

**University of Strathclyde**  
**Department of Computer and Information Sciences**



**Self-efficacy Sources and Outcome  
Expectations of  
Researchers for Sharing Knowledge  
via Social Media**

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A thesis presented in partial fulfilment of the requirements for the degree  
of **Doctor of Philosophy**

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## **Declaration of Originality**

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Signed:

Date:

# **Dedication**

*To*

*My beloved parents for their support and encouragement.*

*My beloved wife for her patience and support.*

*My lovely three kids Yazied, Zeiad, and Bassam for their encouragement.*

*My brothers and sisters.*

*My father-in-law and his family.*

*My sponsor “Shaqra University”.*

*&*

*My country.*

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*In the name of Allah the most gracious and the most merciful*

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## **Abstract**

Although social media is a vital way to communicate and share knowledge, the researchers' use is still less than expected. This may be due to their lack of self-efficacy or lack of knowledge of outcomes from its use. Therefore, this research aimed to investigate sources of self-efficacy and outcome expectations of researchers and their impact on the use of social media for knowledge sharing.

To provide a theoretical framework, this research adopted social cognitive theory, which contains two important concepts are self-efficacy and outcome expectations. It investigated sources of self-efficacy and types of outcome expectations to address the research objectives and questions.

This study has employed a sequential exploratory mixed methods design. It started with qualitative approach by conducting semi-structured interviews with thirty researchers from University of Strathclyde. The data were analysed by using a qualitative directed content analysis approach. In quantitative approach, online questionnaire was used to substantiate the qualitative findings. The total participants in this questionnaire was 144 researchers also from University of Strathclyde and the data were analysed by using descriptive statistics.

This study found that researchers relied on the four sources of self-efficacy for using this media. They lead researchers to use it effectively, although some may discourage its use. It also found that researchers expect social and personal outcomes from its use. Each type has positive and negative forms, which can motivate or prevent researchers from use it.

This study develops a theoretical framework by identifying levels of importance of these sources and types of outcomes as applied to a real-life online context. In a practical light, this helps researchers to understand these sources and outcomes and determine how they can develop in order to increase their confidence and use. Finally, institutions can encourage their staff, particularly researchers, to use it for their competitive advantage.

## Publications

- Alshahrani, H., & Rasmussen Pennington, D. (2018). “Why not use it more?” Sources of self-efficacy in researchers’ use of social media for knowledge sharing. *Journal of Documentation*, 74(6), 1274-1292.
- Alshahrani, H., & Rasmussen Pennington, D. “Maybe we can work together”: Researchers’ outcomes expectations for sharing knowledge on social media. (Submitted) *Journal of Information Technology & People*.
- Alshahrani, H., & Rasmussen Pennington, D. “How to use it more?” Self-efficacy and its sources in the use of social media for knowledge sharing. (Submitted) *Journal of Documentation*.



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# Chapter 1: Introduction

## 1.1 Introduction

In the last decade, society has increasingly used social media as a method of communicating and sharing. Facebook, Twitter, LinkedIn, YouTube, and other social media platforms facilitate people's sharing of ideas, pictures, comments, and other forms of knowledge (Kaplan & Haenlein, 2010). Researchers routinely share knowledge with others either to improve their own ideas or to help others develop theirs, and they employ social media platforms to facilitate this (Panahi, Watson, & Partridge, 2016a). The benefits of using social media for knowledge sharing include the removal of space and time constraints that are inherent in traditional methods of sharing knowledge, online tools that enable one to share multimedia content, and easy-to-use interfaces that enable even non-specialists to share and connect (Fotis, 2015).

Social media platforms allow researchers around the world to communicate and share their knowledge (Panahi et al., 2016a). For example, they can learn what was discussed at any conference without travelling long distances. In addition, researchers use social media as a channel for visibly presenting themselves and their outputs to those who share the same interests (Veletsianos, 2016). In other words, social media afford exceptional opportunities for researchers to engage and interact with each other (Carrigan, 2016).

Researchers can share their research outputs with large numbers of other researchers by using social media, which makes this facility an important channel for

them, since dissemination of research is essential (Ellison, Gibbs, & Weber, 2015). Knowledge here refers to both *tacit* (cognitive experience) and *explicit* (research outputs) forms. Online, researchers can share what they have learnt and practised in their work as well as what they have produced as written communication.

## **1.2 Research Problem**

Previous studies discuss either the use of social media for knowledge sharing or the factors that affect this use (e.g. Aboelmaged, 2018; Bilgihan, Barreda, Okumus, & Nusair, 2016; Cheung, Lee, & Lee, 2013; Cho, Chen, & Chung, 2010; Eid & Al-Jabri, 2016; Havakhor, Soror, & Sabherwal, 2018; Kwahk & Park, 2016; L. Ma, Lee, & Goh, 2014; Oh & Syn, 2015). However, understanding of these phenomena are still in the early stages and need more investigation (Edwards, Cheng, Wong, Zhang, & Wu, 2017; Panahi, Watson, & Partridge, 2012b; Razmerita, Kirchner, & Nabeth, 2014).

According to prior work (e.g. Cheung et al., 2013; Cho et al., 2010; Kwahk & Park, 2016; Vuori & Okkonen, 2012), there are a number of factors such as self-efficacy, reputation, enjoyment, reciprocity, social interaction, learning, and rewards which can significantly influence the use of social media for knowledge sharing. Self-efficacy is one of the most significant factors that influence the use of social media for knowledge sharing, whereas other factors may represent the expected outcomes of using social media.

Despite the importance of self-efficacy in the use of social media, no attention has been paid to its sources and their impact on the use of social media, particularly for knowledge sharing. Moreover, though researchers expect potential outcomes from its use, existing studies are not adequate to explain the outcomes that researchers expect

from this use, the types of these outcomes, and how they influence researchers' use. Furthermore, according to George Macgregor<sup>1</sup>, scholars' use of social media is not as effective as it should be at the university, despite institutional efforts to encourage its use for sharing research outputs and academic achievements. He also stated that only 92 academics joined the Strathclyde Open Access account on Twitter (G. Macgregor, personal communication, August 2017). This argument is consistent with Greifeneder et al. (2018).

Therefore, due to the importance of universities for producing and sharing knowledge (Armstrong & Franklin, 2008), it is important to study the sources of self-efficacy and outcomes expectations of researchers, in particular at universities, and their impact on the use of social media for sharing knowledge. This may highlight ways of improving researchers' use of these media.

### **1.3 Research Objectives and Questions**

This study aims to investigate the sources of self-efficacy that researchers rely on in using social media for knowledge sharing, and to explore how these sources impact on this use. It also aims to investigate the expected outcomes, their types and their impact on researchers' use of social media to share knowledge. To address these objectives, this study attempts to answer the following research questions:

*RQ1: What sources of self-efficacy do researchers rely on in the use of social media for knowledge sharing?*

*RQ2: How do these sources impact on the use of social media for knowledge sharing?*

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<sup>1</sup> G. Macgregor is the Institutional Repository Coordinator at the University of Strathclyde and the person responsible for supporting colleagues in delivering their Current Research Information System (CRIS) and institutional activities in the areas of research discovery.

*RQ3: What outcomes do researchers expect from the use of social media for knowledge sharing?*

*RQ4: How do these outcome expectations impact on the use of social media for knowledge sharing?*

## **1.4 Significance of the Research**

The findings of this research will add to the body of knowledge on the use of social media for knowledge sharing. They will also be of value in enabling researchers and institutions to understand how to develop their self-efficacy for using these media to achieve the positive outcome expectations and avoid the negative ones.

From a theoretical perspective, this study further develops the self-efficacy theoretical framework by identifying levels of importance of the sources as applied to a real-life online context. Therefore, researchers and institutions will improve their self-efficacy by looking at these sources and how they can be enhanced. This study also develops the theoretical framework of outcome expectations by identifying types and forms within a real-life context. Thus, researchers and institutions will be aware of the benefits and disadvantages of these media. This will lead them to use them more effectively while controlling the negative outcomes of their use.

The findings of this study will show some of the barriers that affect or lead to avoidance of social media for sharing knowledge. By knowing these barriers, researchers and institutions will try to find solutions for them. However, this study provides a number of possible solutions that they would find useful.

The intention of this research is to produce findings that are specific to researchers at the University of Strathclyde. However, recommendations developed

by this research should be sufficiently flexible to apply to other researchers at other institutions.

## **1.5 Definition of Terms**

Self-efficacy is defined as “a judgment of one’s capability to accomplish a certain level of performance” (Bandura, 1986, p. 391). Outcome expectation is defined as “a judgment of the likely consequence such behaviour will produce” (Bandura, 1986, p. 391). This is operationalized in this study as researchers’ perceived ability and expected outcomes in using social media for knowledge sharing. Self-efficacy in this study refers to the researchers’ abilities to use social media for knowledge sharing, whereas outcome expectations are defined as the positive or negative results that researchers expect from the use of social media for sharing knowledge.

According to Bandura (1977), self-efficacy is constructed from four main sources: performance accomplishments; vicarious experience; verbal persuasion; and emotional arousal. These four sources are defined in this study as follows:

- *Performance accomplishments* or *personal mastery experiences* refer to the positive or negative past experiences that influence researchers’ ability to use social media for sharing knowledge.
- *Vicarious experience* refers to the mimicry of other researchers who effectively use social media for knowledge sharing, by observing their performance and successes, and then attempting to replicate their behaviours.
- *Verbal persuasion* refers to encouragement and discouragement from colleagues or institutions that influence the researchers’ decisions as to whether to use social media for knowledge sharing.



- *Emotional arousal* refers to psychological reactions based on researchers' positive and negative experiences of this use.

## **1.6 Organization of the thesis**

The remainder of the thesis is organized into six chapters as follows:

Chapter 2, Research Context, provides a brief description of Scottish Universities in general, with more details of the University of Strathclyde in particular.

Chapter 3, Literature Review, presents a critical survey of the literature on the topic, encompassing three sections. The first section focuses on social cognitive theory with its two important factors: self-efficacy and outcome expectations. The second section is about knowledge, its types, and its sharing. The third section includes social media, their types and platforms, and their use for knowledge sharing. The chapter provides the theoretical framework which directs this study.

Chapter 4, Research Methodology, discusses the methodology and methods employed in the study. It presents the justification for the choice of Sequential exploratory mixed methods (qualitative followed by quantitative), the procedures for conducting the data collection for the qualitative phase (semi-structured interviews) and the quantitative phase (questionnaire), and the data analysis (qualitative content analysis for qualitative data and descriptive statistics analysis for quantitative data). It also explains the procedures for testing the validity and reliability of both phases.

Findings of the qualitative phase are presented in Chapter 5. This chapter introduces the main themes and the associated sub-themes that have emerged from the data. In Chapter 6, the results from the quantitative phase are presented.

Chapter 7 discusses the major findings and results of the two phases (qualitative and quantitative). Chapter 8 concludes the thesis by presenting the contributions and

implications of the study. It also shows some of the study's limitations and indicates the direction for future research.

Finally, the *Appendices* contain further information related to the data collection and the data analysis processes used for both phases of the study.

## **1.7 Chapter Summary**

The current chapter has provided more details about research problem, and explained its importance, particularly for researchers and institutions. The chapter also outlined the study's main objectives and its research questions.

# Chapter 2: Research Context

## 2.1 Introduction

As mentioned in Chapter 1, universities are considered the most effective site of the production and sharing of knowledge. In fact, they have academics and researchers who create, develop, and share knowledge. Therefore, it is more important to give a brief introduction about them. Accordingly, what is meant by “researchers”. The term “researchers” refers to those who conduct research and explore a new knowledge contribution (Nassuora & Hasan, 2010). The researcher could be a student, an academic, or anyone who has the necessary ability and interest in research. Academics and researchers create knowledge by developing or discovering new ways of doing things (Ramachandran, Chong & Ismail, 2009).

Academics and researchers play a key role in producing and disseminating knowledge. They are the best example of those who practise the sharing of knowledge with others (Jolaei, Md Nor, Khani, & Md Yusoff, 2014). Therefore, it is important that we explore how researchers implement knowledge sharing among themselves and with others, and which channels they use.

They use several channels to present themselves and their works in a visible manner to people in the same field of interest. One of the most effective channels is social media (Veletsianos, 2016). In other words, social media afford exceptional opportunities for them to engage and interact with other and increase their visibility (Carrigan, 2016).

Veletsianos (2016) identified the main practices in the use of social media by academics and researchers. He found that researchers use Twitter to enhance their knowledge and skills in some fields. For example, they request resources or explanations of some ideas that could be used in their researches or lectures.

Mollett, Moran and Dunleavy (2011) introduced a guide for academics and researchers for using Twitter in research and teaching at university. For research, they stated that Twitter can add more value to it in several ways. This includes tweet about new publication, update, or blog which are related to research. Moreover, Twitter provides an opportunity to reach out to external audiences. Twitter also can help researchers to see the number of people who read their research which can create another opportunity such as collaboration. For teaching, it can be used to give advice about tasks, or problems. Besides, it can be used to engage with students and keep them up-to-date. Thus, Al-Rahmi, Alias, Othman, Marin and Tur (2018) argued that social networking sites have become popular platforms for learning and engagement. Indeed, academics and researchers use social media for publicising their work, build their networks, public engagement, and managing information (Carrigan, 2016).

## **2.2 Research Context**

Since, universities are places of knowledge where faculty members and students are involved in creating, developing, publishing, and delivering knowledge (Rowley, 2000), it is of key importance to conduct this study with researchers at universities. The University of Strathclyde was accordingly selected as the research context in which to conduct this study.

The following sub-sections provide a brief description of Scottish Universities in general, with more details of the University of Strathclyde in particular. See Figure 2-1.

### ***2.2.1 Scottish Universities***

Gallacher (2014) argued that the period dating from the 1960s has witnessed a great expansion of higher education in Scotland, through a transition from "a unified system to a highly diversified one" (p. 96). He identified in his study five sectors included in this process. In the first sector, up to the 1960s, four "ancient" universities that dated back to the fifteenth and sixteenth centuries were the only institutions with the title of university (Gallacher, 2006, 2009, 2014); they were the University of Edinburgh, the University of Glasgow, the University of Aberdeen, and the University of St Andrews. According to (uniRank, 2018), only two of these four are in the Top 200 universities in the world, whereas they are in the Top 200 world university rankings according to the Times Higher Education (Gallacher, 2014). According to the Scottish Funding Council (SFC) (2018), this sector receives 67% of the grants for research and innovation for 2018-19, see Table 2-1.

In the second sector, four more universities were included, which were established or re-designed in the 1960s. Two of them were institutions of advanced technology such as Heriot-Watt and Strathclyde. The third university was Dundee, which had been one of the colleges of St Andrews University, while the fourth university was Stirling, a new establishment in that period. According to Gallacher (2014), "These institutions have not, for the most part, achieved the level of international recognition achieved by the ancient universities. While they have

achieved areas of research excellence, their overall weaker performance in this respect can be seen in that they currently receive only 23% of the Scottish Funding Council's research funding" (p. 97). However, they are now regarded as the major providers for postgraduate courses in Scotland, with a great many research students (Gallacher, 2014). Moreover, grants for research and innovation in (2018-2019) for this group have been increased to 26% according to (Scottish Funding Council (SFC), 2018), as shown in Table 2-1.

The third group represents the institutions that were established or re-designed after 1992, called "Post 1992s" (Gallacher, 2006, 2009, 2014). This group contains seven universities including the University of the Highlands and Islands, the University of Abertay Dundee, Edinburgh Napier University, Glasgow Caledonian University, Queen Margaret University (Edinburgh), Robert Gordon University, and the University of the West of Scotland (Gallacher, 2014) (Scottish Funding Council (SFC), 2018). These universities are considered major providers of undergraduate and postgraduate education, even for part-time students (Gallacher, 2014). However, this group receives only 6% of the grants for research and innovation for 2018-19 (Scottish Funding Council (SFC), 2018), see Table 2-1.

In the fourth sector, the specialist colleges of art, music and drama were included, such as the Glasgow School of Art and the Royal Conservatoire of Scotland. They receive 1% of the grants for research and innovation for 2018-19 (Scottish Funding Council (SFC), 2018), as shown in Table 2-1. They provide opportunities for full-time undergraduate and postgraduate education, while the Open University provides part-time degrees through distance learning (Gallacher, 2014).

*Table 2-1: Percentage of Grants for Research and innovation for Scottish Universities 2018-2019*

<b>Four Sectors</b>	<b>Grants for Research and Innovation (2018-19)</b>
Ancients	67%
1960s	26%
Post 1992s	6%
Art/music and OU	1%



*Figure 2-1: Scottish Universities (Source: <https://www.webarchive.org.uk/wayback/archive/20170701050950/http://www.scotland.org/study-in-scotland/universities>)*

### **2.2.2 University of Strathclyde**

The University of Strathclyde was founded in 1796 and is regarded as one of the oldest institutions in Scotland (QS Top Universities, 2018; Time Higher Education (THE), 2018; University of Strathclyde, 2018c). Initially named the Andersonian Institute, it was distinct in becoming the first technological university in 1964 (Time Higher Education (THE), 2018).

The University of Strathclyde is located on the John Anderson campus, which is close to the city centre (QS Top Universities, 2018; Time Higher Education (THE), 2018; University of Strathclyde, 2018c). This proximity allows access to the varied activities available within the city itself and to extensive public transport (QS Top Universities, 2018; Time Higher Education (THE), 2018; University of Strathclyde, 2018c). The University offers numerous resources such as academic facilities, including a new Technology and Innovation centre opened in July 2015, specialised pharmaceutical facilities, the library, the Students' Union and the sports centre (Time Higher Education (THE), 2018; University of Strathclyde, 2018c).

Although the University offers a range of subjects for undergraduate and postgraduate students, it also focuses on technological and scientific studies (Time Higher Education (THE), 2018). Furthermore, research is considered an important part of Strathclyde's offerings in various disciplines (Time Higher Education (THE), 2018). In addition to a great reputation in research and teaching, the university has strong ties with the commercial and industrial sectors (Prospects, 2018). Moreover, it has a wide variety of partnerships with businesses and other higher education institutions, inside and outside the UK (Time Higher Education (THE), 2018).

Strathclyde is currently the third largest university in Scotland (Prospects, 2018). According to the Scottish Funding Council (SFC) (2018), the University receives the third highest amount in grants for research and innovation for 2018-19, totalling approximately £25 million, after the University of Edinburgh and University of Glasgow. It was ranked the 36<sup>th</sup> most popular university in the United Kingdom in 2018 (uniRank, 2018). In terms of university ranking, Time Higher Education (THE) (2018) put the University of Strathclyde among the 401-500<sup>th</sup> World University



Rankings 2019, while QS Top Universities (2018) ranked it 268<sup>th</sup> among world universities. The university's research intensity, which is based on the number of papers produced relative to the university's size, is very high, placing it among the UK's top 20 universities for research intensity (QS Top Universities, 2018; University of Strathclyde, 2018c). The Business school at Strathclyde has a triple accreditation (AMBA, AACSB, and EQUIS), and was named "Business School of the Year" in the THE Awards 2016 (Strathclyde Business School (SBS), 2018). Strathclyde also has one of the best and most fully equipped Engineering faculties in Scotland (QS Top Universities, 2018). Strathclyde is a community of about 1188 academic staff, as reported by the Information Governance Unit at University of Strathclyde (2018), and 22,000 students from over 100 countries. It is investing £650 million to create an effective working and learning environment for students and staff. The Students' Association at the University contains over 130 clubs and societies (University of Strathclyde, 2018c).

There are four main Faculties at Strathclyde: Science, Engineering, Humanities and Social Sciences, and the Strathclyde Business School. These Faculties each have several Departments, offering a wide range of postgraduate and undergraduate courses (Prospects, 2018; University of Strathclyde, 2018a).

- **Faculty of Science** (<https://www.strath.ac.uk/science/>)

This Faculty is considered one of the leading Faculties of Science in the UK. It provides a vibrant, effective, supportive, and friendly environment for learning. It includes five specialized departments: Computer and Information Sciences, Mathematics and Statistics, Physics, Pure and Applied Chemistry, and the Strathclyde Institute of Pharmacy and Biomedical Sciences. Each department has

several features and can claim achievements in the fields of education and research. For example, according to the Research Excellence Framework (REF2014), Strathclyde was ranked as number one for physics research in the UK. For research power, Strathclyde Institute of Pharmacy and Biomedical Sciences was 4<sup>th</sup> in the UK and 1<sup>st</sup> in Scotland, while Chemistry was 4<sup>th</sup> in the UK. With regard to Computer and Information Sciences, Strathclyde's is a highly-rated department recognized for groundbreaking research, excellent teaching and entrepreneurial approach, together with one of the largest and leading international information schools in the UK, called iSchools.

- **Faculty of Engineering** (<https://www.strath.ac.uk/engineering/>)

This is regarded as the biggest Faculty in Scotland, and one of the largest and best-equipped engineering faculties in the UK. Over 5,000 students from 100 countries study at eight world-leading departments, including Architecture, Biomedical Engineering, Chemical and Process Engineering, Civil and Environmental Engineering, Design, Manufacture and Engineering Management, Electronic and Electrical Engineering, Mechanical and Aerospace Engineering, Naval Architecture, and Ocean and Marine Engineering.

This Faculty has recently completed a £40 million investment programme in Engineering facilities and support infrastructure. Its £85 million research portfolio is one of the largest in the UK.

- **Faculty of Humanities and Social Sciences**

(<https://www.strath.ac.uk/humanities/>)

This Faculty has an excellent reputation across a wide range of disciplines. For instance, it has one of the top law schools in Scotland, including the first and largest law clinic. It also has a school of education, which is considered the largest provider of teacher education in the country. In addition to these two schools, there are four others included in this Faculty: Social Work and Social Policy, Government and Public Policy, Humanities, and Psychological Sciences and Health.

Each of these schools can point to its own achievements. The school of Government and Public Policy, for instance, is ranked 1<sup>st</sup> in Scotland and 7<sup>th</sup> in the UK for research impact beyond academia. Psychology at Strathclyde was ranked in the top 20<sup>th</sup> sector of Psychology departments in the UK, based on the Sunday Times Good University Guide 2018.

- **Strathclyde Business School** (<https://www.strath.ac.uk/business/>)

This business school is one of four Faculties forming the University of Strathclyde. It has nine departments and five specialist centres, and is described as follows: “Strathclyde Business School has established international centres in Greece, Switzerland, UAE, Oman, Bahrain, Singapore and Malaysia. With around 150 academic staff and more than 3000 full-time and part-time students (undergraduate and postgraduate), Strathclyde Business School’s subject departments and specialist units collaborate to provide a dynamic, fully-rounded and varied programme of specialist and cross-disciplinary courses” (<https://www.strath.ac.uk/business/aboutus/>).

The Business School at Strathclyde has triple accreditation (AMBA, AACSB, and EQUIS), and was named “Business School of the Year” in the THE Awards 2016

(Strathclyde Business School (SBS), 2018). It is considered the first business school in Scotland to receive these accolades and one of only 88 in the world. Based on the REF 2014, it was ranked 1<sup>st</sup> in Scotland, and 10<sup>th</sup> among business schools in the UK for research. It was also ranked 3<sup>rd</sup> in the UK for Impact of business research.

### **2.3 The use of Social Media in Strathclyde**

The University of Strathclyde is very interested in social media, and recognizes the effective role they play in communicating with others such as students, staff, partners in business, and other organizations nationally and internationally (Human Resources (HR), 2015). Despite this tool's effective role, Strathclyde is aware of the potential risks associated with its use. Therefore, the University has issued a guidance document to promote good practice in the use of social media among the University's members, and to explain some issues that need to be taken into consideration in order to meet the University's expectations (Human Resources (HR), 2015).

According to Human Resources (HR) (2015), "The University encourages employees to make use of social media where appropriate for their work. It is recognised that social media can enhance the work of the University if used in a reasonable and appropriate way" (p. 1).

There are some of common practices followed by the University's members in using social media. For example, they use it to support teaching and learning opportunities. These media are used to create means of internal and external collaboration with stakeholders. The University's members use social media to build relationships with others and recruit them for participation in the University's activities (Human Resources (HR), 2015).

Due to the risks involved in social media usage, Strathclyde has issued general guidelines for this use by the University's members. These guidelines include usage for work purposes, personal life, and other University activities.

For work purposes, the University requires its members to be aware that they represent the University when they use social media. Thus, they should use this tool for a purpose beneficial to their University. The members should also be responsible when they express views or opinions via this social tool if these views and opinions are related to work at the University. They should be careful about published expressions, upholding the University's dignity and the policies of respect, equality and diversity. Social media should not be used to reveal any confidential information about the University, or to affect its reputation. The members need to have permission to use images or content, and to post personal information or any other sensitive material. For more details see (Human Resources (HR), 2015).

As regards personal life, besides the previous policies, members need to be aware that social media should not be used for personal communications during paid working time. The views and opinions expressed via these media should represent the users themselves and not be deemed to reflect the views of the University (Human Resources (HR), 2015).

The University seeks to utilize social media to attract students and prospective employers. However, it will not normally refer to social media when assessing job applications (Human Resources (HR), 2015).

It is important to mention that there are three types of social media adopted by the University of Strathclyde, as shown on its website (University of Strathclyde, 2018b). They include social networking sites (Facebook, Google +), microblogs

(Twitter), and content communities (YouTube, Instagram). However, by reviewing the Faculties' and Departments' websites, it can be argued that Twitter is the social media platform most commonly used in the University. Thus, each Faculty and Department has its Twitter account. The following Figures 2-2, 2-3, and 2-4 show Twitter accounts for all the Faculties, some Departments, and some other groups.



Figure 2-2: Twitter accounts for the Faculties

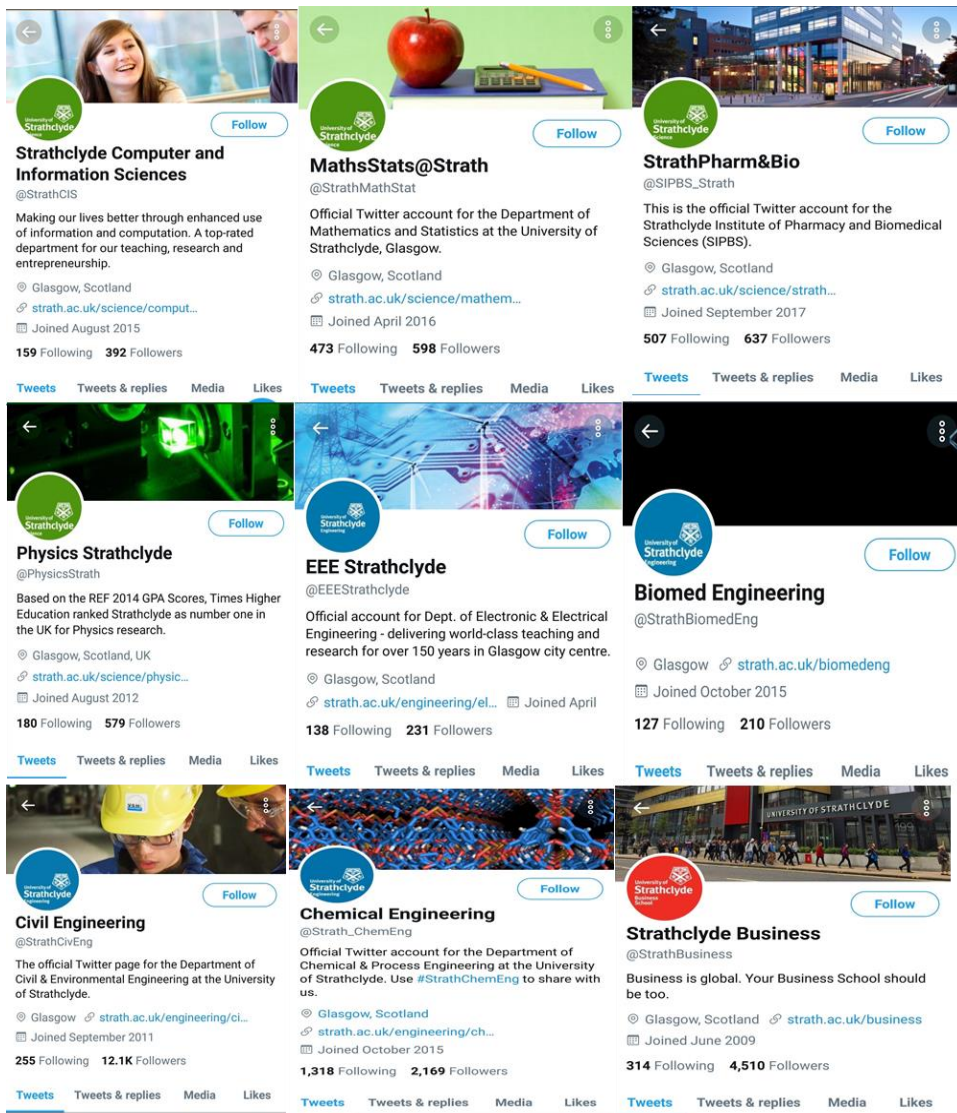


Figure 2-3: Twitter accounts for some Departments



Figure 2-4: Twitter accounts for some groups

## 2.4 Chapter Summary

This chapter has provided a brief description of Scottish Universities in general, with more details of the University of Strathclyde in particular, also discussed the use of social media in The University of Strathclyde.



# Chapter 3: Literature Review

## 3.1 Introduction

The literature review is the basic foundation on which to build any research project or study. In other words, each study has its key concepts to focus on. These concepts give a view of what has been done in previous studies and how they can promote the current study.

As outlined in the present study, the main focus is on investigating the sources of self-efficacy that researchers rely on in using social media for knowledge sharing, the impact of these sources on this use, and the outcomes that researchers expect from this use, together with how these outcomes can impact it. This chapter reviews the important literature that is relevant to the three main concepts: theoretical foundations, knowledge, and social media.

The first main concept in this study is that of theoretical foundations, which will cover a proper theory for this research. As is clear and well known, every study has either applied one theory or integrated numerous theories to build a strong foundation for the work. A review of social media and knowledge sharing literature indicates that some studies have used a single theoretical lens (e.g. Arazy, Gellatly, Brainin, & Nov, 2016; Bakhuisen, 2012; Cho et al., 2010; Eid & Al-Jabri, 2016; Gibbs, Rozaidi, & Eisenberg, 2013; Oostervink, Agterberg, & Huysman, 2016; Osatuyi, 2013), whereas others have integrated two or more theoretical lenses (e.g. Bilgihan et al., 2016; Lee & Ma, 2012; Oh & Syn, 2015). In this study, social cognitive theory (Bandura, 1986, 1989) is used to investigate these sources of self-

efficacy and outcome expectations of researchers in relation to the use of social media for knowledge sharing.

Over the last few years, scholars and researchers have given attention and effort to studying the concept of knowledge and its activities. Through all this attention and effort, knowledge creation, sharing, and management have become the most important areas of research and exploration. Thus, it is important to consider knowledge as one of the vital concepts in this study. A number of related concepts are discussed in order to understand the knowledge context. The first related concept concerns the definition of and some general ideas about knowledge which have been identified by numerous scholars. The second related concept concerns the numerous classifications of knowledge, which have been reviewed and which represent the importance of knowledge. This related concept is followed by another significant one, which explains knowledge sharing and how it is important for individual, groups, and thus for organizations. These three related concepts have a major contribution to make in understanding a part of the main focus of this study, namely knowledge sharing. In order to identify these concepts, the literature is presented and reviewed.

In recent years, scholars and researchers from different disciplines have also paid considerable attention to social media tools and their uses. But despite this attention, these tools need more research and exploration. Accordingly, the third main concept in this study is social media. Within this concept, a number of related concepts are discussed. First of all, the definition of social media is determined in order to understand the main idea behind this term. The second related concept focuses on the characteristics of social media in order to indicate their importance, and why they

have become a phenomenon. Once this phenomenon has been defined and its characteristics discussed, it is important that the types of social media be identified and explained in the subsequent concept. The final related concept highlights the literature on social media usage for knowledge sharing, in order to demonstrate the importance of social media for this purpose. In addition, through reviewing the literature, the knowledge gap is detected, which is relevant to the current study.

Because of the importance of the three main concepts in this study, they are explained in greater detail in the following sections.

## **3.2 Theoretical Foundations**

As explained previously, each study has either applied one theory or integrated numerous theories to build a strong theoretical foundation. In this study, social cognitive theory (Bandura, 1986, 1989) is used to investigate the sources of self-efficacy and outcome expectations of researchers toward the use of social media for knowledge sharing. This theory is discussed in more detail in the following section.

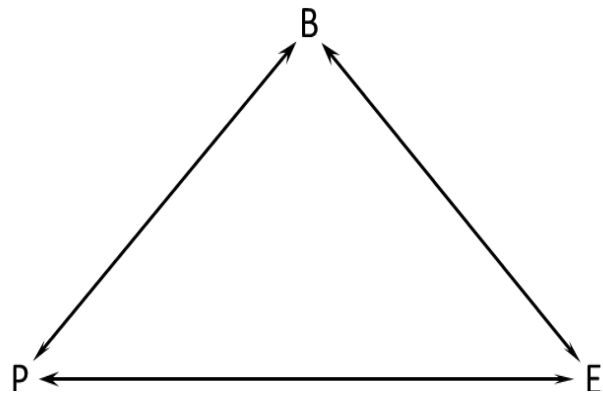
### ***3.2.1 Social Cognitive Theory***

Social cognitive theory contains an important framework that helps to explain how personal cognition and environmental factors affect human behaviour and learning. In the early 1940s, two scholars, Neal Miller and John Dollard, introduced Social Learning Theory, which later became the foundation of Social Cognitive Theory. In Social Learning Theory, three concepts were identified: outcome expectations, behavioural reinforcement, and observation (Pajares, 2000).

Albert Bandura with his colleagues and students conducted a group of studies known as the Bobo doll experiment (Bandura & Huston, 1961; Bandura, Ross, &

Ross, 1963a). This experiment is suitable for observing why and when children show aggressive behaviour. It also demonstrates the importance of modelling for learning novel behaviours (Bandura & Huston, 1961; Bandura et al., 1963a). Bandura (1977) argued that social learning theory demonstrates a direct correlation between self-efficacy and behavioural change. He claimed that self-efficacy has four major sources: performance accomplishment, vicarious experience, verbal persuasion, and emotional arousal.

In 1986 Bandura introduced his new theory, called social cognitive theory, which was actually the product of an expansion of social learning theory. Bandura (1977, 1986) defines social cognitive theory as a framework that assists in understanding, predicting, and changing human behaviour. The outline of this theory discusses how imitation of observed behaviour and modelling can be influenced by the following determinants: (P) personal determinants which refer to high and low self-efficacy, motives, and personality in relation to behaviour; (B) behavioural determinants, or the response of an individual after performing certain behaviour, such as complexity, duration, and skill; (E) environmental determinants, or those aspects which can influence the individual's ability to successfully perform a behaviour such as situation, roles, models, and relationships (see Figure 3-1). Although these determinants operate and affect each other interactively, the effect depends on their strength at any particular moment (Bandura, 1986, 1989).



*Figure 3-1: The relations between social cognitive determinants. Source: Bandura (1986)*

Social cognitive theory demonstrates how individuals learn and maintain particular behaviour by observing others. Thus, this theory is based on a set of basic concepts (Bandura, 1963, 1977, 1986, 1989; Bandura & Huston, 1961; Bandura, Ross, & Ross, 1963b). The first concept is learning by observing others. An individual can acquire new behaviour and knowledge by observing certain surrounding models. The second concept is an internal process which may or may not drive the learner to acquire a new behaviour. Motives are among those concepts which can encourage the learner to set his/her goals and try to accomplish them. Finally, punishment and reinforcement have an indirect influence on learning and behaviour (Bandura, 1963, 1977, 1986, 1989, 1999; Bandura & Huston, 1961; Bandura et al., 1963a, 1963b).

Numerous studies have examined and applied the concepts of social cognitive theory. Many of these studies have been conducted by Bandura himself in collaboration with his colleagues and students. Mostly, their studies examined triadic reciprocity as a means of understanding human functioning. Bandura (1986) claimed that people have a set of capabilities that function within the social cognitive framework. Symbolizing capability refers to the ability of people to allocate symbols

to skills and experiences and use these symbols to transform these skills and experiences into a cognitive model. The second capability is self-regulation, which refers to people's ability to regulate their behaviour without external interference. Self-reflective capability is the ability of people to reflect upon their own thoughts, feelings, and actions. Vicarious capability is their ability to learn from observing others' models, as well as learning from their own actions (Bandura, 1986). These capabilities enhance the nature of the human being towards a specific behaviour.

All these studies that have been conducted by Bandura with his colleagues and students have become important foundations of mutual determinism. As Bandura (1986) summarized it: "what people think, believe, and feel affects how they behave. The natural and extrinsic effects of their actions, in turn, partly determine their thought patterns and affective reactions" (p. 25). Moreover, Bandura (1986) claimed that proxy agency and collective agency are two additional domains of the construct. Hardin (2010), in a study of the relationship between professional learning communities and collective teacher efficacy in an international school setting, argued that these two aspects, proxy and collective, are important indicators of how people work together, rely upon each other, and enhance their social systems.

Although social cognitive theory originated from a psychological perspective, it has received considerable attention from other perspectives such as those of education, science, and informatics. For example, Bandura (2001) has applied social cognitive theory to media-based mass communication. Zimmerman and Schunk (2001, 2012) used social cognitive theory to discuss how social cognitive principles can be applied to enhance self-regulatory skills in the classrooms. LaRose and Eastin (2004) have integrated uses and gratifications theory with social cognitive theory to

test a new model of media attendance, whereas Lee and Ma (2012) have integrated the same theories to explore the influences of information seeking, socializing, entertainment, status seeking, and prior social media sharing experience on news sharing intentions. Chiu, Hsu, and Wang (2006) have integrated social cognitive theory with social capital theory to investigate the motivations behind people's knowledge sharing in virtual communities. In relating social media with knowledge sharing, Oh and Syn (2015) have integrated social cognitive theory with social exchange theory to investigate the motivations of social media users for sharing their own expertise and experiences with anonymous others. Eid and Al-Jabri (2016) applied social cognitive theory in their study to examine the various classifications of social networking sites usage including: chatting and online discussion, creating knowledge and information content, file sharing, and enjoyment and entertainment, by tertiary students at King Fahd University of Petroleum and Minerals in Saudi Arabia.

In social cognitive theory, two core factors have the most influence on people's behaviour: self-efficacy and outcome expectation (Bandura, 1986). Self-efficacy is "a judgment of one's capability to accomplish a certain level of performance" (Bandura, 1986, p. 391). Those who have high self-efficacy believe that they possess the ability to achieve high performance in a certain behaviour. On the other hand, outcome expectation is "a judgment of the likely consequence such behaviour will produce" (Bandura, 1986, p. 391), which is closely related to the reward system. These two factors are important in influencing people to make decisions concerning knowledge sharing via virtual communities such as social media (Oh & Syn, 2015). These two factors are discussed in the next two sub-sections.

### ***3.2.1.1 Self-efficacy***

Self-efficacy represents one of the theoretical components of social cognitive theory (Bandura, 1986). As mentioned previously, self-efficacy is “a judgment of one’s capability to accomplish a certain level of performance” (Bandura, 1986, p. 391). Self-efficacy beliefs affect a number of psychological processes such as performance (Bandura, 1977, 1986; Wiedenbeck, 2005; Wiedenbeck, Labelle, & Kain, 2004), achievement of personal goals (Bandura, 1994), expenditure of effort (Askar & Davenport, 2009; Bandura, 1977, 1982, 1986, 1994), perseverance in the face of difficulties (Bandura, 1977, 1982, 1986, 1994), resilience in the face of failure (Bandura, 1994), and choice of situations, activities and environments (Askar & Davenport, 2009; Bandura, 1977, 1982, 1986). Self-efficacy affects personal outcome expectations. Thus, high self-efficacy will result in positive outcomes (Bandura, 2004b). Bandura (1994) writes that “self-efficacy affects life choices, level of motivation, quality of functioning, resilience to adversity and vulnerability to stress and depression” (p. 80). Indeed, the self-efficacy mechanism is a central part of human agency (Bandura, 1982, 1986, 1989).

Although self-efficacy affects the level of motivation, it cannot produce a new performance if there is a lack of the subskills necessary to implement the personal agency (Bandura, 1986). However, people have a number of basic subskills for forming new performances (Bandura, 1986). If these subskills are lacking, efficacy-sustained effort helps support their development (Bandura, 1986).

Several studies have discussed how self-efficacy influences students’ behaviour and skills such as writing and mathematics. For example, Pajares and his colleagues have conducted numerous studies of specific variables such as learning disability (Pajares & Kranzler, 1994), problem solving (Pajares & Miller, 1994), and age



(Pajares & Miller, 1995). They concluded that self-efficacy plays an important role in student performance. Regarding the use of new technologies, several studies have examined self-efficacy of technological users. Celik and Yesilyurt (2013) have argued that perceived computer self-efficacy and computer anxiety are important predictors of the teacher's attitude towards using computers to support education. Gegenfurtner, Veermans, and Vauras (2013) have studied the longitudinal development of the relationship between self-efficacy and transfer before and after training. They found that there is a positive population correlation estimate between self-efficacy and transfer before and after training.

Regarding social media, numerous studies have examined how personal self-efficacy influences the use of this tool for knowledge sharing. For example, Oh and Syn (2015) have investigated the motivations of social media users for sharing their own expertise and experiences with anonymous others. In their study, they identified ten factors that influence knowledge sharing via social media. They conducted an empirical study with more than 1000 participants, and concluded that the use of social media for knowledge sharing with others is highly likely to be motivated by self-efficacy and vice versa. In a study by Cho and colleagues (2010), they explored how and why people participate in collaborative knowledge-building practices in the context of Wikipedia. They also conducted an empirical study with 223 participants, and found that self-efficacy has a significant association with behavioural intention to share knowledge in Wikipedia. Papadopoulos, Stamati, and Nopparuch (2013) confirmed that self-efficacy has a positive effect on the intention of knowledge sharing among employees via weblogs.

According to Bandura (1977), self-efficacy is derived from four main sources: performance accomplishment, vicarious experience, verbal persuasion, and emotional arousal. Performance accomplishment is the influential source of efficacy information and is based on personal mastery experiences. Bandura (1997) wrote, “A resilient sense of efficacy requires experience in overcoming obstacles through perseverant effort. After people become convinced they have what it takes to succeed, they persevere in the face of adversity and quickly rebound from setbacks” (p. 73). Successes can build strong confidence in individuals, whereas failure can weaken confidence (Hendricks, 2016). However, a high sense of self-efficacy built on past successes can enhance the capability to face failures (Hendricks, 2016). Failure in some cases may strengthen an individual’s ability to cope with other situations. Thus, the experience levels of researchers in using social media may either strengthen or weaken their use.

The second source is vicarious experience. Seeing others’ activities can enhance the expectations of observers, leading them to intensify and persist in their efforts (Bandura, 1977). They convince themselves that they can achieve improvement in performance if others can do it (Bandura, 1977); while “people convinced vicariously of their inefficacy are inclined to behave in ineffectual ways that, in fact, generate confirmatory behaviour evidence of inability” (Bandura, 1986, p. 400). Observing others can provide individuals with a sense of confidence in their abilities to perform similarly to others (Hendricks, 2016). Researchers could experience a boost in their self-efficacy for using social media to share knowledge by observing others’ successes in doing so.

The third source is verbal persuasion. Because of the ease and availability of this source, it is widely employed (Bandura, 1977). Bandura (1997) claimed, “People who are persuaded verbally that they possess the capabilities to master given activities are likely to mobilize greater effort and sustain it than if they harbour self-doubts and dwell on personal deficiencies when problems arise” (p. 74). Verbal persuasion involves encouragement from others, such as colleagues and institutions, which serves to enhance an individual’s belief that they possess the abilities to achieve a desired level of performance (Tschannen-Moran & McMaster, 2009). Researchers may receive encouragement to use social media from their colleagues or institutions.

The fourth and last source of self-efficacy is emotional arousal. Stressful and psychological situations elicit emotions, and they depend on the circumstances which might provide valuable information about personal competency (Bandura, 1977). Bandura (1997) stated, “Positive mood enhances perceived self-efficacy, despondent mood diminishes it” (p. 75). Positive and negative experiences can leave researchers with a high or low perception, respectively, of their confidence in using social media for knowledge sharing (Hendricks, 2016).

Many researchers have studied these sources of self-efficacy. Usher and Pajares (2008) completed a critical review of the literature for the period between 1990 and 2007. They categorized this research into quantitative and qualitative studies; most were quantitative and mainly focused on education and performance.

Joët, Usher, and Bressoux (2011) studied the influence of these sources on the academic and self-regulatory efficacy beliefs of third grade elementary school students. They found that the sources and mean classroom level predicted self-

efficacy for self-regulated learning. Likewise, Loo and Choy (2013) found in a study of 178 third year engineering students that these sources were correlated, but the main predictor for academic achievements of mathematics and related engineering modules was mastery experience. Warner et al. (2014) found that mastery experience, self-persuasion, and reduction in negative affective states are the significant predictors of self-efficacy for physical activity in community-dwelling older adults. Garlin and McGuiggan (2002) investigated the sources of self-efficacy in consumer behaviour through ten in-depth interviews. The findings provided supporting evidence for the significance of these sources and their impact on an individual's sense of self-efficacy in the course of consumption.

As shown, there are number of studies focused on the sources of self-efficacy. However, based on the researcher's knowledge, there is no known study that has investigated these sources and the levels of impact on researchers regarding the use of social media for knowledge sharing.

### ***3.2.1.2 Outcome Expectations***

As mentioned previously, outcome expectation is considered one of the two important factors in social cognitive theory, and is defined as “a judgment of the likely consequence such behaviour will produce” (Bandura, 1986, p. 391). Thus, the outcome relates to the consequence of the act, not the act itself. Occasionally, outcome expectations are misconstrued and regarded as an efficacy of a technique, whereas the efficacious technique is not in itself the outcome, but is a means for producing the outcome (Bandura, 1986).

According to Bandura (1986), efficacy and outcome judgements are various, and the reason behind this argument is that individuals believe that a particular action can

produce certain outcomes. Moreover, they do not act on that belief and they are not sure whether they can actually perform the necessary activities. Outcome expectations can be separated from self-efficacy “when either no action can produce a selected effect or extrinsic outcomes are loosely linked to level or quality of performance” (Bandura, 1986, p. 393). Moreover, expected outcomes are relatively dissociable from self-efficacy when extrinsic outcomes are fixed at the low level of performance, or high performance brings no additional benefits (Bandura, 1986).

According to the theory of personality (Rotter, 1966), outcomes are determined either by an individual’s actions or by external factors beyond the individual’s control. Therefore, individuals who believe that their outcomes are determined by their actions and behaviour tend to be more active compared with those who perceive events more fatalistically (Bandura, 1986). The belief in personal determination of outcomes creates a sense of efficacy and power, whereas the belief that outcomes occur based on what the individual does results in apathy (Bandura, 1986). However, it has been argued that the relation to outcomes is with actions rather than with personal efficacy (Rotter, 1966). In contrast, Bandura (1986) argued that “outcomes are determined by one’s own actions can be either demoralizing or heartening, depending on the level of self-judged efficacy” (p. 413).

According to a number of studies that discussed the concept of outcome expectations, it can be argued that such expectations can affect individuals’ behaviour. For example, Kwahk, Ahn, and Ryu (2018) examined the effects of outcome expectations on use of information systems. They conducted quantitative data collection from 208 enterprise systems’ users. They found that the outcome

expectations positively affect the use of information systems, and may promote it in the mandatory use context.

As the importance of outcome expectations has been shown, it will be significant to identify their forms and types. Thus, they are identified within three main forms: social, physical (performance), and self-evaluative (Bandura, 2004a). Social outcome expectations have two sides, positive and negative. The positive side includes social reaction of others as expressions of interest, social recognition, approval, conferral of status, and monetary compensation. The negative side represents disapproval, disinterest, censure, social rejection, imposed penalties, and deprivation of privileges. Likewise, physical outcome expectations can take positive forms (e.g. pleasant sensory experiences and physical pleasures), or negative forms (e.g. aversive sensory experiences, pain, and physical discomfort). Self-evaluative outcome expectations also have two sides, namely positive and negative reactions to the individual's own behaviour (Bandura, 1997). Within each form, positive outcome expectations are seen as incentives and thus human behaviour is determined by these forms (Bandura, 1997). Bandura (1997) argues that these three forms are different, but related, and combine together to construct the outcome expectations. However, Niederhauser and Perkmen (2010), according to others, claimed that these three constructs are not unique.

Moreover, numerous studies have presented various types of outcome expectations. For instance, Compeau, Higgins, and Huff (1999) studied the role of an individuals' beliefs and their reactions concerning the ability to efficiently use computers in the determination of computer usage. They discussed two types of outcome expectations which are relevant to computer use. The first type is

performance-related outcome expectations which are associated with improvements in job performance connected to using computers. The second type is personal outcome expectations which relate to a change in image or status, or receipt of rewards. Their study shows that these two types have a significant impact on the use of computers. Hsu, Ju, Yen, and Chang (2007) discussed the knowledge sharing behaviour within the virtual communities of professional societies. They identified two kinds of outcome expectations: personal and community-related outcome expectations. Personal outcome expectations refer to the expectations of individuals such as making more friends or getting better returns, whereas community-related outcome expectations refer to the individuals' beliefs about the impact of their knowledge sharing. The study shows that personal outcome expectations have a significant influence on knowledge sharing behaviour; in contrast, community-related outcome expectations have no significant influence on knowledge sharing behaviour.

In another study conducted by Shoffner, Newsome, and Barrio (2005) about "Young Adolescents' Outcome Expectations", outcome expectations were classified into five forms. Three out of these five forms were adapted from Bandura (2004a) and have been previously mentioned. The remaining two were added by Shoffner and her colleagues and included generativity outcome expectations and relational outcome expectations. Generativity outcome expectations include impact of personal success, potential creation and discovery, and altruistic motivation. Relational outcome expectations refer to interpersonal and social impact. However, there is clearly some overlap between some of these forms. For instance, there is some

similarity between generativity and self-satisfaction on one hand, and between relational and social outcome expectations on the other hand.

In fact, the two types of outcome expectations discussed by Compeau et al. (1999) highlight the individuals' benefits as derived from their actions. Likewise, numerous studies have provided empirical support for individuals' benefits (e.g. reward, enjoyment) which can act as motivators of knowledge sharing (Bock & Kim, 2001; Bock, Zmud, Kim, & Lee, 2005; Kankanhalli, Tan, & Wei, 2005). If users of social media believe that they may receive extrinsic benefits such as promotion, educational opportunity, a new position, or monetary reward from their knowledge sharing, they will have a more positive attitude toward knowledge sharing (Hsu et al., 2007). Thus it is obvious that outcome expectations are important factors which may influence the decision to share knowledge through social media.

It must be considered that numerous studies have provided strong evidence for the relationship between self-efficacy and outcome expectations. For example, Compeau et al. (1999) found that computer self-efficacy exerts a significant positive influence on personal outcome expectations and performance outcome expectations. Johnson and Marakas (2000) also showed that computer self-efficacy exerts a significant influence on performance outcome expectations. Hsu and his colleagues (2007) found that knowledge sharing self-efficacy has a significant influence on personal outcome expectations and community-related outcome expectations.

Despite the benefits of social media use, there is a lack of understanding as to why researchers use or do not use this tool for knowledge sharing. Do they expect any outcomes from this use? If so, what are these outcomes, and how can they impact on this use? These issues need to be highlighted. Therefore, this study aims to



investigate the outcomes that researchers expect from the use of social media to share knowledge, and the impact of these expectations on this use.

### **3.3 Knowledge**

#### ***3.3.1 Background***

There is a big debate among researchers in the Information Sciences and Information Systems fields about how they can distinguish between data, information, and knowledge. This debate can be divided into two groups. The first group uses one of these concepts to define and denote the others. For instance, Kogut and Zander (1992) defined information as “knowledge which can be transmitted without loss of integrity” (p. 386).

In contrast, the second group argues that these concepts are different, even in their relationships with each other, as shown in Table 3-1. Stenmark (2002) confirmed that the relationships between data, information, and knowledge are linear, which means that the distance between data and information is similar to the distance between information and knowledge (Figure 3-2). A second point is that data can be converted to information, and information can be converted to knowledge, but not vice versa (Becerra-Fernandez & Sabherwal, 2014). Thus, knowledge is considered more valuable than information and data, as shown in Figure 3-3 (Becerra-Fernandez & Sabherwal, 2014). According to Wilson (2002), the difference between data, information, and knowledge is that data and information can be managed, by comparison with knowledge which can never be managed, “except by the individual knower and, even then, only imperfectly” (p. 2).

Table 3-1: Definitions of data, information, and knowledge

<b>Data</b>	<b>Information</b>	<b>Knowledge</b>
<ul style="list-style-type: none"> <li>• Simple observations</li> <li>• A set of discrete facts and messages</li> <li>• Text that does not answer questions about a particular problem</li> </ul>	<ul style="list-style-type: none"> <li>• Facts organized to describe a situation or condition</li> <li>• A flow of meaningful messages meant to change the receiver's perception</li> <li>• Data with meaning, relevance and purpose</li> <li>• Text that answers the questions who, when, what, or where</li> </ul>	<ul style="list-style-type: none"> <li>• Truths and beliefs, perspectives and concepts, judgements and expectations, methodologies and know-how</li> <li>• Commitments and beliefs created from these messages</li> <li>• The ability to assign meaning</li> <li>• Valuable information from the human mind</li> <li>• Experiences, values, insights, and contextual information</li> <li>• Text that answers the questions why and how</li> </ul>

Source: Stenmark (2002, p. 2).

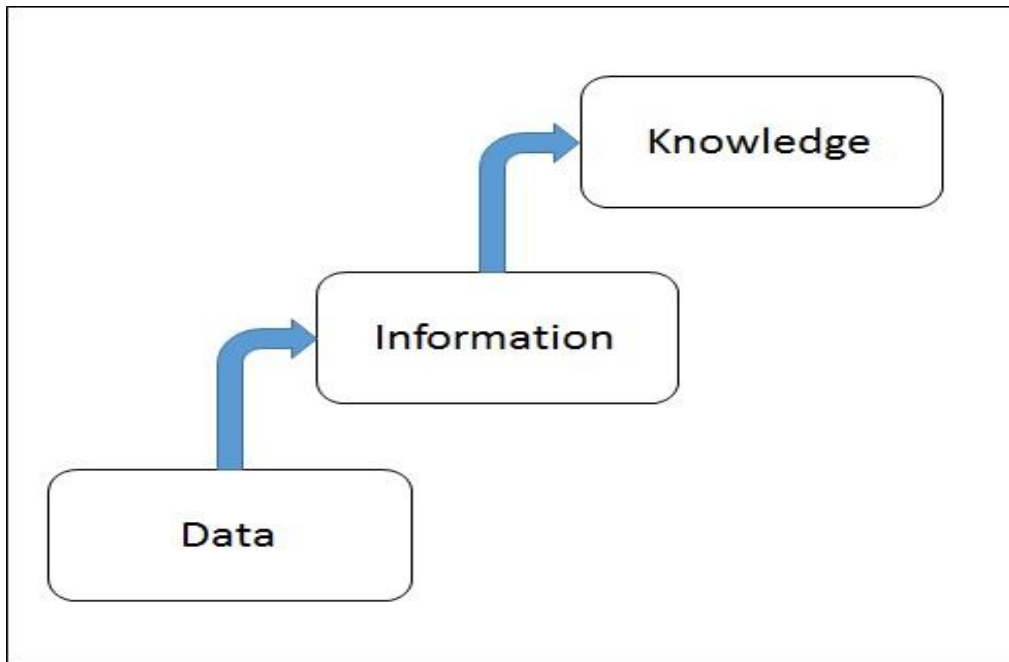


Figure 3-2: The relationship between data, information, and knowledge.

Source: Stenmark (2002, p. 3)

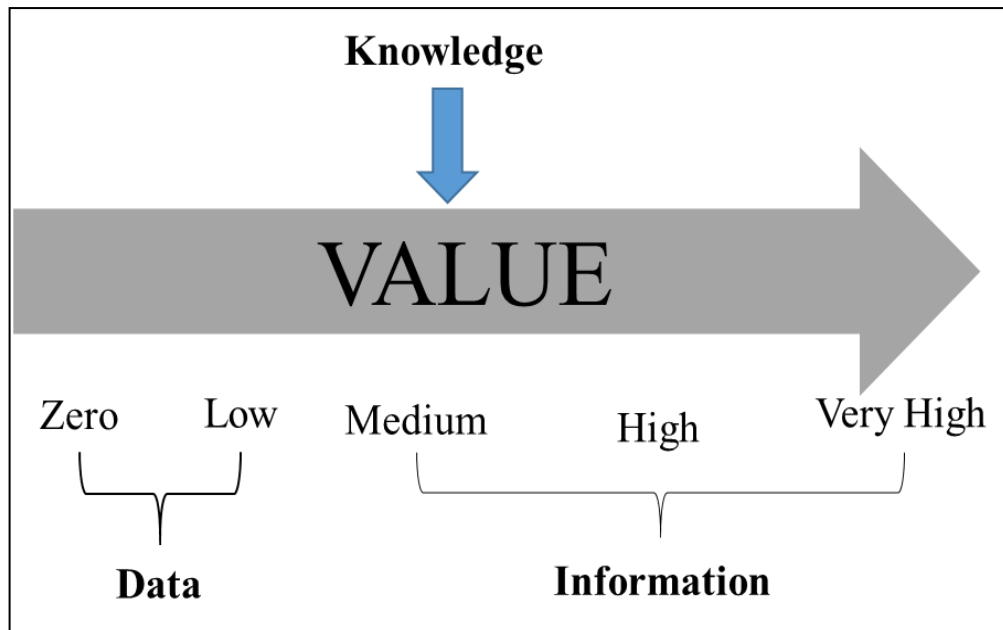


Figure 3-3: Data, Information, and Knowledge. Source: Becerra-Fernandez & Sabherwal (2014, p. 20)

Nonaka and Takeuchi (1995) described the similarity and difference between knowledge and information, and made three observations: “First, knowledge, unlike information, is about beliefs and commitment. Knowledge is a function of particular stance, perspective, or intention. Second, knowledge, unlike information, is about action. It is always knowledge ‘to some end’. And third, knowledge, like information, is about meaning. It is context-specific and relational” (p. 58).

Moreover, some scholars include another concept in their discussions, which is wisdom. Thus, data refer to raw facts which demonstrate a reality. Information is important and valuable data that is structured and processed to become knowledge. The final stage is wisdom which enables people to provide practical insights (Bierly III, Kessler, & Christensen, 2000; Davenport & Prusak, 2000; Faucher, Everett, & Lawson, 2008; Rowley, 2007). Therefore, it is important to discuss the data-information-knowledge-wisdom hierarchy in the following section.

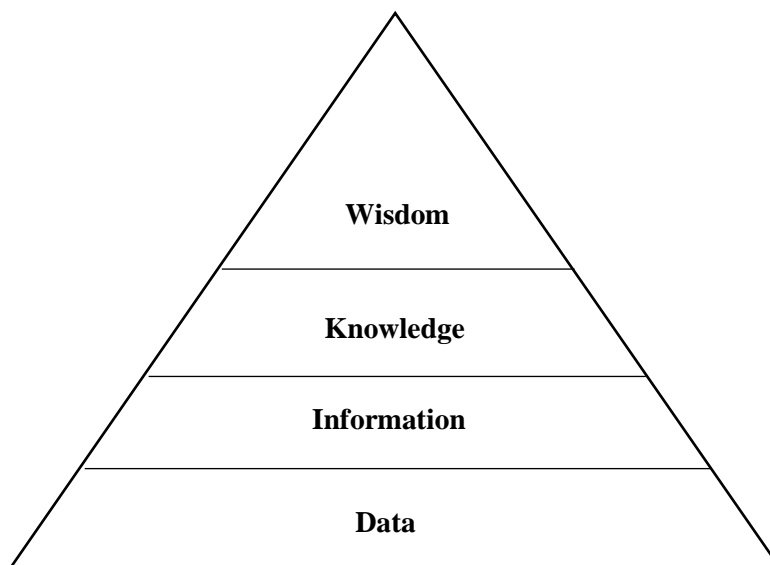
### ***3.3.2 The Data-Information-Knowledge-Wisdom Hierarchy (DIKW)***

One of the fundamental models in information and knowledge literature is the data-information-knowledge-wisdom hierarchy (DIKW) (Ackoff, 1989; Rowley, 2007). It is called the knowledge hierarchy, or information hierarchy, or knowledge pyramid (Faucher, Everett & Lawson, 2008; Rowley, 2007), as shown in Figure 3-4.

The hierarchy is used to contextualize data, information, knowledge, and sometimes wisdom, with respect to one another and to identify and describe the processes involved in the transformation of an entity at a lower level in the hierarchy (e.g. data) to an entity at a higher level (e.g. information). The implicit assumption is that data can be used to create information; information can be used

to create knowledge, and knowledge can be used to create wisdom (Rowley, 2007, p. 164).

Ackoff (1989) published a paper entitled “From data to wisdom”. This paper is very often cited as source of the DIKW hierarchy when discussing the following concepts: data, information, knowledge, understanding and wisdom. Wisdom is at the top of the hierarchy of these concepts, followed by understanding, knowledge, information, and, at the bottom, data. Thus, each concept includes any concept that falls below it. For example, there can be no wisdom without understanding and no understanding without knowledge. Likewise, there is no knowledge without information and no information without data (Ackoff, 1989).



*Figure 3-4: The traditional knowledge pyramid. Source: Faucher, Everett, and Lawson (2008), Rowley (2007).*

The main elements of this hierarchy are discussed in the following sections.

### ***3.3.2.1 Data***

According to Rowley (2007), data are defined as symbols that represent or describe objects, events, and their environment. Data are not in usable form and differ from information in functional respects (Rowley, 2007).

Frické (2009) identified two features of data: truth and certainty. Data are true and are known for certain to be true. This thing enables the building of all knowledge; that is, all certain knowledge. But Frické (2009) stated that “there is no such thing as certain knowledge. All knowledge is conjectural” (p. 7). Thus, data are not known for certain to be true, because data might be incorrect and invalid. In other words, data are fallible (Frické, 2009).

### ***3.3.2.2 Information***

According to information systems and knowledge management literature, information is defined as organized or structured data (Rowley, 2007). The processes associated with converting data into information were identified by Curtis and Cobham (2008). These processes are: classification, rearranging/sorting, aggregating, performing, calculations, and selection. However, they have not discussed whether the processes are performed by information systems, or people, or both (Rowley, 2007).

### ***3.3.2.3 Knowledge***

As mentioned previously, there is considerable debate about the difference between knowledge on the one hand and data and information on the other. This debate is clear in the information systems and knowledge management literature. Some information systems texts identify knowledge in terms of data and information. The following studies give better examples of this point. Chaffey and Wood (2005) stated

that knowledge is “the combination of data and information, to which is added expert opinion, skills, and experience, to result in a valuable asset which can be used to aid decision making” (p. 223). According to Turban, Rainer and Potter (2005, p. 38) (as cited in Rowley, 2007), “Knowledge is data and/or information that have been organized and processed to convey understanding, experience, accumulated learning, and expertise as they apply to a current problem or activity”.

Some of the knowledge management texts also concur that knowledge is based on information. For example, Barnes (2002) indicated that knowledge is information that is processed in the mind of an individual and represents a justified personal belief, so as to increase the ability to take effective actions.

Information systems and knowledge management texts discuss the difference between tacit and explicit knowledge (Rowley, 2007). Jashapara (2011) stated that “Knowledge exists along a continuum between tacit knowledge (know how) and explicit knowledge (know what)” (p. 17). Tacit knowledge refers to knowledge that is embedded in individual experience and involves personal belief, perspective, and values, whereas explicit knowledge refers to knowledge that has been documented and articulated (Rowley, 2007).

These two types of knowledge are the main focus of this study and are discussed in greater detail in the section on types of knowledge.

#### **3.3.2.4 Wisdom**

Although there is limited discussion of the concept of wisdom in information systems and knowledge management texts, a number of scholars have defined the term “wisdom”. For example, Rowley (2007) defined wisdom as the ability to increase effectiveness and add value that requires the mental function. Spence (2011)

stated that “Wisdom is knowing how to live well and successfully applying that knowledge in living well (KLSA)” (p. 271).

According to Frické (2009),

Wisdom is not just one type of knowledge, but diverse. What a wise person needs to know and understand constitutes a varied list: the most important goals and values of life – the ultimate goal, if there is one; what means will reach these goals without too great a cost; what kinds of dangers threaten the achieving of these goals; how to recognize and avoid or minimize these dangers; what different types of human beings are like in their actions and motives (as this presents dangers or opportunities); what is not possible or feasible to achieve (or avoid); how to tell what is appropriate when; knowing when certain goals are sufficiently achieved; what limitations are unavoidable and how to accept them; how to improve oneself and one's relationships with others or society; knowing what the true and unapparent value of various things is; when to take a long-term view; knowing the variety and obduracy of facts, institutions, and human nature; understanding what one's real motives are; how to cope and deal with the major tragedies and dilemmas of life, and with the major good things too (p. 11).

Wise persons must act in accordance with the wide appropriate knowledge that they possess to achieve appropriate ends (Frické, 2009).

As has been clearly shown in the above discussion of the distinctions between data, information, and knowledge, these distinctions must be taken into account. Thus, each study has to clarify which group it belongs to. The present study is



aligned with the second group which argues that these three concepts are different, and defines knowledge differently from information and data.

### ***3.3.3 Knowledge***

As previously mentioned, knowledge represents another important concept in this research. Thus, it is important to discuss this concept in more detail in this section.

Knowledge is defined as human awareness of a specific discipline that has been achieved through experiences and continuous study (Awad & Ghaziri, 2004). Davenport and Prusak (2000, p. 5) defined knowledge as a “fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information”. Becerra-Fernandez and Sabherwal (2014) defined knowledge in a particular area as the justified true beliefs about the relationship between all the concepts related to this area.

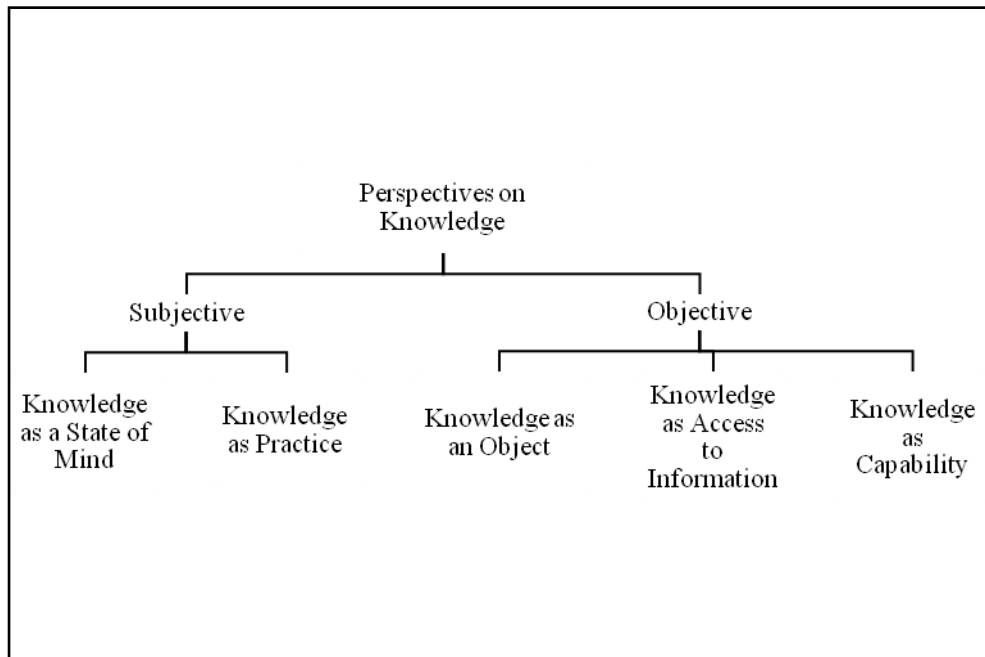
Knowledge is a mental process which develops through understanding, learning, and experience, and can interact with everything outside the mind (Wilson, 2002). However, the concept of everything outside the mind can be employed in various ways. It can refer to data if these data consist of simple facts. On the other hand, if these data have been established in a context relevant to the recipient, they refer to information (Wilson, 2002). Based on the previous definitions and for the purpose of this study, knowledge is the understanding and expertise that are either embedded in an individual's mind or documented in sources (e.g. books, articles), and relate to a specific discipline.

The literature review on the nature of knowledge is essentially based on the views of Ryle (1949) and Polanyi (1966). These views have been expanded by two scholars, Burrell and Morgan (1979). They have developed a framework that identifies the four main positions of epistemology: positivism, constructivism, postmodernism, and realism. These four positions have been classified under two paradigms: subjective or objective (Burrell & Morgan, 1979).

According to the subjective paradigm, two perspectives of knowledge were identified (Becerra-Fernandez & Sabherwal, 2014), as shown in Figure 2-5. The first perspective of knowledge is a state of mind, which means that the knowledge of individuals differs, based upon their experiences and beliefs (Becerra-Fernandez & Sabherwal, 2014). The second perspective represents knowledge as practice concepts (Becerra-Fernandez & Sabherwal, 2014). Thus, from this perspective, knowledge is not in the individual mind, but comes from activities and practices (Al-Taei, 2014).

In contrast, the objective paradigm holds that reality is independent and does not relate to human perceptions. Moreover, it can be structured based on previous concepts and categories (Becerra-Fernandez & Sabherwal, 2014). This paradigm incorporates three different perspectives: knowledge as objects, knowledge as access to information, and knowledge as capability (Becerra-Fernandez & Sabherwal, 2014); see Figure 3-5. In the first perspective, knowledge is considered something that can be stored, transferred, and deployed (Becerra-Fernandez & Sabherwal, 2014). The second perspective views knowledge as the condition that makes access to information possible (Becerra-Fernandez & Sabherwal, 2014). The knowledge as capability perspective, while consistent with the previous two perspectives, focuses

on "the way in which knowledge can be applied to influence the action" (Becerra-Fernandez & Sabherwal, 2014, p. 24).



*Figure 3-5: Paradigms and their perspectives on knowledge,  
Sources: Becerra-Fernandez & Sabherwal (2014, p. 23)*

Apparently, according to the present section, knowledge is a phenomenal concept and needs more research to investigate its benefits. It is, therefore, very important to discuss its types in the next section.

### **3.3.3.1 Types of Knowledge**

Knowledge has been categorized in various ways (Becerra-Fernandez & Sabherwal, 2014). For example, according to Alavi and Leidner (2001), knowledge has been classified as tacit (knowledge that is structured based on actions, experience, and involvement in specific activities), explicit (articulated/generalized knowledge), individual (created by an individual), social (created by a group), declarative (know-about), procedural (know-how), causal (know-why), conditional (know-when),

relational (know-with), and pragmatic (useful for an organization). Anderson, Krathwohl, and Bloom (2001) classified knowledge into four general types: factual knowledge (knowledge about specific elements and details), conceptual knowledge (classifications, models, structures, and theories), procedural knowledge (knowledge of how), and metacognitive knowledge (awareness of cognition).

Based on this introduction to the types of knowledge, it can be argued that these types fall into three classifications (Al-Tae, 2014; Becerra-Fernandez & Sabherwal, 2014). These categories are explained in the following sub-sections.

– **Tacit or Explicit Knowledge**

The first category is the distinction between tacit and explicit (Collins, 2010; Nonaka & Von Krogh, 2009; Polyani, 1966). Tacit knowledge is based on personal insights and individual experiences and activities. In other words, tacit knowledge refers to the knowledge that resides in an individual's mind, as derived from experiences and personal beliefs (Panahi, Watson, & Partridge, 2012a). Polyani (1966) described tacit knowledge in the words "we know more than we can tell" (p. 4). This kind of knowledge is difficult to articulate, formalize, imitate, and share (Ambrosini & Bowman, 2001; Powell & Ambrosini, 2012).

In contrast, explicit knowledge refers to knowledge that can be articulated in words and numbers. This kind of knowledge can be formally and systematically shared in the form of manuals, audio and videotapes, data, results, etc. (Al-Tae, 2014; Becerra-Fernandez & Sabherwal, 2014; Kothari et al., 2012). This category of knowledge is the main focus in this research and will be discussed in some details later on.

Although it has been argued that tacit and explicit knowledge are different (see Table 3-2), it is possible to convert one form to the other. For example, when individuals read articles or books (explicit knowledge), then they evaluate what has been found in their minds (tacit knowledge). Conversely, when individuals possess ideas and thoughts in their minds (tacit knowledge), they present these ideas and thoughts by writing articles or books (explicit knowledge).

*Table 3-2: A comparison between tacit knowledge and explicit knowledge*

<i>Tacit Knowledge</i>	<i>Explicit knowledge</i>
- <i>Unstructured, difficult to understand, classify, estimate, explore, formalize, and capture</i>	- <i>Structured, articulated, well-documented, easy to identify, classify, validate, store, share, and practise</i>
- <i>Unavailable and invisible</i>	- <i>Available and visible</i>
- <i>Subjective, know-how, practical, experience-based, and expert knowledge</i>	- <i>Objective, know-what, declarative, and academic knowledge</i>
- <i>Resides in human minds and also in relations</i>	- <i>Found in books, journals, and articles</i>
- <i>Difficult to learn: can be learnt through personal experience and observations</i>	- <i>Easy to learn: can be learnt through instruction and procedures</i>
- <i>Transferred through conversation and discussions</i>	- <i>Transferred by using any information sharing medium</i>

*Sources: Dampney, Busch, and Richards (2002); Haldin-Herrgard (2000); McAdam, Mason, and McCrory (2007); Nonaka and Takeuchi (1995); Pavlíček (2009)*

### – **Procedural or Declarative Knowledge**

Another important category within the concept of knowledge is the distinction between procedural knowledge (know-how) and declarative knowledge (know-about) (Banks & Millward, 2007; Becerra-Fernandez & Sabherwal, 2014; Kogut & Zander, 1992; Singley & Anderson, 1989). Procedural knowledge focuses on beliefs

about sequences of steps or actions which lead to desired outcomes (Becerra-Fernandez & Sabherwal, 2014). An example of this kind of knowledge would be a set of justified beliefs about the procedures that have to be taken in a government organization to make a decision on who can get a contract for a specific project.

In contrast, declarative knowledge, or what is called substantive knowledge, represents the focus on beliefs about relationships among variables (Becerra-Fernandez & Sabherwal, 2014). As an example of declarative knowledge, the increase in a product's price would cause some reduction in the number of sales. Therefore, it can be identified as expected correlations, forms of propositions, or formulas relating concepts represented as variables (Becerra-Fernandez & Sabherwal, 2014).

#### – **General or Specific Knowledge**

In this category, the focus revolves around whether the knowledge is possessed widely or narrowly (Becerra-Fernandez & Sabherwal, 2014). General knowledge is knowledge that is possessed by a large number of individuals and can be shared easily and quickly among them. For example, the rules of a soccer game can be regarded as general knowledge. If one player has got two yellow cards, this player will directly receive a red card and leave the game (Becerra-Fernandez & Sabherwal, 2014). It is general knowledge because everyone with a basic understanding of the game of soccer possesses this knowledge.

In contrast, specific knowledge is possessed by a very limited number of people, and is costly to share (Becerra-Fernandez & Sabherwal, 2014; Sabherwal & Becerra-Fernandez, 2005). This kind of knowledge is divided into technology-specific knowledge, context-specific knowledge, and context-and-technology knowledge

(Becerra-Fernandez & Sabherwal, 2014). Technology-specific knowledge refers to deep knowledge in a specific area, including knowledge about tools and techniques which can be utilized to solve problems in this area. This type of specific knowledge is usually acquired through official training and can then be improved on through experience and practice in the field. For example, a computer engineer possesses specific knowledge about computer hardware (Becerra-Fernandez & Sabherwal, 2014).

The second type is context-specific knowledge, or knowledge about particular circumstances such as the place and time at which work has to be performed. This type relates to the organization and organizational departments within which tasks are accomplished (Becerra-Fernandez & Sabherwal, 2014). In contrast to the previous type, which is technology-specific knowledge, context-specific knowledge cannot be obtained through official training, but can be acquired within a specific context. For example, membership of a soccer team is considered a specific context (Becerra-Fernandez & Sabherwal, 2014).

The third type of specific knowledge combines both technology- and context-specific knowledge and is called context-and-technology-specific knowledge. It comprises both deep scientific knowledge and understanding of a particular context. For example, knowledge of how to take a decision on stocks in order to gain within the industry is context-and-technology-specific knowledge (Becerra-Fernandez & Sabherwal, 2014).

From a review of all these types, it is obvious that knowledge is a valuable phenomenon. Thus, there is a high demand for understanding of how this phenomenon is shared. The next section discusses this issue.

### ***3.3.3.2 Knowledge Sharing***

Knowledge sharing has received substantial attention from scholars in recent years, and has thus been defined from different perspectives. For example, knowledge sharing is defined as a set of behaviours that includes assistance in knowledge exchange with others (Chow & Chan, 2008; Connelly & Kelloway, 2003). Bukowitz and Williams (2000); Lee (2001) define knowledge sharing as the activity that supports the transfer or dissemination of knowledge from one person, group or organization to another. Knowledge sharing can be defined as a social interaction culture which involves the exchange of knowledge, experience and skills among employees within organizations (Šajeva, 2014; Zawawi et al., 2011). Sohail and Daud (2009) define knowledge sharing as “exchanging experience, events, thought or understanding on anything (in general) with an expectation to gain more insights and understanding about something for temporary curiosity” (p. 129). Knowledge sharing refers to the exchange of knowledge among two parties or more in a reciprocal process which allows them to reshape and formulate the knowledge in the new context (Willem, 2004). Bircham-Connolly, Corner, and Bowden (2005); Ma and Chan (2014); Sharratt and Usoro (2003) define knowledge sharing as the process of capturing knowledge from a source and transferring it to a recipient. Knowledge sharing refers to exchange of relevant information, ideas, concepts, suggestions, problem solving, and expertise (Bartol & Srivastava, 2002; Cummings, 2004; Singh Sandhu, Kishore Jain, & Umi Kalthom bte Ahmad, 2011; Srivastava, Bartol, & Locke, 2006). Knowledge sharing is furthermore defined as “the combination of one or both parties seeking knowledge in response to the request, such that one or both parties are affected by the experience” (Scott & Ghosh, 2007, p. 4). In this study, the researcher defines knowledge sharing as a process of interaction through which



knowledge is exchanged between individuals, groups, and organizations. This interactive exchange effectively occurs through the use of social media which is regarded as the most interactive tool.

Knowledge sharing for individuals is valuable for enhancing their learning and understanding. In other words, by sharing knowledge individuals acquire new knowledge and are able to perform their tasks (Brown, Dennis, Burley, & Arling, 2013). Knowledge sharing among researchers can be classified in four categories: contributing knowledge by publishing books or articles; formal interactions such as meetings or workshops; informal interactions; and interacting with communities (Ramayah, Yeap, & Ignatius, 2013). Thus, they can benefit from this sharing by getting rewards or improving their performance. Srivastava et al. (2006) stated that "Knowledge sharing may lead to better team performance for at least two reasons: improved decision making, and coordination" (p. 1242). Another benefit of knowledge sharing among researchers is improving research productivity (Fauzi, Nya-Ling, Thursamy & Ojo, 2019). According to them, to achieve this productivity, academics need to be encouraged to share their knowledge through formal or informal ways. Karim and Majid (2019) argued that the quality of education and improving academic research are depend on the level of knowledge sharing practices. Besides, an effective collaboration among academics is highly dependent on knowledge sharing (Tan, 2016; Laycock, 2005), while Wang and Noe (2010) stated that "The successes of knowledge management initiatives depends on knowledge sharing" (p.115). Moreover, knowledge sharing can highly improve the quality of the work, skills of decision-making, and problem solving (Cheng, Ho & Lau, 2009; Syed-Ikhsan & Rowland, 2004; Yang, 2007).

There are number of scholars investigated the factors that affect or influence this sharing (e.g. Fullwood, Rowley & McLean, 2018; Fullwood & Rowley, 2017; Ismail, Tajuddin & Yunus, 2019; Akosile & Olatokun, 2019; Naeem, Mirza, Ayyub & Lodhi, 2019; Jahani, Ramayah & Effendi, 2011; Al-Alawi, Al-Marzooqi & Mohammed, 2007). Tan (2016) classified the factors that affect knowledge sharing into individual, organisational, technological, and communication factors. Some studies classified these factors into three groups: organisational, individual, technological factors (e.g. Akosile & Olatokun, 2019; Cheng et al, 2009), while Fullwood and Rowley (2017) classified them into two groups: individual and organisational factors. Some studies investigated number of factors without any classification (e.g Ismail et al, 2019; Naeem et al, 2019; Jahani et al, 2011; Al-Alawi et al, 2007). However, these studies contain a set of factors that significantly influence knowledge sharing. These factors include trust (Ismail et al, 2019; Akosile & Olatokun, 2019; Naeem et al, 2019; Al-Alawi et al, 2007), reward system (Naeem et al, 2019; Jahani et al, 2011; Al-Alawi et al, 2007; Fullwood & Rowley, 2017), leadership (Akosile & Olatokun, 2019; Jahani et al, 2011; Fullwood & Rowley, 2017), organisation structure (Akosile & Olatokun, 2019; Al-Alawi et al, 2007), individual beliefs (Fullwood & Rowley, 2017), intention (Ismail et al, 2019), communication and information systems (Al-Alawi et al, 2007), affective commitment and human resource management practices (Naeem et al, 2019), University policy (Akosile & Olatokun, 2019).

In fact, there is an important issue regarding to knowledge sharing that needs more attention and is intellectual property rights. According to Harris (2019), “Intellectual property rights are divided into registered and non-registered rights. Registered rights

are those that you need to apply for and have granted, un-registered right become yours automatically” (p. 24). It is the most appropriate way to protect and specify ownership to the valuable knowledge (Olaisen & Revany, 2017).

According to Manzini and Lazzaritti (2015), and Harris (2019), there are several mechanisms of intellectual property protection and include patents, designs, trade secrets, trademarks, and copyrights. Researchers and academics, therefore, can benefit from any of these mechanisms to protect creations of their mind that may include cognitive experiences, books, articles, or even ideas (Harris, 2019; Poticha & Duncan, 2019). For example, using copyrights mechanism gives authors the right to protect their research outputs, thus these outputs will not be used without their permission (Manzini & Lazzarotti, 2016).

On the organizational side, numerous organizations encourage and promote knowledge sharing to obtain competitive advantage (Liebowitz, 2001; Feiz, Soltani & Farsizadeh, 2019). Thus, knowledge sharing is a vital component of organizational success (Sohail & Daud, 2009). It has been argued that the outcome of practising knowledge sharing is improved organizational effectiveness and performance. The importance of knowledge sharing can be clearly observed in knowledge-based organizations such as universities (Al-Hawamdeh, 2003; Gupta & Govindarajan, 2000; Olivera, 2000; Petrash, 1996).

Contemporary organizations have paid considerable attention to knowledge sharing, and have been stimulated by people’s need for knowledge sharing. Thus, they are successful and have achieved competitive advantage (Gaál, Szabó, Obermayer-Kovács, & Csepregi, 2015). So, to the extent that the knowledge is available for employees within organizations, the quality and efficiency of work should be

improved (Brown et al., 2013). According to Wang and Noe (2010), “Because of the potential benefits that can be realized from knowledge sharing, many organizations have invested considerable time and money into knowledge management (KM) initiatives including the development of knowledge management systems (KMS) which use state-of-the-art technology to facilitate the collection, storage, and distribution of knowledge” (p. 115).

There is a wide literature focused on knowledge sharing and particularly on sharing tacit and explicit knowledge (e.g. Al-Husseini & Elbeltagi, 2018; Arnett & Wittmann, 2014; Chuang, Jackson, & Jiang, 2016; Chung, Cooke, Fry, & Hung, 2015; Kucharska, Kowalczyk, & Kucharski, 2017; Loebbecke, van Fenema, & Powell, 2016; Park & Gabbard, 2018). From these studies, the importance of knowledge sharing can clearly be seen. Furthermore, the two main types of knowledge are tacit and explicit. For example, knowledge sharing among individuals is part of the learning process, helping them to convert the tacit knowledge which represents ideas, skills and experiences embedded in individuals’ minds to explicit knowledge which will be documented in papers and articles (Al-Husseini & Elbeltagi, 2018; Wang & Wang, 2012). According to Arnett and Wittmann (2014), the sharing of tacit knowledge between sales and marketing departments' members is a catalyst of marketing innovation. In another study conducted by Alias, Abbas, and Nordin (2016), the authors captured the way people in an IT department of a public higher education institution shared their tacit and explicit knowledge with each other. They interviewed five selected employees and found that the employees shared tacit knowledge through social media, discussions, incident handling, training classes, on-the-job training, troubleshooting and problem solving. In terms of explicit

knowledge, employees used configuration settings, technical drawings and coding templates via face-to-face meetings, instant messaging, development servers and emails.

From the previous discussion, it is clear that knowledge and knowledge sharing are important factors. In the case of knowledge sharing, there are various channels which are used to facilitate it. The latest and most powerful channel is social media, which is discussed in the next section, followed by a discussion on how this channel is used for knowledge sharing.

## **3.4 Social Media**

### ***3.4.1 A brief History of Social Media Sites***

It is important to take a look at some examples from the history of social media. In the 1990s, people used various technologies such as bulletin board systems, ICQ and Usenet to read news and bulletins, to exchange messages with other users, and to allow users to interact with each other (Neal, 2012). The first recognizable social media site, launched in 1997, was called SixDegrees.com. This site allowed users to create their profiles and list their friends. In 1998, users were able to surf their friends' lists. SixDegrees.com was designed to help people connect and send messages to each other (Boyd & Ellison, 2008).

From 1997 to 2001, a number of sites were launched to support various combinations of profiles and publicly articulated friends, such as AsianAvenue, BlackPlanet, and MiGente, which allowed users to create personal, professional, and dating profiles (Boyd & Ellison, 2008). LunarStorm, refashioned as a social media site in 2000, included friends lists, a guestbook, and diary pages (Boyd & Ellison,

2008). Ryze.com was launched in 2001 to help people influence their businesses (Boyd & Ellison, 2008).

In 2002, Friendster was launched to help friends-of-friends meet each other (Boyd, 2006). “Friendster gained traction among three groups of early adopters who shaped the site” (Boyd & Ellison, 2008, p. 215). The users were restricted from viewing profiles of people who were more than four degrees away (Boyd & Ellison, 2008).

From 2003 onwards, various social media were launched. It would be difficult to list all these sites, but the most popular of them are LinkedIn (launched in 2003), Facebook (launched in 2004), Twitter (launched in 2006) (Boyd & Ellison, 2008), ResearchGate, Academia.com (launched in 2008), Instagram (launched in 2010) (Hu, Manikonda, & Kambhampati, 2014), and Snapshot (launched in 2011).

From the previous brief discussion, it is obvious that social media and their use have an ancient history. Thus, a substantial part of this review will be devoted to defining social media, which will be undertaken in the following section.

### ***3.4.2 Definition of Social Media***

The term ‘Social media’ has been defined in different ways. A review of the social media literature indicates that scholars use a number of common perspectives to clarify the social media concept. The first group of scholars define social media in terms of user-generated content and internet-based applications (Kaplan & Haenlein, 2010; Kärkkäinen, Jussila, & Väisänen, 2010; Mandal & McQueen, 2012). The second group presents social media as Web 2.0 technologies (Askool & Nakata, 2011; Burns, 2008; Kaplan & Haenlein, 2010; Neti, 2011). The third group describes

social media as web-services (Ahmetoglu, Al-Yami, & Ibrahim, 2015; Burns, 2008; Lietsala & Sirkkunen, 2008). The fourth group of scholars regard social media as interaction tools (Askool & Nakata, 2011; Bryer & Zavattaro, 2011; Neti, 2011). The fifth group defines social media as sharing tools (Ahmetoglu et al., 2015; Bryer & Zavattaro, 2011; Cook, 2008; Kaplan & Haenlein, 2010; O'Reilly, 2007; Postman, 2009). And the final group uses the term “software tools” to define social media (Cook, 2008; O'Reilly, 2007).

These perspectives have been widely discussed by scholars. User-generated content is created by users and is available for public access via the internet (Krumm, Davies, & Narayanaswami, 2008; Moens, Li, & Chua, 2014). Internet-based applications are any IT implementations that run on a web browser (Calore, 2010). Sharing and interaction tools provide the possibility of access, and exchange contents and information through the internet (Blackshaw, 2006; Meske & Stieglitz, 2013). Web 2.0 technology is considered the second generation of the internet, migrating from static to dynamic web pages (Askool & Nakata, 2011; Burns, 2008; O'Reilly, 2007). Web-services are systematic and extensible frameworks for interaction between applications built on the existing web (Curbera et al., 2002; Lietsala & Sirkkunen, 2008). Finally, software tools are those solutions that are created to support any program or application for interactions (Cook, 2008; Kernighan & Plauger, 1976; McLoughlin & Lee, 2007; O'Reilly, 2007).

In addition, some scholars derive the meaning of the term “social media” from the two main concepts “Social” and “Media”. “Social” refers to an individual interaction within a group or community, while “media” refers to the channels that are used to support this interaction (Fong & Yazdanifard, 2014; Neti, 2011). On the other hand,

some scholars use the terms “Social media”, “Web 2.0” and “Social networks” interchangeably (Ahmetoglu et al., 2015; Askool & Nakata, 2011).

It has been argued that the definition of social media given by Kaplan and Haenlein (2010) is more advanced, and it has been widely cited by a number of scholars (e.g. Babak, 2014; Curran & Lennon, 2011; Macnamara & Zerfass, 2012; McCarthy, Rowley, Jane Ashworth, & Pioch, 2014; Neti, 2011; Paquette, 2013; Razmerita et al., 2014; Treem & Leonardi, 2012; Wagner, Vollmar, & Wagner, 2014).

In this research, the term “social media” is defined as online applications or platforms that allow people to meet as if they were in the same room and to share their knowledge, experiences, and ideas. The main focus of social media is on enabling the users to be more active online in order to collaborate and share knowledge with other people, thus gaining the benefits of this phenomenon. It is, therefore, very important to discuss some of the concepts related to social media such as characteristics and types.

### ***3.4.3 Characteristics of social media***

Social media share a set of characteristics and features which have been discussed in various studies. For example, Mayfield (2008) divides the characteristics of social media into five categories: participation, openness, conversation, community, and connectedness. Similarly, in Bowley (2009), characteristics of social media are categorized into participation, connectivity, information sharing, user-generated content, and collaboration. Panahi (2014) classifies the characteristics of social media into user-generated content, peer-to-peer communication, networking,



multimedia oriented, and user-friendly. However, in this study, only those characteristics of social media which are relevant to knowledge sharing will be considered, in order to understand how social media can encourage, support, and enable people to exchange knowledge. Accordingly, these characteristics can be categorized into the following five features:

**Participation.** Social media form a channel that can encourage users to give feedback, share information (Ashling, 2007; Fussell Sisco & McCorkindale, 2013), and actively participate (Gilpin, 2009). The participatory culture enhances the users' behaviour towards creating and sharing knowledge with a variety of people around the world (Jenkins, Purushotma, Weigel, Clinton, & Robison, 2009). Social media promote communication skills and provide alternatives to old media (Khor & Marsh, 2006). Bowley (2009), quoted in Tapscott and Williams (2007) argues that "Whether people are creating, sharing or socializing, the new web [social media] is principally about participating rather than about passively receiving information" (p. 37). Participation is a key to the success of social media. Thus, the increased participation leads to more advanced and valuable services (Constantinides & Fountain, 2008; Gaál et al., 2015; Parveen, Jaafar, & Ainin, 2015).

**Connectivity.** Social media have created a channel, or platform, through which the global community can communicate online (McAfee, 2006). In contrast to the earlier static web pages, social media conversations are created in real time, allowing users to debate, collaborate, and discuss with one another, while others watch, listen, and learn (Bowley, 2009; Henderson, Edwards, Henderson, & Bowley, 2010). Social media can help people connect and communicate from different places (Gaál et al., 2015).

**Information sharing.** Social media allow users to share content, creations, thoughts, views, information and personal details (Baumann, 2006; Beer & Burrows, 2007; O'Reilly, 2007; Parveen et al., 2015). Traditionally, website content was created, selected and filtered by organizational or media gatekeepers. Users had little power over what information was shared with them, unless they had created the website themselves. Social media have broken down these barriers to create a culture of sharing and openness, shifting the emphasis “away from more static toward dynamic content and toward user engagement” (Beer & Burrows, 2007, p. 4). This is an era in which users have become active processors and publishers of online content (Baumann, 2006).

**User-generated content.** Social media have supported a move towards active and engaged users, who both create and control online content (Beer & Burrows, 2007). Previous internet applications and technologies were created by “experts”, because they were the only internet users who could navigate the technology. By simplifying and sharing web technologies and processes, social media have given all internet users the ability to create their own online applications and technologies. This shift in power has seen traditional gatekeepers lose control and influence over online content, rendering anyone with an internet connection a potential resource (Baumann, 2006; Henderson et al., 2010). Thus, users are no longer just readers; they can participate and collaborate in content generation (Panahi, 2014).

**Collaboration.** Collaboration is a characteristic of social media which winds its way throughout the above-mentioned characteristics and features. Collaboration, through social media, plays a key role in creating an open and collective community out of several sources (Bowley, 2009; Jindal & Shaikh, 2014; Khor & Marsh, 2006).

Without collaboration, the community function which underpins all social media would not exist. Social media create countless opportunities for users to harness the power of collective intelligence and co-creation, and to “participate, collaborate and share in social media conversation” (Murray, 2007, p. 9). Social media allow people to establish mass collaborations by working together in a many-to-many way to achieve their goals (Khan, 2017).

From the previous discussions of social media and their characteristics, the importance of this tool has been shown and its types highlighted. Therefore, the following section further discusses the main types of social media.

#### ***3.4.4 Types of Social Media***

Social media are classified into numerous types of platforms each of which has its own features. For example, Mayfield (2008) divides social media platforms into blogs, social networks, forums, wikis, microblogging, and content communities. However, there is no specific agreement on the types of social media. Therefore, rather than discussing all the possible types of social media, the most common types will be described in order to focus on the categories which are relevant when analysing their use for knowledge sharing among researchers.

**Blogs:** the term “blog” was derived from “web blog” (Chu, Malhotra, Ho, Leung, & Mo, 2009). This type of social media consists of online diaries created by users. It contains posts in chronological order and allows others to add comments on these posts (Babak, 2014; Wahlroos, 2010). Blogs can be used to share ideas, opinions, topics of interest, and experiences (Khan, 2017; Wahlroos, 2010). Moreover, blogs are used for special announcements (Payne, 2008), and to create “a community of

readers and receive early and direct feedback on issues and innovative ideas” (Khan, 2017, p. 4)

**Social networking sites:** these constitute another type of social media where people can meet and share their knowledge and stories with each other (Das & Sahoo, 2011; Khan, 2017). This type enables users to create public or semi-public profiles and make them available to those with whom they want to connect and share material. Moreover, the users can invite colleagues and friends to access their profiles and send messages (Das & Sahoo, 2011). The biggest and most popular social networking site is Facebook, with 2.271 billion active users (Smith, 2019d). Facebook users can easily share and interact with others in the same group (Pi, Chou, & Liao, 2013). The second most popular social networking site is LinkedIn, with 590 million active users (Smith, 2019c). LinkedIn is a platform that connects professionals from various disciplines around the world; it is, therefore, described as a virtual résumé and social network connecting professionals (Weinberg, 2009). Among social networking sites there are also two platforms called Academia.edu and ResearchGate, which have been established specifically to enable academics and researchers to share papers, monitor their impacts, and follow other researchers in their fields (Thelwall & Kousha, 2014; Van Noorden, 2014).

**Wikis:** this type of social media allows users to add or edit the contents. It is therefore regarded as an online database which is used to store knowledge in one place. “Wiki is often connected with the principle of wisdom of the crowd, reflecting the idea of people collecting and aggregating enough data until there is a consistently reliable answer” (Wahlroos, 2010, p. 10). Wikipedia is the most popular example of

this type (Rodgers & Bafia, 2011). It is also considered an online content management system (Khan, 2017).

**Microblogs:** nowadays, this type has become one of the most used social media platforms. It allows users to post short weblogs, with few characters, describing experiences or any updates, and to share them with people who follow these users (Eley & Tilley, 2009; Khan, 2017). The most popular microblogging site is Twitter, which has 336 million monthly active users (Smith, 2019g). The message in Twitter is called a tweet and contains a maximum of 140 characters (Halligan & Shah, 2009; Khan, 2017). However, in November, 2017, the character allowance was doubled to 280 (Rosen, 2017).

**Content communities:** this is another type of social media which enables the users to share photos (e.g. Instagram and Flickr) and videos (e.g. YouTube and Slideshare) with others. The most popular content community is YouTube, with 1.8 billion active users (Smith, 2019b). Instagram is in second place, with one billion active users (Smith, 2019f). Next is Flickr with over 90 million monthly active users (Smith, 2019e), then Slideshare with 80 million (Smith, 2018a). Although profiles and personal details are required in social media, users in content communities are not required to create profile pages (Kaplan & Haenlein, 2010).

Finally, it should be borne in mind that many social media applications may overlap and so might be difficult to place within a single category of social media. Nevertheless, the categories provide an essential basis for analysing the use of social media for knowledge sharing among researchers.

### ***3.4.5 Social media for researchers***

Researchers use social media as a channel where they can present themselves and their works in a visible manner to people in the same field of interest (Veletsianos, 2016). In other words, social media afford exceptional opportunities for researchers to engage and interact with each other (Carrigan, 2016).

Veletsianos (2016) identified the main practices in the use of social media by academics and researchers. He found that researchers use Twitter to enhance their knowledge and skills in some fields. For example, they request resources or explanations of some ideas that could be used in their researches or lectures.

The motivations that inspire and encourage academics and researchers to use social media have been discussed. One of the most important motives is the prospect of publishing their works (Carrigan, 2016). Carrigan (2016) argued that researchers want to increase the citation frequency of their works, increase their visibility in their research area and discipline, and disseminate their research to others outside the academic field. Thus, they employ these tools to do so.

Also, it has been confirmed that social media have expanded the range of publication (Carrigan, 2016). Researchers, therefore, use social media to escape the diverse pressures imposed by international higher education systems which require them to demonstrate the impact of their publications and their relationships. Researchers can lead people to their works by using social media, in order to increase their rankings (Carrigan, 2016).

Social media such as Academia.edu and ResearchGate can play vital roles by allowing researchers to archive and categorize their papers in a specific way and so make them available to others who share the interests that the papers explore

(Carrigan, 2016). Researchers may use social media to obtain some scholarly articles or papers which cannot otherwise be accessed (Veletsianos, 2016). They can seek assistance from their networks by posting a request via any type of social media. Veletsianos (2016) has observed that scholars use social media to share some of their experiences with others in their networks. Social media can be used effectively by researchers to announce new publications, or share the link to these publications with whoever is interested (Carrigan, 2016).

Siamagka and Christodoulides (2016) have studied social media in higher education and found that the most popular social media platforms used by academics were YouTube followed by Twitter and Facebook. Moreover, they argued that academics in the UK can benefit from social media by enhancing students' learning and engagement. Researchers can profit from the use of social media to support their interests and expectations, to find discussions and studies relevant to their interests, or to find other researchers who have the same interests (Levy et al., 2016). Another benefit that can motivate researchers to use social media is the potential increase in citation of their papers. Social media motivate researchers to understand what others do, what others think, and what contribution others want to add (Levy et al., 2016).

#### ***3.4.6 Social media and knowledge sharing for researchers***

Social media have become one of the critical learning systems that are used in education (Veletsianos, 2017). According to Armstrong and Franklin (2008), there are two reasons why universities, colleges, and schools should matter to social media. The first reason is that these technologies are increasingly used by students in all aspects of their lives, a fact which can be exploited to promote further use of

them. The second reason is that these technologies provide a new sphere of collaboration, reflection, learning, knowledge sharing, and student engagement (Armstrong & Franklin, 2008). However, in their study, they predicted that “Universities will lose their privileged role as a primary producer of knowledge, and gatekeeper to it, as knowledge becomes more widely accessible through other sources and is produced by more people in more ways” (Armstrong & Franklin, 2008, p. 27).

The use of social media is of interest to many researchers in educational institutions. For example, Hamid, Chang, and Kurnia (2009) have provided a useful review of some studies in this area, although many of the studies identified “focused on content generation, and less [being understood] about how social media may be used in sharing, interacting and collaboratively socialising” (Hamid et al., 2009, p. 420). It has been confirmed that social media usage in education enhances the students' experience of learning by providing students with support and mentoring (Dabner, 2011; Homitz & Berge, 2008; Veletsianos, 2017). Mack, Behler, Roberts, and Rimland (2007) have observed that Facebook, as a communication tool, is used by librarians to interact with undergraduate students. Indeed, numerous universities preserve profiles and groups on social media such as Facebook, Twitter, YouTube, and Instagram, where students and faculty are able to interact, share resources (Selwyn, 2012), and adapt to the university lifestyle (Yu, Tian, Vogel, & Kwok, 2010). Jabr (2011) argued that social media are extremely supportive technologies in building academic groups so as to achieve superior academic learning and communication. Therefore, many students use social media to share information,



exchange knowledge, collaborate, discuss concepts and ideas, and complete assignments or projects (Eid & Al-Jabri, 2016).

Eid and Al-Jabri (2016) classify the use of social networking into four categories: chatting and discussion, content creation, files sharing, and enjoyment and entertainment. In their study, they investigated the effects of these four classifications on knowledge sharing and learning. They found that chatting and discussion and files sharing have a significant positive relationship, while enjoyment and entertainment have a strong influence on student learning.

On social media, people from various disciplines such as science, engineering, and law interact to exchange knowledge, inspire ideas, build new friendships, and share news (Veletsianos, 2017). Moreover, scholars and academic researchers communicate to develop new theories and learning models, distribute their final results, discuss scientific problems, and get criticism and feedback (Jabr, 2011).

Park (2010) examined the usage of social networking sites by three different types of university users: undergraduate students, graduate students, and faculty members. In this study, Park found six major factors that affect the use of social networking sites by these three different user groups. These factors include: desire for expression, peer influence, familiarity with information technologies, sensitivity to privacy, the nature of internet usage, and perceptions of social networking sites.

Indeed, although social media facilitate knowledge sharing amongst users by increasing knowledge re-use and eliminating dependence on formal connection structures (Yates & Paquette, 2011), there are some factors that may affect knowledge sharing. Bock et al. (2005) argued that fairness, affiliation, and innovativeness are three factors of organizational climate that affect employees'

intention to share knowledge; whereas Yu, Lu, and Liu (2010) discussed the idea that fairness, identification, and openness affect the sharing culture through the use of weblogs. In their study, they found that the sharing culture is the most significant factor affecting knowledge sharing behaviour. Pi et al. (2013) studied the factors that influence users' willingness to use Facebook Groups for knowledge sharing. They found that a social networking culture of sharing (embodying fairness, identification, and openness) significantly influences knowledge sharing intention (directly and indirectly) and subjective norm. In addition, reputation, sense of self-worth, and subjective norm affect the attitude to knowledge sharing.

Jabr (2011) conducted a study that shows how students are developing their capabilities, time, and readiness by using social networking to seek academic achievement. Her study identified three broad aspects which affect the use of social networking: social communication, academic sharing, and learning aspects. However, Hew (2011) found that the usability of Facebook for teaching and learning is limited for teachers and students. Veletsianos (2017) stated that researchers use hashtags frequently to gather data. Liu, McKelroy, Kang, Harron, and Liu (2016) argued that researchers use social media "to share resources, connect with others, enhance communications, and post personal feelings or reflections of learning in an informal and quick manner" (p. 22).

Although social media have several benefits and advantages for researchers, there are a number of disadvantages that might affect the use of these media by researchers to share their knowledge. For example, researchers must keep in mind that they are in a public place. They are followed by people who may or may not be interested in

research, and it is extremely difficult to use the same profile for personal and professional matters, at the risk of loss of privacy (Williams & Krause, 2012).

The second challenge that might affect the use of social media for sharing knowledge is trust (Panahi et al., 2012b). “Trust issues refer to any perceived lack of integrity or accuracy in the content of social media as well as fears over the potential future use of the data once it is stored in some knowledge repository” (Tchape & Wilcox, 2016). Panahi, Watson, and Partridge (2016c) stated that lack of trust is one of the main challenges that deter people from using social media.

As noted in the previous discussion, the use of social media for knowledge sharing has become an important topic for research and exploration. A review of the social media and knowledge sharing literature indicates that the majority of previous studies discuss either the use of social media for knowledge sharing or the factors that affect this use. Based on our knowledge, there is no single study that focuses on the role of the sources of self-efficacy and outcome expectations in the use of social media for knowledge sharing. Therefore, this study aims to explore and explain this role. To do so, social cognitive theory (Bandura, 1986, 1989) is applied to build a strong theoretical foundation for this study, as discussed earlier.

### **3.5 Chapter Summary**

As outlined in this study, the focus was on investigating the sources of self-efficacy that researchers rely on in using social media for knowledge sharing, the impact of these sources on this use, the outcomes that researchers expect from this use, and how these outcomes can impact on it. This chapter reviewed the important literature that is relevant to the three main concepts. The first concept was theoretical foundations, with a focus on social cognitive theory and its main determinants such

as self-efficacy and outcome expectations. The second concept was knowledge, its types and the practice of sharing it, while the last concept was social media, their types and platforms, and how they are used to share knowledge.

## Chapter 4: Methodology

### 4.1 Introduction

This chapter will discuss the methodology and methods that were used to address the objectives of this study. The first objective is to investigate the sources of self-efficacy that researchers rely on in using social media for knowledge sharing, and to explore how these sources impact on this use. The second objective is to investigate the outcomes that researchers expect from this use and how this use is impacted on by these outcomes. In order to address these objectives, this study attempts to answer the following four research questions:

*RQ1: What sources of self-efficacy do researchers rely on in the use of social media for knowledge sharing?*

*RQ2: How do these sources impact on the use of social media for knowledge sharing?*

*RQ3: What outcomes do researchers expect from the use of social media for knowledge sharing?*

*RQ4: How do these outcome expectations impact on the use of social media for knowledge sharing?*

## 4.2 Research Design

These research questions were studied using a mixed methods approach. The mixed methods approach “employs strategies of inquiry that involve collecting data either simultaneously or sequentially to best understand research problems. The data collection also involves gathering both numeric information (e.g., by questionnaire) as well as text information (e.g., by interviews) so that the final database represents both quantitative and qualitative information” (Creswell, 2003, p. 21). It can be argued that, in order to fulfil the validation process in research, more than one method can be used (Campbell & Fiske, 1959). According to Greene, Caracelli, and Graham (1989), there are five purposes of using the mixed methods approach, including triangulation, complementarity (to elaborate, enhance, or illustrate the results), development (to develop the other method), initiation (to learn a new perspective), and expansion (to extend the scope of the study).

Morse (1991) argued that methodological triangulation consists of using at least two methods (e.g. qualitative and quantitative) to address the same research problem. Thus, she identified two forms of methodological triangulation. The first form is simultaneous, meaning that researchers use both methods at the same time. The second form is sequential, meaning that researchers use the results of one method to plan and develop the next. Based on this identification, the current study used sequential methodological triangulation.

Triangulation means combining more than one theory, data, method, or investigator (Fabritius, 1999; Yeasmin & Rahman, 2012). It can be employed by using both qualitative (inquiry) and quantitative (validation) studies in order to increase the credibility, reliability, and validity of the results (Creswell, 2014;

Yeasmin & Rahman, 2012). “Triangulation can overcome challenges related to a single-method, single-observer and single-theory biasness and thus can be applied to confirm the research results and conclusions” (Yeasmin & Rahman, 2012, p. 158). Moreover, it can increase the understanding of the phenomenon being investigated by combining multiple methods (Creswell, 2014; Yeasmin & Rahman, 2012). Considering all these benefits of triangulation, the current study used a mixed methods design.

Mixed methods design has been classified in several ways. Mark, Philip, and Adrian (2009) classified mixed methods into two main categories, parallel and sequential. Parallel design means that quantitative and qualitative data collection and analysis are conducted at the same time, whereas sequential design means that the research begins by employing either a quantitative or qualitative approach, then follows it with the other (Mark et al., 2009). Teddlie and Tashakkori (2009) categorize mixed methods into five families: parallel mixed designs; sequential mixed designs; conversion mixed designs (whereby the study’s approach in the experiential phase can be converted into the other form); multilevel mixed designs (whereby qualitative data are collected at one level of analysis, and quantitative data at another level); and fully integrated mixed designs (whereby qualitative and quantitative approaches are employed in an interactive manner at all stages of the study). However, the most common classification of mixed methods has been done by Creswell (2014), who classifies this design into two main groups. The first group contains the basic mixed methods designs, which include convergent parallel mixed methods design, explanatory sequential mixed methods design, and exploratory sequential mixed methods design. The second group consists of advanced mixed

methods designs, which include embedded mixed methods design (quantitative data or qualitative data or both, within a larger design such as a narrative study, an ethnography, or an experiment), transformative mixed methods design (incorporating elements of the convergent, explanatory sequential, or exploratory sequential approaches), and multiphase mixed methods design (applying several mixed methods within the study).

The interest in mixed methods research is reflected in its steady use by researchers in the field of information science. For example, Neal (2006) used simultaneous methodological triangulation to explore the image retrieval preferences of news photographers and news photo editors in work contexts. In her study, interviews were conducted to gain a deeper understanding of the data collected by the survey. She used both content analysis and descriptive statistics in her study. Huang, Chu, and Chen (2015) used mixed methods to examine the interactions on librarians' social networking sites by classifying the social networking sites' posts according to different types of information exchange.

According to Creswell (2012), "The purpose of an exploratory sequential mixed methods design involves the procedure of first gathering qualitative data to explore a phenomenon, and then collecting quantitative data to explain relationships found in the qualitative data" (p. 543). This design is commonly used to explore a phenomenon, categorize themes, design an instrument, and then test it (Creswell 2012). Thus, researchers use it when the existing variables, measurements, and instruments may not be available or known (Creswell 2012). Based on this approach, the researchers conduct their study in two phases. The first phase is qualitative data collection (e.g. interviews) with a small number of individuals. After analysing the



qualitative data in the first phase and getting the findings, the quantitative instrument (e.g. survey) is developed to conduct the quantitative data collection with a large number of individuals. Due to the importance of this approach, a number of studies have used it to conduct their research (e.g. AlGhamdi, 2014; Brdese, 2013; Gilbert, 2010; Kong, Mohd Yaacob, & Mohd Ariffin, 2018). AlGhamdi (2014) used exploratory sequential mixed methods to study diffusion of the adoption of online retailing in Saudi Arabia. In his study, he started by conducting semi-structured interviews to gain more insight into this topic and to develop a survey to obtain more data from a large sample in order to confirm the data that were collected by the first study. Likewise, Brdese (2013) used this design to identify factors that affect the adoption and use of e-commerce by travel operators and tourism in Saudi Arabia. Gilbert (2010) used a sequential exploratory mixed methods design to compare the success of Graduate Development Programs (GDPs) and informal graduate training activities. Kong et al. (2018) also used this design to illustrate the application of mixed methods research in architectural design, using a hybrid model consisting of a taxonomy development model and an embedded quasi-experimental model.

As stated previously, this study is investigating the sources of self-efficacy that researchers rely on in using social media for knowledge sharing, and how these sources affect this use. In addition, it is investigating the outcomes that researchers expect from this use and how this use is impacted on by these outcomes. To develop better understanding of the subjects of this study, exploratory sequential mixed methods design is adopted and applied as a research design. Therefore, the researcher conducted a qualitative study first to explore this phenomenon, identify themes, and design an instrument (Creswell, 2012). In the second phase, which was quantitative

study, researcher intended to refine and extend the qualitative findings by conducting online questionnaire, which was developed by using the qualitative findings from the first phase (Creswell, 2012). According to Creswell (2012), “advantage of this approach is that it allows the researcher to identify measures actually grounded in the data obtained from study participants. The researcher can initially explore views by listening to participants rather than approach a topic with a predetermined set of variables” (p. 544). These two phases are discussed in the next sections.

### **4.3 Qualitative Study: (Phase 1)**

As an investigation of a new area of research, this study begins with qualitative data collection and analysis in order to define and clarify the nature of the problem. Creswell (2012) argued that qualitative research is the best approach for addressing the research problem when the variables of the study are unknown and need to be explored. Data in this approach are textual and collected in the form of interviews (structured, semi-structured, or unstructured), journals, observations, stories, or videos (Creswell 2012). Thus, qualitative methods may be defined as “the techniques associated with the gathering, analysis, interpretation, and presentation of narrative information” (Teddlie & Tashakkori, 2009, p. 6).

In the qualitative research study, researchers need to analyse the data that have been collected via interviews or other forms of qualitative data collection in order to answer the research questions. In this process, it is necessary to examine the data in detail to describe what the researcher has learned, and identify themes or broad categories of ideas which emerge from these data (Creswell 2012; Teddlie & Tashakkori, 2009). These themes contain the answers to the major research questions

and provide in-depth understanding of the central phenomenon (Creswell 2012). One of the most common methods for analysing qualitative data is content analysis (Zhang & Wildemuth, 2016).

A number of studies have used this approach to understand the use of social media for knowledge sharing (e.g. Gibbs et al., 2013; Leonardi, 2014; Oostervink et al., 2016; Panahi et al., 2012a; Park, 2010). All these studies used semi-structured interviews for data collection to explore and understand the research problem in depth. More details of these studies can be found in Chapter 3.

#### ***4.3.1 Qualitative Data Instrument***

The relevant data collection instruments that can be used in qualitative research consist of participant observations, interviews (e.g. face-to-face, focus group), documented material (Creswell, 2014; Hancock, Ockleford, & Windridge, 1998; Kumar, 2014), and open-ended questions in questionnaires (Hancock et al., 1998). The selection of an appropriate instrument for gathering data is an important stage at which to ensure that the appropriate data for answering the research questions will be obtained (VanderStoep & Johnson, 2009).

An interview is described as a conversation with a purpose (Berg, 2004). In this conversation, the interviewer reads a number of questions to the interviewee and records his or her answers (Monette, Sullivan, & DeJong, 2013). According to Burns (2000), “an interview is a verbal interchange, often face to face, though the telephone may be used, in which an interviewer tries to elicit information, beliefs or opinions from another person” (p. 423). Thus, an interview is defined as a conversation between two or more individuals, face-to-face or by any other means (e.g. telephone

or social media), to obtain ideas, beliefs, information, and opinions about a specific topic from these individuals.

There are numerous purposes of using the interview instrument in research. Besides the above-mentioned purpose of obtaining ideas, beliefs, information, and opinion from an individual, interviews can be used to reconstruct events, descriptors, and feelings about current phenomena and to predict future developments (Pickard, 2013). These purposes make the interview instrument an appropriate way to gather data in this study.

Interviews are classified into different types, as previously mentioned. This classification is based on the degree of flexibility of the interview (Kumar, 2014). To be more specific, three types of interviews have been identified: structured interview, unstructured interview (Berg, 2004; R. Burns, 2000; Heigham & Croker, 2009; Kumar, 2014; Mark et al., 2009; Pickard, 2013), and semi-structured interview (Berg, 2004; R. Burns, 2000; Heigham & Croker, 2009; Mark et al., 2009). The structured interview is very similar to the questionnaire, with the same guidelines, but in it the researcher listens to and watches the respondent (Pickard, 2013). Kumar (2014) states that this type of interview "provides uniform information, which assures the comparability of data, and requires fewer skills compared with unstructured interview" (p. 178). The unstructured interview is used to understand the thoughts and feelings of the interviewees and gain their points of view (Pickard, 2013). In this type, there is complete freedom in asking questions, deciding on the order of questions, and adding new questions or deleting others (Berg, 2004; Kumar, 2014). However, the unstructured interview is often used in "the early stage of the research to explore salient issues for further investigation" (Pickard, 2013, p. 199). In

the third type of interview, semi-structured interview, its flexibility is moderate, lying between structured and unstructured interviews. With this type, the researcher will have a list of questions to be covered, although he/she can add questions in order to address the research questions (Heigham & Croker, 2009; Mark et al., 2009). Because of this moderate flexibility, the semi-structured interview is the most common type used to collect qualitative data (Heigham & Croker, 2009).

Numerous studies have used the semi-structured interview type to collect relevant data on the use of social media for knowledge sharing, as mentioned previously (e.g. Gibbs et al., 2013; Huang et al., 2015; Leonardi, 2014; Oostervink et al., 2016; Panahi et al., 2012a; Park, 2010). For instance, Panahi et al. (2012a) conducted semi-structured interviews with 10 physicians to demonstrate how social media can provide new opportunities for tacit knowledge sharing amongst physicians. From this discussion, and due to the flexibility of this type of interview, it is obvious that it is an appropriate method for collecting data for this study.

#### ***4.3.2 Qualitative Data Collection***

The primary method used for data collection by this approach was semi-structured interviews. This method enables the researcher to obtain the participant's opinions and experiences (Kvale & Brinkmann, 2009).

The interview guide was designed after reviewing the literature on the use of social media for knowledge sharing, and was based on the theoretical lens of social cognitive theory (Bandura, 1986, 1989), which encompasses self-efficacy and outcome expectations. The researcher discussed the interview guide with his supervisor and some academic colleagues revised it accordingly. Some questions

were adjusted during interviews to gain more information from interviewees. However, there are two additional questions (21,22), which were developed in case that if any of the participants does not use social media in general or for knowledge sharing particularly. Indeed, these two questions have not been used since all the participants use social media for sharing knowledge. The final interview questions can be found in Appendix A.

The researcher used a convenience sample to investigate the sources of self-efficacy and outcome expectations of researchers towards the use of social media for knowledge sharing and their impact on this use. Convenience sampling is a non-probability and non-random sampling strategy (Etikan, Musa, & Alkassim, 2016). Thus, the researcher selected the study participants based on their availability to participate, and communication between the researcher and participants was easy and convenient (Etikan et al., 2016).

Based on the importance of universities for producing and sharing knowledge (Armstrong & Franklin, 2008), the researcher selected the University of Strathclyde as a context for this study. Thus, the required participants for the purpose of this study included academic staff, researchers, and PhD students.

The researcher invited participants to his study by posting flyers around the university and in each faculty and department. The flyers included brief details of the study, the researcher's contact information, and a statement about the £20 gift card for each participant. Once the researcher received an inquiry about participation in the study, he directly emailed the potential participant to arrange a suitable time and location.

### *4.3.3 Conducting the interviews*

The interviews were conducted in April and May 2017. The day before the interview, the researcher checked the participant's availability and allowed time for preparation before the actual interview. In the interview, participants were first introduced to the nature and purpose of the study and given the interview information sheet (Appendix B), which contains brief details about the research, participant's rights, and contact information for the researcher and his supervisors. Then, they were asked to sign the interview consent form (Appendix C).

The interviewer commenced by requesting standard demographics. Then, the researcher asked open-ended questions about the person's self-efficacy sources and outcome expectations in the use of social media platforms and the impact of these sources and outcomes on the use of social media for knowledge sharing. The researcher never used the unfamiliar terms "self-efficacy" and "outcome expectations"; instead, he used familiar phrases such as "confidence in your ability", "positive and negative experience", "emotion", "encouragement", and "observation of others" for self-efficacy, and terms such as "reasons," "benefits," "advantages," and "disadvantages" for outcome expectations. However, sometimes extra questions emerged when an interviewee responded. At the end of the interview, the interviewee was given free time to add any further information.

Each interview was conducted at a time and place convenient for the participant. With regard to the place, most interviews were held in Livingstone Tower – level 12 – Interview room (LT12.04), while the remaining interviews were in places chosen by the participant. The average interview time was about 30 minutes.

The total number of participants who were interviewed was 30. These participants represented the four main faculties at University of Strathclyde. Table 4-1 shows the number of participants, their positions, and their faculties.

*Table 4-1: Number of participants representing each faculty and each position.*

Faculties \ Positions	Academic Staff	Researchers	PhD Students	Total (Faculties)
Sciences	5	1	8	14
Engineering	0	0	6	6
Humanities & Social Science	1	0	4	5
Strathclyde Business School	0	0	5	5
<b>Total (Positions)</b>	6	1	23	<b>30</b>

All interviews were audio recorded after gaining permission from the participants to avoid missing out on important statements made during the interviews, or misinterpreting the interviewees. This process can achieve reliability in the analysis of the data. All recordings were transcribed and then entered into NVivo 11 software for analysis.

#### ***4.3.4 Qualitative Data Analysis***

Researchers need to make sense of the data that have been collected from individuals. Therefore, the analysis of these data is a critical step. As mentioned earlier, the most common method of data analysis is qualitative content analysis. Content analysis is defined as “a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns” (Hsieh & Shannon, 2005, p. 1278). Content analysis is also defined as “the intellectual process of categorizing qualitative textual data into clusters of similar entities, or conceptual categories, to identify consistent patterns and relationships between variables or themes” (Julien, 2008, p. 120). These themes



might be identified a priori; thus, the researcher seeks evidence from participants' expressions relating to these themes, or they may emerge from the analysis of the transcripts. Moreover, these themes or patterns are used as the units for analysis (Zhang & Wildemuth, 2016). Each theme might be expressed in a single word, a phrase, a sentence, a paragraph, or an entire document (Zhang & Wildemuth, 2016).

There are three approaches in qualitative content analysis: conventional, directed, and summative (Hsieh & Shannon, 2005). Since the researcher in this study attempted to extend the theoretical framework of self-efficacy and its sources by Bandura (1977), and of outcome expectations by Bandura (1998, 2004a), he used directed content analysis, which is the appropriate approach for validating or extending a conceptual theory or theoretical framework (Hsieh & Shannon, 2005).

According to Elo and Kyngäs (2008), content analysis contains three stages: preparation, organization, and reporting. The preparation starts with selection of the unit of analysis, which was based on the four sources of self-efficacy (Bandura, 1977) and three types of outcome expectations (Bandura, 2004a). In the organizing stage, the researcher creates categories and codes, and then groups these codes within the suitable category. In the final stage, the researcher reports the analysing process and the results through categories, models, a conceptual system or a map.

A professional transcription service was used to transcribe all 30 audio recordings (Appendix D). The researcher read the transcripts and listened to the audio recordings for interviews at the same time to verify the accuracy of the transcripts. In the next stage, the researcher derived the codes from theory and relevant research findings (Hsieh & Shannon, 2005). In this study, the codes were derived from the four sources of self-efficacy (Bandura, 1977), which include personal mastery

experience, vicarious experience, verbal persuasion, and emotional arousal. In addition, they were derived from Bandura (1998, 2004a) classification of outcome expectations into three types: physical, social, and self-satisfaction. In this stage, the researcher used these concepts as main themes to direct the analysis and code the transcripts of the interviews so as to answer the research questions. However, some sub-themes and ideas emerged from the data, as shown in Figure 4-1. As previously mentioned, the researcher used NVivo 11 software to facilitate this analysis (Appendix E). In the final stage, the researcher reported the analysing process and the results by categorizing the data within these main themes and their sub-themes, as shown in Chapter 5.

Name	Sources	Referen
Social Media and Knowledge Sharing	30	284
Self-efficacy	29	146
Personal mastery experience	26	48
Verbal persuasion	19	49
Emotional arousal	13	16
Vicarious experience	17	33
More about Positive Outcome Expectations	10	10
Outcome Expectations	30	128
Social outcomes	27	76
Positive	26	69
Networking	17	21
Attracting people	22	38
Social Impact	2	2
Visibility	5	8
Negative	7	7
Lack of trust	7	7
Personal Outcomes	26	52
Positive	23	38
Get Feedback	7	7
Get Information and papers quickly from various sourc	4	4
Keep up to date	4	5
Publicise your work	4	4
Get a job	3	3
Get Credit	3	4
Get help	6	6
Promoting the work	1	1
Learning	2	4
Negative	12	14
Time Consuming	7	7
Privacy	3	3
Distractions	4	4

Figure 4-1: Themes and ideas emerging from the data

#### 4.3.5 Validity and reliability

In a qualitative study, it is important to establish the validity and reliability of the collected data (Creswell, 2014). Validity means the accuracy of the findings which

can be checked by employing certain procedures, whereas reliability indicates that the approach is consistent across different projects and different researchers (Gibbs, 2008).

For testing the validity of the data, the researcher used rich and thick description to convey the findings of the study. This description can provide a coherent discussion about all facets of the collected data to render them richer and more realistic (Creswell, 2014). The researcher also asked senior colleagues who were not familiar with the study to provide an objective assessment of its aspects, such as the relationship between the research questions and the data, the level of analysis, and the interpretation, in order to enhance the overall validity of the qualitative study (Creswell, 2014). Another step that the researcher took to validate the data for the qualitative study was triangulation, using the quantitative study to build a coherent justification of the findings (Creswell, 2014; Silverman, 2015).

Regarding the reliability of the collected data, many steps were taken. First, the researcher checked all the transcripts to avoid any mistakes that may have been made during transcription (Gibbs, 2008). This step consisted of reading the transcripts and listening to the audio recordings of interviews at the same time in order to verify the accuracy of the transcripts. In the next step, the researcher read the transcripts several times even after coding to make sure that the codes had not drifted in their definitions or shifted in meaning during the process of coding (Gibbs, 2008). As mentioned, this research used triangulation, which strengthens reliability as well as internal validity (Creswell, 2014).

#### **4.4 Quantitative Study: (Phase 2)**

As mentioned earlier in this chapter, this study used a sequential exploratory mixed methods design which began with a qualitative approach as the first phase of investigating and understanding the phenomena of the study. The findings of this phase were used to develop a questionnaire with which to conduct the second phase (quantitative approach). The first phase was discussed in the previous section. In the current section, the second phase, using the quantitative approach, is discussed in greater detail.

The quantitative approach is used in research to explain phenomena by collecting numerical data and analysing them using mathematical and statistical techniques (Muijs, 2011). It is considered one of the best ways to provide information in breadth from a large number of participants. Also, it is well-suited to testing hypotheses and theories (Muijs, 2011). It can be used to generalize to a large sample of population the data collected from a few individuals by the qualitative approach (Creswell, 2014). Finally, it can be used to validate the qualitative results; this is called triangulation (Yeasmin & Rahman, 2012).

A number of studies have used this approach either to study the factors that affect the use of social media to share knowledge (e.g. Arazy et al., 2016; Li & Ma, 2014; Ma & Chan, 2014; Pi et al., 2013), or to study the relationships between the use of social media and the intention of sharing knowledge (e.g. Bilgihan et al., 2016; Gaál et al., 2015; Oh & Syn, 2015; Romero-Hall, 2017). All these studies used questionnaires for collecting data to address their research objectives.

#### ***4.4.1 Quantitative Data Instrument***

After analysing the qualitative data (phase one), and based on its findings, the questionnaire was constructed to obtain information in breadth from a large number of participants, and also to generalize and validate the qualitative findings. This subsection, therefore, explains how the questionnaire was developed from the findings of the first phase.

The qualitative findings yielded a number of quotes, codes, and themes. The development of the questionnaire was preceded by use of the quotes to write down items, the codes to develop variables that group these items, and themes to group variables into scales. According to Creswell (2014), this procedure is useful for developing scales from qualitative findings.

The questionnaire was designed in six steps, as follows.

Step one: After identifying items, variables, and scales, the researcher developed the initial questionnaire by writing them down in a Word document. Three copies of this initial questionnaire were given to three colleagues who were asked to provide their comments and feedback on the following points:

- Clarity of statements.
- Extent to which these statements are related to variables and scales.
- Time spent in completing the questionnaire.
- Whether there are any changes that need to be made.

Step two: Based on the comments and feedback from these three colleagues, the second draft of the questionnaire was developed. A copy of this draft was given to

the supervisor who was asked to review it and give her comments and recommendations on the following points:

- Do the statements capture the phrases provided by the participants?
- Are the statements formulated in neutral and correct ways?
- Are there any changes that need to be made?

Step three: In this step, all the comments and recommendations that were received from the supervisor were modified. Then, the researcher used online survey tool Qualtrics.com to design the research questionnaire.

Step four: After designing the questionnaire in Qualtrics.com, the researcher printed five copies of the questionnaire and sent them to three academics (two senior lecturers and one lecturer) and two PhD students who have good experience with quantitative research, particularly with questionnaires. They were asked to evaluate the design and all the concepts and statements in the questionnaire.

Step five: Based on the evaluations received from the three academics and two PhD students, the researcher again modified the concepts and statements that needed to be improved. Then, he invited a number of colleagues to access the questionnaire and participate in it to provide certainty about the design of the questionnaire and its flow. This stage was used as a pilot study to test the questionnaire's flow and the participants' responses.

Step six: Based on comments from these colleagues about the design and flow of the questionnaire, the researcher made a number of changes related to its interfaces and flow. Then, the researcher showed the final design of the questionnaire to his supervisor and they agreed to activate the questionnaire and send it to academic staff,

researchers, and PhD students at the University of Strathclyde. See the final version of the questionnaire in Appendix F.

#### ***4.4.2 Quantitative Data Collection***

The questionnaire was made available by using Qualtrics.com, as mentioned in the previous sub-section, for four months (1<sup>st</sup> April to 31<sup>st</sup> July 2018). Online surveys have several advantages over traditional survey methods. These advantages may be summed up in the following points. Online surveys are easy to use and inexpensive compared with alternative survey methods (Evans & Mathur, 2005; Harlow, 2010; Van Selm & Jankowski, 2006). They are valuable for collecting data from respondents from one place or different places, within one country or around the world (Evans & Mathur, 2005). They are also more flexible than other survey methods (Evans & Mathur, 2005; Harlow, 2010). Online surveys are the best and easiest way to obtain information from a large sample (Evans & Mathur, 2005). “Because online surveys provide the ability to transfer survey responses directly into a database, transcription errors are eliminated” (Harlow, 2010, p. 98).

The questionnaire was used to generalize and validate the findings of the qualitative data yielded by the first phase of this study (Creswell, 2014), and also to provide information in breadth from a large number of participants about the qualitative findings (Muijs, 2011). The questionnaire contained two main concepts, self-efficacy and outcome expectations. Self-efficacy has four sources: personal mastery experiences, vicarious experience, verbal persuasion, and emotional arousal (Bandura, 1977). A number of items yielded by the first phase (qualitative approach) were used to measure each source. With regard to outcome expectations, they have



two types of outcomes, social and personal, and each type has two sides, positive and negative. Each side consists of number of variables and their items, which also were yielded by phase one.

The questionnaire consisted of closed-ended questions, some of which including options that allowed the participants to add their experiences and state whether there were other social media platforms that were used for knowledge sharing.

It was taken into account that there might be participants who did not use social media to share knowledge. The researcher, therefore, added two types of questions to provide certainty about that. First, it was asked whether or not the participant used social media for knowledge sharing. If the participant selected 'Yes', he/she would continue to answer the questionnaire. On the other hand, if the participant selected 'No', he/she would be asked another type of question, about the reasons for not using this tool for knowledge sharing. In addition, the questionnaire included some questions that sought demographic information such as types of social media, social media platforms, gender, position, faculty, and length of time in the research field. At the end of the questionnaire, there was an opportunity to enter the draw for those who wanted to. The prizes were five gift cards from Amazon (£25 each). The draw was held to find the winners of these gifts. The email addresses of those participants who provided them for the draw were printed and placed into a bowl. The researcher invited the current head of the Computer and Information Sciences Department, as well as the researcher's supervisor, to select the five winners from the bowl. Each winner received a £25 gift card from Amazon.

The questionnaire was distributed to a convenience sample of academic staff, researchers, and PhD students at the University of Strathclyde. The researcher sent

an email to administrators and secretaries of the departments to assist in distributing it to all the academic staff, researchers, and PhD students at the University. The email included brief details about the researcher and his study, and also contained the link to the questionnaire. In addition, the researcher, with his supervisor's help, used the Twitter platform to recruit participants to the study. They tweeted about his study and asked to participate.

The total number of participants who completed the questionnaire was 144. These participants represented the four main faculties at the University of Strathclyde.

#### ***4.4.3 Quantitative Data Analysis***

Descriptive statistics were used to analyse quantitative data in this study. According to Fisher and Marshall (2009), "Descriptive statistics provide us with a useful strategy for summarising data and providing a description of the sample but cannot provide information for causal analysis" (p. 97). The aim is to comprehend the data more easily (Cottrell & McKenzie, 2010). Descriptive statistics can provide alternative information and measure normality and frequency distributions to characterize the data, rather than test significance levels and hypotheses (Cliff & King, 1996). Pallant (2013) stated that descriptive statistics are used to describe the characteristics of the sample, to check the variables and the statistical techniques that will be used, and to address specific research questions.

This kind of statistics is mostly used to examine central tendency (mean, median, and mode), dispersion (range, variance, standard deviation) (Pallant, 2013; Pickard, 2013), skewness and kurtosis (Pallant, 2013). The current study was not focusing on relationships or differences between groups; therefore descriptive statistics were the

appropriate method for analysis. Central tendency and dispersion were measured in this study to explain the data more accurately and in greater detail, whereas skewness and kurtosis were measured to determine whether the variables were normally distributed.

Most of the questions in the questionnaire were measured using five-point Likert scales in which 1 = “strongly disagree” and 5 = “strongly agree”. However, there were a number of variables that received a code of “1” if the respondent chose it as an answer or “0” if the respondent did not choose it. Another type of question also received a code of “1” if the respondent chose “Yes” and “0” if the respondent chose “No”.

To analyse the collected data in this phase, IBM SPSS Statistics 24 software and Excel 2016 were used. The researcher used frequency to analyse demographic and general information such as gender, position, faculty, years of experience, types of social media, social media platforms, and barriers to the use of social media for sharing knowledge. With regard to the main sections of the questionnaire, mean and standard deviation were calculated to analyse the collected data that were related to the key concepts of this study. The results are presented in Chapter 5.

#### ***4.4.4 Validity and Reliability***

These two concepts are also important in quantitative research. Thus, attention has been paid to them and they are discussed under the following two headings.

- **Validity**

This is defined as the extent to which the instrument accurately measures what it is intended to measure in a quantitative study (Heale & Twycross, 2015). There are

three main types of validity: content validity, construct validity, and criterion validity (Bryman, 2012; Heale & Twycross, 2015). These types are shown in Table 4-2.

*Table 4-2: Types of Validity*

Types of Validity	Descriptions
Content validity	The extent to which a research instrument accurately measures all aspects of a construct.
Construct validity	The extent to which a research instrument measures the intended construct.
Criterion validity	The extent to which a research instrument is related to other instruments that measure the same variables.

*Source: Heale & Twycross (2015)*

Each of these types can be measured in one or more ways, according to Heale and Twycross (2015). For instance, content validity can be established by asking people who have experience or expertise in the field to act as judges as to whether or not the measure reflects the concept intended (Bryman, 2012; Heale & Twycross, 2015). Construct validity can be measured on three bases: homogeneity, convergence, and theory evidence, as presented in Table 4-3.

*Table 4-3: Ways of Measurement for construct validity*

Ways of Measurement	Descriptions
Homogeneity	The instrument measures one construct.
Convergence	This occurs when the instrument measures concepts similar to those of other instruments, although if there are no similar instruments available this will not be possible.
Theory evidence	This is evident when behaviour is similar to theoretical propositions of the construct measured in the instrument.

*Source: Heale & Twycross (2015)*

With regard to criterion validity, it can be established by comparing an instrument with any other instrument that measures the same variable (Heale & Twycross, 2015). According to Heale and Twycross (2015), this can be done by conducting correlations to determine the extent to which these instruments measure the same variable. Moreover, this form of validity is measured in three ways: convergent validity, divergent validity, and predictive validity (Bryman, 2012; Heale & Twycross, 2015). These ways are presented in Table 4-4.

*Table 4-4: Ways of measurement for criterion validity*

Ways of Measurement	Descriptions
Convergent validity	It shows that an instrument is highly correlated with instruments measuring similar variables.
Divergent validity	It shows that an instrument is poorly correlated to instruments that measure different variables.
Predictive validity	It means that the instrument should have high correlations with future criteria.

*Source: Heale & Twycross (2015)*

Based on these descriptions, the current study used content validity. According to DeVellis (2016); Frey (2006), content validity is the extent to which a specific set of items reflects a content domain. Thus, the attempt to achieve content validity for the questionnaire in this study started at the questionnaire's development stage, when the researcher asked a number of experts in the field at the University of Strathclyde's Department of Computer and Information Sciences to review the questionnaire. All the details are discussed in sub-section 4.4.1 in this chapter.

- **Reliability**

This is the concept that fundamentally focuses on the consistency of the items of an instrument and whether or not they are stable over time (Bryman, 2012).

According to Muijs (2011), reliability in a quantitative study has two main forms: repeated measurement and internal consistency.

In repeated measurement, an instrument is used to measure the same thing at different times and, to be reliable, needs to come up with the same answer when used with the same participants (Heale & Twycross, 2015; Muijs, 2011). The second form, internal consistency, is only applicable to instruments containing more than one item, the aim being to find how homogeneous these items are, or how well these items measure a single construct (Heale & Twycross, 2015; Muijs, 2011). With this form, there are two ways to calculate reliability: split-half reliability and coefficient alpha (called 'Cronbach's alpha') (Bryman, 2012; Muijs, 2011).

According to Bryman (2012), "Nowadays, most researchers use a test of internal reliability known as Cronbach's alpha. Its use has grown as a result of its incorporation into computer software for quantitative data analysis" (p. 170). Therefore, in this study, Cronbach's alpha was calculated to ascertain internal reliability for the items in the questionnaire. The result of the reliability test is presented in Chapter 6.

#### **4.5 Research Ethics Statement**

Gaining ethical approval prior to any actual data collection was one of the main concerns of this study. As the research involved human participation through semi-structured interviews in the first phase and a questionnaire in the second phase, the level and details of the participants' involvement in the study, led to a number of ethical considerations (Babbie, 2013; Creswell, 2014). These considerations included the following points:

- Voluntary participation was respected at all levels of the study;
- A consent form for the qualitative study was provided to every participant in the interview, while the consent form for the quantitative study was provided within the questionnaire;
- Participants could withdraw from participation at any point in the study;
- Participants were assured that all the information, comments and responses they provided to the researcher would be treated confidentially, and no names, addresses, or any other identifying information would be stored or reported in the study;
- Only the researcher and his supervisor would have access to the participants' data, and the audio files of interviews would be deleted at the conclusion of the project; and
- Findings of the study would only be used for the purposes of the research.

The approaches for the data collection and data analysis for both phases were reviewed and granted by the University of Strathclyde's Departmental Ethics Committee in Computer and Information Sciences, (see Appendix H).

#### **4.6 Chapter Summary**

This chapter discussed the methodology and methods that were used to address the objectives of this study, which was conducted by sequential exploratory mixed methods. Thus, the study started by using the qualitative approach for data collection

and analysis. Based on the qualitative study's results, the second study, which was quantitative, was developed and then carried out. In addition, in this chapter, a number of concepts involved in both studies were discussed, such as methods for collecting and analysing data, the sample, analysis software, and ethical approval.



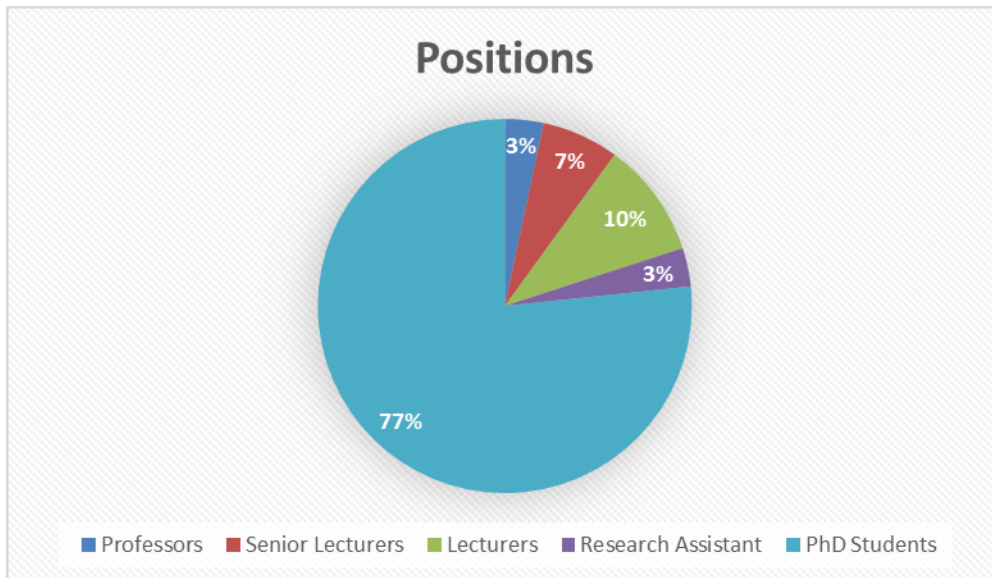
## **Chapter 5: Qualitative Findings**

### **5.1 Introduction**

The focus of this research is to investigate the sources of self-efficacy that researchers rely on in using social media for knowledge sharing, the expected outcomes from this use, and the impact of these sources and outcomes on this use. This chapter represents the findings of the first phase, which was qualitative in approach, using semi-structured interviews with 30 researchers from University of Strathclyde. The characteristics of these researchers are shown in Table 5-1.

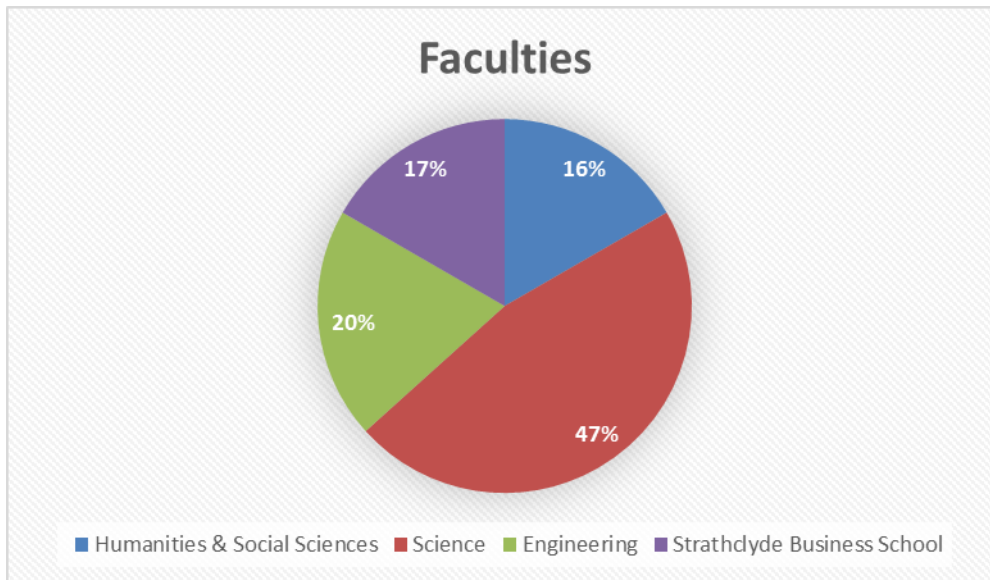
Table 5-1: Characteristics of Participants

Participants	Faculty	Position	Experience (Years)
P1	Science	PhD Student	2
P2	Science	PhD Student	1
P3	Science	PhD Student	3
P4	Science	PhD Student	2
P5	Science	Senior Lecturer	> 5
P6	Science	Research Assistant	5
P7	Science	PhD Student	3
P8	Science	Senior Lecturer	> 5
P9	Humanities & Social Sciences	PhD Student	4
P10	Humanities & Social Sciences	PhD Student	1
P11	Science	Lecturer	> 5
P12	Science	Lecturer	> 5
P13	Science	PhD Student	1
P14	Science	Lecturer	> 5
P15	Engineering	PhD Student	1
P16	Humanities & Social Sciences	Professor	> 5
P17	Science	PhD Student	2
P18	Strathclyde Business School	PhD Student	1
P19	Science	PhD Student	3
P20	Engineering	PhD Student	2
P21	Engineering	PhD Student	3
P22	Strathclyde Business School	PhD Student	3
P23	Humanities & Social Sciences	PhD Student	3
P24	Engineering	PhD Student	4
P25	Engineering	PhD Student	5
P26	Engineering	PhD Student	1
P27	Strathclyde Business School	PhD Student	4
P28	Humanities & Social Sciences	PhD Student	2
P29	Strathclyde Business School	PhD Student	3
P30	Strathclyde Business School	PhD Student	2



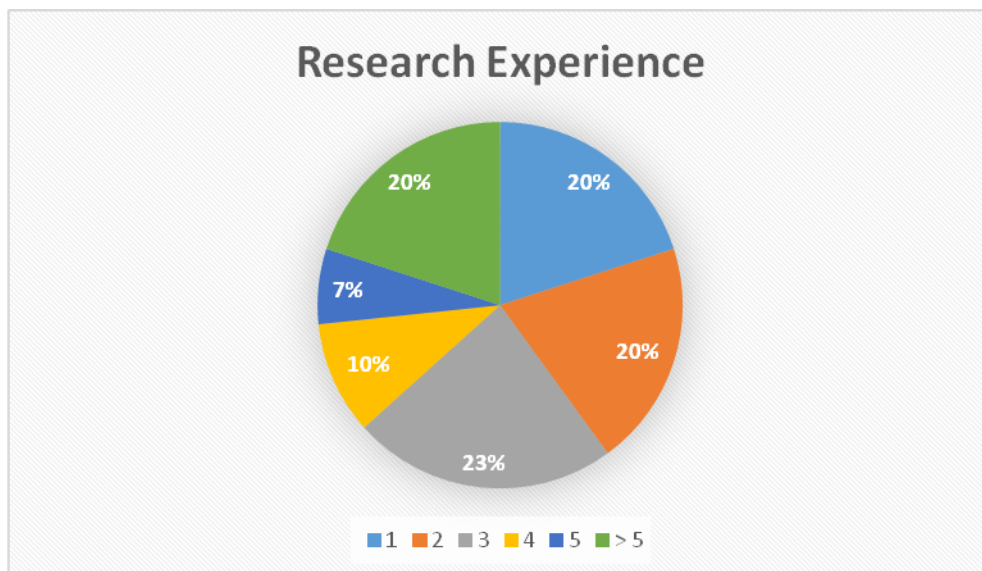
*Figure 5-1: Participants' Positions*

As shown in Figure 5-1, 77% of the participants were PhD Students, followed by lecturers at 10%, senior lecturers at 7%, and Professors and Research Assistants both at 3%. They represented four faculties at the University as presented in Figure 5-2, showing that 47% of the participants were from the Faculty of Science, followed by the Faculty of Engineering with 20%, Humanities & Social Sciences with 17%, and Strathclyde Business School with 16%.



*Figure 5-2: Participants' Faculties*

The participants have a range of experience. As shown in Figure 5-3, 23% of the participants have 3 years' experience, while 1 year, 2 years, and more than 5 years were represented by the same percentage (20%) for each range, followed by 10% for those with 4 years' experience and 7% for those with 5 years' experience.



*Figure 5-3: Participants' Experience*

## 5.2 Use of Social Media

The participants used different social media platforms to share knowledge. The most common platform used by the participants was Twitter, which was used by 70%. The second most common was Facebook with 60%, followed by LinkedIn and ResearchGate with 43% and 40% respectively. Other platforms were represented, but they were less used, as shown in Figure 5-4.

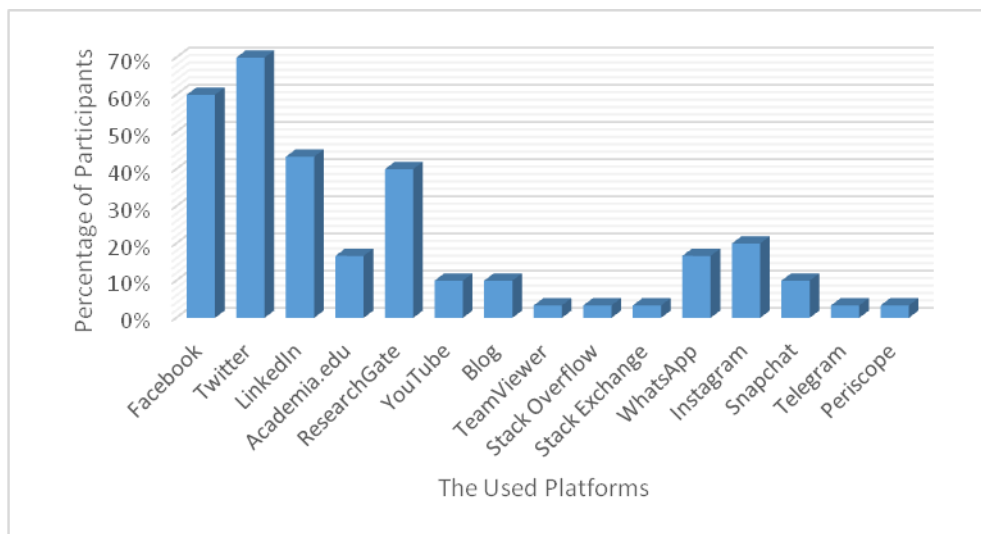


Figure 5-4: The Social Media Platforms Used

## 5.3 Coding and Analysis

The data analysis used in this phase was qualitative directed content analysis, derived from the proposed sources of self-efficacy (Bandura, 1977) and types of outcome expectations (Bandura, 2004a), in order to investigate the sources that researchers rely on in using social media for knowledge sharing and the expected outcomes from this use. The second aim was to explore the impact of these sources and outcomes on

this use. According to this analysis, data were categorized into four themes that represent the sources of self-efficacy and two themes that represent outcome expectations. Also based on the data analysis, each theme has an impact on the use of social media for knowledge sharing. These sources and outcomes and their impact on the use of social media for knowledge sharing are presented in the following sections to answer the research questions in this study.

## **5.4 Sources of Self-efficacy**

The data revealed evidence of all four sources of self-efficacy (Bandura, 1977). This evidence showed that researchers rely heavily on these four sources to enhance their use of social media to share knowledge. Each source, with its evidence from the participants' responses, is illustrated in one of the following four sub-sections.

### ***5.4.1 Personal mastery experiences***

The study participants agreed on the importance of skills and abilities which were gained from practice and experience in the use of social media for knowledge sharing over time. This source might lead to researchers' greater confidence in their self-efficacy in the use of social media to share knowledge. Most of the study participants stated that they were confident in their ability to use social media for knowledge sharing. The following two interview excerpts illustrate this point.

*I'm more confident and more used to tweeting things, retweeting things, embedding links, embedding pictures into the tweets that I share as well. I'm*

*more confident in how to find people and adding people to follow.  
(Participant no. 5)*

*I am very confident about my ability. I am an effective communicator and I think I have a keenly developed online personality. (Participant no. 9)*

In contrast, some researchers may not have confidence in their ability to use social media to share knowledge. This is due to their lack of practice and experience in the use of social media for this purpose, as revealed by the following two participants.

*I think overall, I have got basic skills. I'm not an advanced user. For instance, on ResearchGate, I have not explored all options that it gives to the user. (Participant no. 2)*

*I think basic, basic skills at the moment. But I have a plan to develop my skills in the future. (Participant no. 7)*

As demonstrated in the above examples, researchers become more confident in the use of social media for knowledge sharing if they have abilities and good skills in this use. However, these abilities and skills may depend on one particular platform of social media or a number of platforms that researchers are accustomed to using for sharing knowledge. The following participants' responses confirmed this point.

*I am a very confident Twitter user. I use it a lot, and I have it on my phone, and I also have it on my tablet, and I have it on my laptop. So, I am very confident at using that one. (Participant no. 11)*

*I am not very good with Twitter. I do not write well in short pieces, I tend to be a little bit more verbose. In terms of Facebook, I feel very confident about it, just because there are less restrictions. I feel like I can easily share things.*  
(Participant no. 14)

These two examples show that researchers may have abilities in some social media platforms, constructed from practice and experience of using these platforms. Moreover, these abilities might be built over the period of time that researchers have spent in using these platforms. This can be revealed in the following interview excerpts.

*For my experience, it is probably being almost ten years since I have been familiar with Twitter. (Participant no. 11)*

*Well, I would have used it for four or five years now. I have used it as a master student, then as a professional. (Participant no. 4)*

As previously explained in regard to personal mastery experiences, researchers rely on these experiences in the use of social media for knowledge sharing. Thus, it can be argued that personal mastery experiences are considered an important source of self-efficacy for researchers in using social media to share knowledge.



### ***5.4.2 Vicarious experience***

According to the participants' responses in this study, personal mastery experiences were not the only source of self-efficacy that researchers relied on in the use of social media for knowledge sharing. The responses revealed that vicarious experience is another source that researchers can rely on for this purpose. This source emerges from observation of those who use social media for knowledge sharing and the wish to imitate them, which may lead researchers to use social media themselves for sharing knowledge with others. The following interview excerpts illustrate this.

*I have seen many people use social media to share and exchange files through WhatsApp, through TeamViewer. The files include reports and tutorial. Seeing others use social media for sharing knowledge influence me to use it. So, I imitate others to achieve what I want. (Participant no. 1)*

*I think it was mostly by observing how it worked for people who are more successful than me, who had more experience in using social media. (Participant no. 2)*

As shown in these two examples, observing others' use of social media can lead researchers to use these media to share knowledge. Researchers can also imitate their colleagues who use social media effectively for sharing knowledge. Thus, they may attempt to be effective users of social media, as shown by the following participants' responses.

*I have seen some colleagues use it very effectively and I have tried it a bit with it, so I have used Twitter to do that. (Participant no. 8)*

*I have seen number of my colleagues use ResearchGate and I realized that they use it quite a lot to share their researches. That makes me copy them and use it much more ... I have seen more close friends in research use Facebook just for very formal chat and looking for documents which again makes me more likely to do the same but in much more informal. (Participant no. 13)*

According to these two examples, it can be argued that seeing colleagues' use of social media for knowledge sharing can lead researchers to imitate them and use it similarly. However, researchers need to seek out those colleagues who use social media for knowledge sharing effectively and successfully in order to imitate their use, which can often support their own effective and successful use. Two participants in this study shared their stories about imitating their colleagues in the use of social media to share knowledge, which led them to use it as well.

*I have seen, I saw for example in terms of Twitter, my colleague runs number of conferences and share their posters, their papers, their posts up on Twitter, and he is getting a huge of a mount of traffics and lot of likes around of the conference. From the point of view, my colleague and I got together and designed Twitter photo competition for CDT students to share these sorts of things they are doing. So, we have ended up with 300,000 views; we have quite good impact. So, definitely, by seeing that, I have changed practising*

*from that; I try to use other platforms looking for what other people doing. By seeing this impact, it positively influences me. (Participant no. 12)*

*When I have started as a PhD student, I have never followed other researchers because I was not in a research environment previously. But when I started working here I started following other researchers, see what they are doing and then from following them I see they start twitting what they are up to in research life. I did not really use LinkedIn too much, but I have used LinkedIn since I have come here and seen some people post in LinkedIn as well. Probably that has influenced me using social media by seeing how they use it. (Participant no. 17)*

As illustrated in this explanation of vicarious experience, it is argued that such experience can be considered another important source of self-efficacy in the use of social media for knowledge sharing. Thus, researchers rely on this source to use social media for that purpose.

#### ***5.4.3 Verbal persuasion***

The third source of self-efficacy is verbal persuasion, which is relied on not only in the use of social media but in other behaviours. Verbal persuasion is the encouragement and support that researchers receive from others towards using social media for sharing knowledge. This encouragement and support can come from individuals (e.g. peers, colleagues) and/or institutions (e.g. universities). Therefore, and based on the participants' responses, encouragement for researchers to use social

media for knowledge sharing can be divided into individual and institutional forms. These two categories are explained below.

- ***Individual encouragement.*** Researchers may receive encouragement from peers or colleagues to use social media to share experiences, ideas, or any kind of knowledge, and even to show their researches to others. The following participant's response exemplifies this.

*Numerous colleagues, whether they are members of the professorial staff or other researchers, whether post-doctoral or doctoral level, have said "You simply have to. If you have research it must be on Twitter because you are your research, your research is you. You must be over identified with the practice. You must be over identified with your work, which means you must use social media as your public". (Participant no. 9)*

According to this example, it can be claimed that colleagues may encourage each other to use social media for knowledge sharing. Thus, researchers can rely on this encouragement to enhance their use of social media.

Furthermore, supervisors may play a key role in encouraging their students to use social media for their researches and to be active on these platforms. Thus, these students can share knowledge with others who are in the same research area, and can show their researches and present themselves to other researchers.

*Last year during my master's degree, a course organiser was emphasizing us and said "Okay, this is very important. Be visible, use it (LinkedIn). Get some valuable connections so then you can cooperate with people". (Participant no. 2)*

*My PhD supervisor is on Twitter a fair amount. She tweets a lot, ... She said at one point, "Oh, you should really get more active". (Participant no. 14)*

As demonstrated in the above examples, new researchers such as postgraduate students can be encouraged by their supervisors to use social media to share knowledge. This encouragement may lead new researchers to use social media and to be active in sharing knowledge with others.

- ***Institutional encouragements.*** Institutions (e.g. universities) may encourage their staff to use social media, in order to employ this tool for their own competitive advantage. For example, universities encourage their staff to use social media to obtain social reach that cannot be obtained in traditional ways. The following participant's response reveals this.

*I think institutions and departments have become increasingly aware of the power of social media to reach people. Thinking about your impact and how far your work can go... So, we were encouraged to use it. (Participant no. 5)*

*I think it is good from the point of view of the university having a social reach that it might not have had before. So, it would be interesting to see if the university does continue to encourage us to use it. I think they probably will,*

*and that will certainly encourage me to keep doing it. I am not sure I could use it much more than I do at the moment. (Participant no. 11)*

As shown in this interview excerpt, institutions can encourage their staffs to use social media for sharing knowledge to have social reach. Furthermore, institutions may encourage staff to use social media to share their research outputs, which can attract others to the institutions' researches. The following interview excerpt illustrates that.

*If increasingly universities start looking at Altmetric as a way of measuring our value, then that would be an encouragement, I guess, to do more of it. ... I think they (university) do see it as a good opportunity for dissemination. I think they see it as a good way of getting research out there. So, there is a growing encouragement in the university community to use it. (Participant no. 11)*

On the basis of this explanation, it can be argued that verbal persuasion is considered the third important source of self-efficacy in the use of social media for knowledge sharing. Thus, researchers rely on this source to use social media for sharing knowledge.

#### **5.4.4 Emotional arousal**

The fourth source of self-efficacy is emotional arousal, which refers to the physical and emotional reactions to the use of social media for knowledge sharing. According

to the participants' responses in this study, the emotional arousal for researchers when using social media for sharing knowledge may be positive or negative, enjoyable or terrifying. Positive emotion may lead researchers to use social media more effectively for sharing knowledge. Thus, this emotion can enhance the researchers' use of social media to share knowledge with others. The following interview excerpts exemplify this point.

*I think my experience so far has been positive... It will make me use it more. If my experience continues to be positive, if I continue to engage with people within my field, and if I also see better impact for my work, why not use it more? (Participant no. 22)*

*The positive side actually influenced me a lot more to strive and be more active. It influenced me to write more papers, and work harder to get my research out, and to see what is going on in the world after my update. If someone can come up and tell me, "This work has already been done, but this work, your approach may be really new to this work. So, keep going." Sometimes, the influences like people's questions. People's questions are more influential. I wanted to like that. The reason... People don't understand what I am doing, but their simple question has a lot more meaningful sense. (Participant no. 25)*

As illustrated in the above examples of positive emotion, it can be argued that positive emotion may be shaped by positive experience or feedback that leads researchers to use social media continuously to share knowledge with others.

Therefore, this emotion becomes a source of self-efficacy that researchers can rely on in the use of social media for knowledge sharing.

In contrast, negative emotion may prevent researchers from using social media for knowledge sharing. This negative emotion may be formed from negative experience or feedback that leads researchers to avoid using social media to share knowledge with others, in turn affecting researchers' self-efficacy in this respect. The following examples from interview excerpts reveal this.

*I think if I had severely negative feedback or a negative experience it would push me off the platform. (Participant no. 12)*

*I suppose, yes, if I had more negative experiences it might put me off using it. If somebody was putting negative comments about what I had written, and it wasn't constructive, it might be a bit disheartening. (Participant no. 27)*

In these two examples, it can be seen how negative emotion may affect researchers' use of social media to share knowledge, to the point of causing them to avoid using this tool. However, negative experiences can be turned into positive ones if taken as lessons learned for the future. As the following participant stated:

*Sometimes I cannot answer the questions, it may be that it is a negative thing for my work, but I take my negatives in a positive way. It's easy for me to conquer my adversity, over something which I don't know. It's all a part of the learning process. Then I can say, "Okay. I haven't done this work so far,*



*but I will try my level best to include this in my research. If it makes more sense. In explaining my results better". (Participant no. 25)*

In this example, it can be observed that researchers can learn from negative emotion which can strengthen their abilities to use social media for knowledge sharing. Thus, negative emotion might be in some cases considered a source that researchers can rely on in the use of social media to share knowledge with others.

Another form of emotional arousal that was revealed by one of the participants in this study is enjoyment. Researchers can enjoy using social media for communicating, interacting, and sharing knowledge with others. This emotional factor can be relied on as a source of self-efficacy for researchers in using social media for knowledge sharing. The participant said,

*I enjoy using social media for that purpose, because of the knowledge sharing. I benefitted from that platform, so it always encourages me to use social media. (Participant no. 1)*

As shown in this interview excerpt, it can be argued that enjoyment gained from the use of social media for knowledge sharing is an emotional factor which can motivate researchers to use this tool for that purpose. However, there is another emotional factor which was revealed by another participant in this study. This emotional factor is anxiety, which the researcher can face in relation to the use of social media for knowledge sharing. This anxiety does not necessarily arise from

social media usage in itself, but only from sharing knowledge via social media. The participant explained:

*Honestly, sometimes when I want to ask a question, I am afraid when I mention the full details about my experiments, maybe sometimes I feel that I can't trust anybody too much, when I put everything online. But sometimes, when I ask for specific information about my question, it's okay. (Participant no. 7)*

As illustrated in the above discussion, it can be argued that emotional arousal is the fourth important source of self-efficacy in the use of social media for knowledge sharing. Thus, researchers rely on this source when adopting the use of social media to share knowledge.

To sum up, it can clearly be argued that researchers rely heavily on these four sources of self-efficacy, proposed by Bandura (1977), in using social media for knowledge sharing. These sources are: personal mastery experiences, vicarious experience, verbal persuasion, and emotional arousal.

## **5.5 The impact of sources of self-efficacy**

It can be confirmed that these sources have a considerable impact on researchers' use of social media to share knowledge with others. Nevertheless, it is important to explain how these sources impact on this use. According to the participants' responses, these sources can increase researchers' use of social media to share

knowledge, and there is substantial evidence to support this claim. In contrast, one of these sources works in a different direction that can negatively affect such use.

As seen, personal mastery experiences have been considered one of the important sources that can be relied on in using social media for knowledge sharing. The importance of this source also lies in how it impacts on the use of social media to share knowledge. The majority of the participants in this study argued that if they have more ability and skills in using social media to share knowledge, this will encourage them to increase their use, as exemplified by the following interview excerpts.

*It makes me keener to use it. (Participant no. 27)*

*That would of course let me use it a lot. (Participant no. 28)*

Researchers become more confident in using social media if they have more of the relevant ability and skills, and this confidence leads researchers to use social media more frequently to share knowledge. In contrast, weak confidence in the use of social media for knowledge sharing can lead researchers to either not use it or to use it rarely. The following participant's response illustrates this:

*If I was not confident about my ability, I would not use it. Or I would be very wary of using it. I would use it much less. I think it is important to be confident. (Participant no. 18)*

The second source is vicarious experience, also considered an important source to be relied on in the use of social media for knowledge sharing. The impact of this source is based on the relevant role models who have been followed. Researchers can effectively enhance their use by imitating a successful role model in the use of social media for knowledge sharing. The following interview excerpts demonstrate this.

*I suppose if I have seen somebody who has twitted a paper and this paper has got more attractions on it, get a lot of likes and retweets, that has a positive influence, because it shows that people engage with that media. So if I have seen people use social media and get that sort of data that will be a kind of positive force, and I will be more likely to use it. (Participant no. 5)*

*Definitely, if I have seen someone use social media for sharing the knowledge and they are succeeded, that will influence me to use it as well and my work can reach those people that I have never had it before. (Participant no. 3)*

According to these two examples, the successful role model in the use of social media for knowledge sharing can positively influence researchers to use this tool in the same way and more effectively. Therefore, researchers need to look for their role model. However, in some cases, observing or seeing others has no influence on the researchers' use, perhaps because they have relied on other sources of self-efficacy to use social media for knowledge sharing. The following participant stated:

*I have seen a lot of researchers in my research area but this did not influence me. I used it with my research community. (Participant no. 4)*

The third source is verbal persuasion. It is considered another important source that can be relied on in the use of social media for sharing knowledge. This source is represented by encouragement and support for researchers in such usage. Encouragements from either individuals or institutions can positively influence researchers to use social media to share knowledge with others, or to increase their existing usage. This can be seen from the following interview excerpts.

*It might encourage me to use it potentially more than I am already using it.*

*(Participant no. 12)*

*I would just be more likely to use it. I would say I would probably increase my use as a result of them being positive about it so. (Participant no. 17)*

*It actually made me think about it a bit more and use it more frequently.*

*(Participant no. 19)*

The fourth important source that has been found is emotional arousal. This source also can be relied on in the use of social media to share knowledge. However, there are two sides of this source: positive and negative. The positive side, such as positive experience and enjoyment, can enhance the researchers' use of social media to share knowledge, whereas the negative side, such as adverse experience and anxiety, can discourage their use. The following interview excerpts illustrate the impact of these two sides on the use of social media to share knowledge.

- ***Positive side:***

*Positive experience is going to make me use it more. It's going to make me think to use it more, engage on it more. (Participant no. 18)*

*The positive side actually influenced me a lot more to strive and be more active. It influenced me to write more papers, and work harder to get my research out, and to see what is going on in the world after my update. (Participant no. 25)*

- **Negative side:**

*I think if I had severely negative feedback or a negative experience it would push me off the platform. (Participant no. 12)*

*I suppose, yes, if I had more negative experiences it might put me off using it. If somebody was putting negative comments about what I had written, and it wasn't constructive, it might be a bit disheartening. (Participant no. 27)*

To sum up, it can be seen how these sources can impact on the researchers' use of social media to share knowledge with others. It can also be argued that the impact of these sources is significant. In general, these sources can lead the researchers to use social media more effectively to share knowledge with others, although negative forms of emotional arousal may cause them to avoid this tool.

## **5.6 Outcome expectations**

Based on the analysis, outcome expectations were classified into two main types: social and personal. Each type was represented in two forms, positive and negative. Moreover, each form contains a set of sub-themes that represent it (see Table 5-2).

Table 5-2: Types of outcome expectations

Types of Outcomes	Forms of the Types of Outcomes	Sub-themes
<i>Social</i>	<i>Positive</i>	<i>Attracting People</i>
		<i>Networking</i>
		<i>Social Impact</i>
		<i>Visibility</i>
	<i>Negative</i>	<i>Lack of Trust</i>
<i>Personal</i>	<i>Positive</i>	<i>Get Help</i>
		<i>Get feedback</i>
		<i>Publicity and Citation</i>
		<i>Keeping up-to-date</i>
		<i>Get Job</i>
	<i>Negative</i>	<i>Distractions</i>
		<i>Privacy concerns</i>
<i>Time-Consuming</i>		

These two types of outcome expectations with their forms and sub-themes, as shown in Table 5-2, are presented in greater detail in the following sections.

### **5.6.1 Social outcome expectations**

Social outcome expectations are the social consequences of using social media for knowledge sharing with communities. These outcomes can be positive (e.g. attracting people, networking, social impact, and visibility), representing the social benefits from using this tool to share knowledge, or negative (e.g. lack of trust), representing the social disadvantages of this use. These two forms (positive and negative) are explained separately in the following sub-sections.

#### **5.6.1.1 Positive Social outcomes**

This form of social outcome expectation refers to the benefits that researchers expected to gain from the use of social media to share their experiences and research

outputs with others. In this study, these benefits were represented in four sub-themes as shown in Table 5-2, and are explained in the following sub-points.

– *Attracting People*

Attracting people is defined as drawing people's attention to researchers' work by using social media. This was found to be one of the most common social outcomes that researchers expect from using social media to share their experience and research outputs. According to the study participants, they attract people for a number of purposes. The first purpose is to get people to read what they are doing in their research, as seen from the following participants' statements.

*I think it is the easiest way to attract other people to read what you are doing. Not just read what you are doing but know what you are doing. (Participant no. 3)*

*For sharing, I suppose it is an ego thing. You want more people to read your material.... I have had a lot of people read material from the non-academic community and I would not have had that without Twitter. (Participant no. 11)*

*I always hope that people will read what I put out there. (Participant no. 14)*

Researchers' second purpose in using social media for knowledge sharing was to find an audience for their knowledge, experiences or research outputs. This was clearly demonstrated by the responses of some participants, and is illustrated in the following interview excerpts.



*I think it is a bit of about feeling that you have an audience. Because if you are stuck in the lab seven hours a day or something, I think part of you also wants to show the world that “yes, I am working really hard”. That kind of thing. (Participant no. 15)*

*I think the main reason is to reach the right audience. If I share my experience in normal social media or in the old way, then it becomes really difficult for me to reach my targeted audience, the ones who are interested or who share this interest with me. (Participant no. 22)*

*I think that’s the most convenient way to find other academics and access a very broad audience. (Participant no. 2)*

However, some researchers, particularly new researchers, may find it difficult to reach audiences who are interested in their fields without using social media.

The third purpose of using this tool for knowledge sharing was to recruit participants in their research and share their experiences and beliefs about certain topics. Two participants raised this issue.

*I will get the opportunity to find and recruit people to help me in the process of my study. (Participant no. 3)*

*It is around the recruitment of participants. .... I recruited families that I would not have been able to before, would not have had access to. (Participant no. 5)*

As demonstrated in the above two interview excerpts, these media may replace traditional methods of recruiting people and sharing expertise and knowledge of

certain topics. Thus, use of social media helps researchers to recruit participants for their study more easily than before.

The fourth purpose that motivated researchers to use social media for knowledge sharing was to exchange ideas and experience with people who are interested. As is known, researchers have a number of activities that they might engage in. One of these activities is exchanging ideas with others. According to the participants, use of social media is the easiest and fastest way to exchange ideas with others. The following examples illustrate this.

*It's quite useful for me to get ideas out there, because it's a way of almost processing your own thinking. (Participant no. 18)*

*I think it could be a good kick-starter of future academic career, this one, because once you get started like that, it's easier to exchange ideas with other people and it saves you a ton of time because you don't have to spend that much time looking. (Participant no. 2)*

To summarize this point, it can be stated that attracting people is an expected benefit of using social media for knowledge sharing. Thus, this method will replace the traditional means of attracting and recruiting people.

– ***Networking***

Networking is defined as interacting with others to build relationships and research communities that encourage the exchange of knowledge. It is considered one of the important foundations of and an initial step in knowledge sharing. As is known,

social media constitute an essential tool for building relationships and networks between people. Thus, networking is a potential benefit of the use of this tool. A number of participants in the study also acknowledged this benefit.

Networking was constructed by combining several codes and concepts that were associated with building relationships and networks with others. According to their responses, participants expected to grow their research communities by using this tool for sharing knowledge. They also expected to build new relationships and engage with research groups from different disciplines.

Participants stated that they were interested in extending their networks and relationships with professional people or those who shared the same interests. The following interview excerpts illustrate this point.

*For me the more positive impact of it has been the growth of my research community. (Participant no. 11)*

*I do think it creates a network of people involved in research. (Participant no. 17)*

*If you could use social media as a better, more efficient through way of networking to other professionals then I suppose that would be a good reason to use it. (Participant no. 13)*

*To get network and know people who are interested in the UK, that should help me in terms of citations and in terms of making connections and in terms of seeing what people are doing and what their major area is. (Participant no. 28)*

*I think it is a very handy platform for you to find more people who are likeminded in their research interest for building networks. (Participant no. 29)*

*It is building those new relationships. (Participant no. 12)*

*So I find social media, for me, is a really good way to make social ties with people. (Participant no. 14)*

One of the important ways to build a relationship by using social media for sharing their experience and research outputs is through engagement. It is known that these media provide an effective means of facilitating engagement between users. In addition, it is known that the research environment is one of the largest environments that depend on how their members engage with others. Researchers therefore use it to achieve this engagement. For instance, they might use social media to meet others and talk to them about their work. One participant indicated that this usage provides a way to talk to people and engage with them. The participant said,

*I will try to talk to people, just a kind of engagement. (Participant no. 6)*

Another participant stated that the use of social media helps one to meet people, find out what they are doing, and then engage with them, as expressed in the following interview excerpt.

*It is great to help meet people, find what other people are doing, and engage with them on that level. (Participant no. 10)*

It gives researchers a great opportunity to communicate with a completely new group of people from several sectors and even from around the world, compared with traditional methods. As one of the study participants observed:

*I guess in traditional forms of research, you might be looking at a very limited group of views, in a sense. Whether they are academic, or journals, or specific, but there is an opportunity here to engage with a whole new group of people. Ideas, whether they're in the UK or abroad, or elsewhere. Different ages, different sectors, different levels of education. There's a real opportunity there, I think, to engage. (Participant no. 18)*

Another important way of building a relationship that participants expected from using social media for sharing their experience and research outputs was collaboration with others. However, researchers may encounter difficulties in finding people who are interested in collaborating with them. These difficulties may consist of distance or lack of knowledge of these people. According to the participants, the use of social media is the most successful way to meet people and collaborate with them. As they stated, by using social media to share their research works, they might receive an offer of collaboration. For example, a number of participants said,

*I was already getting messages from different companies saying, "Okay, we've viewed your profile. Maybe you'd be interested in collaboration, there is this research project or maybe you would like to do an internship." (Participant no. 2)*

*It might help me in the future in case a professor or lecturer reads my work and sends me an email and says, “Do you want us to collaborate?” Maybe if I finish doing what I’m doing and produce an actual thing, maybe a company will go online and see what I’m doing and say, “I want to buy this.” I don’t know. (Participant no. 3)*

*Then people are aware of your portfolio, so they might then access your web profile and see your other interest areas, because you’re only tweeting that one paper. But your profile network would then evolve, and it may lead to new collaborations. (Participant no. 5)*

*I can contact these people who are in the same interest very easily. Maybe we can work together, to collaborate on a certain area. (Participant no. 26)*

As demonstrated above in regard to networking and building relationships with people, social media can help researchers to build these relationships. This can occur in two important ways: engagement and collaboration with others via these media.

– ***Social Impact***

Social impact is the way the use of social media for knowledge sharing affects the surrounding community. As is known, sharing knowledge is an essential way to influence communities. It is also known to be a vital tool with which to facilitate this sharing, as illustrated in the literature review. By using it, knowledge is delivered to the right people, and then the impact of this knowledge is achieved. The following interview excerpt confirms this point.

*We keep producing knowledge or producing comments, this knowledge for me at least is not a goal in itself; the goal is to make an impact. By delivering that knowledge or those recommendations to the right people, the likelihood for this impact to happen be higher I would say. (Participant no. 22)*

Thus, this usage has a potential impact on these people. In fact, its use for knowledge sharing can influence communities. In other words, researchers use it to share experience with their own communities within the same institutions or in others, which may further expand the impact of using this tool to share knowledge. The following two examples show this.

*You need to be getting involved in these forms of communication, because I think there is an expectation more widely for universities to have impact. (Participant no. 18)*

*When Twitter came, I used it, and I found this had more impact, and would affect all the community, so I should stick with it. That is what happened. (Participant no. 23)*

These media can play a vital role in influencing communities. According to Participant (18), universities are considered one of the important places for creating, developing, and sharing knowledge. Thus, universities have an impact on communities, and this impact can be widely achieved if researchers within these universities use social media to share their knowledge.

– **Visibility**

Visibility is one of the expected outcomes from the use of social media for knowledge sharing, as raised by the participants. It indicates the extent to which this use helps researchers to be known in their fields and communities. Since visibility is one of the key factors affecting researchers and research environments, their use of these media for sharing knowledge might increase this visibility, especially for young researchers. The following interview excerpt illustrates this point.

*I think academics who are very active on social media will be more visible within the younger set of their field.... Yes, I think especially amongst younger researchers any academic who is active on social media is more visible and potentially that might have an impact on their citation rates. (Participant no. 12)*

Thus, new researchers want to present themselves and their researches to others, and use social media to achieve this goal. The following interview excerpt shows this.

*The first outcome will be increasing my visibility as a new player to the field. (Participant no. 2)*

In addition, this might help them to become involved in research with others and to let others see what they have produced. Participant (6) said:



*I'm aware that really, technically, if you engage in ResearchGate and Academia.edu and all these things for people who seemingly have a whole day a month minimum to sit and do all this – I know that if you do that, I think it should help to build up more, not even citations in academic terms, but more visibility that it should help more people see the work that you've produced, specifically because it is kind of tucked away and hidden. (Participant no. 6)*

Indeed, each researcher expected this outcome from the use of social media for knowledge sharing. Thus, researchers can be recognized and known from their profiles and research outputs on social media.

#### **5.6.1.2 Negative Social Outcomes**

This is the second form of social outcome expectations and consists of the social disadvantages that can arise from using social media to share knowledge with communities. The participants showed their interest in using this tool for knowledge sharing. However, based on some of the participants' responses, plagiarism of their ideas and research outputs that have not yet been published is an expected negative outcome of using this tool. Thus, there is a lack of trust in using it to share knowledge with others.

One of the important factors in building a relationship is definitely trust. Although social media usage is a great way to build relationships, a number of participants raised the issue of lack of trust in sharing their experience and research outputs by

this means. The study participants stated that they are concerned about having their works or ideas stolen. For example, the following participants said,

*I think that you have to worry about if you give them your main idea. I think, you are not to publish it or so register it.... So, yes this is a disadvantage of this social media, you have to keep a little worried about those people who use it just to steal the ideas or something like that. (Participant no. 20)*

*I think one of the main disadvantages could be stealing your research before it has been peer-reviewed, or been put in a journal, which means you can lose your research to someone else for instance. (Participant no. 21)*

*If you tried to publish a bit early, or you tried to talk about a plan for a paper prematurely, and then somebody might steal it. (Participant no. 27)*

Therefore, researchers' lack of trust surrounding the use of social media to share knowledge with others is based on concern over the possible theft of their ideas and knowledge. This prevents them from using this tool again for that purpose, so they will not benefit from this vital method of sharing knowledge.

### ***5.6.2 Personal outcome expectations***

Personal outcome expectations are the personal consequences that researchers will experience from the use of social media for knowledge sharing. These outcomes, too, can be positive (e.g. getting help, getting feedback, publicity and citation, keeping up-to-date, and getting a job), which represent the personal benefits from using this

tool to share knowledge, or negative (e.g. distractions, privacy concerns, and time consumption), which represent the personal disadvantages of this use. These two forms (positive and negative) are explained separately in the following sub-sections.

#### ***5.6.2.1 Positive Personal Outcomes***

This form of personal outcome expectations represents the personal benefits that researchers expect from using social media for sharing their experiences and research outputs with others. According to the findings in this study, the expected benefits of this use included getting help, getting feedback, publicity and citation, keeping up-to-date, and getting a job, as shown in Table 5-2, and are explained in the following sub-points.

##### ***– Get Help***

Social media as a tool can be used to get help from others. For instance, researchers, and in particular new researchers, try to get assistance from those who are more experienced and knowledgeable in specific fields. As is known, researchers, particularly in the first stage of their research career, might face some challenges which could affect their research. According to the participants' responses, by using these media they can seek help from experts or professionals to overcome such difficulties. The following two interview excerpts demonstrate this issue.

*The benefit I got from social media when I had a new problem facing me, during my research, I used social media to solve this problem. (Participant no. 7)*

*It may help my thesis, [finding a new methodology]. It should help my methodology or how to choose this method and what should be the respondent and so on. (Participant no. 30)*

As shown in these two examples, these social platforms can be used by researchers to get help from others. This help can take the form of solving problems that face researchers in some subject areas, or finding the appropriate methodology to use in their research. This expectation can motivate researchers to use social media to share experience and any kind of knowledge.

Another form of help that researchers expect to get from using these media is help with finding papers or materials, which might be hard to locate by other means. Thus, researchers can contact the authors and ask for their help in obtaining their work. The following two interview excerpts show this.

*The main benefit I get from it is finding papers. (Participant no. 8)*

*So specific outcomes, it's getting journals which I don't have access to. (Participant no. 21)*

Moreover, researchers can get help from other researchers or experts to acquire new knowledge, skills, and experience. In this case, researchers will be encouraged to use this tool for this purpose, as manifested by the following participant's response.

*The most important things that encourage me or the reason behind using social media is to learn from others. (Participant no. 28)*

To sum up this point, it can be confirmed that researchers can benefit from social media by getting help from others to complete their work. Thus, they use it to obtain this benefit.

– ***Get feedback***

Social media became a vital channel through which to share many things and gain the opportunity to get some feedback about them. This can help researchers to improve their ideas and research. Based on the participants' responses, they desire from its use the chance to share ideas, work with those who may be experts in this area, and get some feedback about these ideas and work and how they can be improved. The following interview excerpts illustrate this point.

*Getting feedback from people who have area expertise. (Participant no. 2)*

*I probably have the feedback that I can get from those experts, because my content is delivered to experts who know the material and therefore they can critically evaluate my work. I think the advantage of having this platform is to receive that feedback. (Participant no. 22)*

*I expect that people read what I share and they give me feedback, that "It's good, it's useful, for my research for my trip or whatever" and I want some comments and advice. (Participant no. 30)*

Since this tool is considered the fastest way to communicate and interact with others, researchers use it to receive immediate comments and feedback from those who are familiar with the topic. This point was raised by one participant who said,

*The obvious things are getting likes, retweets, comments. So, it's immediate feedback. (Participant no. 12)*

It is argued that social media can enable researchers to get feedback on their work. Thus, they can evaluate and improve their research and ideas based on this feedback, and go on to produce exceptional work.

– ***Publicity and Citation***

Two of the important tasks performed by researchers in their research life are publicizing their work among people who are interested and letting them cite it in their own research. Indeed, there are various ways to do so. However, the most effective way is through the use of social media. Two of the study participants stated that they use it to facilitate this publicity. The following examples from the interview excerpts demonstrate this.

*I would guess to publicize their own work. (Participant no. 8)*

*I think you want to get your work out there when you're doing research. (Participant no. 17)*

Researchers use social media as a way to distribute their research outputs to others and then motivate them to use and cite these outputs in their own work. In this case, these research outputs will be widely cited in other works. This can lead to an increase in credit for researchers from colleagues in their research environments. The following participants supported this claim.

*The goal of being an academic. It's about sharing the knowledge and getting credit for what you're doing. More or less, that's how we are judged. We are judged by the research output. If you produce a paper and you get 2000 citations in a year that means that you've done something good. (Participant no. 3)*

*Trying to get my citation count up. Probably the citation count, which is now more important in academia I think.... More views of my articles, more downloads of my articles. (Participant no. 16)*

*If a paper is promoted beforehand, before you have started your research, maybe you will go to that paper first. It gives you more of a chance to be cited, the opportunity to be cited by other people. (Participant no. 26)*

As illustrated in this point, social media helps researchers to show their work to others and let them cite it in order to get more credit from it. This benefit certainly drives researchers to use this tool for sharing knowledge.

– *Keeping up-to-date*

Nowadays, knowledge travels and updates faster than ever before. The ability to keep informed of the latest knowledge is important in the research environment. Keeping up-to-date is one of the key features provided by social media. This tool is considered by a number of the study participants as one of the most effective ways to keep them up-to-date with what others are doing and what is new in the field. The following interview extracts illustrate this point.

*I think I tend more to keep up to date with what people are doing in a more general sense. (Participant no. 14)*

*Maybe at one time I will work with my colleagues via the social media. After graduation, we do have the alumni. This will also keep me up to date with my university, with the research there. (Participant no. 23)*

*The first reason is to know what the newer things, to be on time. (Participant no. 28)*

These three examples show the importance of social media for keeping researchers up-to-date with their research area and even with their research group. Thus, they will be fully aware of what is new in their field. Not using this tool may make it difficult to follow all the new developments in research and knowledge, as one of the study participants confirmed:

*I think otherwise it would be very difficult to keep other people up-to-date. (Participant no. 2)*



Social media therefore are considered the most powerful way for researchers to keep up-to-date with their research communities. They expect to benefit from the use of this tool to receive any new knowledge or research ideas in their field. Therefore, they use it to do so.

– ***Get a Job***

It is known that social media can increase researchers' visibility, which may enhance their reputations and help them to become known through their activities or writings. This may provide them with the opportunity to get a job or position somewhere. The following interview excerpts prove this.

*The long term is that someone might read about my work and be interested in what I am doing, or the way I have approached it, and maybe get a job.*

*(Participant no. 3)*

*It may get you into a job somewhere. (Participant no. 25)*

Indeed, through placing their profiles on social media platforms and identifying their interests and activities through the writing and knowledge shared on these platforms, researchers might have a great opportunity to get the jobs they want. The following participant's response exemplifies this.

*I was hoping it would be quite good for job prospects, thinking if I put up a few pieces, I think my written English is pretty decent, so I thought this would show that I know what I am talking about. If I did have a potential recruiter or*

*employer that stumbled across my profile, and then they saw not only has he got a profile with his history here, but he is also actively talking about what he is interested in as well, I thought it would be quite good from that point of view for just demonstrating that I am not passive in my research. I am actually showing interest beyond that, and that I know what I am talking about from the get go. That was a main benefit. (Participant no27)*

In fact, it can be the easiest way for researchers to get a job or a new position. Therefore, it can be confirmed that whenever researchers have the skills and abilities to write and share knowledge through social media, they may benefit from it by obtaining their desired job.

#### ***5.6.2.2 Negative personal outcomes***

Negative personal outcomes are the personal disadvantages that researchers expect from the use of social media for knowledge sharing, and that harm them personally. According to the study participants, there are three expected disadvantages from using this tool to share knowledge, including distractions, privacy concerns, and time consumption. These negative personal outcome expectations are explained in the following sub-points.

##### ***– Distractions***

Distraction is a state which prevents researchers from concentrating on important work through preoccupation with other things that might not be important. According to the study participants, distraction is one of the negative personal

outcomes that can be expected from the use of social media for knowledge sharing. They believe that if they are not careful about this tool, it will distract them from giving full attention to their main task. The following interview excerpts exemplify this.

*If there is no thinking or you are not so careful, it can also lead to distractions.*

*(Participant no. 1)*

*I think there's distraction issue. I think that's an issue. I think ensuring the quality of your work remains high, it's not misinterpreted. (Participant no. 18)*

Thus, researchers believe that the use of this tool distracts them from completing their duties. This outcome therefore can prevent researchers from using this tool to share their experience and research outputs and benefitting from it.

– ***Privacy concerns***

Privacy entails keeping personal matters and relationships secret from the public. Everyone wants to protect his/her private matters from being seen or known by others. Nowadays, the use of any social media platforms may affect this privacy in a way or another. Therefore, the privacy issue is considered another negative personal outcome that researchers expect from using these media for knowledge sharing. The following interview excerpts illustrate this issue.

*It's all about exposure and data privacy. So, everyone knows you shouldn't post things about confidential research that you're doing. (Participant no. 13)*

*Privacy, I think. (Participant no. 16)*

Although researchers consider social media as a great way of reaching and communicating with others, they have substantial concern about their privacy. This concern prevents them from using this tool for knowledge sharing, as shown by the next participant's response.

*Privacy concerns about social media in general hold me back from using it more than I would otherwise, and more openly than I currently do. (Participant no. 10)*

This example showed how privacy is very important to researchers. Thus, in the interests of this privacy, they may use these platforms for knowledge sharing less than before, or may not use them again for that purpose.

– ***Time Consumption***

Time consumption is the key concern of researchers regarding the use of social media. There are different social media platforms, and each platform has its own features that might be beneficial for researchers. However, the fear is about the amount of time spent by researchers in the use of one or more platforms. Participants raised this issue and showed their concern over it, as in the following excerpts.

*It wastes your time. (Participant no. 1)*

*I suppose some of the disadvantages are the time it can take and if you're using lots of different platforms, to keep them all up to date at the same time. (Participant no. 5)*

*It can be a total time suck is the main disadvantage. (Participant no. 12)*

*For me the disadvantage is that it takes time. It takes a lot of my time. (Participant no. 26)*

As demonstrated in these examples, it can be argued that the use of social media to share knowledge can be a way of consuming time. In fact, some of the participants expect that the use of this tool will affect the amount of time they have, which in turn will affect the completion of their work. For example, one participant said,

*The fact that if you spend too much time on it, then it's a hindrance to your work. (Participant no. 29)*

And while losing time in the use of this tool, you may get information which is not useful. The following interview excerpt illustrates this point.

*There is the waste of time aspect, where you're not just getting academic information, you're getting all kinds of things, but some of the information from academic sources are also not useful. (Participant no. 14)*

The above explanation highlighted the point of time consumption as one of the negative personal outcome expectations. It also showed how this negative outcome

can lead researchers to avoid using social media to share their experience and research outputs. Thus, they will not get the potential benefits from this use in their research life.

## **5.7 The Impact of Outcome Expectations**

### ***5.7.1 Positive Outcome Expectations***

The positive outcomes, both social and personal, motivate researchers to use social media to share their experience and research outputs. The study participants stated that their use of social media for knowledge sharing might be increased by obtaining their benefits. This issue was raised when participants were asked how the positive outcomes can influence their use of social media to share their experience and research outputs. The following interview excerpts illustrate this influence.

*I probably would start using the platform more, or find myself checking out more, and maybe even start posting more frequently. (Participant no. 27)*

*I think this will increase my using for social media as well. This will increase as well not only using, but to follow people on the last things, on last studies that they are doing and the major finding. (Participant no. 28)*

*If I see these outcomes, if I'm experiencing these benefits, then I'm bound to use social media more in my future for my future projects. (Participant no. 29)*

According to these examples, it can be argued that the positive outcomes have an important impact on the researchers' use of social media for knowledge sharing. Thus, through achieving these outcomes, this use can be increased.

### ***5.7.2 Negative outcome expectations***

The negative outcomes, both social and personal, can prevent researchers from using this tool to share their experience and even their research outputs. The study participants confirmed that their use of this tool might be negatively affected by the negative outcomes of this use. This issue was raised by some of the participants when they talked about how the negative outcomes can affect their use of social media to share knowledge. The following responses exemplified this point.

*Privacy concerns about social media in general hold me back from using it more than I would. (Participant no. 10)*

*If I had negative experience it would push me off from the platform. (Participant no. 12)*

*If I had more negative experiences it might put me off from using it. (Participant no. 27)*

Thus, these outcomes may lead the researchers to miss out on the potential benefits from this tool in their research life. In fact, they may prevent the researchers from using social media at all.

## **5.8 Chapter Summary**

The chapter presented these findings of the study in relation to the study's main question. The data analysis revealed that participants rely on the four sources of self-efficacy to use social media for knowledge sharing and that these sources have an important impact on the use of this tool. There are two outcomes that participants expect from their use of these media, and they identified that these outcomes have a

significant impact on their usage. In the next chapter, the second phase will be presented to validate and add more understanding of these findings.



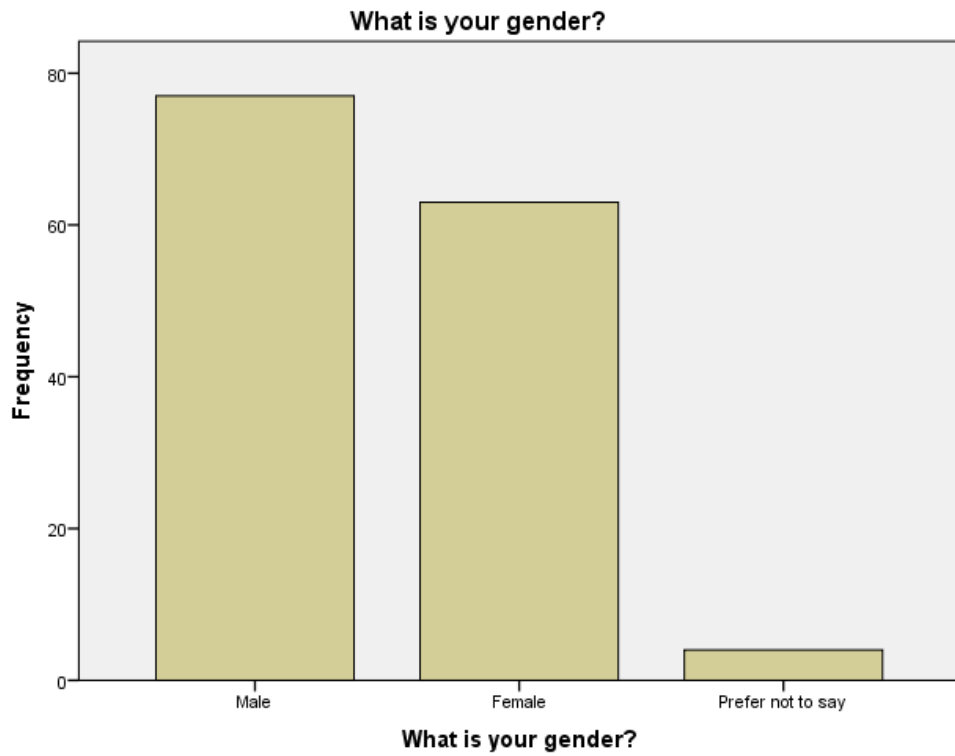
# **Chapter 6: Quantitative results**

## **6.1 Introduction**

The purpose of this study was to investigate the sources of self-efficacy and outcome expectations of researchers in the use of social media for knowledge sharing, as well as the impact of these sources and expectations on this use. This chapter reports the results from the statistical analysis of the data collected by questionnaire in this study. The chapter includes descriptive analysis of the sample demographics, descriptive statistics of the data, validity and reliability analysis, results presented by the research questions, and the chapter summary.

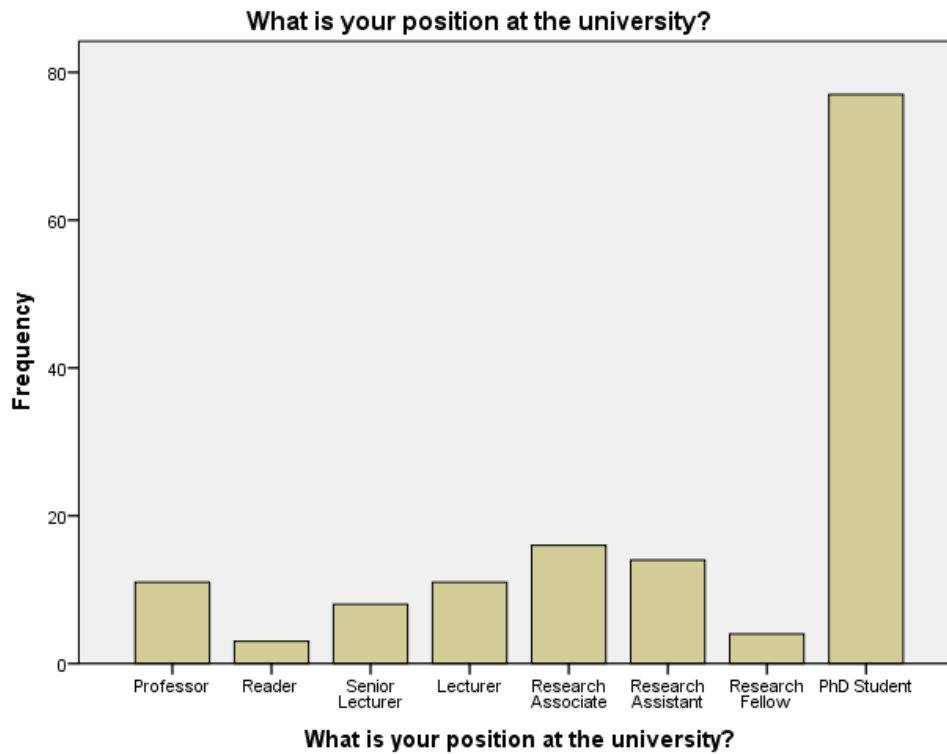
## **6.2 Response rate and demographics**

There were 222 responses: 144 completed responses (65%) and 78 incomplete responses (35%). The incomplete responses were excluded from the analysis. Thus, the actual usable size of the sample in this study was 144 participants. The participants were from the University of Strathclyde, Glasgow, United Kingdom. There were 77 males (53.5%) and 63 females (43.7%), while four participants (2.8%) preferred not to say (See Figure 6-1).



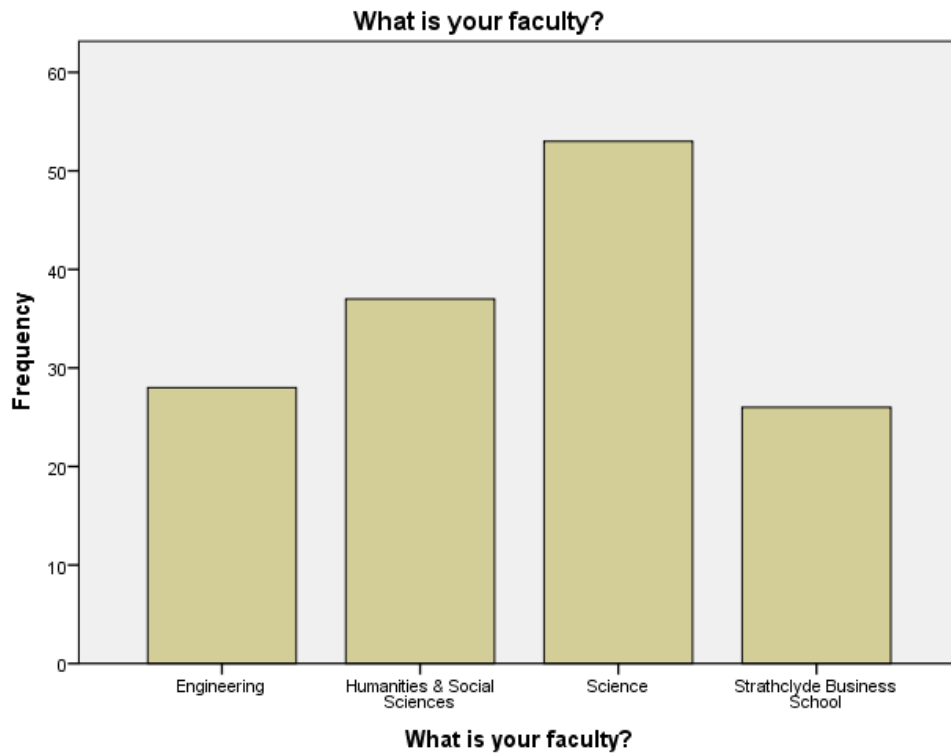
*Figure 6-1: Participants' Gender*

Most of the respondents, 53.5%, were PhD students, followed by research associates at 11.1%, research assistants at 9.7%, professors and lecturers both at 7.6%, senior lecturers at 5.6%, research fellows at 2.8%, and readers at 2.1% (see Figure 6-2).



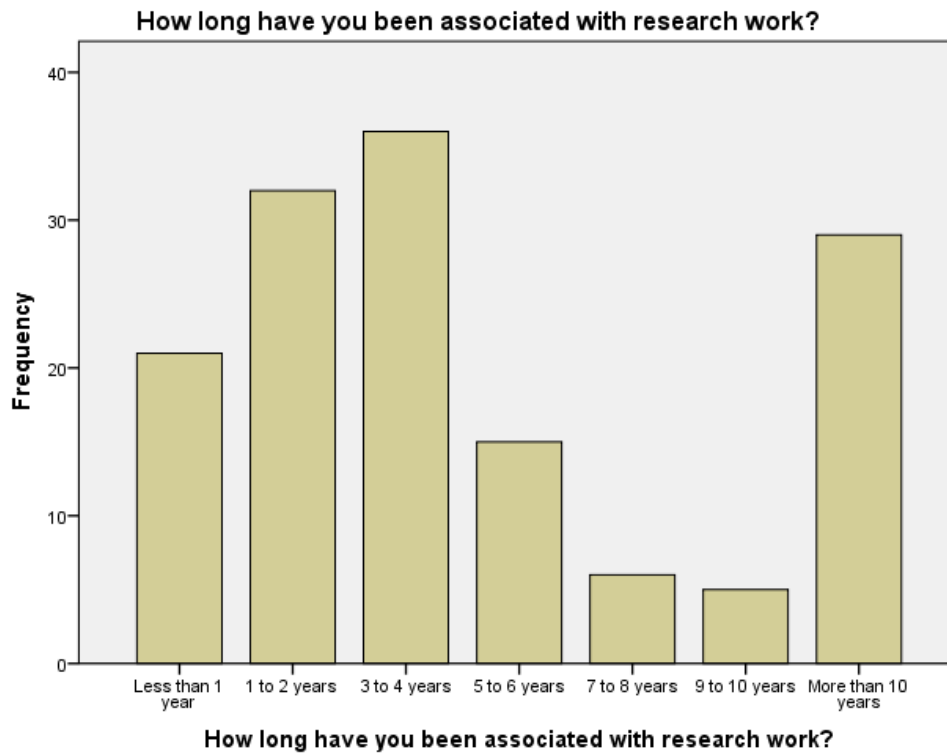
*Figure 6-2: Participants' Positions*

Those respondents represented four main faculties at the university. Most of them, 36.8%, were from the Faculty of Science, followed by the Faculty of Humanities & Social Sciences at 25.7%, the Faculty of Engineering at 19.4%, and Strathclyde Business School at 18.1% (see Figure 6-3).



*Figure 6-3: Participants' Faculties*

In terms of experience, 25% of the respondents have 3 to 4 years of association with research work, 22.2% from 1 to 2 years, 20.1% more than 10 years, 14.6% less than 1 year, 10.4% from 5 to 6 years, 4.2% from 7 to 8 years, and 3.5% from 9 to 10 years (see Figure 6-4).



*Figure 6-4: Participants' Experience*

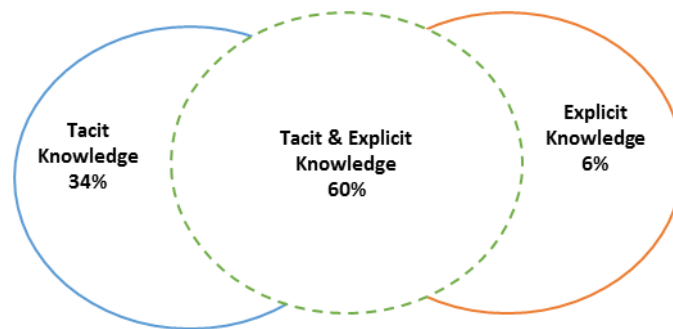
### **6.3 Social media and knowledge sharing**

According to the results of this study, 66% of the respondents use social media to share either their cognitive experience (tacit knowledge), or research outputs (explicit knowledge), or both, while 34% do not use them to share any kind of knowledge (see Table 6-1).

*Table 6-1: Number of Participants who use or do not use Social Media for Knowledge Sharing*

<b>Positions</b>	<b>Frequency</b>	<b>Use-SM</b>	<b>%</b>	<b>Not-Use-SM</b>	<b>%</b>
Professor	11	4	3%	7	5%
Reader	3	1	1%	2	1%
Senior Lecturer	8	5	3%	3	2%
Lecturer	11	9	6%	2	1%
Research Associate	16	11	8%	5	3%
Research Assistant	14	10	7%	4	3%
Research Fellow	4	2	1%	2	1%
PhD Student	77	53	37%	24	17%
<b>Total</b>	<b>144</b>	<b>95</b>	<b>66%</b>	<b>49</b>	<b>34%</b>

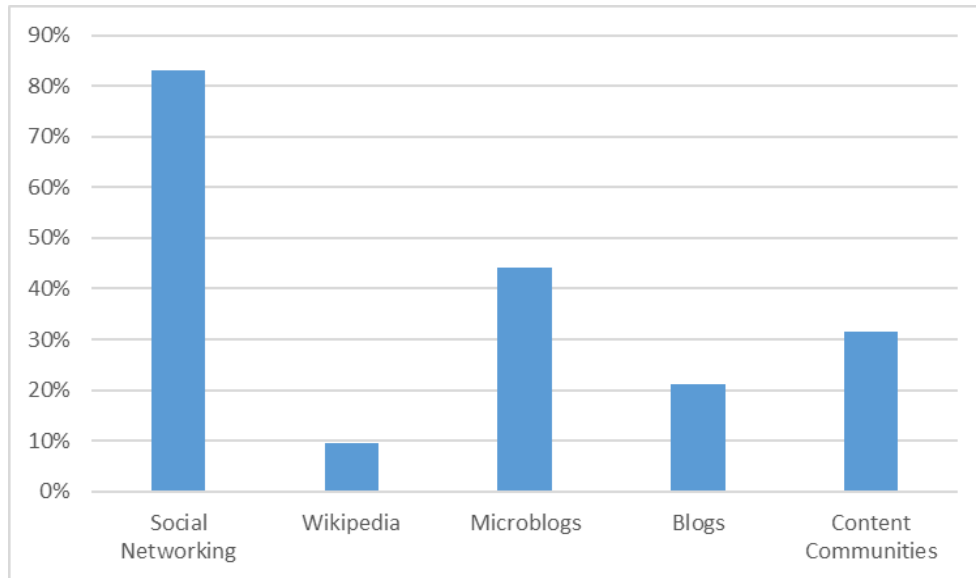
As shown in Table 6-1, 95 respondents use this tool for knowledge sharing, 89 of them use it for sharing their cognitive experience (tacit knowledge), while 63 use it for sharing research outputs (explicit knowledge). However, among them, 57 respondents use it to share both (tacit and explicit knowledge) (see Figure 6-5).



*Figure 6-5: Percentage of Participants for using Social Media for Sharing Tacit and Explicit Knowledge*

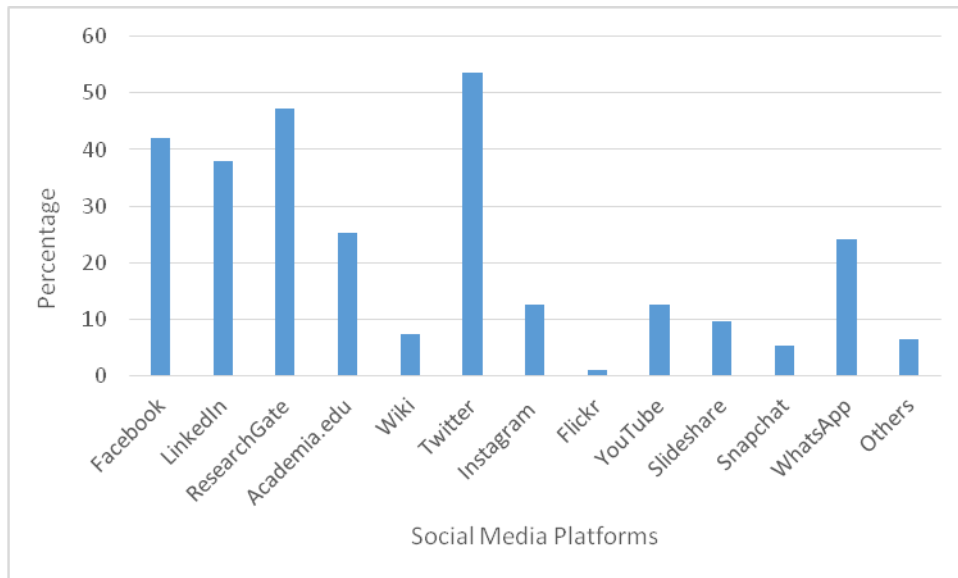
As presented in Figure 6-5, most respondents use social media for sharing both types of knowledge, followed by sharing tacit knowledge, while some of them use it only to share explicit knowledge.

Also according to the results, respondents use several types of social media to share knowledge. Figure 6-6 shows that social networking is the most common type of social media used to share knowledge, while microblogs are in second place, followed by content communities, blogs, and Wikipedia in last place.



*Figure 6-6: Types of Social Media used by the Participants*

In fact, each type contains one or more platforms. Thus, Figure 6-7 shows that most respondents (54%) use Twitter to share knowledge with others, followed by ResearchGate (47%), Facebook (42%), LinkedIn (38%), Academia.edu (25%), and WhatsApp (24%), while the least used were Flickr (1%), followed by Snapchat (5%), Wiki (7%), Slideshare (9%), and YouTube and Instagram at 13%.



*Figure 6-7: Social Media Platforms used by the Participants*

However, some individuals use other platforms such as Pinterest, Vimeo, WordPress, and Reddit.

## **6.4 Normality Testing**

This is one of the first important tests used to ensure that the data are normal and usable for representing the study’s population. Normality is the most fundamental assumption for multivariate analysis (Hair, Black, Babin, & Anderson, 2010); it measures the extent to which the data are normally distributed or not. This test can be conducted by looking for the shape of the data distribution and the correspondence of each individual metric variable to this normal distribution (Hair et al., 2010).

According to Hair et al. (2010), “the shape of any distribution can be described by two measures: kurtosis and skewness” (p. 71). Kurtosis indicates the height of the distribution (peak or flat), while skewness indicates the balance of the distribution (right, left, or centred), where right skew is negative and left skew is positive.



For normal distribution, the cut-off value of skewness and kurtosis for the data should be within the + 2 to -2 range (George & Mallery, 2010; Lewis-Beck, Bryman, & Liao, 2004). According to Hair et al. (2010) and Byrne (2016), the data are considered normal if the value of skewness is between +2 to -2, while the value of kurtosis is between +7 to -7. However, Kline (2015) argued that the absolute value for skewness and kurtosis should not be greater than 3 and 10 respectively. The results of the normality test for this study are represented in Table 6-2 and Table 6-3 below.

Table 6-2: Results of Normal Distribution Test for using social media to share experience

Variables	N	Skewness	Kurtosis	Variables	N	Skewness	Kurtosis
PME1_SE	89	-0.714	0.573	Net1_SE	89	-1.587	4.702
PME2_SE	89	-0.718	0.535	Net2_SE	89	-0.877	0.749
PME3_SE	89	-0.713	1.610	Net3_SE	89	-0.826	0.570
PME4_SE	89	1.006	0.023	Net4_SE	89	-1.218	1.678
Imp_PME1_SE	89	-0.596	0.406	Social Imp_1_SE	89	-1.152	1.637
Imp_PME2_SE	89	-0.702	0.414	Social Imp_2_SE	89	-0.508	0.184
VE1_SE	89	-0.874	0.106	Visibility_1_SE	89	-0.991	1.229
VE2_SE	89	-0.654	-0.174	Visibility_2_SE	89	-1.194	3.132
Imp_VE1_SE	89	-0.834	0.634	Personal_OUT1_SE	89	-0.665	0.261
Imp_VE2_SE	89	-0.875	0.619	Personal_OUT2_SE	89	-0.310	-0.257
VP1_SE	89	-0.171	-0.914	Personal_OUT3_SE	89	-1.249	2.633
VP2_SE	89	0.148	-0.540	Personal_OUT4_SE	89	-0.906	2.902
Imp_VP_SE1	89	-0.506	0.100	Personal_OUT5_SE	89	-0.629	0.293
Imp_VP_SE2	89	-0.512	0.59	Personal_OUT6_SE	89	-1.087	1.353
Pos_EA1_SE	89	-0.866	1.400	Personal_OUT7_SE	89	-1.461	3.173
Pos_EA2_SE	89	-1.095	1.385	Personal_OUT8_SE	89	-0.403	-0.247
Imp_Pos_EA_SE1	89	-0.945	2.467	Imp_Pos_OUT_SE	89	-0.248	0.518
Imp_Pos_EA_SE2	89	-0.832	1.905	Neg_Social_OUT1_SE	89	-0.404	-0.567
Neg_EA1_SE	89	0.159	-1.059	Neg_Social_OUT2_SE	89	-0.710	-0.365
Neg_EA2_SE	89	0.137	-1.050	Neg_Personal_OUT1_SE	89	0.029	-1.065
Imp_Ne_EA_SE1	89	-0.840	0.021	Neg_Personal_OUT2_SE	89	-0.099	-0.823
Imp_Ne_EA_SE2	89	-0.641	-0.409	Neg_Personal_OUT3_SE	89	-0.503	-0.755
Attr_Peop_1_SE	89	-1.140	2.031	Imp_Neg_OUT_SE	89	-0.201	-0.526
Attr_Peop_2_SE	89	-0.842	0.894	Gender	89	0.465	-0.778
Attr_Peop_3_SE	89	-0.278	-0.643	Position	89	-1.021	-0.049
Attr_Peop_4_SE	89	-0.910	1.016	Faculty	89	-0.080	-1.001
				Experience	89	0.736	-0.745

\*These variables are shown in Appendix G

Table 6-3: Results of Normal Distribution Test for using social media to share research outputs

Variables	N	Skewness	Kurtosis	Variables	N	Skewness	Kurtosis
PME1_SR	63	-0.641	0.377	Net1_SR	63	-0.970	3.889
PME2_SR	63	-0.907	0.907	Net2_SR	63	-1.137	3.366
PME3_SR	63	-1.026	3.511	Net3_SR	63	-0.893	3.021
PME4_SR	63	0.235	-1.299	Net4_SR	63	-1.170	1.842
Imp_PME1_SR	63	-0.903	1.470	Social Imp_1_SR	63	-0.595	1.162
Imp_PME2_SR	63	-0.769	1.726	Social Imp_2_SR	63	-0.784	1.616
VE1_SR	63	-1.353	3.292	Visibility_1_SR	63	-0.888	2.467
VE2_SR	63	-0.543	0.571	Visibility_2_SR	63	0.034	0.074
Imp_VE1_SR	63	-1.070	1.628	Personal_OUT1_SR	63	-0.523	-0.577
Imp_VE2_SR	63	-0.948	0.987	Personal_OUT2_SR	63	-1.083	1.358
VP1_SR	63	-0.213	-0.599	Personal_OUT3_SR	63	-1.305	4.358
VP2_SR	63	-0.011	-0.618	Personal_OUT4_SR	63	-1.375	3.336
Imp_VP_SR1	63	-0.604	0.332	Personal_OUT5_SR	63	-0.859	0.986
Imp_VP_SR2	63	-0.738	0.653	Personal_OUT6_SR	63	-1.125	1.201
Pos_EA1_SR	63	-0.994	1.941	Personal_OUT7_SR	63	-0.566	2.963
Pos_EA2_SR	63	-1.068	1.841	Personal_OUT8_SR	63	-0.715	0.390
Imp_Pos_EA_SR1	63	-0.566	2.963	Imp_Pos_OUT_SR	63	0.021	0.259
Imp_Pos_EA_SR2	63	-0.482	1.766	Neg_Social_OUT1_SR	63	-0.074	-0.975
Neg_EA1_SR	63	0.526	0.109	Neg_Social_OUT2_SR	63	-0.224	-0.964
Neg_EA2_SR	63	0.287	-0.512	Ne_Personal_OUT1_SR	63	-0.218	-1.214
Imp_Ne_EA_SR1	63	-1.222	1.166	Ne_Personal_OUT2_SR	63	0.041	-1.170
Imp_Ne_EA_SR2	63	-1.057	0.311	Ne_Personal_OUT3_SR	63	-0.639	-0.592
Attr_Peop_1_SR	63	0.108	0.599	Imp_Neg_OUT_SR	63	-0.238	-0.921
Attr_Peop_2_SR	63	0.206	1.030	Gender	63	0.569	-0.584
Attr_Peop_3_SR	63	-0.546	-0.476	Position	63	-0.793	-0.415
Attr_Peop_4_SR	63	-1.331	3.016	Faculty	63	-0.200	-0.709
*These variables are shown in Appendix G				Experience	63	0.434	-1.206

Table 6-2 and Table 6-3 demonstrate that all values for skewness and the majority of kurtosis values for the items in this study fall within the +2 to -2 range (George & Mallery, 2010; Lewis-Beck et al., 2004). Only a few items, as shown in Table 6-2 and Table 6-3, are outside this range for kurtosis. However, they meet the more lenient range for kurtosis based on Byrne (2016); Hair et al. (2010). Therefore, all variables in this case are considered to be normally distributed.

## 6.5 Reliability Testing

The test of reliability is a vital process for ensuring the consistency and accuracy of the measurement used in a questionnaire (Muijs, 2011; Straub, Boudreau, & Gefen, 2004). The key point in testing reliability is to gain the true score without any error for the questionnaire items used (Muijs, 2011).

Reliability has two forms: repeated measurement and internal consistency (Muijs, 2011), as discussed previously in Chapter 4, sub-section 4.4.4. In this study, the researcher applied the second form by calculating Cronbach's alpha for each measurement. According to Straub et al. (2004), the cut-off value for Cronbach's alpha should be greater than .60 in exploratory research and greater than .70 in confirmatory research in order to be internally consistent. George and Mallery (2010) provided a rule of thumb for the value of Cronbach's alpha, as shown in Table 6-4.

*Table 6-4: The value of Cronbach's alpha*

<b>Cronbach's alpha (<math>\alpha</math>)</b>	<b>Status</b>
$.9 \leq \alpha$	Excellent
$.8 \leq \alpha < .9$	Good
$.7 \leq \alpha < .8$	Acceptable
$.6 \leq \alpha < .7$	Questionable
$.5 \leq \alpha < .6$	Poor
$\alpha < .5$	Unacceptable

In this study, the values of reliability tested by Cronbach's alpha are represented in Table 6-5. The results demonstrate that the scores of Cronbach's alpha ranged from .80 to .91 for all scales. Thus, and based on George and Mallery (2010), the values of Cronbach's alpha in this study are either good or excellent, which shows a good level of internal consistency for the questionnaire items.

*Table 6-5: Calculated Cronbach's alpha Coefficients for the four dimensions*

<b>Scales</b>	<b>N of Items</b>	<b>Cronbach's Alpha</b>
Self-efficacy of the use of SM for sharing experience	22	.80
Outcome expectations of the use of SM for sharing experience	27	.90
Self-efficacy of the use of SM for sharing research outputs	22	.86
Outcome expectations of the use of SM for sharing research outputs	27	.91

## **6.6 Descriptive analysis of the questionnaire**

The questionnaire contains two main sections, which include sources of self-efficacy for using social media to share cognitive experience and research outputs, and outcome expectations from this use to share these two types of knowledge. The section Sources of self-efficacy has 44 items, which are divided into 22 items for using social media for sharing cognitive experience and 22 other items for using social media for sharing research outputs. Likewise, the section of outcome expectations contains 54 items divided into 27 for sharing cognitive experience and 27 for sharing research outputs.

IBM SPSS was used to obtain descriptive statistics by calculating mean and standard deviation for each item related to the 5-point Likert scale used in the questionnaire, such as (1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, and 5 = Strongly agree).

Here, attention must be drawn to the fact that there were 95 respondents out of 144 who used social media for sharing knowledge. Thirty-two used it only to share cognitive experience, six only for sharing research outputs, and fifty-seven for sharing both types of knowledge. However, to reduce the complexity, the analysis was based on two groups. The first group includes the respondents who use social

media to share cognitive experience (n = 89), while the second group includes the respondents who use social media to share research outputs (n = 63), (see Appendix G).

## **6.7 Sources of self-efficacy**

In this part of the questionnaire, the mean, standard deviation, and percentages were calculated for four sources of self-efficacy for those who use social media to share cognitive experience, and those who use it to share research outputs. The results are shown in the following sub-sections.

### ***6.7.1 Personal Mastery Experience***

#### **– Sharing Cognitive Experience**

The results of the analysis showed that experience with using social media platforms for sharing cognitive experience is an important factor in improving the personal mastery experience source ( $M = 3.92$ ,  $SD = .644$ ). Of the total 89 participants, 82% of them agree or strongly agree that they have experiences with social media platform that they use for sharing their cognitive experience. Only 14.6% neither agree nor disagree, while 3.4% disagree, as shown in Figure 6-8.

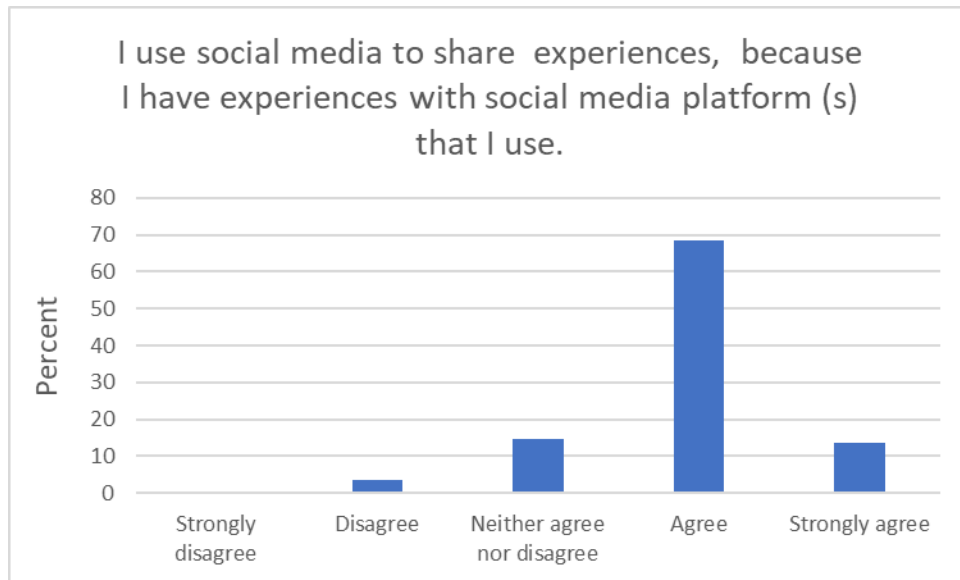


Figure 6-8: Experiences with social media platform(s) for sharing cognitive experience

The second important factor for improving the personal master experiences is skills ( $M = 3.69, SD = .847$ ), where 67.5% of the participants agree or strongly agree that they have good skills in the use of social media for sharing their experiences. Only 22.5% neither agree nor disagree, while 10.1% of the participants disagree or strongly disagree. See Figure 6-9.

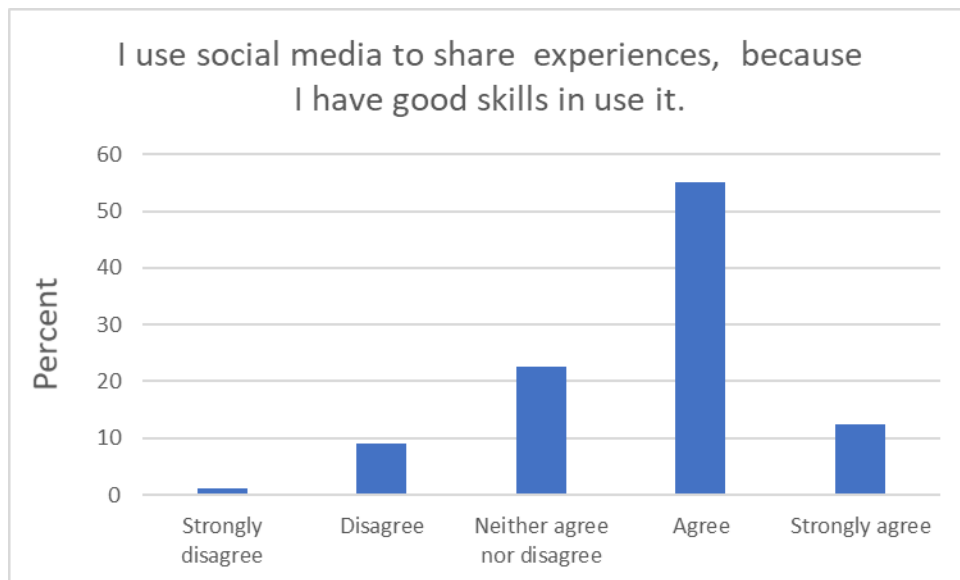
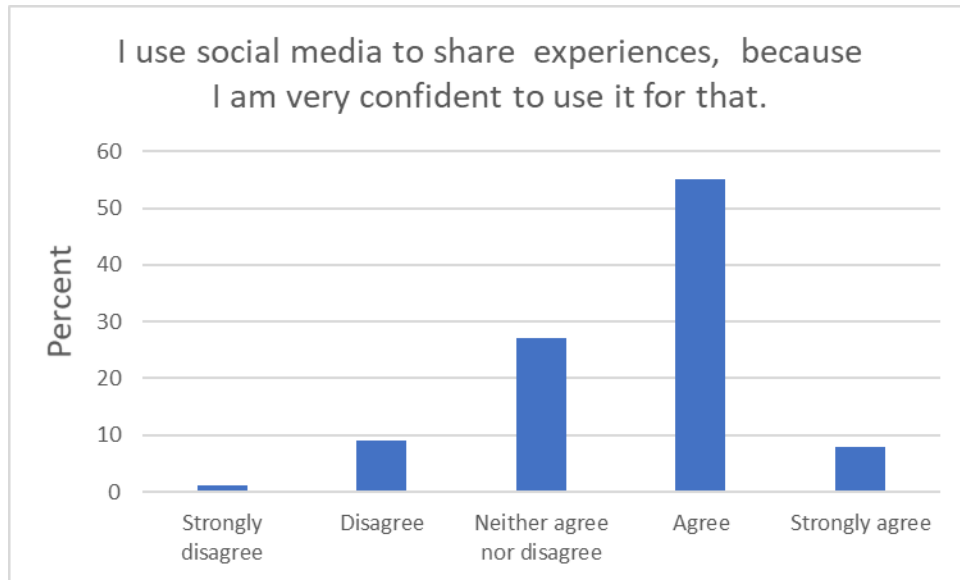


Figure 6-9: Skills in the use of social media for sharing cognitive experience

In the third place is confidence in the use social media for sharing experiences ( $M = 3.60$ ,  $SD = .808$ ). Of the total 89 participants, 63% of them agree or strongly agree that they are very confident to use it. Only 10% disagree or strongly disagree, while 27% neither agree nor disagree, as shown in Figure 6-10.



*Figure 6-10: Confidence in the use of social media for sharing cognitive experience*

The last factor is attending training courses or workshops to improve the ability to use it ( $M = 1.93$ ,  $SD = 1.064$ ). It seems that this factor has no strong effect where 77.5% disagree or strongly disagree that they use social media for sharing experience because they have attended training courses to improve their abilities. Only 13.5% agree or strongly agree, while 9% neither agree nor disagree. See Figure 6-11.



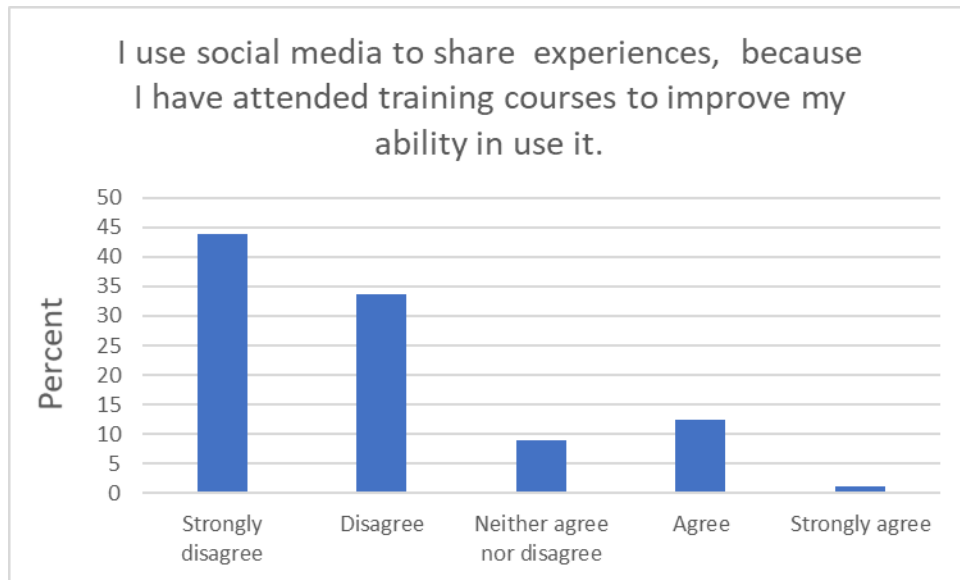


Figure 6-11: Attending training in the use of social media for sharing cognitive experience

– **Sharing Research Outputs**

Regarding the use of social media for sharing research outputs, the experience with using social media platforms to share research outputs is considered the most important factor in improving personal mastery experience ( $M = 3.95$ ;  $SD = .580$ ). Of the total 63 participants, 87.3% of them agree or strongly agree that they have experiences with social media platform that they use for sharing their research outputs. Only 9.5% neither agree nor disagree, while 3.2% disagree, as shown in Figure 6-12.

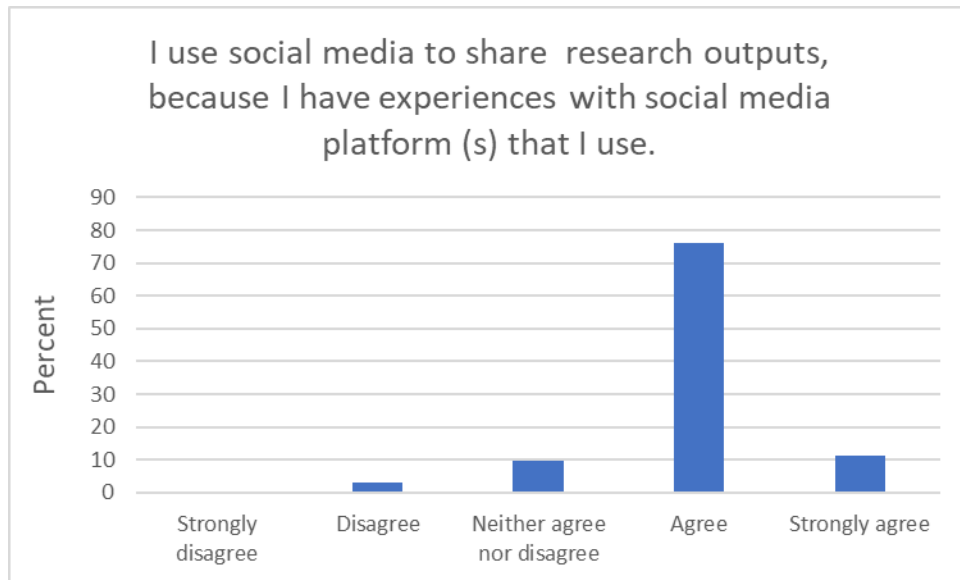


Figure 6-12: Experiences with social media platform(s) for sharing research outputs

Likewise, the second important factor is skills ( $M = 3.65$ ;  $SD = .845$ ), where 68.2% of the participants agree or strongly agree that they have good skills in the use of social media for sharing their research outputs. Only 20.6% neither agree nor disagree, while 11.1% of the participants disagree or strongly disagree. See Figure 6-13.

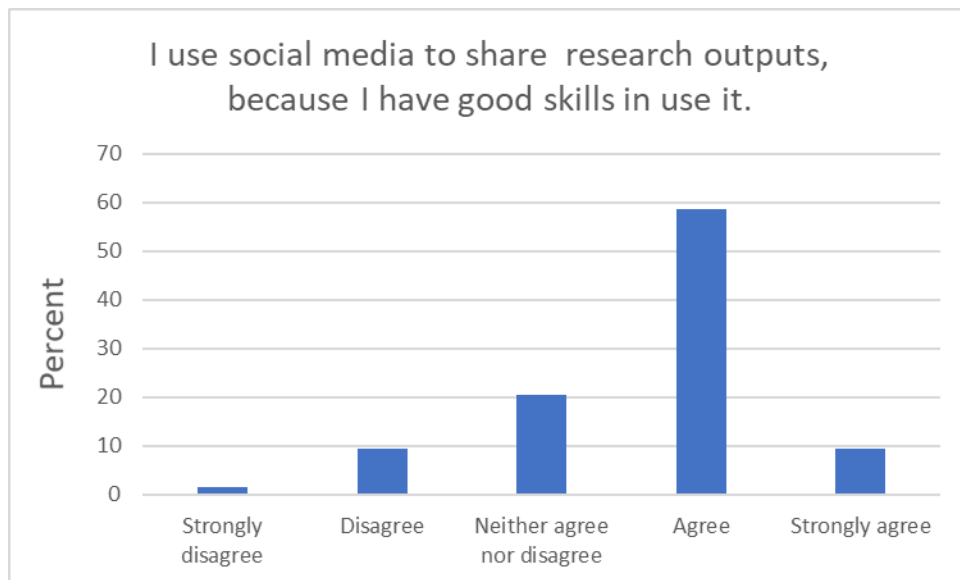
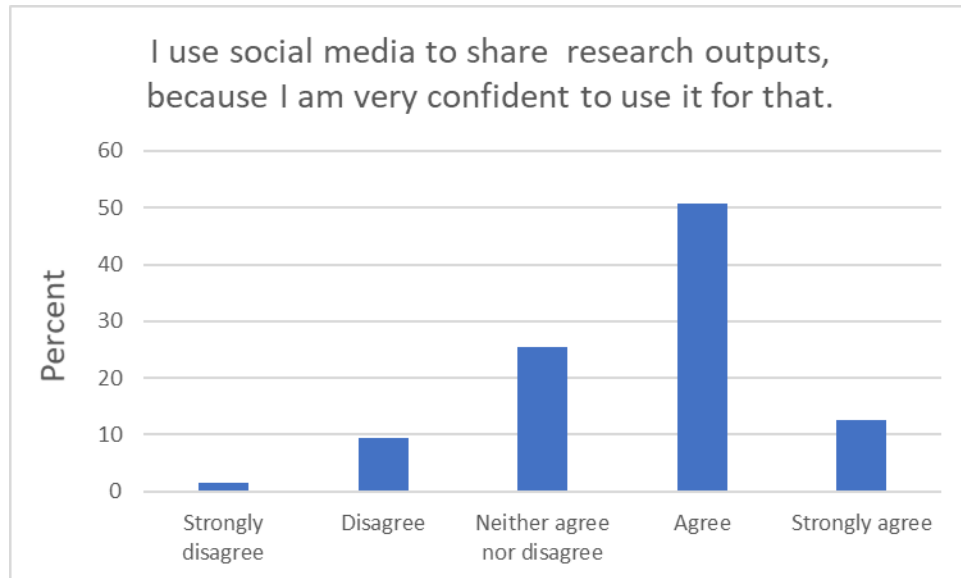


Figure 6-13: Skills in the use of social media for sharing research outputs

In the third place is confidence in the use social media for sharing research outputs ( $M = 3.63$ ;  $SD = .885$ ). Of the total 63 participants, 63.5% of them agree or strongly agree that they are very confident to use it. Only 11.1% disagree or strongly disagree, while 25.4% neither agree nor disagree, as shown in Figure 6-14.



*Figure 6-14: Confidence in the use of social media for sharing research outputs*

The last factor is attending training courses or workshops to improve the ability to use it ( $M = 2.57$ ;  $SD = 1.228$ ). It seems that this factor has some effect where 57.1% disagree or strongly disagree that they use social media for sharing research outputs because they have attended training courses to improve their abilities, while 33.4% agree or strongly agree. Only 9% neither agree nor disagree. See Figure 6-15.

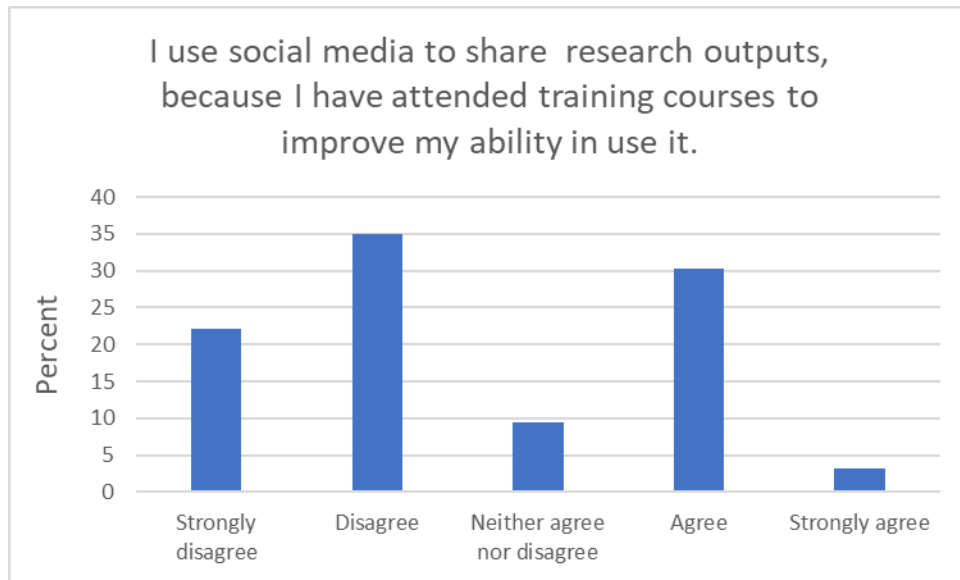
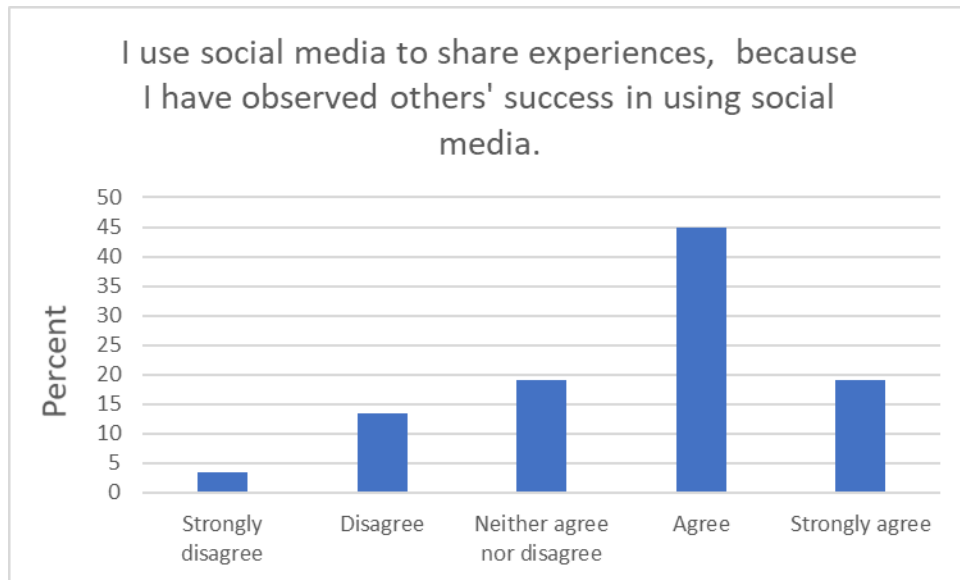


Figure 6-15: Attending training in the use of social media for sharing research outputs

### 6.7.2 Vicarious experience

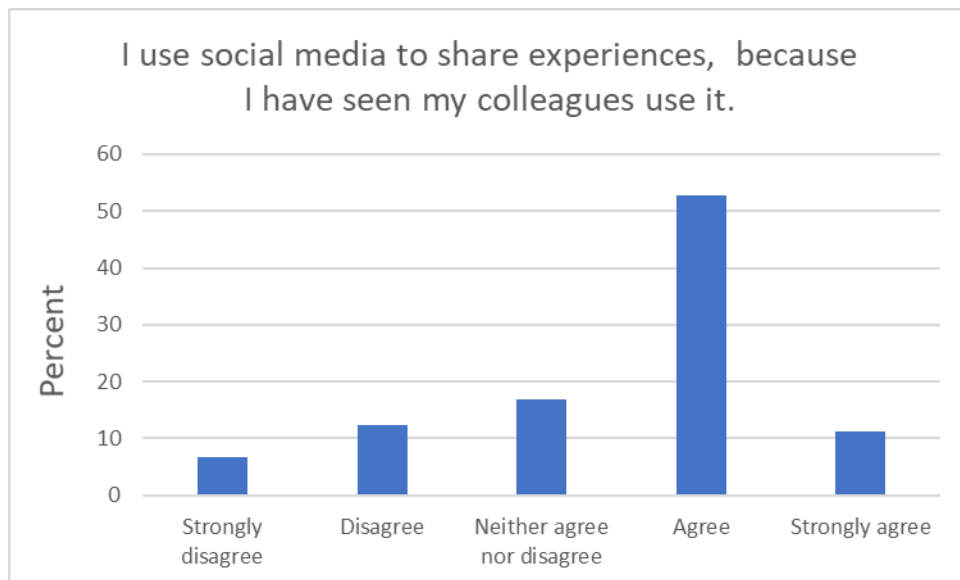
#### – Sharing Cognitive Experience

Two items related to this source were listed in the questionnaire. The results of analysis demonstrated that observing others' success in using social media to share cognitive experience is an important factor in improving vicarious experience for encouraging respondents to use this tool ( $M = 3.63$ ;  $SD = 1.049$ ). Of the total 89 participants, 64% of them agree or strongly agree that they use social media for sharing their experiences because they have seen others' success in use it. Only 19.1% neither agree nor disagree, while 16.9% disagree or strongly disagree, as shown in Figure 6-16.



*Figure 6-16: Observing others' success in use social media for sharing cognitive experience*

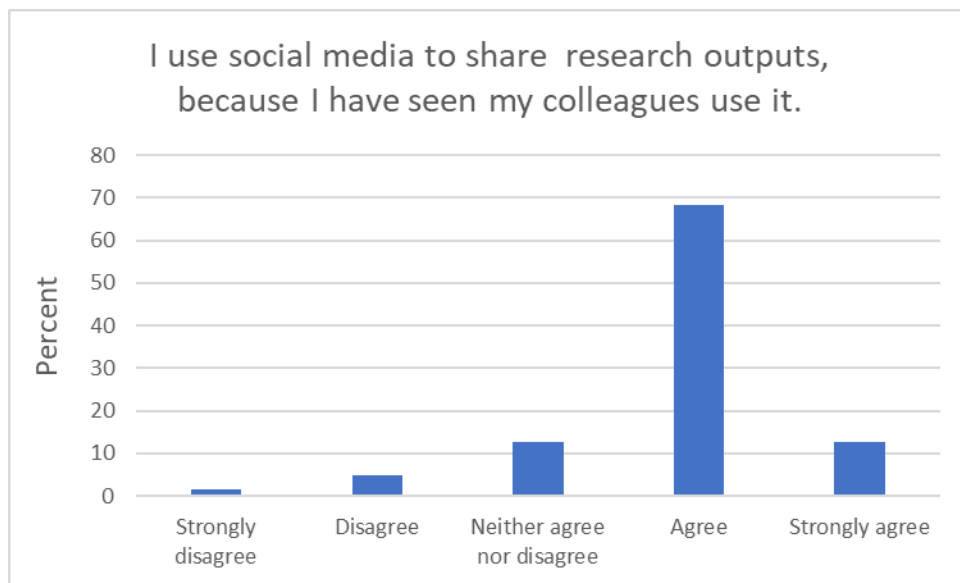
In the second place is seeing colleagues' use ( $M = 3.49$ ;  $SD = 1.067$ ), where 64% of the total 89 agree or strongly agree that they use it because they have seen their colleagues use it. Only 16.9% neither agree nor disagree, while 19.1% disagree or strongly disagree. See Figure 6-17.



*Figure 6-17: Seeing colleagues' use of social media for sharing cognitive experience*

– **Sharing Research Outputs**

For using social media to share research outputs, seeing colleagues' use is slightly more important in improving the vicarious experience source ( $M = 3.86$ ;  $SD = .759$ ). Of the total 63 participants, 81% of them agree or strongly agree that they use social media for sharing their experiences because they have seen their colleagues use it. Only 12.7% neither agree nor disagree, while 6.3% disagree or strongly disagree, as shown in Figure 6-18.



*Figure 6-18: Seeing colleagues' use of social media for sharing research outputs*

In the second place is observing others' success in using this tool ( $M = 3.84$ ;  $SD = .723$ ), where 74.6% of the total 63 agree or strongly agree that they use it because they have seen others' success in use it. Only 20.6% neither agree nor disagree, while 4.8% disagree. See Figure 6-19.

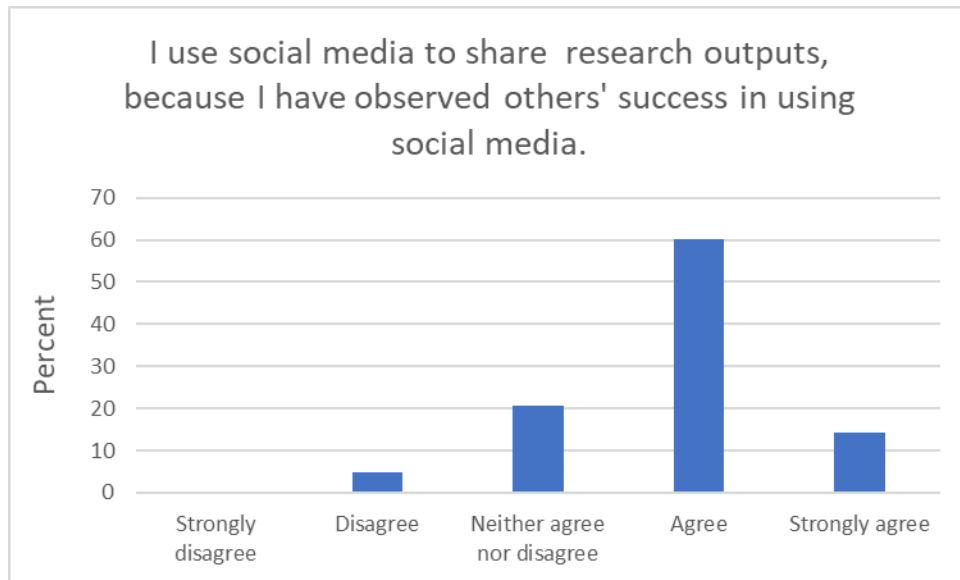
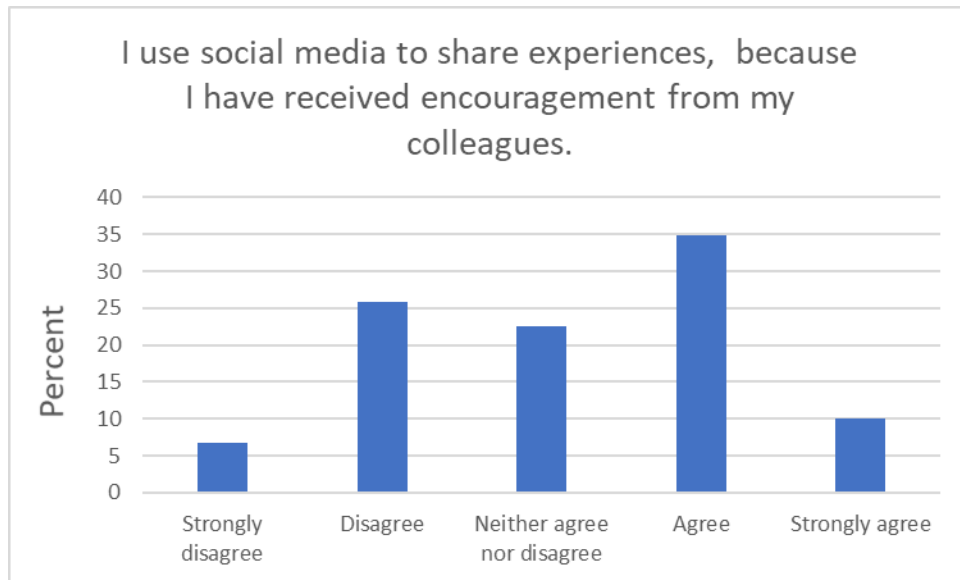


Figure 6-19: Observing others' success in the use of social media for sharing research outputs

### 6.7.3 Verbal persuasion

#### – Sharing Cognitive Experience

For this source, the results of analysis showed that receiving encouragement from colleagues is considered slightly important factor in improving it to encourage use of these media to share cognitive experience ( $M = 3.16$ ;  $SD = 1.127$ ). Of the total 89 participants, 45% agree or strongly agree that they have received encouragement from their colleagues to use it for sharing experiences. Some of the 89 participants (32.5%) disagree or strongly disagree, while 22.5% neither agree nor disagree, as shown in Figure 6-20.



*Figure 6-20: Receiving encouragement from colleagues to use social media for sharing cognitive experience*

Receiving encouragement from an institution is less important ( $M = 2.82$ ;  $SD = 1.083$ ), where 39.3% out of 89 participants disagree or strongly disagree that they have received encouragement from their institution to use social media for sharing experiences. Moreover, some of these 89 participants (34.8%) neither agree nor disagree, while only 25.8% agree or strongly agree. See Figure 6-21.



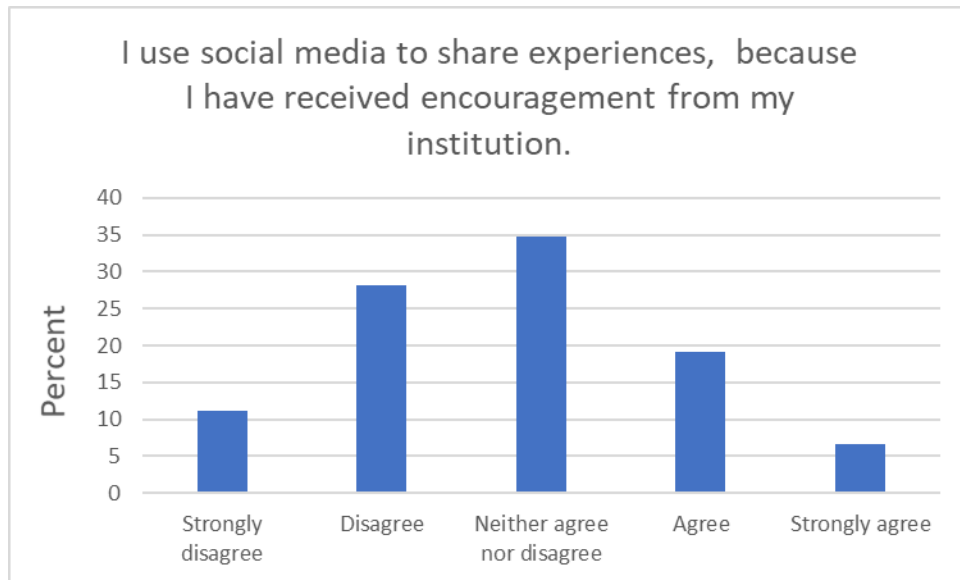
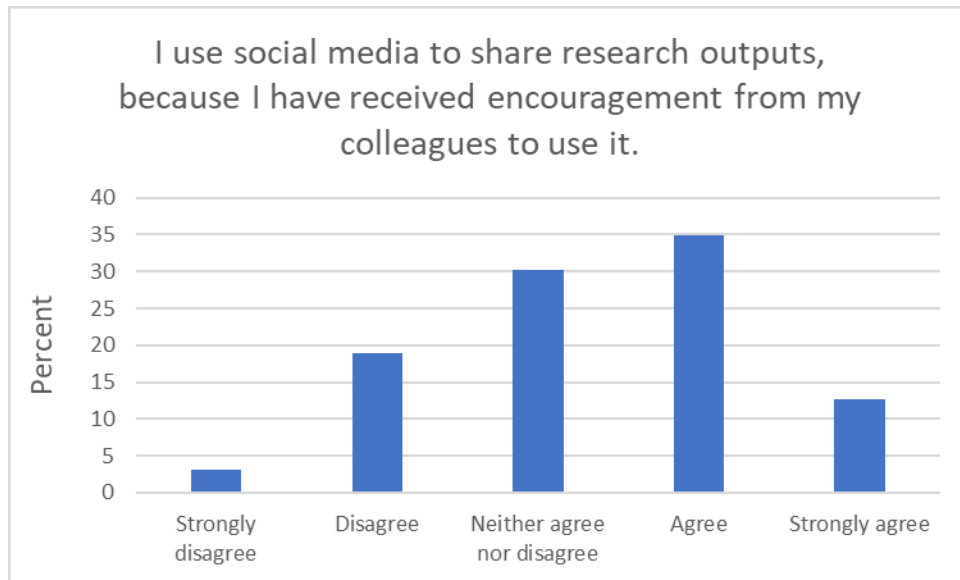


Figure 6-21: Receiving encouragement from institution to use social media for sharing cognitive experience

– **Sharing Research Outputs**

Likewise, for sharing research outputs, receiving encouragement from colleagues is most important ( $M = 3.35$ ;  $SD = 1.034$ ), where 47.6% out of 63 participants agree or strongly agree that they have received encouragement from their colleagues to use it for sharing research outputs. Some of these 36 participants (30.2%) neither agree nor disagree, while 22.2% disagree or strongly disagree, as shown in Figure 6-22.



*Figure 6-22: Receiving encouragement from colleagues to use social media for sharing research outputs*

Encouragement from an institution seems somewhat influence ( $M = 3.10$ ;  $SD = 1.027$ ), where 36.5% out of 63 participants agree or strongly agree that they have received encouragement from their institution to use social media for sharing research outputs. Moreover, some of these 63 participants (33.3%) neither agree nor disagree, while 30.2% disagree or strongly disagree. See Figure 6-23.

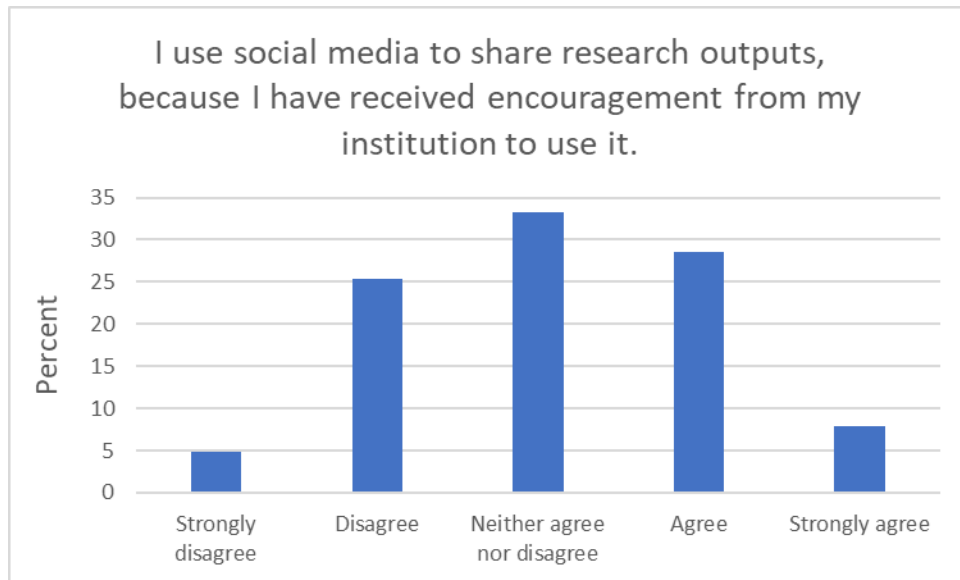


Figure 6-23: Receiving encouragement from institution to use social media for sharing research outputs

#### 6.7.4 Emotional arousal

##### – Sharing Cognitive Experience

This source has two sides that need attention paid to them: positive and negative. The results of analysis for the positive side indicate that respondents use social media for sharing cognitive experience because they enjoy using it ( $M = 3.72$ ;  $SD = .953$ ). Of the total 89 participants, 70.8% agree or strongly agree that they enjoy use it for sharing their experiences. Only 19.1% neither agree nor disagree, while 10.1% disagree or strongly disagree, as shown in Figure 6-24.

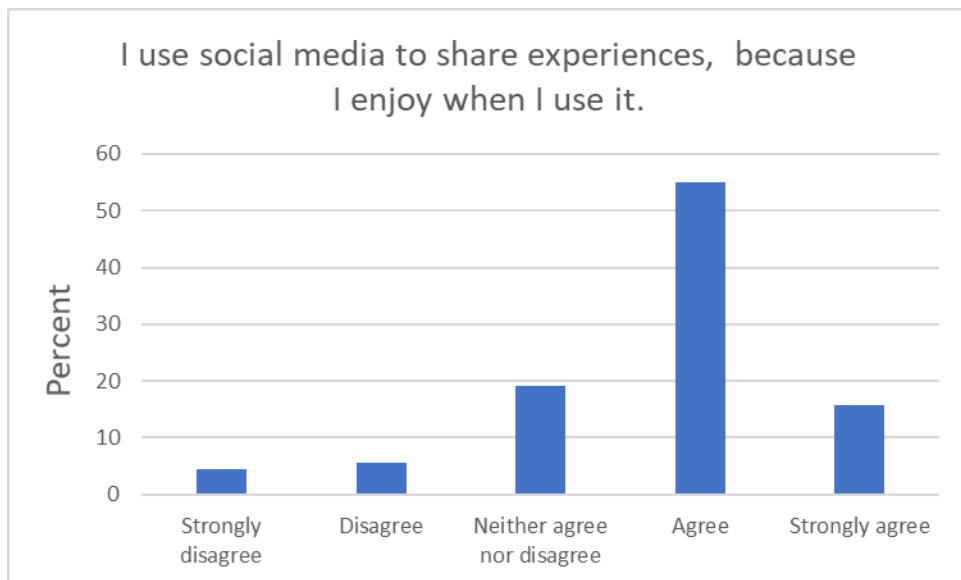


Figure 6-24: Enjoyment of the use of social media for sharing cognitive experience

They also use social media for sharing experiences because they have positive experience from its use ( $M = 3.67$ ;  $SD = .750$ ). Therefore, 67.5% out of 89 participants agree or strongly agree that they use it because of these positive experiences. Only 6.7% disagree or strongly disagree, while 25.8% neither agree nor disagree. See Figure 6-25.

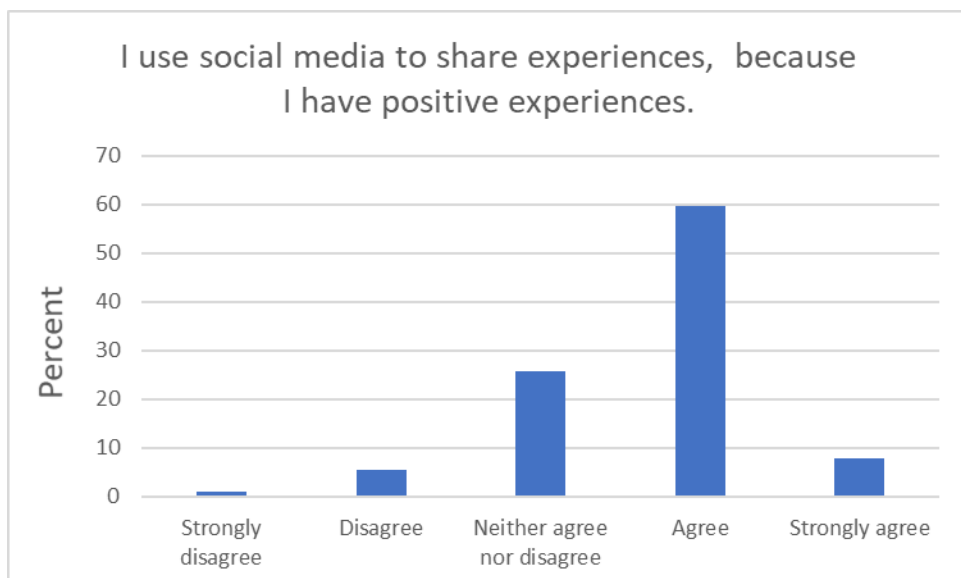


Figure 6-25: Positive experiences of using social media for sharing cognitive experience

With regard to the negative side of emotional arousal, feeling anxious has some effects on respondents' emotion towards the use of social media to share cognitive experience ( $M = 2.48$ ;  $SD = 1.139$ ). Of the total 89 participants, 49.4% disagree or strongly disagree that they feel anxious from use it, while 29.2% neither agree nor disagree. Some participants (21.3%) agree or strongly agree that they feel anxious from its use. See Figure 6-26.

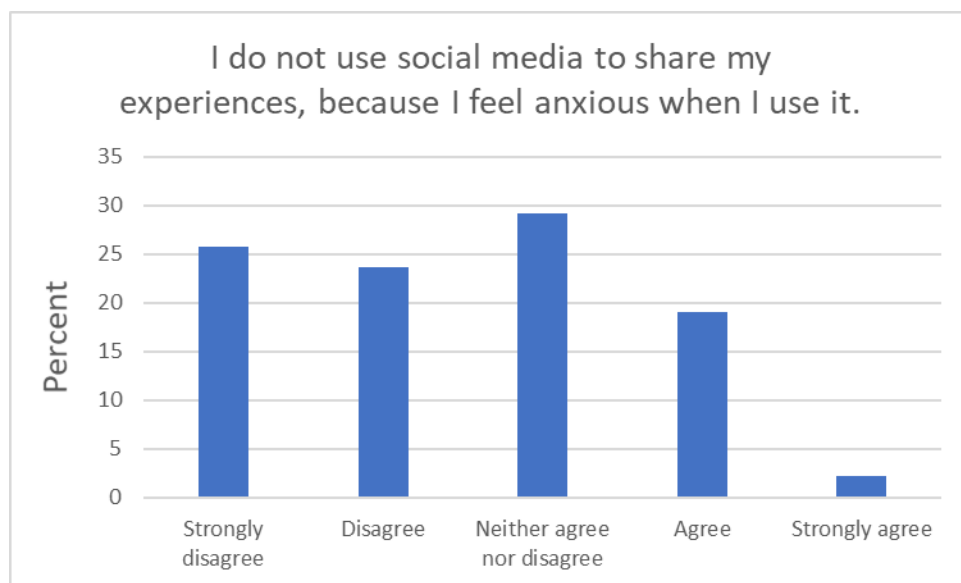


Figure 6-26: Anxious from using social media for sharing cognitive experience

Negative experiences are also another factor that has some effects on respondents' emotion towards its use ( $M = 2.36$ ;  $SD = 1.014$ ). Therefore, 56.2% out of 89 participants disagree or strongly disagree that negative experiences can affect their use for social media, while 28.1% neither agree nor disagree. Only 15.7% agree that negative experiences affect their use. See Figure 6-27.

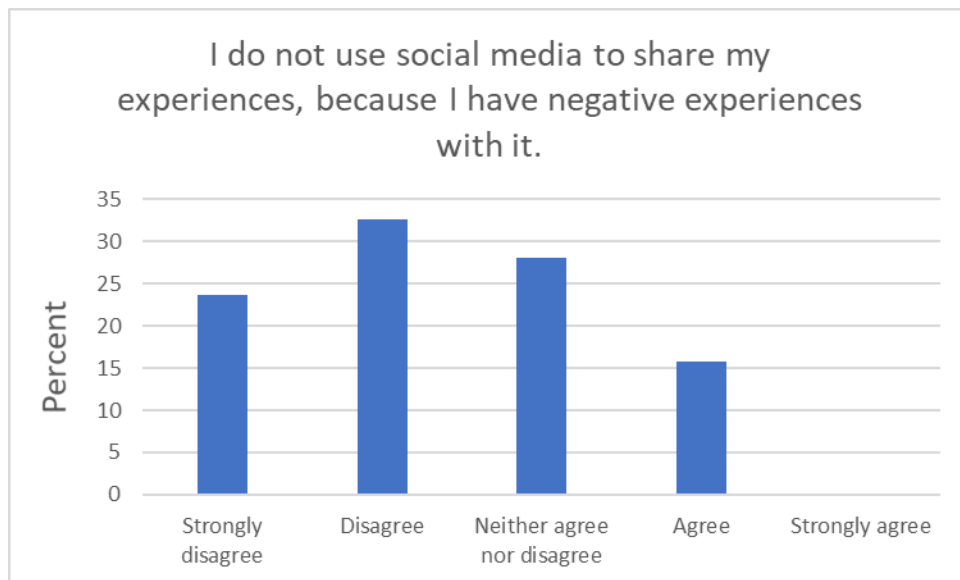


Figure 6-27: Negative experiences from using social media for sharing cognitive experience

#### – Sharing Research Outputs

As regards positive emotion when using social media for sharing research outputs, positive experiences are important for respondents ( $M = 3.68$ ;  $SD = .758$ ). Of the total 63 participants, 68.2% agree or strongly agree that they use it because they have positive experiences with its use. Some of the participants (25.4%) neither agree nor disagree, while only 6.4% disagree or strongly disagree, as shown in Figure 6-28.

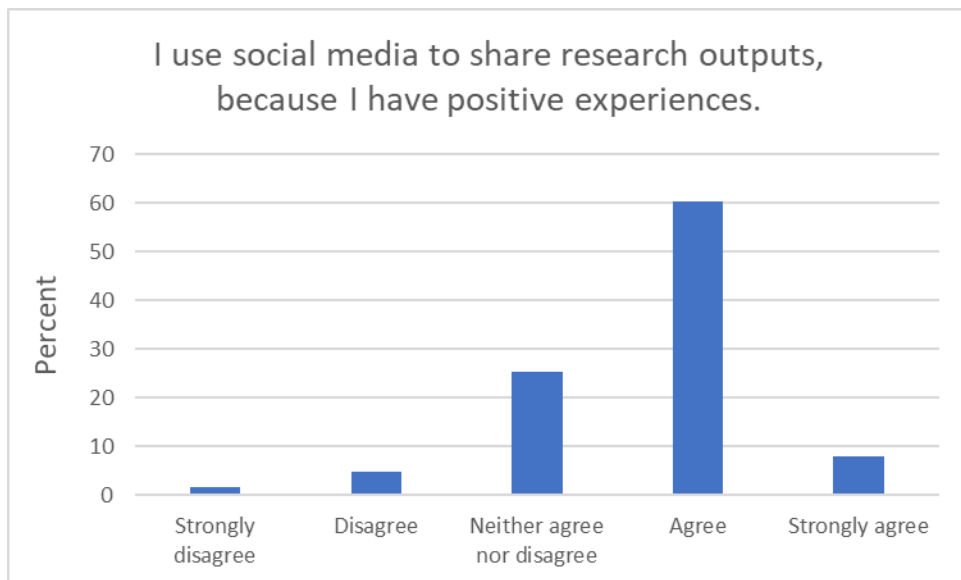


Figure 6-28: Positive experiences of using social media for sharing research outputs

They also enjoy use it for sharing their research outputs ( $M = 3.68$ ;  $SD = .858$ ), where 68.2% agree or strongly agree that they enjoy use it for sharing their research outputs. Only 8% disagree or strongly disagree, while 23.8% neither agree nor disagree, as shown in Figure 6-29.

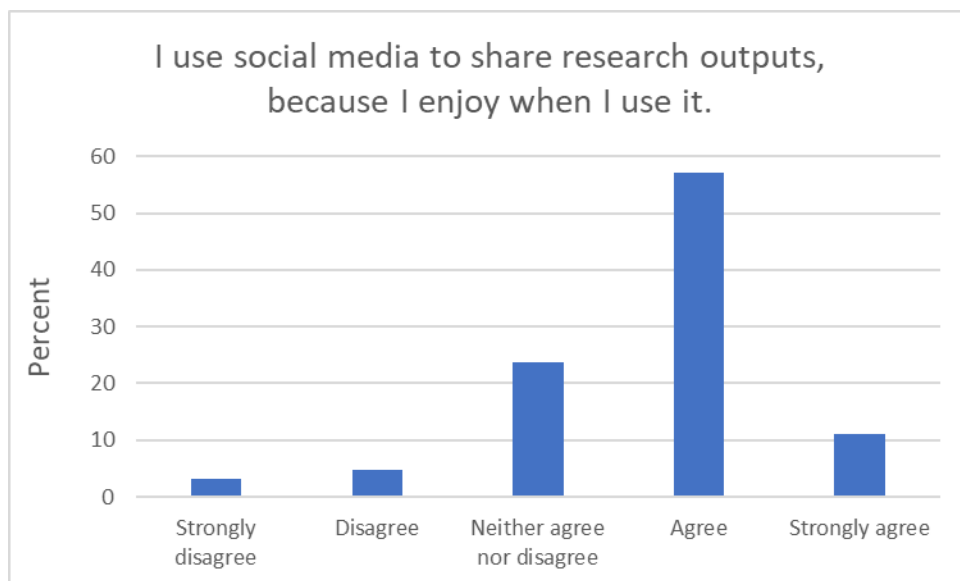
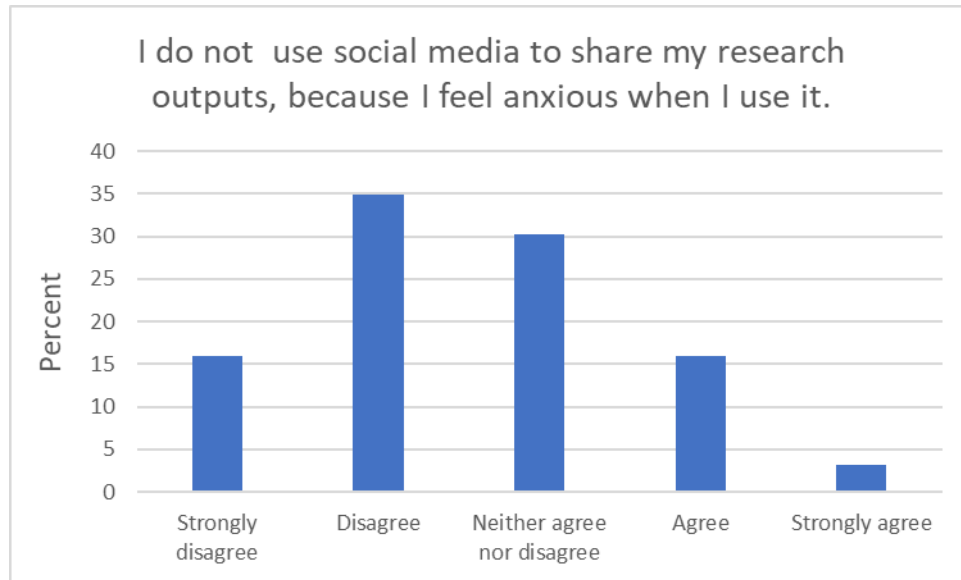


Figure 6-29: Enjoyment of the use of social media for sharing research outputs

Likewise, for sharing research outputs, feeling anxious has some effects on respondents' emotion towards the use of social media to share research outputs ( $M =$

2.56;  $SD = 1.044$ ), where out of 63 participants, only 19.1% agree or strongly agree that they feel anxious from its use. More than half of these participants (50.8%) disagree or strongly disagree that they feel anxious from use it, while 30.2% neither agree nor disagree. See Figure 6-30.



*Figure 6-30: Anxious from using social media for sharing research outputs*

Negative experiences are also another factor that has some effects on respondents' emotion towards its use ( $M = 2.43$ ;  $SD = .979$ ). Therefore, 57.2% out of 63 participants disagree or strongly disagree that negative experiences can affect their use for social media, while 30.2% neither agree nor disagree. Only 12.7% agree or strongly agree that negative experiences affect their use. See Figure 6-31.



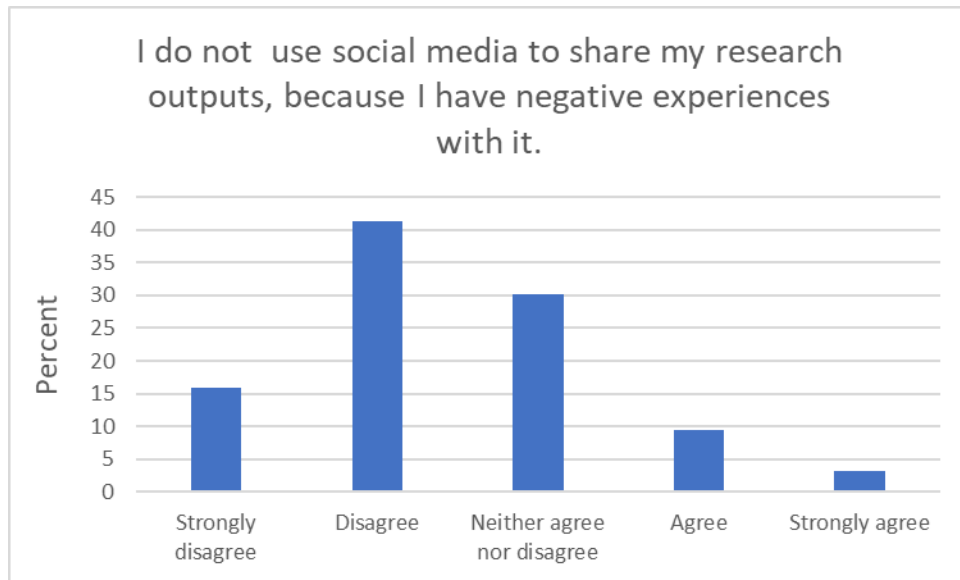


Figure 6-31: Negative experiences from using social media for sharing research outputs

## 6.8 The impact of the sources of self-efficacy

### – Sharing Cognitive Experience

In terms of sharing cognitive experience, the results of analysis for the impact of these four sources indicated that the personal mastery experience source has an important impact on this use ( $M = 3.72$ ;  $SD = .761$ ). Of the total 89 participants, 72% agree or strongly agree that if they have confidence, abilities, and skills, they will be keen to use it. Only 6.7% disagree, while 21.3% neither agree nor disagree.

See Figure 6-32.

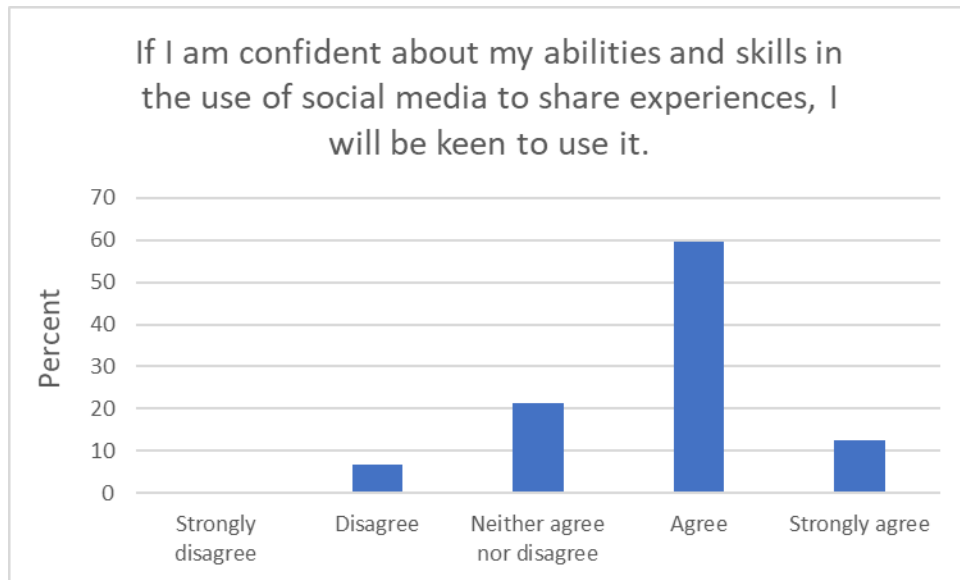


Figure 6-32: The impact of confidence, ability, and skills in keen to use social media for sharing cognitive experience

Moreover, 65.1% out of these 89 participants agree or strongly agree that they will use it more frequently if they have confidence, abilities, and skills. Only 11.2% disagree or strongly disagree, while 23.6% neither agree nor disagree, as shown in Figure 6-33.

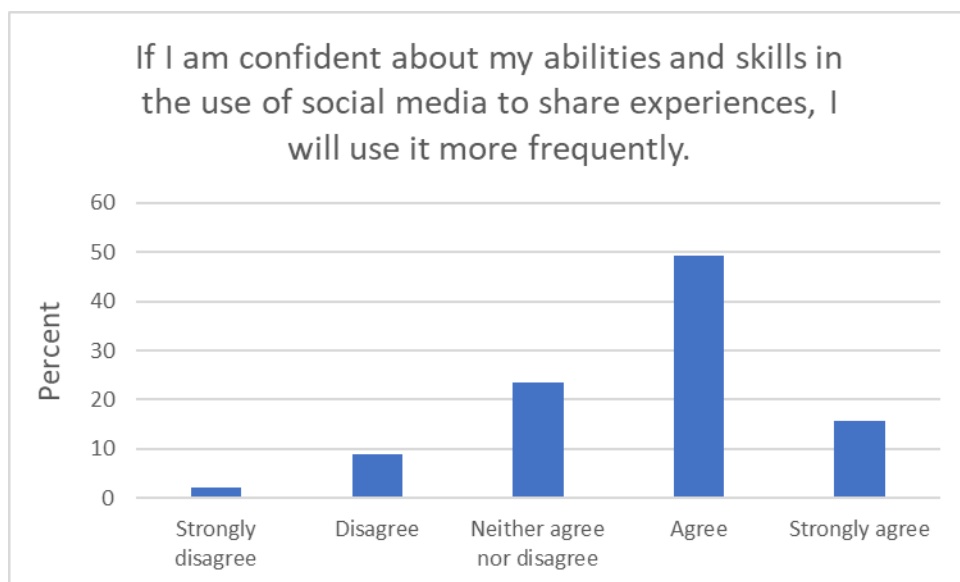
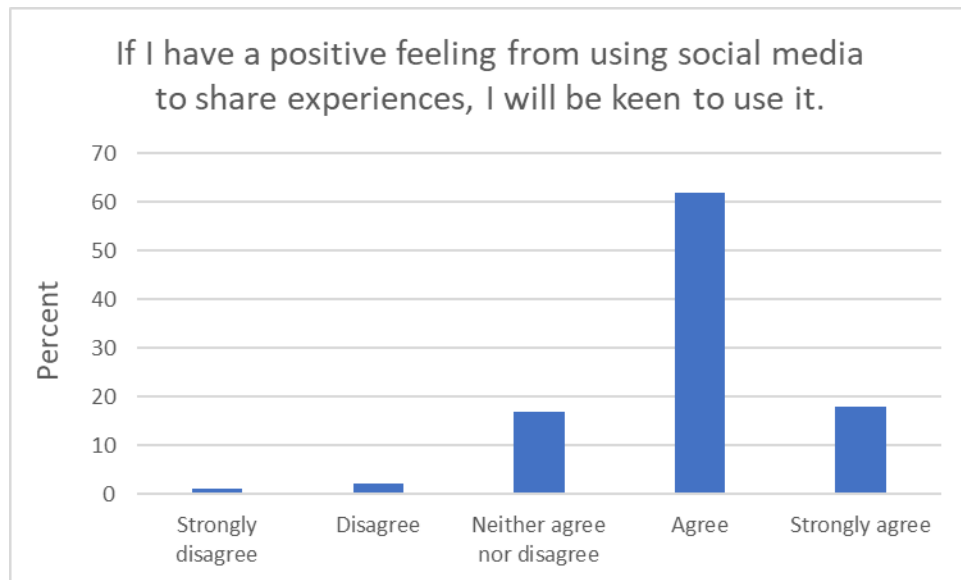


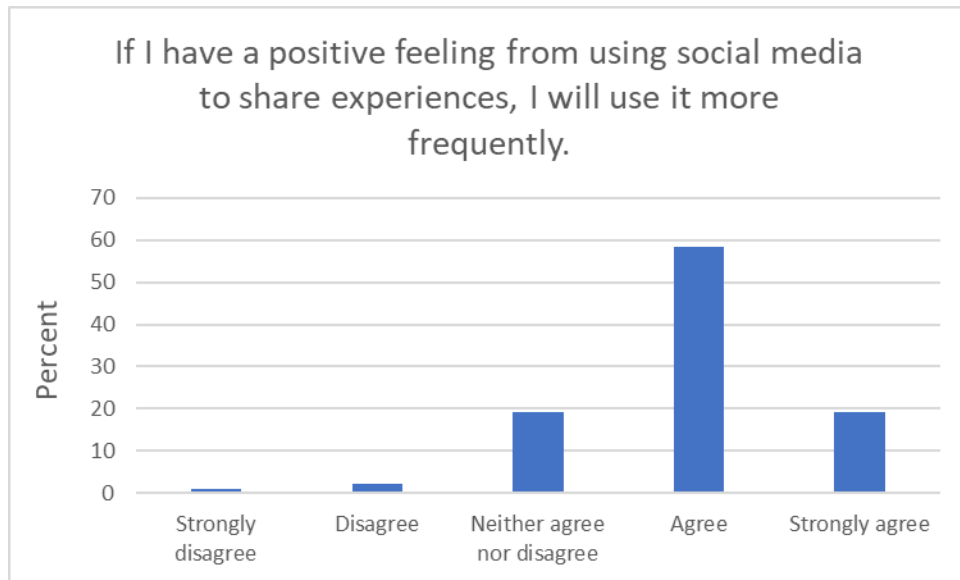
Figure 6-33: The impact of confidence, ability, and skills for frequently use of social media for sharing cognitive experience

The second important source is emotional arousal ( $M= 3.70$ ;  $SD = .687$ ). Most of the 89 participants (79.8%) agree or strongly agree that they will be keen to use it if they have a positive feeling towards this use. Only 3.3% disagree or strongly disagree, while 16.9% neither agree nor disagree. See Figure 6-34.



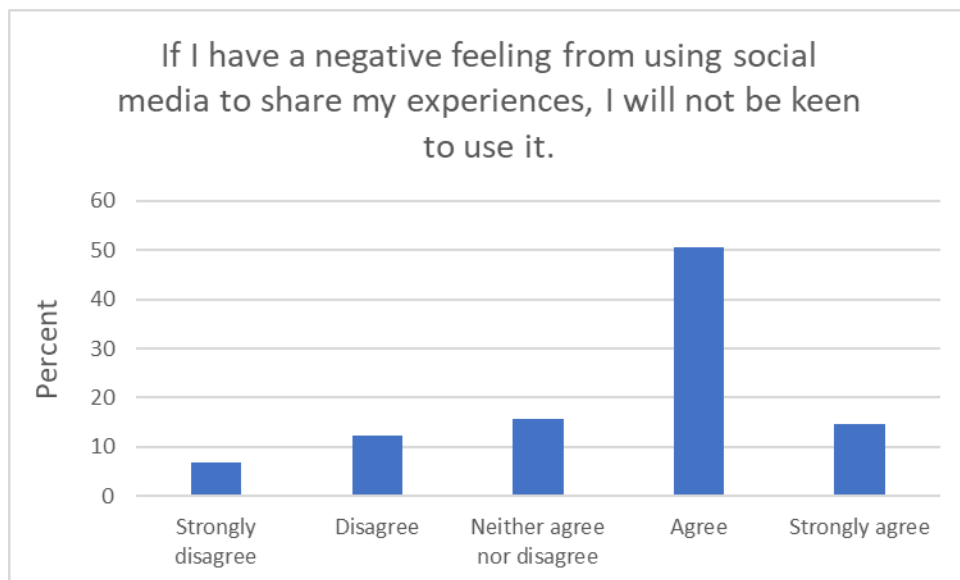
*Figure 6-34: The impact of positive feeling in keen to use social media for sharing cognitive experience*

Likewise, 77.5% out of these 89 participants agree or strongly agree that they will use it more frequently if they have positive feeling towards its use. Only 3.3% disagree or strongly disagree, while 19.1% neither agree nor disagree, as shown in Figure 6-35.



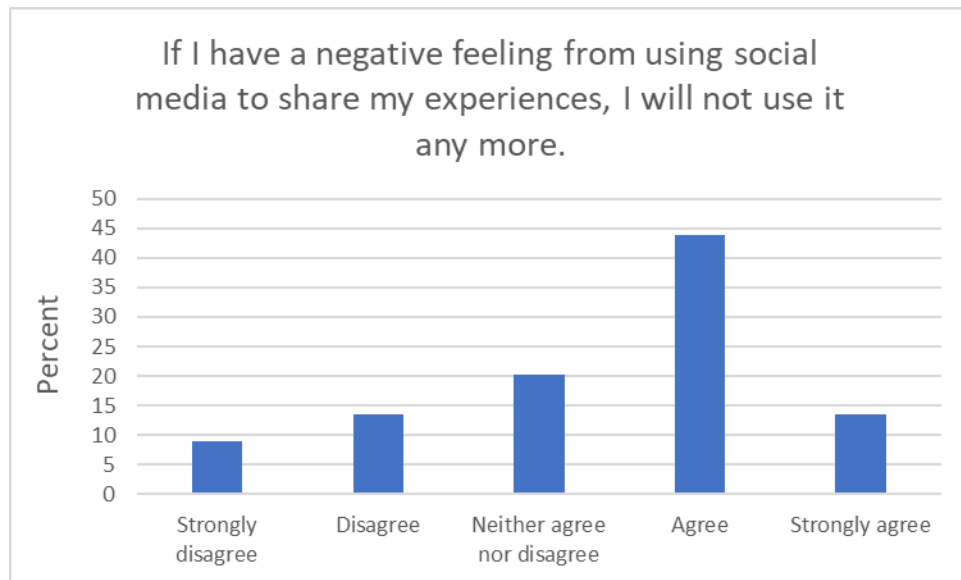
*Figure 6-35: The impact of positive feeling for frequently use of social media for sharing cognitive experience*

With regard to negative feeling, 65.2% of these 89 participants agree or strongly agree that they will not be keen to use it if they have negative feeling towards its use. Some of the participant (19.1%) disagree or strongly disagree, while 15.7% neither agree nor disagree. See Figure 6-36.



*Figure 6-36: The impact of negative feeling in keen to use social media for sharing cognitive experience*

Furthermore, 57.3% out of 89 participants agree or strongly agree that they will not use it any more if they have negative feeling from its use. Some of the participants (20.2%) neither agree nor disagree, while 22.5% disagree or strongly disagree, as shown in Figure 6-37.



*Figure 6-37: The impact of negative feeling on the use of social media for sharing cognitive experience*

The third important source is vicarious experience ( $M = 3.61$ ;  $SD = .827$ ), where 66.3% of the participants agree or strongly agree that they will be keen to use it if they have seen more successes from others' use. Only 11.2% disagree or strongly disagree, while 22.5% neither agree nor disagree. See Figure 6-38.

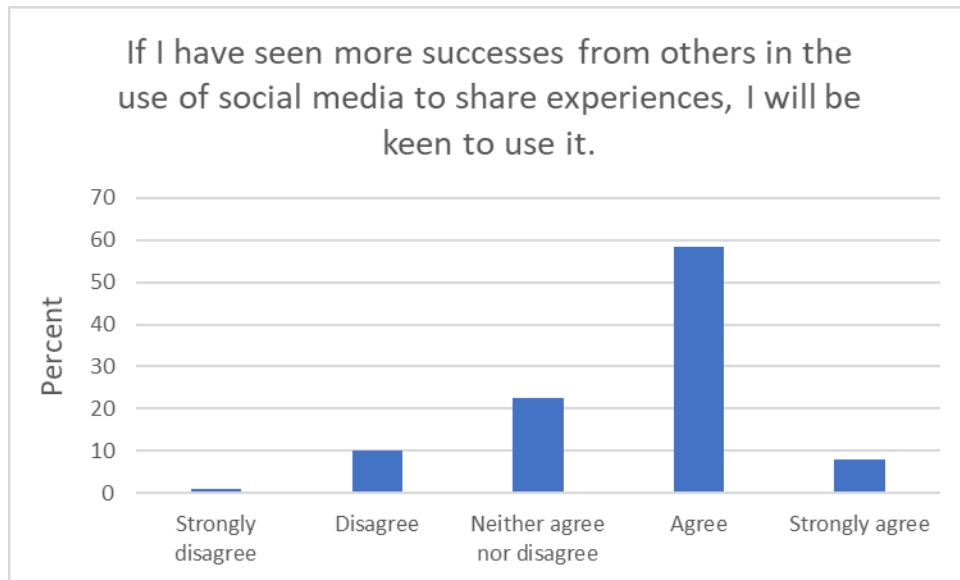


Figure 6-38: The impact of seeing others' success in keen to use social media for sharing cognitive experience

Moreover, 65.1% out of 89 participants agree or strongly agree that they will use it more frequently if they have seen others' successes, while some of them (21.3%) neither agree nor disagree. Only 13.5% disagree or strongly disagree that they will use it because of others' successes. Figure 6-39 demonstrates that.

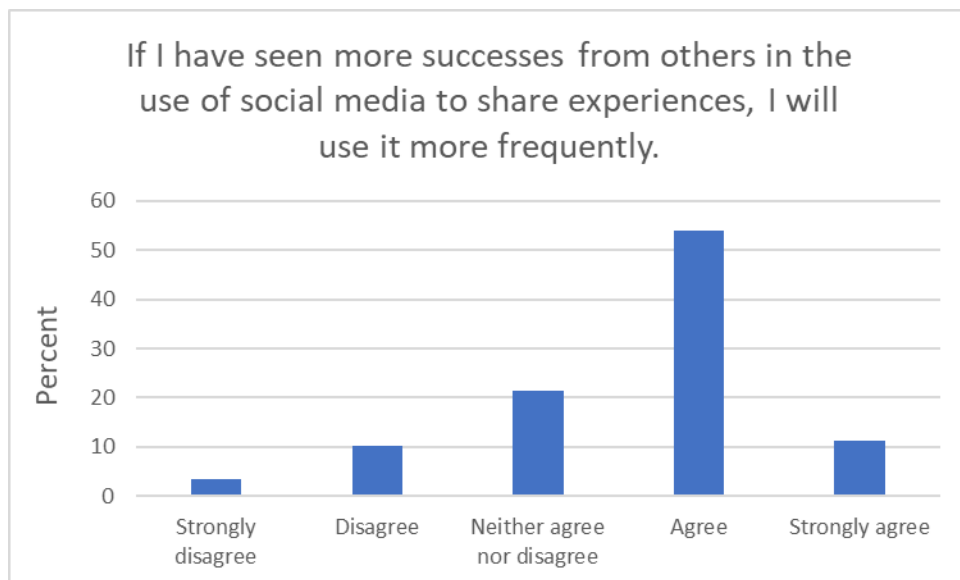
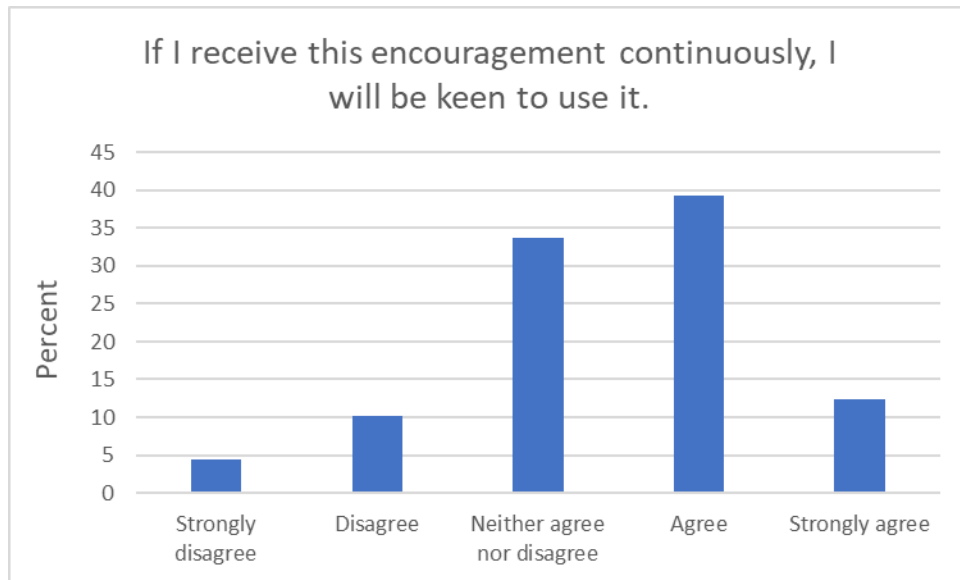


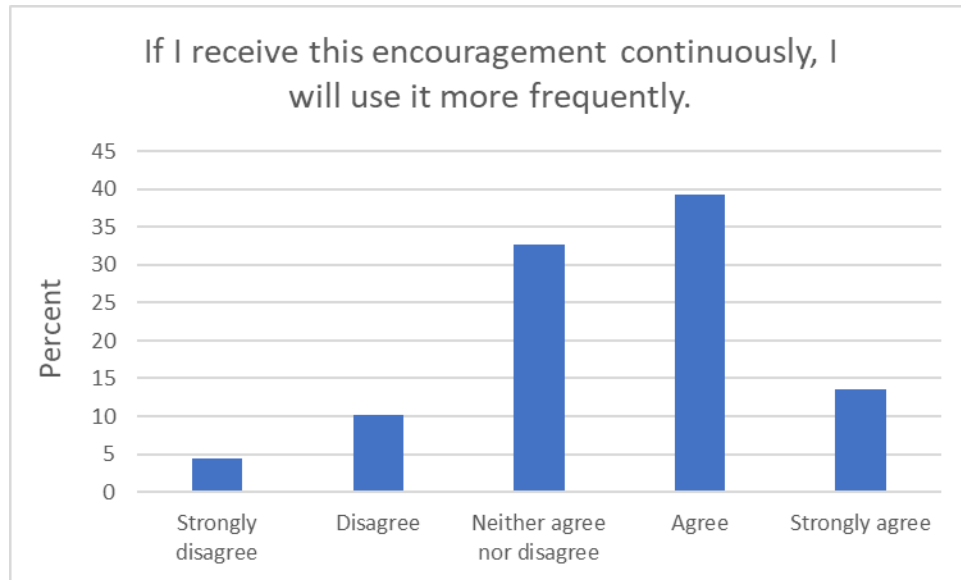
Figure 6-39: The impact of seeing others' success for frequently use of social media for sharing cognitive experience

The fourth important source is verbal persuasion ( $M = 3.46$ ;  $SD = .975$ ). Out of 89 participants, 51.7% agree or strongly agree that they will be keen to use social media for sharing their experiences if they receive encouragement continuously, while 33.7% neither agree nor disagree. Only 14.6% disagree or strongly disagree with this point, as shown in Figure 6-40.



*Figure 6-40: The impact of continuous encouragement in keen to use social media for sharing cognitive experience*

Furthermore, 52.8% out of these participants agree or strongly agree that they will use it more frequently if they receive continuous encouragement towards it's use. Some of them (32.6%) neither agree nor disagree, while only 14.6% disagree or strongly disagree, as demonstrated in Figure 6-41.

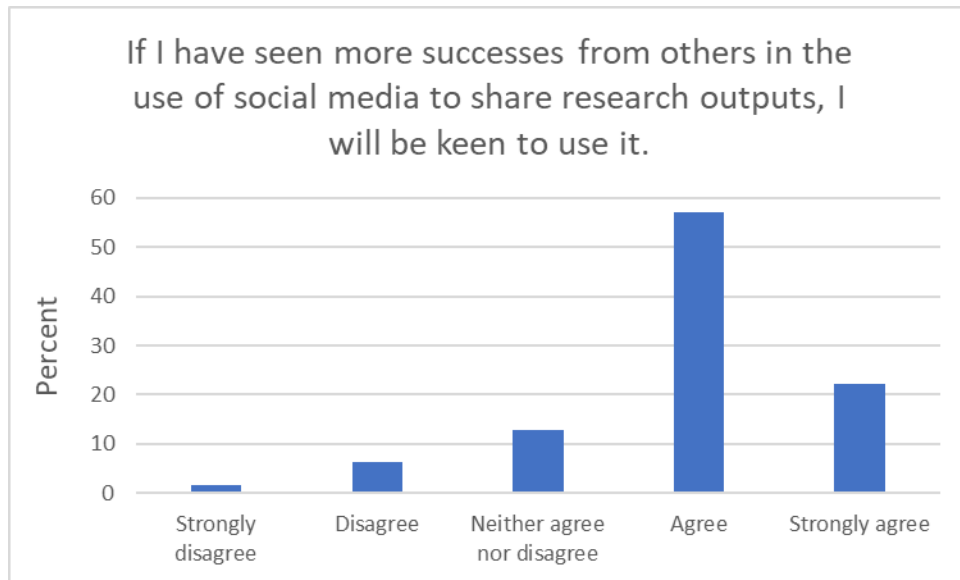


*Figure 6-41: The impact of continues encouragement for frequently use of social media for sharing cognitive experience*

#### – **Sharing Research Outputs**

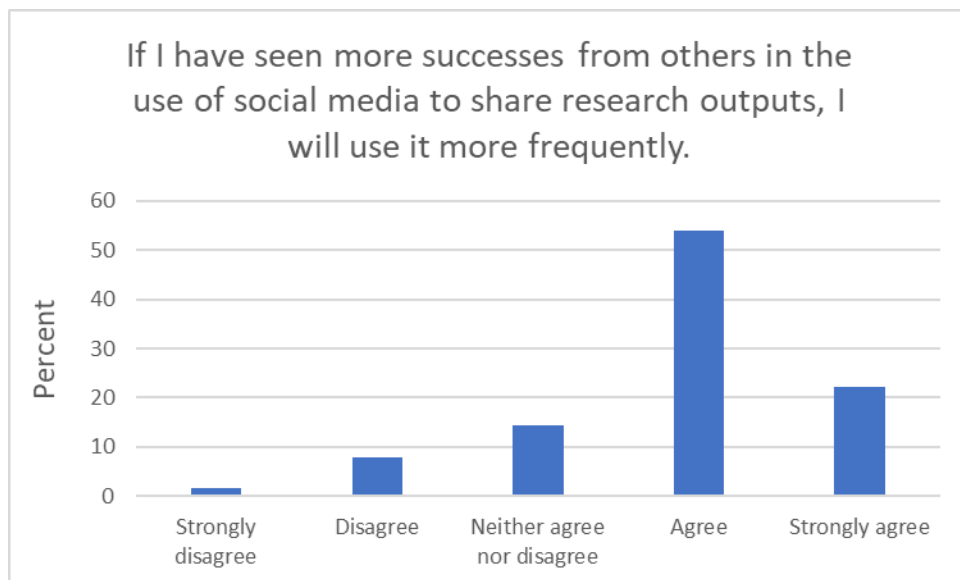
With regard to sharing research outputs, the vicarious experience source has more impact on the use of social media to share this kind of knowledge ( $M = 3.90$ ;  $SD = .876$ ). Out of 63 participants, 79.3% agree or strongly agree that they will be keen to use it if they have seen more successes from others' use. Only 7.9% disagree or strongly disagree, while 12.7% neither agree nor disagree. See Figure 6-42.





*Figure 6-42: The impact of seeing others' success in keen to use social media for sharing research outputs*

Moreover, 76.2% out of these participants agree or strongly agree that they will use it more frequently if they have seen others' successes. Only 9.5% disagree or strongly disagree that they will use it because of others' successes, while 14.3% neither agree nor disagree. Figure 6-43 demonstrates that.



*Figure 6-43: The impact of seeing others' success for frequently use of social media for sharing research outputs*

The second important source is personal mastery experience ( $M = 3.87$ ;  $SD = .789$ ). Of the total 63 participants, 74.6% agree or strongly agree that if they have confidence, abilities, and skills, they will be keen to use it. Only 6.4% disagree or strongly disagree, while 19% neither agree nor disagree. See Figure 6-44.



*Figure 6-44: The impact of confidence, ability, and skills in keen to use social media for sharing research outputs*

Moreover, 73% out of these 63 participants agree or strongly agree that they will use it more frequently if they have confidence, abilities, and skills. Only 3.2% disagree or strongly disagree, while some of these participants (23.6%) neither agree nor disagree, as shown in Figure 6-45.

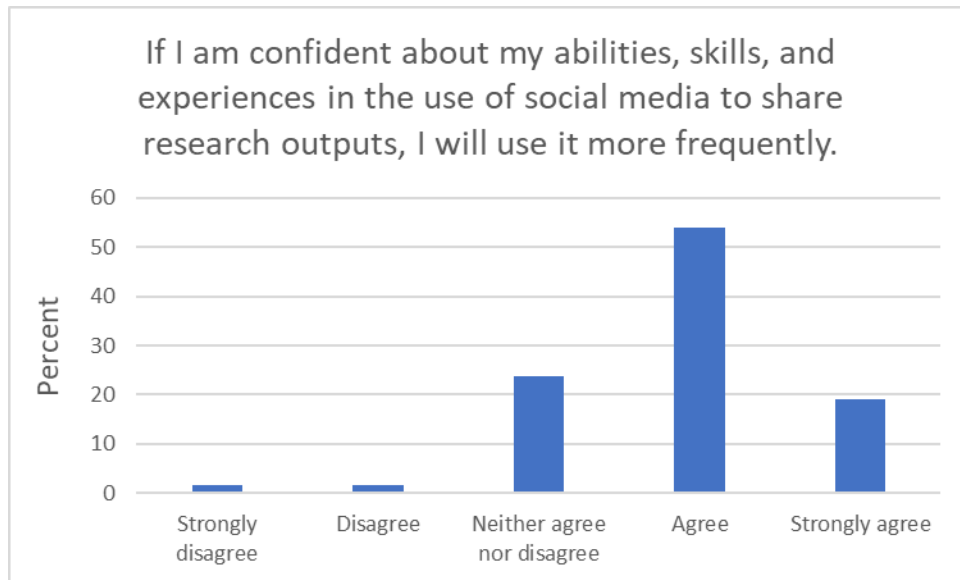


Figure 6-45: The impact of confidence, ability, and skills for frequently use of social media for sharing research outputs

The third important source is emotional arousal ( $M = 3.75$ ;  $SD = .563$ ). Majority of the 63 participants (90.5%) agree or strongly agree that they will be keen to use it if they have a positive feeling towards this use. Only 1.6% disagree, while only 7.9% neither agree nor disagree. See Figure 6-46.

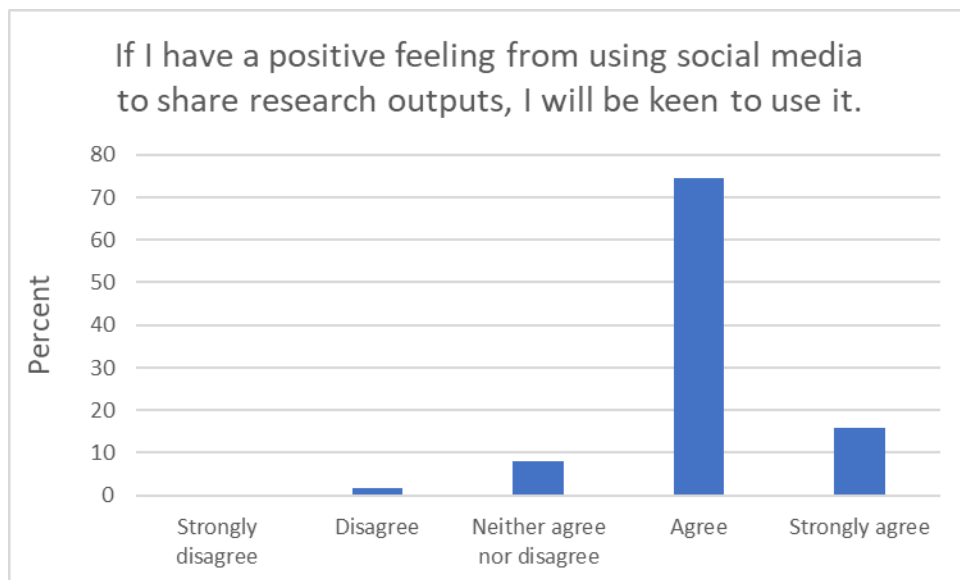
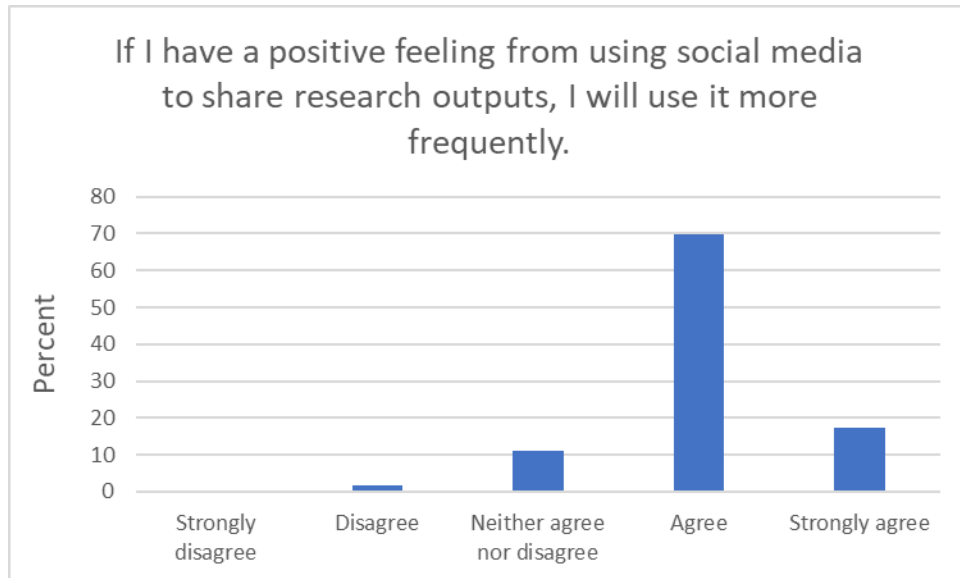


Figure 6-46: The impact of positive feeling in keen to use social media for sharing research outputs

Likewise, 87.3% out of these 63 participants agree or strongly agree that they will use it more frequently if they have positive feeling towards its use. Only 1.6% disagree, while 11.1% neither agree nor disagree, as shown in Figure 6-47.



*Figure 6-47: The impact of positive feeling for frequently use of social media for sharing research outputs*

With regard to negative feeling, 68.2% of these 63 participants agree or strongly agree that they will not be keen to use it if they have negative feeling towards its use. Some of the participant (14.2%) disagree or strongly disagree, while 17.5% neither agree nor disagree. See Figure 6-48.

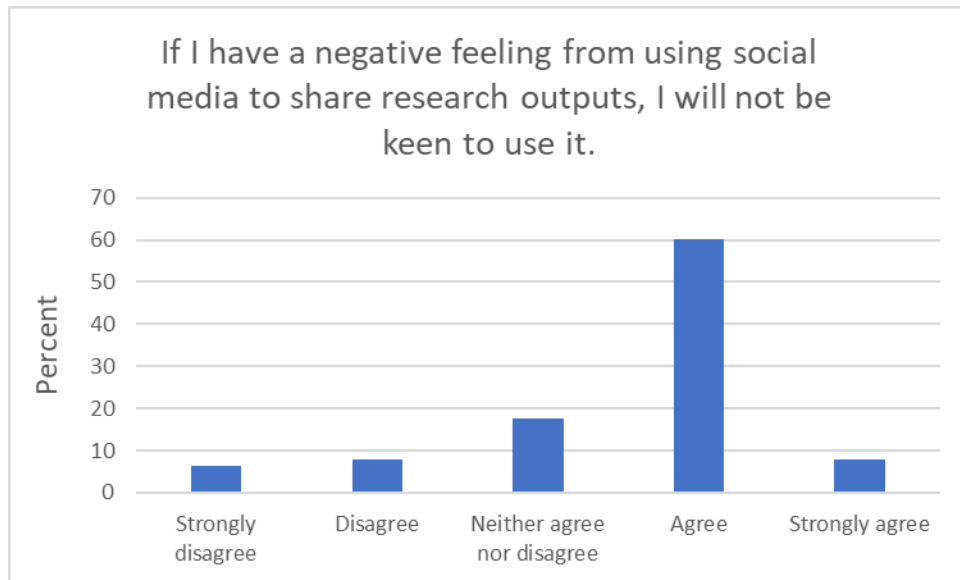


Figure 6-48: The impact of negative feeling in keen to use social media for sharing research outputs

Furthermore, 58.8% out of 63 participants agree or strongly agree that they will not use it any more if they have negative feeling from its use. Some of the participants (22.2%) neither agree nor disagree, while 19% disagree or strongly disagree, as shown in Figure 6-49.

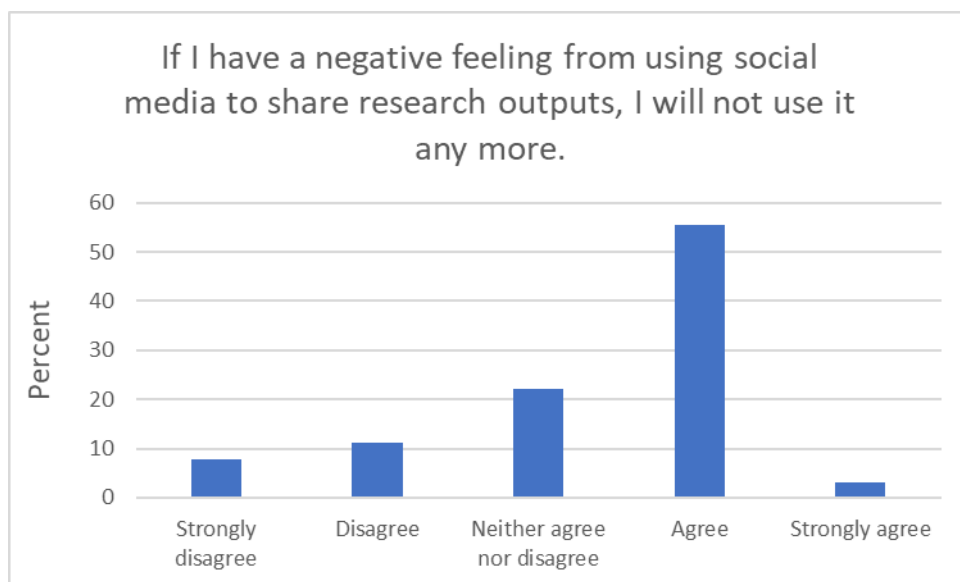
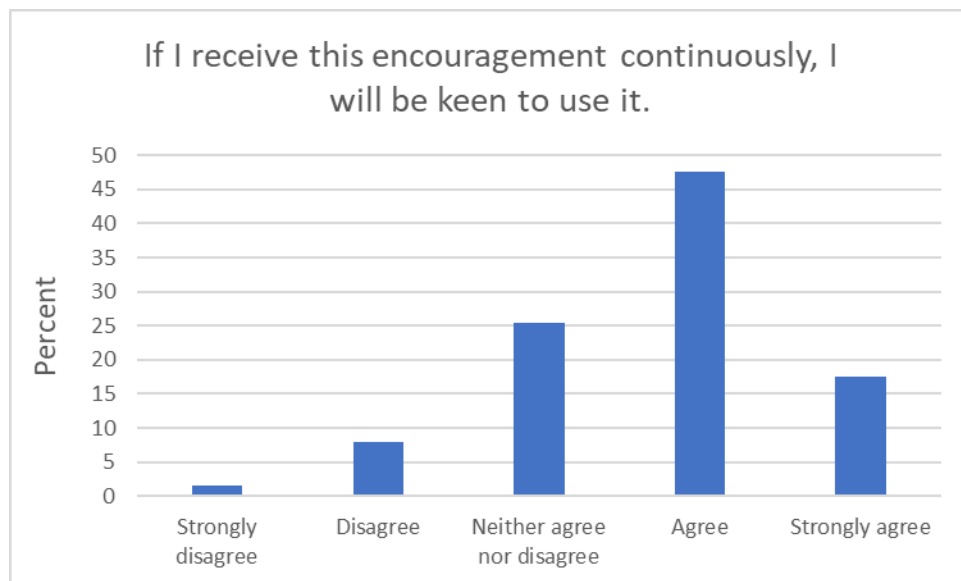


Figure 6-49: The impact of negative feeling on the use of social media for sharing research outputs

The fourth and last important source of self-efficacy for using social media to share research outputs is verbal persuasion ( $M = 3.72$ ;  $SD = .883$ ). Out of 63 participants, 65.1% agree or strongly agree that they will be keen to use social media for sharing their research outputs if they receive encouragement continuously, while 25.4% neither agree nor disagree. Only 9.5% disagree or strongly disagree with this point, as shown in Figure 6-50.



*Figure 6-50: The impact of continuous encouragement in keen to use social media for sharing research outputs*

Moreover, 68.3% out of these participants agree or strongly agree that they will use it more frequently if they receive continuous encouragement towards its use. Some of these participants (22.2%) neither agree nor disagree, while only 9.5% disagree or strongly disagree, as demonstrated in Figure 6-51.

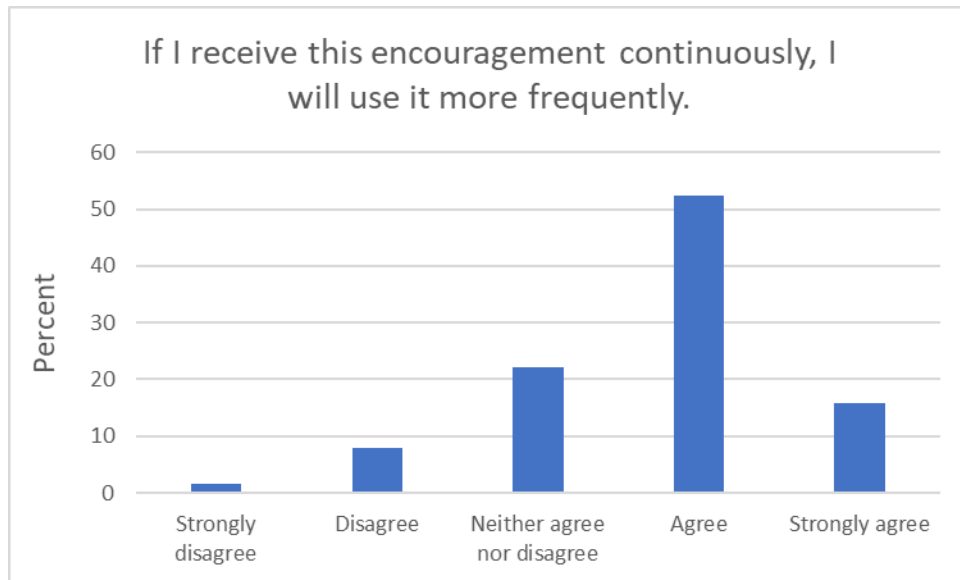


Figure 6-51: The impact of continues encouragement for frequently use of social media for sharing research outputs

### 6.9 The level of impact of the sources of self-efficacy

The results of analysis for the impact of these four sources indicated that they are differ in their level of impact. By combining these results from sharing experience and research outputs, it can be confirmed that the most important source for using social media to share knowledge is Personal mastery experiences ( $M = 3.73$ ;  $SD = .775$ ), and followed by vicarious experience ( $M = 3.68$ ;  $SD = .842$ ). In the third level is emotional arousal source ( $M = 3.64$ ;  $SD = .638$ ), and verbal persuasion is in the fourth level ( $M = 3.52$ ;  $SD = .927$ ), as shown in Figure 6-52.

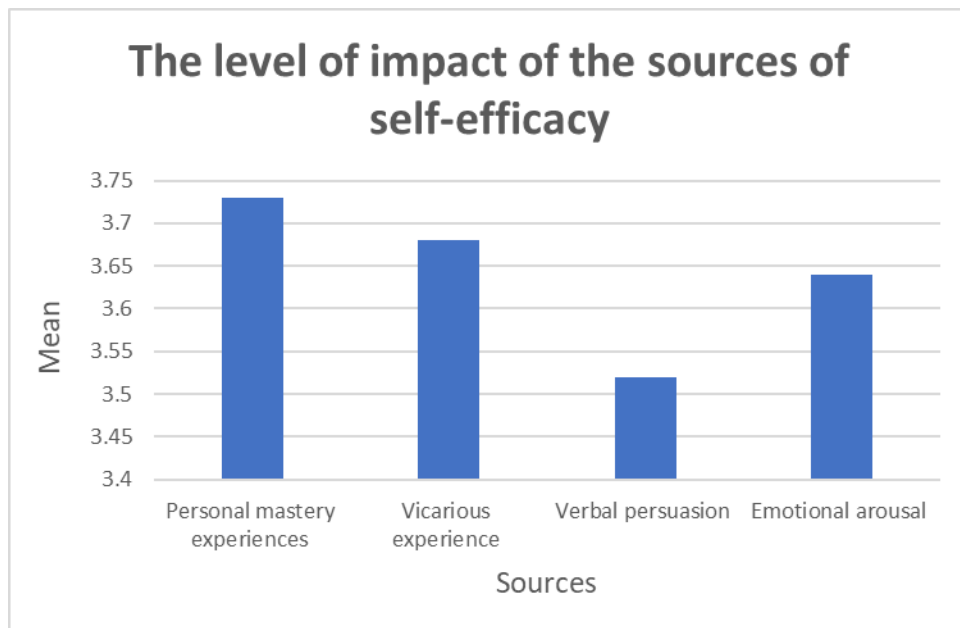


Figure 6-52: The level of impact of the sources of self-efficacy on use social media for knowledge sharing

## 6.10 Outcome Expectations

This is the second important part of this study. It focuses on two main types of outcome expectations, social and personal. These two outcomes are presented in the following sections.

### 6.10.1 Social Outcome Expectations

This type has two sides. The first side is positive, consisting of the social benefits of using social media to share either cognitive experience, or research outputs, or both. The second side is negative, consisting of the social disadvantages of using these media for sharing these types of knowledge. Each side contains one or more expected outcomes, as presented in the following two points.



### 6.10.1.1 Positive Social Outcomes

On this side, the mean and standard deviation were calculated for four expected benefits from the use of social media to share cognitive experience or research outputs. These four benefits are shown in the following sub-points.

- **Attracting People**
  - o **Sharing Cognitive Experiences**

The results of analysis indicated that the use of social media for sharing cognitive experience helps respondents significantly with attracting people to exchange experience with them ( $M = 4.03$ ;  $SD = .790$ ). Out of 89 participants, 84.2% agree or strongly agree that they attract people by using social media to exchange their experiences with them. Only 6.7% disagree, while only 9% neither agree nor disagree. See Figure 6-53.

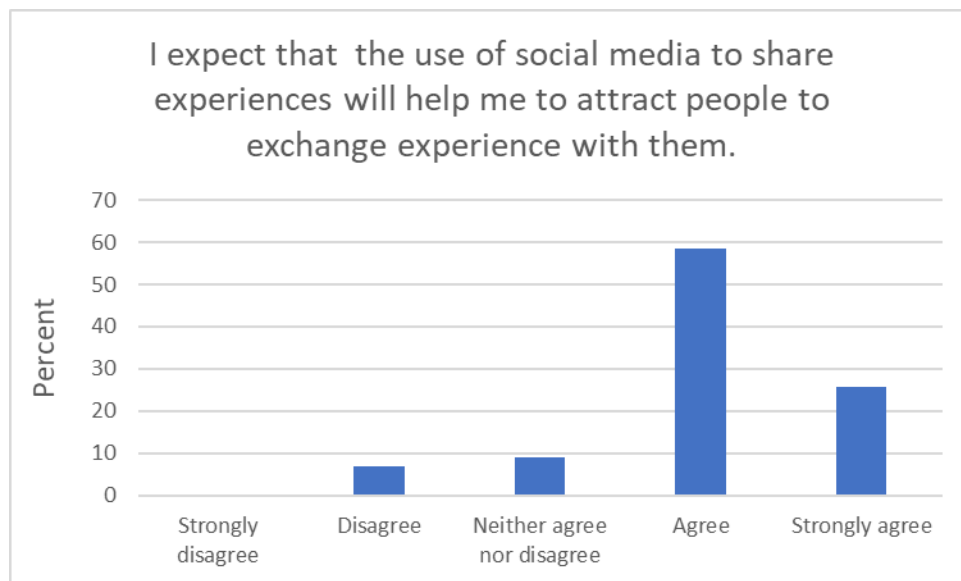
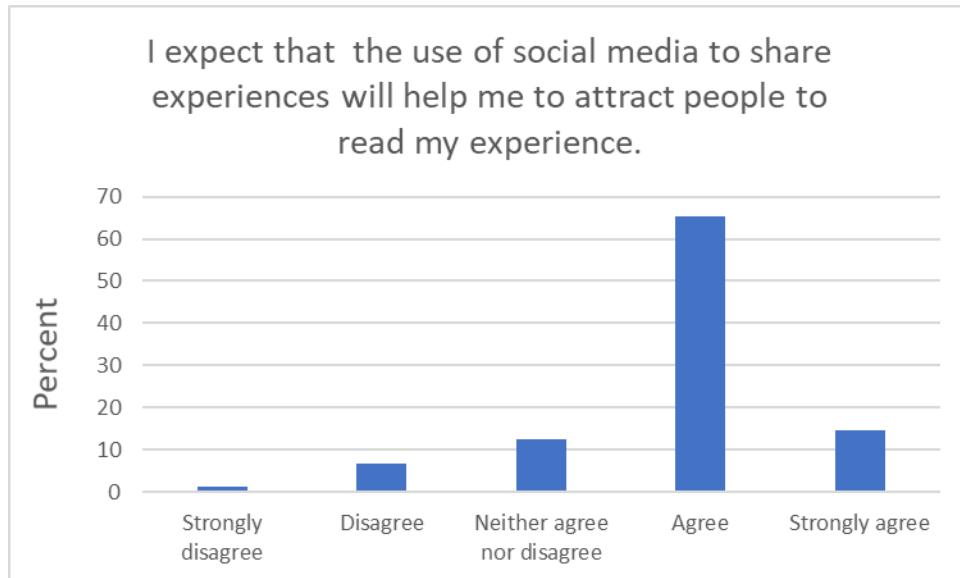


Figure 6-53: Attracting people to exchange cognitive experiences with them

In second place is enabling others to read about their experience ( $M = 3.85$ ;  $SD = .791$ ), where 79.8% of these participants agree or strongly agree that they attract

people by using social media to let them read their experiences. Only 7.8% disagree or strongly disagree, while 12.4% neither agree nor disagree, as shown in Figure 6-54.



*Figure 6-54: Attracting people to read researchers' cognitive experience*

In the next level is attracting an audience ( $M = 3.79$ ;  $SD = .846$ ). Of the total 89 participants, 73% agree or strongly agree that they attract people to become an audience for their work, where 18% neither agree nor disagree. Only 9% disagree or strongly disagree with this point, as demonstrated in Figure 6-55.

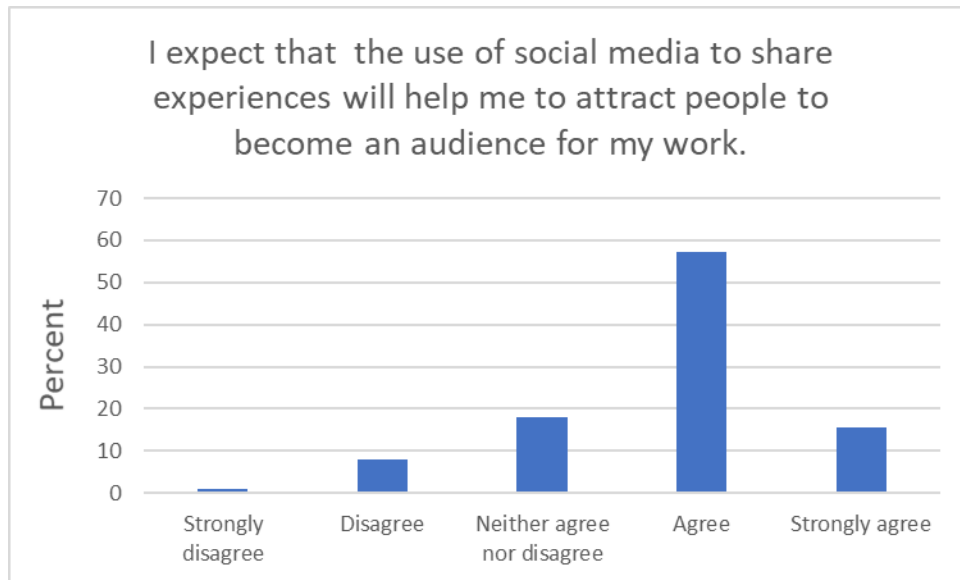


Figure 6-55: Attracting people to become an audience for researchers' cognitive experience

The last point is recruiting participants in their studies ( $M = 3.34$ ;  $SD = 1.033$ ), where just under half (49.4%) agree or strongly agree that they attract people through social media to recruit them to their studies. Some of the participants (27%) neither agree nor disagree, while 23.6% disagree or strongly disagree, as shown in Figure 6-56.

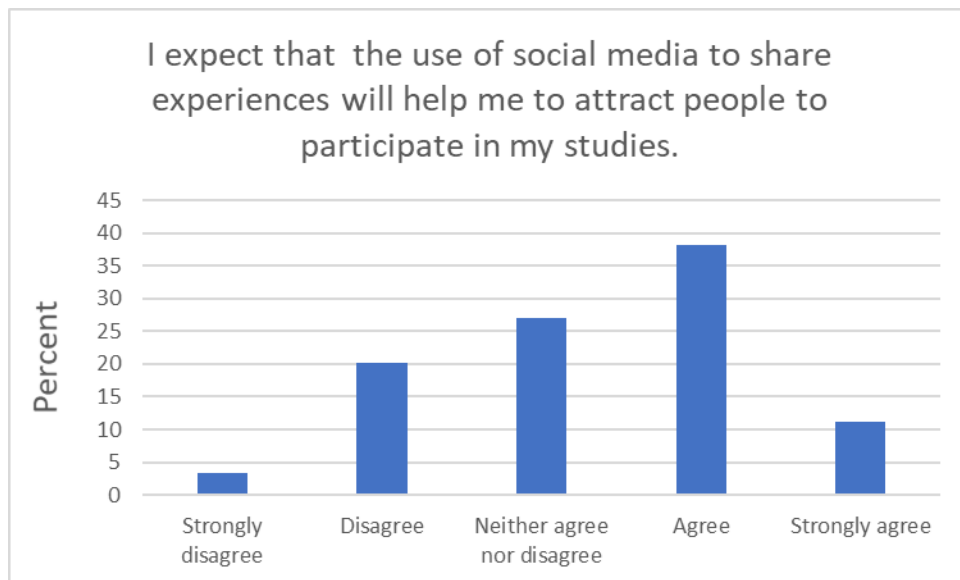
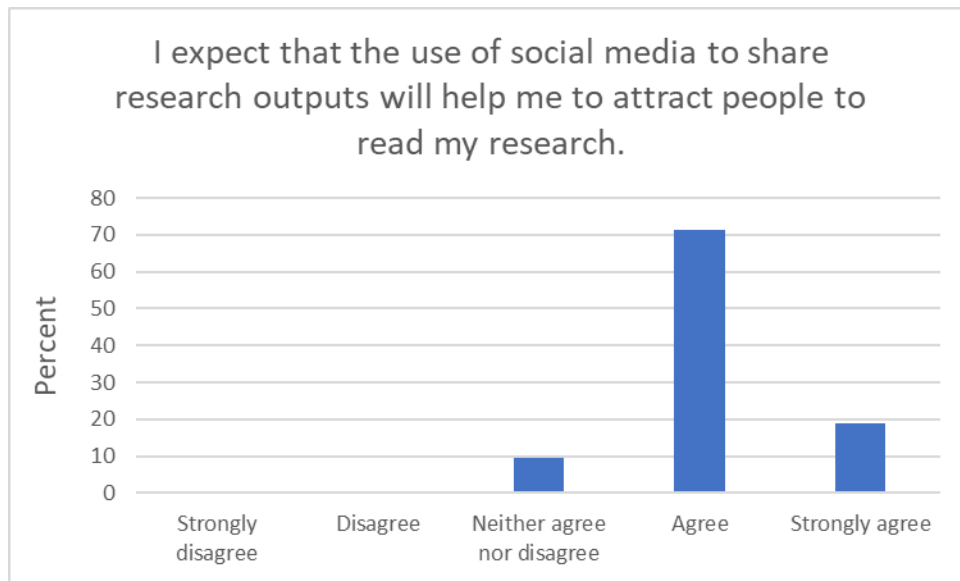


Figure 6-56: Attracting people to participate in cognitive experience

- **Sharing Research Outputs**

For sharing research outputs, the results showed that respondents use this tool significantly for attracting people to read their research ( $M = 4.10$ ;  $SD = .530$ ). Of the total 63 participants, 90.4% agree or strongly agree that they attract people by using social media to let them read their research outputs. Only 9.5% neither agree nor disagree, as shown in Figure 6-57.



*Figure 6-57: Attracting people to read research outputs*

Another point is attracting an audience for their research outputs ( $M = 4.10$ ;  $SD = .499$ ). A total of 92.1% agree or strongly agree that they attract people to become an audience for their outputs, where only 7.9% neither agree nor disagree. This is demonstrated in Figure 6-58.

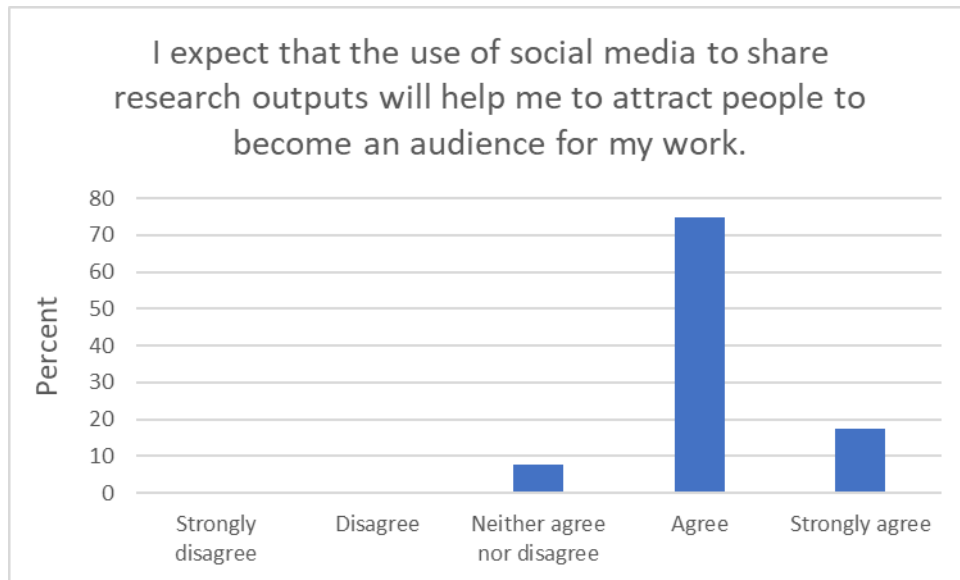


Figure 6-58: Attracting people to become and audience for research outputs

The next point is exchanging research ideas with people ( $M = 4.02$ ;  $SD = .813$ ). Out of 63 participants, 85.7% agree or strongly agree that they attract people by using social media to exchange their research ideas with them. Only 6.4% either disagree or strongly disagree, while only 7.9% neither agree nor disagree. See Figure 6-59.

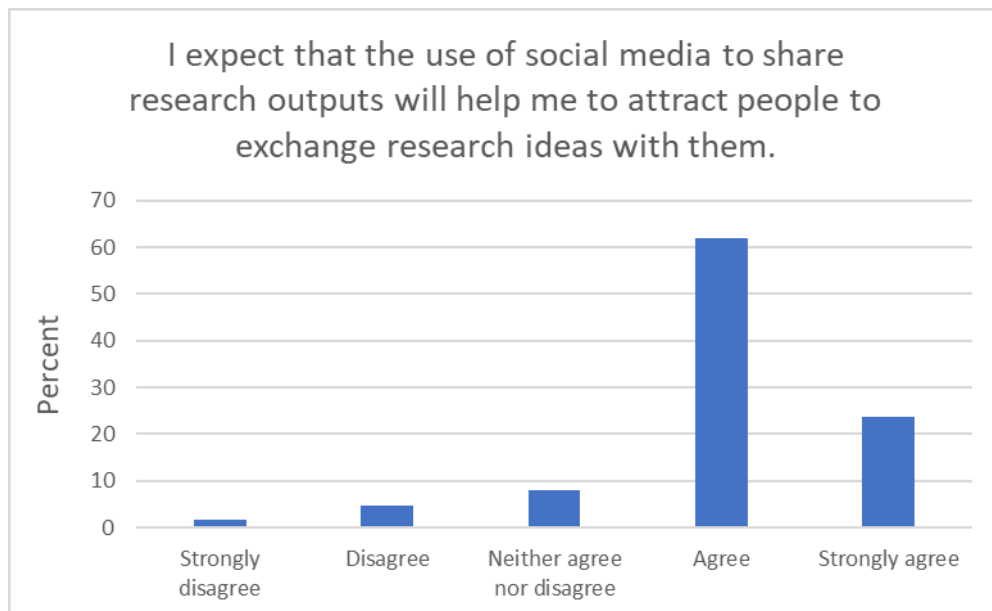


Figure 6-59: Attracting people to exchange research ideas

The last point is recruiting participants in their studies ( $M = 3.44$ ;  $SD = 1.133$ ), where 57.2% out of 63 participants agree or strongly agree that they attract people through social media to recruit them to their studies. Some of the participants (20.6%) neither agree nor disagree, while 22.2% disagree or strongly disagree, as shown in Figure 6-60.

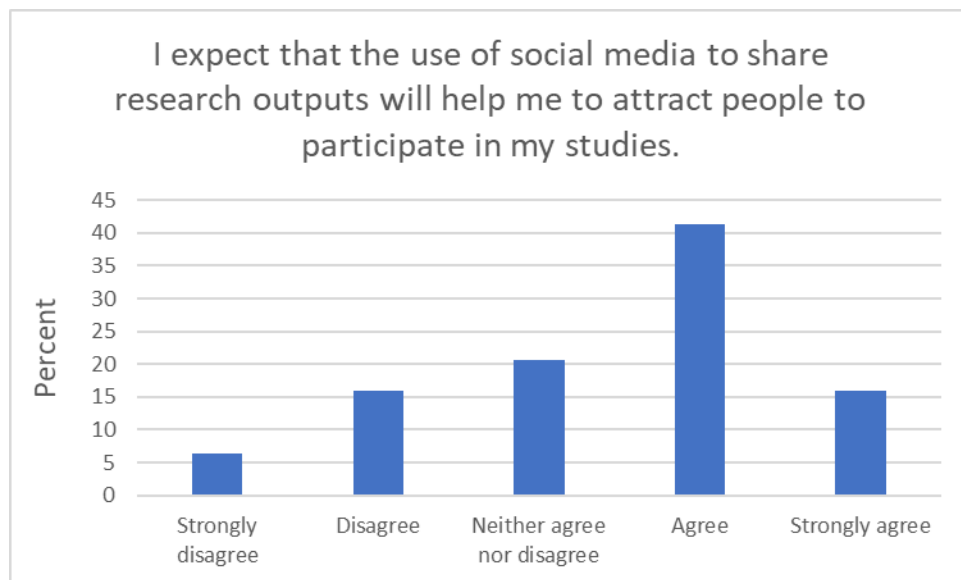


Figure 6-60: Attracting people to participate in research outputs

- **Networking**

o **Sharing Cognitive Experiences**

The results of analysis indicated that the use of social media for sharing cognitive experience helps respondents significantly to extend their current community ( $M = 4.07$ ;  $SD = .780$ ). Out of 89 participants, 88.7% agree or strongly agree that the use of social media can help them to extend their current community. Only 4.4% disagree or strongly disagree, while only 6.7% neither agree nor disagree. See Figure 6-61.

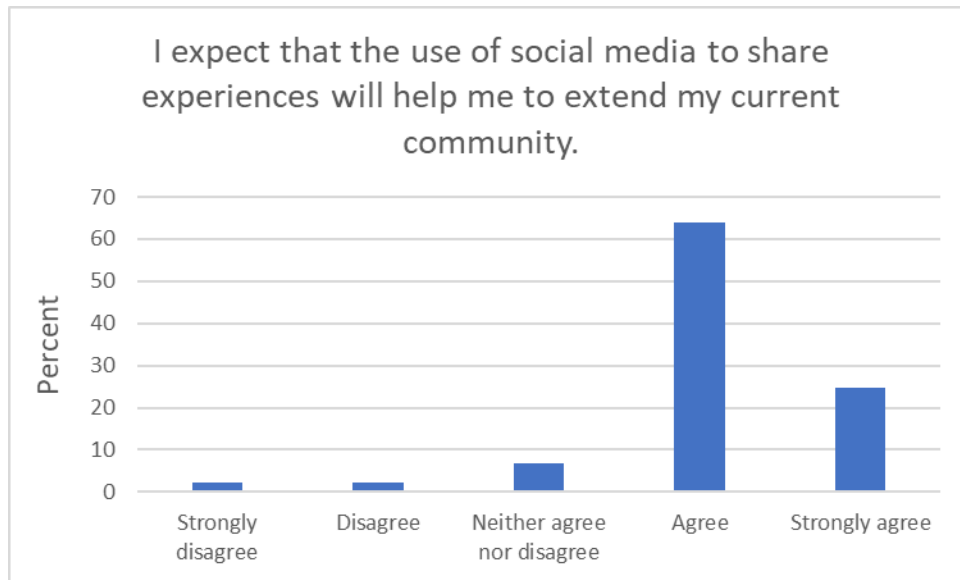


Figure 6-61: Using social media for sharing cognitive experiences to extend current community

The following point is engaging with different communities ( $M = 3.98$ ;  $SD = .825$ ), where 80.9% agree or strongly agree that they expect to engage with different communities by using social media. Only a few participants (7.9%) disagree, while 11.2% neither agree nor disagree, as demonstrated in Figure 6-62.

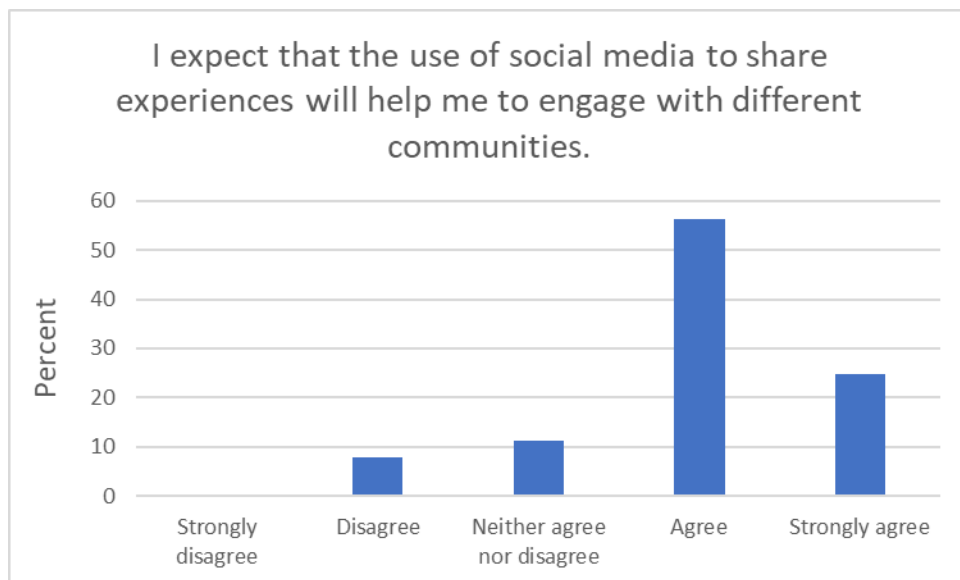
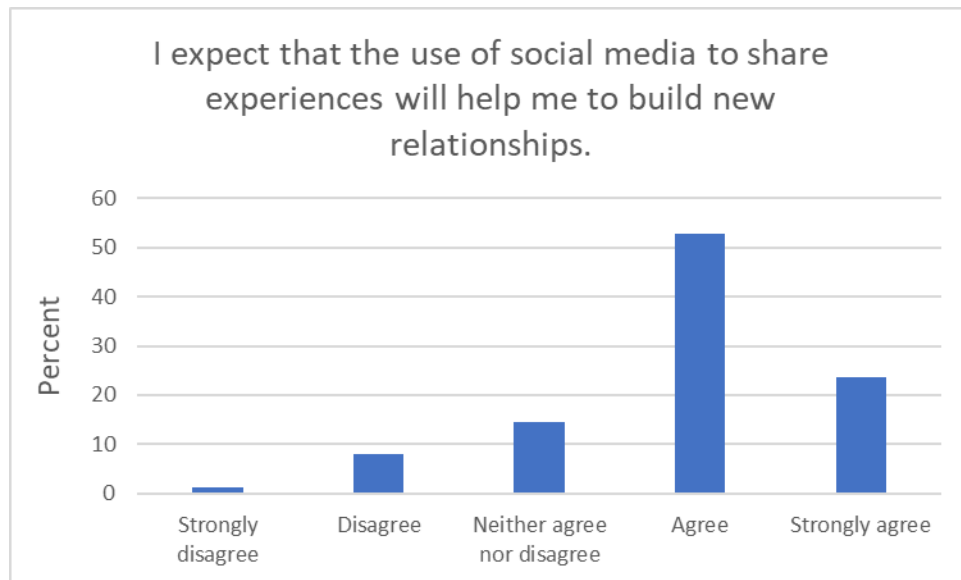


Figure 6-62: Using social media for sharing cognitive experiences to engage with different communities

The third point is building new relationships ( $M = 3.90$ ;  $SD = .892$ ). Out of 89 participants, 76.4% agree or disagree that they can build new relationships by using social media for sharing their experiences, while 14.6% neither agree nor disagree. Only 9% disagree or strongly disagree with this point. See Figure 6-63.



*Figure 6-63: Using social media for sharing cognitive experiences to build new relationships*

The last point is collaborating with others from any community ( $M = 3.87$ ;  $SD = .944$ ). A total of 78.6% agree or strongly agree that they use social media for sharing experiences to collaborate with others from their community or other communities. Only 11.2% neither agree nor disagree, and 10.1% either disagree or strongly disagree. See Figure 6-64.



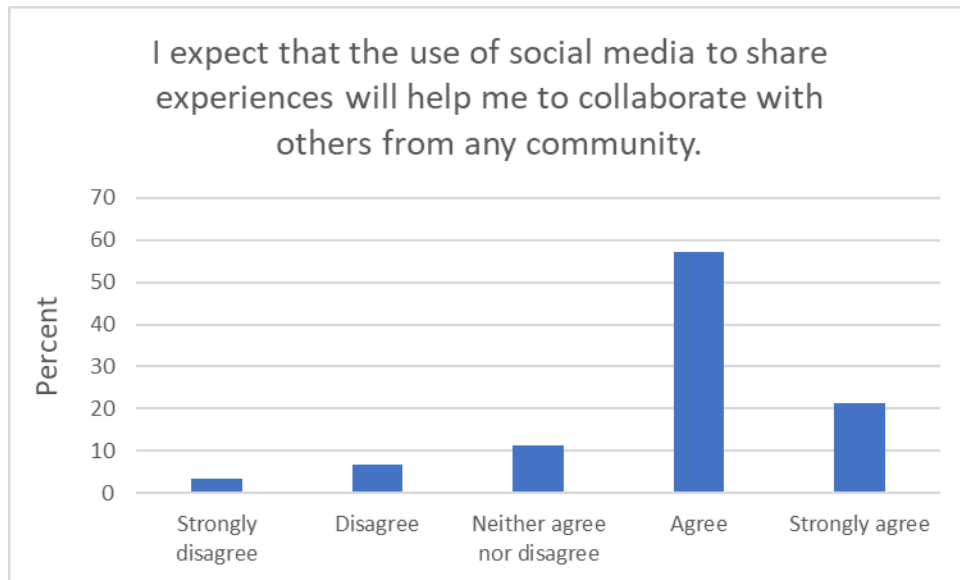
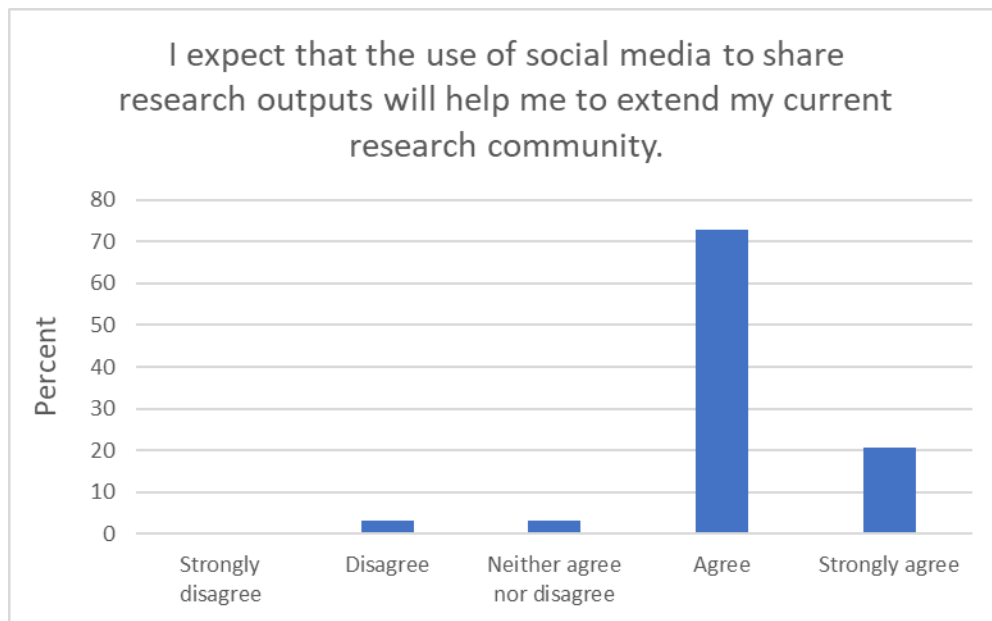


Figure 6-64: Using social media for sharing cognitive experiences to collaborate with others

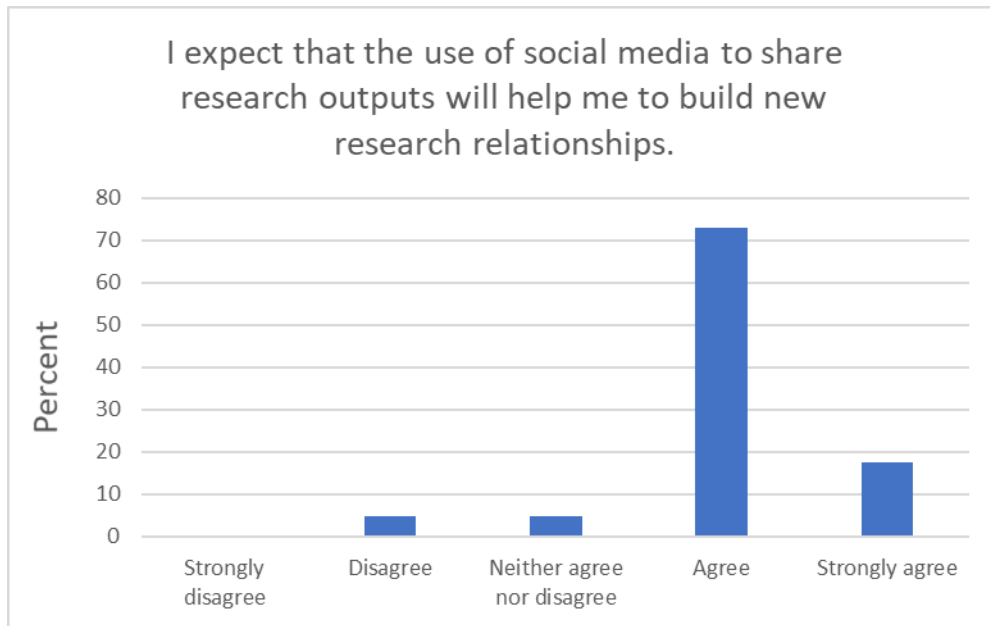
- **Sharing Research Outputs**

Likewise, for sharing research outputs, respondents use these media widely to extend their current research community ( $M = 4.11$ ;  $SD = .599$ ). Out of 63 participants, Majority of them (93.6%) agree or strongly agree that the use of social media can help them to extend their current community. Only 3.2% disagree, and only 3.2% neither agree nor disagree. See Figure 6-65.



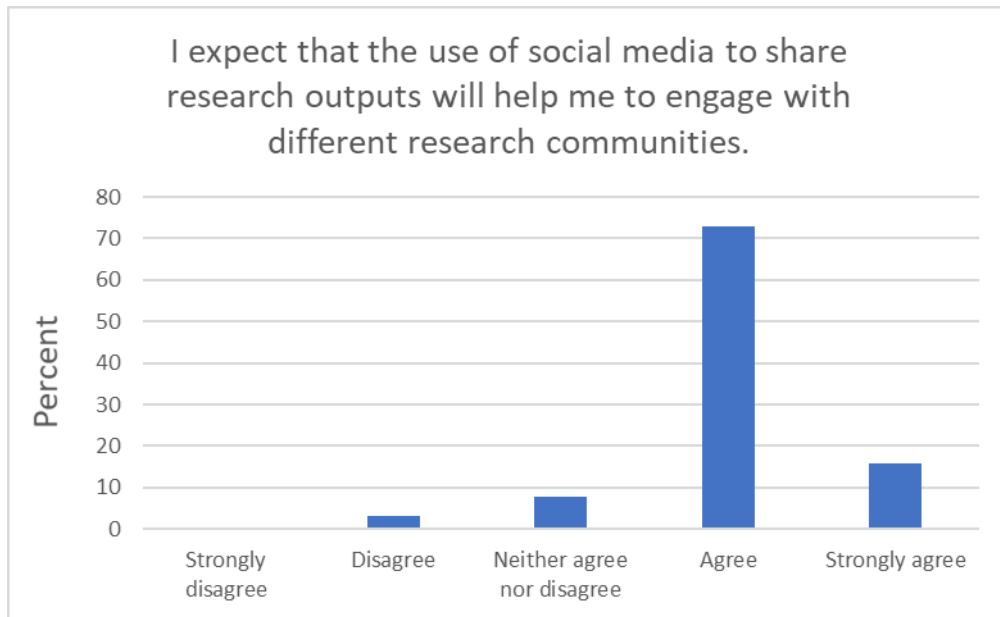
*Figure 6-65: Using social media for sharing research outputs to extend current community*

The following point is building new research relationships ( $M = 4.03$ ;  $SD = .647$ ). A total of 90.5% of the participants either agree or strongly agree that they can build new relationships by using social media to share their research outputs. Only 4.8% neither agree nor disagree, and 4.8% disagree with this point. See Figure 6-66.



*Figure 6-66: Using social media for sharing research outputs to build new research relationships*

The third point is engaging with different research communities ( $M = 4.02$ ;  $SD = .609$ ). Indeed, 88.9% agree or strongly agree that they expect to engage with different communities by using social media to share their research outputs. Only a few participants (7.9%) neither agree nor disagree, and only 3.2% disagree with this point, as demonstrated in Figure 6-67.



*Figure 6-67: Using social media for sharing research outputs to engage with different research communities*

The last point is collaborating with researchers from any research community ( $M = 3.84$ ;  $SD = .846$ ). A total of 79.4% either agree or strongly agree that they use social media to collaborate with others from their community or other communities to share their research outputs. Only 11.1% neither agree nor disagree, and 9.5% either disagree or strongly disagree. See Figure 6-68.

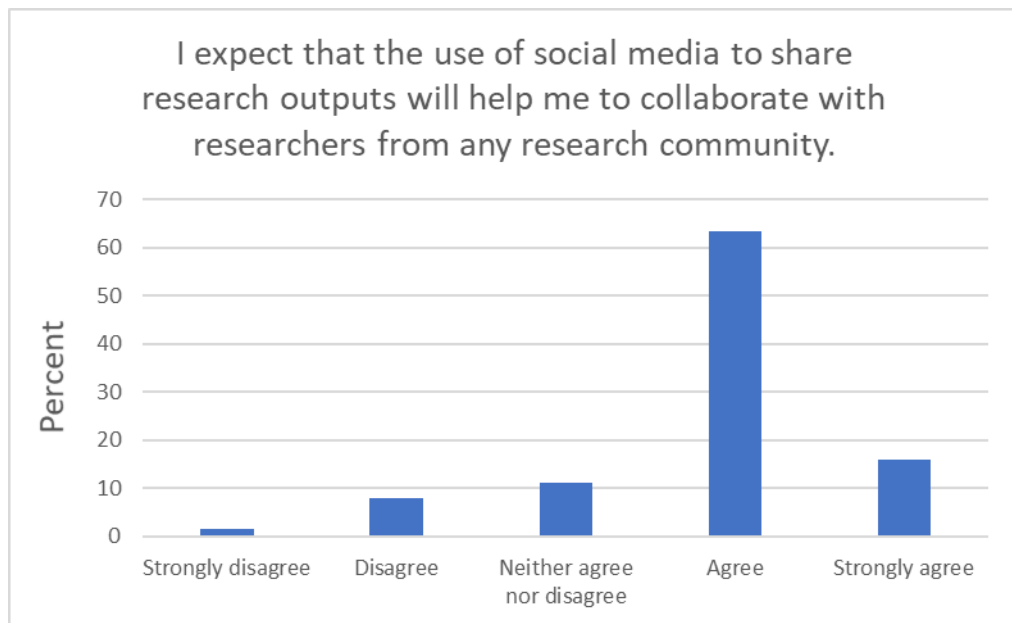
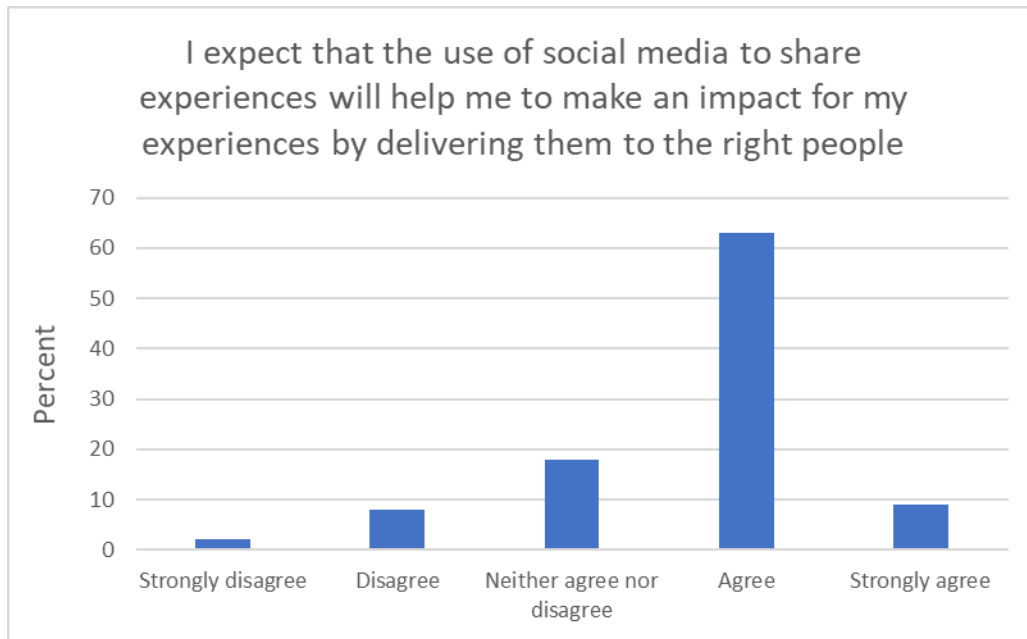


Figure 6-68: Using social media for sharing research outputs to collaborate with others

- **Social Impact**

o **Sharing Cognitive Experiences**

The results of analysis for this benefit indicated that the use of social media for sharing cognitive experience helps respondents significantly to enable their experience to have an impact by delivering it to the right people ( $M = 3.69$ ;  $SD = .834$ ). Indeed, 71.9% agree or strongly agree that the use of social media can help them to deliver their cognitive experiences to the right people. Some of the participants (18%) neither agree nor disagree, whilst 10.1% either disagree or strongly disagree, as shown in Figure 6-69.



*Figure 6-69: Using social media for sharing cognitive experiences to deliver them to the right people*

The second social impact is represented by helping institutions to have an impact in their communities ( $M = 3.53$ ;  $SD = .906$ ). Out of these participants, 56.1% either agree or strongly agree that they use social media to support their institution by delivering its impact to its community, while only 12.3% either disagree or strongly disagree. Some of the participants (31.5%) neither agree nor disagree with this point. This can be seen in Figure 6-70.

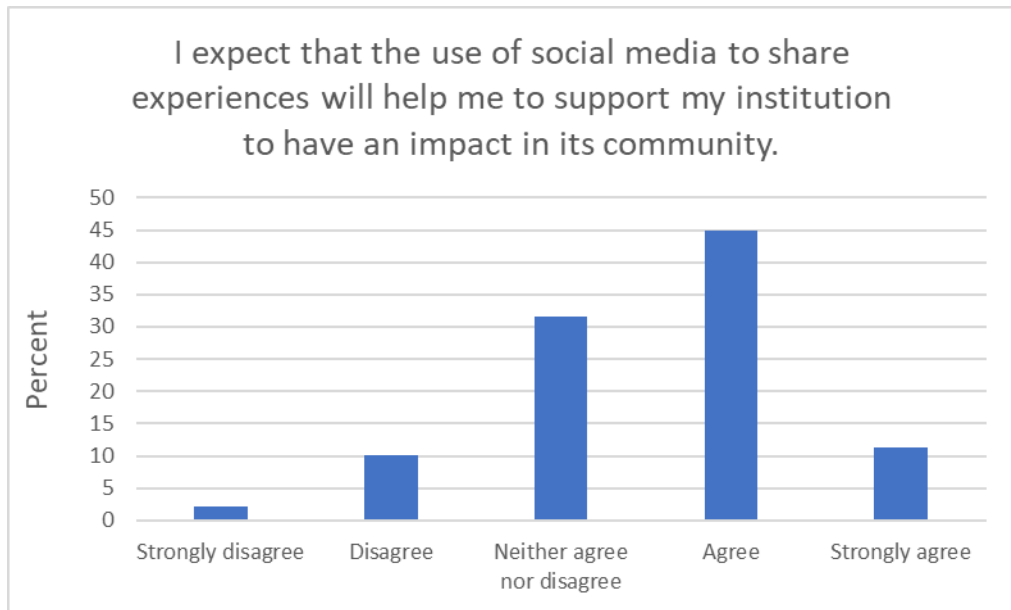
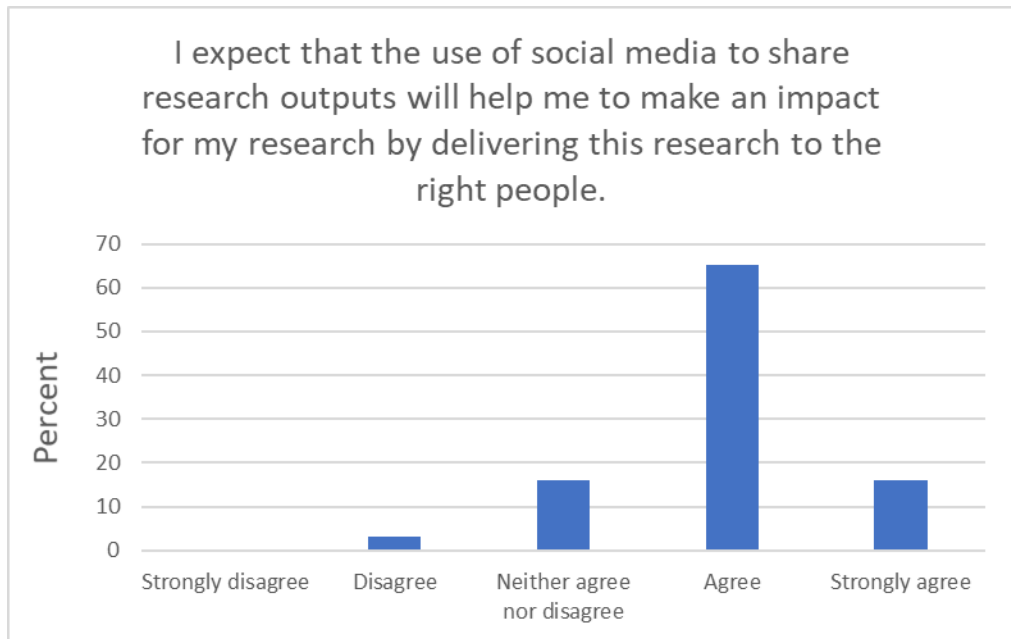


Figure 6-70: Using social media for sharing cognitive experiences to support institution for delivering its impact

- **Sharing Research Outputs**

Likewise, for research outputs, respondents use social media widely to enable their research to have an impact by delivering it to the right people ( $M = 3.94$ ;  $SD = .669$ ). A total of 81% agree or strongly agree that the use of social media can help them to deliver their research outputs to the right people. Some of the participants (15.9%) neither agree nor disagree, whilst 3.2% disagree, as shown in Figure 6-71.



*Figure 6-71: Using social media for sharing research outputs to deliver them to the right people*

The second social impact also is helping institutions to have an impact in their communities ( $M = 3.78$ ;  $SD = .792$ ). Out of 63 participants, 69.9% either agree or strongly agree that they use social media to support their institution by delivering its impact to its community, while only 4.8% either disagree or strongly disagree. Some of the participants (25.4%) neither agree nor disagree with this point. See Figure 6-72.



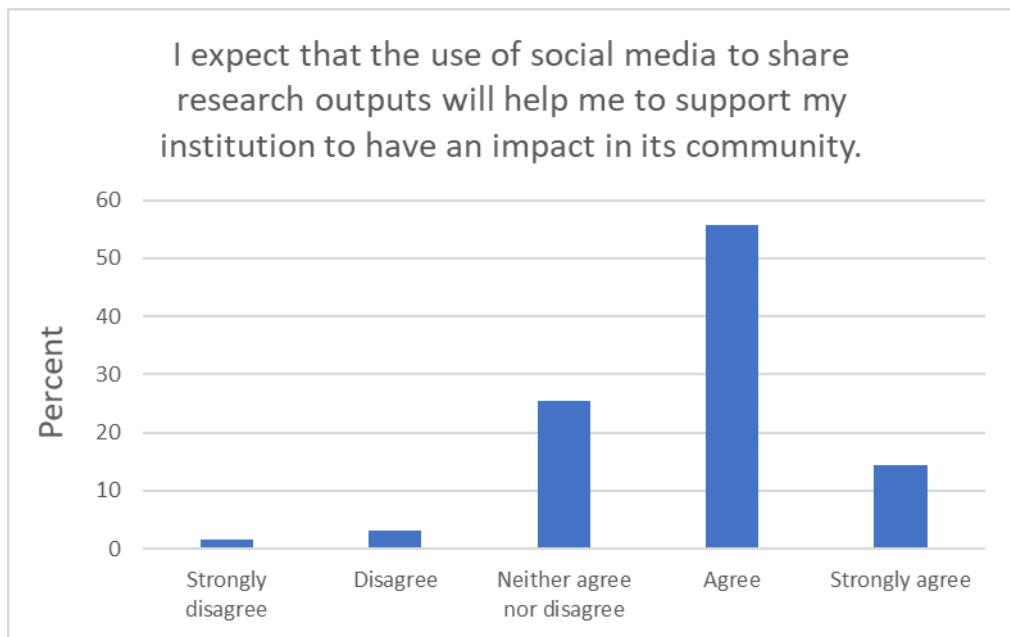
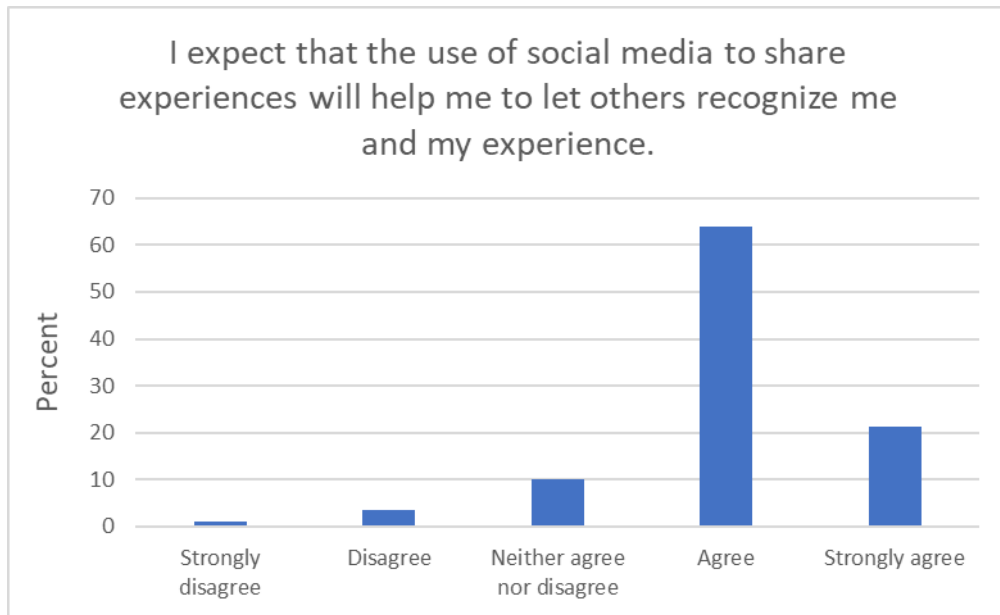


Figure 6-72: Using social media for sharing research outputs to support institution for delivering its impact

- **Visibility**

o **Sharing Cognitive Experiences**

The results of analysis for this benefit indicated that the respondents' use of this social tool for sharing cognitive experience is important for letting others recognize them and their experience ( $M = 4.01$ ;  $SD = .746$ ). Indeed, 85.3% out of 89 participants agree or strongly agree that the use of social media for sharing their cognitive experiences can make them and their experiences more recognizable by others. Only 10.1% neither agree nor disagree, whilst 4.5% either disagree or strongly disagree. This can be seen in Figure 6-73.



*Figure 6-73: Using social media for sharing cognitive experiences to let others recognize researchers*

Furthermore, their use of social media increases their visibility in their communities ( $M = 3.96$ ;  $SD = .865$ ). A total of 79.8% either agree or strongly agree that the use of this tool for sharing cognitive experiences can increase their visibility. Only 7.8% either disagree or strongly disagree, while 12.4% neither agree nor disagree with this point, as demonstrated in Figure 6-74.

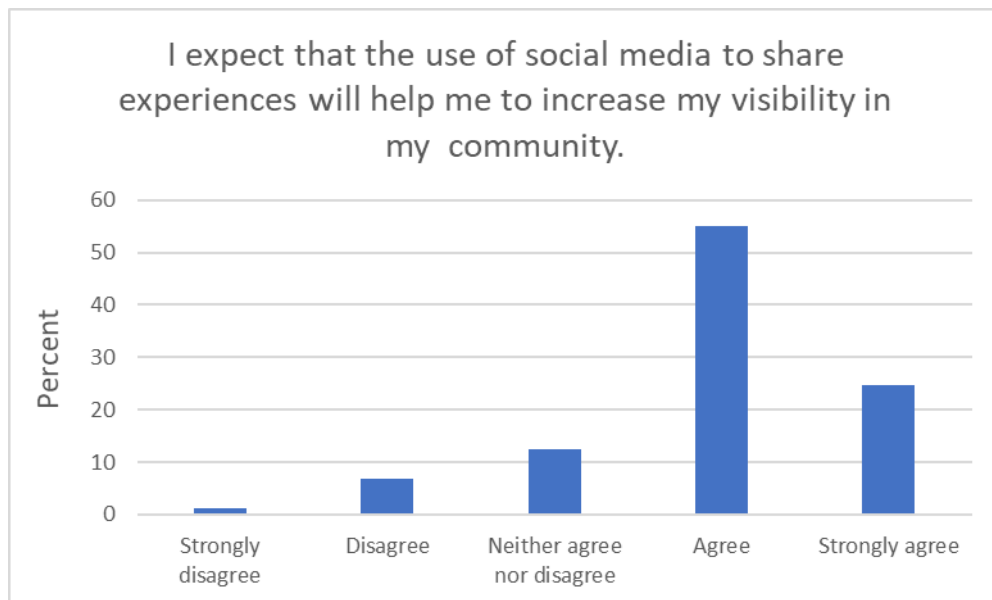


Figure 6-74: Using social media for sharing cognitive experiences to increase researchers' visibility

- **Sharing Research Outputs**

In sharing research outputs, the respondents use this tool considerably to increase their visibility in their research communities ( $M = 4.16$ ;  $SD = .653$ ). Indeed, 92.1% out of 63 participants either agree or strongly agree that the use of this tool for sharing research outputs can increase their visibility. Only 3.2% disagree, while 4.8% neither agree nor disagree with this point, as demonstrated in Figure 6-75.

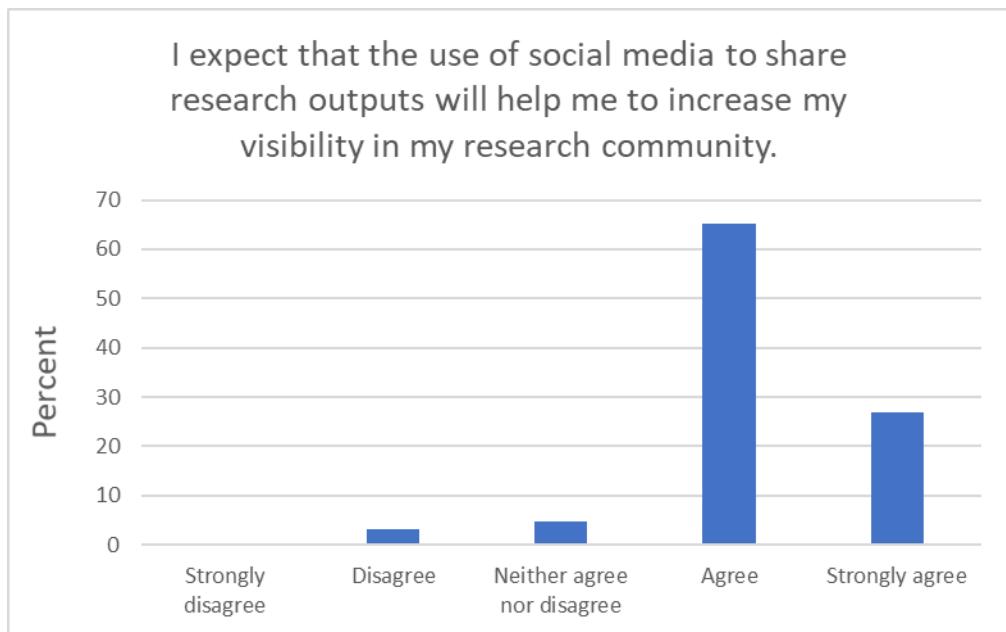


Figure 6-75: Using social media for sharing research outputs to increase researchers' visibility

Furthermore, the use of this tool for sharing research outputs is important for letting others recognize them and their outputs ( $M = 4.14$ ;  $SD = .564$ ). Most of the participants (90.5%) agree or strongly agree that the use of social media for sharing their research outputs can make them and their outputs more recognizable by others. Only 9.5% neither agree nor disagree with this point. This can be seen in Figure 6-76.

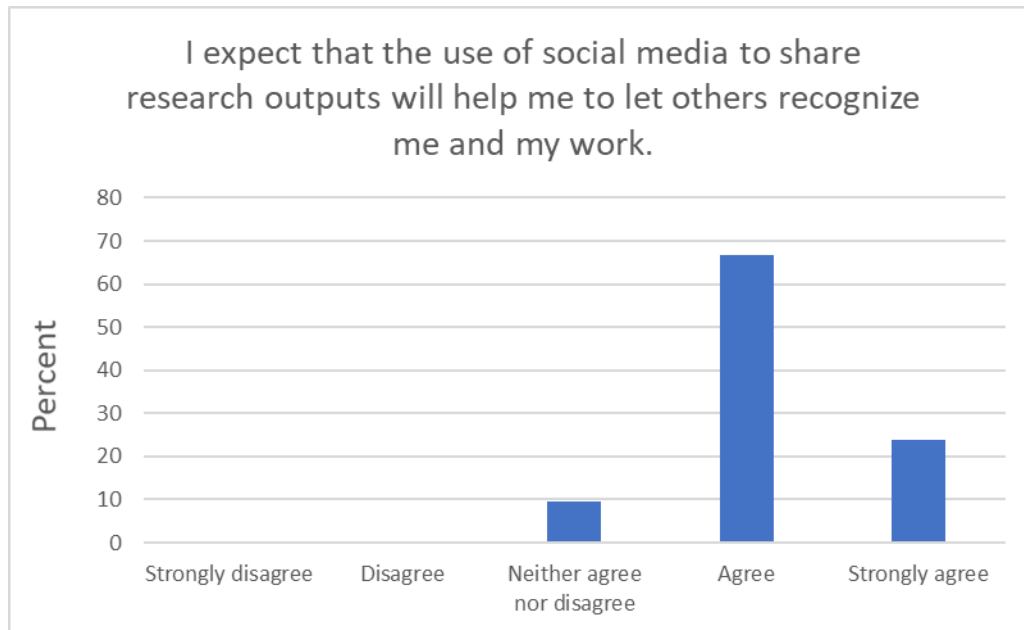


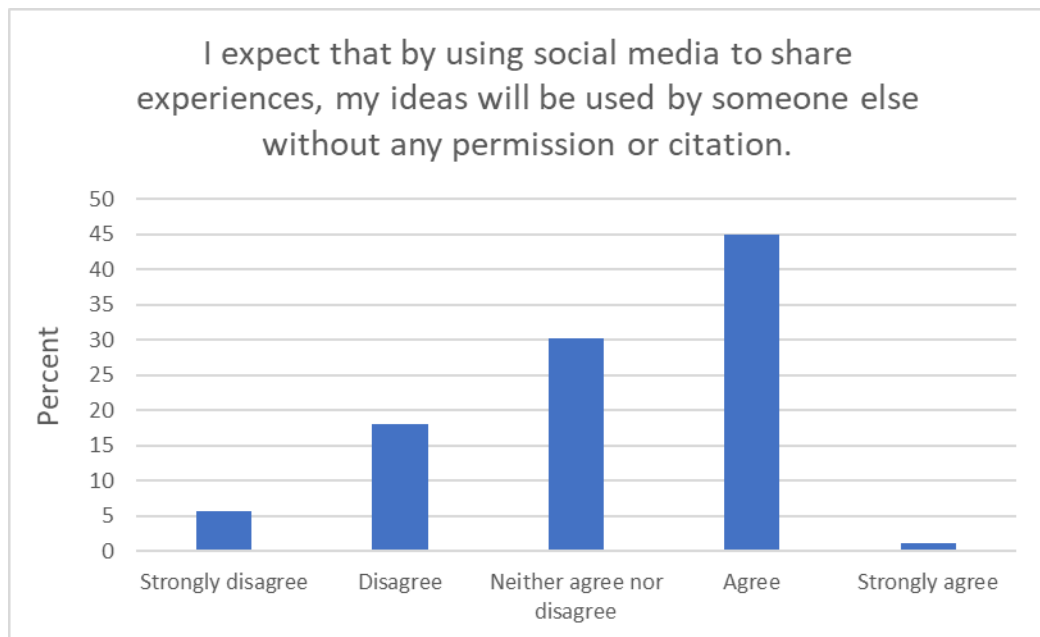
Figure 6-76: Using social media for sharing research outputs to let others recognize researchers

#### 6.10.1.2 Negative Social Outcomes

##### - Lack of Trust

##### o Sharing Cognitive Experiences

On this side of social outcome expectations, the results of analysis showed that the respondents are slightly concerned about having their ideas, constructed from their experience, taken by someone and used without permission or citation ( $M = 3.18$ ;  $SD = .936$ ). Indeed, 46% either agree or strongly agree that they are concerned about sharing their ideas through social media. Nevertheless, 30.3% neither agree nor disagree, whilst 23.6% either disagree or strongly disagree with this issue. This can be seen in Figure 6-77.



*Figure 6-77: By using social media for sharing cognitive experiences, the ideas will be used without permission*

However, they seem less concerned about others taking their experience without any permission or citation ( $M = 2.99$ ;  $SD = .935$ ), where 33.7% agree or strongly agree that they are concerned about sharing their experiences through social media. A total of 37.1% neither agree nor disagree with this issue, while 29.2% either disagree or strongly disagree. See Figure 6-78.

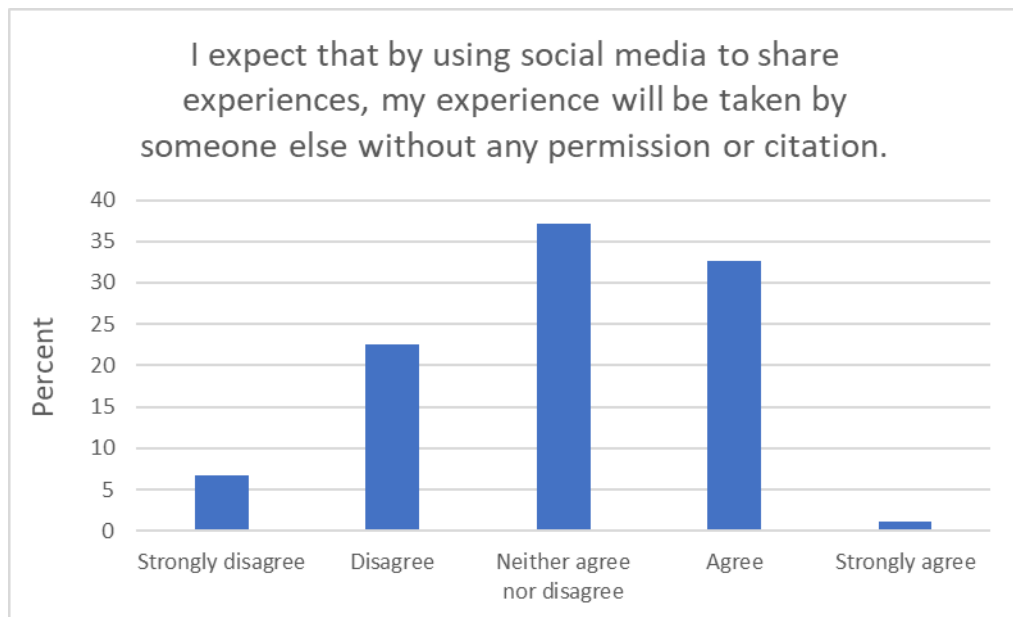
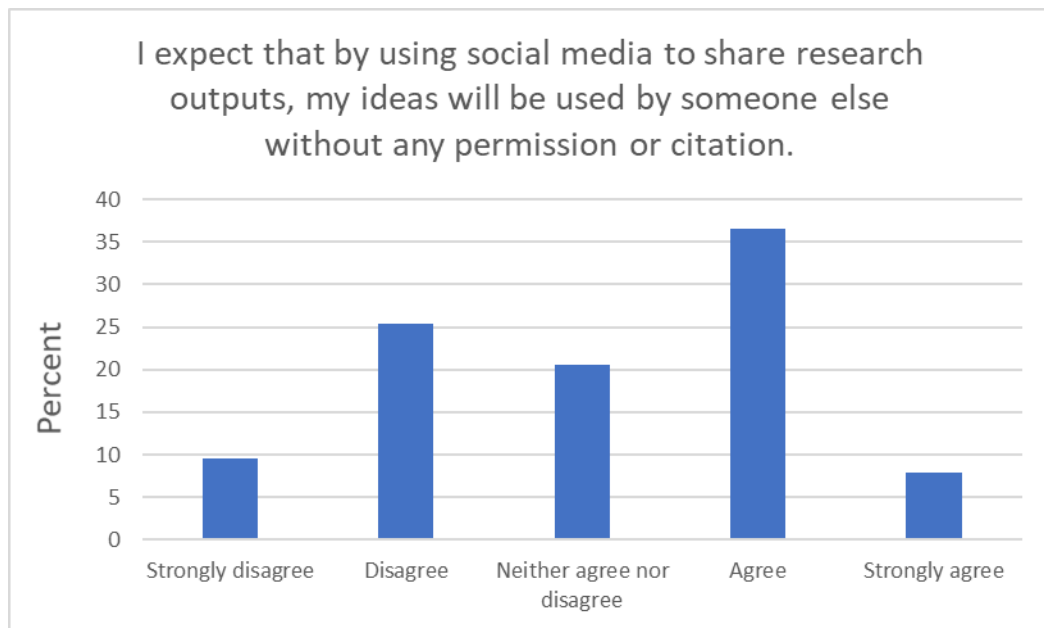


Figure 6-78: By using social media for sharing cognitive experiences, the experiences will be used without permission

- **Sharing Research Outputs**

Likewise, for sharing research outputs, the results indicated that there is some concern among respondents about ideas being taken from their work without permission or citation ( $M = 3.08$ ;  $SD = 1.154$ ). A total of 44.4% either agree or strongly agree that they are concerned about sharing their ideas through social media. Nevertheless, 20.6% neither agree nor disagree, whilst 34.9% either disagree or strongly disagree with this issue. This can be seen in Figure 6-79.



*Figure 6-79: By using social media for sharing research outputs, the ideas will be used without permission*

They also have some concern about sharing work which is not published yet, in case it should be taken by someone without permission or citation ( $M = 3.00$ ;  $SD = 1.107$ ). Indeed, 39.6% agree or strongly agree that they are concerned about sharing their work through social media. In other side, 38.1% either disagree or strongly disagree, while 22.2% neither agree nor disagree, as shown in Figure 6-80.



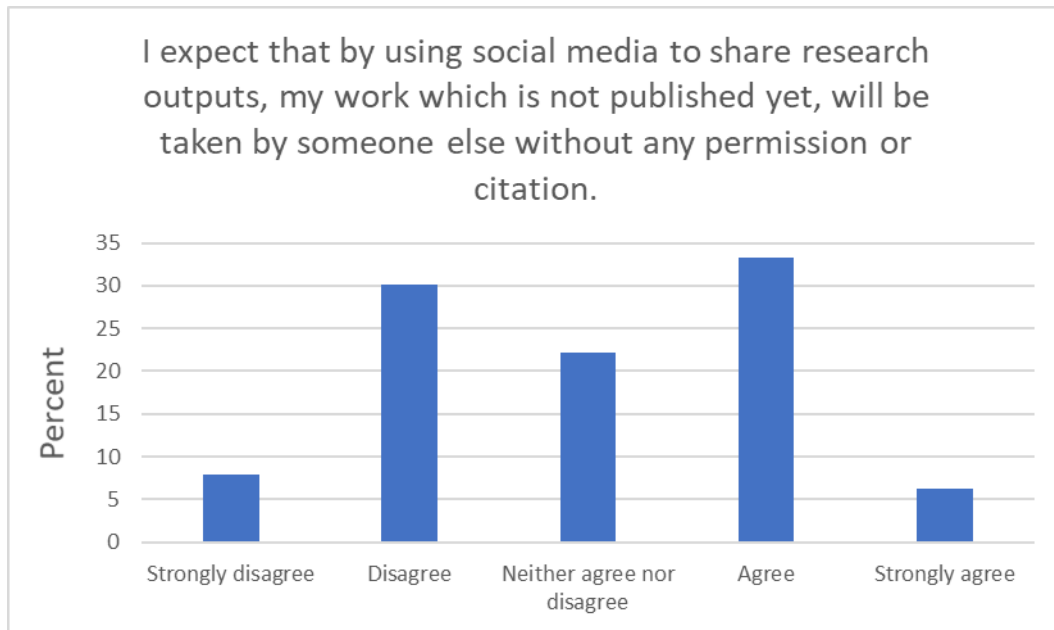


Figure 6-80: By using social media for sharing cognitive experiences, the outputs will be used without permission

### 6.10.2 Personal Outcome Expectations

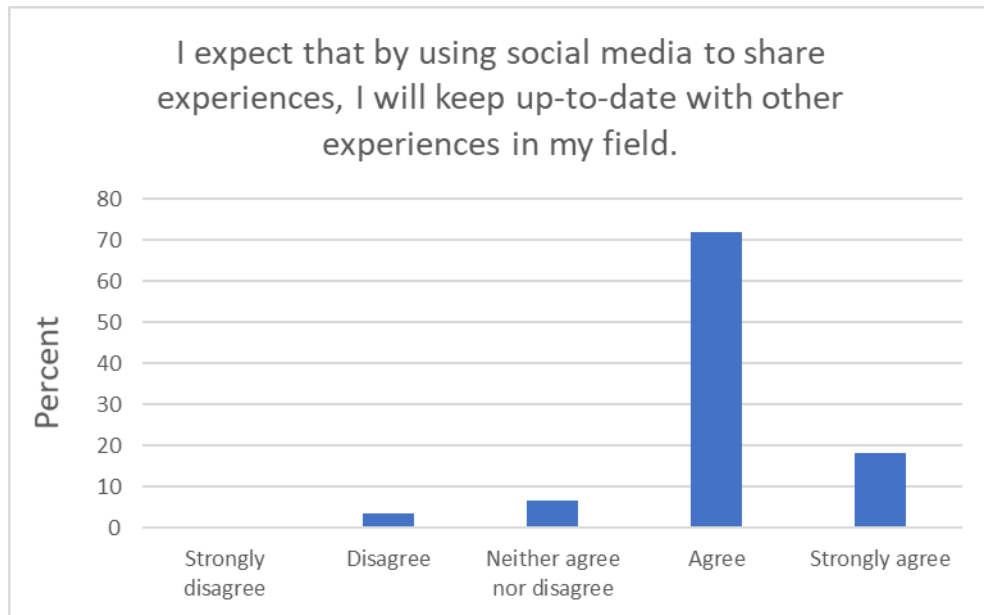
This type also has two sides. The first side is positive, comprising personal benefits from using social media to share either cognitive experience, or research outputs, or both. The second side is negative, comprising personal disadvantages from using these media for sharing these types of knowledge. These two sides are presented in the following two points.

#### 6.10.2.1 Positive Personal Outcomes

- **Sharing Cognitive Experiences**

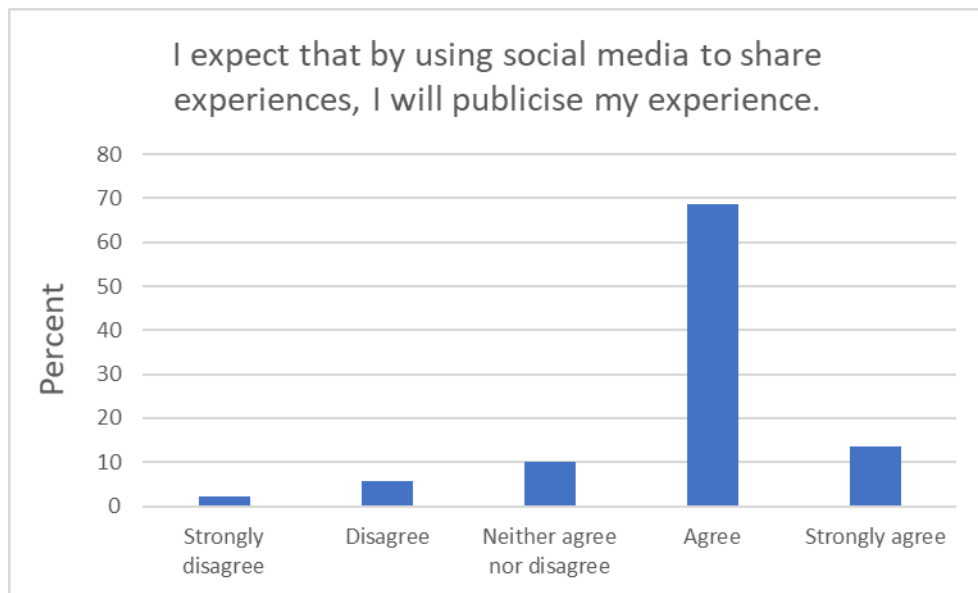
On this side, the results of analysis indicated that the use of social media for sharing cognitive experience helps respondents significantly to keep up-to-date with other experiences in their field ( $M = 4.04$ ;  $SD = .620$ ). Out of 89 participants, 89.9% either agree or strongly agree that they can keep up-to-date by using social media for

sharing cognitive experiences. Only 3.4% disagree, whilst 6.7% neither agree nor disagree, as shown in Figure 6-81.



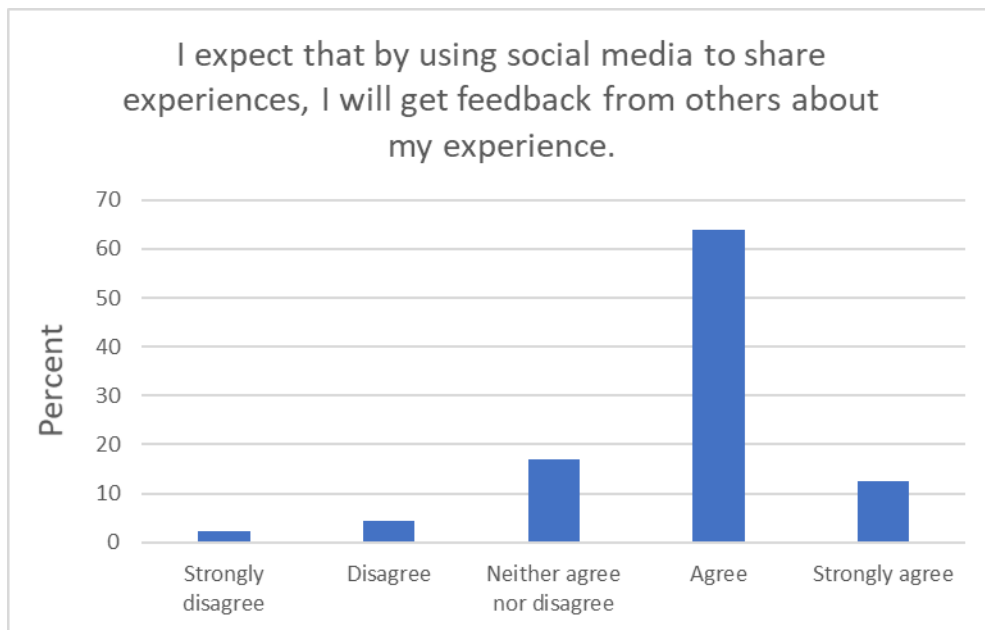
*Figure 6-81: Using social media for sharing cognitive experiences to keep up-to-date*

Another point is publicizing their experience ( $M = 3.85$ ;  $SD = .806$ ), where 82% agree or strongly agree that social media can help them to publicise their experiences. A few participants (7.8%) either disagree or strongly disagree, while 10.1% neither agree nor disagree. This can be seen in Figure 6-82.



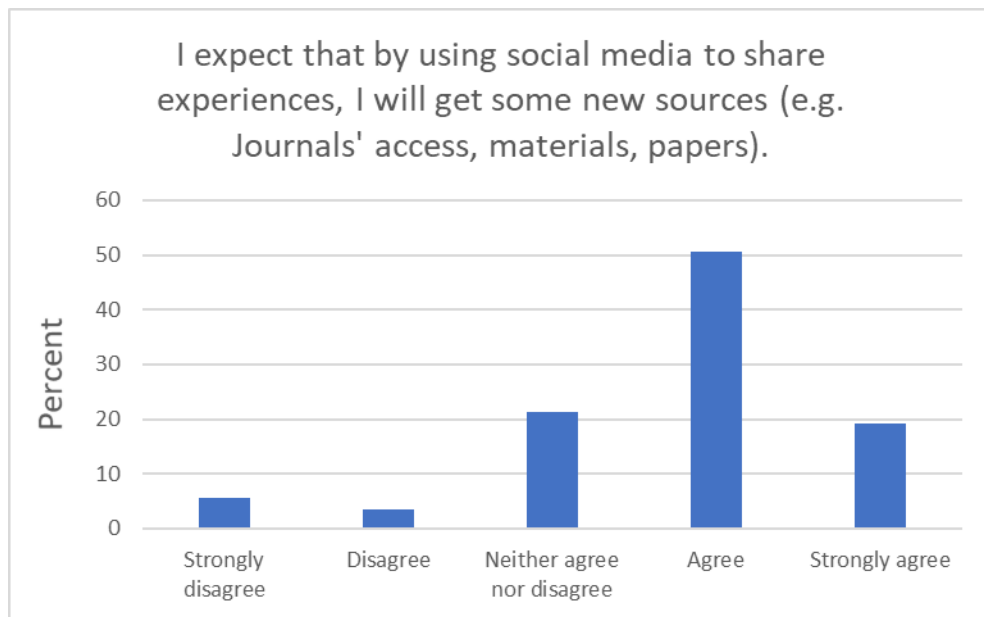
*Figure 6-82: Using social media for sharing cognitive experiences to publicise these experiences*

The next point is receiving feedback from others about their experience ( $M = 3.80$ ;  $SD = .800$ ). A total of 76.4% either agree or strongly agree that they can use social media to get feedback from others to improve their experiences. Only 6.7% of the participants either disagree or strongly disagree, whilst 16.9% neither agree nor disagree, as demonstrated in Figure 6-83.



*Figure 6-83: Using social media for sharing cognitive experiences to get feedback*

The following point is to find some new sources such as access to journals, materials, and papers ( $M = 3.74$ ;  $SD = .995$ ). Out of 89 participants, 69.7% agree or strongly agree that the use of social media can help them to find some sources, while only 9% either disagree or strongly disagree with this point. Some of the participants (21.3%) neither agree nor disagree, as shown in Figure 6-84.



*Figure 6-84: Using social media for sharing cognitive experiences to get new sources*

Also, another point is acquiring new skills and experience ( $M = 3.65$ ;  $SD = .931$ ). Indeed, 62.9% agree or strongly agree that they can benefit from the use of social media to earn new experience and skills. Some of the participants (25.8%) neither agree nor disagree, while 11.2% either disagree or strongly disagree. This is seen in Figure 6-85.

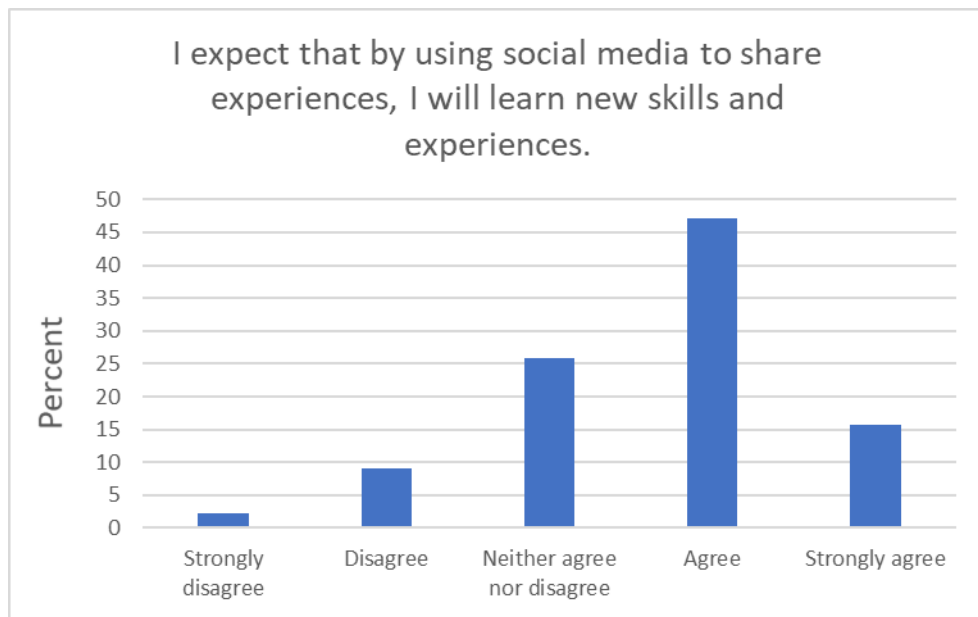
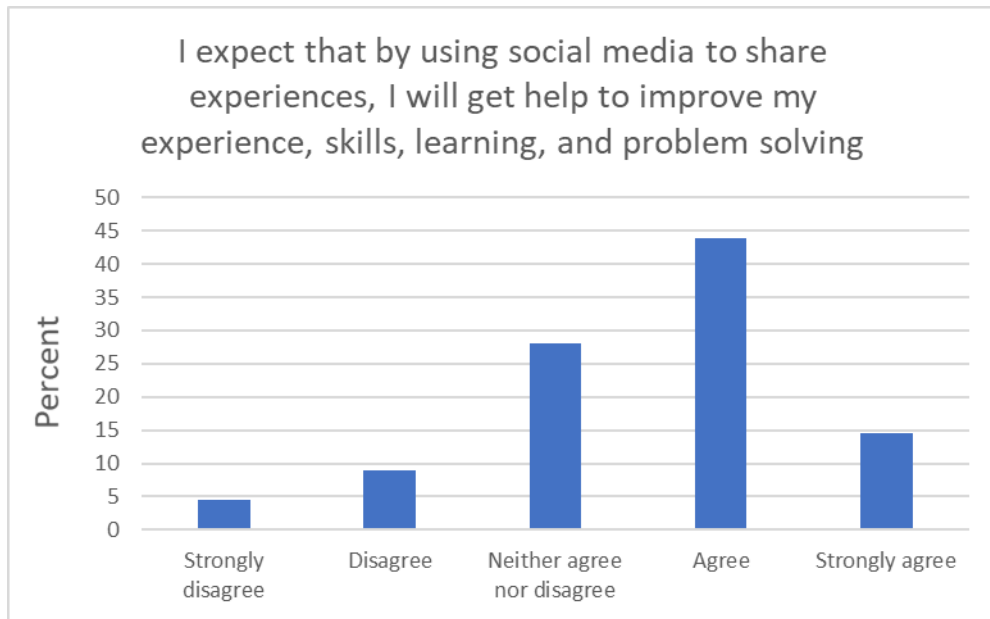


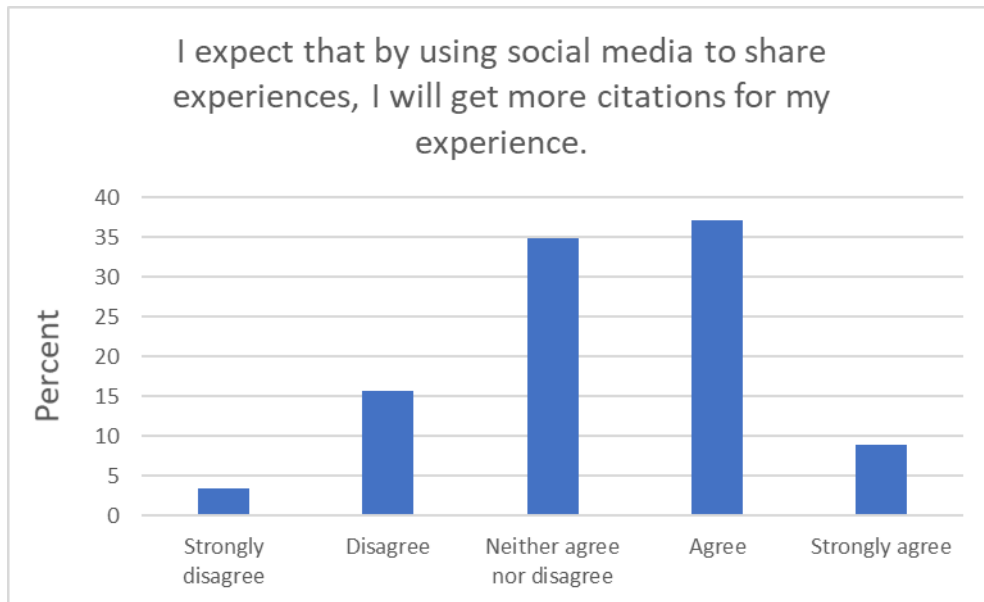
Figure 6-85: Using social media for sharing cognitive experiences to learn new skills

Another personal outcome is receiving help from others to improve their experience ( $M = 3.55$ ;  $SD = 1.000$ ). More than a half (58.4%) either agree or strongly agree that they can get help to improve their experience, skills, learning, and problem solving by using social media. Some of the participants (28.1%) neither agree nor disagree with this point, while 13.5% either disagree or strongly disagree with it. See Figure 6-86.



*Figure 6-86: Using social media for sharing cognitive experiences to help*

Getting more citations for their experience is another personal outcome ( $M = 3.33$ ;  $SD = .963$ ), where just under half (46.1%) either agree or strongly agree that the use of social media can help them to get more citations for their experiences. A total of 34.8% neither agree nor disagree, while 19.1% either disagree or strongly disagree with this point. This can be seen in Figure 6-87.



*Figure 6-87: Using social media for sharing cognitive experiences to get more citations for these experiences*

The last outcome is getting a job somewhere ( $M = 3.25$ ;  $SD = 1.090$ ). Out of 89 participants, 42.7% agree or strongly agree that they can get a job from using social media to share their experiences, while 37.1% neither agree nor disagree. Some of the participants (20.2%) either disagree or strongly disagree with this point. See Figure 6-88.



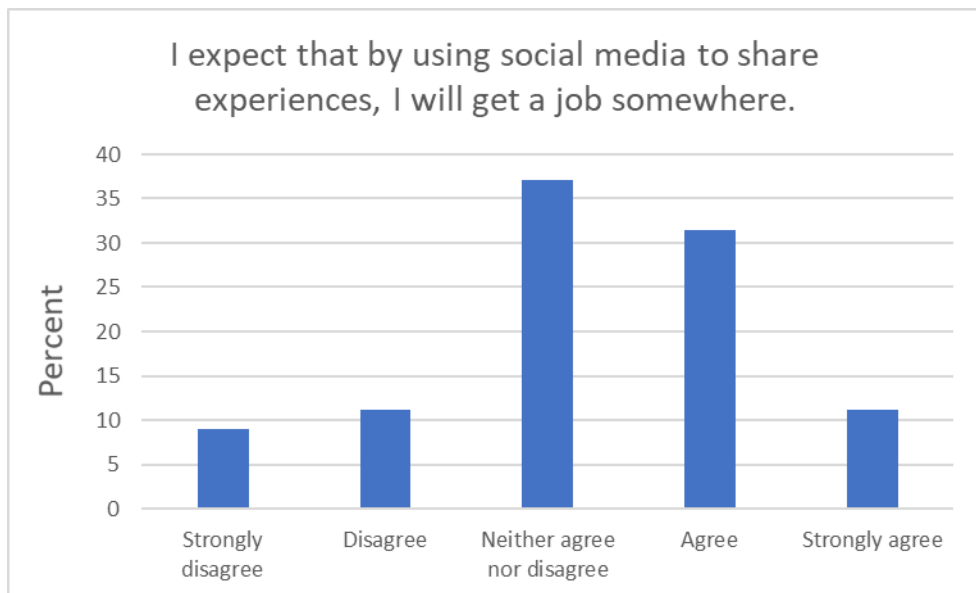


Figure 6-88: Using social media for sharing cognitive experiences to get job

- **Sharing Research Outputs**

With regard to using social media for sharing research outputs, the results of analysis indicated that these media help respondents significantly to publicize their work ( $M = 4.05$ ;  $SD = .551$ ). Out of 63 participants, a total of 90.5% agree or strongly agree that social media can help them to publicise their research outputs. A few participants (7.9%) neither agree nor disagree, while only 1.6% disagree with this point. This can be seen in Figure 6-89.

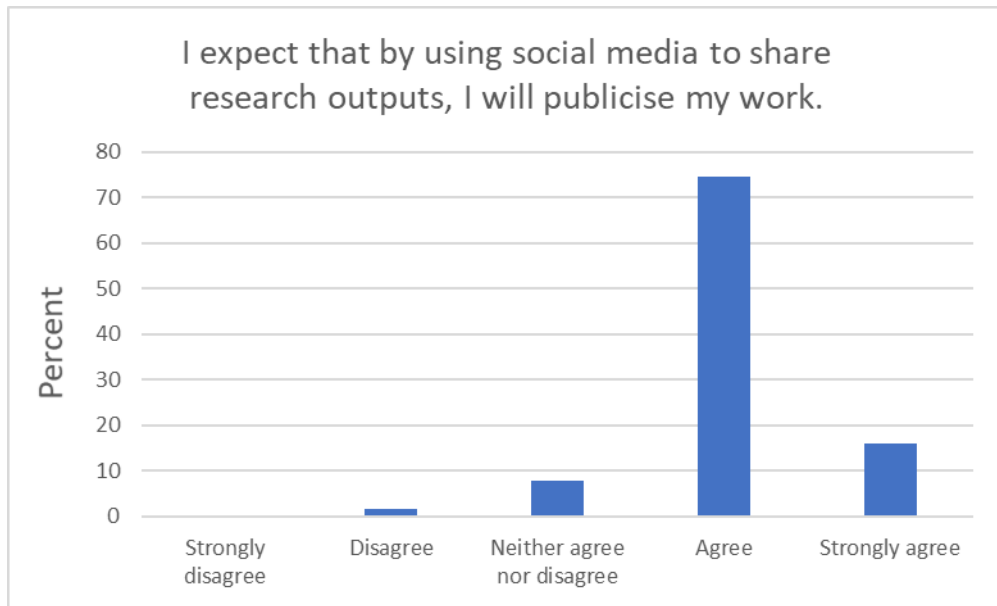


Figure 6-89: Using social media for sharing research outputs to publicise these outputs

The second benefit is to keep up-to-date with their research areas ( $M = 3.98$ ;  $SD = .793$ ), where 85.7% either agree or strongly agree that they can keep up-to-date by using social media to share research outputs. Only 6.4% either disagree or strongly disagree, whilst 7.9% neither agree nor disagree, as shown in Figure 6-90.

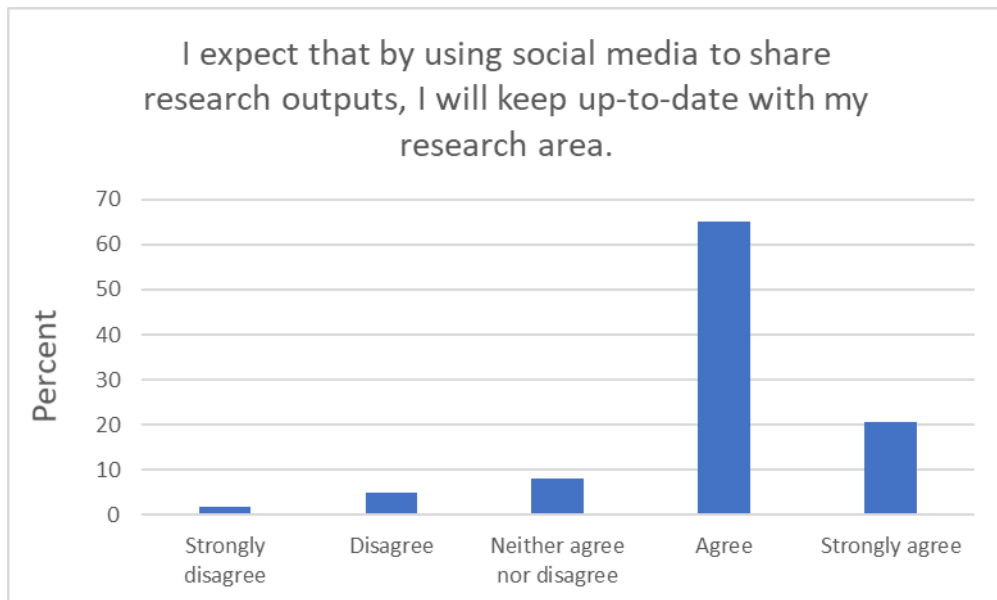
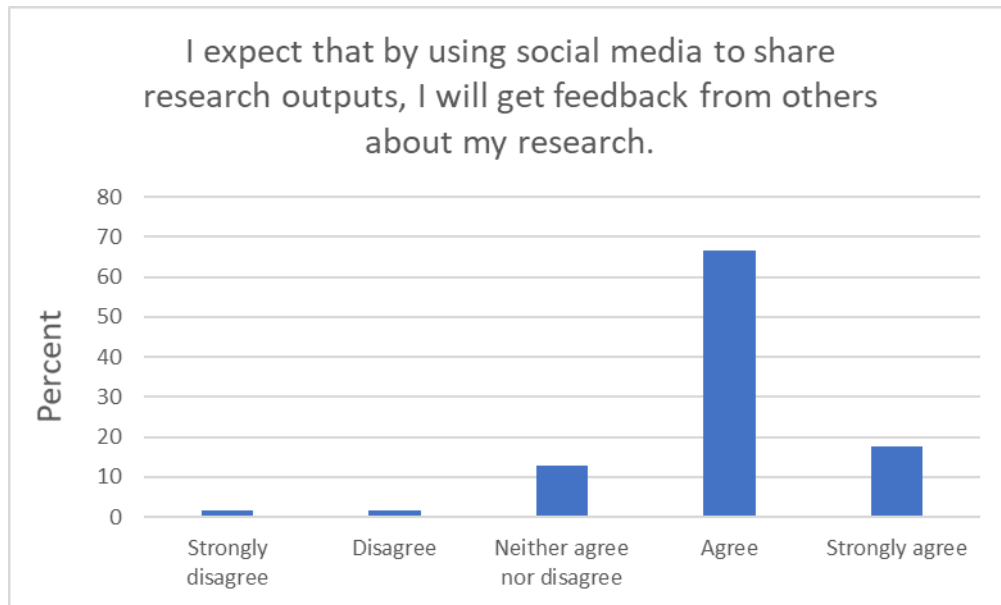


Figure 6-90: Using social media for sharing research outputs to keep up-to-date

Another benefit is to get feedback from others about their research ( $M = 3.97$ ;  $SD = .718$ ). A total of 84.2% either agree or strongly agree that they can use social media to get feedback from others to improve their research. Only 3.2% of the participants either disagree or strongly disagree, whilst 12.7% neither agree nor disagree, as demonstrated in Figure 6-91.



*Figure 6-91: Using social media for sharing research outputs to get feedback*

The following benefit is to find some new sources such as access to journals, materials, and papers ( $M = 3.78$ ;  $SD = .958$ ). Out of 63 participants, 76.2% agree or strongly agree that the use of social media can help them to find some sources for their research. Only 12.7% either disagree or strongly disagree with this point, while 11.1% neither agree nor disagree, as shown in Figure 6-92.

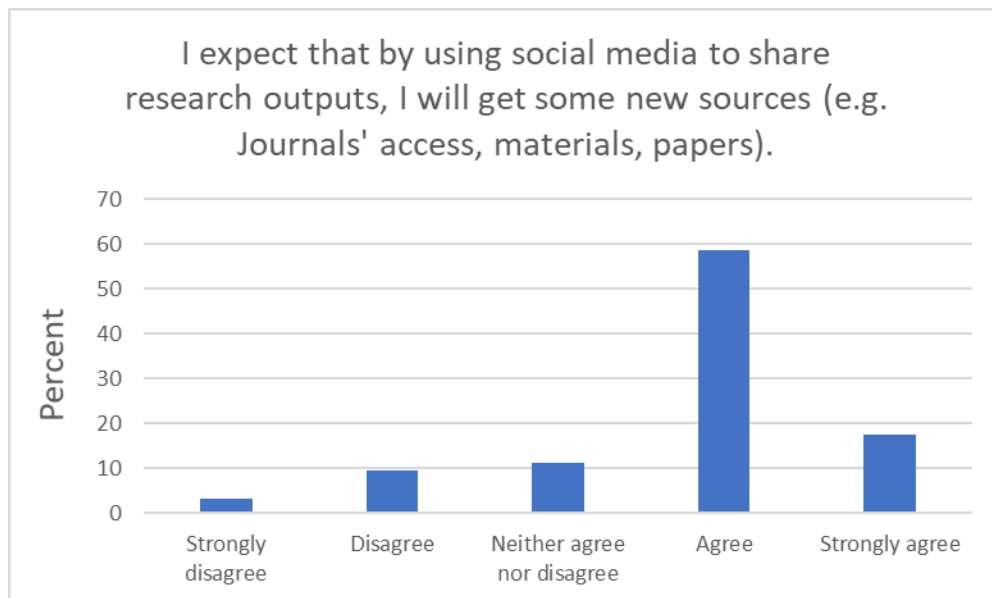
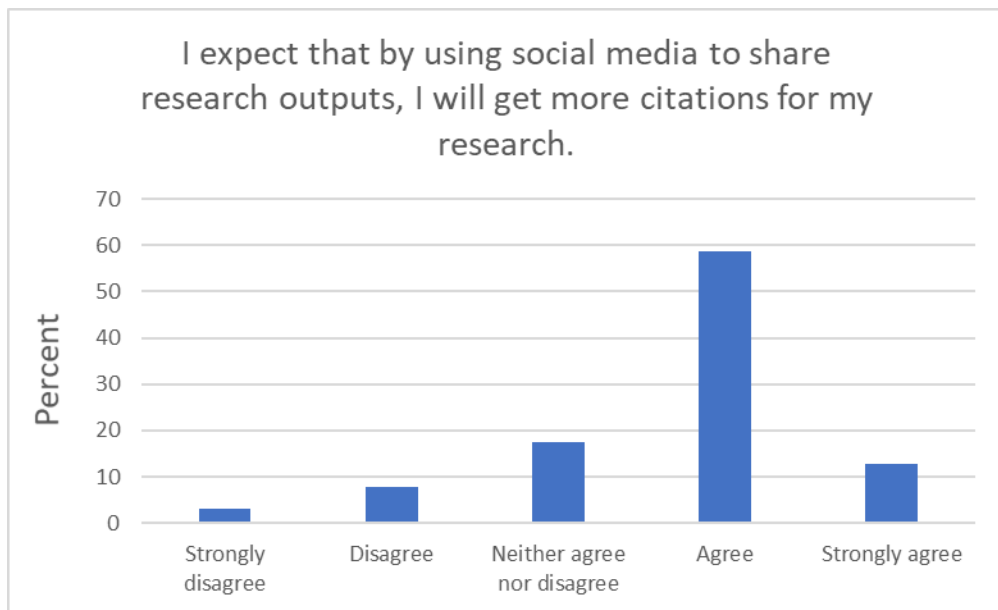


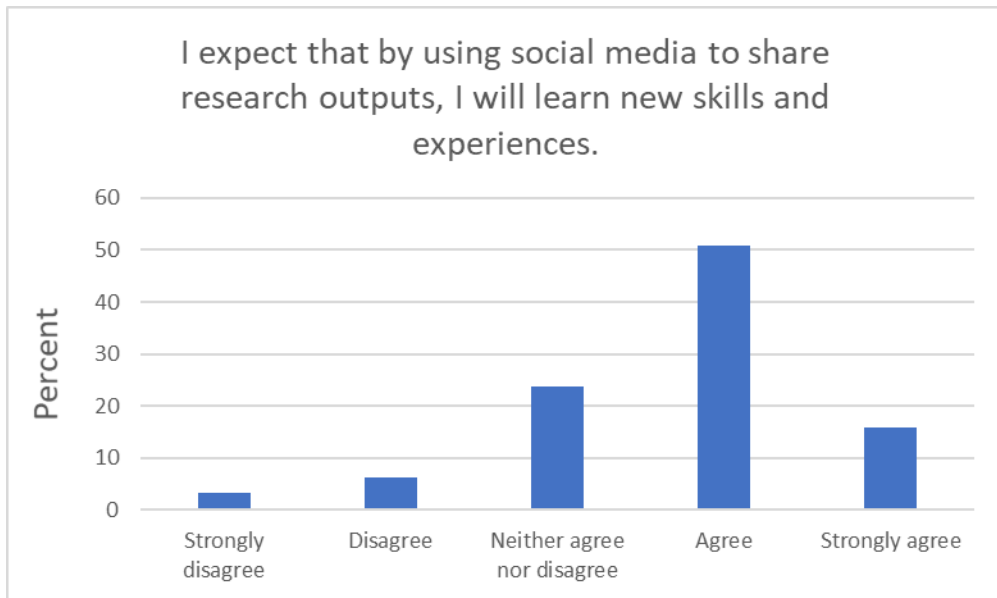
Figure 6-92: Using social media for sharing research outputs to get new sources

Another benefit is to get more citations for their research ( $M = 3.70$ ;  $SD = .909$ ). Indeed, many of the participants (71.4%) either agree or strongly agree that the use of social media can help them to get more citations for their research outputs. Some (17.5%) neither agree nor disagree, while 11.1% either disagree or strongly disagree with this point. This can be seen in Figure 6-93.

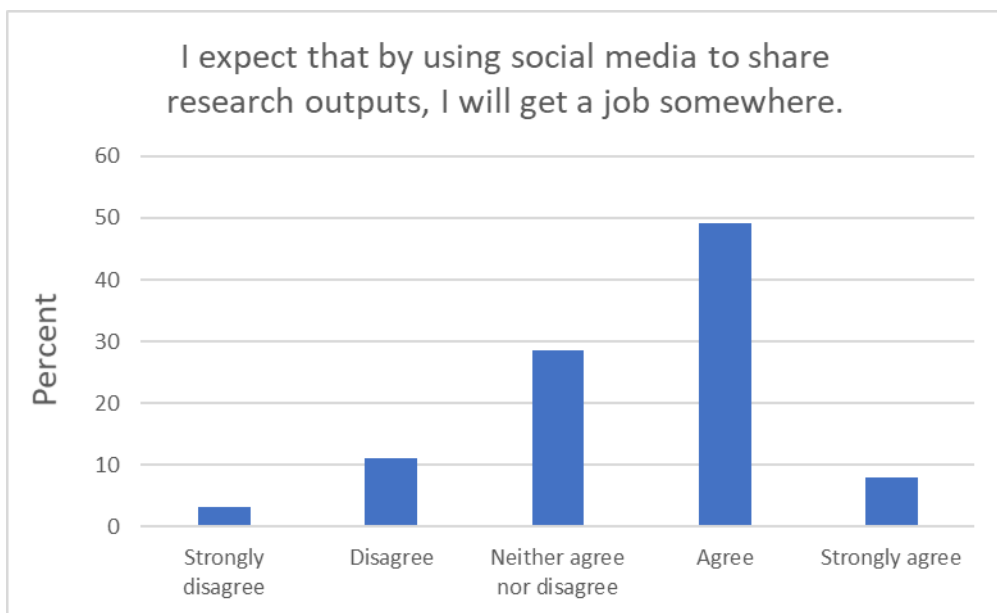


*Figure 6-93: Using social media for sharing research outputs to get more citations for these outputs*

One of the benefits that is expected is acquiring new skills and experience related to their research ( $M = 3.70$ ;  $SD = .927$ ). Many (66.7%) agree or strongly agree that they can benefit from the use of social media to earn new experience and skills to improve their research. Some of the participants (23.8%) neither agree nor disagree, while only 9.5% either disagree or strongly disagree. This is seen in Figure 6-94.



*Figure 6-94: Using social media for sharing research outputs to learn new research skills*  
 Another benefit is to get a job somewhere ( $M = 3.48$ ;  $SD = .913$ ), where out of 63 participants, 57.1% agree or strongly agree that they can get a job from using social media to share their research outputs, while 28.6% neither agree nor disagree. Only 14.3% either disagree or strongly disagree with this point. See Figure 6-95.



*Figure 6-95: Using social media for sharing research outputs to get job*

The last benefit is to get help from others to improve their research skills ( $M = 3.44$ ;  $SD = 1.104$ ). More than a half (58.7%) either agree or strongly agree that they can get help to improve their skills in research, learning, and problem solving by using social media. Some of the participants (23.8%) either disagree or strongly disagree with it, while 17.5% neither agree nor disagree with this point. See Figure 6-96.

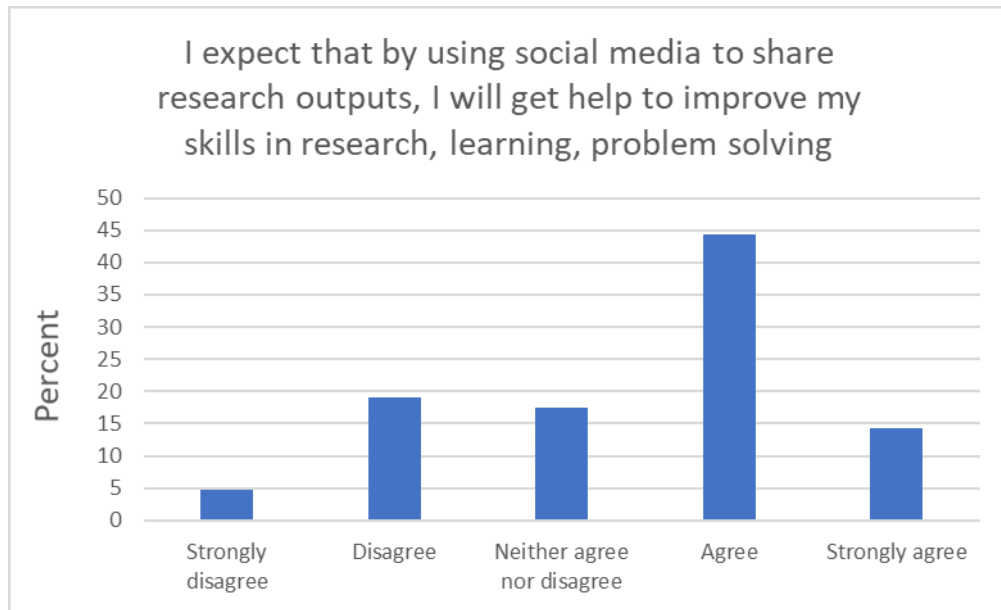
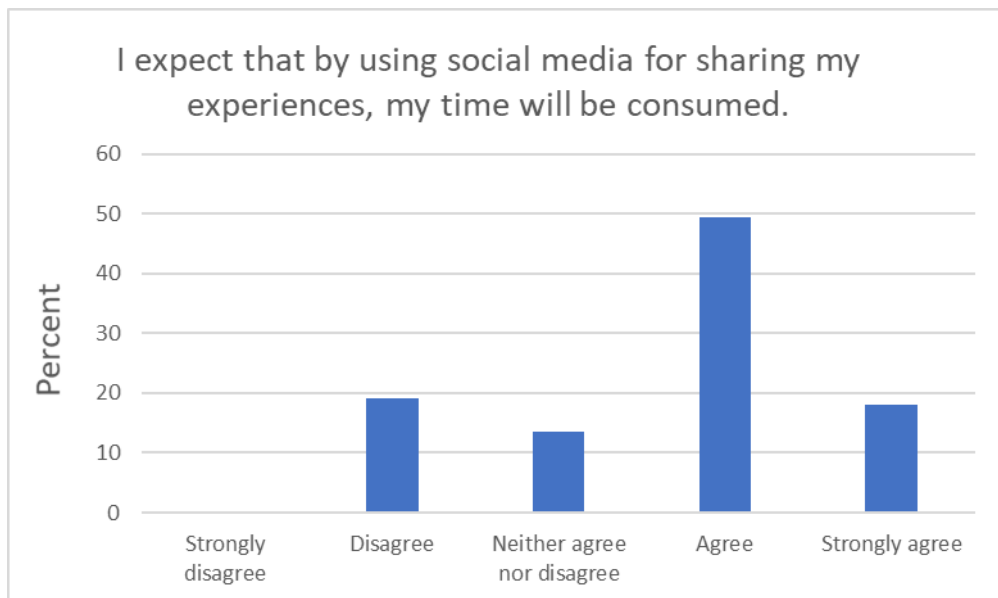


Figure 6-96: Using social media for sharing research outputs to get help

### 6.10.2.2 Negative Personal Outcomes

#### ○ Sharing Cognitive Experiences

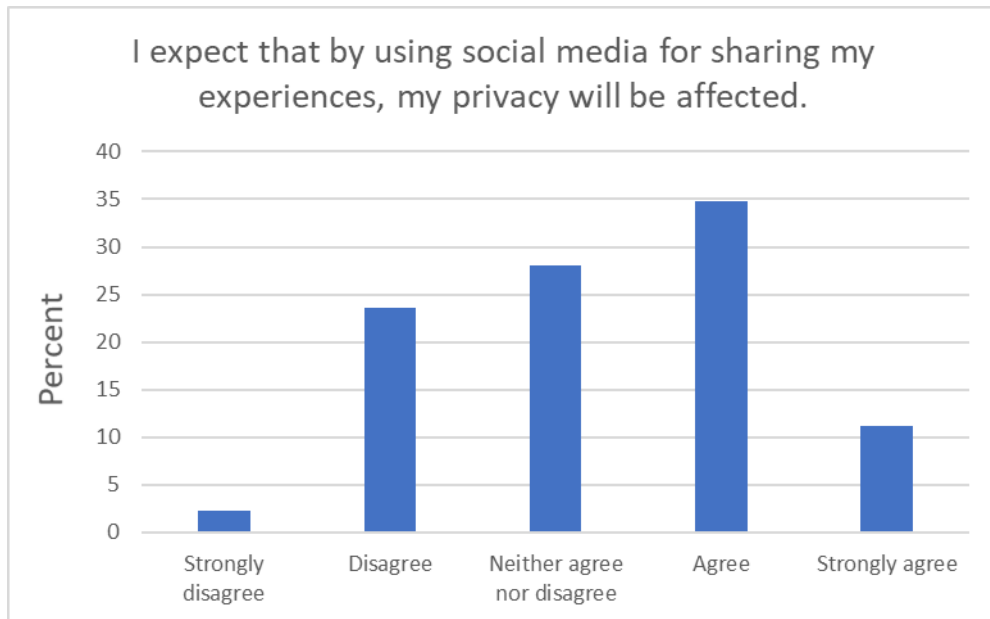
On this side, the results of analysis showed that the use of social media for sharing cognitive experience significantly consumes the respondents' time ( $M = 3.66$ ;  $SD = .988$ ), where out of 89 participants, 67.4% agree or strongly agree that the use of social media for sharing experiences can consume their time, while some of the participants (19.1%) disagree with this point. Only 13.5% neither agree nor disagree. This can be seen in Figure 6-97.



*Figure 6-97: Using social media for sharing cognitive experiences will consume time*

The second negative outcome is concerning about privacy issue ( $M = 3.29$ ;  $SD = 1.025$ ). Indeed, just under half (46%) either agree or strongly agree that they are concern about their privacy from the use of social media for sharing experiences. However, 25.8% of the participants either disagree or strongly disagree, while 28.1% neither agree nor disagree with this issue, as shown in Figure 6-98.





*Figure 6-98: Using social media for sharing cognitive experiences will affect privacy*

The last concern about using social media for sharing cognitive experiences is distraction from an important work ( $M = 3.24$ ;  $SD = 1.023$ ). A total of 44.9% either agree or strongly agree that the use of social media for sharing experiences can distract them from their work. However, some (30.3%) disagree or strongly disagree with this issue, whilst 24.7% neither agree nor disagree. See Figure 6-99.

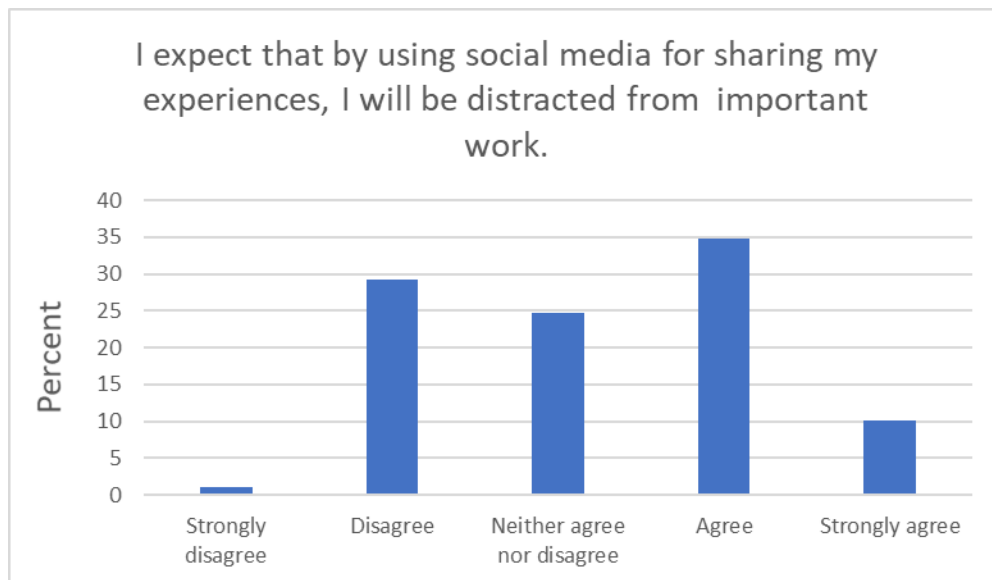


Figure 6-99: Using social media for sharing cognitive experiences will distract

○ **Sharing Research Outputs**

Likewise, the use of this media for sharing research outputs significantly consumes the respondents' time ( $M = 3.44$ ;  $SD = 1.044$ ), where out of 63 participants, 63.5% agree or strongly agree that the use of social media for sharing research outputs can consume their time, while 25.4% either disagree or strongly disagree with this point. Only 11.1% neither agree nor disagree. This can be seen in Figure 6-100.

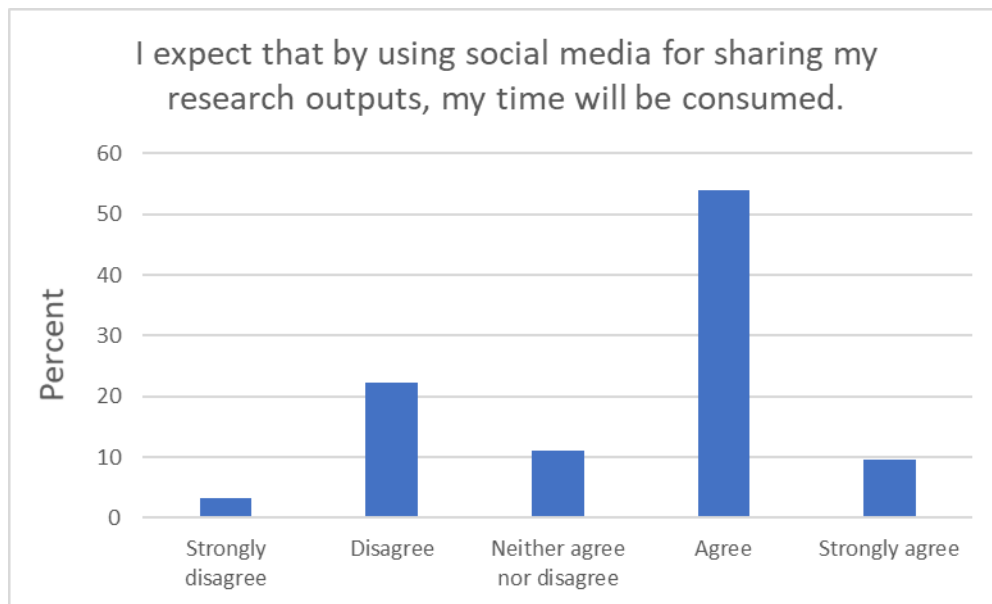


Figure 6-100: Using social media for sharing research outputs will consume time

The following concern is about affecting their privacy ( $M = 3.13$ ;  $SD = 1.100$ ). Out of 63 participants, 44.4% either agree or strongly agree that they are concern about their privacy from using social media to share their research outputs. However, 38.1% of the participants either disagree or strongly disagree with this concern, while 17.5% neither agree nor disagree, as shown in Figure 6-101.

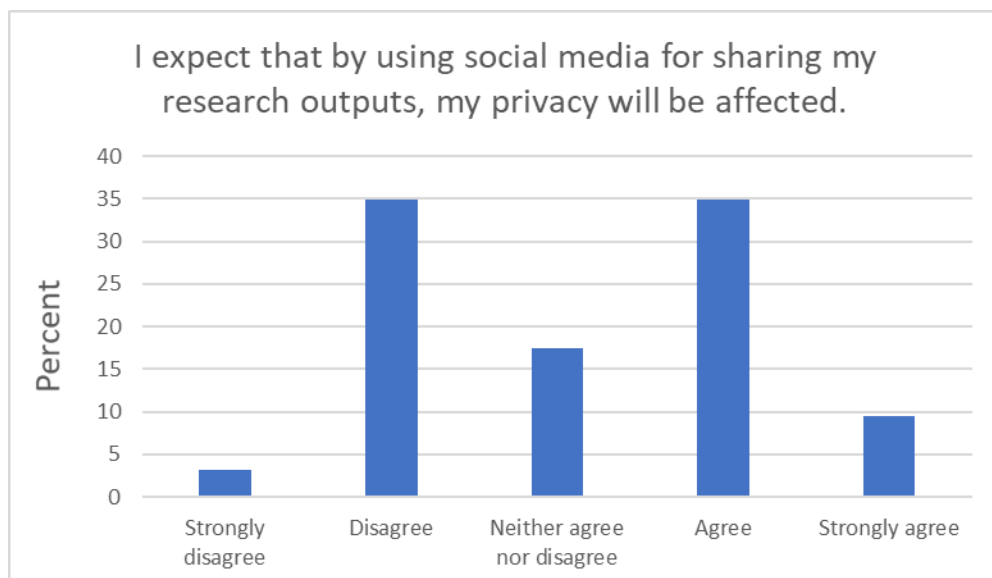


Figure 6-101: Using social media for sharing research outputs will affect privacy

Also, the last concern is about distracting them from their important work ( $M = 3.06$ ;  $SD = 1.045$ ). Indeed, 46.1% either agree or strongly agree that the use of social media for sharing research outputs can distract them from their work. However, 38.1% disagree or strongly disagree with this issue, while 15.9% neither agree nor disagree. See Figure 6-102.

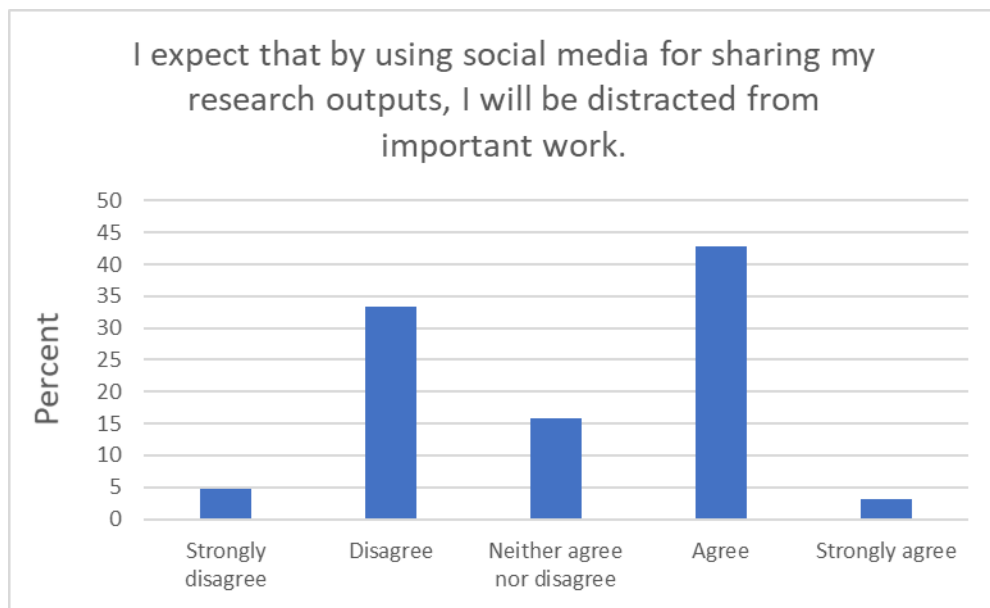
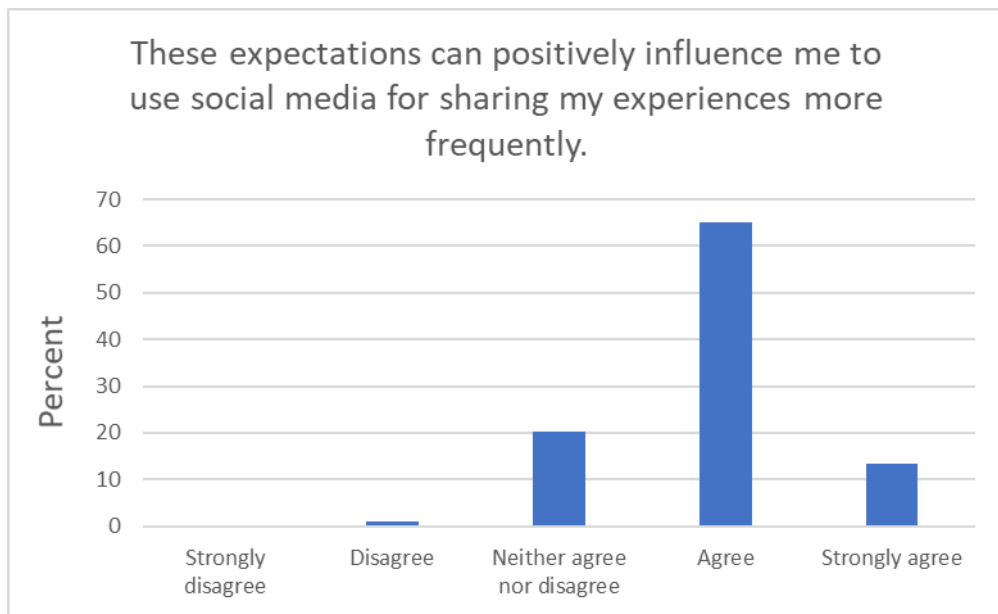


Figure 6-102: Using social media for sharing research outputs will distract

## 6.11 The impact of outcome expectations

### ○ Sharing Cognitive Experiences

In fact, the impact of these outcomes was associated with their two sides, the positive and the negative. The results of analysis indicated that the positive side of social and personal outcome expectations significantly motivates the respondents to use this tool to share their cognitive experience ( $M = 3.91$ ;  $SD = .615$ ). Many (78.7%) either agree or strongly agree that the positive outcomes can motivate them to use social media for sharing their experiences. Only 1.1% disagree with this point, while 20.2% neither agree nor disagree. This is shown in Figure 6-103.



*Figure 6-103: The impact of positive social and personal outcomes on the use of social media for sharing cognitive experiences*

With regard to the negative side, it may prevent them from sharing their cognitive experience via this tool ( $M = 3.26$ ;  $SD = .860$ ). A total of 42.7% agree or strongly agree that the negative outcomes can prevent them from use social media for sharing their experiences. Some (20.2%) either disagree or strongly disagree with this issue, while 37.1% neither agree nor disagree, as shown in Figure 6-104.

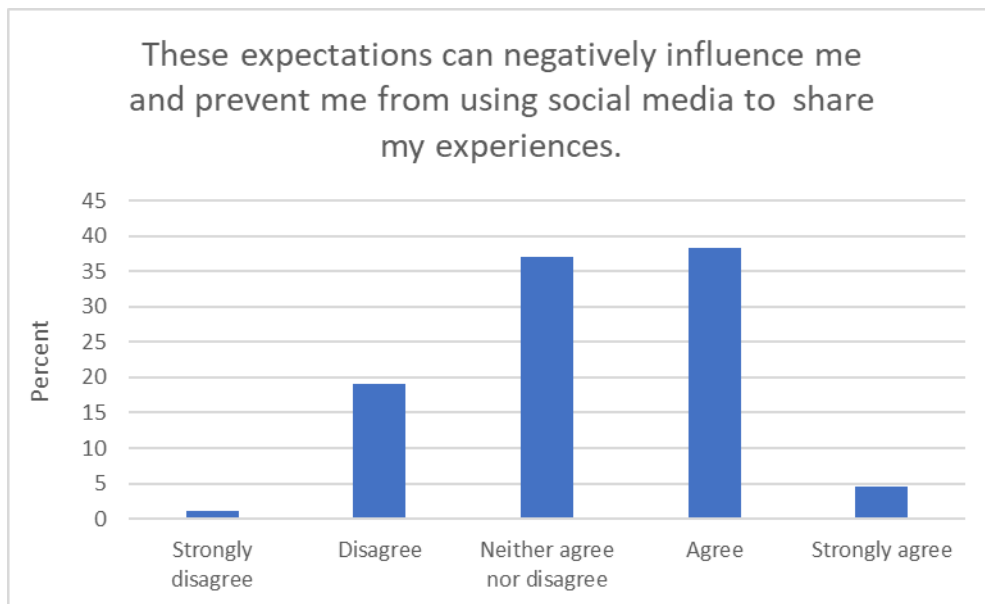
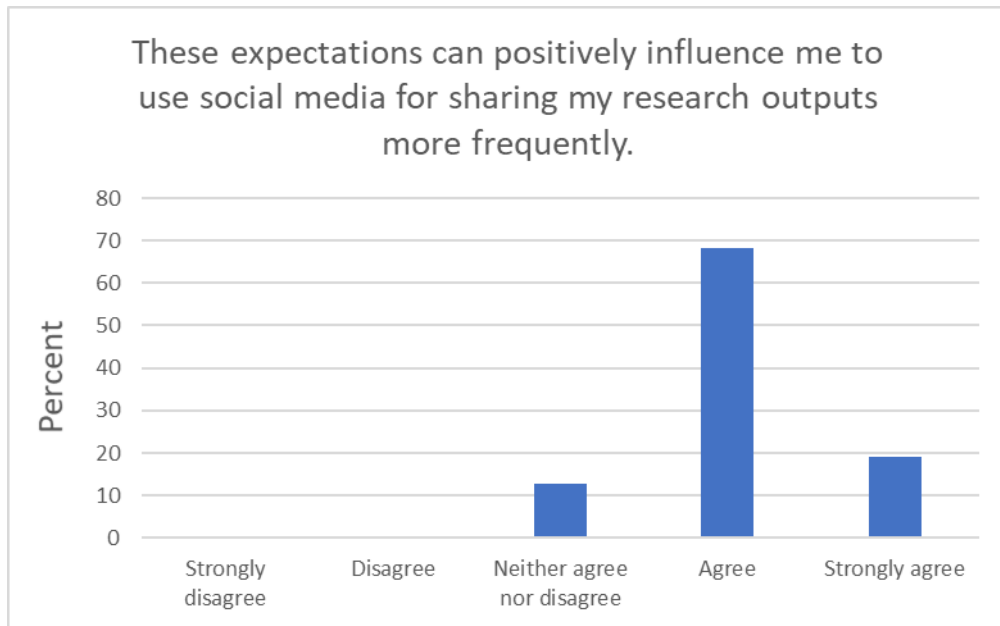


Figure 6-104: The impact of negative social and personal outcomes on the use of social media for sharing cognitive experiences

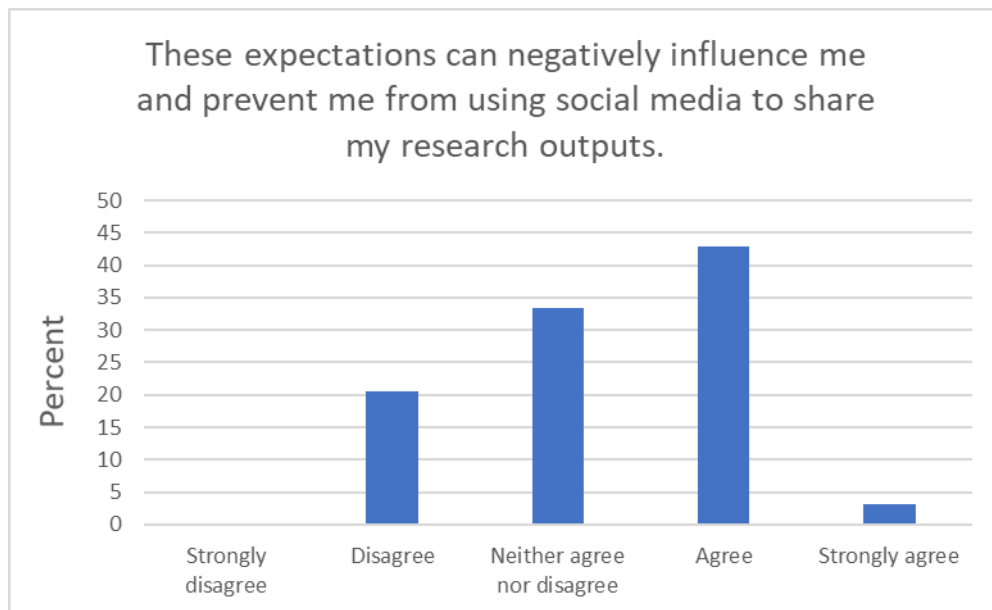
○ **Sharing Research Outputs**

For sharing research outputs, the results of analysis also indicated that the positive side of social and personal outcome expectations significantly motivates the respondents to use this tool to share their research outputs ( $M = 4.06$ ;  $SD = .564$ ). Most of 63 participants (87.3%) either agree or strongly agree that the positive outcomes can motivate them to use social media for sharing their research outputs. Only 12.7% neither agree nor disagree. This is shown in Figure 6-105.



*Figure 6-105: The impact of positive social and personal outcomes on the use of social media for sharing research outputs*

With regard to the negative side, it may prevent them from sharing their research outputs via this tool, but again, not significantly ( $M = 3.29$ ;  $SD = .831$ ). Indeed, 46.1% agree or strongly agree that the negative outcomes can prevent them from use social media for sharing their research outputs. Some (20.6%) disagree with this point, while 33.3% neither agree nor disagree, as shown in Figure 6-106.



*Figure 6-106: The impact of negative social and personal outcomes on the use of social media for sharing research outputs*

## **6.12 Barriers to Sharing Knowledge via Social Media**

According to Table 6-1, 49 respondents do not use social media to share knowledge with others. Several barriers prevented them from using it. Figure 6-107 shows these barriers.



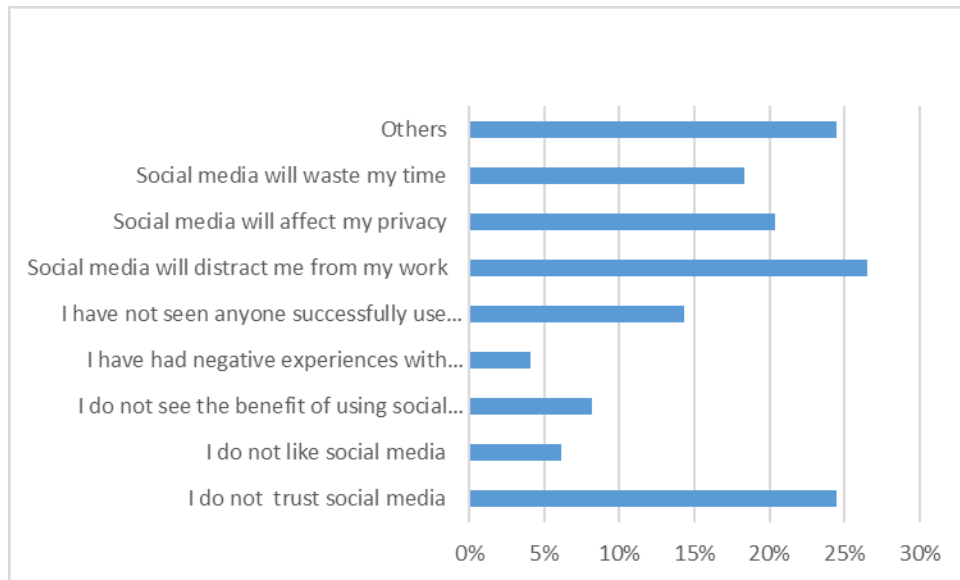


Figure 6-107: Barriers to using Social Media for Knowledge Sharing

According to Figure 6-107, the most common barrier was distraction (27%), followed by lack of trust (24%), privacy concerns (20%), and time consumption (18%). In the following level, the barriers included lack of the role model (14%) and lack of understanding the benefits from its use (8%). The least common barrier included negative emotion about it (6%) and negative experience (4%).

However, the respondents were given space to add any other barriers from their own perspectives. Thus, some (24%) identified other barriers that prevented them from using social media to share knowledge. These barriers are shown in the following quotations.

*“I know it would be beneficial but I haven't got around to it.”*

*“I don't have that much confidence to share my experience.”*

*“There are specialized web sites solely dedicated to sharing your work, i.e. peer-reviewed papers.”*

*“I do not use it so I do not really know what the benefits would be. I am too busy with traditional means of disseminating research findings to try it out.”*

*“I am not proficient with social media.”*

*“I have not learnt how to use it properly e.g. do not have a Twitter account.”*

*“I am uncomfortable using social media – I just fundamentally do not enjoy text-based conversation and find it a distraction rather than an aid. I also do not have any idea how to use it strategically to further my work.”*

*“I see the value in using social media to advertise one's work. But I do not want to turn into an advertiser (that's why I opted to work in academia). I recognize that this is an old-fashioned view.”*

*“I do not see social media as a platform for academic sharing. I use it to keep up with friends and family and not to be showy about my achievements.... or bore them with papers.”*

*“I do not think social media allows for the conveying of nuance, subtlety, depth, etc. etc. that are fundamental to quality knowledge production. I feel it perpetuates a fragmented and impulsive and short-sighted way of going about knowing and exchanging knowledge and ideas.”*

*“I do not have a personal social media platform, which makes using social media for research a bigger time commitment (to establish & learn to use a platform). Sometimes I work with others (charities, Government and individuals) and promote my work for them through social media.”*

*“Current results are really only interesting to a very small subset of people - conferences is seen as sufficient for the moment.”*

### **6.13 Chapter Summary**

This chapter has presented the results of the statistical analysis of the data collected by questionnaire from 144 participants from the University of Strathclyde, Glasgow, United Kingdom. A total of 95 of them use social media for sharing knowledge, while 49 do not.

The results show that the respondents who use social media for sharing cognitive experience and research outputs rely on four sources of self-efficacy: personal mastery experience, vicarious experience, verbal persuasion, and emotional arousal. These sources differ in their levels of impact on the use of this media.

In addition, the results show that there are two types of outcomes that are expected from using this tool to share knowledge. These two outcomes are social and personal, and each type has two sides, positive and negative. The positive side motivates the respondents to use social media for sharing knowledge, while the negative side prevents them from doing so.

Finally, there were a number of barriers that prevented the respondents from using social media for sharing knowledge. These barriers were arranged from the most important to the least important. In addition, some other barriers have been added by the respondents from their own perspectives.

# Chapter 7: Discussion

## 7.1 Introduction

In Chapter 4 and Chapter 5, the main findings of the qualitative phase and the results of quantitative phase, respectively, were presented, the semi-structured interviews having been conducted first, followed by the online questionnaire. These two phases were used to address two main objectives: 1) To investigate the sources of self-efficacy that researchers rely on when using social media for knowledge sharing and to explore how these sources impact on their use. 2) To investigate the outcomes that researchers expect from using social media for knowledge sharing and to explore how these outcomes impact on their use.

Thus, through this sequential exploratory mixed methods design, four research questions were answered. These questions were:

*RQ1: What sources of self-efficacy do researchers rely on in the use of social media for knowledge sharing?*

*RQ2: How do these sources impact on the use of social media for knowledge sharing?*

*RQ3: What outcomes do researchers expect from the use of social media for knowledge sharing?*

*RQ4: How do these outcome expectations impact on the use of social media for knowledge sharing?*

The answers to these questions in both phases indicated that researchers rely on the four sources of self-efficacy introduced by Bandura (1977) in using social media

for sharing knowledge. According to the qualitative and quantitative findings, they rely on personal mastery experiences, vicarious experience, verbal persuasion, and emotional arousal. However, these two phases showed that these sources have different levels of impact on usage.

Social and personal outcomes were indicated as the two main types of outcomes that are expected from using social media to share knowledge with others. Each type has positive and negative sides, and the findings from both phases revealed that positive outcomes could encourage the use of this tool, while negative outcomes could prevent it.

In this chapter, the outputs which were presented in Chapters 4 and 5 are discussed.

## **7.2 Discussion**

### ***7.2.1 Sources of self-efficacy***

Self-efficacy is defined as “a judgment of one’s capability to accomplish a certain level of performance” (Bandura, 1986, p. 391). As previously mentioned, there are four sources within this concept: personal mastery experience, vicarious experience, verbal persuasion, and emotional arousal (Bandura, 1977). Thus, anyone who wants to build his or her self-efficacy in any activity must take account of and pay attention to these four sources. For example, if researchers want to enhance their use of social media for knowledge sharing, they need to improve their self-efficacy in this use. To do so, they have to rely on these sources. In fact, according to the findings of the two phases of this study, participants relied on these sources to influence their use of

these media to share knowledge. They may draw upon one source more than others. Based on these results, it seems possible that finding ways to enhance self-efficacy through these sources could increase use by those who do not use social media often. To provide more understanding of these sources, each source is discussed separately within the following points.

#### ***7.2.1.1 Personal mastery experience***

Personal mastery experience consists of the positive or negative past experiences that influence researchers' ability to use social media for sharing knowledge. It is considered the most important source, which can build self-efficacy for researchers and assist in building its other sources. The importance of this source was confirmed in this study in both the qualitative and quantitative phases. Interview responses highlighted personal mastery experience as the most significant source, and those who have a wide range of mastery were more likely to use social media effectively, confidently, and frequently. The results of descriptive statistics in the second phase of the study also confirmed that researchers rely on their experience and skills in the use of social media to utilize it for sharing knowledge. This finding corroborates the theoretical framework of Bandura (1977, 1986, 1997), in which he suggested that personal mastery experience is the most important and influential source of self-efficacy. It also aligns with other studies such as Zeldin, Britner, and Pajares (2008) and Hendricks (2016), which identified personal mastery experience as the most influential source.

Indeed, personal mastery experience can also influence other sources, because it must be developed before drawing on the others. Experience can be gained through practice, training, and mentoring, which are the main processes in developing

efficacy. This account is in agreement with Bandura (2004b). However, based on the results of the two phases, it is confirmed that practice and frequent use are the most utilized ways of promoting personal mastery experience to support the use of social media for knowledge sharing, while training is less utilized.

In fact, due to the frequent use of this tool by researchers, their capabilities and skills in its use are enhanced, thus building their self-efficacy in its use for knowledge sharing. However, the importance of training for improving researchers' skills and abilities cannot be ignored. It can allow researchers to understand the benefits and risks of using social media, and also to understand its features and opportunities, which can lead them to use it more effectively (Bizzi, 2018).

Therefore, researchers need to attend some workshops and training programs on how to use this tool and gain its benefits, in order to improve their capabilities and skills. They also need to practise this use more frequently in order to increase their mastery experience, which in turn will lead to enhancing their self-efficacy for this use.

#### ***7.2.1.2 Vicarious experience***

Vicarious experience refers to the mimicry of other researchers who use social media for knowledge sharing effectively, by observing their performance and success, and then attempting to replicate their behaviours. It is another significant source which enables researchers to imitate their colleagues in the use of social media. The findings of the two phases in this study confirmed the importance of this source for researchers to rely on in the use of these media to share knowledge. These findings are in line with Bandura (1977, 1986, 1997), Zeldin et al. (2008), Surland (2010), and Hendricks (2016), whose studies established that observing and seeing others

perform a task successfully may increase individuals' confidence in their own ability to perform the same thing. Seeing the successful performance of colleagues in sharing knowledge through social media leads researchers to believe that they themselves possess the capabilities to use them successfully as well. Thus, those colleagues become role models, enabling them to build their own self-efficacy for using this tool.

As stated above, however, researchers may not benefit from vicarious experience in the use of social media for knowledge sharing, unless they have sufficient skills and abilities to use this tool. Also, the chosen role models should be those who use social media actively and effectively for sharing knowledge.

With regard to institutions, those who use these media effectively and have extensive experience in this use should be asked to provide some workshops and training for others. These programs can show researchers how to use these media professionally and obtain the potential benefits from such use. Thus, these trainees will attempt to follow their instructors in this use and choose them as role models. This will help those trainees to build their self-efficacy in the use of these social platforms for sharing knowledge with others.

### ***7.2.1.3 Verbal persuasion***

Verbal persuasion refers to encouragement and discouragement from colleagues or institutions that influence the researchers' decisions as to whether to use social media for knowledge sharing. It was another source of self-efficacy. The findings of this study are consistent with those of Bandura (1977, 1986, 1997), Garlin and McGuiggan (2002), Zeldin et al. (2008), Surland (2010), and Hendricks (2016), which argued that encouragement from others may motivate individuals to perform



effectively. Thus, researchers can be convinced by their colleagues to use social media to spread their cognitive experience and research outputs and achieve greater impact. Those researchers who use these media successfully for sharing knowledge and get the benefits from this use may tell other researchers about their success and beneficial use. This may encourage other researchers to use social media as well.

Researchers can also be motivated by following role models in using this tool. As mentioned previously, seeing others' use of social media can provide significant motivation and this may indirectly encourage them to use these media.

Another source of encouragement is institutions, which can convince their researchers to utilize social media to increase their visibility and attract others by presenting their works by this method. It is known that any institution desires to be recognized by others. This can be done by showing others its knowledge productions and achievements, which in turn will increase its reputation and impact. Nowadays, the most effective way to present these productions is by using social media. Therefore, institutions are keen to encourage their researchers and staff to use them. This encouragement may take several forms, such as organizing workshops and training or giving tangible or intangible rewards. This can eventually help to improve the researchers' self-efficacy in such use.

However, like vicarious experience, verbal persuasion should follow personal mastery. Therefore, for this source to be more effective, researchers need to have mastery experience; this aligns with Warner et al. (2014) and Wise and Trunnell (2001).

#### ***7.2.1.4 Emotional arousal***

Emotional arousal consists of psychological reactions based on researchers' positive and negative experiences of this use. Positive emotion can motivate researchers to use social media for sharing knowledge, whereas negative feelings can prevent this use. The findings of this study from its two phases indicated that positive experiences and feelings (e.g. enjoyment) might encourage researchers to use this social tool to share knowledge with others more frequently. This can lead to improvement in their self-efficacy for using it. On the other hand, negative experiences and feelings (e.g. anxiety) might prevent them from using it for knowledge sharing temporarily, if not completely. The effect is to weaken researchers' self-efficacy in using these media. This finding is in agreement with Bandura (1977, 1986, 1997), Wise and Trunnell (2001), Garlin and McGuiggan (2002), and Hendricks (2016).

Indeed, positive or negative emotional arousal can leave individuals with a high or low perception, respectively, of the ability to persist in a task. This source can also influence other sources of self-efficacy. In fact, the positive side of this source not only builds self-efficacy but can also enhance it. In contrast will be the effect of the negative side. This argument is consistent with Hendricks (2016).

Researchers should try to keep in mind that others' negative reactions on social media are part and parcel of online discussion, and should not let this discourage them from further online interaction. Negative reactions should rather be viewed as learning experiences.

To conclude these points, this study has contributed to the existing body of knowledge by investigating researchers' sources of self-efficacy in the use of social media for knowledge sharing. Use of a sequential exploratory mixed methods

approach strengthens the outcome by comparison with use of only one method. In other words, the results of the qualitative phase showed that researchers rely on these four sources. This method alone could be considered a contribution as no previous study has investigated this issue. However, it may not be enough to rely on only one method to draw a conclusion about these sources. Therefore, the quantitative phase was needed for more investigation and understanding of these sources.

### ***7.2.2 The Impact of the sources of self-efficacy***

This study has extended the theoretical framework of Bandura (1977) by exploring the levels of importance of the self-efficacy sources (Figure 7-1). As shown in the previous section, the sources of self-efficacy influence researchers' use of social media to share knowledge. This impact makes these sources very important for researchers and institutions, and they need to pay attention to them. To do so, it is best to consider the levels of importance of these sources. According to the findings of this study, personal mastery experience is the most important source. The stronger the personal mastery, the more participants can draw on the other three sources. In contrast, researchers who lack personal mastery experience may not be able to improve their abilities through other sources. This was confirmed by the participants' responses from the first phase and statistically from the second phase, and is consistent with Bandura (1977) and Loo and Choy (2013).

With regard to vicarious experience and emotional arousal sources, they exchanged the roles in this study. In the qualitative approach, emotional arousal was the second most important source. Positive emotional arousal can encourage researchers who already have personal mastery experience to continue improving

their ability to use social media. Researchers should try to learn from these emotions to develop their self-efficacy, assuming they have personal mastery experience. Negative emotions may prevent researchers from using social media. This differs from other studies, which found that emotional arousal is the least influential source (e.g. Redmond, 2016). In quantitative approach, vicarious experience was the second important sources after personal mastery experiences, while emotional arousal was in the third level. In fact, these two sources are important for individuals to build and improve their self-efficacy for using social media, but they are still in need for personal mastery experiences source.

Verbal persuasion is somewhat less influential sources than the other sources, but is still important. Researchers may not benefit from it unless they have personal mastery experience, have seen a role model, and can effectively handle positive and negative emotional reactions.

The high level of importance given to these sources may be due to their close association with researchers themselves, who have the opportunity to develop their skills, follow a role model, and control their feelings. In other words, they can practise the use of this tool or attend workshops and training in its use. They can see what successful users do and try to mimic them. They can also utilize their positive emotions as motivational factors to incentivize them towards this use, while negative emotions can be used to get more experience for future use.

With regard to verbal persuasion, it is related directly or indirectly to other influences, such as colleagues and institutions. This could be the reason for the low level of importance of this source compared with other sources. Thus, researchers need for colleagues and institutions to encourage them to use this tool to share their

knowledge. This can lead to enhancement of their use and at the end will improve their self-efficacy.

To sum up this point, researchers need to improve their skills and abilities for using social media to share knowledge. This can be achieved by attending some workshops and training programs and trying to practise this use more frequently to build their self-efficacy. They also need to control their emotions in order to be able to make more use of these media, which can lead to further improvement of their self-efficacy. Colleagues who use social media for sharing knowledge, and institutions as well, should support researchers in this use through verbal persuasion and provision of role models. Finally, it can be argued that building and developing these sources will play an effective role in motivating researchers to use social media for knowledge sharing, and to use them even more frequently.

To conclude, this is most likely the first study to investigate these sources and their impact on researchers' use of these media to share knowledge. Therefore, this study has made a new contribution to the existing literature on social media and knowledge sharing.

*Table 7-1: The level of impact of the sources of self-efficacy in the two phases*

<b>Sources \ Phases</b>	<b>Qualitative</b>				<b>Quantitative</b>			
	①	②	③	④	①	②	③	④
<b>Personal mastery experiences</b>	√				√			
<b>Vicarious experience</b>			√			√		
<b>Verbal persuasion</b>				√				√
<b>Emotional arousal</b>		√					√	

### ***7.2.3 Types of Outcomes Expectations***

This section discusses the outcomes that researchers expect from the use of social media for knowledge sharing, and how these outcomes can affect this use. Based on the findings of this study, the categories and types of outcome expectations exemplify why researchers use or do not use social media to share knowledge. Accordingly, these findings identified two types of outcome expectations: social and personal, which partly aligns with (Bandura, 2004a; Shoffner et al., 2005), whereas there was no evidence from the participants' responses that was related to physical outcome expectations. These two types are discussed below.

#### ***7.2.3.1 Social Outcome Expectations***

Social outcome expectations are the social consequences of using social media for knowledge sharing with communities. Based on the findings, this study identified two forms of social outcomes: positive and negative. On the positive side, four important positive social outcomes were found: attracting people, networking, social impact, and visibility. These outcomes have also been found by other studies as significant factors that motivate researchers to use these social platforms to share their experience and research outputs (e.g. Al-Tae, 2014; Gaál et al., 2015; J. L. Gibbs et al., 2013; Jarrahi, 2013; Kimmerle, Moskaliuk, Oeberst, & Cress, 2015; Okazaki, Andreu, & Campo, 2017; Oostervink et al., 2016; van Winkelen & McKenzie, 2011; Yu et al., 2010).

The current study in both phases confirmed that researchers attract people by using social media for several purposes. These purposes include presenting their

work, finding their audience, exchanging ideas, and recruiting participants for their studies. This aligns with the findings of previous studies (e.g. Donelan, 2016; Elsayed, 2016; Greifeneder et al., 2018).

Greifeneder et al. (2018) reported that researchers use social media to attract and check new staff members. Caers and Castelyns (2011) and Nández and Borrego (2013) argued that researchers use it for recruitment.

The findings of the present study are also consistent with other studies that support networking as another important outcome of the use of social media for sharing knowledge. Researchers are interested in building relationships with other researchers or colleagues through any social media platform; this is for a number of reasons. They use it to collaborate, engage, and extend their research community. This is in agreement with the findings of Greifeneder et al. (2018), who argued that researchers maintain profiles on social media to create new networks and find new collaborations. It is also consistent with Oh and Syn (2015), who reported that engagement is one of the main factors that motivate people to use social media.

The current study confirmed that researchers use social media to share their experience and their work in order to see the social impact of these experiences and this work. This impact might be achieved by delivering experience and research outputs to those who benefit from them through these social platforms. This aligns with previous studies such as Carrigan (2016), Veletsianos (2016), and Kietzmann, Hermkens, McCarthy, and Silvestre (2011). For instance, Kietzmann et al. (2011) stated, “Yet others see social media as a way of making their message heard and positively impacting humanitarian causes, environmental problems, economic issues, or political debates” (p. 244).

Another positive social outcome was visibility. The findings of the present study also confirmed that researchers desire to increase their visibility in their communities by using this tool. This is consistent with Oostervink et al. (2016), J. L. Gibbs et al. (2013), Leonardi, Huysman, and Steinfield (2013), and Treem and Leonardi (2012), which argued that social media afford users the ability to make their knowledge, experience, and work visible to others.

Indeed, social media enable researchers to add information, experiences, achievements, work, and any other details. This is a basic feature of this tool, which leads researchers to be seen and recognized by others and vice versa (Treem & Leonardi, 2012). Thus, researchers can see what other researchers do and learn from them, or increase their reputation among those researchers (Leonardi et al., 2013). Greifeneder et al. (2018) stated that researchers desire to display their skills in an effective way rather than using traditional means such as a CV or a list of publications.

As shown in previous paragraphs of this section, four main positive outcomes are represented among social outcome expectations. Researchers use social media for sharing cognitive experience and research outputs in order to obtain these social outcomes.

However, this type of outcome, as stated before, has a negative side. According to the findings of this study, only one outcome represented negative social outcomes, namely the lack of trust. Indeed, researchers are anxious about their ideas and work that has not yet been published, lest these be used somewhere else without citation or permission. As is known, social media provide a channel for the public who desire to communicate, participate, and interact. Thus, it could be difficult to counteract some



negative behaviours such as plagiarism. This leads to lack of trust on the part of researchers as regards using this tool for knowledge sharing. This argument is in alignment with a number of studies (e.g. Bilgihan et al., 2016; Kwahk & Park, 2016; Papadopoulos et al., 2013; Yu et al., 2010).

Some studies have confirmed that the weakness of social media use was due to lack of trust (e.g. Abrizah et al., 2014; Coppock & Davis, 2013; Greifeneder et al., 2018). Thus, it can be argued that this negative outcome has a significant effect on researchers' use of social media to share knowledge.

### ***7.2.3.2 Personal Outcome Expectations***

Personal outcome expectations are the personal consequences to researchers of the use of social media for knowledge sharing. With regard to this type, the findings of this study in both the qualitative and quantitative phases found that researchers use social media to get a number of benefits that can improve their experience, ideas, careers, and even lives. The important positive personal outcomes that researchers expect from using this tool are getting help, getting feedback, publicity and citation, keeping up-to-date, and getting a job. This is in agreement with other studies (e.g. Jarrahi, 2013; Majchrzak, Faraj, Kane, & Azad, 2013; Oostervink et al., 2016; Panahi, 2014; Panahi et al., 2012a, 2012b; Pi et al., 2013; Yu et al., 2010), whose arguments confirmed that these benefits can enhance the use of social media to share knowledge.

Social media can help researchers obtain what they need. For example, in some cases, researchers are in strong need of finding an expert on a specific issue. One of the best ways to locate this expert is to use social media (Panahi, 2014). This tool can

be a way of getting help with solving problems (Pi et al., 2013), helping others to solve their problems (Yu, Lu, & Liu, 2010), helping others to achieve their objectives (Pi et al., 2013), or finding any other form of help (Oh & Syn, 2015).

Any work needs to be evaluated and given some feedback to improve it. Social media have become the most effective means of communicating with those who have experience and obtaining their feedback. Therefore, researchers utilize these media to do so in order to develop their work (Gibbs et al., 2013; Leonardi et al., 2013; Pi et al., 2013; Van Noorden, 2014).

Researchers attempt to find the best way to publish their work, experience, ideas, and thoughts and share them with others. According to the findings of this study and previous studies, social media constitute the best tool for distributing these outputs and letting others find and cite them in their own work (Al-Tae, 2014; Gaál et al., 2015; Panahi, 2014). This can enable researchers to increase their credit by letting others see, read, cite, and interact with their research outputs and experience. This is also what their institutions aim to achieve.

According to the results of the two phases of this study and of previous studies such as Aifan (2015), Al-Tae (2014), Panahi (2014), Panahi, Watson, and Partridge (2016b), and Yuan, Zhao, Liao, and Chi (2013), researchers use social media to keep them up-to-date with their research fields. Thus, this is another important benefit that is expected from using this tool for sharing knowledge. For example, Panahi et al. (2016b) argued that keeping up-to-date is an important challenge facing physicians in their profession. This challenge can be met by using social media.

As discussed earlier in regard to these media and their role in promoting researchers' visibility in their communities, this tool may in one way or another lead

them, particularly new researchers, to get a job somewhere. This was found by the current study and is in agreement with a number of other studies (e.g. Caers & Castelyns, 2011; Greifeneder et al., 2018; Nández & Borrego, 2013), which confirmed that this tool is one of the best methods of job seeking.

Indeed, there are some social platforms used by researchers specifically to present their research outputs, such as ResearchGate and LinkedIn. In these platforms, the researchers mention their research and professional interests. From time to time, they receive job offers that fit those interests. Therefore, this tool is one of the best ways to get the desired job.

The negative side of personal outcome expectations from researchers' use of social media that was found in the current study can be summarized as containing three important disadvantages. The first one was distraction. In fact, this is one of the key disadvantages of the use of social media, inasmuch as this tool takes researchers away from their duties and work. This point is consistent with Aifan (2015), Coppock and Davis (2013), Gibbs et al. (2013) and Greifeneder et al. (2018). Researchers leave their tasks and duties to deal with this tool and this in turn may affect their achievement and performance in other areas. This negative outcome was expected from the use of this tool.

The second disadvantage was impairment of privacy. Privacy is the main concern behind the weakness or non-use of any social technology. The results of the current study and previous studies such as Jarrahi (2013); Madhusudhan (2012); Panahi (2014) confirmed this point. When researchers use social media professionally and personally, they think that it may threaten their privacy to some extent, as their

personal matters (e.g. family issues) may become known to their colleagues and vice versa. Thus, this is another negative outcome expected from the use of this tool.

Researchers may use social media for several hours a day and this can lead to wastage of time. Thus, time consumption is another negative side of such use. This point was confirmed by the results of the two phases of the current study. These findings agreed with the results of previous studies such as Coppock and Davis (2013); Greifeneder et al. (2018); Jamali, Nicholas, and Herman (2015), when they argued that social media can be the foremost way of wasting time. This is the third negative outcome that was expected from the use of this tool.

To conclude these points about outcome expectations, this study has contributed to the existing body of knowledge by investigating researchers' outcome expectations of the use of social media for knowledge sharing. Using the sequential exploratory mixed methods approach, rather than a single method, has strengthened the findings. In other words, the results of the qualitative phase showed that researchers expect two types of outcomes from their use of social media to share knowledge. Indeed, this method alone could be considered a contribution, as no previous study has investigated these types. However, it may not be enough to rely on only one approach to draw conclusions about these outcomes. Therefore, the quantitative phase was needed for more investigation and understanding of this issue.

#### ***7.2.4 The Impact of Outcome Expectations***

According to the results from both the qualitative and quantitative phases in the current study, the positive side of social and personal outcome expectations, which represents the benefits of using social media for sharing knowledge, motivates

researchers to use these media. The participants stated that they might use it more if they gain benefits. They noted this when asked in the qualitative phase how positive outcomes might influence their use. They confirmed that they are willing to use it more and in effective ways. Some examples of their responses to this question exemplify and support this.

*I probably would start using the platform more, or find myself checking out more, and maybe even start posting more frequently. (27)*

*I think this will increase my using for social media as well. This will increase as well not only using, but to follow people on the last things, on last studies that they are doing and the major finding. (28)*

*If I see these outcomes, if I'm experiencing these benefits, then I'm bound to use social media more in my future for my future projects. (29)*

Moreover, the quantitative phase also confirmed this point, with 79% of 95 participants who use social media for knowledge sharing agreeing with it. Thus, it can be said that these benefits not only lead to increased use, but can also make this use more effective. This aligns with previous studies (e.g. Panahi, Watson, & Partridge, 2013; Yu, Lu, & Liu, 2010).

It is clear that social and personal benefits play an important role in motivating researchers to use these social platforms to share, collaborate and interact with others in sharing knowledge. It is well known that these benefits are considered key features of these platforms, which distinguish them from other traditional methods. This would be one of the most important reasons for using social media for knowledge sharing, and using them continuously.

On the other side, the negative social and personal outcomes, which represent the disadvantages of using this tool, may prevent researchers from using social media. In fact, this side has a moderate impact on the use of social media for knowledge sharing. This might be seen from participants' responses in the qualitative phase. The following examples of responses confirm this.

*Privacy concerns about social media in general hold me back from using it more than I would. (10)*

*If I had negative experience, it would push me off from the platform. (12)*

*If I had more negative experiences, it might put me off from using it. (27)*

The quantitative phase also confirmed this moderate impact of the negative side of social and personal outcomes, with 45% of 95 participants who use the media for knowledge sharing agreeing on the impact of these negative outcomes. Therefore, it can be argued that these negative outcomes might prevent researchers from gaining potential benefits. Other studies have supported this opinion (e.g. Alwagait, Shahzad, & Alim, 2015; Ma & Chan, 2014).

To sum up the discussion of these types of outcomes, it is important for researchers to understand and know about them. Thus, they can improve their use of social media for knowledge sharing so as to gain more benefits. They can also develop some procedures with which to control these disadvantages and not let these negative outcomes drive them away from the potential important benefits of these platforms. This practice could motivate them to use social media effectively and more frequently.

To conclude, it is likely that this is the first study to investigate these types of outcomes and their impact on researchers' use of these media to share knowledge. Therefore, this study has made a new contribution to the existing literature on social media and knowledge sharing.

#### **7.2.5 Barriers**

An important topic emerged from the results of the quantitative phase, namely, the barriers that totally prevent researchers from using this tool to share knowledge. While one of the characteristics of researchers who could participate in the study was that "they should use social media for knowledge sharing", the researcher added a question at the beginning of the questionnaire to ascertain the extent to which the participant uses, or does not use, these media for sharing knowledge. The researcher also added another question to find the reasons for non-use, where that is the case. All these details were explained in Chapter 3, section 3.4.

It was found that 49 participants do not use this media because of several barriers. In fact, most of these barriers have been discussed in exploring the negative outcomes that researchers expect from the use of this tool to share knowledge (e.g. lack of trust, distraction, privacy, and time consumption). Although the effects of these outcomes were relatively moderate as previously shown, this group of participants showed that these barriers were important factors in preventing the use of this social tool for knowledge sharing.

Moreover, these participants also showed that, to a certain extent, they lack self-efficacy in using social media for knowledge sharing. According to the results of the

quantitative phase of this study, lack of self-efficacy of these participants has arisen for a number of reasons, which can be included in the following points:

1. They are not confident in using it for sharing knowledge.
2. They have not seen anyone else use it successfully in this way.
3. They have negative emotions surrounding its use.
4. They may not receive any encouragement to use it.

However, this issue needs more investigation and research. Therefore, it can be one of the new directions for future research.

### **7.3 Chapter Summary**

The chapter discussed the findings of the qualitative and quantitative phases, which addressed the objectives and the main research questions of this study. Each theme of the study was discussed separately with reference to the literature. The discussion covered each theme, its relationship with the literature, and its new meaning in the new context of social media. It was shown that the study differs from the literature by focusing on researchers' sources of self-efficacy and outcome expectations in using social media for knowledge sharing, subjects which have been addressed in the literature poorly or not at all.

The study findings illustrated the four sources of self-efficacy and their impact on the researchers' use of social media for knowledge sharing. The findings also showed the outcomes that researchers expect from this use, and their impact. In addition, the quantitative phase presented some of the barriers that prevent researchers from using this tool.



The next chapter will conclude the thesis by presenting an overview of the key findings, contributions of the study, implications, limitations, and some recommendations for future research.

## Chapter 8: Conclusion

### 8.1 Chapter Preview

This study aimed to investigate the sources of self-efficacy and outcome expectations of researchers and their impact on the use of social media for knowledge sharing. There were four main research questions: *RQ1) What sources of self-efficacy do researchers rely on in the use of social media for knowledge sharing? RQ2) How do these sources impact on the use of social media for knowledge sharing? RQ3) What outcomes do researchers expect from the use of social media for knowledge sharing? RQ4) How do these outcome expectations impact on the use of social media for knowledge sharing?* To achieve the research goal and answer these research questions, a sequential exploratory mixed methods design was employed. Thus, this study addressed these questions in two phases.

The first phase used the qualitative approach by conducting semi-structured interviews with thirty researchers from the University of Strathclyde who were users of social media. The data were analysed by using a qualitative directed content analysis approach. The analysis revealed six themes in relation to sources of self-efficacy and outcome expectations of researchers in using this tool to share knowledge. These were presented in Chapter 4.

The second phase, using the quantitative approach, was conducted by online questionnaire. The total number of participants in this questionnaire was 144, consisting of researchers also from the University of Strathclyde. The data were

analysed in this phase by descriptive statistics. The analysis confirmed the findings of the first phase and added more insights into sources of self-efficacy, outcome expectations, and barriers to researchers' use of these media to share knowledge. These results were presented in Chapter 5. The findings of these two approaches in this study and its relation to previous literature were discussed in Chapter 6.

In the current chapter, the purpose is to provide a summary of key findings, contributions to knowledge, implications, and limitations of the study. This chapter concludes with a set of recommendations and suggestions for future work.

## **8.2 Summary of Key Findings**

As presented in Chapters 4 and 5, the study found that researchers rely on personal mastery experience, vicarious experience, verbal persuasion, and emotional arousal as sources of their self-efficacy in using social media to share knowledge. These sources, which were originally introduced by Bandura (1977), have a significant impact on the researchers' use of this tool. However, the level of this impact varies from one source to another.

The most important source is personal mastery experience, which can also support other sources to improve researchers' self-efficacy. In the second level of importance, two sources have exchanged the roles. The first one is emotional arousal source. This source has two sides: the positive, which can enhance self-efficacy, and the negative, which may or may not do so. The second one is vicarious experience, where researchers can develop their self-efficacy by observing a good role model in the use of this social tool. At the last level of importance is verbal persuasion, which

can promote researchers' self-efficacy by encouraging and motivating them towards its use.

In addition, the study revealed that researchers expect two types of outcomes from the use of social media. These types are the social and the personal, which were partly introduced by Bandura (2004a). Social outcomes have positive and negative sides. The positive side represents social benefits and includes attracting people, networking, social impact, and visibility, while the negative side represents social disadvantages, and includes lack of trust in others.

Personal outcomes also have positive and negative sides. On the positive side, there are a number of benefits that researchers expect, which include getting help, getting feedback, publicizing their work, keeping up-to-date, getting more citations, learning new skills, and getting jobs. On the negative side, researchers expect that this tool may distract them from their work, impair their privacy, and waste their time.

With regard to the impact of these outcomes on the use of these media for knowledge sharing, the positive side of both social and personal outcomes can motivate researchers to use this tool and obtain its potential benefits. The negative side, also of both types, can prevent its use or make such use almost rare.

### **8.3 Contributions to Knowledge**

Many studies have discussed either the use of social media for knowledge sharing or the factors that affect this use (e.g. Bilgihan et al., 2016; Cheung et al., 2013; Cho et al., 2010; Eid & Al-Jabri, 2016; Kwahk & Park, 2016; Ma et al., 2014; Oh & Syn, 2015). However, understanding of these phenomena is still in the early stages and

needs more investigation (Edwards et al., 2017; Panahi et al., 2012b; Razmerita et al., 2014).

With regard to the factors that affect its use, Cheung et al. (2013); Cho et al. (2010); Kwahk and Park (2016); Vuori and Okkonen (2012) examined a number of these factors such as self-efficacy, reputation, enjoyment, reciprocity, social interaction, learning, and rewards. They argued that these factors have a significant influence on the use of social media for knowledge sharing.

Self-efficacy, as shown in numerous studies, is one of the most important factors that affect the use of social media for knowledge sharing. According to Bandura (1977), self-efficacy is improved by four sources, which include personal mastery experience, vicarious experience, verbal persuasion, and emotional arousal. However, no attention has been paid to these sources and their impact on the use of social media, particularly for knowledge sharing. Therefore, the current study has investigated these sources and their impact on the use of this tool.

This study makes key contributions to the study of the use of social media for knowledge sharing. It has investigated the importance of the sources of self-efficacy for researchers in using social media for knowledge sharing, and the impact of these sources. These sources are aligned with those presented in the theoretical framework of (Bandura, 1977), which is a new finding in this context. Thus, it can be said that this study further develops the self-efficacy theoretical framework by identifying levels of importance of the sources as applied to a real-life online context.

There was inadequate understanding of the outcomes expected from the researchers' use of social media for knowledge sharing. Bandura (2004a) argued that outcome expectations include three types: physical, social, and self-satisfaction

expectations. Furthermore, these types have positive and negative sides. Thus, the current study investigated these outcomes and their impact on this use. This study therefore further develops the theoretical framework of outcome expectations by identifying types and forms within a real-life context.

The findings provide an opportunity for researchers to better understand their self-efficacy and outcome expectations and the impact of these factors on the use of social media for knowledge sharing. They can also understand how to improve this self-efficacy, obtain the positive outcomes, and control the potential negative outcomes of this use.

#### **8.4 Practical Implications**

There are several practical implications of this study. It articulates ways in which researchers may improve their self-efficacy in the use of social media for knowledge sharing by developing their skills, observing and mimicking experienced users, finding encouragement from colleagues and institutions, and practising emotional regulation. According to the findings of this study, it may be important for institutions to provide training, bring in social media experts, and offer their staff encouragement as well as psychological preparation.

Researchers who are looking to improve their social media use should be made aware of the four sources of self-efficacy and determine which ones they need to develop in order to strengthen their confidence. First of all, researchers need to practise using their chosen tools. They should seek out mentoring and training as needed. Universities can offer social media workshops and how-to sessions, peer support networks, and other support as appropriate. In the second stage of self-

efficacy development, researchers must become aware of their positive and negative emotional responses to usage and responses from others. Obviously, building on positive experiences and learning from negative ones would be beneficial. Next, researchers should observe their colleagues and peers and try to emulate them.

Universities could identify and involve experts to serve as role models. Finally, institutions can encourage staff to use social media by tangible means such as recognition of good social media sharing practice in annual reviews and promotion practices. This could also lead colleagues to encourage each other. By following these four progressive stages, researchers may become more confident and effective social media users.

Researchers who want to use social media more effectively should be made aware of the benefits, decide which ones are important to them, and learn to use this tool to achieve these benefits. The negative outcomes are worrisome, but researchers should be made aware of how to control them in order to obtain the benefits. For example, with respect to distraction and time consumption, researchers could identify specific times of day at which to use social media and restrict themselves to these times only, so as not to lose focus on their important tasks or waste time. Regarding privacy concerns, researchers may use strategies to protect themselves. For example, they could use two accounts: a professional one for use during working hours, and a personal one for other uses. Finally, because researchers can use these platforms to build relationships with others, they need to learn to trust others, unless negative behaviours emerge. Researchers can at the very least use social media to share work that has already been published in pre-print or final form, because these will obviously be public regardless.

Universities can and should encourage their researchers to use social media for knowledge sharing. They could reward those who are active on desired channels because this activity will increase the visibility and impact of the university. They should also provide support, training, and mentorship for those who are not experienced social media users. These strategies can enable researchers as well as universities to develop more effective and engaging social media presences, which can help to promote the institution's strategic goals

Finally, the findings of the study might also be useful through helping other industries to improve the self-efficacy and outcome expectations of their staff in using social media for knowledge sharing. Thus, they can use this tool more effectively and earn its potential benefits. Theoretically, there is not much difference between different industries in terms of knowledge sharing. Sources of self-efficacy, outcome expectations and their impacts on the use of social media for knowledge sharing are as important in other industries as in the universities. Therefore, the results of the present study might be applicable to other contexts as well.

## **8.5 Limitations**

Although this study has contributed to the social media and knowledge sharing fields, some limitations need to be considered. They are shown within the following points.

- The context of this study is a single university among a number of universities in Scotland. Thus, the results may not be generalized outside of this context. However, the purpose of the study is to fully appreciate and understand this particular phenomenon within the particular context. Future research should be



conducted in multiple institutions to gain a holistic view and understanding of the topic.

- The study investigated social media as a whole, rather than focusing on a particular type or platform. However, this was helpful for obtaining a comprehensive view and understanding of social media. Researchers in future studies should focus on a specific type or platform of social media to get more insight into it.
- Another limitation of this study is related to the type of sample. It used convenience sampling whereby research participants were selected based on their ease of availability. According to Saumure and Given (2008), in convenience sampling, it is difficult to assess whether or not the findings can be applied and generalized beyond the original sample or in other contexts. However, Bryman (2016) states:

It also perhaps ought to be recognized that convenience sampling probably plays a more prominent role than is sometimes supposed. Certainly, in the field of organization studies it has been noted that convenience samples are very common and indeed are more prominent than are samples based on probability sampling. Social research is also frequently based on convenience sampling. ... Probability sampling involves a lot of preparation, so that it is frequently avoided because of the difficulty and costs involved (p.187).

- Due to non-response from senior researchers, the majority of participants in this study were PhD students; this was beyond the researcher's control. Because of the skewed sample, this study cannot make comparisons between the different levels of researchers. Moreover, the number of participants in the quantitative

phase was an issue, since the total usable sample size in this study was 144 participants. Thus, the sample is too small to represent the population of the study.

- Although the researcher used the same methods to recruit participants from different faculties, most of them were from the Faculty of Science. This may be because the researcher belongs to this faculty, but this too was outside the researcher's control.

## **8.6 Directions for Future Research**

This research drew attention to a new direction for future research. This study could be replicated with multiple institutions to obtain greater understanding and insight. Moreover, it can be replicated with the use of different methods for collecting and analysing data.

It is worth further investigating these sources and their impact on the use of social media for knowledge sharing in different organizations. It is also worth examining the benefits and disadvantages of these media and the impact of these consequences on the use of this tool to share knowledge in multiple contexts.

Further investigation could address the question of whether there is a relationship between sources of self-efficacy and outcome expectations in regard to the use of social media to share knowledge. Furthermore, this relationship could be tested to find out the extent to which it might have significant effects on such use.

There is still a need for further empirical studies to compare sources of self-efficacy and outcome expectations and their impact on sharing tacit knowledge with their impact on sharing explicit knowledge. This could be a potential theme of future research.

## **8.7 Thesis Conclusion**

The research began by reviewing the literature and identifying the gap in research. The results of this review indicated that no attention has been paid to sources of self-efficacy and outcome expectations and their impact on the use of social media for knowledge sharing. Thus, the research problem, objectives, and questions were identified in order to guide this research.

By using a sequential exploratory mixed methods approach, this study was conducted in two phases. The first phase was qualitative, and consisted of interviews with 30 participants in order to understand the topic in greater depth. In data analysis, the sources of self-efficacy (Bandura, 1977) and outcome expectations (Bandura, 2004a) were implemented as units of analysis with which to code and analyse data by means of qualitative software (NVivo11). The results of this phase revealed four sources of self-efficacy and two types of outcome expectations and their importance for the decision to use, or not use, social media to share knowledge.

In the second phase, an online questionnaire was implemented in order to further investigate the findings of the first phase across a wider population. Descriptive statistics were conducted to analyse data by means of IBM SPSS Statistics 24 software. The results of this phase supported the findings of the qualitative phase. The results of the qualitative and quantitative phases were presented separately in Chapters 4 and 5, and discussed in Chapter 6.

In summary, participants relied on all four sources of self-efficacy, all of which had an impact on the use of social media for knowledge sharing. This impact ultimately determined whether or not participants would continue to use this tool.

The findings provide an opportunity for researchers to better understand their self-efficacy and its sources and the impact of these sources on the use of social media for knowledge sharing. Participants also identified two types of outcomes: social and personal. Each type has positive and negative forms. The positive outcomes lead to more effective use of this tool, whereas the negative outcomes ultimately lead to inactive use or complete non-use. The findings provide an opportunity for researchers to better understand the outcomes they can obtain from this tool and the impact of these outcomes on such use, and suggest why and how universities should support and encourage their researchers to use these platforms.

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## Appendix A: Interview Questions and Guidelines

<b>General Information</b>	<ol style="list-style-type: none"> <li>1- Can you tell me a little bit about your job in the university? What are you doing exactly?</li> <li>2- How long have you been doing this job?</li> <li>3- Do you use social media? (if answer yes, go to Q 4; else go to Q 21)</li> <li>4- What social media platforms do you usually use?</li> <li>5- Have you used these platforms or any of them for professional purpose in your job such as sharing experience with your colleagues? (If answer yes, go to Q 6, else go to Q 22).</li> <li>6- Have you used these platforms or any of them to share your research outputs with your colleagues? Could you specify what you have shared?</li> </ol>
<b>Self-efficacy</b>	<ol style="list-style-type: none"> <li>7- How confident are you about your ability to use social media to share your expertise or research outputs with your colleagues?</li> <li>8- How do you think this ability that you have can influence your use for social media to share your expertise or research outputs with your colleagues?</li> <li>9- Could you tell me about your expertise in using social media to share your knowledge experience or research outputs with your colleagues?</li> <li>10- Could you tell me a little bit about the experiences that you have in the use of social media to share your research outputs with your colleagues?</li> <li>11- How do you think these experiences that you have can influence your use for social media to share your expertise or research outputs with your colleagues?</li> <li>12- Have you been encouraged to use social media to share your expertise or research outputs with your colleagues? Who did encourage you?</li> <li>13- How do you think these encouragements that you got can influence your use for social media to share your expertise or research outputs with your colleagues?</li> <li>14- Have you used social media to share your experience or research outputs because you have seen someone use it? Could you tell me about it?</li> <li>15- How do you think seeing others' use can influence your use for social media to share your expertise or research outputs with your colleagues?</li> </ol>
<b>Outcome</b>	<ol style="list-style-type: none"> <li>16- Why are you using social media for sharing your</li> </ol>

<b>Expectations</b>	<p>expertise or research outputs with your colleagues?</p> <p>17- What specific outcomes or benefits do you expect to obtain from using social media to share your expertise or research outputs with your colleagues?</p> <p>18- How do you think these outcomes or benefits that you get can influence your use for social media to share your expertise or research outputs with your colleagues?</p> <p>19- From your perspective, what are the disadvantages that you expect from the use of social media for sharing experience and research outputs?</p> <p>20- How do you think these disadvantages can influence your use for social media to share your expertise or research outputs with your colleagues?</p>
<b>Others</b>	<p>21- Why do you not use social media?</p> <p>22- Why do you not use social media for sharing your experience or research outputs?</p>

## Appendix B: Participant Information Sheet for Interview

**Research Title:** The Use of Social Media for Knowledge Sharing.

**Investigators:**

- Mr Hussain Alshahrani (Computer and Information Sciences, PhD student, [hussain.alshahrani@strath.ac.uk](mailto:hussain.alshahrani@strath.ac.uk), +447426057992).
- Dr Diane Pennington (Computer and Information Sciences, Lead Supervisor, [diane.pennington@strath.ac.uk](mailto:diane.pennington@strath.ac.uk), +44 (0)141 548 3900).
- Dr Martin Halvey (Computer and Information Sciences, Second Supervisor, [martin.halvey@strath.ac.uk](mailto:martin.halvey@strath.ac.uk), +44 (0)141 548 3595).

**Dear Participant**

You are invited to participate in a research being conducted by Hussain Alshahrani who is a PhD student at the University of Strathclyde. This information sheet describes the research to be undertaken. Please read this sheet carefully and be confident that you understand its contents before deciding whether to participate or not. If you have any questions about the research, please ask the researcher.

The title of this research project is “*The Use of Social Media for Knowledge Sharing*”. This research aims to explore the role of self-efficacy and outcome expectations on the use of social media for knowledge sharing. Self-efficacy is a judgment of one’s capability to accomplish a certain level of performance, whereas outcome expectation is a judgment of the likely consequence such behaviour will produce. Thus, this study will explore the role of these two concepts on the use of social media by academics and researchers to share their knowledge.

You are invited to participate in a one-on-one interview that will take approximately 45 minutes to complete. Your contribution in this interview is valuable for my research, and the findings will assist in understanding the role of self-efficacy and outcome expectations that encourage to use social media for knowledge sharing. The interview will be recorded (audio-taped) with your permission. My aim is to explore ideas, beliefs, and experiences of academics and researchers in the universities toward the use of social media for knowledge sharing. You will get £20 purchase voucher from Amazon for your participation. It is up to you to decide whether or not to take part. If you decide to take part, you will be given

this information sheet to keep and asked to sign a consent form. Your participation in this research is voluntary and you are free to withdraw at any time without giving a reason. You also have the right to withdraw retrospectively any consent given, and to require that any data gathered on you be destroyed.

You will be identified by ID number (e.g. P1). Your name and other contact details will never be used in this research so that you cannot be recognised from it. The collected data from the interview will be used for research purposes, and will be stored and kept strictly confidential. Only my supervisors and I will have access to this data. An anonymised version of the data will be made available for other researchers to use.

To protect participants, the following steps will be taken with regards to anonymity and confidentiality of information:

- 1) The interviewee will be given four weeks to communicate to the researcher any notes concerns or modifications. Once this four week period is over, it will be assumed that the interviewee agrees with the notes.
- 2) The audio recording will be kept in my personal computer for transcription, and then will be deleted after the PhD has been awarded. An interview transcript will be stored in Strathclyde H drive and external hard drive to be analysed.
- 3) Digital copies of interview data will be included in data in university Knowledge Base. These copies do not contain any information which could possibly identify any participant.
- 4) Consent form will be kept in the locked cabinet in my supervisor's office in the University of Strathclyde for five years. If this period is over, this form will be shredded and recycled.

Please read the consent form carefully and be confident that you understand its contents before signing on it. If you have any questions about the research please feel free to contact the researcher or anyone of his supervisors.

<b>Researcher</b>	<b>Primary supervisor</b>	<b>Second Supervisor</b>
Mr Hussain Alshahrani  Computer and Information Sciences, PhD student <a href="mailto:hussain.alshahrani@strath.ac.uk">hussain.alshahrani@strath.ac.uk</a> , +447426057992).	Dr Diane Pennington  Computer and Information Sciences  <a href="mailto:diane.pennington@strath.ac.uk">diane.pennington@strath.ac.uk</a> , +44 (0)141 548 3900).	Dr Martin Halvey  Computer and Information Sciences  <a href="mailto:martin.halvey@strath.ac.uk">martin.halvey@strath.ac.uk</a> , +44 (0)141 548 3595).

This study is approved by the Departmental Ethics Committee and if there is any concerns should contact the Departmental Ethics Committee using [enquiries@cis.strath.ac.uk](mailto:enquiries@cis.strath.ac.uk)

## Appendix C: Consent Form for Interview

**Researcher:** Mr Hussain Alshahrani, [Hussain.alshahrani@strath.ac.uk](mailto:Hussain.alshahrani@strath.ac.uk),  
Department of Computer and Information Sciences.

**Supervisors:** Dr Diane Pennington, [diane.pennington@strath.ac.uk](mailto:diane.pennington@strath.ac.uk),  
Department of Computer and Information Sciences.

**Dr Martin Halvey**, [martin.halvey@strath.ac.uk](mailto:martin.halvey@strath.ac.uk),  
Department of Computer and Information Sciences.

**Title of the study:** The Use of Social Media for Knowledge Sharing.

By signing below, I confirm that I have read and understand the following points:

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions.
2. I understand that my permission is voluntary and that I am free to withdraw at any time, without giving any reason, without my legal rights being affected.
3. I agree to take part in the above study.
4. I consent to be audio recorded as part of an exit interview.
5. I consent for anonymised data which do not contain my identity information to be made available for research purposes.
6. I would like to receive a transcript sheet of the interview:       Yes     No

\*If yes; please write your e-mail: \_\_\_\_\_

Name of Participant		Date:	
Signature of Participant			

Name of Researcher		Date:	
Signature of Researcher			

## Appendix D: Examples of interviews' transcripts

### Participant- 5

#### START AUDIO

Interviewer: First of all, I would like to thank you for accepting to participate in my research. First of all, I would like to ask you about, could you please tell me about your job at the university? What are you exactly doing?

Respondent: So I'm a senior lecturer in the Department of Computing and Information Sciences. I just started relatively recently, on the 1<sup>st</sup> March, so fairly new. Still trying to find my feet here in the department and across the university, but the main part of my role is research-orientated and research led. So I'm principal investigator on a number of projects, and core investigator on some projects, including a large European randomised control trial. I'm a co-investigator and deputy director for the five-year funded study from the EU.

So day-to-day I'm managing projects, managing staff who're working on the projects, thinking about writing reports, writing publications. Developing networks and potential collaborations for future, grant applications, writing new proposals to take future work forward. A big part of the work is also dissemination, so conferences, publications, reports, using social media to kind of highlight some of the work that has been done as well. And as my role evolves and my time in the department evolves, I'll have a teaching allocation as well.

Because I've come in midway through a semester, I've got no teaching just now, but as 2017-2018 term starts, I'll have some teaching as well.

Interviewer: So hopefully you have a longer experience with \_\_\_[0:01:45] from here.

Respondent: Yes. I've been working in academia for about 12 years now. 12, 13 years, and I've worked at 3 previous institutions in that time, for between 3 and 5 years at each previous institution, before I came here.

Interviewer: Okay. Do you use social media?

Respondent: I do.

Interviewer: What type of platform are you using, in general?



Respondent: So I use... In general? Just work, or personal and professional? So I use things like Facebook, Twitter, Instagram, and app called Slack which is an app for team-based communication, as part of a sports club I'm in. Photo apps, photo collage apps, transport apps, things like that. I also use things like LinkedIn as a kind of social media platform, and Twitter I have a professional account and a personal account. Facebook, just personal. I don't use Facebook for any professional research.

Interviewer: So just Twitter you use for both directions?

Respondent: Yes.

Interviewer: Okay. In that case, have you used Twitter for sharing your experience with colleagues?

Respondent: So yes, I tend to use-

Interviewer: I mean, in academic?

Respondent: In academic, yes. So thinking just about my academic Twitter handle. So I use that for tweeting about publications that have come out that I'm involved in. When I'm at conferences, so tweeting perhaps things I've heard, headline news I've heard at the conferences, or tweeting that I'm at a conference and I'm presenting or I've got a poster. If I'm at a large meeting, or any governmental meetings or a new project, we have face-to-face meetings. So tweeting about those sort of things. I might retweet stories of interest, certainly in the digital health domain, as well. I tweeted about starting a new job, new environment, that sort of thing.

Interviewer: Okay. Have you used Twitter for sharing your research output? Something about a result or something?

Respondent: Only if it's published papers. So if the paper is out and it has been published, then I'll tweet that that's now available in the public domain. I won't be tweeting other things at the projects are ongoing, just because that's not really the way to do it until the project is confirmed and until it's been published in the public domain. But certainly if a paper has been accepted and published then I will tweet a link to that as well. And I also use Twitter to advertise jobs that are, like, research jobs that are attached to grants that I have as well.

Interviewer: Okay. In that case, could you give me an example?

Respondent: Of a recent tweet?

Interviewer: Yes.

Respondent: So just now I'm advertising for a research associate position, which is a 12 month fixed term project. A fixed term position on a project I'm about to arrange, to launch. So I have retweeted the link from Strathclyde's vacancy pages with the application link, and included a short message saying that I'm doing this new project on young adults with cancer and developed a digital health platform. And I've retweeted the link and encouraged people to apply. That's one example. I've used it quite a lot on my previous projects where I've tried to recruit families with children with complex healthcare needs, because I use it as a recruitment mechanism.

And advertising the study with the research poster, and again tagging various charities and organisations and key links within the domain that I have to retweet it and share it. And try and open up the network to recruit families that way as well.

Interviewer: Okay. In that case, I would like to jump to other question. How competent are you about your ability to use social media for sharing your experience and research output?

Respondent: Fairly competent, I would say. It's taken a bit of practice. I mean, I wasn't really, I was late to Twitter, I would probably say, both personally and professionally. Then I had one account for Twitter, then I started to tweet some things, more work things than personal things. Then I decided I would make the two quite distinct and have a personal Twitter handle and a professional Twitter handle. So I'm more confident and more used to tweeting things, retweeting things, embedding links, embedding pictures into the tweets that I share as well. I'm more confident in how to find people, and adding people to follow and things.

So yes, I'd say in the last year and a half, two years my competence has increased. I wouldn't say regularly, all the time. I definitely go through peaks and troughs where there might be a period of activity and I use it more. And then I won't check it quite so regularly, but then I'll come back on and be able to pick up, really, in terms of where I left off, confidence wise.

Interviewer: In that case, could you just tell me a bit about your experience that you have, to use social media?

Respondent: So prior to...?

Interviewer: Yes.

Respondent: I suppose my most experience is from a Facebook kind of domain, from a personal level. And I suppose that's something that I check more regularly, personally, than I check Twitter professionally, if you like. LinkedIn is something I also use. I'm fairly new to that and I'm finding that a little less intuitive in terms of how you map, how you work your way round the pages and how you upload and share information. But again, it's another platform to have that you can help raise your profile.

But my experience has generally been positive and I'd say it's more just a kind of a step-by-step, getting used to it and also having the time to do it. Particularly Twitter, because things evolve so quick and it's real time timeline, you know, seconds. If you don't check it regularly, you can be days apart, not just hours apart. Sometimes the new news is old news by the time you tweet it or you see it on Twitter, so that's something. I suppose it's a bit more difficult to keep track of because there's so much information now, and so many different platforms. There are so many different sites that have social media linked in as well.

You can embed things and you can retweet things and you can have a link to all your different accounts. I don't link things to different accounts because I don't tweet from one and it suddenly appears everywhere. I kind of manually do that, just try and keep a handle on things a bit more as well. Partly because of the time, and you have people who spend a lot of their time tweeting and retweeting. Then you get a little bit fed up of seeing the same people all the time. So just trying to manage it a little bit that way, as well.

Interviewer: How do you think this experience that you have could influence your use of social media, to share your experience and research output?

Respondent: I suppose when you've had a positive interaction with it, so for example when I was recruiting families for the study. Then I used it a lot more, because I was getting quite a lot of traffic, I was getting a lot of retweets and a lot of new followers. It was attracting people to the work, the nature of what I do, so I was more encouraged to use it then, when I could see those positive outcomes of it. And certainly, having experience of using it as a recruitment channel, then that's something I would embed in future research studies to use again.

To try and increase the ability to recruit populations that might be hard to reach and might not always be found in traditional NHS settings, the nature of the work I do. I suppose the downside of social media is that things can be taken out of context. And things can unravel quite quickly because, certainly with Twitter, it's quite free in terms of who can follow you. That you don't necessarily need to approve them before they follow you, depending on your settings. I mean, I've not had it personally, but I've read threads where people were being quite negative.

If you share papers and things, people don't agree with it, you're always opened up to critique. Whether that's from people who are academic colleagues, or members of the public. I suppose that [comes from 0:10:35] people who are more informed or less informed on the work you're doing as well. So it's positive, but it can also open up negative channels, and if I was to have a negative experience with it then it may make me rethink on how I use it and perhaps how much.

Interviewer: Okay. And you said about encouragement. Have you been encouraged to use social media?

Respondent: Yes. So, previous institutions, this happened in the last place I worked, where there was a Twitter handle for the school that I worked in. And I

think institutions and departments have become increasingly aware of the power of social media to reach people. Thinking about your impact and how far your work can go, particularly around \_\_\_[0:11:20] 20, 21. So we were encouraged to, in my previous institution, let the person know who was running the Twitter handle if you were involved in a particular project. Or if you were going somewhere to share the work of the school, any new papers to come out.

So they would share that information as well. For our EU project we have a Twitter handle, and we are encouraged to take responsibility for tweeting from that, again, to raise the profile of the work. That hasn't worked quite so well, but what I do tend to do is tag the handle in it, because the people who follow the study can still see the work that's being done. So we are encouraged with a view of being wary of what the university's social media policies might be, and again they might differ between institutions.

Interviewer: So could I ask you to specify a person that encouraged you, instead of an institution, is there any one of your colleagues?

Respondent: No, because I would say that I tweet more than anybody else. Certainly on the Twitter side of things. I know other colleagues use LinkedIn more or ResearchGate more, but certainly from a Twitter perspective that's something I've increased and tried to encourage within some of the members of the team. That really came from me going on a personal development course where they were trying to encourage you to raise your profile. So that meant I took that [trick 0:12:53] back into the team. At my previous institution where the departmental one was there, I think that really came from the senior exec team rather than a particular individual.

Interviewer: How do you think this encouragement that you got from your institution could influence your use of social media to share your experience?

Respondent: I think it's just encouraged in that you've got to raise your public profile. You've got to make people aware of what you're doing and you've got to share good news stories. People don't know what they don't know. So if you're not tweeting about stuff that's going on or sharing it through LinkedIn or ResearchGate, whatever methods that you might have, people aren't going to be aware of what you're doing. So then your networks might not be as wide because people aren't aware of what you've got. Your publication citation rates might not be as high.

So I think it's just about sharing information and sharing it in an open forum, and trying to encourage people to look at your work and make contact with you. LinkedIn, I've had a few people, I think when they verify your certain skillset things, but that's not really my go-to one at this stage. I have far more followers on Twitter than I do on LinkedIn. And whether that's as a consequence of me not being active on LinkedIn or if it's just not something that's quite as prominent in people's uses.

I think because you've got to pay for a more advanced level. I haven't looked at paying, I'm not really investigating that at this stage.

Interviewer: Okay. You said you use social media to share your publications and your experience. If I asked you why you are using social media to share your experience or your research output? What are the reasons?

Respondent: I think it's so easy. It's accessible. It's quick. Lots of people are doing it and have access to that information. A lot, as I say, is in real time, so you're keeping track of it in real time. The reach is quite wide, because not only do you share stuff with your followers, people pick it up and they retweet it, then it goes to their followers. So your, I suppose, your network can expand relatively quickly, and the reach that you can have with that information. Again, like I said before, that could be a positive thing, that reach, but it also good be viewed negatively in some respects, that you're not controlling it as much as you would.

But at the same time, if you're putting your publications on your university profile website, you're not really any idea of how wide they're going and how far people are... In terms of those being accessed and read, and reviewed as well. It's also because you can also share information in a number of short characters. Like, whatever, 140, or maybe a bit more now. So you've got to keep it neat and small, so it's got to be something that people can link into very quickly.

The challenge of that is sometimes you want to say more than 140 characters, and then you don't want to use text speak if you're using your professional account. So sometimes it might take a little while to think about how you best share that information. But that's a good skill to have in terms of how you relay academic information into the public domain in non-academic terms. Because it's got to be wider than your professional colleagues who might access that information.

Interviewer: Okay. What specific outcomes or benefits do you expect to get from using social media for sharing knowledge?

Respondent: So the one I've mentioned a couple of times is around the recruitment of participants. That was the social media approach to that, and putting in the ethical amendment to be able to do that helped in that I recruited families that I wouldn't have been able to before, wouldn't have had access to. Either because the family members had seen it and they made contact, or different charities and organisations that they have links with shared that information before. There are benefits there, there are benefits when you tweet a paper or publication.

Then people are aware of your portfolio, so they might then access your web profile and see your other interest areas, because you're only tweeting that one paper. But your profile network would then evolve, and it may lead to new collaborations. Often when you meet people now, I've just been to meet new colleague in a different department here for the first time, and I had a quick look at her web profile, quick look to see if she had a Twitter handle. People are using it as a kind of pre-lead in to try and get an idea of what people's interest areas are as well.

Again, that could be beneficial or it could be slightly negative, depending on what

you tweet. Some people can be quite controversial in their social media presence, but that might not be how they are in real life, in inverted commas. But it's just a good, easy way to share information, and a quick way to do that.

Interviewer: How do you think these outcomes or benefits you're getting from using social media for sharing knowledge could influence your use?

Respondent: I think if it has led to new contacts and new networks, and particularly new collaborations, then it's obviously showing that it's working, in some respects. If I say, if that was to be viewed negatively, or if it's picked up in the Twittersphere, if you like, with people who don't agree with your position and some of the statements, then can be quite negative. So I'm quite careful, because I don't use it to... Maybe that's partly my bias or anxiety, because I don't use it to share opinions on a lot of things.

I don't tweet a statement of the day or anything like this, some people make quite pointed statements about the NHS, or about government or politics and things. I try not to go down that line, keep it more as a promo tool. Maybe it's a bit more of a self-promo tool. You know, "I'm at this conference," or, "I'm at this event." But I think I would be more wary of using it to put myself out there and my persona out in the public, just with not sharing and how that might be viewed and reacted at the same time. But use it much more to promote good news stories, I think, either in the work of the team, the work that I'm involved in, meetings.

If there is a particular headline or article that I've read that is of relevance, that fits within my interest areas. If someone were to see that on my feed, that they would put two and two together that that's why I've tweeted it. An article about digital health, for example, because I work in digital health.

Interviewer: What are you using for a \_\_\_[0:20:07] purpose? Is there any disadvantage for using social media?

Respondent: Well, I think people seem to spend a lot of their time on social media, and not doing the other, or the normal parts of academic life. I suppose some of the disadvantages are the time it can take and if you're using lots of different platforms, to keep them all up to date at the same time. Your pure profile here, your LinkedIn, your ResearchGate. You know, there are lots of things. Lots of things to keep on top of, on top of your normal day-to-day roles and expectations.

So if they're not all updated and some day you only use one, then you might be at a disadvantage because your story's not continuous, that public profile is not continuous. Disadvantage, as I alluded to before, if it is picked up that you've tweeted something that's perhaps somebody disagrees with it, you don't really have the opportunity to engage them properly about it. You can misconstrue things because of, certainly on Twitter, the short nature of the tweets that are there. Things round LinkedIn and ResearchGate in terms of sharing papers, sharing information, sometimes that's not as easy as what it could be.

So again, there's time involved to follow things up and send information on to people if they ask for it, and just keeping up to date with everybody else's news because it evolves so quick. We're surrounded by so much new information all the time that it's impossible to keep on top of everything.

Interviewer: Okay. The last question. Do you have anything to add here about social media, or using social media for knowledge sharing?

Respondent: I think it's an important part of an academic's life, and whether there can be some training sessions that are provided for academics and how they can best use it and utilise it. I think some institutions haven't got to grips with that. I don't know if that's the case here, but some have social media experts within the marketing teams, and certain things you can say, certain things you can't say. But sometimes would be helpful to know on a departmental level or research group level. What's a good way to use it? Which are the most commonly used social media platforms and do we need to target one over another?

Do we need to target information differently from one audience to another, depending on which platform it is? I mean, certainly when I do presentations or anything, I always include my Twitter handle on the last slide. I think it's about increasing that awareness as well, but perhaps encouraging everybody to do the same. And if there are research groups, then perhaps they need a Twitter handle as well. They need somebody to organise and manage that, and facilitate that, and again, that additional role for somebody. So who takes that on?

Is it something that's shared across the team as a collective resource? But how do you keep up to date with ensuring that the information you get sent is relevant then and it's not two days old news? Then something else evolves since then. What was the question again, any other...?

Interviewer: Do you have anything to add here?

Respondent: Yes. I think students should be encouraged to follow their academic staff on Twitter because there could be bits they pick up there as well, in terms of articles that are shared. Certainly for students and academics to follow journals, because a lot of them now tweet when new papers come out. Certainly with open access and how quickly things evolve, and you can access publications straight from the tweets as well, so your information availability is increasing.

So you can have lots of things at your fingertips, but it's how you best filter it and use it in your day-to-day, day in, working life environment, as well as where it might lead to something longer term in the future as well.

Interviewer: Many thanks to you for participating in my research, and I appreciate this information. Valuable information for my research. Thank you very much.

Respondent: That's okay. Is there anything else? Is that enough to...?

Interviewer: That's fine. Thank you very much.

Respondent: Okay, thank you.

Interviewer: Thank you.

Respondent: Do you need an example? Okay. So I meant to say that I also use social media in a teaching environment. So when I have done some lectures in the past, I do a lot of teaching around e-health and digital health qualitative methods. I often embed YouTube videos within those lectures as well. Partly to break up the nature of the lecture, because sometimes they were for an hour and a half a time, so it's too long just to talk to students. In some of my previous teachings I've been teaching to 220, 250 students at a time, so it's too big to do group work.

I've used YouTube clips that have either given little hints on research methods, or how to design a research question, how to analyse data from an e-health perspective. Clips that, like, a facts and figures thing about how much technology do you use in day-to-day practice, and day-to-day lives. But it's done by a company who've put that together to a nice piece of music, who've gone quite quick and quite fast, three or four minutes. Again, it's just another teaching strategy to use, and YouTube would be the kind of go-to place I would look to for some of that information.

But whether I view YouTube as a social media platform in the same way that I view Twitter and LinkedIn and ResearchGate. It's just a thing that's been around for a very long time, hasn't it? But I think it's evolved in terms of what's available and how you can use that, and how you can embed that information into your teaching materials as well. I've also used, so some of those clips I've used in teaching, but I've also used in conferences, I'll often embed some video clips as well into conferences, depending on the nature of the session and what's being done.

And if there are, maybe it's not social media, but if there are promo or PR clips from the university that have been done that are relevant, I'll also embed those. So I've been using video and multimedia that would be relevant in a teaching context.

Interviewer: Okay. Thank you.

END

## **Participant- 8**

START AUDIO



Interviewer: First of all, I would like to thank you for participating in my research. Could you please tell me a little bit about your job in the university? What exactly are you doing?

Respondent: Okay, I'm a lecturer in the university, and as a lecturer my job involves teaching, and research, and administration. My teaching covers programming and software engineering. My research mostly covers software engineering, software design, and my admin is concerned with looking after... Primarily, I'm a deputy head in the department, but also look after first year students. I'm a first year advisor.

Interviewer: You're a lecturer or senior lecturer?

Respondent: Senior lecturer.

Interviewer: I see. How long have you been doing this?

Respondent: Well, I've been here now, as a lecturer, for 30 years.

Interviewer: Oh, do use social media?

Respondent: Yes.

Interviewer: What platform do you use?

Respondent: For my teaching, or in...?

Interviewer: In general.

Respondent: In general, well, I use Twitter a lot. I get all my news from Twitter now. I used to buy two newspapers every day. Instead, I use Twitter as my source of news and other sources of information. So, I use it more widely than news, but I use it for my news. Beyond that, mostly just the web, I would say, unless you have other examples that... Maybe in the interview you'll ask about other sources, but off the top of my head, I would just say Twitter and social media, the web.

Interviewer: Okay, what about in a professional way?

Respondent: So again, I would use mostly the web, but I do have Twitter feeds that are related to my research. So, I follow some... Maybe the IEEE Computer Society, and a few software engineers, and some conferences. So, I get some of my research information from Twitter.

Interviewer: Okay, have you used this platform, Twitter, for sharing your experience?

Respondent: I don't use it for academic... That's why I receive research and academic information from it, but I don't publish... The stuff I publish tends to be social.

Interviewer: Is there any reason behind that, that prevents you from using it for that?

Respondent: I think the main reason is that the people... I don't have many followers, or maybe I have, I don't know, 80 followers, and they're all social. Well, there are a few people I think who are maybe students or ex-PhD students. But, I don't have a following that is academic, so I don't...

Interviewer: Are you planning to use it in the future?

Respondent: Not at the moment, I wouldn't say so. No.

Interviewer: Have you used it for the research output, for scheduling research?

Respondent: No, I don't publish my research output on it. I see people doing that, and I thought... You know, for example, I just got a journal paper accepted. But, it's not something I do. I don't know if you would count Pure, the university system, as within your area of interest, but all our publications go on Pure, which is published, again, just on the web. It's not broadcast through any other... So, my publications go in there, and that's it.

Interviewer: Okay, about your publication, have you used what's called a ResearchGate or what's called Academic.edu?

Respondent: No.

Interviewer: Academic... They used to use that [tool 0:04:11].

Respondent: So, I haven't ever broadcast my publications, other than, I used to keep them on my own website, so I used to manage my own website, or a group website. So, for many years, 20 years, since the advent of the web, we had a group website where all our publications, all our technical reports, all our PhD students, all our PhD theses were published. I still have that, to an extent, so I still manage that webpage where I have all my old PhD students' PhDs maintained there, and all our old research group, technical publications. So, there are, I don't know, about 50 technical reports there, 10, 11, 12 PhD theses there. But nowadays, the university system manages these through this Pure system, so I tend to leave... Recent publications, I haven't even put on my own webpage, but they're put on the university Pure system, and then my webpage references that, but I haven't put them on any other form of social media.

Interviewer: Oh, okay. In that case, I will take this from your perspective. What do you think about the ability that the person has to have to use social media?

Respondent: In terms of their skillset?

Interviewer: Yes, skillset.

Respondent: So, what's your definition of 'social media'?

Interviewer: Actually, the definition for social media?

Respondent: Yes.

Interviewer: It's the technology that can be used to communicate with other people or network with other people.

Respondent: So, what would you include in that in terms of...? So, when you're asking me about skillsets to use social media, you're including things like Twitter, but would you include Facebook?

Interviewer: Facebook, yes, LinkedIn, and Twitter.

Respondent: Yes, yes. So, I suspect there are different skillsets involved in using these different forms of social media, but for me, I think to use something like Face... I don't use Facebook, but my impression is it would be quite easy for somebody to use Facebook, or indeed, Twitter. But again, the issue for me is building up... What do you use Facebook for, or Twitter? Are you using it socially, are you using it academically, are you using it for a combination of these? Why do people follow what you put on Facebook or Twitter? Is it because they are friends, or socially interested, or are they interested in your academic work? So, I see some people or some users which are purely academic, and I see some that are purely social, and I see some that mix it a bit. I know some people who have separate Twitter feeds for their academic work and for their social. So, I think Twitter or Facebook are quite easy for people to use, but to reach an audience, I think is more difficult, to reach the right audience. I don't know for Facebook, but for Twitter, people have to recognise that you're worth following, and why would they do that if they're going to get a load of rubbish and a load of non...?

Interviewer: Could be one of the disadvantages, could be.

Respondent: Yes.

Interviewer: Okay, once the user has good skills for using social media, do you think these skills could influence the user to use social media?

Respondent: I'm not sure if this is answering the question, I think the difficulty I see with using social media for academic work is getting the audience, is getting it out there. But, even if you had a static webpage, again, so nowadays I use... We put all our research on a static webpage. Again, how do you meet the

audience? How do you get that out to the right audience? Similarly, there are some Twitter, or Facebook, or... So, that to me is the difficulty.

So, even if you were sat and there's a new research, so there's a PhD student, how do you get your work out to using social media? How do you get your work to the right audience? I don't know. I guess there are skills in doing that, I don't know those skills. So, maybe tweeting people or contacting them, and saying, "Could you publicise this? Are you interested in this?" or, "You might be interested in this," or... I don't know how you do that.

Interviewer: They use it, for example, I have a paper that has been published, or for example, if I need articles from the database, and I could access this database. But, I know the author. I try to find the author, and I found he has an account on LinkedIn or on Facebook. I said to him, "I am interested in these articles. Could you please provide me...?" Sometimes they sent a link for the articles through Facebook or Twitter. In that case, they share with me what they have that could be one way to use...

Respondent: Yes, so in the past, so again, over the years, I've had people coming to me for papers or data associated with papers. In the past I've always tried to maintain that myself, but now this system, Pure, does that for you. So, I've had that, but nowadays it would be by email. I've never had anybody approach me through Twitter or any other means, other than by email. There were two other thoughts came, while we were talking there: One is Google Scholar. So, I always get regular updates from Google Scholar, people who are citing my work. So, how does that work? That way, I see who's citing and how the papers that I've written or on a course are being cited. But, that's more coming back towards me. The other thing was, I don't know if it was after I agreed to do this or I saw your supervisor, I think I saw that she was giving a talk on how to use social media for your research. It made me think that I should put my Twitter name or handle on my website, which I hadn't done before, but I've done now. But, as I say, I use Twitter more socially. I haven't ever put anything to do... Although, I do, if I see an interesting research article, I would maybe retweet it. But, over the last two or three years, I've found a lot of interesting research material by following people on Twitter. So, I've got quite a lot of useful information from Twitter.

Interviewer: Okay. In that case, from your experience using Twitter, to what extent are you an expert in using Twitter?

Respondent: (Laughter) I wouldn't say I was an expert and I wouldn't say I was a novice. I would say somewhere in between, but...

Interviewer: Okay, how could this experience influence your use?

Respondent: How could that experience influence my usage, in general usage? So, again, I'm not sure if I'm answering the question, but my experience enables me... I get very little useless information. So, I get a range of information from Twitter, but now, over the last two or three, four years, I've managed what I

receive so I don't get much rubbish. I don't get adverts, so I use an app called Tweetbot and I don't get any adverts in it.

Where, if I use Twitter just on a normal client it's full of adverts. I think I've managed to focus the information that I receive well so that I don't get a lot of stuff which I'm not interested in. So, I've learned how to identify Twitter feeds, sources of information that are only relevant to what I'm interested in. So, I would say I get quite a high information content of what I'm getting, and I'm good at unfollowing anything that I'm not interested in. I don't know if that's...

Interviewer: Okay, have you been encouraged to use social media or any platforms of social media to share your knowledge?

Respondent: I don't think so, I don't think so. Encouraged by other people?

Interviewer: Yes, or by an institution?

Respondent: No, no, no. So, I think that there's an important point in there. So, as I say, I saw that Diane was giving a talk or a course. So, I was sent an email saying that... I think it was called 'STEP' or something. It's a university organisation for informing staff, and your supervisor was giving a talk... That's one of the first I think I've seen where the university's starting to... Even things like webpages over the years, we have a staff... In the computer science department, you would expect staff to know perhaps a bit more than other departments. But, I don't think the university or the department has really... I know the department has its own Twitter feed, which I follow, and it's encouraged staff a wee bit to, if there was any news, to put it on. So again, for example, yes, now you can go back to the papers, I think they asked if you had any new papers to let them know, to put it on. But, I'm not... That's [crosstalk 0:15:39].

Interviewer: Okay, if you have been encouraged by an institution or-

Respondent: The department.

Interviewer: Or any one of your colleagues to use social media, to share some articles or some experience with them, are you going to use it?

Respondent: Not at the moment, not at the moment. I don't think I would change... I've no great interest in changing it at the moment. I believe in making the work that I've done available, but at the moment, I'm not trying to push it out there. But, it's available for people who want to see it.

Interviewer: Even if there is a benefit or outcomes behind...?

Respondent: Yes, yes, yes, I know. But again, at the moment, my view is to make it available. It's available in journals, so things like Google and Google Scholar will find it. So, at the moment, I've been comfortable with that form of publicity. But, I take your point. Maybe if I was at a different stage of my career...

So I'm coming to the end of my career, maybe if I was at the beginning of my career and I wanted to get my work out, I would maybe be more inclined to use it.

Interviewer: Okay. From your perspective do you think the encouragement, you encourage someone to use social media, do you think this encouragement could influence their use?

Respondent: Yes, yes. I do think, so as I say, even just the fact that, you know, I saw the course by \_\_\_[0:17:25]. That made me think, "Should I be doing more?" Yes, and I definitely agree that... You know, you asked me first of all, "Would I...?" I hadn't really thought of that, but I think yes, more could be done to encourage staff and researchers to think about different social media platforms, yes, and to use them, yes.

Interviewer: Okay. You said you have seen some academics, or they use social media to share their experience. From your perspective, what do you think are the reasons behind their use, why they use social media for sharing knowledge?

Respondent: Well, I would guess as one, to publicise their own work. But, I've seen some good Twitter feeds. I can think of one off the top of my head that is very good at publicising... Again, at least one, publicising good work in their area, and it's a useful service to the community. So, I see people who are self-publicists publicising their own work, but I also see good Twitter feeds. I guess they use other platforms to publish. A useful thing I've seen recently is at conference, live tweeting conferences.

I found that very useful, where people are tweeting the talks they're at, and maybe a key summary in tweets of the conference. Or, "Here's a good paper," or something, and I find that very useful. I would say that is a service to the community. So, people not necessarily publicising their own work, but publicising the work of colleagues.

Interviewer: Okay. If you use something, you expect to get something from it.

Respondent: Yes.

Interviewer: What do you think about the outcomes and benefits that the user could expect to get from using social media to share knowledge from the academic perspective?

Respondent: Well, the main benefit I get from it is finding papers or work. Sometimes, it's not... So, finding papers that I wouldn't have otherwise find, or I maybe would've taken a longer time to find. But, one of the things I think, the best things academically that I've found from Twitter were not necessarily academic papers. So, last week I found a discussion from... It was a blog from somebody who worked at Microsoft for many years, 20 years. They'd written a wee blog about complexity in design. That's the kind of thing my main research area is, design. So, for design, and this chart \_\_\_[0:20:20]. It wasn't a published article, but it was a blog somewhere about his experience in dealing with complexity, which I wouldn't

have found. In years gone by, it may not have been found by others because it wasn't in an academic paper. But, somebody I was following published a link to this. So, that's the kind of thing I find regularly, maybe less formal articles that have been published on social media that haven't gone through a refereeing process. But, they tend to be forwarded by somebody with a bit of authority, then they're often worth reading.

Interviewer: So, about the benefit and outcomes, for example, academically, a researcher uses social media to get some reward or to get some, we can say, reputations.

Respondent: What did you say there?

Interviewer: Reputations, that become-

Respondent: Reputations?

Interviewer: Yes, become famous or something in his work.

Respondent: Yes, yes.

Interviewer: Do you think these outcomes or benefits could influence their use?

Respondent: Yes, definitely, but I think the issue... I'm going to say the same thing I think. I think the challenge for somebody who's trying to increase their reputation or get their work out there, the challenge is how to use social media properly. It comes back to, "Have I been encouraged by the institution as a department or by anybody else? No, I haven't really. How have I used the web or Twitter?" I've really found my own way and I haven't really read anything, gone looking for how to use Twitter properly for your work, how to use another social media source.

So, to answer your question about if somebody was trying to build their reputation or rewards and benefit, there are rewards, but it's how to do it properly, and that's coming back to the same thing. If I was a young researcher starting off and I wanted to get my work out there, I think there are skills in there, and I'm not sure what they'd be useful for people to know, what are the best ways of trying to get...? Because, I think there is a skill in getting the right people to follow your work. I don't know, again, I don't know much about other social media platforms, how easy or difficult it is to build a reputation.

Interviewer: Just as an example, let's say you're an expert in Java, you found there is some benefit from using Java and building your programme by using Java, do you think that's a benefit you learn and you get from teaching Java and this kind of thing, or teach it to the student? The benefit behind this usage can influence your use or your teaching [in your particular role 0:23:48]? For example, using desktop, and you found there is a benefit from using this Desktop? Do you think the

benefit, you will get it from this Desktop? You will influence your use, you will increase your use or decrease your use?

Respondent: I'm [stuck 0:24:09]. So, if I see a benefit in using something, would I continue...?

Interviewer: Would you continue to use it?

Respondent: And tell students about it, and other...?

Interviewer: For example, you use [TBC], the Word document, it's easy to write about?

Respondent: Yes, okay.

Interviewer: Do you find there is benefit from it, if...?

Respondent: I'm not sure, because from what I'm understanding from your question it seems quite obvious to me. If it's beneficial, I use it, and if it's not beneficial-

Interviewer: If there is benefit from using social media, from your perspective, there is benefit?

Respondent: Yes, I wouldn't use it if there wasn't. But, my benefit of using social media, so I tend to use social media but not for academic work. That's not [right 0:25:00]. Primarily, I use it for news and information, but I have found it useful for finding academic work, as I said earlier. But, I would immediately not... I don't use things that are...

Interviewer: But, you use, for example, social media to... Or, do you find there is benefit from using social media?

Respondent: Yes.

Interviewer: Do you think this benefit or the benefit you will get from social media will, you can say, influence you, or you will increase your use for this technology? Use social media to get a reward, for example.

Respondent: Yes, yes.

Interviewer: You get this reward from an institution or from anywhere? In that case, this reward or this usage will increase or decrease?

Respondent: Well, if I felt I was getting... In terms of my career, or...?

Interviewer: Yes.



Respondent: Yes, well, if it was benefitting my career, yes, I would use... I don't know, again, I'm not at the stage, I think... I'm not really getting the question, but I think I would use things that are benefitting me in my day-to-day work. Again, I'm not at that stage where I'm that bothered about \_\_\_[0:26:34]. But, if I was on... I mean, you were speaking earlier, I was thinking of somebody on... What do they call it in the States? 'Probation' or trying to get on to a full-time ac... Then, I could see where you were keen to get your work out there, and reward in terms of career, or get a permanent position, or find a new job, then I would be looking for mechanisms such as...

Maybe that's a different way of answering. Again, compared to when I started 30 years ago or whatever, it was very difficult, one, to find information. Used to use the library, and catalogues in the library, and you know, it would take two weeks to get a paper. Now, you get them instantly. There was very little interaction with the community. You had to go to conferences or you had to go to visit people, go to seminars. But now, the internet and all forms of social media have made it much easier, obviously, to get information, get papers, interact with people, but also to get your work out there. So again, in the old days, trying to get your work out to other people was so much more difficult.

Interviewer: Okay. Is there any disadvantage, if you think about it from using social media by the academic, what disadvantage could you think about?

Respondent: I think one of the disadvantages is separating the quality from non-quality, wheat from the chaff, using social media to keep it focused on relevant information. So, I think social media, again, my experience is mainly Twitter, and it's trying to keep that focus, and I think it takes a wee while. If you're not careful, you do get a load of irrelevant, non-relevant content. So, it's separating the relevant content from the non-relevant content.

I guess different sources of social media, I don't really know ResearchGate but I think the thing about ResearchGate, at least it's all research materials. Whereas, something like Twitter, if you're not careful, you can get rubbish. Similar with things like Facebook. So, I think the main disadvantage, the challenge is separating useful content from non-useful content.

Interviewer: Okay. Do you have anything to add here about using social media for sharing knowledge?

Respondent: I think I've said all... No.

Interviewer: Okay, thank you very much for your time, and I appreciate you participating in my research.

Respondent: Okay.

Interviewer: Thank you.

Respondent: Yes.

END

## Participant- 16

START AUDIO

Interviewer: First of all, I would like to thank you for participating in research. Could you please tell me a little bit about your job, what exactly are you doing here?

Respondent: I'm a professor of government at Strathclyde, I've been here just since July. I was nine and a half years at University of Essex before that. Right now, I research on public opinion and foreign policy attitudes. I'm incoming head of school in July, so that's another joy. Basically, a whatchamacallit- So my research, I've looked at the participant sheet and stuff. I do use social media to transmit and disseminate, particularly when I write more public things such as for the Scottish Herald. I just wrote on Trump's 100 days and things like that.

Interviewer: I think you've answered three questions in that one.

Respondent: Oh, sorry.

Interviewer: That's fine. What social media are you using?

Respondent: My big social media is Facebook, I do use Twitter but less frequently. I'd say my primary use- In terms of academic social media, I try to avoid- I find ResearchGate, I use them when I get requests and stuff, but I find it a bit unrelenting. I get a lot of emails and there is a lot of concern about what academia.edu is trying to do, so I said, "Stay off of it." I wouldn't say Google Scholar is social media, but I use it.

Interviewer: [Crosstalk 00:01:34].

Respondent: Yes.

Interviewer: There is a debate between [Crosstalk]-

Respondent: Yes, okay.

Interviewer: Have you used any of them to share your experience, [knowledge] and experience, with colleagues?

Respondent: Yes, generally when I publish an article I always brag, basically, on social media and put it up there for people. Particularly with the open access movement, I know people can get it for free, friends, now. Which is a big change, I think, from when I entered the profession. I, increasingly, am trying to avoid, I pretty much have irreverent views, posting that. I would say, over the past year my Facebook page has become more professionalised. That's a different norm. I've noticed that among my scholars, some of my scholars use it to post about their kids. Some of them are very strict, they're on social media but they use it just to post research. Others are just completely irreverent. I was irreverent, particularly in reaction to the stupidity of the UK pulling out of the European Union, then I just sort of tried to tone it down a bit. So recently I've tried to just post nice pictures of me playing golf, and some social media stuff, some research related stuff.

Interviewer: Okay. Have you used any of them to share your research output with colleagues?

Respondent: Well yes, definitely. Whenever I publish an article, I generally am always the first to mention it. Plus when I'm in the media and stuff, because I do local media surrounding particularly, I do, American politics. So they're on me over Trump and things, so I will post things when I'm in the press.

Interviewer: Okay. Could you please give me a specific example?

Respondent: Of the press?

Interviewer: Yes, using your social media to [Crosstalk 00:03:21]-

Respondent: So two weeks ago, I published an op-ed in the Scottish Herald about Trump's first 100 days. Immediately when I saw it online, the Scottish Herald, I posted a link to it on my Facebook and Twitter accounts. That's kind of what I do.

Interviewer: Okay. Let me jump to this question, important question.

Respondent: Okay.

Interviewer: How confident are you about your ability to use social media for shared knowledge?

Respondent: I'm pretty fluent in how to use it. What I'm not fluent in is the line between professional boundaries and personal boundaries. I have high school friends on there, and things like that. That's what I'm increasingly concerned about, I would say.

Interviewer: Okay. How could this influence your use?

Respondent: Probably toning down some of my more, I'd say, politically incorrect attitudes towards certain things. Probably taming- You know, not saying, "Theresa May is a fucking authoritarian idiot," on Facebook. So a more- Sort of like self-censoring for the media, almost like a politician.

Interviewer: Okay. To what extent are you expert in [using social media 00:04:35]?

Respondent: Expert. I wouldn't say I'm an expert, I don't have any sort of advanced platform where I would know how to scrape, or anything, from Twitter, or pull data off Twitter or anything like that. I have friends that do that for research purposes, you know actually scan Twitter for the \_\_\_\_\_. In terms of confidence in using it personally, I have pretty high levels of confidence.

Interviewer: Okay. How could this influence your use?

Respondent: I think knowing who sees my posts and stuff, I've thought of maybe becoming much more private. You know, keeping Facebook but also censoring. A couple of my family members are limited to a very, very, narrow view of what I post on Facebook due to political differences and stuff. So I have used it to grant different levels of access and so forth.

Interviewer: Okay. Could you just tell me a little bit about your experience with using social media?

Respondent: Well I was actually one of the first, so I've used it- Because Facebook originated at elite universities in 2004. I was at Duke at the time, so I caught on to the Facebook phenomenon. I've used it, pretty much, since its inception. I remember some of the earlier people, Bebo and Myspace and all these things that have just gone. Is that okay?

Interviewer: Yes. How could this influence your use, using social media to share your [Crosstalk 00:06:10]?

Respondent: Well, I think, sometimes I look back on my history and say, "Should I delete those posts or not?" I think it's interesting, we're now getting a narrative of people's life history going back, often, 10 years, which is really something we've never seen before. You see some of your students that friend you, or whatever, and then you see them as little kids because they don't know a world without Facebook.

Interviewer: Okay. Have you been encouraged to use social media?

Respondent: By the university?

Interviewer: By the university, by you know?

Respondent: I've been encouraged to use, let's say, Google Scholar, and have a profile on Google Scholar I would say. I find this really frustrating, sometimes, to use, to remember how to- What's called a DOI. No, what's it called? You know, it's this number, that academics get, that identifies them with all their publications. Is it a DOI, that refers to a paper doesn't it? It's something, DOI number?

Interviewer: Yes, yes, DOI number, yes.

Respondent: I think it's a paper, but I think it's called something else for the people.

Interviewer: Similar to ResearchGate as well?

Respondent: Yes, exactly.

Interviewer: Okay. How could this influence your use if you were encouraged by it?

Respondent: If I'm encouraged, I feel like it's- Somebody at Essex said they just created a Google Scholar profile for me. Actually I felt a little bit, "Is this going a little too far?" If I want to create a Google Scholar profile, I want to do it on my terms, not, you know...

Interviewer: The other part, you use social media to share your experience or research afterwards, what's the reason behind this use? Why do you use this?

Respondent: Bragging rights, to show that I'm actually doing something. Trying to get my citation count up. Probably the citation count, which is now more important in academia I think.

Interviewer: Okay. What are the specific outcomes, or benefits, you expect to get from using social media?

Respondent: More views of my articles, more downloads of my articles. Potentially, more people can see and share and that might lead to more media contacts and things like that. My profile on Twitter is much more public, so I find sometimes Twitter might be more serious. To communicate with the research agencies, I would say, so particularly I use Twitter for that. So my @esrcfunding, to remind them that I'm actually doing stuff with the money that they give me.

Interviewer: Okay. How do these benefits, or outcomes, influence your use? To use social media or sharing your knowledge?

Respondent: Well, I think these benefits are basically alerting people to something. It's pretty timeless, it takes a few seconds, so it's a cheap investment to try to disseminate your work.

Interviewer: Okay. We talked about the benefits, the advantage of using social media, what do you think about disadvantages for academic research?

Respondent: Privacy. I think, what I was alluding to before, the boundaries between what I want to post about my life, I'd rather post pictures of me playing golf sometimes than really deal with work. The feeling that we have to use this platform and that platform, like you know we have to as academics, the university expects us to spend time getting-  
We have, what is it called? Pegasus or Pure, I forget which one it is, downloading and linking all of our articles and stuff. It can be really stressful at times, when you don't do it right and then the librarian rejects you and does all this. It's really frustrating, enough already. I think it could be overload. I kind of want to do it on my own terms, rather than be dictated to how to do it. I would say, that's I think, you know.

Interviewer: Okay. Do you have anything to add, here, about using social media for sharing knowledge?

Respondent: No, I think we've covered it.

Interviewer: Okay. Many thanks to you for-

Respondent: Oh, okay, that wasn't 45 minutes. There you go, well thank you.

END

## Appendix E: Examples of Coding interviews (using NVivo software)

<Internals\Interviews\Transcript of Interviews\P1\_Transcript> - § 8 references coded [11.84% Coverage]

Reference 1 - 2.04% Coverage

Yes, whereby I learn a lot of things. Sometimes, when I need to be taught something, then... Maybe a friend or in my feed, can use the platform to teach me something.

Reference 2 - 1.44% Coverage

I have confidence, because I believe that is one of the fastest ways for me to acquire some knowledge or some skills

Reference 3 - 2.53% Coverage

Of course, yes, because, like I said, any time, maybe I'm trying to do some work with my system, that I need help or support, I use social media to communicate with somebody who knows it better than I do.

Reference 4 - 1.75% Coverage

I believe that, whenever I need help or support, through the social media platform, I can easily link up with somebody who can put me through

Reference 5 - 0.41% Coverage

it can also lead to distractions.

Reference 6 - 0.25% Coverage

it wastes your time.

Reference 7 - 1.89% Coverage

- Yes, I have seen many people use social media to share and exchange files through WhatsApp, through TeamViewer. The files include reports, and tutorial

Reference 8 - 1.53% Coverage

- Seeing others use social media for sharing knowledge influence me to use it. So, I imitate others to achieve what I want.
- 

<Internals\Interviews\Transcript of Interviews\P10\_Transcript> - § 13 references coded [16.11% Coverage]

Reference 1 - 0.41% Coverage

I feel like I understand it and can use it fairly easily.

Reference 2 - 1.50% Coverage

definitely I feel like, in academia, social media is becoming more and more important, and so being able to use it competently in general is definitely a good skill if you're trying to pursue a career in academia.

Reference 3 - 1.43% Coverage

it also encourages me to keep going with my project because I see that people are responding to it, and people must think it's a worthy subject in some way because they engage with it on a personal level.

Reference 4 - 2.31% Coverage

I am followed by some people that have their own professional accounts, but then there's people that are also just their personal accounts that don't really have any career expectations that I can tell, they just kind of use it for fun. And to see that I'm reaching those people, as well as professional people, is encouraging.

References 5-6 - 1.62% Coverage

I mean, just encourage me to use it more. You get positive feedback by using it. You know, if you use it in a certain way and then someone retweets something, or likes something, that makes you feel good and then you use it more.

Reference 7 - 1.50% Coverage

Strathclyde in general has encouraged that use, and I'm just sort of aware that, in academia, it's a good thing: It's not going to hurt you to use it. As long as you don't say (Laughter) anything controversial-

Reference 8 - 1.42% Coverage

the more people that are using it, the more encouraging it is to me to use it because there's more ways to find out about things, like articles, or job opportunities, or conferences, that sort of thing.



Reference 9 - 0.73% Coverage

it does generally help in my research because I'm trying to look at what people think about this author.

Reference 10 - 0.65% Coverage

I guess I expect to meet people that are doing similar things, and I already have done that.

Reference 11 - 0.98% Coverage

it's great to help meet people, find what other people are doing, and engage with them on that level, as a professional sort of networking.

Reference 12 - 2.59% Coverage

It would just make me use it more. I mean, there are times where I have thought it's a bit of a hassle, (Laughter) you know, I don't have to keep doing it. But then, when I am responded to positively in that way, then I want to keep using it because I don't know who the next person I might meet will be, or who else I can share this with, or interact with in that way

Reference 13 - 0.98% Coverage

Privacy concerns about social media in general hold me back from using it more than I would otherwise, and more openly than I currently do.

<Internals\Interviews\Transcript of Interviews\P11\_Transcript> - § 13 references coded [11.97% Coverage]

Reference 1 - 0.75% Coverage

I am a very confident Twitter user. I use it a lot, and I have it on my phone, and I also have it on my tablet, and I have it on my laptop. So I'm very confident at using that one social media account, I would say.

Reference 2 - 0.21% Coverage

I think because I am a confident user, I use it all the time.

Reference 3 - 1.58% Coverage

I supposed it would depend, encouraged by whom, I guess. The university's kind of okay with it. I think they worry that we might say the wrong thing. Occasionally I kind of say the wrong thing, because it's that kind of environment, isn't it? But I think they do see it as a good opportunity for dissemination. I think they see it as a

good way of getting research out there. So there is a growing encouragement in the university community to use it.

Reference 4 - 1.04% Coverage

I'm encouraged, I guess, as a model of communicating more generally, but also encouraged from the point of view that the university does want to understand the whole metrics thing. And how, maybe, new mechanisms for disseminating research are beginning to build through things like social media.

Reference 5 - 0.59% Coverage

You're also encouraged from the point of view, quite often when you sign up for a conference now, or if you're doing a paper, they ask you what your Twitter handle is.

Reference 6 - 0.47% Coverage

So I think that encouraged me as well, I guess, because you can see there's a marketing element to it as well, for what you're doing.

Reference 7 - 2.00% Coverage

I think it affects, certainly, there's an ongoing encouragement from colleagues. Institutionally, I can see it growing and I guess, I suppose, it's like anything else. If they find that you're strong on the Altmetrics scale, will that help your career, I guess? So if increasingly universities start looking at Altmetrics as a way of measuring our value, then that would be an encouragement, I guess, to do more of it. Because you know that by using Twitter or Facebook, you're reaching different people, perhaps, than you would through online journals or conferences.

Reference 8 - 2.19% Coverage

So that's a nice encouragement, and I think it's good from the point of view of the university having a social reach that it might not have had before. So it would be interesting to see if the university does continue to encourage us to use it. I think they probably will, and that will certainly, probably, encourage me to keep doing it, I guess. I'm not sure I could use it much more than I do at the moment, but it would certainly encourage me to keep using it and maybe use it slightly differently. Maybe disseminate more of my papers and think more about doing that, rather than just seeing it as a community, I guess.

Reference 9 - 0.30% Coverage

For sharing? I suppose it is an ego thing. You want more people to read your material.

Reference 10 - 0.43% Coverage

So I'm always just keen to try and make sure I play my part in that as much as I can, to get material out to the community.

Reference 11 - 0.41% Coverage

I've had a lot of people read material from the non-academic community and I wouldn't have had that without Twitter.

Reference 12 - 0.26% Coverage

for me the more positive impact of it has been the growth of my community.

Reference 13 - 1.75% Coverage

You know, those are domains I've never studied before, so having them tweet papers at me about subjects has made me read material I wouldn't have read. So impact-wise on me, that's made me a better researcher, I think, because I'm more open-minded. Without social media I probably wouldn't have got that, because you tend to use the same databases that are part of your own intellectual domain. You very rarely stray outside that, because you get used to what you know as what you're supposed to do.

<Internals\Interviews\Transcript of Interviews\P12\_Transcript> - § 11 references coded [6.60% Coverage]

Reference 1 - 0.83% Coverage

Very confident. I'm very familiar with the platforms and what I can do with them. I'm still refining my methods and the reasons for taking part, especially with Instagram because that's one I'm not quite so familiar with. With Twitter and Facebook I know what I'm doing and I know that they work more importantly.

Reference 2 - 0.84% Coverage

That's a good question because I am less confident with Instagram so I don't use it as much, that's a very good and interesting point. I think it's because I used social media personally for quite a long time before I used it for professional purposes, so that probably has an impact on my confidence with using them.

Reference 3 - 1.35% Coverage

Not really. It was sort of starting to grow when I was doing my PhD and more and more people were doing it. The more that I moved into public engagement and the engagement area it became obviously more obvious.

There is now a lot more training available to PhD students in terms of managing your digital footprint, that sort of thing but I've never been actively encouraged or discouraged from it. It's part of my job description now so I have to do it but I've never actively been encouraged to do it.

Reference 4 - 0.20% Coverage

It might encourage me to use it potentially more than I'm already using it.

Reference 5 - 0.23% Coverage

The obvious things are getting likes, retweets, comments. So, it's immediate feedback.

Reference 6 - 0.10% Coverage

it's building those new relationships.

Reference 7 - 0.36% Coverage

it's building awareness of who I am, that I'm here, so people are starting to get in contact with me because my reputation is building.

Reference 8 - 0.30% Coverage

I think academics who are very active on social media will be more visible within the younger set of their field.

Reference 9 - 0.47% Coverage

Yes, I think especially amongst younger researchers any academic who is active on social media is more visible and potentially that might have an impact on their citation rates,

Reference 10 - 0.14% Coverage

it can be a total time suck is the main disadvantage.

Reference 11 - 1.78% Coverage

- Yes, I have seen, I saw for example in terms of Twitter, my colleague runs number of conferences and share their posters, their papers, their posts up on Twitter, and

he is getting a huge amount of traffic and a lot of likes around of the conference.

- From the point of view, my colleague and I got together and designed Twitter photo competition for CDT students to share these sort of things they are doing. So we have ended up with 300,000 views, we have quite good impact.
  - So, defiantly, by seeing that, I have changed practicing from that, I try to use other platforms looking for what other people doing.
  - By seeing their impact positively influence me.
- 

<Internals\Interviews\Transcript of Interviews\P13\_Transcript> - § 7 references coded [9.37% Coverage]

Reference 1 - 1.11% Coverage

If you could use social media as a better, more efficient thorough way of networking to other professionals then I suppose that would be a good reason to use it.

Reference 2 - 0.57% Coverage

to find collaborative partners and other researchers that they can help each other.

Reference 3 - 1.14% Coverage

I would hope that other researchers would see what I'm doing, find me, think, "He's doing some good stuff. Let's contact him and offer him a collaboration," a job, etc

Reference 4 - 0.90% Coverage

it's all about exposure and data privacy. So, everyone knows you shouldn't post things about confidential research that you're doing

Reference 5 - 1.68% Coverage

Yes. So, I will give you an example. Once you have a paper and you publish it, no one can steal it, but to get more \_\_\_\_ [0:14:47], that the other researcher or scholar could find your article and cite it, you may use social media to your advantage

Reference 6 - 1.15% Coverage

- I have seen number of my colleagues use ResearchGate and I realised that they use it quite a lot to share their researches that makes me copy them and use it much more.

Reference 7 - 2.82% Coverage

- I will be more likely to have an active profile on the social media sites and keep them up to date with my current research to communicate with other researchers certainly through ResearchGate which is keeping it a bit formally.
  - I have seen more close friends in research use Facebook just for very formal chat and looking for documents which again makes me more likely to do the same but in much more informal.
- 

<Internals\Interviews\Transcript of Interviews\P14\_Transcript> - § 15 references coded [8.54% Coverage]

Reference 1 - 0.58% Coverage

I mean, in some ways I think it depends, and I think it depends on the platform. I am not very good with Twitter. I don't write well in really short pieces, I tend to be a little bit more verbose.

Reference 2 - 0.39% Coverage

In terms of Facebook, I feel very confident about, just because there's less restrictions, I feel like I can easily share things.

Reference 3 - 0.63% Coverage

if I use social media, have a positive experience, for example, that's increased my performance. In that case, by this experience, my use of social media would be increased. That could be kind of, and vice versa.

Reference 4 - 1.51% Coverage

So, ASIST, the association for information science and technology, they'll often ask people to tweet things out. [SIGUS 0:19:13], the special interest group that I'm a part of, also wants people to put things out. My PhD supervisor, she's on Twitter a fair amount. She tweets lots, it's sort of, I don't know if she actually, I think she said at one point, "Oh, you should really get more active." Or maybe it was just implied, maybe it just felt like it. I have lots of friends who do use it a fair amount.

Reference 5 - 0.34% Coverage

I think it will make me check things out more. I think it's led me to do more in terms of tweeting at conferences.

Reference 6 - 0.66% Coverage

I think it's nice to be able to share what you've done. The people that I'm friends with on Facebook tend to be people who are in the same field as

me. So these are the people who actually would read my stuff potentially.

Reference 7 - 0.34% Coverage

well, other people do it, and so you kind of feel like, "Oh, other people are doing this, I should do it as well."

Reference 8 - 1.27% Coverage

It really does feel like so much of what you do in academia, you do it by yourself. There's not a lot of recognition from other people. You sit in your own office, and you do your work, and you submit it, and then it comes out online, and then that's it. So, it's nice to share that with people, but yes. They are my colleagues, but they're also my friends, who not only would read it but would actually care if I did something.

Reference 9 - 0.55% Coverage

it's interesting, because when you talk about sharing information and things on social media, I think I tend more to keep up to date with what people are doing in a more general sense.

Reference 10 - 0.25% Coverage

So I find social media, for me, is a really good way to make social ties with people.

Reference 11 - 0.17% Coverage

I always hope that people will read what I put out there.

Reference 12 - 0.53% Coverage

I also hope that, at some point, it will, I think it has, where people know, "Oh, she's publishing in this area, she's researching in this area," then leading to collaborations.

Reference 13 - 0.57% Coverage

there is the waste of time aspect, where you're not just getting academic information, you're getting all kinds of things, but some of the information from academic sources are also not useful.

Reference 14 - 0.31% Coverage

I would say yeah, actually. I do tend to remember to use social media when I see other people doing it.

Reference 15 - 0.45% Coverage

Well I think if it becomes sort of a part of everyday practice for most of the people who I associate with, then it sort of becomes a more regular thing.

<Internals\Interviews\Transcript of Interviews\P15\_Transcript> - § 3 references coded [2.83% Coverage]

Reference 1 - 0.15% Coverage

I'd say it's quite basic.

Reference 2 - 0.71% Coverage

I think to just have a presence on social media and to kind of tell the world that you're doing something interesting.

Reference 3 - 1.97% Coverage

So there's that aspect as well, but I think there's more of an ego driven aspect behind it. So I think it's a bit of both, feeling that you have an audience. Because if you're stuck in the lab seven hours a day or something, I think part of you also wants to show the world that, "Yes, I'm working really hard." That kind of thing.

<Internals\Interviews\Transcript of Interviews\P16\_Transcript> - § 8 references coded [13.22% Coverage]

Reference 1 - 4.79% Coverage

Yes, generally when I publish an article I always brag, basically, on social media and put it up there for people. Particularly with the open access movement, I know people can get it for free, friends, now. Which is a big change, I think, from when I entered the profession. I, increasingly, am trying to avoid, I pretty much have irreverent views, posting that. I would say, over the past year my Facebook page has become more professionalised. That's a different norm.

Reference 2 - 1.29% Coverage

I'm pretty fluent in how to use it. What I'm not fluent in is the line between professional boundaries and personal boundaries.



Reference 3 - 0.60% Coverage

Bragging rights, to show that I'm actually doing something.

Reference 4 - 1.15% Coverage

Trying to get my citation count up. Probably the citation count, which is now more important in academia I think.

Reference 5 - 0.58% Coverage

More views of my articles, more downloads of my articles.

Reference 6 - 1.09% Coverage

Potentially, more people can see and share and that might lead to more media contacts and things like that.

Reference 7 - 1.81% Coverage

Well, I think these benefits are basically alerting people to something. It's pretty timeless, it takes a few seconds, so it's a cheap investment to try to disseminate your work.

Reference 8 - 1.91% Coverage

Privacy. I think, what I was alluding to before, the boundaries between what I want to post about my life, I'd rather post pictures of me playing golf sometimes than really deal with work.

## Appendix F: Questionnaire



I would like to welcome you in my study which is about “Sources of Self-efficacy and Outcome Expectations for Researchers in The Use of Social Media for Knowledge Sharing”. This study is looking for views and experiences of Academic Staff, Research Assistants, Research Associates, and PhD students at University of Strathclyde about their use of social media for sharing their experiences and research outputs.

---

Are you Academic staff/Research Assistant/ Research Associate/Research Fellow/PhD student at University of Strathclyde?

No

Yes



## Dear Participant

You are invited to participate in a research being conducted by Hussain Alshahrani who is a PhD student at the University of Strathclyde. This information sheet describes the research to be undertaken. Please read this sheet carefully and be confident that you understand its contents before deciding whether to participate or not. If you have any questions about the research, please ask the researcher by emailing [hussain.alshahrani@strath.ac.uk](mailto:hussain.alshahrani@strath.ac.uk)

### What is this Study about?

The title of this research project is "*Sources of Self-efficacy and Outcome Expectations for Researchers in The Use of Social Media for Knowledge Sharing*". This research aims to explore the sources of self-efficacy and outcome expectations for researchers and their roles in the use of social media for knowledge sharing. Self-efficacy is a judgment of one's capability to accomplish a certain level of performance, whereas outcome expectation is a judgment of the likely consequence such behaviour will produce.

This study is approved by the Departmental Ethics Committee and if there is any concerns should contact the Departmental Ethics Committee using [enquiries@cis.strath.ac.uk](mailto:enquiries@cis.strath.ac.uk)

Ethical approval number is: 667

### What should I know?

The questionnaire is completely anonymous and confidential and there is no way to identify who has filled it in. It is asking all academic staff and PhD students at University of Strathclyde about their views and experiences about the use of social media for sharing their experiences and research outputs.

This questionnaire will take approximately 15 minutes to complete. Your contribution in this questionnaire is valuable for my research, and the findings will assist in understanding and achieving the aim of this study. Your participation in this research is voluntary.

*There will be five gift certificates from Amazon (£25 each) for who want to enter into the drawing.*

### What will happen to the data?

The collected data from the questionnaire will be used for research purposes. A summary of the anonymised findings will be made available for other researchers to use.

### Who can access the data?

Only my supervisors and I will have access to this data, which will be securely stored on the university server. An anonymised version of the data will be made available for other researchers to use.

### What is next?

It is up to you to decide whether or not to take part. If you decide to take part, please click the consent form below to start the survey.

Thank you very much for your consideration.



Below is the informed consent agreement for this study. Please review the text below and click "Yes" if you agree to participate, and "No" if you do not agree to participate.

- I confirm that I have read and understood the information above.
- I understand that my participation is voluntary and that I am free to withdraw at any time, without having to give a reason and without any consequences.
- I understand that the survey is anonymous and that I cannot be identified.
- I understand that once the survey is submitted my responses cannot be withdrawn.
- I understand that the survey data will remain confidential.
- I understand that the findings will be used in this study and other publications and from other researchers.
- I understand that on completion the data will be stored in the university Data Archive repository.
- I consent to taking part in the survey.

I agree to participate in this study

No

Yes



Social media can be used to share experiences. Experiences here refer to the experiences that come from the continuing study, learning, research, or problem solving.

Do you use social media to share your experiences?

No

Yes



**I do not use social media to share my experiences because.... (Please select all that apply)**

I do not trust social media

I do not like social media

I do not see the benefit of using social media

I have had negative experiences with social media

I have not seen anyone successfully use social media

Social media will distract me from my work

Social media will affect my privacy

Social media will waste my time

Others (please specify):



## Section 1: Sources of Self-efficacy

I use social media to share experiences, because .....

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....I am very confident to use it for that.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....I have good skills in use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....I have experiences with social media platform (s) that I use.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....I have attended training courses to improve my ability in use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If I am confident about my abilities and skills in the use of social media to share experiences,

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I will be keen to use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will use it more frequently.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



**I use social media to share experiences, because .....**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
.....I have seen my colleagues use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
.....I have observed others' success in using social media.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**If I have seen more successes from others in the use of social media to share experiences,**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I will be keen to use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will use it more frequently.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



I use social media to share experiences, because .....

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....I have received encouragement from my colleagues.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....I have received encouragement from my institution.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If I receive this encouragement continuously,

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I will be keen to use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will use it more frequently.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>





**I use social media to share experiences, because .....**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....I have positive experiences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....I enjoy when I use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**If I have a positive feeling from using social media to share experiences,**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I will be keen to use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will use it more frequently.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**I do not use social media to share my experiences, because....**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....I have negative experiences with it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....I feel anxious when I use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**If I have a negative feeling from using social media to share my experiences,**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I will not be keen to use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will not use it any more.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



I expect that the use of social media to share experiences will help me....

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....to read my experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....to become an audience for my work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....to participate in my studies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....to exchange experience with them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I expect that the use of social media to share experiences will help me ....

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....to extend my current community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....to build new relationships.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....to engage with different communities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....to collaborate with others from any community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I expect that the use of social media to share experiences will help me....

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....to make an impact for my experiences by delivering them to the right people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....to support my institution to have an impact in its community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I expect that the use of social media to share experiences will help me....

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....to increase my visibility in my community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....to let others recognize me and my experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I expect that by using social media to share experiences, I will ....

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....get help to improve my experience, skills, learning, and problem solving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....get more citations for my experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....get feedback from others about my experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....keep up-to-date with other experiences in my field.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....learn new skills and experiences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....get some new sources (e.g. Journals' access, materials, papers).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....publicise my experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....get a job somewhere.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

These expectations can positively influence me to use social media for sharing my experiences more frequently.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
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I expect that by using social media to share experiences,

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
...my experience will be taken by someone else without any permission or citation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...my ideas will be used by someone else without any permission or citation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I expect that by using social media for sharing my experiences,

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
...I will be distracted from important work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...my privacy will be affected.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...my time will be consumed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

These expectations can negatively influence me and prevent me from using social media to share my experiences.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
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Social media can be used to share research outputs. Research outputs here refer to papers, results, or data.

Do you use social media to share your research outputs?

No

Yes



I do not use social media to share my research outputs because....(Please select all that apply)

I do not trust social media

I do not like social media

I do not see the benefit of using social media

I have had negative experiences with social media

I have not seen anyone successfully use social media

Social media will distract me from my work

Social media will affect my privacy

Social media will waste my time

Others (please specify):



## Section 1: Sources of Self-efficacy

I use social media to share research outputs, because .....

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
.....I am very confident to use it for that.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
.....I have good skills in use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
.....I have experiences with social media platform (s) that I use.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
.....I have attended training courses to improve my ability in use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If I am confident about my abilities, skills, and experiences in the use of social media to share research outputs,

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I will be keen to use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will use it more frequently.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



I use social media to share research outputs, because .....

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
.....I have seen my colleagues use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
.....I have observed others' success in using social media.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If I have seen more successes from others in the use of social media to share research outputs,

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I will be keen to use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will use it more frequently.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



**I use social media to share research outputs, because .....**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....I have received encouragement from my colleagues to use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....I have received encouragement from my institution to use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**If I receive this encouragement continuously,**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I will be keen to use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will use it more frequently.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



**I use social media to share research outputs, because .....**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....I have positive experiences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....I enjoy when I use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**If I have a positive feeling from using social media to share research outputs,**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I will be keen to use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will use it more frequently.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**I do not use social media to share my research outputs, because....**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....I have negative experiences with it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....I feel anxious when I use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**If I have a negative feeling from using social media to share research outputs,**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I will not be keen to use it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I will not use it any more.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>





**I expect that the use of social media to share research outputs will help me to attract people....**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....to read my research.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....to become an audience for my work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....to participate in my studies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....to exchange research ideas with them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**I expect that the use of social media to share research outputs will help me....**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....to extend my current research community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....to build new research relationships.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....to engage with different research communities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....to collaborate with researchers from any research community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**I expect that the use of social media to share research outputs will help me....**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....to make an impact for my research by delivering this research to the right people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....to support my institution to have an impact in its community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**I expect that the use of social media to share research outputs will help me....**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....to increase my visibility in my research community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....to let others recognize me and my work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**I expect that by using social media to share research outputs, I will ....**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....get help to improve my skills in research, learning, problem solving	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....get more citations for my research.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....get feedback from others about my research.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....keep up-to-date with my research area.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....learn new skills and experiences.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....get some new sources (e.g. Journals' access, materials, papers).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....publicise my work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....get a job somewhere.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**These expectations can positively influence me to use social media for sharing my research outputs more frequently.**

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
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**I expect that by using social media to share research outputs,**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....my work which is not published yet, will be taken by someone else without any permission or citation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
...my ideas will be used by someone else without any permission or citation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**I expect that by using social media for sharing my research outputs,**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
....I will be distracted from important work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....my privacy will be affected.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
....my time will be consumed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**These expectations can negatively influence me and prevent me from using social media to share my research outputs.**

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
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### Section 3: Demographic Information

What type (s) of social media do you use for knowledge sharing? *(Please select all that apply).*

Social networking sites (such as Facebook, LinkedIn, ResearchGate, and Academia.edu)

Wikipedia

Microblogs (such as Twitter)

Blogs

Content communities (such as Instagram, Flickr, YouTube, Slideshare, Snapchat, and WhatsApp)

Others (please specify):

What social media platform (s) specifically do you use for knowledge sharing? *(Please select all that apply).*

Facebook

LinkedIn

ResearchGate

Academia.edu

Wikipedia

Twitter

Instagram

Flickr

YouTube

Slideshare

Snapchat

WhatsApp

Others (please specify):



**What is your gender?**

Male

Female

Prefer not to say

**What is your position at the university?**

Professor

Reader

Senior Lecturer

Lecturer

Research Associate

Research Assistant

Research Fellow

PhD Student

**What is your faculty?**

Engineering

Humanities & Social Sciences

Science

Strathclyde Business School

**How long have you been associated with research work?**

Less than 1 year

1 to 2 years

3 to 4 years

5 to 6 years

7 to 8 years

9 to 10 years

More than 10 years



If you would like to be entered into the drawing for one of five £25 gift certificates to Amazon.com, please enter your email address. You will be emailed if you are a winner.



*Thank you very much for participating in this survey!  
Your opinions are essential to this project.*



## Appendix G: Descriptive Statistics Tables

<i>Self-efficacy</i>					
<i>Items</i>	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
<b>Personal Mastery Experiences (Sharing experience)</b>					
<b>I use social media to share experiences, because...</b>					
....I am very confident to use it for that.	89	1	5	3.60	.808
....I have good skills in use it.	89	1	5	3.69	.847
....I have experiences with social media platform (s) that I use.	89	2	5	3.92	.644
....I have attended training courses to improve my ability in use it.	89	1	5	1.93	1.064
<b>Vicarious experience (Sharing experience)</b>					
<b>I use social media to share experiences, because...</b>					
....I have seen my colleagues use it.	89	1	5	3.49	1.067
....I have observed others' success in using social media.	89	1	5	3.63	1.049
<b>Verbal persuasion (Sharing experience)</b>					
<b>I use social media to share experiences, because...</b>					
....I have received encouragement from my colleagues.	89	1	5	3.16	1.127
....I have received encouragement from my institution.	89	1	5	2.82	1.083
<b>Emotional arousal (Sharing experience)</b>					
<b>- Positive</b>					
<b>I use social media to share experiences, because...</b>					
....I have positive experiences.	89	1	5	3.67	.750
....I enjoy when I use it.	89	1	5	3.72	.953
<b>- Negative</b>					
<b>I do not use social media to share my experiences, because....</b>					
....I have negative experiences with it.	89	1	4	2.36	1.014
....I feel anxious when I use it.	89	1	5	2.48	1.139
<b>Personal Mastery Experiences (Sharing research outputs)</b>					
<b>I use social media to share research outputs, because...</b>					
....I am very confident to use it for that.	63	1	5	3.63	.885
....I have good skills in use it.	63	1	5	3.65	.845

....I have experiences with social media platform (s) that I use.	63	2	5	3.95	.580
....I have attended training courses to improve my ability in use it.	63	1	5	2.57	1.228
<b>Vicarious experience (Sharing research outputs)</b>					
<b>I use social media to share research outputs, because...</b>					
....I have seen my colleagues use it.	63	1	5	3.86	.759
....I have observed others' success in using social media.	63	2	5	3.84	.723
<b>Verbal persuasion (Sharing research outputs)</b>					
<b>I use social media to share research outputs, because...</b>					
....I have received encouragement from my colleagues to use it.	63	1	5	3.35	1.034
....I have received encouragement from my institution to use it.	63	1	5	3.10	1.027
<b>Emotional arousal (Sharing research outputs)</b>					
- <b>Positive</b>					
<b>I use social media to share research outputs, because...</b>					
....I have positive experiences.	63	1	5	3.68	.758
....I enjoy when I use it.	63	1	5	3.68	.858
- <b>Negative</b>					
<b>I do not use social media to share my research outputs, because....</b>					
....I have negative experiences with it.	63	1	5	2.43	.979
....I feel anxious when I use it.	63	1	5	2.56	1.044

*The impact of Sources of self-efficacy*

<i>Items</i>	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
<b>Personal Mastery Experiences (Sharing experience)</b>					
<b>If I am confident about my abilities and skills in the use of social media to share experiences,</b>					
....I will be keen to use it.	89	2	5	3.78	.750
....I will use it more frequently.	89	1	5	3.67	.927
<b>Vicarious experience (Sharing experience)</b>					
<b>If I have seen more successes from others in the use of social media to share experiences</b>					
....I will be keen to use it.	89	1	5	3.62	.819
....I will use it more frequently.	89	1	5	3.60	.938
<b>Verbal persuasion (Sharing experience)</b>					
<b>If I receive this encouragement continuously,</b>					
...I will be keen to use it.	89	1	5	3.45	.989
...I will use it more frequently.	89	1	5	3.47	1.001
<b>Emotional arousal (Sharing experience)</b>					
<b>- Positive</b>					
<b>If I have a positive feeling from using social media to share experiences,</b>					
....I will be keen to use it.	89	1	5	3.93	.735
....I will use it more frequently.	89	1	5	3.92	.757
<b>- Negative</b>					
<b>If I have a negative feeling from using social media to share my experiences,</b>					
....I will not be keen to use it.	89	1	5	3.54	1.098
....I will not use it any more.	89	1	5	3.39	1.154
<b>Personal Mastery Experiences (Sharing research outputs)</b>					
<b>If I am confident about my abilities, skills, and experiences in the use of social media to share research outputs</b>					
....I will be keen to use it.	63	1	5	3.86	.840
....I will use it more frequently.	63	1	5	3.87	.793
<b>Vicarious experience (Sharing research outputs)</b>					
<b>If I have seen more successes from others in the use of social media to share research outputs</b>					
...I will be keen to use it.	63	1	5	3.92	.867

...I will use it more frequently.	63	1	5	3.87	.907
<b>Verbal persuasion (Sharing research outputs)</b>					
<b>If I receive this encouragement continuously</b>					
....I will be keen to use it.	63	1	5	3.71	.906
....I will use it more frequently.	63	1	5	3.73	.884
<b>Emotional arousal (Sharing research outputs)</b>					
<b>Positive</b>					
<b>If I have a positive feeling from using social media to share research outputs</b>					
....I will be keen to use it.	63	2	5	4.05	.551
....I will use it more frequently.	63	2	5	4.03	.595
<b>Negative</b>					
<b>If I have a negative feeling from using social media to share research outputs</b>					
....I will not be keen to use it.	63	1	5	3.56	.980
....I will not use it any more.	63	1	5	3.35	1.003

<i><b>The impact of the sources of self-efficacy for using social media for sharing experience</b></i>				
<i><b>Sources</b></i>	<i><b>N</b></i>	<i><b>M</b></i>	<i><b>SD</b></i>	
Personal Mastery Experience Sharing Experience	89	3.72	.761	
Vicarious Experience Sharing Experience	89	3.61	.827	
Verbal Persuasion Sharing Experience	89	3.46	.975	
Emotional Arousal Sharing Experience	89	3.70	.687	

<i><b>The impact of the sources of self-efficacy for using social media for sharing research outputs</b></i>				
<i><b>Sources</b></i>	<i><b>N</b></i>	<i><b>M</b></i>	<i><b>SD</b></i>	
Personal Mastery Experience Research Outputs	63	3.87	.789	
Vicarious Experience Research Outputs	63	3.90	.876	
Verbal Persuasion Research Outputs	63	3.72	.883	
Emotional Arousal Research Outputs	63	3.75	.563	



*The level of the impact of the sources of self-efficacy*

<i>Sources</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Personal Mastery Experience	95	3.73	.775
Vicarious Experience	95	3.68	.842
Verbal Persuasion	95	3.52	.927
Emotional Arousal	95	3.64	.638

## *Outcome expectation*

<i>Items</i>	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
<b>Social outcomes (Sharing experience)</b>					
<b>Positive</b>					
- <b>Attracting People</b>					
<b>I expect that the use of social media to share experiences will help me to attract people....</b>					
...to read my experience.	89	1	5	3.85	.791
...to become an audience for my work.	89	1	5	3.79	.846
...to participate in my studies.	89	1	5	3.34	1.033
...to exchange experience with them.	89	2	5	4.03	.790
- <b>Networking</b>					
<b>I expect that the use of social media to share experiences will help me....</b>					
...to extend my current community.	89	1	5	4.07	.780
...to build new relationships.	89	1	5	3.90	.892
...to engage with different communities.	89	2	5	3.98	.825
...to collaborate with others from any community.	89	1	5	3.87	.944
- <b>Social Impact</b>					
<b>I expect that the use of social media to share experiences will help me....</b>					
...to make an impact for my experiences by delivering them to the right people.	89	1	5	3.69	.834
...to support my institution to have an impact in its community.	89	1	5	3.53	.906
- <b>Visibility</b>					
<b>I expect that the use of social media to share experiences will help me....</b>					
...to increase my visibility in my community.	89	1	5	3.96	.865
...to let others recognize me and my experience.	89	1	5	4.01	.746
<b>Negative</b>					
- <b>Lack of trust</b>					
<b>I expect that by using social media to share experiences,</b>					
...my experience will be taken by someone else without any permission or citation.	89	1	5	2.99	.935
...my ideas will be used by someone else without any permission or citation.	89	1	5	3.18	.936

**Personal Outcomes (Sharing experience)****Positive****I expect that by using social media to share experiences, I will....**

...get help to improve my experience, skills, learning, and problem solving	89	1	5	3.55	1.000
...get more citations for my experience.	89	1	5	3.33	.963
...get feedback from others about my experience.	89	1	5	3.80	.800
...keep up-to-date with other experiences in my field.	89	2	5	4.04	.620
...learn new skills and experiences.	89	1	5	3.65	.931
...get some new sources (e.g. Journals' access, materials, papers).	89	1	5	3.74	.995
...publicise my experience.	89	1	5	3.85	.806
...get a job somewhere.	89	1	5	3.25	1.090

**Negative****I expect that by using social media for sharing my experiences,**

...I will be distracted from important work.	89	1	5	3.24	1.023
...my privacy will be affected.	89	1	5	3.29	1.025
...my time will be consumed.	89	2	5	3.66	.988

<i>Outcome expectation</i>					
<i>Items</i>	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
<b>Social outcomes (Sharing research outputs)</b>					
<b>Positive</b>					
- <b>Attracting People</b>					
<b>I expect that the use of social media to share research outputs will help me to attract people....</b>					
...to read my research.	63	3	5	4.10	.530
...to become an audience for my work.	63	3	5	4.10	.499
...to participate in my studies.	63	1	5	3.44	1.133
...to exchange research ideas with them.	63	1	5	4.02	.813
- <b>Networking</b>					
<b>I expect that the use of social media to share research outputs will help me....</b>					
...to extend my current research community.	63	2	5	4.11	.599
...to build new research relationships.	63	2	5	4.03	.647
...to engage with different research communities.	63	2	5	4.02	.609
...to collaborate with researchers from any research community.	63	1	5	3.84	.846
- <b>Social Impact</b>					
<b>I expect that the use of social media to share research outputs will help me....</b>					
...to make an impact for my research by delivering this research to the right people.	63	2	5	3.94	.669
...to support my institution to have an impact in its community.	63	1	5	3.78	.792
- <b>Visibility</b>					
<b>I expect that the use of social media to share research outputs will help me....</b>					
...to increase my visibility in my research community.	63	2	5	4.16	.653
...to let others recognize me and my work.	63	3	5	4.14	.564
<b>Negative</b>					
- <b>Lack of trust</b>					
<b>I expect that by using social media to share research outputs</b>					
...my work which is not published yet, will be taken by someone else without any permission or citation.	63	1	5	3.00	1.107
...my ideas will be used by someone else without any permission or citation.	63	1	5	3.08	1.154

**Personal Outcomes (Sharing research outputs)****Positive****I expect that by using social media to share research outputs, I will....**

...get help to improve my skills in research, learning, problem solving	63	1	5	3.44	1.104
...get more citations for my research.	63	1	5	3.70	.909
...get feedback from others about my research.	63	1	5	3.97	.718
...keep up-to-date with my research area.	63	1	5	3.98	.793
...learn new skills and experiences.	63	1	5	3.70	.927
...get some new sources (e.g. Journals' access, materials, papers).	63	1	5	3.78	.958
...publicise my work.	63	2	5	4.05	.551
...get a job somewhere.	63	1	5	3.48	.913

**Negative****I expect that by using social media for sharing my research outputs**

...I will be distracted from important work.	63	1	5	3.06	1.045
...my privacy will be affected.	63	1	5	3.13	1.100
...my time will be consumed.	63	1	5	3.44	1.044

## *The impact of outcome expectations*

<i>Items</i>	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
<b><i>Sharing experience</i></b>					
- <b>Positive</b>					
These expectations can positively influence me to use social media for sharing my experiences more frequently.	89	2	5	3.91	.615
- <b>Negative</b>					
These expectations can negatively influence me and prevent me from using social media to share my experiences.	89	1	5	3.26	.860
<b><i>Sharing research outputs</i></b>					
- <b>Positive</b>					
These expectations can positively influence me to use social media for sharing my research outputs more frequently.	63	3	5	4.06	.564
- <b>Negative</b>					
These expectations can negatively influence me and prevent me from using social media to share my research outputs.	63	2	5	3.29	.831

**Results of Normal Distribution Test for using social media to share experience.**

Variables	N	Skewness	Kurtosis
PERSONAL MASTERY EXPERIENCE1_SHARING EXPERIENCE ( <b>PME1_SE</b> )	89	-0.714	0.573
PERSONAL MASTERY EXPERIENCE2_SHARING EXPERIENCE ( <b>PME2_SE</b> )	89	-0.718	0.535
PERSONAL MASTERY EXPERIENCE3_SHARING EXPERIENCE ( <b>PME3_SE</b> )	89	-0.713	1.610
PERSONAL MASTERY EXPERIENCE4_SHARING EXPERIENCE ( <b>PME4_SE</b> )	89	1.006	0.023
IMPACT_PERSONAL MASTERY EXPERIENCE1_SHARING EXPERIENCE ( <b>Imp_PME1_SE</b> )	89	-0.596	0.406
IMPACT_PERSONAL MASTERY EXPERIENCE2_SHARING EXPERIENCE ( <b>Imp_PME2_SE</b> )	89	-0.702	0.414
VICARIOUS EXPERIENCE1_SHARING EXPERIENCE ( <b>VE1_SE</b> )	89	-0.874	0.106
VICARIOUS EXPERIENCE2_SHARING EXPERIENCE ( <b>VE2_SE</b> )	89	-0.654	-0.174
IMPACT_VICARIOUS EXPERIENCE1_SHARING EXPERIENCE ( <b>Imp_VE1_SE</b> )	89	-0.834	0.634
IMPACT_VICARIOUS EXPERIENCE2_SHARING EXPERIENCE ( <b>Imp_VE2_SE</b> )	89	-0.875	0.619
VERBAL PERSUASION1_SHARING EXPERIENCE ( <b>VP1_SE</b> )	89	-0.171	-0.914
VERBAL PERSUASION2_SHARING EXPERIENCE ( <b>VP2_SE</b> )	89	0.148	-0.540
IMPACT_VERBAL PERSUASION_SHARING EXPERIENCE1 ( <b>Imp_VP_SE1</b> )	89	-0.506	0.100
IMPACT_VERBAL PERSUASION_SHARING EXPERIENCE2 ( <b>Imp_VP_SE1</b> )	89	-0.512	0.59
POSITIVE_EMOTIONAL AROUSAL1_SHARING EXPERIENCE ( <b>Pos_EA1_SE</b> )	89	-0.866	1.400
POSITIVE_EMOTIONAL AROUSAL2_SHARING EXPERIENCE ( <b>Pos_EA2_SE</b> )	89	-1.095	1.385
IMPACT_POSITIVE_EMOTIONAL AROUSAL_SHARING EXPERIENCE1 ( <b>Imp_Pos_EA_SE1</b> )	89	-0.945	2.467
IMPACT_POSITIVE_EMOTIONAL AROUSAL_SHARING EXPERIENCE2 ( <b>Imp_Pos_EA_SE2</b> )	89	-0.832	1.905

NEGATIVE_EMOTIONAL AROUSAL1_SHARING EXPERIENCE (Neg_EA1_SE)	89	0.159	-1.059
NEGATIVE_EMOTIONAL AROUSAL2_SHARING EXPERIENCE (Neg_EA2_SE)	89	0.137	-1.050
IMPACT_NEGATIVE_EMOTIONAL AROUSAL_SHARING EXPERIENCE1 (Imp_Ne_EA_SE1)	89	-0.840	0.021
IMPACT_NEGATIVE_EMOTIONAL AROUSAL_SHARING EXPERIENCE2 (Imp_Ne_EA_SE2)	89	-0.641	-0.409
ATTRACTING_PEOPLE_1_SHARING EXPERIENCE (Attr_People_1_SE)	89	-1.140	2.031
ATTRACTING_PEOPLE_2_SHARING EXPERIENCE (Attr_People_2_SE)	89	-0.842	0.894
ATTRACTING_PEOPLE_3_SHARING EXPERIENCE (Attr_People_3_SE)	89	-0.278	-0.643
ATTRACTING_PEOPLE_4_SHARING EXPERIENCE (Attr_People_4_SE)	89	-0.910	1.016
NETWORKING1_SHARING EXPERIENCE (Net1_SE)	89	-1.587	4.702
NETWORKING2_SHARING EXPERIENCE (Net2_SE)	89	-0.877	0.749
NETWORKING3_SHARING EXPERIENCE (Net3_SE)	89	-0.826	0.570
NETWORKING4_SHARING EXPERIENCE (Net4_SE)	89	-1.218	1.678
SOCIAL IMPACT_1_SHARING EXPERIENCE (Social Imp_1_SE)	89	-1.152	1.637
SOCIAL IMPACT_2_SHARING EXPERIENCE (Social Imp_2_SE)	89	-0.508	0.184
VISIBILITY_1_SHARING EXPERIENCE (Visibility_1_SE)	89	-0.991	1.229
VISIBILITY_2_SHARING EXPERIENCE (Visibility_2_SE)	89	-1.194	3.132
PERSONAL_OUTCOME1_SHARING EXPERIENCE (Personal_OUT1_SE)	89	-0.665	0.261
PERSONAL_OUTCOME2_SHARING EXPERIENCE (Personal_OUT2_SE)	89	-0.310	-0.257
PERSONAL_OUTCOME3_SHARING EXPERIENCE (Personal_OUT3_SE)	89	-1.249	2.633
PERSONAL_OUTCOME4_SHARING EXPERIENCE (Personal_OUT4_SE)	89	-0.906	2.902



PERSONAL_OUTCOME5_SHARING EXPERIENCE ( <b>Personal_OUT5_SE</b> )	89	-0.629	0.293
PERSONAL_OUTCOME6_SHARING EXPERIENCE ( <b>Personal_OUT6_SE</b> )	89	-1.087	1.353
PERSONAL_OUTCOME7_SHARING EXPERIENCE ( <b>Personal_OUT7_SE</b> )	89	-1.461	<b>3.173</b>
PERSONAL_OUTCOME8_SHARING EXPERIENCE ( <b>Personal_OUT8_SE</b> )	89	-0.403	-0.247
IMPACT_POSITIVE_OUTCOMES_SHARING EXPERIENCE ( <b>Imp_Pos_OUT_SE</b> )	89	-0.248	0.518
NEGATIVE_SOCIAL_OUTCOME1_SHARING EXPERIENCE ( <b>Neg_Social_OUT1_SE</b> )	89	-0.404	-0.567
NEGATIVE_SOCIAL_OUTCOME2_SHARING EXPERIENCE ( <b>Neg_Social_OUT2_SE</b> )	89	-0.710	-0.365
NEGATIVE_PERSONAL_OUTCOME1_SHARING EXPERIENCE ( <b>Neg_Personal_OUT1_SE</b> )	89	0.029	-1.065
NEGATIVE_PERSONAL_OUTCOME2_SHARING EXPERIENCE ( <b>Neg_Personal_OUT2_SE</b> )	89	-0.099	-0.823
NEGATIVE_PERSONAL_OUTCOME3_SHARING EXPERIENCE ( <b>Neg_Personal_OUT3_SE</b> )	89	-0.503	-0.755
IMPACT_NEGATIVE_OUTCOMES_SHARING EXPERIENCE ( <b>Imp_Neg_OUT_SE</b> )	89	-0.201	-0.526
GENDER	89	0.465	-0.778
POSITION	89	-1.021	-0.049
FACULTY	89	-0.080	-1.001
EXPERIENCE	89	0.736	-0.745

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### Results of Normal Distribution Test for using social media to share research outputs

Variables	N	Skewness	Kurtosis
PERSONAL MASTERY EXPERIENCE1_SHARING RESEARCH OUTPUTS (PME1_SR)	63	-0.641	0.377
PERSONAL MASTERY EXPERIENCE2_SHARING RESEARCH OUTPUTS (PME2_SR)	63	-0.907	0.907
PERSONAL MASTERY EXPERIENCE3_SHARING RESEARCH OUTPUTS (PME3_SR)	63	-1.026	3.511
PERSONAL MASTERY EXPERIENCE4_SHARING RESEARCH OUTPUTS (PME4_SR)	63	0.235	-1.299
IMPACT_PERSONAL MASTERY EXPERIENCE1_SHARING RESEARCH OUTPUTS (Imp_PME1_SR)	63	-0.903	1.470
IMPACT_PERSONAL MASTERY EXPERIENCE2_SHARING RESEARCH OUTPUTS (Imp_PME2_SR)	63	-0.769	1.726
VICARIOUS EXPERIENCE1_SHARING RESEARCH OUTPUTS (VE1_SR)	63	-1.353	3.292
VICARIOUS EXPERIENCE2_SHARING RESEARCH OUTPUTS (VE2_SR)	63	-0.543	0.571
IMPACT_VICARIOUS EXPERIENCE1_SHARING RESEARCH OUTPUTS (Imp_VE1_SR)	63	-1.070	1.628
IMPACT_VICARIOUS EXPERIENCE2_SHARING RESEARCH OUTPUTS (Imp_VE2_SR)	63	-0.948	0.987
VERBAL PERSUASION1_SHARING RESEARCH OUTPUTS (VP1_SR)	63	-0.213	-0.599
VERBAL PERSUASION2_SHARING RESEARCH OUTPUTS (VP2_SR)	63	-0.011	-0.618
IMPACT_VERBAL PERSUASION_SHARING RESEARCH OUTPUTS1 (Imp_VP_SR1)	63	-0.604	0.332
IMPACT_VERBAL PERSUASION_SHARING RESEARCH OUTPUTS2 (Imp_VP_SR1)	63	-0.738	0.653
POSITIVE_EMOTIONAL AROUSAL1_SHARING RESEARCH OUTPUTS (Pos_EA1_SR)	63	-0.994	1.941
POSITIVE_EMOTIONAL AROUSAL2_SHARING RESEARCH OUTPUTS (Pos_EA2_SR)	63	-1.068	1.841
IMPACT_POSITIVE_EMOTIONAL AROUSAL_SHARING RESEARCH OUTPUTS1 (Imp_Pos_EA_SR1)	63	-0.566	2.963
IMPACT_POSITIVE_EMOTIONAL AROUSAL_SHARING RESEARCH OUTPUTS2 (Imp_Pos_EA_SR2)	63	-0.482	1.766

NEGATIVE_EMOTIONAL AROUSAL1_SHARING RESEARCH OUTPUTS (Neg_EA1_SR)	63	0.526	0.109
NEGATIVE_EMOTIONAL AROUSAL2_SHARING RESEARCH OUTPUTS (Neg_EA2_SR)	63	0.287	-0.512
IMPACT_NEGATIVE_EMOTIONAL AROUSAL_SHARING RESEARCH OUTPUTS1 (Imp_Ne_EA_SR1)	63	-1.222	1.166
IMPACT_NEGATIVE_EMOTIONAL AROUSAL_SHARING RESEARCH OUTPUTS2 (Imp_Ne_EA_SR2)	63	-1.057	0.311
ATTRACTING_PEOPLE_1_SHARING RESEARCH OUTPUTS (Attr_People_1_SR)	63	0.108	0.599
ATTRACTING_PEOPLE_2_SHARING RESEARCH OUTPUTS (Attr_People_2_SR)	63	0.206	1.030
ATTRACTING_PEOPLE_3_SHARING RESEARCH OUTPUTS (Attr_People_3_SR)	63	-0.546	-0.476
ATTRACTING_PEOPLE_4_SHARING RESEARCH OUTPUTS (Attr_People_4_SR)	63	-1.331	3.016
NETWORKING1_SHARING RESEARCH OUTPUTS (Net1_SR)	63	-0.970	3.889
NETWORKING2_SHARING RESEARCH OUTPUTS (Net2_SR)	63	-1.137	3.366
NETWORKING3_SHARING RESEARCH OUTPUTS (Net3_SR)	63	-0.893	3.021
NETWORKING4_SHARING RESEARCH OUTPUTS (Net4_SR)	63	-1.170	1.842
SOCIAL IMPACT_1_SHARING RESEARCH OUTPUTS (Social Imp_1_SR)	63	-0.595	1.162
SOCIAL IMPACT_2_SHARING RESEARCH OUTPUTS (Social Imp_2_SR)	63	-0.784	1.616
VISIBILITY_1_SHARING RESEARCH OUTPUTS (Visibility_1_SR)	63	-0.888	2.467
VISIBILITY_2_SHARING RESEARCH OUTPUTS (Visibility_2_SR)	63	0.034	0.074
PERSONAL_OUTCOME1_SHARING RESEARCH OUTPUTS (Personal_OUT1_SR)	63	-0.523	-0.577
PERSONAL_OUTCOME2_SHARING RESEARCH OUTPUTS (Personal_OUT2_SR)	63	-1.083	1.358
PERSONAL_OUTCOME3_SHARING RESEARCH OUTPUTS (Personal_OUT3_SR)	63	-1.305	4.358
PERSONAL_OUTCOME4_SHARING RESEARCH OUTPUTS (Personal_OUT4_SR)	63	-1.375	3.336


PERSONAL_OUTCOME5_SHARING RESEARCH OUTPUTS ( <b>Personal_OUT5_SR</b> )	63	-0.859	0.986
PERSONAL_OUTCOME6_SHARING RESEARCH OUTPUTS ( <b>Personal_OUT6_SR</b> )	63	-1.125	1.201
PERSONAL_OUTCOME7_SHARING RESEARCH OUTPUTS ( <b>Personal_OUT7_SR</b> )	63	-0.566	2.963
PERSONAL_OUTCOME8_SHARING RESEARCH OUTPUTS ( <b>Personal_OUT8_SR</b> )	63	-0.715	0.390
IMPACT_POSITIVE_OUTCOMES_SHARING RESEARCH OUTPUTS ( <b>Imp_Pos_OUT_SR</b> )	63	0.021	0.259
NEGATIVE_SOCIAL_OUTCOME1_SHARING RESEARCH OUTPUTS ( <b>Neg_Social_OUT1_SR</b> )	63	-0.074	-0.975
NEGATIVE_SOCIAL_OUTCOME2_SHARING RESEARCH OUTPUTS ( <b>Neg_Social_OUT2_SR</b> )	63	-0.224	-0.964
NEGATIVE_PERSONAL_OUTCOME1_SHARING RESEARCH OUTPUTS ( <b>Neg_Personal_OUT1_SR</b> )	63	-0.218	-1.214
NEGATIVE_PERSONAL_OUTCOME2_SHARING RESEARCH OUTPUTS ( <b>Neg_Personal_OUT2_SR</b> )	63	0.041	-1.170
NEGATIVE_PERSONAL_OUTCOME3_SHARING RESEARCH OUTPUTS ( <b>Neg_Personal_OUT3_SR</b> )	63	-0.639	-0.592
IMPACT_NEGATIVE_OUTCOMES_SHARING RESEARCH OUTPUTS ( <b>Imp_Neg_OUT_SR</b> )	63	-0.238	-0.921
GENDER	63	0.569	-0.584
POSITION	63	-0.793	-0.415
FACULTY	63	-0.200	-0.709
EXPERIENCE	63	0.434	-1.206

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# Appendix H: Ethics Approvals

## Ethic Approval for Qualitative Phase.

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## CIS Ethics Approval System

*You are Hussain Alshahrani (Research Student - 201675598)*

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**Application ID:** 542

**Title of research:**  
The Use of Social Media for Knowledge Sharing

**Summary of research (short overview of the background and aims of this study):**  
Scholars and researchers have paid their attentions and efforts to study the concept of knowledge and its activities. According to all of these attentions and efforts, knowledge creating, sharing, and management were becoming the most important areas of research and exploration. Among of these important areas is knowledge sharing which refers to the activity that supports the transfer or dissemination of knowledge from one person, group or organisation to another. Thus, researchers interest to find the ways to share knowledge. One of the most effective way is social media which refers to online applications or platforms that allow people to meet as if they are in one room and share their knowledge, experiences, and ideas.

The use of social media for knowledge sharing has become one of the important topics for research and exploration. A review of the social media and knowledge sharing literature indicates that the majority of the previous studies discuss either the use of social media for knowledge sharing or the factors that affect this use. Based on our knowledge, there is no single study that focus on the role of self-efficacy and outcome expectations on the use of social media for knowledge sharing. Therefore, this study aims to explore and explain the role of self-efficacy and outcome expectations by academics and researchers to use social media for knowledge sharing. Therefore, this study aims to explore this role. To do so, social cognitive theory (Bandura, 1986, 1989) is applied to build a strong theoretical foundation for this study.

**How will participants be recruited?**  
Participants in this study will be recruited via word of mouth, e-mails to known individuals and mailing lists that allow solicitation, and flyers around the university. We hope to get approximately 30 participants from academics and researchers in the University of Strathclyde.

**What will the participants be told about the proposed research study? Either upload or include a copy of the briefing notes issued to participants. In particular this should include details of yourself, the context of the study and an overview of the data that you plan to collect, your supervisor, and contact details for the Departmental Ethics Committee.**  
**PDF File:** None.

You are invited to participate in a research being conducted by Hussain Alshahrani who is a PhD student at the University of Strathclyde. This information sheet describes the research to be undertaken. Please read this sheet carefully and be confident that you understand its contents before deciding whether to participate or not. If you have any questions about the research, please ask the researcher.

The title of this research project is "The Use of Social Media for Knowledge Sharing". This research aims to explore the role of self-efficacy and outcome expectations on the use of social media for knowledge sharing. Self-efficacy is a judgment of one's capability to accomplish a certain level of performance, whereas outcome expectation is a judgment of the likely consequence such behaviour will produce. Thus, this study will explore the role of these two concepts on the use of social media by academics and researchers to share their knowledge.

You are invited to participate in a one-on-one interview that will take approximately 45 minutes to complete. Your contribution in this interview is valuable for my research, and the findings will assist in understanding the role of self-efficacy and outcome expectations that encourage to use social media for knowledge sharing. The interview will be recorded (audio-taped) with your permission. My aim is to explore ideas, beliefs, and experiences of academics and researchers in the universities toward the use of social media for knowledge sharing. You will get £20 purchase voucher from Amazon for your participation. It is up to you to decide whether or not to take part. If you decide to take part, you will be given this information sheet to keep and asked to sign a consent form. Your participation in this research is voluntary and you are free to withdraw at any time without giving a reason. You also have the right to withdraw retrospectively any consent given, and to require that any data gathered on you be destroyed.

You will be identified by ID number (e.g. P1). Your name and other contact details will never be used in this research so that you cannot be

# Ethic Approval for Quantitative Phase

12/4/2018

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### CIS Ethics Approval System

You are Hussain Alshahrani (Research Student - 201675598)

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Application ID: 667

Title of research:

Sources of self-efficacy and outcome expectations for researchers in the use of social media for knowledge sharing

Summary of research (short overview of the background and aims of this study):

Although, the importance of self-efficacy in the use of social media for knowledge sharing, there is no single study explored the sources of self-efficacy, particularly for researchers in the use of social media to share knowledge. Also, there is lack of understanding what researchers expect from the use of social media for knowledge sharing.

This study aims to explore the sources of self-efficacy and outcome expectations for researchers in the use of social media for knowledge sharing.

How will participants be recruited?

Participants in this study will be recruited via emails and social media platforms. The link of questionnaire will be sent to researchers in the university through their email and social media platforms.

What will the participants be told about the proposed research study? Either upload or include a copy of the briefing notes issued to participants. In particular this should include details of yourself, the context of the study and an overview of the data that you plan to collect, your supervisor, and contact details for the Departmental Ethics Committee.

PDF File: None.

Dear Participant

You are invited to participate in a research being conducted by Hussain Alshahrani who is a PhD student at the University of Strathclyde. This information sheet describes the research to be undertaken. Please read this sheet carefully and be confident that you understand its contents before deciding whether to participate or not. If you have any questions about the research, please ask the researcher by emailing [hussain.alshahrani@strath.ac.uk](mailto:hussain.alshahrani@strath.ac.uk), or the supervisor Dr Diane Pennington by emailing [diane.pennington@strath.ac.uk](mailto:diane.pennington@strath.ac.uk).

What is this Study about?

The title of this research project is "Sources of Self-efficacy and Outcome Expectations for Researchers in The Use of Social Media for Knowledge Sharing". This research aims to explore the sources of self-efficacy and outcome expectations for researchers and their roles in the use of social media for knowledge sharing. Self-efficacy is a judgment of one's capability to accomplish a certain level of performance, whereas outcome expectation is a judgment of the likely consequence such behaviour will produce.

This study is approved by the Departmental Ethics Committee and if there is any concerns should contact the Departmental Ethics Committee using [ethics@cis.strath.ac.uk](mailto:ethics@cis.strath.ac.uk)

Ethical approval number is: 667

