, ICT use was significant among researchers and affected the social media utilization (Carpenter, 2012). Therefore, the stakeholders of higher education institutions might take further steps to increase the use of ICT for scholarly activities. Empowering researchers on the ICT use would also affect their utilization of social media tools for research with the necessary support from IT staff and librarians (Procter et al., 2010).

Results of the multiple regression analysis showed that microenvironment was significant for predicting the graduate students' utilization. The results of the quantitative data analysis showed that microenvironment predicted the 5.1% of overall variance significantly on the use of social media tools for thesis/dissertation research. Similarly, environmental variables also affected the doctoral student's degree completion. Especially, participants of a microenvironment like peers, advisor, faculty and institution have effects on graduate students (Lovitts, 2008). Therefore, it can be suggested that positive experiences and support of close circles of graduate students such as their thesis advisors or peers may have an impact on their use of social media tools for thesis/dissertation research. Moreover, the findings of interview participants indicated that, most of the time their friends from department or colleagues mentioned about the research related social media tools to them and they started to work collaboratively on academic documents. Communication with remote colleagues and experts also impacted their usage. Academic research is a complex process and consists of many iterations from identification of knowledge to its dissemination (Cann, Dimitriou, & Hooley, 2011). Throughout this process, it can be said that the graduate students use various kinds of social media tools.

Findings of the study revealed that there was a significant association with the graduate students' attitudes towards social media and their use of social media tools for

thesis/dissertation research. Similarly, studies examining the students' perceptions and beliefs about social media indicated that utilization of social media tools increases with a positive attitude towards social media (Browning, Gerlich, & Westermann, 2011; Poellhuber, Anderson, & Roy, 2011). This can be because the awareness of these tools and technologies increases their usage and the graduate students also discover new ways to benefit from these tools in their academic research. Therefore, as Ellison, Steinfield, and Lampe (2007) suggested that students who had positive attitudes for social media tools were using these tools conveniently for other purposes. On the other hand, Al-Sharqi, Hashim, and Kutbi (2015) argued that social media tools can have negative impacts on graduate students. The authors stated that social media tools might distract students and affect their learning processes. Their physical and social interactions might also diminish. Since the use of social media tools in general and for thesis/dissertation research are different in terms of their focus and purposes, negative results can be explained by students' lived experiences on these virtual environments. However, as their attitudes towards these tools improve, their usage for thesis/dissertation also increases significantly. Therefore, if academic advisors desire their students to acquire the benefits of social media tools for academic purposes, they may inform their students about the advantages of social media tools for resesarch and they can also promote the usage both in courses and scholarly activities to increase students' awareness and improve their attitudes.

In the present study, quantitative results showed that graduate students' attitudes for social media tools for professional purposes was positive. Attitude for social media was found significant and explained the 4.8% of total variance. It may be attributed to the fact that they were adults who completed many levels in their education and they were aware of the requirements of their academic study, especially for their thesis/dissertation. Moreover, their attitude in general might also affect their perception in using social media tools for scholarly activities. Therefore, it can be suggested for higher education institutions and academic staff to raise the students'

awareness of social media tools and possibilities provided by these tools for academic research.

As the graduate students' completion of degree approaches, they utilize more of social media tools. This might be attributed to the graduate students' transition to become an independent researcher as their graduate education progress (Lovitts, 2008). Taking courses, conducting research, working on experiments and disseminating research outputs bring academic knowledge and skills that enable graduate students to become successful researchers. Moreover, Joyce and Brown (2009) highlighted that students increased their self-efficacy potential and became more skillful users of social media tools with an expanding social presence and resources. Therefore, graduate students should be supported with available resources in the university in their degree completion and thesis/dissertation writing processes. Academic writing centers and instructional technology support centers in universities may guide graduate students throughout their graduate education along with the microenvironment factors such as advisors, other faculty researchers, and peers.

In the present study, the researcher examined the effects of four Researcher Development Framework (Vitae, 2010) domains to predict graduate students' use of social media tools for thesis/dissertation research. Engagement, influence and impact domain was found significant to show relations with the utilization of these tools. This domain includes items like the publication, presentation in conferences, collaboration, supervision, and teaching. Knowledge and skills of the graduate students on these descriptors were higher than the ones that did not use social media tools for research. It can be said that preparation for conferences, working for dissemination of research outputs, collaborative working provided increased use of social media tools in academic settings (Carpenter, 2012; Cann, Dimitriou, & Hooley, 2011). Therefore, higher education institutions may focus on the dissemination of research outputs to a broader audience via multiple social media channels. Moreover, supporting the

knowledge and skills of graduate students impacts their ability to collaborate and communicate with other colleagues in academia effectively (Van Noorden 2014).

The results of the present study showed that the Researcher Development Framework domains of knowledge and intellectual abilities, personal effectiveness, and research governance and organizations were not found significant in the multiple regression analysis. Since these domains were composed of various knowledge and skills, their compound affect might not be evaluated precisely in the study. Moreover, self-report measures of graduate students might cause these knowledge and skills ratings to be subjective. The complex nature of social media tools might also be an indicator for non-significant results. These can be because graduate students should evaluate their level of knowledge and skills in these domains by thinking about their social media tools use. However, graduate students might be confused by a large number of social media tools and the results might be affected for the researcher development domains. These descriptors may not be exactly fit into the specific situations, but provide a better point of view for required knowledge and skills (Vitae, 2010). Therefore, rather than looking for the direct relationship between these knowledge and skills, decision makers should focus on the development of the graduate students by providing infrastructural and technological resources.

Gender was also not found as a significant factor for predicting social media tools use in the present study. However, Poellhuber, Anderson and Roy (2011) reported that attitudes toward technology and experience in social software were higher for male and younger students. Similarly, one of the previous studies reported differences by gender for social media use for adults (Correa, Hinsley, and Zúñiga, 2010). This result was attributed to potential effect of different personality types for social media use. For example, Correa, Hinsley, and Zúñiga found that extraverted men and women had a high possibility of being the frequent users of social media tools. Hargittai (2007) also reported gender differences between users and non-users of social networking sites. Female college students used social media tools 1.6 times more than males.

However, in terms of weekly social media usage, there was not any significant difference. The use of social media tools for thesis/dissertation research might not have clear boundaries for graduate students, especially when it was not easy to differentiate between personal and professional use of these tools. Since the requirement for thesis/dissertation were similar to all graduate students regardless of gender, the extent of using social media tools may not be related to gender as found in the present study.

In predicting the graduate students' use of social media tools for thesis/dissertation research, age was not found significant. In the present study nearly half of the participants were between 26-30 ages. Non-significance of graduate students' age factor may be attributed to groups' homogeneity. Moreover, participants of the study consisted of students who were registered to their third or more semesters. Their level of progress for thesis/dissertation research might be similar when compared between age groups. Carpenter et al. (2010) also found that there was not a significant age difference between doctoral students in their information seeking and use of social media tools behaviors. Although some previous research on social networking sites usage reported increasing number of adolescent users (Hargittai, 2007; Lenhart, Purcell, Smith, & Zickuhr, 2010; Roblyer et al., 2010), age was not indicated as an important socio-demographic factor for thesis/dissertation research.

Similarly, weekly social media tools use in general was not found important in terms of predicting their usage for thesis/dissertation research with 0.6% total variance explained. On the other hand, their weekly time spent on the utilization of these tools for thesis/dissertation research purposes had a significant effect. 6.0% of total variance was explained with the weekly social media tools use of graduate students for thesis/dissertation research. Qualitative findings of the study also indicated that graduate students increased their weekly use of social media tools as their degree of completion progressed. It can be said that the more time the graduate students spend on their thesis and academic research, the more they use social media tools. Graduate students might be using social media to spend time, communicate with their friends.

Moreover, they might also be using it for facilitating information exchange with their advisors, peers and access electronic resources.

Qualitative results of this study found that the graduate students who were in the active writing process of their thesis/dissertation used tools like reference management, academic databases, online library catalog, and file services substantially. The qualitative findings of this study also indicated that as the degree of completion progress, graduate students' use of social media tools increased. Moreover, support from peers and colleagues was also provided in this process. However, Kim and Abbas (2010) found that although libraries initiated research oriented social media tools for use, graduate students, especially doctorate students and faculty were reluctant to use them. This may be due to the lack of support graduate students got from institutions or from faculty. In a research report about the faculty use of social media, Moran, Seaman, and Tinti-Kane (2011) found that faculty members believe that social media offers great opportunities in higher education. However, lack of faculty training and lack of support at institution were viewed as barriers to adopt for social media tools by scholars.

Another indication of the qualitative findings of the present study was that graduate students needed trainings and seminars on how to use social media tools effectively for scholarly activities. Some of them got help from their peers and colleagues. Therefore, support from the faculty and higher education institution play a critical role in graduate students degree completion. (Melrose, Moore, & Ewing, 2014; Getzlaf et al., 2012). Moreover, social collaboration of graduate students are enhanced in a supportive environment and learning takes place by using a social constructivist method of learning for exchanging ideas with their peers (Banger, 2011). However, Rockinson-Szapkiw, Heuvelman-Hutchinson, and Spaulding (2014) reported that student interaction via university supported social media groups was not found significant in terms of sense of connectedness between peers and faculty. Students who used social media tools outside of classroom to interact with their peers indicated

higher sense of connectedness. These results may be attributed to the importance of getting support from faculty while universities being a provider for necessary resources. Researchers, decision makers in the higher education institutions should also pay attention to needs of the graduate students and provide necessary training, learning resources, and guidelines on effective use of social media for research and opportunities to interact with peers and faculty.

Furthermore, the graduate students are complex users of social media tools. The results showed that although some students used social media tools rather low, they benefited from them in their research for many times. Certain social media tools are preferred by graduate students for personal and social reasons (Joosten, 2012). Therefore, it can be appropriate to bring these certain tools into academic settings and encourage their usage by providing best practices for research purposes.

5.2.2 Social Media Tools for Thesis/Dissertation Research

The qualitative findings of the study revealed that the main reasons to use social media tools by graduate students were for keeping up-to-date and literature search. In terms of keeping up-to-date with social media tools, the graduate students stayed connected to their research and academic fields by regularly following the accounts and profiles of the colleagues, experts, and institutions in their domain.

Moreover, by checking out the related developments using e-mail lists, social networking sites like Facebook or LinkedIn, science related websites they remained updated. Bijker and van den Brekel (2014) stated that researchers use various tools and technologies for keeping up-to-date in their field of specialization. The tools for accessing e-journals and academic databases vary by subscription and also by databases. Therefore, it is not easy to follow recent publications and news related to an academic field from a single platform or a website. It can be said that the large

number of tools and sites with different purposes keep many researchers and students away from the active utilization of them.

Furthermore, the literature search was the second important purpose of graduate students' utilization of social media tools. Similarly, numerous studies mentioned about the information seeking behaviors of students and search for the quality literature in academic research (Cann, Dimitriou, & Hooley, 2011; Carpenter, Tanner, Smith, & Goodman, 2011; Carpenter, Wetheridge, Smith, Goodman, & Struijve', 2010; Carpenter, Wetheridge, Smith, & Goodman, 2012). It can be said that literature search is an indispensable part of a thesis/dissertation research and identification of knowledge is the first step in the academic research cycle of a study. Therefore, social media tools like online library catalogs, academic databases, and open document repositories which have the capabilities of search, filtering, and organization are preferred by graduate students.

The goal of this part was to examine patterns of graduate students' use of social media tools in terms of this study's research context. Their use of social media tools for communication, collaboration, multimedia, information retrieval and management, types of social media tools, the reasons to use were discussed in the following sections.

5.2.2.1 Information Retrieval and Management

In this study, the results indicated that the graduate students highly utilized online library catalog in the information management/retrieval category of social media tools. Survey results showed that 95.5% of graduate students utilized online library catalog for their thesis/dissertation research. Similarly, Carpenter, Wetheridge, Smith, Goodman and Struijve' (2010) reported the high take-up of these tools. Moreover, the results also indicated that 91.5% of graduate students accessed e-information or academic database services for thesis/dissertation research. It can be said that working on thesis-related work requires the search for the outputs of previous research done in

a field. Identification of academic knowledge by using library catalogs and academic database services, graduate students are supported by the quality information on their thesis/dissertation research (Carpenter et. al., 2012). Therefore, it becomes important for higher education institutions, librarians, and decision makers to provide services for researchers, access to research repositories, and subscriptions to various academic databases. The qualitative findings of the study revealed that these tools were used mostly for literature search and information seeking in terms of academic research.

Findings of the thematic analysis also indicated that the management of references and citations in academic documents was critical. 67.1% of graduate students used reference management tools, and some of the participants requested trainings on the effective use of these tools. It can be said that reference management is an important part of the thesis/dissertation writing process. Organization of the references, keeping them up-to-date durig writing, and citing when necessary may require high level of knowledge and skills. Therefore, seminars, courses or guidelines to use these tools should be provided to graduate students, even to other researchers in the institutions (CARL/ABRC, 2010). Keyword search, filtering and refinement of literature search by using various features in these tools should also be included into the trainings and courses. Qualitative findings also indicated that these tools used for managing references, adding citations to thesis/dissertation document, and conducting full text search inside articles and other resources.

5.2.2.2 Multimedia Services

The findings of the study showed that the graduate students used online file services extensively. Especially cloud file services like Dropbox and Google Drive were used by 86.8% of graduate students for storing their thesis/dissertation related documents. It was important for a researcher to store and protect their intellectual properties and works which have been studied and collected for a long time by spending resources and time. Qualitative findings of the study revealed that file services used mainly for

the storage purposes. Some of the graduate students also shared documents with their advisors and peers through these cloud supported services.

The results also indicated that in a case of thievery or loss cloud file services can become helpful to recover these lost files. Therefore, researchers should become aware of the opportunities these services provide while considering the issues like security and trust. However, cloud file services were not the only places where researchers share documents with others or with co-authors. Van Noorden (2014) reported that scholars use academic social networks like ResearchGate and Academia.Edu also for sharing research outputs and dissemination purposes along with communication with other colleagues. Van Noorden's report was also consistent with the qualitative findings of this study indicating that graduate students shared their thesis/dissertation documents, article manuscripts, and jury presentations over file services.

5.2.2.3 Communication

The finding of this study showed that 76.7% of graduate students used academic social networks in the communication category of social media tools. The findings of the qualitative interviews also indicated that graduate students used academic social networks for keeping up-to-date and discussion purposes. It can be said that academic social networks are the professional networks of scholars where they can increase their professional presence, highlight their research. Graduate students can also seek for job opportunities, post-doctorate positions, and the funding (Van Noorden, 2014). Therefore, stakeholders of higher education should participate in these networks and build their research communities around them.

The results of this study indicated that the active utilization of blogging (2.6%) and microblogging (3.0%) was rather low. Moreover, the graduate students' responses showed that 58.6% of them did not use blogging at all, along with 71.8% of them was non-users of microblogging tools. These results were contradictory with the findings

of the previous research (Hooley, 2010; Ewins, 2005). However, in the literature the utilization of blogging and microblogging in academic settings were not investigated for specific purposes. Their use was rather personal or professional purposes (Van Noorden, 2014). Students' use of Twitter for informal learning activities was also low, with a 27.2% daily use (Yakin & Gencel, 2013).

On the other hand, when the graduate students' use of communication category related tools for thesis/dissertation research purposes considered, it can be said that due to the nature of thesis related research, graduate students might not share posts or seek help through these tools. Their immediate environment, i.e. their university, and microenvironment might be sufficient for them (Lovitts, 2008). It can be said that peers and their thesis advisor were the significant ones that graduate students shared their status and developments about their thesis/dissertation research. However, using blogs and following specific twitter accounts can allow graduate students about the advancements in their research field and may improve their writing skills which are necessary for a good quality thesis/dissertation. The qualitative findings also revealed that graduate students use these tools for discussion with other researchers and peers. Following other people and institutions, and keeping themselves up-to-date via academic social networks were other reasons to prefer social media tools for communication.

5.2.2.4 Collaboration

In this study, it was found that wikis used by 84.4% of graduate students for thesis/dissertation purposes in the collaboration category of social media tools. Similar research studies also indicated the use of wikis by scholars (Carpenter et. al, 2011; 2012). Additionally, the findings of this study showed that graduate students used wikis for initial search purposes to get an overview of the subject they would like to study or know. Redirection to the primary sources like articles or books occurred after its passive or moderate use (e.g. reading or skimming content) of wikis most of the

time. As reported by Carpenter et al. using wikis for information seeking purposes was quite important. Therefore, it is important to create or provide guidelines for researchers that can ease and focus their search efforts in terms of information seeking. Moreover, 65.9% of graduate students used collaborative writing tools in their thesis related research.

The findings with interview participants indicated that they used collaborative writing tools like Google Docs to exchange their thesis related works with their advisors. Their supervisors also provided feedback over these tools. It can be said that these tools quicken their thesis writing processes and built a better communication line with their thesis advisors. Graduate students and their supervisors may ubiquitously access thesis related documents and might eliminate the need to meet for writing revisions in the office hours. Therefore, higher education institutions should empower graduate students and their advisors on working collaboratively. Collaborative working also enables to make research with other universities around the world and exchange information with colleagues.

5.2.3 Enablers and Barriers of Social Media Tools

While describing the current situation of the utilization of social media tools in the first quantitative phase, qualitative interviews were conducted to examine the underlying reasons for enablers and barriers of these tools for graduate students in their thesis/dissertation research. The advantages and disadvantages of social media tools expressed by graduate students presented various insights and findings to the study. The research also benefited from these perceived risks and opportunities throughout this study himself.

5.2.3.1 Enablers

The findings of this study showed that social media tools acted as a facilitator for graduate students. By using these tools graduate students' accessibility increased. Similarly, Van Noorman (2014) also mentioned about the ubiquitous access of social media tools and impact of it to the usage behaviors of researchers. Facilitating accessibility and communication enabled graduate students to reach distant contacts or places to collect data over social media tools or to make videoconferences with peers, colleagues, and other experts. Moreover, increasing collaboration and sharing opportunities provided time and resource advantages, too. As Solis (2008) expressed that social media is not a sport that you will sit down and watch, thus participation is seen as a must in this environment. Sharing articles, asking questions and feedback, and exchanging information on academic social networks and file services graduate students facilitated their communication. It can be said that digital resources become the first to be referenced and be looked for. Therefore, considering the advantages of social media tools, stakeholders in higher education institutions should raise awareness of these tools and describe the possible advantages that could be provided to the researchers.

Additionally, social media tools were found to be an important aid to research. Technologies and features like keyword search enable graduate students to look for quality and related content for their academic research easily (Cann, Dimitriou, & Hooley, 2011; Glenn, 2008). The findings of this study indicated that tools like reference management and academic databases became an indispensable part of academic research, making the world a much smaller for graduate students. Moreover, research-oriented tools or using social media tools for academic research may eliminate unnecessary distractions that were inherent in social media (Carpenter, 2012). Therefore, graduate students should use research-oriented tools and services in their thesis/dissertation research to benefit from these tools.

5.2.3.2 Barriers

In this study, the findings of the study also highlighted the barriers to adoption of social media tools for thesis/dissertation research. The graduate students expressed the reasons that were keeping them away from the utilization of these technologies. Information quality issues were the biggest barriers to using social media tools in academic settings. Issues like missing information, duplicate contents, obsolete information, and information overload were the reasons for the graduate students not using some social media tools. These barriers were also found consistent with the previous research (Hoggan, 2002). While an important activity for the scholars was to stay up-to-date with the current research in the field, they face with many challenges in using social media tools. Moreover, the qualitative findings of the study revealed that graduate students were not sure about the reliability and validity of information on social media tools. Therefore, they mainly accessed the contents via university library catalogs and academic databases. Higher education institutions should define social media and academic research policies on using information and resources from social media and Internet in general. Old policies should be updated and reevaluated in terms of the developments in the scholarly communication and academic research domains.

The results of this study indicated that distractions were the negatively affected the use of social media tools for thesis/dissertation purpose. Graduate students were the complex users of social media and shifted their use and purposes through professional to personal some of the time due to various distractions in their environment. Advertisements, entertainment purpose links, private messages from peers and friends distracted their use and the focus on thesis/dissertation research. The findings were also correlated with the results of the research report on faculty's use of social media by Moran, Seaman, and Tinti-Kane (2011). The most important concern of the faculty was the time that social media required. To effectively benefit from these tools, graduate students and also faculty members should be careful and knowledgeable

about the perceived risks and disadvantages of these technologies. Moreover, they should limit their personal usage during their academic research and can use tools to limit or block their usage between specific periods.

In this study, the graduate students reflected that restrictions played a critical role in their non-use of social media tools for thesis/dissertation research purposes. The risk of the ban of social media tools kept graduate students away from such tools to use them for in their academic research. Due to the ban of social networking sites in China, one graduate student had to communicate with peers from China and opened a national social media account there for collecting her thesis research data. Moreover, the unexpected ban of social media services in Turkey affected the interview participants, and they indicated that they became reluctant to use these services for their professional purposes. Moreover, subscription and download fees of academic journals and article content made a barrier for some graduate students. They limited their searches to available contents or tried to find these resources by other means such as asking from peers who has access to library subscription, downloading them from sites sharing contents illegally, or taking photocopies of printed resources. Availability and up-to-dateness of online academic resources are very important. Carpenter et al. (2012) also mentioned the importance of open access repositories and institution-wide online content availability. Therefore, stakeholders who are affected by these restrictions such as digital publishers, librarians, researchers, administrative staff, and institutions should come together and propose concrete solutions to the availability of academic content. Even though the dissemination of research outputs to society and academic domains is critical, information seekers still have to pay fees directly or indirectly through their institutions.

Finally, lack of knowledge and skills were reported as a barrier to adoption of social media tools in academic environments. Since some older researchers did not start to use social media tools and created a virtual presence for them, their students indicated low usage of these technologies. Even though there was not found any significant

difference of usage in terms of age in this study and in similar studies (Carpenter, Wetheridge, Smith, & Goodman, 2012), graduate students reflected that their thesis advisors, especially older ones were not using social media tools. Hence, their usage in terms of their thesis/dissertation research became limited. They had to use traditional ways of communication and sharing of thesis related documents via USB disks or e-mails and met face to face. Therefore, it is important to increase the awareness of social media, explain their opportunities to all stakeholders of the higher education institutions, and empower them with the necessary resources and technologies. Moreover, the findings of the study indicated that graduate students might not communicate or collaborate with peers and experts from other universities over some social media tools due to the language of these tools. Since most of the social media tools only supported English as default, the graduate students indicated that they were reluctant to use these tools. It can be said that especially students who graduated from schools where their language of teaching and instruction was not English may indicate this issue as a purpose of their non-use. Therefore, developers of these tools and platforms should focus on the needs of their users, and multi-language interfaces should be provided for them. Moreover, support for the academic research using English should be provided scholars in terms of researcher development knowledge and skills (Vitae, 2010), especially in the English as a Second Language (ESL) researchers (Omar, Embi, & Yunus, 2012).

5.3 Implications

As the number of social media tools is increasing, their types and frequency of usage are also increasing. The graduate students have a chance to access these tools and services ubiquitously. Moreover, the social media tools increased the accessibility of information and facilitated the communication and collaboration of scholars. Although the majority of graduate students were using social media tools in the categories of communication, collaboration, and information management/retrieval services, their use for multimedia services was low. Moreover, blogging and microblogging tools use

were rather low for thesis/dissertation purposes. Rather than concerning the types of tools, graduate students, supervisors, stakeholders and decision makers of higher education institutions should focus on purposes of using these tools and how to facilitate the effectiveness of usage. The findings of this study revealed a number of important implications. The findings of the present study propose that graduate students should use social media tools more to discover new connections, research collaborations, and professional opportunities.

This study has some theoretical implications centered on its conceptual framework. First of all, microenvironment factors were found significant for predicting graduate students' use of social media tools for thesis/dissertation purposes. The immediate setting of students like peers, advisor, faculty, and university affected their use significantly. Along with microenvironment, the degree of completion was also found significant. The students who were in their active writing phases used various tools to support their thesis/dissertation research. As stated by Lovitts (2008), these factors are very important for degree completion and creative performance of students. Furthermore, collaboration tools such as collaborative writing tools and wikis enable them to work with other researchers and observe their working, writing, and research styles. Therefore, to benefit from the potentials of these technologies, graduate students should be supported in their microenvironment. Centers in the university such as Academic Writing Center and Instructional Technology Support Center can provide assistance to the graduate students in their thesis/dissertation research.

Findings of the present study imply that social media attitude of graduate students was found significant in their social media tools use. Their attitude towards social media tools impacted their usage for thesis/dissertation research. Therefore, encouragement and positive perception may play an important role in their usage. To raise awareness of the benefits of these tools, the higher education institutions should guide graduate students and inform them about the opportunities that social media tools have. Having a positive attitude towards technology and social media tools will have an effect on

their use for academic research, too. A positive attitude may affect perceived ease of usefulness and their actual use of these technologies (Venkatesh et al., 2003).

The results of the study indicated that Research Development Framework (Vitae, 2010) may affect graduate student' use of social media tools for thesis/dissertation research. Especially, engagement, influence, and impact domain was found significant in predicting graduate students' usage. Therefore, informative guidelines, trainings should be provided for graduate students for dissemination of their research outputs, presenting at conferences, seeking funding, seeking job opportunities, and supervision. As reported by the Institute for the Future, Future Work Skills 2020 (2011) skills like virtual collaboration, new media literacy, and trans-disciplinarity are very important in a globally connected world. Therefore, empowering the knowledge and skills of both graduate students and early career academic should be the main concerns of higher education institutions.

One of the implications of the present study is that graduate students' social media tools use was rather low for thesis/dissertation research compared to similar studies on scholars' social media tools use for professional purposes (Van Noorden, 2014; Carpenter, 2012; Procter et. al, 2010). Nature of the thesis/dissertation research becomes a complex process combined with the self-efficacy of graduate students, degree completion requirements of different institutions. This result may be because using social media tools in thesis/dissertation research may not have immediate benefit for graduate students when this academic process is a study of an independent researcher, sometimes requiring study in isolation as commonly referred ABD, i.e. all but dissertation. Therefore, while activities related with information seeking from online resources, literature search were high, graduate students' use for active participation and content sharing were limited.

A final implication of this study is that social media and academic research policies of higher education institutions should regularly be reviewed as the new technologies and

research practices emerge. Therefore, higher education institutions should be proactive in terms of these processes and updating their policies.

5.4 Limitations

This study had some limitations that can impact the reliability and validity (trustworthiness) of the study. Graduate students' experiences of the use of the social media tools was collected through an online questionnaire and semi-structured interviews. Although collecting a variety of data helped exploring the research questions with increased reliability and validity, students' self-reported experiences may not reflect their actual behavior. Moreover, the participation rate is 9.3% of the population and volunteered participants may not be representative of the population (Creswell, 2012). Therefore, attempts to generalize conclusions drawn from this study should be made carefully.

The results of this study should also be considered with regards to the unique nature of the METU, its campus-based environment and graduate students' access to various resources such as its infrastructure, technology, library, e-resources, and funding. The context of METU should be taken into consideration when interpreting the results of the study. In this study, 30% of the total variance were explained by the factors for predicting the graduate students of social media tools for thesis/dissertation research. Therefore, conclusions should be drawn carefully about the predicting the effect of factors for graduate students in other universities. Furthermore, although the sequential design of this study enabled a single researcher to implement necessary steps easily, the existence of quantitative and qualitative phases might require extended time to complete.

Finally, since the language of instruction was English in the universities which pilot and main data collected, the conclusions drawn from the results should be made carefully. Because many social media tools do not support other languages in their

early years, and language barrier could affect graduate students' actual use of these tools and services.

5.5 Recommendations

5.5.1 Recommendations for Graduate Students

In this study, graduate students and their use of social media tools for thesis/dissertation research purposes were the main focus. Therefore, through quantitative and qualitative methods, their thoughts and experiences on using or not using these tools were investigated.

The graduate students commonly use social media tools for hedonic purposes. However, by creating a separate account for private and professional life, they may show a better academic presence in social media. A completion of public profiles on various social media sites enables other peers and researchers from the related fields to contact and communicate with them. Having a better academic presence also increases their sharing of academic content and dissemination of their research outputs to a broader audience. The findings of this study also indicated that graduate students use academic social networking sites and platforms like blogging and microblogging to follow other researchers and keep in touch with them. Moreover, by sharing information online, they build their social presence in these platforms.

The graduate students may use project management tools to track their thesis/dissertation research progress. These tools enable them focus on their research goals and keep them connected to their research topics. Synchronous and asynchronous communication tools facilitates their collaboration with their thesis advisors and other experts in their field. Collaborative writing tools provides options to see their thesis progress through the views of their advisors. Their ease of use enable feedbacks and revisions take less time to complete. Results of the qualitative

interviews revealed that graduate students used collaborative writing tools to work together with their advisors and peers even if they were not remotely located from each other. Moreover, graduate students may create checklists for their thesis/dissertation and track their progress with their advisors. While working actively on their research, graduate students may benefit from these tools.

By using the power of keyword search, graduate students can find related literature on their field out of information overload inherent in social media (Carpenter, 2012). Participation in online courses and trainings on the effective use of social media tools for research may help them reach quality academic content by saving time and their resources. The findings of this study also highlighted that literature search using keywords and accessing academic content online were among the most important types of use for graduate students. Therefore, support and training for the literature search may be provided by related bodies of the universities. Research courses may include subjects covering the online search of the literature and using keywords. Moreover, instructional support centers in the universities may provide training, seminars and resources like handbooks, guidelines for graduate students.

Graduate students may also keep a journal while using social media tools to track their behaviors and moods during their research or thesis process. These diary type like journals may also be online. Using blogs, students may plan their actions or present related research for their thesis/dissertation. They can also create the content with other students via collaborative writing tools or by discussing communication tools like instant messaging, videoconferencing etc. The findings of the interviews indicated that taking notes about the progress of academic research and thesis/dissertation helped graduate students to stay on the track in their degree of completion and they became more focused by accomplishing these tasks produced from their journals.

Asking for help via social media can provide useful feedback for other people. Discovering new contacts in their field and exchange information with them enable a

new world of opportunities. Knowing that somebody in the world might have this problem and solved with the help of others may increase graduate students use and limit their reluctance to ask for help.

5.5.2 Recommendations for Researchers and Instructors

Searching for information, using them in their studies and dissemination of research outputs are very important for researchers. Social media tools can provide various opportunities for researchers. First of all, it facilitates communication and collaboration with other researchers and experts across the world. The researcher and instructors may use social media tools to discover peers, contact with colleagues and build an online presence in case they are contacted by others. Scholars from higher education institutions may discover recommended papers, studies and follow discussions in their field.

A more active use may indicate sharing links to academic content, post their authored studies. Moreover, they can actively discuss research opportunities and collaborate other research facilities online. Commenting on previous research which traditional ways may take a very long time may become easier using social media tools. Asking for feedback or updated information on a subject and getting replies from the experts in the field in less time is possible through social networking sites like ResearchGate, Academia.Edu, and even Twitter.

Instructors may affect or encourage the use of social media tools of graduate students. In their courses or through various activities graduate students might be introduced to use social media tools for their academic research related activities. These activities will also increase the social media awareness of graduate students and may contribute to the personal and professional use of these kinds of tools. The results of this study found that graduate students used learning managements systems to access materials provided in their courses by their instructors. Therefore, instructors may enforce their

students by increasing the interaction over learning management system with discussions. Moreover, keeping a blog with posts on various course subjects, submitting their homework or requirements via their blogs may increase the actual use of graduate students. Furthermore, instructors may initiate collaborative writings activities related with the course using online tools. These digital participations may also be accounted to the overall course score for increasing the active contribution of graduate students to the courses.

The most important tools to be used by graduate students may be the ones that might make them more productive in academic research activities. To increase the awareness and actual usage of social media tools, instructors may invite some speakers into their courses on research oriented social media tools. Moreover, instructors may include modules or resources that demonstrate how to conduct an online research. The guidelines and seminars on the use of academic database services, online library catalog, and reference management tools may be provided to graduate students.

Instructors may also use the power of social media tools and form closed communities for their courses and students. Sharing content and learning resources to the selected circles or groups privately enable instructors to focus on quality learning resources in social media. Using learning management systems and tracking students' performance through some metrics or rubrics instructors may get supported in their decision-making processes. However, it should be noted that these tools may not teach or grade students' performance alone. Researchers and instructors should still allocate time to measurement and evaluation.

5.5.3 Recommendations for Higher Education Institutions

First of all, higher education institutions should reevaluate their social media and academic policies if they have any. The digital presence of higher institutions seems inevitable. They may reach a broader audience and prospective students through social

media tools. It may be possible by building a social media team and hiring professionals who have related experience such as social media managers, community managers and related with the academic research, it is better to include stakeholders from the inside.

Since presence in social media is not just about the marketing and creating awareness, institutions should implement policies and support these policies with multiple channels. Stakeholders of the institutions may choose to contact them via e-mail, telephone, and social media. The qualitative findings of this study also indicated that some graduate students chose to communicate over videoconferencing tools with the related staff in their institutions. Moreover, they tried to reach support personal over social media when alternative lines of communication did not work. Therefore, guidelines about the communication inside the institution and with external parties should be explicit.

In a world changing faster than before it is important to staying up-to-date. Therefore, higher education institutions may focus on monitoring social media tools for opportunities in line with their objectives. In terms of their support for the graduate students' use of social media tools in their academic settings, institutions may indicate new regulations and best practices for them beforehand and provide faster support with councils like graduate students office.

Moreover, quality content creation and their measurement in terms of reaching institutions' goals are also important. Higher education institution may publish up-to-date information on topics which the stakeholders may need or ask them directly for potential themes and topics. Highlighting newest studies and findings of their researchers through multiple social media channels and measuring the conversion rates of these contents, institutions may disseminate research outputs to the academia and public effectively.

5.5.4 Recommendations for Further Research

This study's main contribution to the literature is categorizing the social media tool usage of graduate students, describing their perception of social media and social media tools usage for thesis/dissertation research purposes, and advantages and disadvantages for the utilization of these tools, and outlining the major factors predicting their use. Therefore, further studies can be developed from the resulted patterns found in this study.

The data were collected from a research university in Ankara, Turkey, and it examined the graduate students' experiences on social media tools for thesis/dissertation research purposes. However, results and the findings in quantitative and qualitative phases of the study were provided in detail allow other researchers and practitioners to consider the generalizations of findings to their own context where appropriate. For further studies, the researchers may expand the focus of the study to other research universities both in Turkey and worldwide.

This study focused on the graduate students' experiences and thoughts of social media tools. Therefore, this study contributes to the literature by investigating graduate students' point of views in terms of social media tools usage in academic settings. Apart from the graduate students, perception and experiences of early career academics, supervisors, decision makers, and librarians may be included in the further studies to gain a broader and complete perspective.

In this study, the survey instrument to examine graduate students' usage of social media tools for thesis/dissertation research was developed based on related literature and items which were included by the researcher. Alternatively, the researchers may administer a well-defined psychometric instrument to look for other variables that can explain a larger part of the total variance and build a better model to predict social media tools usage in academic settings. Moreover, in a further study, observations and

artifacts may be used to collect data and examine the graduate students' personal learning environments. Therefore, a future study may focus on to observe and analyze their research outputs based on rubrics developed by field experts.

This study was examined the social media tools that were already available and accessible by graduate students. During the data collection availability and accessibility of social media tools were checked when necessary. Some tools might not be operative or accessible from other countries due to governmental restrictions. Therefore, further studies may also investigate the social media tools that are specific to some countries or communities. For example, Hargittai (2007) found a significant relationship between communities of social networking sites and race. Researchers should be careful on the ban of social media tools by governmental bodies and be prepared for alternative tools or plans.

In this study, 30% of total variance were explained by the factors to predict graduate students' use of social media tools for thesis/dissertation research. Their actual use for academic purposes might be affected by other factors. The findings of the qualitative results showed that active writing level of graduate students might be an indicator for the prediction of usage. When graduate students start to work on their thesis/dissertation actively, they use various tools to gather information online, access academic databases and manage their references. Therefore, their level of use seems to increase throughout their academic progress. Further studies may look for the changes in the behaviors and level of use of graduate students as they progress in their academic program.

Furthermore, this study was conducted in the universities where their language of teaching and instruction was English. Therefore, the graduate students who participated in survey instruments and interviews had a good command of English. Since most of the social media tools were developed and introduced to users in only English, language may affect their actual use of these kinds of tools and services.

Therefore, future studies should also focus on research on the use of social media tools in universities where their language of teaching and instruction are not English. Moreover, cultural variables and the language of teaching and instructions could be included as mediator predictors to future studies.

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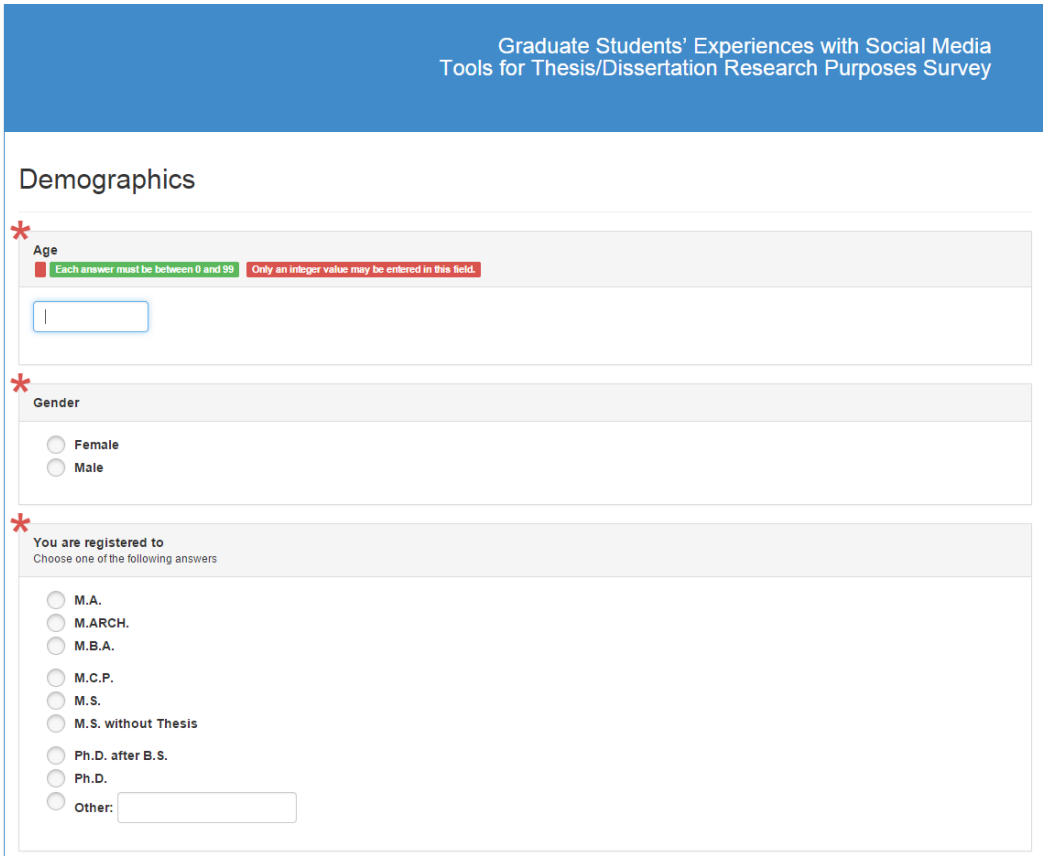
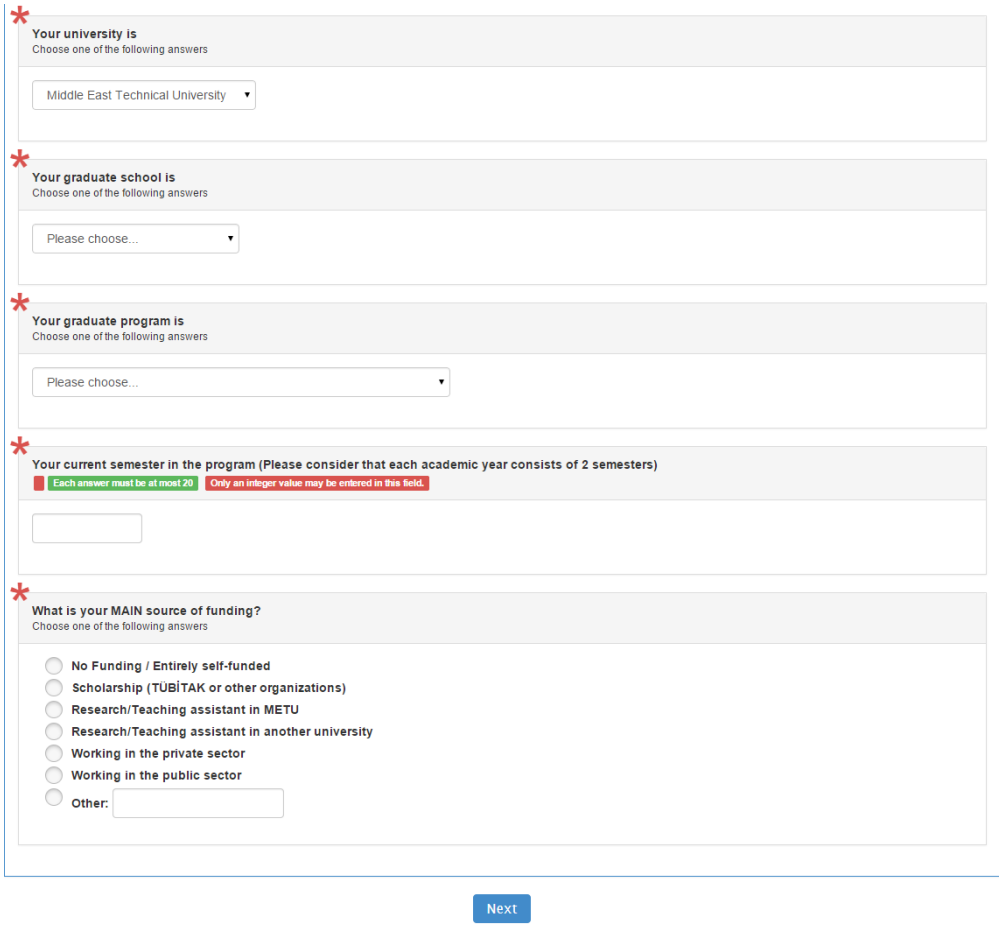
APPENDIX A

GRADUATE STUDENTS' EXPERIENCES WITH SOCIAL MEDIA TOOLS FOR THESIS/DISSERTATION RESEARCH PURPOSES SURVEY


Graduate Students' Experiences with Social Media
Tools for Thesis/Dissertation Research Purposes Survey
Demographics
Age
Each answer must be between 0 and 99
Only an integer value may be entered in this field.
Gender
Female
Male
You are registered to
Choose one of the following answers
M.A.
M.ARCH.
M.B.A.
M.C.P.
M.S.
M.S. without Thesis
Ph.D. after B.S.
Ph.D.
Other:


Your university is
Choose one of the following answers
Middle East Technical University
Your graduate school is
Choose one of the following answers
Please choose...
Your graduate program is
Choose one of the following answers
Please choose...
Your current semester in the program (Please consider that each academic year consists of 2 semesters)
Each answer must be at most 20
Only an integer value may be entered in this field.
What is your MAIN source of funding?
Choose one of the following answers
No Funding / Entirely self-funded
Scholarship (TÜBİTAK or other organizations)
Research/Teaching assistant in METU
Research/Teaching assistant in another university
Working in the private sector
Working in the public sector
Other:
Next

Graduate Students' Experiences with Social Media Tools for Thesis/Dissertation Research Purposes Survey

Research

Research is a process that can be cyclical and that may go through several iterations during your graduate study. Please answer the following questions according to this statement and considering your thesis/dissertation research process.

* Please rate COMPLETION level of the following STAGES for your thesis/dissertation research.

	0- Not Started at All	1- Recently Started	2	3- Partially Completed	4	5- Completed
Taking courses	○	○	○	○	○	○
Idea generating (e.g. looking at previous work, reading, discussing with colleagues)	○	○	○	○	○	○
Background work (e.g. locating source materials, consulting with other scholars)	○	○	○	○	○	○
Preparing and organizing (e.g. organizing information and resources, writing thesis proposal)	○	○	○	○	○	○
Collecting Data	○	○	○	○	○	○
Analyzing (e.g. analyzing data, image or text)	○	○	○	○	○	○
Writing, creating and revising your primary research outputs (e.g. working on your results and discussion chapters)	○	○	○	○	○	○
Dissemination of your research (e.g. working on conference papers, articles, thesis)	○	○	○	○	○	○

* Where is the MAIN location you work on your academic research for your thesis/dissertation?
Choose one of the following answers

- ○ At home/Where you live
- ○ Office space
- ○ Library
- ○ Laboratory/Studio
- ○ Public places (e.g. café)
- ○ Other: _____

* Please rate the frequency of your Desktop Computer/Laptop/Netbook use for your thesis/dissertation research.

	Never	Rarely	Sometimes	Often	Always
Desktop Computer/Laptop/Netbook	○	○	○	○	○

* Please rate the frequency of your Mobile Device (Smartphone, Tablet PC, iPad etc.) use for your thesis/dissertation research.

	Never	Rarely	Sometimes	Often	Always
Mobile Device	○	○	○	○	○

Next

Graduate Students' Experiences with Social Media Tools for Thesis/Dissertation Research Purposes Survey

Social Media Tool Use for Thesis/Dissertation

Social media tools can be defined as Internet-based interactive tools used by people to gather, create, share and exchange information such as blogs, forums, social networking sites, wikis and instant messaging technologies.

Please answer the following questions according to the definition above and considering your RECENT (1-3 months) social media tools use.

* Please rate how actively you use the following technologies for your thesis/dissertation research.

	0- Not Used at All	1- Passive Use (Only Looked at or Received)	2	3- Moderate Use	4	5- Active Use (Participated or Contributed)
Social networking sites e.g. Facebook, LinkedIn, Google+	○	○	○	○	○	○
Academic social networks e.g. Academia.edu, ResearchGate	○	○	○	○	○	○
Instant Messaging e.g. Google Hangouts, Facebook Messenger, WhatsApp, Viber	○	○	○	○	○	○
Internet discussion forums	○	○	○	○	○	○
Mailing lists	○	○	○	○	○	○
Blogging e.g. WordPress, Blogger	○	○	○	○	○	○
Microblogging e.g. Twitter, Yammer	○	○	○	○	○	○
RSS feeds e.g. E-mail Subscriptions, Alerting services	○	○	○	○	○	○

* Please rate how actively you use the following technologies for your thesis/dissertation research.

	0- Not Used at All	1- Passive Use (Only Looked at or Received)	2	3- Moderate Use	4	5- Active Use (Participated or Contributed)
Collaborative writing tools e.g. Google Docs	○	○	○	○	○	○
Videoconferencing e.g. Skype, Webinar, Adobe Connect	○	○	○	○	○	○
Social bookmarking e.g. Delicious, Connotea, Evernote	○	○	○	○	○	○
Wikis e.g. Wikipedia, PBworks	○	○	○	○	○	○

Please rate how actively you use the following technologies for your thesis/dissertation research.

	0- Not Used at All	1- Passive Use (Only Looked at or Received)	2	3- Moderate Use	4	5- Active Use (Participated or Contributed)
Presentation Services e.g. Slideshare, Prezi						
Video Services e.g. Youtube, Vimeo						
Photo Services e.g. Instagram, Flickr, Picasa						
File Services e.g. Dropbox, Skydrive, Google Drive						
Audio/Podcasting Services e.g. iTunes, Podomatic						

Please rate how actively you use the following tools for your thesis/dissertation research.

	0- Not Used at All	1- Passive Use (Only Looked at or Received)	2	3- Moderate Use	4	5- Active Use (Participated or Contributed)
Citation or reference management tools e.g. Mendeley, RefWorks, Endnote						
E-information or academic database services e.g. Web of Science, Google Scholar, EBSCOHOST						
An online library catalog e.g. Your university library catalog						
Survey Tools e.g. Surveymonkey, Google Forms (Docs)						
Learning Management Systems e.g. Moodle, Blackboard, METUClass						
Project Management e.g. Basecamp, Trello						

How likely have the following influenced (or may influence) your decision to use social media tools for your thesis/dissertation research?

	Very Unlikely	Unlikely	Neutral	Likely	Very Likely
Peers					
Your supervisor					
Your faculty/instructors					
Library staff					
Media or learning centers/labs					
Training/Seminar/Workshops					
Demonstrations/others using the technology					
Academic societies (e.g. Research communities)					

*

Please rate how much you agree with the following statements about Social Media in GENERAL

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Social media is a part of my everyday activity	○	○	○	○	○
I am proud to tell people I use social media	○	○	○	○	○
Social media has become a part of my daily routine	○	○	○	○	○
I feel out of touch when I haven't used social media for a while	○	○	○	○	○
I feel I am a part of an online community	○	○	○	○	○
I would be sorry if one of the social media services that I use was shut down	○	○	○	○	○

*

How many hours do you usually spend using social media tools in a week? (Please estimate an average number)

Only numbers may be entered in this field. Each answer must be between 0 and 170

*

How many hours do you usually spend using social media tools for YOUR THESIS/DISSERTATION? (Please estimate an average number).

Only numbers may be entered in this field. Each answer must be between 0 and 170

Next

Graduate Students' Experiences with Social Media
Tools for Thesis/Dissertation Research Purposes Survey

Research Skills

*

Please rate your current performance on the following research knowledge and skills. (Personal Effectiveness)

	Very Poor	Poor	Acceptable	Good	Very Good
Career Management	○	○	○	○	○
Continuing Professional Development	○	○	○	○	○
Academic Networking	○	○	○	○	○
Academic Reputation and Esteem	○	○	○	○	○
Work-Life Balance	○	○	○	○	○
Time Management	○	○	○	○	○
Preparation and Prioritization	○	○	○	○	○

*

Please rate your current performance on the following research knowledge and skills. (Knowledge and Intellectual Abilities)

	Very Poor	Poor	Acceptable	Good	Very Good
Subject Knowledge	○	○	○	○	○
Theoretical Knowledge on Research Methods	○	○	○	○	○
Practical Application on Research Methods	○	○	○	○	○
Information Seeking	○	○	○	○	○
Information Literacy and Management	○	○	○	○	○
Academic Reading	○	○	○	○	○
Academic Writing	○	○	○	○	○
Critical Thinking	○	○	○	○	○
Problem Solving	○	○	○	○	○

*

Please rate your current performance on the following research knowledge and skills. (Research Governance and Organization)

	Very Poor	Poor	Acceptable	Good	Very Good
Research Management					
Multimedia Management					
Reference Management					
Financial Management					
Seeking Funding					
Seeking Scholarship					

*

Please rate your current performance on the following research knowledge and skills. (Engagement, Influence and Impact)

	Very Poor	Poor	Acceptable	Good	Very Good
Publication					
Present at Conferences/Events					
Communication					
Collaboration					
Team Working					
People Management					
Supervision					
Teaching					

(Optional) You are welcome to add any comments that will contribute to this study in the following box.

(Optional) Please enter your e-mail address if you are willing to participate into follow-up interviews as part of this study

Submit

APPENDIX B

INTERVIEW QUESTIONS WITH GRADUATE STUDENTS (TURKISH)

Lisansüstü Öğrencilerin Tez Çalışmaları Amacıyla Sosyal Medya Araçlarını Kullanması

Mülakat Soruları

Görüşme Tarih ve Saati: Mekân: (Sanal ya da fiziksel)

Görüşmeci Kodu:

Lisansüstü öğrencilerin sosyal medya araçlarını tez çalışmaları amacıyla kullanmaları konusunda görüşlerinizi almak için sizinle görüşmek istiyorum.

Sorduğum sorular tamamen düşünce ve deneyimlerinizden faydalanabilmek içindir. Söylediklerinizin kesinlikle gizli kalacak, verdiğiniz cevaplardan isminiz ve sizi işaretleyen bilgiler çıkarılacaktır. Bu görüşmeden toplanacak veriler sadece akademik amaçlar için kullanılacak ve üçüncü kişilerle paylaşılmayacaktır.

Cevaplarınızı eksiksiz kayıt altına alabilmek için ses kayıt cihazı ile kaydetmeme izin verdiğiniz için teşekkür ederim. Görüşme esnasında kendinizi rahatsız hissederseniz görüşmeyi durdurabiliriz.

1. **Kısaca tez konunuz ve tezinizde hangi aşamada olduğunuzdan bahsedebilir misiniz?**

Prompt: Lisansüstü öğreniminizin hangi aşamasındasınız? (Döneminiz? Derslerinizi tamamladınız mı? Yeterlik Sınavını Geçtiniz mi? Tez konunuzu belirlediniz mi? Tez Önerisi Yazdınız mı? Tez aşamasında mısınız?)

2. **Akademik çalışmalarınızdan bahsedebilir misiniz? (Konferansa katılım durumunuz, yazdığınız makaleler, akademik çıktılar).**

3. **Şu an yaptığınız tez dışında bir araştırma, akademik çalışma var mı? Araştırmanız kısaca ne hakkında? Bu araştırma için bilgi ve iletişim teknolojilerini kullanıyor musunuz? (Nasıl, ne şekilde?)**

4. **Genel olarak tezinizle ilgili araştırmalarınızda nasıl bir çalışma yöntemi izliyorsunuz?**

   Prompt: (Fikir üretimi, bilgi arama, alanyazın-literatür tarama, hipotez ya da araştırma soruları, veri toplama, veri analizi, resmi bir dokümana çevrilmesi-rapor, makale, tez, konferans bildirisi vb., değerlendirme süreci, basım, başka yazarlar tarafından alıntılanma)

Teknoloji Kullanımı ve Seviyesi

5. **Tez çalışmalarınız amacıyla kullandığınız bilgi ve iletişim teknolojileri nelerdir? Ne tür elektronik cihazlarınız var ve ne kadar süredir bilgisayar teknolojileri kullanıyorsunuz?**

   Prompt: Bu cihazınızı lisansüstü öğrenim ve tez araştırmaları amaçlı kullanıyor musunuz? Nasıl? Ne kadar sıklıkla kullanıyorsunuz?

Şimdi sosyal medya ve sosyal medya araçları ile ilgili sorulara geçiyoruz.

Sosyal Medya ve Sosyal Medya Araçları

6. **Genel olarak sosyal medya hakkında ne düşünüyorsunuz?**
   Prompt: Sosyal medya size ne ifade ediyor? Bu araçlar konusunda düşünceleriniz nelerdir?

7. **Sosyal medya araçları denildiğinde aklınıza ne tür araçlar geliyor?**

Tez Araştırma Amaçları için Sosyal Medya Araçları Kullanımı

8. **Tez araştırmaları amacıyla hangi siteleri, servisleri ya da programları kullanırsınız? (Nasıl, ne şekilde?)**
   a. Bu araçları kullanarak nasıl bir çalışma yöntemi izlersiniz?

9. **İletişim odaklı sosyal medya araçları kategorisinde çeşitli araçlar bulunmaktadır. Örneğin sosyal ağlar, akademik sosyal ağlar, anlık mesajlaşma, forumlar, e-posta listeleri, bloglar, twitter, rss beslemeleri gibi.**

   a. Bu araçları tez araştırmalarınızda kullanıyor musunuz? (Nasıl, ne şekilde? Kullanmamanızın sebepleri nelerdir)

10. **İşbirliği/Birlikte çalışma odaklı sosyal medya araçları kategorisinde çeşitli araçlar bulunmaktadır. Örneğin birlikte yazma araçları, video konferans, sosyal imler, wiki'ler gibi.**

    a. Bu araçları tez araştırmalarınızda kullanıyor musunuz? (Nasıl, ne şekilde? Kullanmamanızın sebepleri nelerdir?)

11. **Çoklu ortam/Multimedya odaklı sosyal medya araçları kategorisinde çeşitli araçlar bulunmaktadır. Örneğin sunum, video, foto, ses ile ilgili siteler, dosya servisleri.**

    a. Bu araçları tez araştırmalarınızda kullanıyor musunuz? (Nasıl, ne şekilde? Kullanmamanızın sebepleri nelerdir?)

12. **Bilgiye ulaşma/bilgi yönetimi odaklı sosyal medya araçları kategorisinde çeşitli araçlar bulunmaktadır. Örneğin referans yönetim araçları, akademik veri tabanları, çevrimiçi kütüphane kataloğu, anket araçları, öğrenme yönetim sistemler, proje yönetimi.**

    a. Bu araçları tez araştırmalarınızda kullanıyor musunuz? (Nasıl, ne şekilde? Kullanmamanızın sebepleri nelerdir?)

13. **Sosyal Medya Araçlarının tez amaçları için kullanılması konusunda ne düşünüyorsunuz?**

14. **Sosyal medya araçlarının tez araştırmaları amacıyla kullanımını kolaylaştıran etmenler sizce nelerdir?**

15. **Sosyal medya araçlarının tez araştırmaları amacıyla kullanımını zorlaştıran etmenler sizce nelerdir?**

Verdiğiniz cevaplar için çok teşekkür ederim. Sorduğum soruların dışında sizin eklemek istedikleriniz varsa söyleyebilirsiniz.

APPENDIX C

RECRUITMENT EMAIL SENT TO SURVEY PARTICIPANTS (TURKISH)

Merhaba hocam,

Ben Murat Duman, ODTÜ Bilgisayar ve Öğretim Teknolojileri Eğitimi bölümünde doktora öğrencisiyim. Tez araştırmalarım kapsamında bir çalışma yapıyorum. Sizi de bu çalışmaya katılmaya davet ediyorum.

Bu çalışma lisansüstü öğrencilerinin tez çalışmaları amacıyla sosyal medya araçlarını (örn: Mendeley, Endnote, ResearchGate, Dropbox gibi) kullanımını analiz etmeyi hedeflemektedir. Çalışma anket ve görüşmeler olmak üzere iki aşamadan oluşmaktadır. Görüşme aşamasına katılım zorunlu değildir, ancak katılan herkese bir hediye verilecektir. Araştırma bilimsel bir amaçla yapılmakta olup, toplanan veriler tezimle ilgili çalışmalarda kullanılacak ve üçüncü şahıslar ile paylaşılmayacaktır.

Katılım için ankete aşağıdaki adresten ulaşabilirsiniz.

http://bit.ly/metusurvey

Değerli katkılarınızdan dolayı teşekkür ederim. Anket ile ilgili yorum ve önerilerinizi bana iletebilirsiniz.

Not: Bu araştırma ODTÜ Uygulamalı Etik Araştırma Merkezi tarafından onaylanmıştır.

Saygılarımla,

Murat Duman
Orta Doğu Teknik Üniversitesi
Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü
Tel: 0312 210 3368
E-posta: mduman@metu.edu.tr

APPENDIX D

FOLLOW-UP EMAIL SENT TO SURVEY PARTICIPANTS (TURKISH)

Merhaba,

Geçen haftalarda size anketim ile ilgili bir e-posta göndermiştim. Bakma şansınız oldu mu acaba? Üniversitemizin güncel durumunu araştırdığım için sosyal medya araçlarını tez çalışmalarınızda kullanmıyor dahi olsanız katılımınız önemlidir.

Ankete erişim için http://bit.ly/metusurvey **adresini kullanabilirsiniz.**

Çalışma anket ve görüşmeler olmak üzere iki aşamadan oluşmaktadır. Görüşme aşamasına katılım zorunlu değildir, ancak katılan herkese bir hediye verilecektir. 30 Kasım 2014 Pazar günü veri toplamayı keseceğim için desteklerinizi bekliyorum. Görüşmeler ise Aralık ayı içinde yapılacaktır.

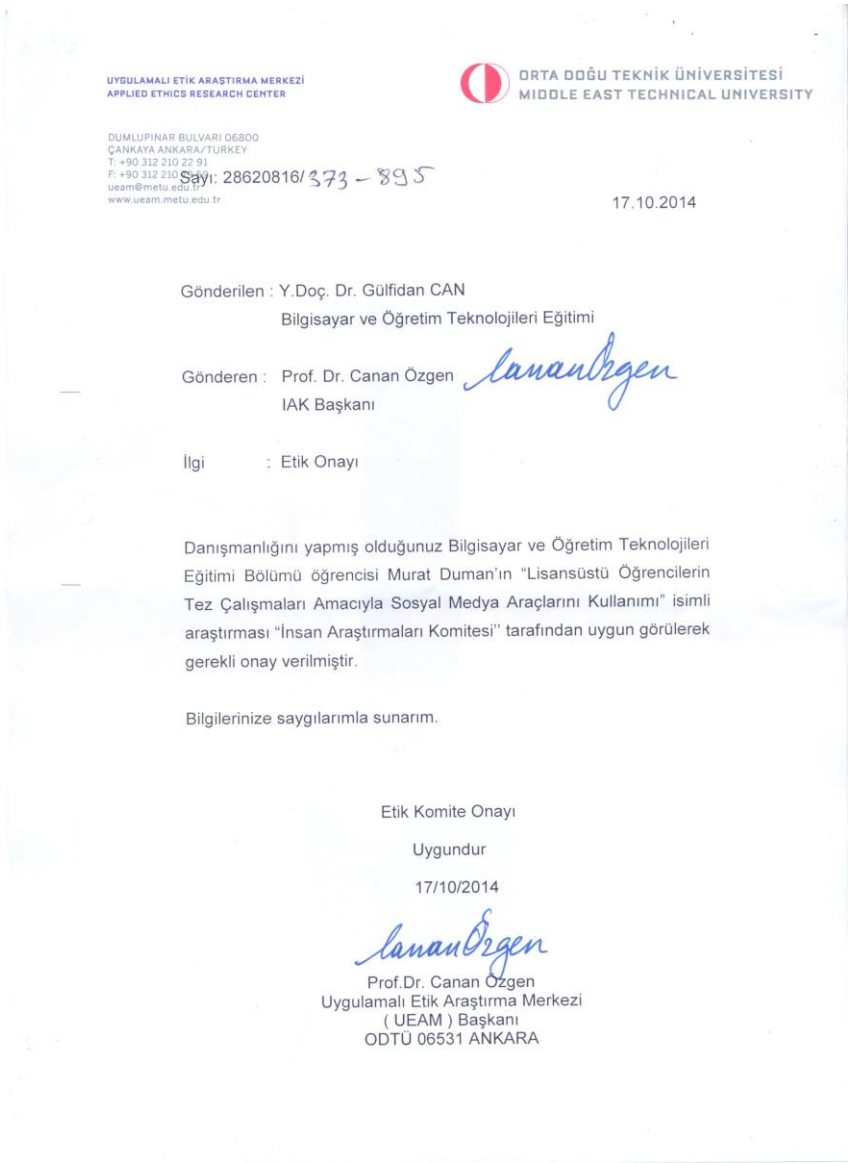
Şimdiden katılımınız için teşekkür eder, anket anonim olduğundan dolayı daha önce katıldıysanız tekrar rahatsız ettiğim için özür dilerim. Dilerseniz mesajın sonundaki bağlantıya tıklayıp (unsubscribe) bir daha e-posta gönderilmemesini seçebilirsiniz.

Saygılarımla.

Murat Duman
Orta Doğu Teknik Üniversitesi
Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü
Tel: 0312 210 3368
E-posta: mduman@metu.edu.tr

APPENDIX E

ETHICS COMMITTEE OF MIDDLE EAST TECHNICAL UNIVERSITY RESEARCH CENTER FOR APPLIED ETHICS APPROVAL FORM (TURKISH)



UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER

ORTA DOĞU TEKNİK ÜNİVERSİTESİ
MIDDLE EAST TECHNICAL UNIVERSITY

DUMLUPINAR BULVARI 06800
ÇANKAYA ANKARA/TURKEY
T: +90 312 210 22 91
F: +90 312 210 79 59
ueam@metu.edu.tr
www.ueam.metu.edu.tr

Sayı: 28620816/373 - 895

17.10.2014

Gönderilen : Y.Doç. Dr. Gülfidan CAN
Bilgisayar ve Öğretim Teknolojileri Eğitimi

Gönderen : Prof. Dr. Canan Özgen
IAK Başkanı

İlgi : Etik Onayı

Danışmanlığını yapmış olduğunuz Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü öğrencisi Murat Duman'ın "Lisansüstü Öğrencilerin Tez Çalışmaları Amacıyla Sosyal Medya Araçlarını Kullanımı" isimli araştırması "İnsan Araştırmaları Komitesi" tarafından uygun görülerek gerekli onay verilmiştir.

Bilgilerinize saygılarımla sunarım.

Etik Komite Onayı
Uygundur
17/10/2014

Prof.Dr. Canan Özgen
Uygulamalı Etik Araştırma Merkezi
(UEAM) Başkanı
ODTÜ 06531 ANKARA

APPENDIX F

VOLUNTARY PARTICIPATION APPROVAL FORM (TURKISH)

Bu çalışma, ODTÜ Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü Lisans Sonrası Doktora öğrencisi Murat DUMAN tarafından Yrd. Doç. Dr. Gülfidan CAN danışmanlığında, ODTÜ'de yürütülen bir tez çalışmasıdır. Araştırmanın amacı, lisansüstü öğrencilerinin tez çalışmaları amacıyla sosyal medya araçlarını kullanımlarını analiz etmektir. Araştırmaya katılım tamamen gönüllülük temelinde olmalıdır. Cevaplarınız tamamen gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecek olup; elde edilecek bilgiler bilimsel yayımlarda kullanılacaktır.

Tez çalışmaları amacıyla sosyal medya araçlarını kullanımı görüşme soruları genel olarak kişisel rahatsızlık verecek durum, görev ve sorular içermemektedir. Ancak, görüşme sırasında sorulardan ya da herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz çalışmayı yarıda bırakıp çıkmakta serbestsiniz. Böyle bir durumda görüşmeciye durumu bildirmeniz yeterli olacaktır. Bu çalışmaya katıldığınız için şimdiden teşekkür ederiz.

Çalışma hakkında daha fazla bilgi almak için Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü öğrencisi Murat DUMAN (Bilgi İşlem Daire Başkanlığı B-12 No'lu Oda, ODTÜ, 06800; Tel: 0312 210 33 68 E-posta: mduman@metu.edu.tr) ile iletişim kurabilirsiniz.

Bu çalışmaya tamamen gönüllü olarak katılıyorum ve istediğim zaman yarıda kesip çıkabileceğimi biliyorum. Verdiğim bilgilerin bilimsel amaçlı yayımlarda kullanılmasını ve görüşmenin ses kaydının yapılmasını kabul ediyorum.

Ad-Soyadı	Tarih	İmza	Görüşme Yeri
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APPENDIX G

INTERVIEW RECRUITMENT E-MAIL MESSAGE

Merhaba hocam,

Kasım ayı içinde "Lisansüstü Öğrencilerin Tez Çalışmaları Amacıyla Sosyal Medya Araçlarını Kullanması" konusundaki anketimi doldurmuş ve çalışmanın ikinci aşaması için e-posta adresinizi bırakmıştınız. Sizinle bu konuda görüşme yapabilmek için iletişime geçiyorum. Görüşmeler yaklaşık 30 dk sürecek ve görüşmenin notları sizin onayınızdan sonra çalışmaya eklenecektir. Görüşmeleri sizin uygun olduğunuz bir zamanda: yüzyüze, telefon ve ya hangouts/skype üzerinden yapabiliriz. Veri toplamak için kritik bir döneme girdiğimden katılım durumunuzla ilgili cevaplarınız benim için çok önemlidir (7/24 haber verebilirsiniz). Ayıracağınız değerli zamanınızdan dolayı vermek istediğim hediyelerinizi görüşme zamanında ya da istediğiniz bir yere getirebilir/iletebilirim.

Toplayacağım veri için sosyal medya araçlarını etkin olarak kullanmıyor olsanız dahi katılımınız oldukça önemlidir.

Görüşme konusundaki durumunuzu bana e-posta adresi veya telefon aracılığıyla iletebilirsiniz.

İlginiz ve cevabınız için şimdiden çok teşekkür ederim.

Murat Duman
E-posta: gelistir@gmail.com
Tel: 05306945456

Teşekkürler.
İyi çalışmalar.

CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: Duman, Murat
Nationality: Turkish (TC)
Date and Place of Birth: 1st of September 1984, Bandırma
Phone: +90 530 694 54 56
E-mail: gelistir@gmail.com
Website: www.muratduman.com

EDUCATION

Degree	Institution	Graduate Year
B.S.	Middle East Technical University Computer Education and Instructional Technology	2008
High School	Recep Gençer Anatolian Vocational High School Computer / Software	2002

WORK EXPERIENCE

Year	Place	Enrollment
2013-Present	METU, Computer Center	IT Support Manager
2008-2013	METU, Department of Computer Education and Instructional Technology	Research Assistant

FOREIGN LANGUAGES

English, French

PUBLICATIONS

Kara, N., Duman, M., Sevim, N., & Yıldırım, S. (2014). The Comparative Analysis of Research Assistants' Perceptions toward Science and Scientific Activities. Journal of Faculty of Educational Sciences, 47(1).

Kara, N., Sevim, N., & Duman, M. (2013). An Investigation of the Perceptions of Early Career Academics towards Science. International Online Journal of Educational Sciences, 5(1).

Akıllı, G. K., Sevim, N., Yıldırım, Ç, İslim, Ö. F., Duman, M., & Kara, A. (2012). A Phenomenological Investigation of Preschoolers' Experiences in Reading an E-book. EDULEARN12 Proceedings, 6785-6790.

HOBBIES

Photography, Finance, Snowboard, Wakeboard, Chess, Tennis, Swimming.