FACTORS AFFECTING USERS' ATTITUDE TOWARDS FACEBOOK APPLICATIONS IN BHUTAN

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A Thesis Submitted in Partial Fulfillment of the Requirements

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ปัจจัยที่มีผลต่อทัศนคติของผู้ใช้ต่อโปรแกรมประยุกต์ของเฟสบุกในประเทศภูฏาน

นายการ์มา ดอร์จี

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต
สาขาวิชาวิทยาการคอมพิวเตอร์และเทคโนโลยีสารสนเทศ ภาควิชาคณิตศาสตร์และวิทยาการคอมพิวเตอร์
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การ์มา ดอร์จี : ปัจจัยที่มีผลต่อทัศนคติของผู้ใช้ต่อโปรแกรมประยุกต์ของเฟสบุกในประเทศภูฏาน. (FACTORS AFFECTING USERS' ATTITUDE TOWARDS FACEBOOK APPLICATIONS IN BHUTAN) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: Asst. Prof. Nagul Cooharojananone Ph.D., 52 หน้า.

เนื่องจากเฟสบุ๊คได้รับความนิยมอย่างต่อเนื่องในโลกโซเชียลมีเดีย ส่งผลให้นักพัฒนาแอพพลิเคชั่นนับล้านสร้างแอพพลิเคชันเพื่อรองรับการใช้งานเฟสบุ๊ค โดยแอพพลิเคชันเหล่านี้เป็นแอพพลิเคชันของกลุ่มบุคคลที่สาม ที่ถูกพัฒนาขึ้นเพื่อตอบสนองวัตถุประสงค์ของผู้ใช้งานที่หลากหลาย เช่น ด้านการใช้งาน ด้านความสนุกสนาน ด้านการศึกษา และด้านความบันเทิง ในขณะเดียวกันข้อมูลส่วนบุคคลของผู้ใช้งานเฟสบุ๊คถือเป็นเป้าหมายสำคัญของ กลุ่มบริษัทด้านการตลาด ซึ่งเป็นที่ทราบกันดีว่าข้อมูลเหล่านี้เป็นสิ่งจำเป็นในการใช้งาน แอพพลิเคชันของกลุ่มบุคคลที่สาม ทำให้อาจเกิดความเสี่ยงต่อการถูกนำข้อมูลไปเผยแพร่หรือนำไปจำหน่ายให้กับบริษัทต่างๆ งานวิจัยนี้จึงสร้างขึ้นเพื่อศึกษาสาเหตุที่บุคคลส่วนใหญ่ยังคงใช้งานแอพพลิเคชันเหล่านั้น และเพื่อศึกษาว่าผู้ใช้งาน แอพพลิเคชันมีความตระหนักในความปลอดภัยของข้อมูลของตนเองมากเพียงใดเมื่อใช้งานแอพพลิเคชั่นเหล่านั้น ดังนั้นเพื่อให้ได้ข้อสรุปสำหรับงานวิจัยนี้ ผู้วิจัยจึงสร้างสมมติฐานขึ้น ซึ่งประกอบไปด้วย ปัจจัยที่สำคัญ 4 ประการ นั่นคือ อิทธิพลทางสังคม (Social Influence) ผลประโยชน์สังคม (Social Benefit) ประโยชน์ส่วนตน (Self-Benefit) และความภักดีในตราสินค้า (Brand Loyalty) โดยคาดว่าปัจจัยเหล่านี้จะมีอิทธิพลต่อการใช้งานแอพพลิเคชัน งานวิจัยนี้ได้ดำเนินการสำรวจประชากรตัวอย่างด้วยแบบสอบถามจำนวน 302 คน ผู้ตอบแบบสอบถามต้องตอบแบบสอบถามสองครั้ง ครั้งแรกหลังจากที่ได้รับข้อมูลเกี่ยวกับความเสี่ยงในด้านข้อมูลและปัญหา ด้านความเป็นส่วนตัว และอีกหนึ่งครั้งหลังจากที่ได้อ่านเรื่องราวที่กำหนด จากนั้นข้อมูลดังกล่าวจะถูกนำไปวิเคราะห์ด้วยการวิเคราะห์การถดถอย เพื่อทดสอบสมมติฐานดังกล่าว ผลการทดสอบสรุปว่า อิทธิพลทางสังคมมีผลกระทบอย่างมากต่อทัศนคติของผู้ใช้งานแอพพลิเคชัน

ภาควิชา คณิตศาสตร์และวิทยาการคอมพิวเตอร์ ลายมือชื่อนิสิต .....

สาขาวิชา วิทยาการคอมพิวเตอร์และเทคโนโลยีสารสนเทศ ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์หลัก .....

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KARMA DORJI: FACTORS AFFECTING USERS' ATTITUDE TOWARDS FACEBOOK APPLICATIONS IN BHUTAN. ADVISOR: ASST. PROF. NAGUL COOHAROJANANONE, Ph.D., 52 pp.

The immense popularity gained by facebook in social media world has led millions of developers to develop application for facebook, also termed as third party applications. These applications are useful, fun, educational and entertaining. There is also massive amount of personal user data in facebook which makes it a prime target for spammers, marketing agencies etc... It has come to surface that propagation of personal user data is being practiced by most of these third party applications. This research is to study why people uses third party applications even when there are risk of personal data being stolen or sold to some other agencies or entities and to see if the users are aware of the security issues involved while using such applications. To find the answer for this study, we have built our hypothesis around four factors social influence, social benefit, self-benefit and brand loyalty which could possibly influence a user to use an application. We conducted the survey and received 302 responses. The respondents were asked to answer the same question twice once before reading about the risk associated in information and privacy issues and once after the users read the story. We conducted regression analysis to test our hypothesis and found out that social influence plays an important role in affecting user's attitude towards facebook applications.

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Student's Signature .....
Advisor's Signature .....

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Chapter 1
INTRODUCTION

1.1 Overview on facebook and facebook third party applications

Facebook defines apps as “Apps are designed to enhance your experience on Facebook with engaging games and useful features. You can use apps to listen to music, share what you're reading, play games and more” (Facebook, 2013). Facebook launched third party application on May 24th 2007 where developers could get access to 20 million users of Facebook and in the process becoming itself a rich platform for third party developers (Arrington, 2007). Everyday an average of 20 million app gets installed on Facebook and 7 million apps and websites are integrated with Facebook ("www.statisticbrain.com," 2013). With the integration of third party application in facebook, lots of security and privacy issue arises. The sheer amount of private data stored in these networks makes it attractive targets for marketing company spammers, phishers and identity thieves. Third party application resides in a different server and once the application gets access to the user data there is no way for SNS operator to assess how the data is being used by the application developer (Egele, Moser, Kruegel, & Kirda, 2011). As of March 2013 facebook has 1.11 billion users around the globe ("www.statisticbrain.com," 2013). The operators of social networking sites are very well-aware of the privacy implications of such a collection of personal data; hence facebook has included many features where a user can secure their profile account from malicious application. However, third party applications always find a way around and increased the ease with which such attacks can be executed(Felt & David, 2008) (Mahmood, 2012) has studied comprehensively about how a user’s account can be exploited.(Egele et al., 2011) also presented a proxy system based on the client side system which provides fine-grained access control capabilities over which part of the private information can be accessed by the third party applications. Once the third party application gets access to the user data there is so little that can be done by the SNS operator to assess how the data is being used by the application.

1.2 Facebook in Bhutan

In the year 2000 the total internet subscriber in Bhutan was only about 500 people (Tobgay & Wangmo, 2008). By the end of 2012 Internet usage rate was 22.7% of the population (BICMA, 2012). At present people of all ages have access to internet through cellular devices, laptops and computers, internet is even accessible in the remote regions of Bhutan through cellular networks but it is widely used in the urban areas. With the availability of Internet Social Networking Sites (SNS) has gained a lot of popularity amongst the Bhutanese people and undoubtedly Facebook is the most popular social networking site in Bhutan. While writing this paper (June,2013) there was about 108,000 facebook users in Bhutan which means 14.66% of the population are using facebook including those expatriates working in Bhutan SNS such as facebook are continuing to grow popular and the users are increasing every day.

Many business entities in Bhutan have started embracing social media as a tool to spread their business reach by creating fan pages and updating it regularly so that the consumers can be informed about the company and increase their customer base through referrals by the means of likes and share feature of facebook. At the moment of writing this paper, Facebook apps have not been created by any of the companies or individual in Bhutan, the Bhutanese population largely uses apps developed by foreign companies around the world. SNS adoption and usage of apps has not been studied in Bhutan. This study is an attempt to find out the possible determinant factors which influences user's decision to use facebook application.

1.3 Problem Formulation and Motivation

Facebook applications (apps) or third party application has gained lot of interest from the users and also the app developers has benefited in the form of monetary profits, some even making millions of dollars. However, a third party application also poses a major risk to the users' privacy and security. This study will try to find out what is the main reason for the users to use an application disregarding security concerns.

1.4 Objectives

The objective of this study is to find out the factors which influence users' attitude towards facebook application. The four factors that we have chosen are brand loyalty, social influence, self benefit and social benefit. The respondents will be

given a set of question to answer and they will again have to answer the same question after they are given to read a passage about information disclosure and security risk while using facebook applications. Both the data will be analyzed using regression analysis and compared to see if there are any changes in users' attitude after reading the passage.

1.5 Scope of Thesis

1. The research is based on Bhutanese facebook users.
2. Facebook applications are chosen for the study
3. Regression analysis is performed to determine which factor can be a predictor that influences users' attitude towards facebook application
4. Chi – square analysis is used to study various relationships
5. Compare mean t-test is performed on the data.
6. One Way ANOVA test

1.6 Constraints

Only facebook application is considered for the study, other social media is not considered for the study. The applications are not classified into various groups.

1.7 Benefit and Expected Outcomes

This study will be able to show us the most important factor which influences Bhutanese people when it comes to using social media applications. The findings of this study can also be applied by business enterprises in Bhutan if they wish to integrate social media for their advertising or marketing campaigns by studying what factor is the most relevant factor that influences Bhutanese users in social media. This study will also help the developers in Bhutan to reach to larger user base by focusing on the right factor which influences the user to use an application.

1.8 Structure of the Thesis

The structure of the thesis is listed below

Chapter 1: Chapter 1 Covers introduction background and importance, problem formulation, objectives, scope of thesis, benefits and limitations of the study are explained.

Chapter 2: Chapter 2 covers literature review and related works associated with the paper.

Chapter 3: Chapter 3 describes the methodology adopted to carry out the study, hypothesis and questionnaire development.

Chapter 4: Chapter 4 covers the data analysis for the study, which includes regression analysis, compare mean t-test and chi – square.

Chapter 5: In this chapter the comparison between Thailand and Bhutanese users are explained.

Chapter 6: Chapter 6 contains discussion about the results from the regression analysis and the conclusions.

Chapter 2

LITERATURE REVIEW

2.1 Related Works

Naratwong, Pongsupankij, Atchariyachanvanich, and Cooharojananone (2013) conducted a similar study in Thailand, self benefit factor was found out to be the most significant factor to influence users attitude before reading the story about the risk and information disclosure associated with facebook applications. However, the users' attitude changed to brand loyalty after the respondents read the story. There are lots of differences between the two countries socially, culturally and geographically and we have included one more factor social influence for this study. Pharmacy students were administered to answer question about Facebook Activity and Opinions Regarding Accountability and E-Professionalism twice, once the e-professionalism presentation and more than half of the pharmacy students planned to make changes to their online posting behavior as a result of the e-professionalism presentation (Cain, Scott, & Akers, 2009) and found out that there is a significant impact on the way users responded after they viewed the presentation.

2.2 Social Influence

Social influence also plays a major role in how people adopt applications in SNS. Crandall, Cosley, Huttenlocher, Kleinberg, and Suri (2008) found strong evidence that people become aware of others through shared recent activity around artifacts. They say that, people are more likely to talk to others they encounter in the real world. "Opportunities for these encounters are in turn driven by factors associated with selection such as income, race, location of residence, and education level, all of which are relatively immutable". This theory can also be applied in user's adoption of Facebook application. Whatever a user do in Facebook, whether playing games, like a page or a user's post can be seen instantly by other users who are in their friend list and there is a high chance to spark an interest to those users who see's other persons facebook activity. A user's influence also depends on the social relationship that they have with others and only a few metrics has been defined such as closeness, betweenness, centrality, centralization, etc. which can identify social influence(Tang, 2009). Angry birds became a very popular game and was

downloaded 600 million times in first two years of its launch, high profile players like U.K Prime Minister David Cameron admitted that he was a big fan of the game and made headlines which only added to the games popularity. The information that individuals or groups provides as, social influences, can have a huge impact on consumers" (Hoyer, Macinnis, & Pieters, 2013).

2.3 Brand Loyalty

Ever since SNS came in web space, a lot of companies have started their loyalty program on SNS sites trying to retain and gain consumers for their brands. Brand Loyalty is an old concept of marketing which keeps on evolving along with the change in technology. Brand loyalty is selecting one or more brands from a large pool of similar competing brand or a relationship between the customer and the brand, where a buyer selects or deselects certain brands (Jacoby & Kyner, 1973). However, the technique and concept of brand loyalty has shifted towards cyberspace, where it is easier to reach the consumers and it is cheaper than the traditional method but the underlying concept of both traditional brand loyalty and e-loyalty are almost the same (Gommans, Krishnan, & Scheffold, 2001). Therefore, we conclude that brand loyalty is to gain the trust from the users or the consumers towards the product. Privacy has emerged as a unique and important dimension of e-loyalty (Gommans et al., 2001) (Ratnasingham, 1998). It is because on an online world you cannot see the person you are dealing at the other side of the computer and hence trust plays an important role on an on-line brand loyalty programs. . Evidence indicates that web customers tend to consolidate their purchases with one primary supplier, to the extent that purchasing from the supplier's site becomes part of their daily routine. They also refer new customers and the most important thing is to gain the trust of the customers (Reichheld & Schefter, 2000).

2.4 Self Benefit

Reward program is also an integral part of companies for their e-loyalty programs in SNS. For example, Citibank in Thailand has a program in facebook "3X Rewards with Citibank program" where a user can apply for Citi Rewards Credit Card and offers a free trolley bag and 5000 points. This reward programs can be used as the basis for self benefit factor where a user uses an application to gain some form of reward or which benefit them by using that application. People use the popular Zynga poker

game on facebook; people undertake actions that help Zynga such as inviting friends to join Zynga poker game and requesting friends for help to proceed to the next level. People also accept such request because it offers an opportunity to e-establish and maintain contact with friends, players encourage others to join or return to Zynga's games (Piskorski, 2011). This benefits the player with game rewards and in turn helps Zynga to retain as well as gain more customers

2.5 Social Benefit

Social benefit can also be one factor where people use applications in facebook. Social benefit is usually termed as cause marketing in social media where companies create facebook pages and applications and people use those pages by the means of share and like pages feature of Facebook for the benefit of others. For instance, Walmart in partnership with the American Society for the Prevention of Cruelty to Animals launched "Lend a Paw" page on Facebook for every "click," $1 was donated (up to $100,000) from Walmart's pet suppliers to the ASPCA(Furlow, 2011). Also, Fresh Step® litter a product of the COLOROX Company has also initiated a program like Walmart, when users like their page the company will be donating US$5 ASPCA and while writing this paper (June, 2013) the page was already liked by 197,000 people (Facebook, 2013). In the process this is how company gain popularity and also not to forget that the non-profit organizations also gets benefited. This is also a clear indication that people are willing to like or use an application for social benefit.

Chapter 3

METHODOLOGY

3.1 Data Collection

All the data for writing this paper were collected online. We created a website (www.lotuslionlion.com) hosted in www.godaddy.com as the landing page of the Facebook application and the survey was conducted from April 2013 till June 2013. The application contained a form to fill up the survey questions. It was stated in the survey form that only a Bhutanese is allowed to fill up the survey form and to ensure that they were required to register with a Bhutanese mobile phone number. A total of 302 persons responded to the survey but we had to delete two responses. To get more participants for the survey we offered Nu.100 mobile vouchers for 10 lucky participants as a reward. Whenever we announced the lucky winner in facebook pages, we use to get more responses on that day. The respondents were given a set of questions in lieu of the four factors i.e. brand loyalty, self benefit, social benefit and social influence. The respondents had to answer the same question twice once before reading the passage about information disclosure and security risks associated with the use of facebook applications and once after reading the story. The highest respondents were from the age group of 25-30 (43.7%), Bachelor's Degree topped the list with 63.7% and the maximum respondents were from the western part of Bhutan since western part of Bhutan is more urbanized than other parts of Bhutan.

The data collected before reading the story will be mentioned as "before reading the story" and the data collected after reading the story will be mentioned as "after reading the story". They were given a story to read after they completed the first round of answering the survey, the story is given in Appendix A. The questions are adopted from various works of other scholars. The questionnaire is presented in Appendix B along with the references of where the questionnaires are adopted from

Table 3. 1: Demographic representation of the respondents

Gender	Male	60%
	Female	40%
Age	14-25	38.7%
	25-30	43.7%
	30-35	13.0%
	35 and above	4.7%
Qualification/Education	High School	20%
	Bachelor's Degree	63.3%
	Master's Degree	16.0%
	Others	0.7%
Region	East	24.7%
	South	13.7%
	West	52.7%
	Others(Non Residential Bhutanese)	9.0%
Average Time Spent on Facebook		2.75 hours

3.2 Proposed Hypothesis Model

Figure 3.1 is the hypothesis model that we have proposed. We have considered four factors that are likely to have an effect on user's attitude towards third party applications.

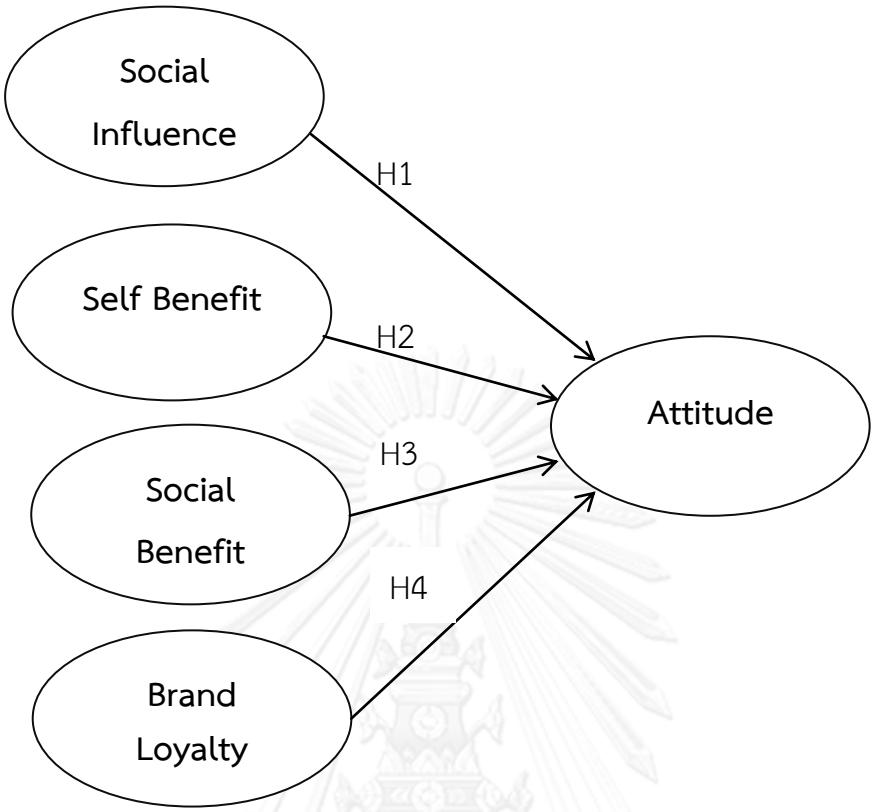

Figure 3. 1: Proposed Hypothesis model

H1: Social influence has an effect on an attitude of using Facebook Application.

H2: Self benefit has an effect on an attitude of using Facebook Application.

H3: Social benefit has an effect on an attitude of using Facebook Application.

H4: Brand loyalty has an effect on an attitude of using Facebook Application.

3.3 Descriptive statistics

The following is the descriptive statistics of how the respondent answered our questionnaire. The questions or the items are grouped based on the factors that we have used for the study. The items for each factor are illustrated in a table for both the data set once before and once after reading the story about the information disclosure and also a brief discussion about the similarities and differences between the two dataset is written for the corresponding tables.

Table 3.2: Response on attitude Factor for first data set

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
1. I am comfortable with an application if it sold my profile information	119 (39.4%)	79 (26.2%)	71 (23.5%)	25 (8.3%)	8 (2.6%)	302 (100%)
2. I will be comfortable with an application if it stored my profile information permanently on its website	88 (29.1%)	91 (30.1%)	86 (21.9%)	45 (14.9%)	12 (4.0%)	302 (100%)
3. I would be comfortable with an application if it shared my profile information with other companies.	87 (28.8%)	94 (31.1%)	69 (22.8%)	47 (15.6%)	5 (1.7%)	302 (100%)
4. I am comfortable if an application tag's an embarrassing photo of me posted/tagged by others.	167 (55.3%)	77 (25.5%)	31 (10.3%)	17 (5.6%)	10 (3.3%)	302 (100%)

Table 3.3: Response on attitude factor for the second data set

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
1. I am comfortable with an application if it sold my profile information	150 (49.7%)	98 (32.5%)	36 (11.9%)	12 (4.0%)	6 (2.0%)	302 (100%)
2. I will be comfortable with an application if it stored my profile information permanently on its website	130 (43.0%)	90 (29.8%)	44 (14.6%)	32 (10.6%)	6 (2.0%)	302 (100%)
3. I would be comfortable with an application if it shared my profile information with other companies.	119 (39.4%)	101 (33.4%)	52 (17.2%)	24 (7.9%)	6 (2.0%)	302 (100%)
4. I am comfortable if an application tag's an embarrassing photo of me posted/tagged by others.	156 (51.7%)	96 (31.8%)	27 (8.9%)	15 (5.0%)	8 (2.6%)	302 (100%)

In the above two table we can see that in the first part (Table 3.2) before reading the story we can see that most of the respondents strongly disagree with applications sharing and selling their personal information to other companies and in the second table after reading the story (Table 3.3) there an increase in the percentage of people strongly disagreeing on applications sharing and selling their information or storing it permanently.

Table 3.4: Response on Social influence factor for the first data set

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
5. I am likely to use an application if a celebrity I like uses an application	33 (10.9%)	81 (26.8%)	31 (34.4%)	72 (23.8%)	12 (4.0%)	302 (100%)
6. I am likely to use an application if a friend or some of my family member	11 (3.6%)	39 (12.9%)	85 (28.1%)	139 (46.0%)	28 (9.3%)	302 (100%)
7. I use an application if a particular application has a large number of users.	16 (5.3%)	53 (17.5%)	92 (30.5%)	112 (37.1%)	29 (9.6%)	302 (100%)
8. I will stop using an application if someone advises me not to use it?	17 (5.6%)	76 (25.2%)	82 (27.2%)	93 (30.8%)	34 (11.3%)	302 (100%)
9. I click an application that was liked by one of my friends	12 (4.0%)	61 (20.2%)	95 (31.5%)	113 (37.4%)	21 (7.0%)	302 (100%)

The tables (Table 3.4 and 3.5) we can see that if we compare the (strongly disagree/ disagree against agree/strongly agree) we can see that most people have agreed, which shows that social influence plays an important role in the way Bhutanese people are influenced by people around them even though there is some decrease in the number of people responding agree and strongly agree after reading the story but still people agreeing are more than those disagreeing on social influence items.

Table 3.5: Response for social influence factor for the second data set

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
5. I am likely to use an application if a celebrity I like uses an application	49 (16.2%)	97 (32.1%)	90 (29.8%)	57 (18.9%)	9 (3.0%)	302 (100%)
6. I am likely to use an application if a friend or some of my family member	22 (7.3%)	70 (23.2%)	89 (29.5%)	100 (33.1%)	25 (7.0%)	302 (100%)
7. I use an application if a particular application has a large number of users.	25 (8.3%)	86 (28.5%)	83 (27.5%)	86 (28.5%)	22 (7.3%)	302 (100%)
8. I will stop using an application if someone advises me not to use it?	15 (5.0%)	66 (21.9%)	91 (30.1%)	90 (29.8%)	40 (13.2%)	302 (100%)
9. I click an application that was liked by one of my friends	16 (5.3%)	79 (26.2%)	101 (33.4%)	96 (31.8%)	10 (3.3%)	302 (100%)

Table 3.6: Response on social benefit factor for the first data set

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
10. I am willing to use an application if it benefits my society.	4 (1.3%)	5 (1.7%)	29 (9.6%)	148 (49.0%)	116 (38.4%)	302 (100%)
11. I am most likely to click an application if it is going to help somebody?	0 0.0%	8 2.6%	55 18.2%	151 50.0%	88 29.1%	302 100%
12. I enjoy spending time on an application if it benefits my society	3 (1.0%)	12 (4.0%)	62 (20.5%)	150 (49.7%)	75 (24.8%)	302 (100%)
13. I think using an application for a social cause is applicable	1 (0.3%)	14 (4.6%)	51 (16.9%)	159 (52.6%)	77 (25.5%)	302 (100%)

Table 3.7: Response on social benefit factor for the second data set

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
10. I am willing to use an application if it benefits my society.	12 (4.0%)	17 (5.6%)	54 (17.9%)	155 (51.3%)	64 (21.2%)	302 (100%)
11. I am most likely to click an application if it is going to help somebody?	9 (3.0%)	23 (7.6%)	63 (20.9%)	150 (49.7%)	57 (18.9%)	302 (100%)
12. I enjoy spending time on an application if it benefits my society	13 (4.3%)	19 (6.3%)	74 (24.5%)	140 (46.4%)	56 (18.5%)	302 (100%)
13. I think using an application for a social cause is applicable	11 (3.6%)	18 (6.0%)	75 (24.8%)	152 (50.3%)	46 (15.2%)	302 (100%)

The above two tables (Table 3.6 and 3.7) shows the items that we have developed for the factor social benefit. We can see that in both the tables' respondents agrees that they are willing to use an application if using an application will benefit somebody.

Table 3.8 and 3.9 shows the responses of the items in self benefit factor for the both the dataset respectively. When we compare the (strongly) agree and (Strongly) disagree we can see that for both the data set, the responses for (strongly) agree is more than (strongly) disagree as well. We can see that people are willing to use an application if there are rewards offered by using an application.

Table 3.8: Response on self benefit factor for the first data set

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
14. I focus on the benefit that I can get after using an application.	11 (3.6%)	38 (12.6%)	89 (29.5%)	124 (41.1%)	40 (13.2%)	302 (100%)
15. I decided to use an application because I can get rewards.	35 (11.6%)	109 (36.1%)	111 (36.8%)	40 (13.2%)	7 (2.3%)	302 (100%)
16. I consider offering rewards encourages more user to use an application.	13 (4.3%)	54 (17.9%)	86 (28.5%)	119 (39.4%)	30 (9.9%)	302 (100%)
17. I think the profit impact of using an application is considerable.	8 (2.6%)	36 (11.9%)	140 (46.4%)	108 (35.8%)	10 (3.3%)	302 (100%)

Table 3.9: Response on self benefit factor for the second data set

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
14. I focus on the benefit that I can get after using an application.	19 (6.3%)	69 (22.8%)	103 (34.1%)	94 (31.1%)	17 (5.6%)	302 (100%)
15. I decided to use an application because I can get rewards.	37 (12.3%)	122 (40.4%)	90 (29.8%)	47 (15.6%)	6 (2.0%)	302 (100%)
16. I consider offering rewards encourages more user to use an application.	13 (4.3%)	55 (18.2%)	104 (34.4%)	103 (34.1%)	27 (8.9%)	302 (100%)
17. I think the profit impact of using an application is considerable.	13 (4.3%)	43 (14.2%)	138 (45.7%)	97 (32.1%)	11 (3.6%)	302 (100%)

Table 3.10: Response on brand loyalty factor for the first data set

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
18. If I like a brand of application. I rarely switch from it.	7 (2.3%)	44 (14.6%)	98 (32.5%)	132 (43.7%)	21 (7.0%)	302 (100%)
19. On several purchase occasions, it is likely that I will buy each time the same brand	13 (4.3%)	84 (27.8%)	106 (35.1%)	91 (30.1%)	8 (2.6%)	302 (100%)
20. During my last purchase, I've always bought the same brand.	17 (5.6%)	107 (35.4%)	95 (31.5%)	78 (25.8%)	5 (1.7%)	302 (100%)
21. Even if the price of that brand I am used to buying strongly increases, I'll still buy it.	19 (6.3%)	98 (32.5%)	101 (33.4%)	77 (25.5%)	7 (2.3%)	302 (100%)

The two tables (Table 3.10 and 3.11) where the respondents answered for the brand loyalty factor, we can see that most answered for the neutral option but when we compare between agree and disagree we can see that in the first data set people responded mostly for agree but after reading the story they have chosen to go along with disagree mostly. This shows that people are not really interested in brands in Bhutan.

The above descriptions are rough descriptions on the how the users have responded to the items presented to them. Their significance and relationships will be discussed further in the following chapters.

Table 3.11: Response on brand loyalty factor for the first data set

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
18. If I like a brand of application. I rarely switch from it.	14 (4.6%)	55 (18.2%)	123 (40.7%)	95 (31.5%)	15 (5.0%)	302 (100%)
19. On several purchase occasions, it is likely that I will buy each time the same brand	15 (5.0%)	87 (28.8%)	103 (34.1%)	86 (28.5%)	11 (3.6%)	302 (100%)
20. During my last purchase, I've always bought the same brand.	20 6.6%	101 33.4%	102 33.8%	68 22.5%	11 3.6%	302 100%
21. Even if the price of that brand I am used to buying strongly increases, I'll still buy it.	30 (9.9%)	104 (34.4%)	87 (28.8%)	68 (22.5%)	11 (3.6%)	302 (100%)

Chapter 4

DATA ANALYSIS

We did reliability analysis, factor analysis, regression and Compare mean test to the responses we have got. The results will be discussed below. Regression analysis was conducted to find out the factor which could predict the factor which influences the user's attitude towards facebook application.

4.1 Reliability Analysis

Since this survey is a multi-point formatted questionnaires (likert scale) with five choices: "Strongly Agree", "Agree", "Neutral", "Disagree" and "Strongly Disagree". We performed reliability analysis to check the reliability of the questions in the survey. The highest Cronbach's alpha value for the first set of question was 0.799 and the lowest value was 0.632 for the first data set. For the second dataset the highest value for Cronbach's alpha was 0.886 and the lowest value was 0.740. The accepted Cronbach's alpha value is 0.7 even though some authors argue that it can also be lower than 0.7 for academic purposes(Santos, 1999). To increase the Cronbach's alpha value we deleted some questions.

Table 4.1: Reliability analysis results for the first data set.

Constructs	Items code	Cronbach's alpha (α)
Brand Loyalty	BrandL2 BrandL3 BrandL4	0.768
Self Benefit	SelfB1 SelfB2 SelfB3 SelfB4	0.632
Social Benefit	Sob1	0.799

	Sob2 Sob3 Sob4	
Social Influence	Soi1 Soi2 Soi3 Soi5	0.636

Table 4.2: Reliability analysis for the second data set

Constructs	Items code	Cronbach's alpha (α)
Brand Loyalty	BrandL2 BrandL3	0.866
Self Benefit	SelfB1 SelfB2 SelfB3 SelfB4	0.740
Social Benefit	Sob1 Sob2 Sob3 Sob4	0.886
Social Influence	Soi1 Soi2 Soi3 Soi5	0.770

4.2 Factor Analysis

After completing the reliability analysis, we performed Factor analysis to the remaining questions. We conducted factor analysis for both the set of data, which is

once before the responders read the story and once after they have read the story. Extraction method used was principle component analysis and orthogonal Varimax rotation. After calculating the correlation value for all the questions, the related questions were grouped into the same factor. The number of factors grouped was four factors. The following conditions were used in our factor analysis.

Communalities of all the items needs to be more than 0.5

Latent root criterion for engenvalues for all components should be greater than 1.0

Factor loading value of 0.50 or greater is considered necessary for practical significance

KMO and Bartlett's test values should be greater than 0.5

For the first data set: the data which was collected before the responders read the story, four items each were loaded into social benefit, self benefit and social influence, three items were loaded into brand loyalty factor. KMO and Bartlett's test score was 0.778.

For the second data set: the data which was collected after the responders read the story, four items each were loaded into social influence and self benefit, two items were loaded into brand loyalty and three factors were loaded into social benefit factor. KMO and Bartlett's test score was 0.814.

Table 4.3: Factor analysis result of first data set (Rotated Component Matrix[a])

Item code	Component			
	1	2	3	4
Sob2	0.814			
Sob1	0.795			
Sob3	0.749			
Sob4	0.690			
Soi2		0.800		
Soi1		0.737		
Soi3		0.626		
Soi5		0.580		
BrandL2			0.852	
BrandL3			0.839	
BrandL4			0.705	
SelfB3				0.747
SelfB2				0.373
SelfB4				0.687
SelfB1				0.519

Extraction Method: Principal Component Analsis

Rotation Method: Varimax with Kaiser Normalization

Rotation Converged in 5 iterations

Table 4.4: Factor analysis result of second data set (Rotated Component Matrix[a])

Item code	Component			
	1	2	3	4
Sob1	0.887			
Sob3	0.876			
Sob2	0.847			
Soi2		0.793		
Soi1		0.742		
Soi3		0.712		
Soi5		0.670		
SelfB2			0.796	
SelfB3			0.699	
SelfB1			0.682	
SelfB4			0.677	
BrandL3				**0.919**
BrandL2				**0.895**

Extraction Method: Principal Component Analsis

Rotation Method: Varimax with Kaiser Normalization

Rotation Converged in 6 iterations

4.3 Regression Analysis

We performed regression analysis to find out the factor that can be a predictor or the factor which influences users' attitude towards facebook application. Regression analysis was applied on both the data set i.e. before and after the users read the story.

Table 4.5: Regression analysis results

Model	Un standardized Coefficients		SC	t	Sig.
	B	Std. Error	Beta		
* (Constant)	-0.003	0.056		-0.051	0.959
Social Benefit	0.076	0.056	0.076	1.358	0.175
Social Influence	0.250	0.056	0.250	4.464	0.000
Brand Loyalty	-0.037	0.056	-0.037	-0.655	0.513
Self Benefit	0.057	0.056	0.075	1.336	0.183
**(Constant)	-3.072E-017	0.054		0.000	1.000
Social Benefit	0.061	0.054	0.061	1.121	0.263
Social Influence	0.312	0.054	0.312	5.721	0.000
Brand Loyalty	0.017	0.054	0.017	0.316	0.752
Self Benefit	0.152	0.054	0.152	2.798	0.005

SC= Standardized Coefficients.

* = before respondents read the story (first dataset).

** = After the respondents read the story (Second dataset)

For the first data set, i.e. before the respondents read the story. Results of regression analysis shows that the factor Social Influence (β = 0.250, $p < 0.001$) was found to be a significant factor affecting the users attitude toward third party applications. However, Self Benefit (β = 0.057, $p > 0.05$), Social Benefit (β = 0.076, $p > 0.05$) and Brand Loyalty (β = -0.037, $p > 0.05$) were found out to be insignificant factors. The model is shown in figure 4.1.

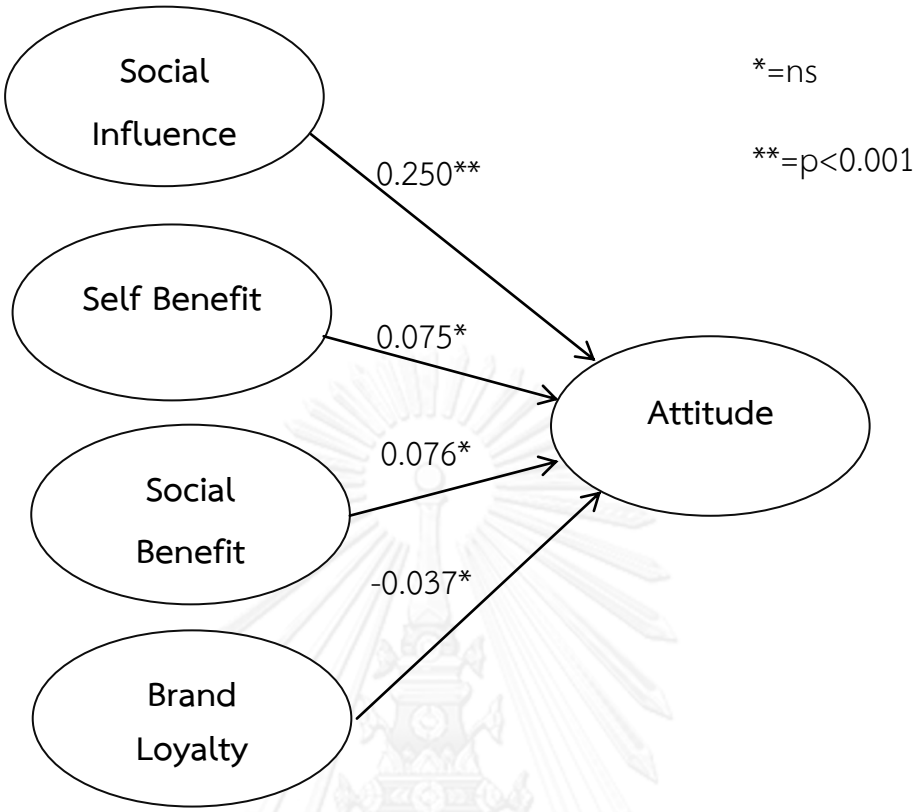

Figure 4.1: Hypothesis model after the regression analysis for the first data set

For the second data set after the user has read the story. The regression analysis results still shows that the factor Social Influence (β = 0.312, $p < 0.001$) to be the most significant factor that affects users attitude. Self Benefit (β = 0.152, $p<0.05$) factor also affects the users attitude. However, Social Benefit (β = 0.061, $p>0.05$) and Brand Loyalty (β = 0.017, $p>0.05$) were not found to be significant and cannot be used as a predictor. The model for the second dataset is shown in figure 4.2.

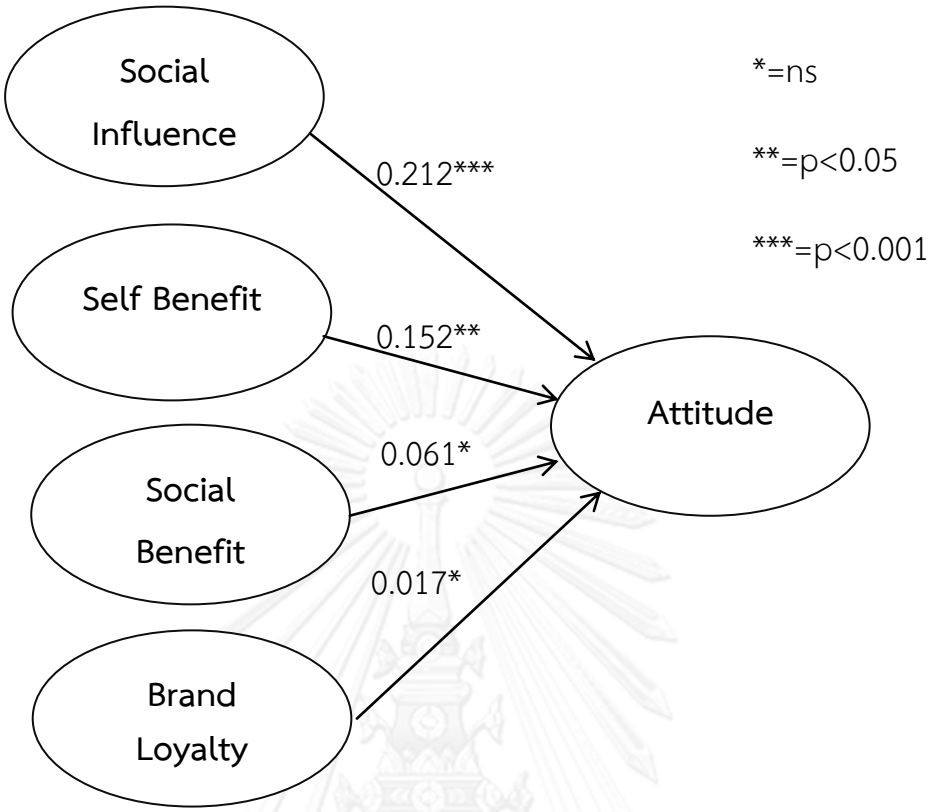

Figure 4.2: Hypothesis model after the regression analysis for the second data set

4.4 Compare mean t-test

An independent sample t- test was performed to compare the means of two independent groups. The respondents were segregated based on location rural and urban groups so that we could test if there is any significant difference towards the four factors by these two groups. The generalized null and alternate hypothesis for all the factors is defined below.

μ_u = the average of (social benefit, self benefit, brand loyalty, social influence) for urban group.

μ_r = the average of (social benefit, self benefit, brand loyalty, social influence) for rural group.

Null hypothesis (H_0): $\mu_u = \mu_r$: there is no significant mean difference between the people of rural and urban area towards the factors.

Alternative Hypothesis (H_1): $\mu_u \neq \mu_r$: there is significant mean difference between the people of rural and urban area towards the factors.

We also assumed that, the variables social benefit, social influence, self benefit and brand loyalty as numerical variables. The variables have normal distribution. The two groups have equal variance on the dependent variable. After we performed the t-test, where confidence interval of 95% and p <0.05 should be satisfied to reject the null hypothesis. The result is shown in Table 4.6.

For social benefit the Levene's Test for Equality shows F ratio (0.044) and sig. value is 0.833 (p>0.05) which means (H_0): $\mu_u = \mu_r$: there is no significant difference between urban and rural group so the null hypotheses cannot be rejected.

The same applies to self benefit factor where p=0.734 which is greater than the accepted value of p<0.05. Hence (H_0): $\mu_u = \mu_r$ is true. We also applied the same method for Social influence where the F ratio was (0.650) and (p>0.05) and we couldn't reject the hypothesis.

For brand loyalty factor the F ratio was (4.469) and (p = 0.035 < 0.05), (H_0): $\mu_u \neq \mu_r$: we conclude that there is a statistically significant difference between the age groups when it comes to the Brand Loyalty factor. ANOVA test also showed that there is a difference between younger and the older generation where older people seem to be loyal to their brand whereas younger people try out different brands.

Table 4.6: Result of the compare mean t-test

		Levene's Test for Equality of		t-test for Equality of Means		
		F	Sig.	t	df	Sig.(2 tailed)
Self Benefit	Ea	0.734	0.392	0.134	263	0.894
	Na			0.134	250.066	0. 893
Social Benefit	Ea	0.044	0.833	-0.285	263	0.776
	Na			-0.287	251.641	0.774
Social Influence	Ea	0.650	0.421	-.185	263	0.854
	Na			-.184	242.524	0.854
Brand Loyalty	Ea	4.469	0.035	1.429	263	0.154
	Na			1.461	260.642	0.145

Note: Ea = Equal variances assumed. Na = Equal variances not assumed

4.5 Chi-Square Test

We also performed Pearson's chi square test or test of associations on the second data set. Chi Square test was performed on two independent variables age and education level, to find out if there is a significant difference between people of different age groups and education levels respectively. The results are discussed in this chapter. The test was performed on age and education level because we wanted to find out if there is any relationship between those groups towards different items. The two assumptions considered are that data that the data are of nominal data type and it consists of two or more independent groups. We also combined the likert scale data Strongly Disagree and Disagree to form Disagree and Agree and Strongly Agree to form agree to minimize the minimum expected count errors. We also combined the age group 31-35 and 36 above as 31 and above to reduce the minimum expected count errors. We also performed Chi-Square test on the data based on the user's qualification level as well. Since it is likely that the mind set of people of different education level may differ, where people of lower education level may not care about whatever applications they may use and the people of higher education level may be careful of what application they are using and vice versa.

4.5.1 Chi - square analysis between age groups with regards to the likeliness of purchasing the same brand

H_0: No relationship exists between age and the likeliness of users while purchasing the brand on several occasions

H_A: A relationship exists between age and the likeliness of users while purchasing the brand on several occasions.

Table 4.7: Chi –Square results

Age	Disagree	Neutral	Agree	Total	Asymp.sig.(2 Sided)	Pearson's Chi-Square
14-25	46	43	23	112	0.010	13.320a
26-30	42	40	44	126		
31+	12	17	23	52		

X2(4) =0.010 < 0.05

The above table is the results of Chi-Square test on the item1 “During my last purchase I have always bought the same brand” with regards to the different age groups. The item is for the brand loyalty factor, to see if the respondents are loyal to the brand they purchase. The chi square results X2(4) =0.010 < 0.05 is significant and we rejected the null hypothesis H_0, this is because younger people tend to experiment different brands whereas the elder generation usually stick to the same brand or the brand which they are loyal to and we conclude that there is a relation between age and the likeliness of users while purchasing the brand on several occasions.

4.5.2 Chi - Square analysis between age groups and the users last purchases pattern

H_0: No relationship exists between age and the user’s last purchases pattern.

H_A: A relationship exists between age and the user’s last purchases pattern.

Table 4.8: Chi – Square results

Age	Disagree	Neutral	Agree	Total	Asymp.sig.(2 Sided)	Pearson’s Chi-Square
14-25	52	37	23	112	0.013	12.642a
26-30	54	45	27	126		
31+	12	18	22	52		

X2(4) = 0.013<0.05

The above result is for the item (During my last purchase, I've always bought the same brand) for the brand loyalty factor. We reject the null hypothesis because the test showed the result to be significant p <0.05 (X2(4) = 0.013<0.05) and the alternate hypothesis H_1 is accepted and conclude that there is a relation between age and the user’s last purchases pattern. We can see that people of older age

group agrees to the statement where else more people in the younger age group disagrees to the statement

4.5.3 Chi – square analysis between age group with regards to an application sharing their profile information

H_0: No relationship exists between age and comfort ability with an application sharing their profile information to other companies

H_A: A relationship exists between age and comfort ability with an application sharing their profile information to other companies

Table 4.9: Chi – Square results

Age	Disagree	Neutral	Agree	Total	Asymp.sig.(2 Sided)	Pearson's Chi-Square
14-25	88	17	11	116	0.759	1.875a
26-30	92	16	15	133		
31+	40	9	4	53		

X2(4) = 0.759 > 0.05

The above table is for the item (I am comfortable with an application if it shared your profile information with other companies?) to check the users' attitude towards the application to see if they are comfortable or not when applications share their information to other parties. We reject cannot reject the null hypothesis and conclude that there is no relation between age and comfort ability with an application sharing their profile information to other companies since the p value is greater than 0.05 (X2(4) = 0.759 > 0.05). We can see that most of the respondents do not agree on the statement and people of all age group do not like their information to be shared to other companies.

4.5.4 Chi–Square test between age and using an application of some ones advice

H_0: No relationship exist between age and using an application if someone advises them not to use it

H_A: A relationship exists between age and using an application if someone advises them not to use it

Table 4.10: Chi – Square Results

Age	Disagree	Neutral	Agree	Total	Asymp.sig.(2 Sided)	Pearson's Chi-Square
14-25	28	37	51	116	0.806	1.617a
26-30	38	41	54	133		
31+	15	13	25	53		

X2(4) = 0.806 > 0.05

The Chi-Square result for the item of social benefit (I will stop using an application if someone advises you not to use it?) is shown in the above table. Since the p value is greater than 0.05 (X2(4) = 0.806 > 0.05) we cannot reject the null hypothesis H_0 and conclude that there is no relation with age and using an application if someone advises them not to use and application. We can also see that most respondents are willing to stop using an application based on their responses favoring the statement, where 51 persons in the age group 14-25 agreed on the statement 54 and 25 persons agreed from the age group 26-30 and 31+ respectively.

4.5.5 Chi – Square test between age with regards to using an application for a social cause

H_0: No relationship exists between age and applicability of using an application for a social cause

H_A: A relationship exists between age and applicability of using an application for a social cause

Table 4.11: Chi – Square results

Age	Disagree	Neutral	Agree	Total	Asymp.sig.(2 Sided)	Pearson's Chi-Square
14-25	66	32	18	116	0.335	4.565a
26-30	68	45	20	133		
31+	25	13	15	53		

X2(4) = 0.335> 0.05

The above Chi-Square result is for the item on social benefit factor. The item is developed to see the acceptance of facebook applications based on social cause or which could benefit the society. The null hypothesis cannot be rejected since the p value is greater than 0.05 (X2(4) = 0.335> 0.05) and conclude that there is no relation between age and using an applications based on social cause. The result shows that people of all age groups are willing to use an application if it is going to benefit the society.

4.5.6 Chi – Square test between age group and using an application because of rewards

H_0: No relationship exists between age and using an application because of rewards

H_A: A relationship exists between age and using an application because of rewards

Table 4.12: Chi – Square results

Age	Disagree	Neutral	Agree	Total	Asymp.sig.(2 Sided)	Pearson's Chi-Square
14-25	66	32	18	116	0.170	6.412a
26-30	68	45	20	133		
31+	25	13	15	53		

X2(4) = 0.170 > 0.05

The result is for an item of self benefit factor. This is to see if a user uses an application if an application offer rewards for using it. We cannot reject the null hypothesis since p value is greater than the accepted value of 0.05 (X2(4) = 0.170 > 0.05) and conclude that there is no relation between age and using an application because of rewards. The result shows that all the respondents do not agree to the statement (I decided to use an application because I can get rewards). The reason is mainly due to the fact that there are no applications built by a Bhutanese or an application built specifically for Bhutanese users. Therefore, there is no user who has used an application because of the rewards an application offers.

4.5.7 Chi - square analysis between education qualification towards likeliness of users purchasing the same brand on several occasions

H_0: No relationship exists between qualification and the likeliness of users while purchasing the brand on several occasions

H_A: A relationship exists between education and the likeliness of users while purchasing the brand on several occasions.

Table 4.13: Chi – Square results

Qualification	Disagree	Neutral	Agree	Total	Asymp.sig.(2 Sided)	Pearson's Chi-Square
High School	20	25	16	61	0.082	8.278a
Bachelor's Degree	66	68	57	191		
Master's Degree	15	10	23	48		

X2(4) =0.082 >0.05

The above table is the results of Chi-Square test on the item1 "During my last purchase I have always bought the same brand" with regards to the different age groups. The item is for the brand loyalty factor, to see if the respondents are loyal to the brand they purchase. The chi square results X2(4) =0.010 < 0.05 is significant and

we rejected the null hypothesis H_0, this is because younger people tend to experiment different brands whereas the elder generation usually stick to the same brand or the brand which they are loyal to and we conclude that there is a relation between age and the likeliness of users while purchasing the brand on several occasions.

4.5.8 Chi – square analysis between education qualification with regards to an application sharing their profile information

H_0: No relationship exists between education qualification and comfort ability with an application sharing their profile information to other companies

H_A: A relationship exists between education qualification and comfort ability with an application sharing their profile information to other companies

Table 4.14: Chi – Square results

Qualification	Disagree	Neutral	Agree	Total	Asymp.sig.(2 Sided)	Pearson's Chi-Square
High School	45	13	5	61	0.120	7.308a
Master's Degree	141	25	25	133		
Bachelor's Degree	32	6	10	48		

X2(4) = 0.120 > 0.05

The above table is for the item (I am comfortable with an application if it stored my profile information permanently on its website) to check the users' attitude towards the application to see if they are comfortable or not when applications store the user data permanently on the servers of their website. We cannot reject the null hypothesis since the p value is greater than 0.05 (X2(4) = 0.120 > 0.05). And we conclude that relationship no relationship exists between qualification and comfort ability with an application storing user data in their websites. We can see that people with master's education and bachelor's degree holders strongly disagree with the

statement and we can conclude that they are more careful about their user profiles being sold and value their privacy more than the people of lower education levels.

4.5.9 Chi – Square test between education qualification towards using an application of someone's advice

H_0: No relationship exist between education qualification and using an application if someone advises them not to use it

H_A: A relationship exists between education qualification and using an application if someone advises them not to use it

Table 4.15: Chi – Square results

Qualification	Disagree	Neutral	Agree	Total	Asymp.sig.(2 Sided)	Pearson's Chi-Square
High School	19	16	26	61	0.525	3.202a
Bachelor's Degree	45	60	86	191		
Master's Degree	16	15	17	48		

X2(4) = 0.525 > 0.05

The Chi-Square result for the item of social benefit (I will stop using an application if someone advises you not to use it?) is shown in the above table. Since the p value is greater than 0.05 (X2(4) = 0.525 > 0.05) we cannot reject the null hypothesis H_0 and conclude that there is no relation with education qualification and users using an application when someone advises them not to use and application. Most respondents agreed to the above statement, which shows that people in Bhutan gets influenced while using an application.

4.5.10 Chi – Square test between education qualifications with regards to using an application for the benefit of the society

H_0: No relationship exists between education qualification and using an application if it benefits the society

H_A: A relationship exists between education qualification and using an application if it benefits the society

Table 4.16: Chi – Square results

Qualification	Disagree	Neutral	Agree	Total	Asymp.sig.(2 Sided)	Pearson's Chi-Square
High School	7	20	34	61	0.530	3.169a
Bachelor's Degree	19	43	129	191		
Master's Degree	5	11	32	48		

X2(4) = 0.530> 0.05

The above Chi-Square result is for the item on social benefit factor. The item is developed to see the acceptance of facebook applications based on social cause or which could benefit the society. The null hypothesis cannot be rejected since the p value is greater than 0.05 (X2(4) = 0.530> 0.05) and conclude that there is no relation between education qualification and using an applications based on social cause. The result shows that people of all education level groups are willing to use an application if it is going to benefit the society.

4.5.11 Chi – Square test between education qualification with regards to using an application because of rewards

H_0: No relationship exists between education qualification and using an application because of rewards

H_A: A relationship exists between education qualification and using an application because of rewards

Table 4.17: Chi – Square results

Qualification	Disagree	Neutral	Agree	Total	Asymp.sig.(2 Sided)	Pearson's Chi-Square
High School	36	17	8	61	0.201	5.974a
Bachelor's Degree	91	63	37	191		
Master's Degree	31	10	7	48		

X2(4) = 0.201 > 0.05

The above result is for an item of self benefit factor. This is to see if a user uses an application if an application offer rewards for using it. We cannot reject the null hypothesis since p value is greater than the accepted value of 0.05 (X2(4) = 0.201 > 0.05) and conclude that there is no relation between education qualification and using an application because of rewards.

4.6 Homogeneity of Variance Test

The table below shows test conducted to see if the data complies with homogeneity of variance. To conduct parametric test, the data should confirm to homogeneity of variance test, the results of the Levene's statistic tested the equality of variances in the samples and the p-value of greater than 0.05 is considered to be acceptable for homogeneity of variance.

Table 4.18: Test of Homogeneity of Variance

Construct	Levene Statistic	Df1	Df2	Df3
Brand Loyalty	0.342	2	287	0.710
Social Benefit	0.809	2	287	0.915
Self Benefit	1.275	2	287	0.281
Social Influence	0.815	2	287	0.444

4.7 Data Normality Test

To check if the data is normal we conducted normality test for all the factors. Since our data was less than 2000 we analyzed the results of Shapiro-Wilk's test where the data is considered normal if ($p > 0.05$) and also skewness and kurtosis value should be ± 1.96. For Brand Loyalty factor the Sig. value ($p = 0.083 > 0.05$) with skewness (1.95) and kurtosis (0.435). For the factor Social Influence ($p = 0.108 > 0.05$), skewness (-0.99) and kurtosis (-1.66). For Self Benefit factor ($p = 0.472 > 0.05$) skewness (1.25) and kurtosis (-0.18) we can say that the data are approximately normally distributed, the visual inspection of histogram and box plot also showed that the above factors are approximately normally distributed. For the factor Social Benefit ($p = 000 < 0.05$) skewness (-5.44) kurtosis (4.35) the data seem to be not normally distributed. We transformed the data by log10 transformation to improve the data skew and kurtosis and to make the data as normal as possible. After the transformation the p value still remained 0.000 which is less than the 0.05 requirement but the skewness and kurtosis level improved by double (-2.93) and kutrosis (2.98) and we assumed the data to be normal.

4.8 One way ANOVA test

Analysis of Variance or ANOVA is performed on the data to test if the respondent's means of each level are same or to see if the levels of at least one of the level are unequal. We performed 1-Way between subjects ANOVA to see if there is statistically significant difference between people of different age groups towards the factors that we considered for our study. We assumed age as the independent variable and factors as the dependent variable for the test. The age group was divided into 14-25, 26-30, 31-35 and 36 and above.

Table 4.19 is the result that we obtained from the one way ANOVA test. There was a significant difference between age group in regards to brand loyalty factor at $p<0.05$. [$F (3, 296) = 3.011$, $p = 0.030$]. Age was not found out to be significant with other factors, for social benefit factor $p>.05$ [$F (3, 296) = 0.618$, $p = 0.604$]. Social influence $p > .05$ [$F (3, 296) = 2.146$, $p = 0.095$]. Self benefit was also found to be insignificant since $p > .05$ [$F (3, 296) = 1.264$, $p = 0.287$]. Since we found a statistically significant result in the test, to determine where the significant exist within the ages we performed Turkey post hoc test. The result of the post hoc test is shown in Appendix C. The result of the Tukey post hoc test shows that the main source of statistically

significant difference between age group towards brand loyalty factor is because of the people in the age group of 14-25 and 31-35 where the p value was 0.018 which is less than 0.05 and none of the other age groups were found to be significant, that is people in the age group of 31-35 considered brand loyalty important with the significance level of p =0.018 where as people in the age group 14-25 did not consider brand loyalty important since p = 0.692.

Table 4.19: ANOVA Test Results

		Sum of Squares	df	Mean Square	F	Sig.
Social_Benefit	Between Groups	1.832	3	.611	0.618	.604
	Within Groups	292.425	296	.988		
	Total	294.256	299			
Social_Influence	Between Groups	6.320	3	2.107	2.146	.095
	Within Groups	290.636	296	.982		
	Total	296.956	299			
Self_Benefit	Between Groups	3.698	3	1.233	1.264	.287
	Within Groups	288.547	296	.975		
	Total	292.245	299			
Brand Loyalty	Between Groups	8.858	3	2.953	3.011	.030
	Within Groups	290.228	296	.980		
	Total	299.085	299			

Table 4.19 shows the result of the ANOVA test. The test was conducted to see if there was any statistically significant difference between the means of age group towards the factors of the study. For the social benefit factor the result shows that there is no significant difference between the means of age group. For social benefit

and social influence factor as well the result shows that there is no statistically significant difference between the means of age group. But for the factor brand loyalty the results shows that there is a significant difference between the means of the age group compared, the Tukey post hoc results shows that there is a significant difference because of the differences between the responses of people in the age group 14-25 and 31-35. Tukey post hoc revealed that younger people are more into changing brands than their older counter part. The possible reason for the difference in perspective of young and the older generation is that younger people are always into trying newer products and eager to try out different things. Whereas older people are more loyal to the brand they like and seldom they change or shift from one brand to another. Patterson (2007) conducted a similar study in Australia and found out that older people were more loyal to a brand than their counterpart.

Chapter 5

DISCUSSIONS

For the first data set, regression analysis showed that the only factor which affects their attitude towards third party application was social influence (H1). The reason for social influence affecting the attitude towards application implies that Bhutanese society still has strong social relationships. It has been studied that "social capital in the form of community leadership, trust and cooperation among the people plays an important role in Bhutanese Society" (Galay, 2001) and for that reason the perception of people to use third party application is also the same, they get strongly influenced by people who they know and who lives around their communities. The other three hypotheses (H2), (H3) and (H4) had to be neglected because the regression analysis showed that people doesn't take into account those factors while using an application. However, for the second data set social influence still remained the strongest factor which affects the users' attitude. This implies that people ignore all those security and privacy concerns.

Even though the user's show that the privacy and security is not so important but we must argue that social influence is based upon the trust on the community and the society as a whole. If a section of a society can influence others to use an application then they can also influence others not to use an application if that application is malicious or not trustworthy. Brand loyalty was not considered as a significant factor by the respondents. The reason may be because all the applications that are there in Facebook don't have any outlets in Bhutan and no Bhutanese business has an application built on SNS sites as of now except fan pages and community pages. For the first week before announcing the prize winner there was only about 30 responses for our survey. However, after announcing the winning phone number in facebook we got a huge response from the users and this clearly shows that if there is an app which could reward them people were going to use the application as well. Hence the hypothesis (H2) has been validated.

Social benefit (H3) also don't affect users attitude towards third party application, even though this quite surprises us because the social settings and willingness to help others by the Bhutanese people is very strong (Galay, 2001), the reason they don't support application for a social cause may be that there is no application which is built and used or based in Bhutan. In addition, one strong reason for social benefit for not affecting the attitude may be because most of the responders are

young and they may not be in a position to contribute or help others monetarily as compared to older people with income at their disposal.

We also found out that there is no significant difference between rural and urban people towards the factors when we conducted the compare mean test. The result of Chi-Square and One Way ANOVA also shows that people with higher education and respondents of the people in the age higher age group takes brand loyalty into consideration while using an application whereas young people and respondents with low education do not take brand loyalty into consideration. The result is similar as in Australia, people in the age group above 30 showed more loyalty whereas younger groups showed less loyalty (Patterson, 2007). We also found that people with higher education level takes independent decision whereas people with lower education level listens to others advice while using an application.

We also found vast differences between the users of Bhutan and Thailand. Regression analysis shows that Thai people are loyal to the brand they like and found out that brand loyalty can be used as a predictor for user's attitude towards facebook applications. The reason for Thai people to consider brand loyalty is because there are many brand loyalty campaign and we can also see that there are lots of people who follows brands in Thailand, whereas in Bhutan there are no such loyalty campaigns as such but people in the higher age group do consider brand loyalty important based on the result of the Chi-Square test and ANOVA test but regression analysis showed that brand loyalty cannot be used as a predictor for users attitude towards facebook applications. Unlike Thailand, people of Bhutan are bound to use an application because of benefit factor which indicates that if an application rewards a user they are willing to use an application irrespective of other possible factors. We conclude that by letting the respondents read the story of information disclosure we did see that there was significant impact in the way they responded while answering the question the second time.

Chapter 6

CONCLUSIONS

We conclude Social influence as the most important factor which affects user's attitude towards third party application. Even after reading about how third party applications could use the private information of a user, the respondent's perspective did not change. The results still showed that Social influence to be the biggest factor which affects their attitude towards third party application. This shows that even with the rapid development and modernization in the country, Bhutanese has still managed to remain a strong community based on social norms and bond between the people. Self Benefit also has an effect on user's attitude towards third party applications. Even though there is not even a single application developed for the Bhutanese masses or neither an application developed by a Bhutanese, people in Bhutan has been using applications which is intended for other users of the world. When there is no application developed for the Bhutanese users there is very little scope or no scope of getting rewards by using that application.

It is evident that if there is an application developed for the Bhutanese masses and offer rewards, people in Bhutan are going to use an application based on rewards as well. Social benefit factor also cannot be used as a predictor and Brand loyalty also cannot be used as a predictor but it is clear that there is a difference in the loyalty towards a brand by people in different age group; people in older age group are found to be more loyal towards a brand than their younger counter parts. The survey does not represent all the users of Facebook and this survey is limited to Facebook platform only. We hope this paper can be useful for individuals in Bhutan who wish to develop facebook applications in the future for the Bhutanese users.

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APPENDICES

APPENDIX A

The following are the passage the user had to read after answering the questionnaire for the first time or before the respondent had to answer the questionnaire for the second time

But did you know that most of these popular applications are 3rd party applications, in which Facebook has no control over their content? Some Facebook Applications Are Dangerous

What you need to know:

"Anyone can be a Facebook Developer: The Facebook application process starts when a person such as me, a business, a felon, or other living-with-his-mother basement dweller gets the bright idea to create a "Which Harry Potter Character is you?" quiz. They navigate to developer.facebook.com and sign up to become a developer. Information gathered is minimal. They don't need to pass a background check, be an actual company, or be in the United States. If I recall correctly (and admittedly, I may not) all that is required is what is already in your Facebook profile. All you need to create an app is a facebook account."

Facebook Applications have access to almost all of your profile data and statuses

Facebook Developers can save and store all of the information collected in their own database. Or, in their basement, on CD's, in a laptop bag left on a bus, or virtually anywhere else they want. Once you've authorized an application, they can permanently store your information off site, away from Facebook, anywhere they want, including their home.

Facebook Applications can contain viruses and/or spyware

Remember a time where there were 100's of post on behalf of you or your friends. Not all applications are malicious, many are there providing wonderful features and exciting offers. Please read to protect yourself from safe usage of facebook applications

http://www.imasuper.com/536/technology/keep-yourself-safe-the-dangers-of-facebook-applications/

Source: http://www.imasuper.com/536/technology/keep-yourself-safe-the-dangers-of-facebook-applications/"

APPENDIX B

SURVEY QUESTIONNAIRE

Survey Questionnaire for factors

Dear Sir/Madam,

Greetings to you! Thank you so much for your time to fill up this questionnaire. It would help me in fulfilling my Master's Degree in Chulalongkorn University in Thailand. I assure you that your responses will be held strictly confidential and will be erased after completion of the data analysis. Please answer the questions as best as you can. Thank you for your time.

Please provide correct information for each item (* required).

1. Gender*
   - ☐ Male
   - ☐ Female
2. Age*
   - ☐ 14 to 25
   - ☐ 26 to 30
   - ☐ 31 to 35
   - ☐ 36 and above
3. Qualification*
   - ☐ High School
   - ☐ Bachelor's Degree
   - ☐ Master's Degree
   - ☐ PhD
   - ☐ Others
4. Occupation*
   - ☐ Government Employee
   - ☐ Co-operate Sector
   - ☐ Private Business
   - ☐ Students
   - ☐ Other5. Your Internet Access Location.* (You can apply more than one choice)
   - ☐ At home

☐ At work
☐ At school
☐ In Internet café
☐ In a friend's place
☐ Do not use the Internet

6. How often do you use Facebook.* (You can apply more than one choice)

☐ 1-2 hours
☐ 2-3 hours
☐ 3-4
☐ 4-5 hours
☐ 5 to 6 hours or more

Direction: Please indicate your level of agreement or disagreement with each of these statements regarding the use of Facebook application. Circle the most appropriate response on the following scale.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

No.	Item	
	Attitude	Source
1	I am comfortable with an application if it sold my profile information	(Naratwong et al., 2013)
2	I am comfortable with an application if it stored my profile information permanently on its website	
3	I am comfortable with an application if it shared my profile information with other companies	
4	I am comfortable with an application if it tag's an embarrassing photo of you posted/tagged by others.	
	Social influence	
5	I am likely to use an application if a celebrity I like uses an application	Self

6	I am likely to use an application if a friend or some of my family member	
7	I use an application if a particular application has a large number of users?	
8	I will stop using an application if someone advises me not to use it?	
9	I click on applications that were liked by one of my friends?	
	Social Benefit	
10	I am willing to use an application if it benefits my society.	(Naratwong et al., 2013)
11	I am most likely to click an application if it is going to help somebody	
12	I enjoy spending time on an application if it benefits my society	
13	I think using an application for a social cause is applicable	
	Self Benefit	
14	I focus on the benefit that I can get after using an application.	(Naratwong et al., 2013)
15	I decided to use an application because I can get rewards.	
16	I consider offering rewards encourages more user to use an application.	
17	I think the profit impact of using an application is considerable	
	Brand Loyalty	
18	If I like a brand. I rarely switch from it.	(Odin, Odin, & Florence, 2001)
19	On several purchase occasions, it is likely that I will buy each time the same brand	
20	During my last purchase, I've always bought the same brand.	
21	Even if the price of that brand I am used to buying	

	strongly increases, I'll still buy it.	

22. Please share your comments and suggestions on Security and Privacy issues in facebook

APPENDIX C

Tukey Post Hoc results

Multiple Comparisons

Dependent Variable		(I) Age age	(J) Age age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
brandloyalty BRANDLOYALTY	Tukey HSD	1 14-25	2 26-30	-.22135414	.12854324	.199	-.5241941	.0814858
			3 31+	-.45637608*	.16609873	.017	-.8476945	-.0650577
		2 26-30	1 14-25	.22135414	.12854324	.199	-.0814858	.5241941
			3 31+	-.23502194	.16314663	.322	-.6193854	.1493415
		3 31+	1 14-25	.45637608*	.16609873	.017	.0650577	.8476945
			2 26-30	.23502194	.16314663	.322	-.1493415	.6193854
	Dunnett T3	1 14-25	2 26-30	-.22135414	.13108703	.252	-.5366327	.0939244
			3 31+	-.45637608*	.16327660	.018	-.8519047	-.0608475
		2 26-30	1 14-25	.22135414	.13108703	.252	-.0939244	.5366327
			3 31+	-.23502194	.15391172	.340	-.6087521	.1387082
		3 31+	1 14-25	.45637608*	.16327660	.018	.0608475	.8519047
			2 26-30	.23502194	.15391172	.340	-.1387082	.6087521
socialbenefit SOCIAL_BENEFIT	Tukey HSD	1 14-25	2 26-30	-.16265253	.12992619	.424	-.4687507	.1434456
			3 31+	-.14801534	.16788572	.652	-.5435438	.2475131
		2 26-30	1 14-25	.16265253	.12992619	.424	-.1434456	.4687507
			3 31+	.01463719	.16490186	.996	-.3738615	.4031359
		3 31+	1 14-25	.14801534	.16788572	.652	-.2475131	.5435438
			2 26-30	-.01463719	.16490186	.996	-.4031359	.3738615
	Dunnett T3	1 14-25	2 26-30	-.16265253	.12826856	.498	-.4710574	.1457523
			3 31+	-.14801534	.17269735	.775	-.5676358	.2716051
		2 26-30	1 14-25	.16265253	.12826856	.498	-.1457523	.4710574
			3 31+	.01463719	.17089674	1.000	-.4007969	.4300713
		3 31+	1 14-25	.14801534	.17269735	.775	-.2716051	.5676358
			2 26-30	-.01463719	.17089674	1.000	-.4300713	.4007969
selfbenefit SELF_BENEFIT	Tukey HSD	1 14-25	2 26-30	.17816416	.12966182	.356	-.1273111	.4836394
			3 31+	-.06012245	.16754410	.932	-.4548461	.3346012
		2 26-30	1 14-25	-.17816416	.12966182	.356	-.4836394	.1273111
			3 31+	-.23828661	.16456632	.318	-.6259948	.1494215
		3 31+	1 14-25	.06012245	.16754410	.932	-.3346012	.4548461
			2 26-30	.23828661	.16456632	.318	-.1494215	.6259948
	Dunnett T3	1 14-25	2 26-30	.17816416	.12563448	.401	-.1239292	.4802575
			3 31+	-.06012245	.18263136	.983	-.5044028	.3841579
		2 26-30	1 14-25	-.17816416	.12563448	.401	-.4802575	.1239292
			3 31+	-.23828661	.17907617	.460	-.6744231	.1978499
		3 31+	1 14-25	.06012245	.18263136	.983	-.3841579	.5044028
			2 26-30	.23828661	.17907617	.460	-.1978499	.6744231
Log10_socialinfluence	Tukey HSD	1 14-25	2 26-30	.02042	.01821	.502	-.0225	.0633
			3 31+	-.02988	.02353	.413	-.0853	.0256
		2 26-30	1 14-25	-.02042	.01821	.502	-.0633	.0225
			3 31+	-.05030	.02311	.077	-.1048	.0042
		3 31+	1 14-25	.02988	.02353	.413	-.0256	.0853
			2 26-30	.05030	.02311	.077	-.0042	.1048
	Dunnett T3	1 14-25	2 26-30	.02042	.01848	.610	-.0240	.0649
			3 31+	-.02988	.02311	.483	-.0859	.0261
		2 26-30	1 14-25	-.02042	.01848	.610	-.0649	.0240
			3 31+	-.05030	.02214	.074	-.1041	.0035
		3 31+	1 14-25	.02988	.02311	.483	-.0261	.0859
			2 26-30	.05030	.02214	.074	-.0035	.1041

*. The mean difference is significant at the 0.05 level.

VITA

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