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Abstract

In this research paper, we discuss the nature of social knowledge and how it can influence consumer sentiments by affecting their economic decisions to some extent. In fact, this is a brief study of *social knowledge* summarizing its evolutionary origin and phylogenesis in the modern context. We have designed a simplistic mathematical model for a theoretical understanding of our assumption that has practical implications regarding its utility in the society. We find social networks generate enough social information that can influence user choice and preferences. Our study has implications for both the users and the developers of social networking sites.

Keywords: *Social knowledge, social information, consumer choice, social networking, knowledge society.*

1 Introduction

1.1 Social Knowledge in the Knowledge Society

The rise of public interest in *social knowledge* complements its growing importance in the economy (Chatterjee 2018) given that social networks generate a vast amount of information from user interactions. Out of the vast amount of information and data generated by social networks, some of it is related to business, markets, and personalized advertisements containing products and their pricing. Users on social networking sites like Facebook and others either overlook such advertisements, or they are tempted by such advertisements. Researchers have analyzed how consumers respond to such personalized advertising on social networking sites (De Keyzer, Dens, & De Pelsmacker, 2015). Now, it is well acknowledged that price and product advertisements are excellent signals that attract consumer attentions (Milgrom and Roberts 1986). Some social networking sites allow users to advertise their products online which allow other users to get informed about various products (new or old) and their prices. The knowledge of such products may be social knowledge, because they originate from social networking sites. But before we proceed any further, it might be important to get some idea of what social knowledge is, and how it might be used as a helpful aid in understanding how consumers respond to available economic information through social networks.

*. This paper is an attempt to understand how social knowledge affects human economic decision making.

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Previously, Cooley (1926), Turiel (1983), Longino (1990), and Girard (2010) among others, have considered the notion of what makes up social knowledge and information. SOCIAL KNOWLEDGE as we know it today, is not much different from what it was like in the past; i.e., now, it has a new source of origin—that is from Digital Social Networks. This paper undertakes a different perspective to study how such knowledge that we call *social*, being generated from social networking sites, affect users in their decisions regarding social and economic behaviors. Previously, socially-held technical knowledge has been considered as one of the prime determinants of economic activities (Veblen 1919; Arrow 1994). Today, the knowledge that is being tagged a “social” is not the work of constructive imagination; it is the product of human interactions and emotions that too influence our economic decisions and activities. It has been observed and claimed that social networks influence consumer behavior (Nolcheska 2017). According to Guo, Wang, & Leskovec, (2011), social networks influence consumer choice by passing information about new products and their pricings among users. In that sense, social networks generate some “knowledge” of products and prices which are spread through these networks. Social knowledge in the modern digital context of knowledge society should be understood as a constituent body of knowledge shared via social media and social networks, which has strategic roles to play in business and the economy. Some scholars posit a view of human science as social construction (Gergen 2012). In most general context, however, it is the sum-total of all the knowledge of society that exists as cultural, traditional and historical knowledge, which could be categorized as SOCIAL KNOWLEDGE.

1.2 The Science Behind Social Knowledge

The collection and gathering of *social knowledge* have been undertaken in the past century by social scientists as data concerning social life and activities, daily habits, personal tastes, moods and most information related to everyday events (Camic, Gross, & Lamont, 2011). This has changed little today, for a vast amount of data concerning human activities, likes and dislikes are being generated by social networking sites. The search for reasons that explain the science behind the growth of social knowledge reveals the exponential generation of data across the web on account of online engagements and social interactions among the people. Undeniably, the evolution of social media and the growing use of social gadgets have led to an immense growth of a kind of knowledge which may be termed as “social”, and which differs from scientific knowledge. But it does not signify any knowledge which exists beyond scientific knowledge be considered as “social”. Rather, such knowledge may be considered as “social-scientific knowledge”. The origin of *social knowledge* and all that knowledge, which is *social*, has a long history dating back to antiquity. Primitive modes of subsistence and lack of effective mass communication technologies affected transmission of (social) knowledge across societies. Much of what social knowledge means to us today concerns about the knowledge of cultures, customs, traditions and the knowledge of commonplace activities (Turiel 1983). Social knowledge corresponds to the construction of knowledge based on how we act, interact and react socially, politically and economically.

1.3 Communication of Social Knowledge

Propagation of any knowledge requires communication channels. Indeed, human beings have been rather slow and backward in the development of technologies for utilization of equipment intended for communication. Although printing technology was already in place following the cultural refinement of civilization, space, time, cost and resources constrained its capacity when compared to modern means of inclusive knowledge production. In modern times, it hinged publishing on mass communication and digital technologies. Introducing new inventions supporting cultural evolution and social transformation demanded further need and necessity of more modern tools and technologies to augment such transformations. The growth of *social knowledge* followed up the developments in printing technology that took shape during the middle of the 15th century. It remains as one of the most primary modes of mass communication media available in the society. However, the growth of digital technologies affected the general welfare of the nations as of late, and heralded further growth of knowledge societies. Mobile means of communication and the technologies supporting it have strengthened as well, which speeded up and revolutionized how humans communicate, transmit, consume and share information today.

2 Social Media, Technology and Social Knowledge

2.1 Social-Scientific Knowledge

The genealogy of social knowledge predates that of the origin of modern scientific knowledge. The modern origin of social knowledge, however, could be ascribed to the knowledge that is got from analytical studies of social sciences. Critical examination of the society and its agents, and study of human behaviors using scientific methods of inquiry have led to the construction of *social-scientific* knowledge that has utility and value in an economic sense. This knowledge—gained from expert inquiry following rational methods of investigation and observation is a proven, valid knowledge. Production and usage of another kind of knowledge have gained in momentum over the past few decades, ever since the advent of *social networking* sites. This knowledge—where the definition of knowledge goes by, is the data and information generated from social interactions among the members of the community of internet users—*netizens*. Gradual evolution in the mechanism of social interactions has changed the ways and means by which people communicate and share their ideas and information instantly over the web. Social networking has simplified how we maintain personal connections in the digital age (Baym 2015). Social networks generate a vast amount of data and information most of it is being, however, unverified knowledge. But there remains some difference between knowledge that is being offered by social sciences and the knowledge generated by social networks.

2.2 The Technology for Schmoozing

The human desire to socialize has given rise to various modes by which humans can schmooze or interact with each other. The “information” being produced from such human-machine-human interactions in the society is something what we may call *social information*. It is *not* actually “true knowledge” which is being produced for much of it remains unverified, unproven in record. Let me articulate that another way; the birth of online social networking platforms has given us the opportunity to socialize and share our thoughts and ideas as “knowledge” from the social world. Technology has provided humanity with advanced tools of networking by which we can interact and connect seamlessly with people from different countries from different regions of the world. Thus, technology has become a *medium* of “interaction” and the *medium* of “exchange” of knowledge and information among the people. But not all the information produced or exchanged is factual or true. Facebook is not the only social networking site where you can socially interact, for there are many others as well. For example, there are few other social networking sites similar to *Facebook* and *Twitter*. Some of these are *Instagram*, *Diaspora*, *Rumble*, *Clubhouse*, *Reddit*, and *Vero*, among others. In this paper, we do not intend to analyze or examine each of the social networking platforms, but we intend to prove a simplistic assumption of how these tools of social interaction affect our economic decisions.

The aforementioned examples of social networking sites allow users to interact, chat and share information among them. Technology provides the interface for communication among users. We may simply reason that “science proved its value as an instrument of social interaction and social contact”. The principle behind Facebook and all these social networking sites is *science*, but the information being generated from it is mostly *not*. Lots of biased views and opinions including incorrect, disinformation and rumors are spread via social networks. Users often share unjust, racial, hateful, and dangerous viewpoints (Tynes and Markoe (2010); Vaidhyanathan (2018)) which under no sense or circumstances could be considered as “knowledge” that is acceptable. Social networks have been under attack from scholars and authors for becoming a vehicle of propagation of fake news (Marwick 2018). Social network is also being dubbed as an antisocial media for undermining democracy (Vaidhyanathan 2018) and fostering the sharing of unacceptable, violent contents that are often asocial. According to Vaidhyanathan (2018), although social networks make personal lives more pleasurable by allowing users to enjoy diverse contents being made available, it makes democracy more challenging too.

2.3 What knowledge is “Social”?

What knowledge is social? And, what makes up social knowledge? Despite all such infictive nuisance, using *social media* to know and share information generated from social interactions produces a kind of knowledge that is being dubbed “social”. It is **SOCIAL** because it has its origin in shared communications. And further, given that it is non-spatial, it is less subjected to objective evaluation using scientific rigor (Cooley 1926). However, given its growing importance in the society, **SOCIAL KNOWLEDGE** demands more scientific attention and scrutiny (Longino 2010) to find out the role it plays in the contexts of social welfare and economic growth. Lots of studies are now being dedicated to analyze the enormous data and information got from social networking sites to understand user/consumer behavior patterns (Guo, Wang, & Leskovec, (2011); Nolcheska (2017)). Current evidence suggests that social knowledge can influence consumer sentiments by affecting their economic decisions to some extent (Nolcheska 2017). To test these aforementioned assumptions, we design a simplistic model to examine how social knowledge might affect human decisions that have economic consequences.

3 Model and Methodology

Proposition 1. *The knowledge of new products λ_n and their approximate prices ρ_η promoted via social networks influences the intertemporal choices $\Delta\gamma$ of potential consumers ϑ_x .*

Let (ϑ_x) be the number of potential users present at a particular moment $t + 1$ on a particular social networking site β . Let the $\Delta\gamma$ be the intertemporal choices of potential number of consumers ϑ_x , whereas λ_n denotes n number of λ new products, whilst $1/\rho$ denotes the approximate variability in price, respectively. We propose based on our assumption that users differ on choices and tastes, and at one particular moment of time $t + 1$, $(1 - \vartheta_x)$ number of users are active on the site. It may be seen from Fig. 1 below that given different changes in price $1/\rho$ variable, consumer preferences change too. The equation no.1 derived from the proposition can be stated as the one shown below;

$$\Delta y = \beta_x + 1(1 - u_n) + \frac{\lambda_x \cdot 1}{P} \quad \text{eq...1}$$

Lemma 2. *It is assumed that if the proposition 1 above be true, then it must meet several conditions as follows: There must be dedicated users who would advertise their products on social networks as well. Besides, the site must support users to advertise their products and must have the required digital infrastructure to display new products and product specifications.*

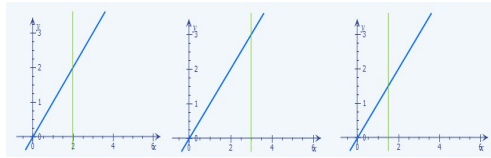


Figure 1. These are the three scenarios of changing consumer preferences and options according to changes in price $1/\rho$, all other things remain constant.

Corollary 3. *Given the wide range of products available to choose from, the price variability induces maximum changes in consumer or user preferences. Suppose that the price of a product drops below a certain threshold ≤ 1 , and this causes the area under the triangle to increase. The inverse relationship is true when the price increases to a maximum threshold of ≥ 2 . This change in consumer choices and preferences could be observed from Fig. 1 above.*

3.1 Model

Our model is a simplistic representation of social knowledge in the making. The variables in the model are defined as follows: $\alpha(x)$ is the constant which takes fixed or incremental values $\gtrsim 1$, $(1+C)$ where C signifies number of days, $\Delta D(x^2)/Q(\eta^2)$ where D and Q represent total number of technical and social (non-technical) posts respectively. Variable μ refers to the number of *users* and v signifying any new event(s) that leads to new postings on social networking sites.

An incremental increase in the number of site users or subscribers may or may not increase the overall efficiency in knowledge growth, because not all users post, nor all of them post technical contents. Most users may post social contents ' Dx^2 ' which may decrease the content quality and efficiency of site-specific social-scientific knowledge growth. Increase in number of ' Dx^2 ' or social contents also do not contribute towards user choices in making smart economic decisions to buy, whereas, increase in total posts related to technical subject-matters, ' $Q\eta^2$ ' concerning new products leads to changes in user preferences. Users may become more inclined to explore new products to choose from after following such posts, which introduce patrons to innovative things existing in the markets other than their own. This knowledge of "new things" immediately becomes social knowledge. The equation is defined as:

$$y = \alpha(x) + (1+C) \times (1 - \Delta D(x^2)/Q(\eta^2))^\mu \times v \dots \text{eq. 2}$$

Now, we compute the ratio of total number of non-technical vis-a-vis technical posts which is defined mathematically in equation 2. In equation 3, we integrate the function for determining the area under curve as depicted in figure 2 below.

$$\left(1 - \frac{D(x^2)}{Q(\eta^2)}\right)^\mu \dots \text{eq. 3}$$

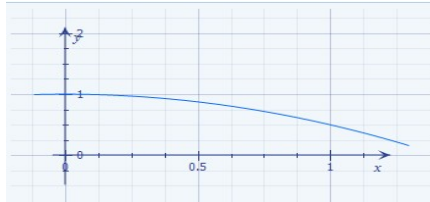


Figure 2. The area under curve (AUC) depicting the growth in product knowledge based on user postings.

$$\int_a^b 1 dx \left(\frac{D(x^2)}{Q(\eta^2)}\right) \dots \text{eq. 4}$$

$$\frac{D(b-a)x^2}{Q\eta^2} \dots \text{eq. 5}$$

whereas, in equation 1 above $\Delta D(x^2)/Q(\eta^2)$ denotes the ratio of continuous change in number of posts related to technical and non-technical contents, the ratio being depicted in equation 2. Note that the users are mostly attracted to various social networking sites for recreational purposes, to build acquaintances, and to maintain contacts with friends, colleagues and family members. Social *infotainment* is also one of the reasons why users visit social networking sites too. Under conditions of optimality, when several of the variables remain stationary, a positive change $\Delta\mu \leq 2$ in number of users (μ) and a positive increase in number of technical-related posts, again $\Delta Q(\eta^2) \leq 2$ causes an exponential growth in information related to price and products depicted in Fig.2.

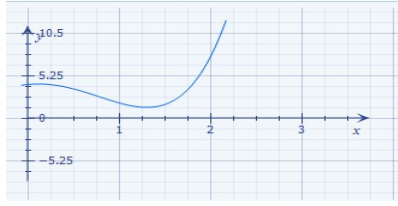


Figure 3. The exponential growth in information content related to number of posts.

4 Results and Discussion

Our model depicts the utility of social information and how it could be used in economic modeling to understand human behavior, choices and preferences. Social networks generate a vast amount of data. Contents which could be accessed within social networking sites beyond user posts relate to entertainment, educational and infotainment contents. Some social networking sites like *Facebook* allow users to advertise their products online (Maurer & Wiegmann 2011) while others do not allow their users to advertise anything beyond digital contents. Users on those sites that allow products to be advertised take advantage of the platform to moderate their choices and preferences. Another advantage is that the mechanism allows researchers/users in using social concepts and principles in modeling economic systems to understand how consumers behave in social networks.

Besides, the vast amount of knowledge being generated from social interactions in social networking sites also helps researchers to examine biological and behavioral phenomena like consumer choices and preferences. Scientific principles and techniques are required to penetrate deeper into the realms of human behavioral complexities that arise from social interactions with others. This is essential for understanding complex human interactions and how they are involved in creating socio-scientific forms of knowledge. The *Proposition* and the model, along with the *Lemma* and the *Corollary*, all depict several scenarios wherein the growth in knowledge of new products and their price causes the line to shift towards the right when products with competitively optimal (low) price are displayed. In addition, information from social networking sites provides users with various options to choose from different categories of product knowledge that they find useful and entertaining. *Social infotainment*—i.e., entertainment bundled with information or information embedded in pleasurable programs aimed to entertain users is another avenue which merits much attention. Summing up, our mathematical model, although naïve and limited by use of data, brings forth interesting implications for both the users and the developers alike.

5 Conclusion

In this paper, we discussed in brief about the origin, usage and meaning of the term “social knowledge”, and how it relates to the current context of economic decision making and consumer behavior. Using a model of consumer behavior based on product variability and price, we show how consumers perceive price variability and how their preferences change with time. We find that when the price of products drops below a certain threshold, the area of the triangle depicting price changes regarding consumer preferences increases and so it does in an inverse relation when the price increases to maximum threshold. This change in consumer choices and preferences has important implications for social network users. Even if the users browse their respective social sites for recreational purposes, attractive bargains and knowledge of new products being advertised on the sites can attract the attention of these users. Users get well informed and they are often influenced by the social knowledge of products and prices which appear on social networking sites.

□

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