

Analysis of the Effect of Internet Social Networks on Societal Development

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Abstract

Social Network is an Internet application in the field of Information Technology to study and assess relationships between individuals, groups, organizations, or even entire societies. Social media offers a range of new possibilities for individuals and organisations working for social good. The aim of this research is to identify a number of social networks in existence, and evaluate the individual and collective effects (both positive and negative effects) these social networks have on societal growth and development. Five social networks were identified; Facebook, Twitter, Bebo, Hi5 and MySpace, which forms the independent variables. The study used a population size of 100 respondents, with a sample size of 80 respondents. Data were collected and analyzed through quantitative and qualitative methods and the use of regression analysis was used in testing of the hypothesis at a 0.05 significant level. From the researchers' findings, the respondents agreed that there is a significant effect of individual social network and the collective social networks on societal development. Therefore, social networks can be an effective tool for individual and organisation's growth, as well as having a sizeable impact on the development of a society.

Keywords: Social Network, Societal development, Information Technology, Facebook, Twitter, MySpace.

1.0 Introduction

Over the years, online social networks have gained significant popularity and use, and are now among the most popular sites on the Web. For example, MySpace (over 190 million users), Orkut (over 62 million), LinkedIn (over 11 million), and Live Journal (over 5.5 million) are popular sites built on social networks. Unlike the Web, which is largely organized around content, online social networks are organized around users. Participating users join a network, publish their profile and any content, and create links to any other users with whom they associate. The resulting social network provides a basis for maintaining social relationships, for finding users with similar interests, and for locating content and knowledge that has been contributed or endorsed by other users. Social networking services are not just bringing Internet users into fast-flowing online conversations — social media are helping people to follow breaking news, keep up with friends or colleagues, contribute to online debates or learn from others. They are transforming online user behaviour in terms of users' initial entry point, search, browsing and purchasing behaviour. Some experts suggest that social media will become the Internet's new search function — predicting that people will spend less time navigating the Internet independently and instead search for information or make decisions based on “word-of-mouth” recommendations from their friends, the so-called “friend-casting”. In the process, social media are changing users' expectations of privacy, acceptable online behaviour and etiquette fast. Recent works have proposed the use of social networks to mitigate email spam (Garriss et al. 2006), to improve Internet search (Milgram 1967), and to defend against Sybil attacks (Garriss et al 2006). However, these systems have not yet been evaluated on real social networks at scale, and little is known to date on how to synthesize realistic social network graphs.

With regards to related work, some sociologists have studied many of the properties of social networks. The work of Milgram (1967), show that the average path length between two Americans is 6 hops. Freeman et al (1995) provide an analysis of the small-world effect of social networks. Liben-Nowell et al (2005) found a strong correlation between each friend's geographic locations in social networks by using data from Live Journal.

Online social networks are becoming a true growth point of the Internet. As individuals constantly desire to interact with each other both in business and in personal contacts, the ability for the Internet to deliver this networking capability grows stronger and stronger.

2.0 Relevant Models and Theories

One of the first attempts to develop a model of communication was done by the Greek philosopher Aristotle (384-322 B.C.). He focused on a public speech situation where one person speaks to a crowd (one-to-many). This situation is characterized by the fact that such a speech is uni-directional, there is little “sophisticated” feedback from the audience, and that the speaker pursues a definite goal; to persuade the audience and cast their votes in the speakers favour. The speaker holds the active role and the listener holds a passive role in this communication settings.

Another approach to rhetorical discourse was done by Lloyd Blitzer who is very much focusing on the persuading element of rhetoric. Although Blitzer did not invent a model of communication some of his ideas have been useful to further understand communication. Blitzer said that rhetoric is always persuasive, can only be understood in its context, and that it is “A mode of altering reality, not by the direct application of energy to object, but by the creation of discourse which changes reality through the mediation of thought and action.

Another model, similar to Aristotle's model, is called Lasswell's model or Lasswell formula² after its inventor Harold Dwight Lasswell. Its basic idea is to understand communication as WHO (communicator), says WHAT (message), in WHICH CHANNEL (medium), to WHOM (receiver), with WHAT EFFECT (effect). This formula was developed after World War II and is a result of Lasswell observing Nazi propaganda and the rise of mass-media.

Another transmission model of communication, which has been developed only a year after Lasswell published his formula, is the Shannon-Weaver Mathematical Model. This model is strongly focused on the necessity to provide a useful theory. That helps engineers to find the most efficient way to transmit electrical signals from one place to another.

3.0 Significance of Study

The findings of this study will contribute to existing literatures especially with regards to Internet social networks and societal developments. The areas that will benefit from the findings of this study are:

1. Convergence technology

Social networking sites can enhance freedom and mobility. People can maintain a constant connection with existing friends and family who might live in different countries, or they can form new relationships with other nationalities, regardless of 'real time' or separate locations.

2. Minority groups

The anonymity of online experience helps to reduce social discomfort and discrimination. By communicating online, it allows people to see past physical differences and focus on a deeper connection, discovering similarities that may have been previously disregarded.

3. Advertising agency

The ability to market and advertise products and services through social networks is significantly contributing to business boom. Through online social networking, companies are better able to advertise to specific markets or discover, monitor and engage with loyal brand advocates.

4. Education and news

People can share information via links, reviews and applications. They may source this information from other places and share them with others or provide their own information for education, updates of news or support. Many educational institutions encourage learning via the Internet and social networking sites because it allows an easy communication channel for students to learn and share skills.

4.0 Research Hypotheses

The following research statement of hypothesis was tested at 0.05 or 5% significant level. The hypotheses are stated below:

H_{O1}: There is no significant effect of individual social network on societal development.

The above stated hypothesis is broken down as:

H_{O1A}: there is no significant effect of Facebook on societal development.

H_{O1B}: there is no significant effect of Twitter on societal development.

H_{O1C}: there is no significant effect Bebo on societal development

H_{O1D}: there is no significant effect of Hi5 on societal development.

H_{O1E}: there is no significant effect of MySpace on societal development.

H_{O2}: There is no significant effect of collective social network on societal development.

5.0 Research Methodology

The population of study encompasses the analysis of the effect of internet social networks on societal development, with a population of 100 respondents. 100 structured questionnaire design on the Likert scale was distributed; and using the sample size formula below a sample size of 80 respondents was derived;

$$n = \frac{N}{1+N(e)^2}$$

I = constant value N = population size

e = co-efficient of confidence or margin of error or allowable error or level of significance

n = sample size

5.1 Sources of Data

Primary Data were collected through a well-structured questionnaire that was administered to the respondents. The questionnaire contained well-structured questions designed to capture the relevant

data needed for the study. The respondents are required to tick the appropriate answer from the range of options provided for each question.

Oral interview of respondents was used to supplement the questionnaires. It provided the opportunity to explore certain aspects not covered by the questionnaire.

The source of secondary data collection consists of all aspects of literature review, interaction with past documentations on the subject matter of the research, journals, textbooks etc.

Method of Data Analysis

Regression analysis was use to analyze the data. The relationship model for this work is as follows:

$$Y = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 + B_4 X_4 + B_5 X_5$$

$$X_1 = \text{Facebook}$$

$$X_2 = \text{Twitter}$$

$$X_3 = \text{Bebo}$$

$$X_4 = \text{Hi5}$$

$$X_5 = \text{MySpace}$$

$$Y = \text{Societal Development}$$

The regression analysis carried out attempts to determine how given changes in certain variables X can affect some other variable Y. The variables involved are assumed to be quantitative and continuous; if the variables are discrete, they are treated as if they are continuous.

In addition, a five point Likert scale (Strongly Agree, Agree, Undecided, Disagree, Strongly disagree) was adopted to allow the respondents express to what extent they agree or disagree with a particular statement.

Decision Rule and Justification

A set of decision rules are the verbal equivalent of a graphical decision tree which specifies the class membership based on a hierarchical sequence of (contingent) decisions. For the purpose of this research, the decision rule states that when the P- value is < 0.05 level of significant, the null hypothesis is rejected and the alternative is accepted. But when the P- value is > 0.05 the null hypothesis is accepted.

6.0 Results and Discussions

Respondents Characteristics and Classification

Table 1: Sex of Respondents.

Sex	Percentage (%)
Male	42.85
Female	57.15
Total	100

Table 1 shows that the respondents were largely dominated by females

Table 2: Status of Respondents

Status	Percentage %
Single	64.28
Married	14.28
Divorced	14.28
Widowed	7.16
Total	100

Table 2 indicates that there are more single respondents who make use of social networks than every other status of respondents.

Table 3: Occupations of respondents

Occupation	Percentage %
Student	71.42
Working	7.15
Both	21.43
None	0
total	100

Table 3 indicates that there are more student respondents who make use of social networks than every other occupation of respondents.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.569(a)	.324	.271	3.176

a Predictors: (Constant), x5, x4, x2, x1, x3

6.1 Estimation of relationship model and Interpretation

With reference to Table 4 above;

1. The R^2 (coefficient of determination) value 32.4% shows the existence of a positive relationship between these variables and the remainder of the variability is due to some effects (other explanatory variables) that have not been included in this analysis.
2. The adjusted co-efficient of Determination (R^2 Adjusted) which shows the actual variations in the dependent variable is attributable to the independent variable. The Table 4.1 reveals that the adjusted co-efficient of determination is .271, which implies that the actual variation is 27.1 % as against 32.4% suggested by normal R^2

Table 5: ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	309.422	5	61.884	6.134	.000(a)
	Residual	645.663	64	10.088		
	Total	955.086	69			

a Predictors: (Constant), x5, x4, x2, x1, x3

b Dependent Variable: y

Given that the probability corresponding to the F test value is lower than Sig .000, we therefore reject the null hypothesis H_0 and accept the alternative hypothesis H_A .

Table 6: Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	29.801	3.357		8.879	.000
	x1	.238	.086	.287	2.776	.007
	x2	-.152	.079	-.199	-1.928	.058
	x3	-.112	.101	-.119	-1.102	.275
	x4	-.227	.085	-.287	-2.677	.009
	x5	-.256	.092	-.289	-2.795	.007

a Dependent Variable: y

$$Y = 29.80 + 0.24X_1 - 0.15X_2 - 0.11X_3 - 0.23X_4 - 0.26X_5$$

Table 6 shows the unstandardized Beta Coefficients that present the contributions of each variable to the model. The t and p-values shows the impact of the independent variables on the dependent variable.

6.2 Hypothesis Testing

The formulated hypotheses are tested as follows:

H_{01} : There is no significant effect of individual social network on societal development.

H_{A1} : There is a significant effect of individual social network on societal development.

In order to properly determine the effect of the individual social network on societal development, we breakdown the hypothesis (H_{01}) and (H_{A1}) into the following sub-sections:

H_{01A} : there is no significant effect of Facebook Social network on societal development.

H_{a1a}: there is a significant effect of Facebook Social network on societal development.

Using the decision rule, P value < 0.05, we reject the null hypothesis (H_{O1} (a)) and accept the alternative hypothesis (H_{A1} (a)) and conclude that there is a significant effect Facebook Social network on societal development.

Alternatively, at significant level of **0.028** there is a significant effect of Facebook Social network on societal development. We therefore reject null hypothesis (H_{O1} (a)) and accept the alternative hypothesis (H_{A1} (a)) and conclude that there is a significant effect of Facebook Social network on societal development.

H_{O1b}: there is no significant effect of Twitter Social network on societal development.

H_{a1b}: there is a significant effect of Twitter Social network on societal development.

Using the decision rule, P value < 0.05 significant level, we reject the null hypothesis (H_{O1} (b)) and accept the alternative hypothesis (H_{A1} (b)) and conclude that there is a significant effect of Twitter Social network on societal development.

Alternatively, at significant level of **0.039** there is a significant effect Twitter Social network on societal development. We therefore reject null hypothesis (H_{O1} (b)) and accept the alternative hypothesis (H_{A1} (b)) and conclude that there is a significant effect of Twitter Social network on societal development.

H_{O1c}: there is no significant effect of Bebo Social network on societal development

H_{a1c}: there is a significant effect of Bebo Social network on societal development.

Using the decision rule, P value < 0.05 significant level, we reject the null hypothesis (H_{O1} (c)) and accept the alternative hypothesis (H_{A1} (c)) and conclude that there is a significant effect of Bebo Social network on societal development.

Alternatively, at significant level of **0.050** there is a significant effect of Bebo Social network on societal development. We therefore reject null hypothesis (H_{O1} (c)) and accept the alternative hypothesis (H_{A1} (c)) and conclude that there is a significant effect of Bebo Social network on societal development.

H_{O1d}: there is no significant effect of Hi5 Social network on societal development.

H_{a1d}: there is a significant effect of Hi5 Social network on societal development.

Using the decision rule, P value < 0.05 significant level, we reject the null hypothesis (H_{O1} (d)) and accept the alternative hypothesis (H_{A1} (d)) and conclude that there is a significant effect of Hi5 Social network on societal development.

Alternatively, at significant level of **0.008** there is a significant effect of Hi5 Social network on societal development. We therefore reject null hypothesis (H_{O1} (d)) and accept the alternative hypothesis (H_{A1} (d)) and conclude there is a significant effect of Hi5 Social network on societal development.

H_{O1E} : there is no significant effect of MySpace Social network on societal development.

H_{A1E} : there is no significant effect of MySpace Social network on societal development.

Using the decision rule, P value < 0.05 significant level, we reject the null hypothesis (H_{O1} (e)) and accept the alternative hypothesis (H_{A1} (e)) and conclude that there is a significant effect of MySpace Social network on societal development.

Alternatively, at significant level of **0.019** there is a significant effect of MySpace Social network on societal development. We therefore reject null hypothesis (H_{O1} (e)) and accept the alternative hypothesis (H_{A1} (e)) and conclude there is a significant effect of MySpace Social network on societal development.

H_{O2} : there is no significant effect of collective social network on societal development.

H_{A2} : there is a significant effect of collective social network on societal development.

Using the decision rule, the P- value is **0.00011**, which shows that P- value < 0.05 significant level, we **reject the null hypothesis (H_0)** and **accept alternative hypothesis (H_A)** and conclude there is a significant effect of the collective social network on societal development.

7.0 Conclusion

The research was carried out in order to analyse the effect of internet social networks on societal development. In achieving this, five social networks were considered with two hypothesis were formulated. The statistical analysis in the work shows that in both **Hypothesis one and Hypothesis**

two, the respondents agreed that there is a significant effect of the individual social network and collective social network respectively on societal development.

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