The impact of social media on University students' academic performance and psychological well-being: Research Proposal

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ABSTRACT

Internet technologies, smartphones advancement and the rise of Social Networking Sites (SNS) have caused an unprecedented change to how humans socially interact, resulting in rising concerns around over-usage, health and the impact to academic performance. Among the population, Universities students are most engaged with the technology and most sensitive to their consequences due to its pervasiveness. Several studies have shown a negative correlation between SNS, academic results and psychological well-being. Those studies are dominated by survey self-reporting that has recall bias. To overcome the limitation, this research proposed a 6-month study using *survey* and *experience sampling* methods to capture real-time behavioural data within context. The research aims to determine the SNS impact/s on University students' academic performance and psychological well-being. Three Universities will be engaged for results generalisability. Sample population targeted a specific student cohort, where stratified sampling method is applied. Multivariate regression analysis will be used to analyse the multiple data streams collected. A minimum of 80 qualified responses is required for a successful study. The results would provide better insights into the influence of SNS among University students, where they can benefit from a recommended SNS usage guide in academic settings and an awareness of SNS potential influence on health and well-being. As a single study cannot validate/generalise its results, a study replication with expanded scope is warranted. A longitudinal study, where data is collected at a different time point, allows for cross-comparison and to study overtime changes, ensuring the study results can be replicated in more than one setting.

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1. INTRODUCTION

SNS users have significantly grown in the last decade. The numbers are almost on par with the current Internet users (Statista, 2018a). Huang (2018) stated that 98% of SNS users are adults age 18-24, commonly enrolled in University studies. Moreover, engagement levels of SNS users have increased in the last years, hand-in-hand with the smartphone penetration and Internet availability (Giunchiglia et al., 2018). This allows users to stay connected on SNS almost 24/7 from everywhere including home, workplace and place of studies such as Universities.

The increased engagement level has gained researchers' attention from academic performance (Giunchiglia et al., 2018; Huang, 2018) and from psychological well-being perspectives (Casale et al., 2015; Lee-Won et al., 2015; Pantic, 2014; Gold et al., 2011). The proposed research aims to establish a correlation and a causal relationship between SNS usage and these two dimensions. These correlations would be investigated from two streams of data collected using mixed methods; *Survey* and *Experience Sampling*, and analysed using Multivariate Regression Analysis method.

This document details the proposed research structure starting with the problem statement justification and the research questions and aims. Reviews from the previous literature show the current understanding and findings from existing studies surrounding the three key topics; SNS use, academic performance and psychological well-being. The research design is presented in the research methodology, detailing each study phase from preparation, pilot-testing, data collection, to analysis. This is followed by the ethical considerations, and project management planning, before concluding with the expectations from the study and suggestions for future research.

2. RESEARCH AIMS & QUESTIONS

2.1 Problem Statement and Justification

Internet and SNS users have grown exponentially in the last few years. There are more than 4 billion active Internet users and more than 3.2 billion active SNS accounts; these represent more than 42% of the global population (Statista, 2018b).

Research conducted by Giunchiglia et al. (2018) and Huang (2018) studied the correlation of SNS use with students' academic performance and found a negative correlation between the two. Other studies (Casale et al., 2015; Gonzales et al., 2014; Jelenchick et al., 2013; Kross et al., 2013) had also explored the incidence of SNSs from a psychological well-being perspective. These studies established an association between SNS overuse and mental health detriment such as depression, feeling of isolation, and drop in self-esteem.

The purpose of this research is to identify the potential influence of SNS usage in Victoria (Australia) University students', from two dimensions: academic performance and psychological well-being. With this approach, this problem can be explored from a multi-dimension perspective; the result could either strengthen previous findings or find no correlations between SNS usage and the two dimensions invalidating previous findings.

Furthermore, as the study focuses on students across various Universities in Victoria (Australia), the results could be generalised within the context. The results could also be used as a comparison point for future research, when replicated in a different timeframe, such as the next academic semesters from the same or different Universities.

2.2 Research Questions

The research proposal is developed around two main research questions:

What is the impact of social media on students' academic results?

This question aims to categorise University students' SNS usage habits and its correlation to academic results in the semester in which research will be conducted. After data collection, participants will be categorised into three main clusters (high, average, low) based on their SNS usage. Academic performance will be obtained from the participants' Grade Point Average (GPA) score from the previous semester, to establish the association between SNS

usage and academic results. This approach is adapted from previous research by Giunchiglia et al. (2018), and Huang (2018).

What is the effect of social media on student's depression, self-esteem and psychological well-being?

This question aims to identify potential effects of SNS usage and changes to psychological well-being from SNS exposure. For this purpose, it is necessary to adapt the Ryff scale of well-being referenced by Casale et al. (2015). The scale proposes an integral evaluation from six dimensions: Self-acceptance, high-quality relationships, autonomy, environmental mastery, the purpose of life and personal growth.

The literature review revealed that two most common mental health-related issues associated with extended use of SNS such as *Facebook* are depression and self-esteem (Pantic, 2014). Consequently, these mental health symptoms will be included and evaluated by adopting the following scales: Patient Health Questionnaire-9 (PHQ-9) for depression (Kroenke et al., 2001) and the Rosenberg self-esteem scale (Pantic, 2014). Data on psychological well-being will be obtained prior to the experience sampling study as a baseline, and then follow-up measures will be taken after the study for comparison.

3. LITERATURE REVIEW

3.1 Social Media and Academic Performance

The first dimension to be analysed refers to the correlation between SNS usage and academic performance. The time spent on SNS during the specific academic period will be analysed and used as the dependent variable.

Giunchiglia et al. (2018) found a negative correlation existed between SNS usage during academic periods and the final academic results of students. Controlled environment scenarios recorded and analysed students' behaviour in periods of 15-minutes. This analysis revealed that on average every 6-minute students diverted their attention from their studies towards their mobile devices, specifically to SNS such as *Facebook*. This behaviour is linked to the fact that SNS and online activities provide students with an immediate feeling of pleasure in contrast to other activities such as lectures or preparing assessments.

Huang (2018) argued that by shifting the time from studying to SNS consumption, quantity and quality of academic-related activities have a direct impact on GPA score at the end of the semester. Moreover, as this behaviour is occurring during learning times such as tutorials and labs, students focus is lost and posed further difficulties to the learning process.

3.2 Social Media, Depression and Self-Esteem

The second dimension addressed in this research, include the evaluation of depression and self-esteem, linked to students' psychological well-being, SNS usage will provide insights of participants' behaviour during the timeframe of the research. The following presents the results from prior research on similar topics and could help define the parameter frameworks and methodology.

Pantic (2014) focused on the impact of SNS on mental health, identifying correlations between SNS and mental health problems such as depression, and low self-esteem. SNSs such as *Twitter* and *Instagram* are mentioned in various research (Casale et al., 2015; Lee-Won et al., 2015; Pantic, 2014; Gold et al., 2011), however, *Facebook* dominated many existing studies due to its worldwide penetration. The findings showed a positive correlation between depression symptoms and time-spent on SNS by University students.

Beck Depression Inventory (Beck et al., 1996) is used as the primary evaluation scale for depression from a psychological perspective. Nevertheless, its complexity and length (set of

21 questions) could potentially add unwanted elements to the research, for instance, survey fatigue. For this reason, PHQ-9 depression scale will be applied as one of the evaluation scales in this research. It is a more concise scale, containing only 9 questions with associative scores between 0 and 3. Depending on the total score, depression is categorised from minimal, mild, moderate, to severe (Kroenke et al., 2001).

Pantic (2014) highlighted that self-esteem relates to the self-promotion or self-presentation activities heavily used by SNS users, particularly *Facebook* users. It derives from "Hyper-personal Model", defined as the selection of positive aspects to show in the online user profiles. In contrast to face-to-face interaction, where individuals have no control over every aspect of the interaction, online profiles can be tailored to highlight only what the individuals consider appropriate to share with their social circle to provide a self-esteem boost. Nevertheless, results are not definitive, and complex self-esteem interactions need further analysis to validate this result.

Rosenberg self-esteem scale (Pantic, 2014) is widely used as evaluation measure for self-esteem in psychology and has been successfully applied in an online context. This scale has 10 questions, each of these are answered using a 4-point Likert scale: strongly agree (4), agree (3), disagree (2), strongly disagree (1). A higher score represents higher self-esteem.

4. METHODOLOGY

The proposed research has five phases from the preparation to the data analysis and debriefing phases, with four stages of data collection. The complete research phases are referenced in Appendix B – Project Timeline (p.23). As the study aims to understand SNS usage influence on University students' academic performance and psychological well-being, the data will be collected using two methods; *Survey* and *Experience Sampling*.

The multi-methods aligned with other SNS studies involving University students (Kross et al., 2013; Jelenchick et al., 2013; Giunchiglia et al., 2018). SNS use studies are commonly measured by self-report using surveys but could be disadvantaged from recall bias (Moreno et al., 2012) and incorrect usage reporting (Giunchiglia et al., 2018). While Experience Sampling method (ESM) requires a greater involvement and time commitment from the participants, it benefits from capturing behavioural, situational experiences and context *as they occur*, without reliance on memory recollection (Larson & Csikszentmihalyi, 2014). ESM is suitable for tracking overtime changes of SNS usage behaviour, symptoms, and feeling/thoughts, and benefits from being administered via text messages, where participants are *not* required to set their own reminders (Moreno et al., 2012). The combined methods enable the capture of SNS usage, psychological well-being measures, academic results and participants' online activities with more validity and reliability than retrospective reports.

4.1 Population

The target population is University students; young adults between 18-30 years old, in Victoria, Australia. They would be *full-time* undergraduates in their second or later semester, majoring in Media and communications studies from three Victorian Universities (Deakin, Swinburne, and RMIT). These Universities are included to introduce a level of generalisability into the study and are selected based on locality, ranking and the University specialisation (i.e. RMIT for fashion and design). The ESM phase of the study requires participants to have a smartphone with Internet access, and have at least one actively used SNS account, either *Facebook* or *Instagram*. These requirements drive the questionnaires' design for pre-screening.

4.2 Recruitment

This study will have a formalised recruitment process, utilising Universities' channels. The research team will engage and obtain approval from each of the three Universities' faculty (Media and Communication) and from the relevant Universities research review board. This ensures a higher chance of uptake by the correct population to increase the study success (Cao & Sun, 2018). Details on research approval and ethics are presented in section 5, Ethical Considerations (p.14). Following the approval, participants will be recruited via advertisement in the student online bulletin board (i.e. Blackboard) and email, specifically targeting Media and Communication undergraduates study units. Those interested in participating will complete an initial online survey/questionnaire as a pre-screening tool to ensure correct sampling.

The data from the initial survey will be compiled; those who do not meet the pre-screening questions will be excluded from further study. Qualified participants will then be grouped into their usage level (Low, Average, and High) and invited to enrol in the ESM phase.

Incentives in the form of gift vouchers will be used to encourage study participation. Participants will receive a $10 gift voucher for completing the initial online survey, and an additional $50 gift voucher will be given to participants who are invited and enrolled in the 14-days ESM where they'll need to complete a minimum 80% of the ESM surveys.

4.3 Questionnaire Design and Quality Control

Two questionnaires will be designed. First, the initial survey has demographic questions such as age, gender and ethnicity, followed by a number of pre-screening questions (study load, active SNS account, smartphone ownership) and questions on current SNS usage level (frequency and time-spent). The online survey also includes PHQ-9 depression scale and will ask for a GPA score from the previous semester; both to obtain baseline measures. Participants are required to use their student email address and provide their mobile number if enrolling in the ESM phase. Official student emails are used for recruitment and sending reminders, which can be useful in removing duplicate entries.

Second, the ESM questionnaires contain a small number of questions to determine participants' online activities. When designing for ESM questionnaire, survey fatigue is taken into consideration since the ESM is administered at 5 random times daily, over 14-days period. There are 4 questions per survey which could be completed in less than 5 minutes each. The questions will ask if participants are currently on SNS, how long had they been on SNS?, what activities were they doing on SNS?, and to rate the quality of the SNS

interaction/activities. The first is a Yes/No question, second and third have a pre-determined list to select (one) and check (multiple) from, and the last is a 5-point Likert scale (1=Low, 5=High).

The study adopted questionnaires from existing scales from similar studies to ensure the validity of the scales. Ryff scale is used to measure psychological well-being, PHQ-9 scale for depression and Rosenberg scale for self-esteem (Casale et al., 2015; Kroenke et al., 2001; Pantic, 2014),

Two forms of quality controls are employed. Pre-screening is implemented as part of the initial survey to ensure the participants are part of the target population. Pilot testing will be conducted by inviting 10 student participants with the required sampling characteristics to complete a trial run of the whole study. This will test the full intended procedure, and allow the opportunity to provide feedback, adjust the procedure and revise any unclear or misleading questionnaires, if required (Lavrakas, 2008). This test also validates the adopted measures/scales, ensuring sufficient and valid data is produced for processing and analysis.

4.4 Data Collection

The four-stages of data collection are adapted from Gonzales (2014), Kross et al. (2013), and Jelenchick et al. (2013).

The survey will be administered online using *SurveyMonkey*. Following the recruitment effort, participants will email in their interest via their student email and provide a signed written consent, before a link to the initial survey is sent.

Those who pass the pre-screening questionnaires will be invited to join the ESM phase. Prior to ESM, enrolled participants will attend a briefing session in a lab, where the study is explained, and consent form is signed for the ESM part of the study. They will then complete Ryff psychological well-being scale and Rosenberg self-esteem scale to establish baseline measures (in addition to PHQ-9 depression measures from the initial questionnaire).

With almost 3.1 billion *mobile* social media users worldwide, where 95% of users access Facebook with a smartphone (Statista, 2018a; Statista, 2018b), the study is most suited to be administered via a smartphone. During ESM, participants will receive a text message on their smartphone with a link to the online survey. This is administered at 5 random intervals each day for 14-days, between 8am to 12midnight. To qualify for the study, each participant is required to complete at least 80% of the ESM survey (56 surveys minimum over 14-days).

After completing the 14-days ESM, participants will be asked to return to the lab to complete the same set of Ryff, PHQ-9 and Rosenberg scales as a follow-up, and debrief and compensated for their time. While the GPA results will be collected post-semester when unit results are released

4.5 Sampling

Participants are selected using stratified sampling to represent each University equally as the pre-set subgroups. Stratified sampling includes both probability and random sampling (Lavrakas, 2008). The stratification of participants into subgroups being the three Universities is the probability sampling while the random selection of low, average and high usage participants into each University subgroups forms the random sampling. This sampling method ensures that there is a range of low, medium and high usage participants within each University. It also highlights the significance each usage group plays in answering the SNS impact on academic achievement and psychological well-being.

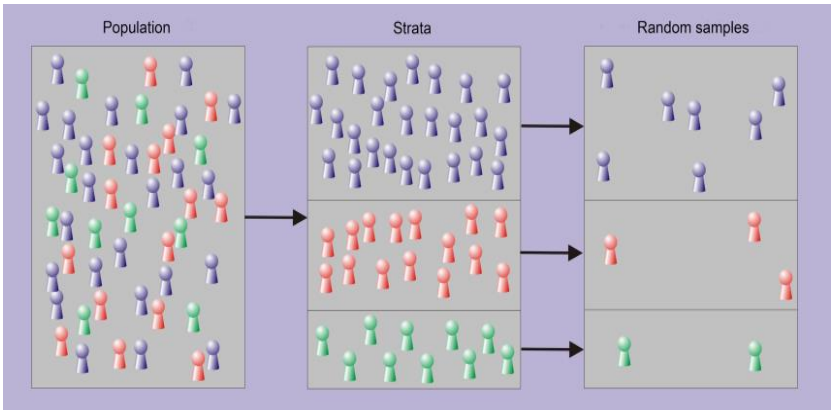

Fig 4.5.1 Illustration of stratified sampling (Thompson, 2014)

The required sampling size for the initial survey is 150-180 responses. From the responses, approximately 120 will be invited to participate in ESM. According to various SNS studies using ESM (Gonzales, 2014; Kross et al., 2013; Jelenchick et al., 2013), the ESM uptake is calculated around 70-75%, including drop-offs and disqualified participants. Based on this, the research would expect a return of 84-90 qualified responses from ESM. To ensure sufficient data is collected for analysis, a minimum of 80 participants/qualified responses is required for a successful study.

4.6 Data Processing and Analysis

The analysis has two stages. The first stage receives the pre-screening data and the second stage receives the experienced sampling data. *SurveyMonkey* is chosen for its strong reporting function. Additionally, responses will be collated/grouped, coded and processed in Excel, accounting the various usage levels, the predetermined subgroups and the various dependent variables of the study. These data will be transferred to a secure cloud storage space in Amazon's Simple Storage Service (S3). Amazon's Kinesis tool is used for data analysis.

In the first stage, the participants shall provide data regarding their demographic, current SNS usage, previous semester academic results and complete the PHQ-9 depression evaluation. Stratified sampling will be applied; a common method used by researchers where data is grouped based on a common parameter and are randomly selected from each sub-group for data analysis (Thompson, 2012). The data shall be grouped to equally represent each university and the usage group based on the participants' social media usage as shown in Fig. 4.6.1. Participants shall be selected from each subgroup and invited to participate in ESM.

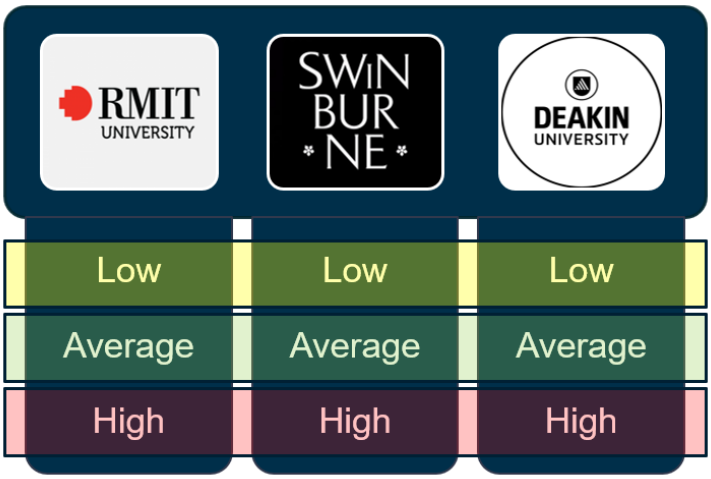

Fig. 4.6.1 Stratified Sampling Method

After 14 days ESM, and prior to data analysis, a set of validation and verification process will be used to prepare the data. Exclusion criteria include the removal of incomplete survey responses, excluding repeated entries using student email addresses, and those who did not fulfil the 80% minimum responses requirements. The analysis will primarily focus on valid and qualified responses.

Multivariate Regression Analysis (MRA) method shall be used for analysis. This study has multiple data streams, such as demographic, academic result, time spent on SNS and psychological measures. MRA correlates the various data streams including the dependent variables and combined results for thorough analysis (Alexopoulos, 2010). As shown in Fig. 4.6.2, the correlations of demographic, usage and academic results assist in answering the first research question relating to the impact of SNS use on academic performance. Fig. 4.6.3 shows correlations of demographic, usage and well-being measures to answer the second research question relating to the impact of SNS use on psychological well-being.

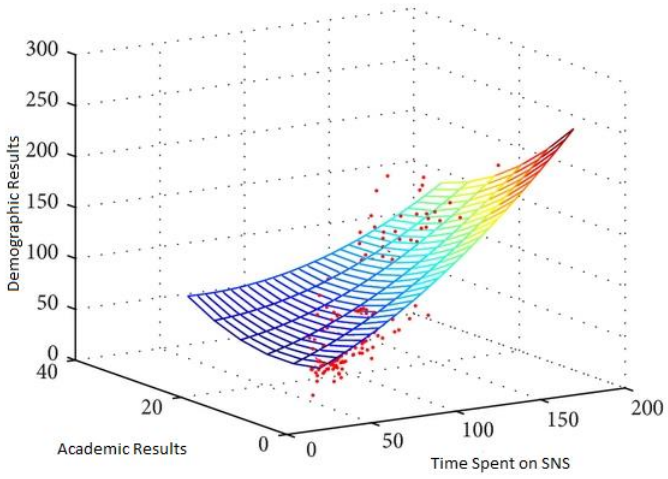

Fig. 4.6.2 Academic Performance (ResearchGate, 2018)

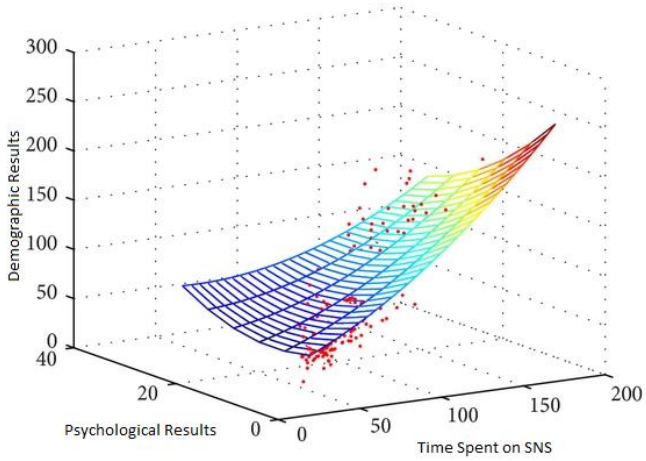

Fig. 4.6.3 Psychological Well-Being (ResearchGate, 2018)

5. ETHICAL CONSIDERATIONS

A human research ethics application form has been supplied, providing details on ethical considerations for this proposed research.

Key ethical considerations are highlighted below:

- To collect data for analysis, the ethics and research committee of each university shall be approached for approval of research and the collection of participants' data.
- Participants would download, read, understand, sign, and return the consent sheet before completing the survey, and the experience sampling.
- For participants who are not fluent in English, they shall be provided with a consent form translated by *Google Translate* into their preferred language to make sure that they understand the study phases and their rights, such as their right to withdraw
- For participants who cannot provide consent in a traditional manner, their legal guardian can be present to explain or read out the consent form and for consent to be obtained orally after the participants understood the study phases.
- Participants' data shall be kept confidential and with integrity. This is achieved by using secure cloud storage (AWS S3) with strict access protocol. Data is to be kept encrypted at all times and be decrypted only when required for analysis
- As per the human rights act and the ethical principles, this study shall make no harm to the participants in any way (Legal, mental, physical, etc.). Any known risks and its mitigation are detailed in the supplied ethics form.
- Should the data collected from this study be required for future research, in a way that has not been considered or explained in the current consent form they have signed, participants will be contacted, informed and new consent shall be obtained for the data to be used in the new study.
- In the event that future research involves collaboration with an external team or a new member within the research team, and requires access to the analysed result, the research team ensures that the data is de-identified before re-use.

6. PROJECT MANAGEMENT

All research is planned within its scope, timeline and budget, and has constraints that need to be managed. This section details the scope and limitations of the research. The cost breakdown shows the estimated budget required to conduct the research and the research timeline is presented in a detailed Gantt chart.

6.1 Research Scope

The study primarily focuses on University students, their SNS use behaviours and the subsequent influence on their academic performance and psychological well-being. Three major universities in Victoria, Australia are selected to participate, as follows:

- RMIT University
- Deakin University
- Swinburne University of Technology

The study targets *Facebook* and *Instagram*, as these are the two most popular and engaging social media platforms with a reach totalling 2 billion users (Holmes, 2018). This study also focuses on students who are between the age 18-30, a prime characteristic of the majority of SNS users (Smith & Anderson, 2018; Huang, 2018). Second or later semester students are selected as the study requires a baseline for the academic result which could be attained from the previous semester's GPA score. The research will use multi-methods; *survey* and *experience sampling* which allow for more reliable and subjective data to be collected for analysis.

6.1.1 Budget

This study is self-funded by the researchers, and no financial assistance has been acquired externally. The total estimated budget for the study to be conducted is $ 8,889.60. Table 6.1.1 below provides the breakdown of the project costs (excluding the research members' time).

Description	Price	Quantity	Amount
Gift vouchers for stage 1 participants	$10/each	180 participants	$ 1,800
Gift vouchers for stage 2 participants	$50/each	120 participants	$ 6,000
SMS provider	¢5.9/SMS	8,400 SMS	$ 495.60
SurveyMonkey	$29/month	6 months	$ 174
Usage of cloud architecture (AWS)	$50/month	6 months	$ 300
Stationery Cost	$20 /month	6 months	$ 120
Total cost			**$ 8,889.60**

Table 6.1.1 Cost Breakdown

6.1.2 Limitations

A number of constraints/limitations are identified in this study:

- The study is limited and only focuses on three major universities in Victoria, Australia, targeting full-time Media and Communication students who fall within the age group of 18–30. This is considered a small sample size, which could be challenging to prove generalisability of the study results.
- The study explores only two popular social media sites (*Facebook* and *Instagram*), while there is an abundance of SNSs actively used by the populations.
- Access to the correct population is highly subjected to approval from each University research and ethics review board and the relevant faculty or program coordinator in agreeing to endorse the study to the required student cohort.
- The timing of the study is proposed to run after the semester census date; this ensures that participants who completed the initial survey are likely to still be present for the ESM phase when invited back. However, this timing would cross into the semester assessment periods, where students would be attending to their study commitment and might have less time to be involved in the research.
- The study is self-funded hence the budget is limited. The budget influences the research design. This is reflected in the small number of total participants as incentives are provided as part of the study.
- Providing incentives may sway the results; those who are not part of the required sampling population may still participate in the initial online survey, therefore reducing the number of qualified participants to select from for ESM phase.
- Alternatively, participants who are students may decide to underreport SNS usage or time-spent due to concern that information collected would become available to their unit convenor and impact their final marks.
- Data for the study are collected from a single point in time. Results are based on associations between SNS usage and academic performance and psychological measures from one academic semester. Results from one single study cannot with certainty validate or invalidate an association. The same findings should be able to be replicated with a similar study in different settings, different timeframe and involving different student cohorts and other Universities.
- Due to Data Privacy Act in Australia restricting the information of the participants collected to be stored offshore, the data is to be stored in AWS Sydney Region.

6.2 Project Timeline

The research is estimated to be a six-month study and will take place in the first semester, from March to August 2019. The research timeline shown in the Gantt chart has six phases, including phase 0 for the research proposal. The complete Gantt charts are presented in Appendix A for phase 0 (p. 22) and Appendix B for phase 1-5 (p. 23).

Phase 0 – Research Proposal (126 days): This phase is composed of the activities to complete this research proposal. The timeframe starts from the first semester of 2018, with additional time for proposal refining and tuning.

Phase 1 – Preparation (19 days): This phase details the planning process to define the population, obtain Universities' approval, and to design the questionnaires before conducting the research.

Phase 2 – Pilot Testing (29 days): This phase allows pre-testing to be conducted, to obtain feedback to refine/adjust questionaries, tools and procedures before production.

Phase 3 – Data Collection (26 days): In this phase, participants are recruited via the pre-screening online survey. Responses will be used to select participants for the ESM study. After 14 days ESM, final data is collected including psychological follow-up measures.

Phase 4 – Data Processing and Analysis (35 days): In this phase, data collected is validated then analysed using multivariable analysis. Results are documented and validated against research questions.

Phase 5 – Debrief (25 days): Final phase after the study, to perform a review of what went well and what can be improved for future studies. Ideas for future research are discussed.

6.3 Tools & Processes

During the five phases of this research, a set of tools would be needed and detailed below.

Emails and Student Portal

Outlook will be used for email communication to utilise Swinburne institutional email addresses. The recruitment of participants will leverage each University's student system (i.e. Blackboard or Canvas). Initial communication with potential participants will be sent via the student portal but administered by the faculty administration. Access to student portals is not required, but recruitment and communication contents are provided by the research team.

Online Surveys

SurveyMonkey is a cloud-based survey development tool. It can generate and deploy online questionaries for the initial pre-screening survey and the ESM daily surveys. This tool stores and provides exports of the survey responses in usable formats for data analysis. It has a strong survey reporting functions and the capability to send reminders to non-responders.

Cloud Computing / Storage

For information storage, redundancy security and accessibility AWS service from Amazon will be used. AWS S3 and Kinesis are two of the services provided, they use object storage through web services, making information available from anywhere at any time, and allows the analysis of different streams of information.

Bulk SMS Send

Once pilot testing and pre-screening are completed, participants who meet the required criteria will be invited to complete ESM. Therefore, bulk and scheduled SMS sending capabilities are needed. *BurstSMS* offers the ability to generate SMS automation to suit the ESM study; sending 5 text messages at random times daily for 14-days to various participants.

MS Office Suite / Outlook365

MS Office suite licenses provided by Swinburne will be used; MS Word for report writing and documentation, MS Excel for data manipulation and reporting, and MS Project to coordinate project management tasks. *Outlook365* and *OneDrive* will be used for project collaboration, sharing and simultaneous editing of documents among the research team.

7. CONCLUSION

This study focuses on the impact of SNS on University students', correlating the effects of these SNS on their academic performance and psychological well-being. The study has two data-collection methods and data analysis methods.

The first data-collection method is a survey where participants provide demographic details, academic results, SNS usage and pre-screening requirements. Stratified sampling will be used to represent each university group based on their SNS usage, and random selection from these sub-groups shall be invited to the ESM stage.

The second data-collection is for ESM where participants complete a 14-days real-time self-reporting. The ESM data will be analysed using multivariate regression analysis. This method suits the study as it analyses multiple data streams to effectively identify causal relationships. The results from this analysis assist in determining the positive or negative correlations of SNS usage on the University students' academic performance and psychological well-being.

For future studies, the research scope can be expanded following the outcome of this study. As the proposed research is based on single time point data collection, the replication of the findings with greater scope and across diverse student cohorts and different Universities are warranted. The study could expand to include a bigger sample size while focusing on other SNS besides *Facebook* and *Instagram*. To stretch test the research findings, a longitudinal study can be conducted across two semesters to help track overtime changes of SNS usage and gain additional insights into the correlations with academic performance and psychological well-being.

Word count: 4,663 words (not including abstract, figure and table captions and appendix)

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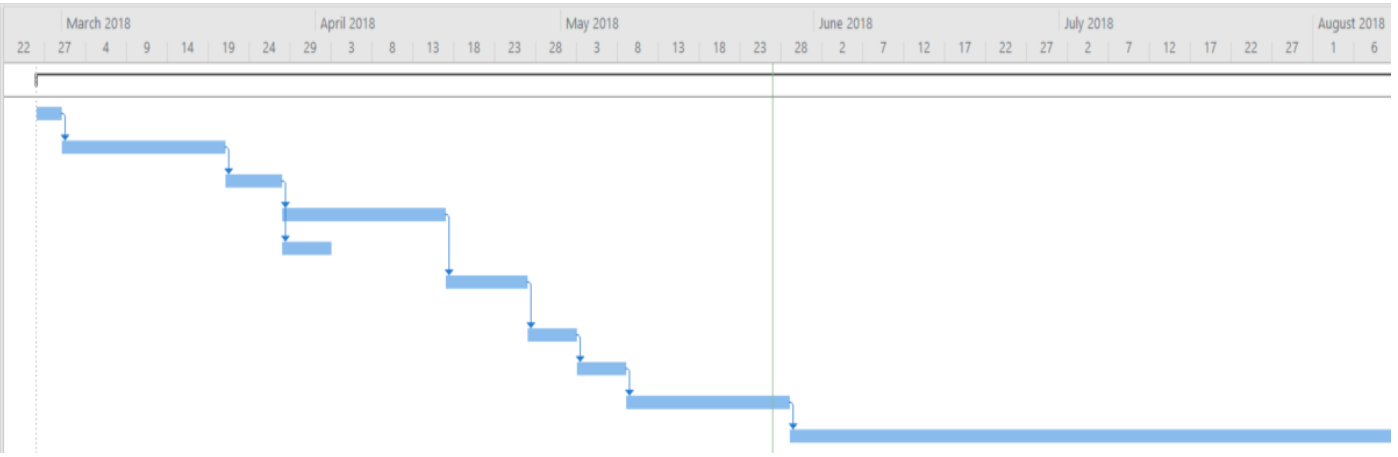
APPENDIX A – Phase 0: Research Proposal (Gantt chart)

	Task Name	Duration	Start	Finish	Prec
1	**Phase 0 - Research Proposal**	**126 days**	**Mon 26/02/18**	**Mon 20/08/18**	
2	Research Aim	3 days	Mon 26/02/18	Wed 28/02/18	
3	Literature Review	14 days	Thu 1/03/18	Tue 20/03/18	2
4	Problem Definition	5 days	Wed 21/03/18	Tue 27/03/18	3
5	Methodology Adaptation	14 days	Wed 28/03/18	Mon 16/04/18	4
6	Research Questions & hypothesis	4 days	Wed 28/03/18	Mon 2/04/18	4
7	Pilot Instrument Construction & questionaries	8 days	Tue 17/04/18	Thu 26/04/18	5
8	Limitations and Constraints	4 days	Fri 27/04/18	Wed 2/05/18	7
9	Ethical Considerations & Guidelines	4 days	Thu 3/05/18	Tue 8/05/18	8
10	Proposal Writing	14 days	Wed 9/05/18	Mon 28/05/18	9
11	Proposal Feedback and Refining	60 days	Tue 29/05/18	Mon 20/08/18	10



APPENDIX B – Phase 1 to 5: Project Timeline (Gantt chart)

	Task Name	Duration	Start	Finish	Prec
12	**Phase 1 - Preparation**	**19 days**	**Mon 25/02/19**	**Thu 21/03/19**	
13	Identify and define the population	3 days	Mon 25/02/19	Wed 27/02/19	
14	Approach various Universities faculties & gain approval from Ethic and Review Board	7 days	Thu 28/02/19	Fri 8/03/19	13
15	Prepare questionaries and sampling tools	7 days	Mon 11/03/19	Tue 19/03/19	14
16	Internal Mock test of questionnaries prior to pilot testing	2 days	Wed 20/03/19	Thu 21/03/19	15
17	**Phase 2 - Pilot Testing**	**29 days**	**Fri 22/03/19**	**Wed 1/05/19**	**12**
18	Conduct pilot survey testing	15 days	Fri 22/03/19	Thu 11/04/19	
19	Review feedback from pilot test	7 days	Fri 12/04/19	Mon 22/04/19	18
20	Refine and finalise questionaries	7 days	Tue 23/04/19	Wed 1/05/19	19
21	**Phase 3 - Data Collection**	**26 days**	**Thu 2/05/19**	**Thu 6/06/19**	**17**
22	Complete a pre-screening using online survey	7 days	Thu 2/05/19	Fri 10/05/19	
23	Select sample from population	2 days	Mon 13/05/19	Tue 14/05/19	22
24	Invite selected sample to participate in experience sampling	3 days	Wed 15/05/19	Fri 17/05/19	23
25	14 day experience sampling	14 days	Mon 20/05/19	Thu 6/06/19	24
26	**Phase 4 - Data Processing and Analysis**	**35 days**	**Fri 7/06/19**	**Thu 25/07/19**	**21**
27	Data processing and verification / validation	4 days	Fri 7/06/19	Wed 12/06/19	
28	Multivariable Analysis Academic Data Stream	7 days	Thu 13/06/19	Fri 21/06/19	27
29	Multivariable Analysis Psychological Data Stream	7 days	Thu 13/06/19	Fri 21/06/19	27
30	Validation of research results against data	12 days	Mon 24/06/19	Tue 9/07/19	28,29
31	Document research results and findings	12 days	Wed 10/07/19	Thu 25/07/19	30
32	**Phase 5 - Debrief**	**25 days**	**Fri 26/07/19**	**Thu 29/08/19**	**26**
33	Conduct post implementation review after research	5 days	Fri 26/07/19	Thu 1/08/19	
34	Discuss future work proposals	20 days	Fri 2/08/19	Thu 29/08/19	33