Explaining multidimensional Facebook benefits: A task-technology fit approach

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Abstract

Facebook has emerged as the most popular Social Network Site (SNS). The literature has studied extensively the factors that explain Facebook usage. Despite this, not equal attention has been devoted to explaining the benefits of this SNS. The few studies have considered impacts as one-dimensional; however, the literature shows that benefits could be conceptualized as a multidimensional construct. Besides, little is known about using the Task-Technology Fit model (TTF) to assess Facebook. In addressing this gap, this study aims to develop and empirically test a model that explains Facebook benefits in a multiple-way using a task-technology fit approach. Data collected from 240 Facebook users, analyzed using partial least squares technique (PLS). The results support the model empirically. This research integrates benefits, use, and task-technology fit into a single model to provide a more comprehensive perspective. Also, a multidimensional view allows us to consider both utilitarian and hedonic benefits as dimensions of value that can spawn greater continued use.

1. Introduction

Although there are hundreds of SNS that support a wide range of interests and practices, Facebook has emerged as the most popular one. As of the fourth quarter of 2018, Facebook had 2.32 billion monthly active users [1]. In the US alone, 68% of adults report themselves as Facebook users, and roughly, three-quarters of users access Facebook daily [2]. This SNS offers customers a unique value proposition through its benefits, these outcomes being a key concept in competitive strategy [3]. This fact shows us the relevance for academia and practice to understand why people use this SNS and what are the benefits of that usage.

Literature has explained Facebook usage under different umbrellas [e.g. 4, 5, 6]; however, less attention was devoted to explaining the benefits of using Facebook. While several studies explain the benefits of using social networking sites in other contexts [e.g. 7, 8, 9], there are still few that deal with the case of Facebook. Within this latter group, Ellison, Steinfield [10], grounded in Social Capital Theory, considers the use explain the benefit. Dong, Cheng [11] and Ou, Davison [12], under Delone and McLean [13]'s background, shows that use and satisfaction influence benefits.

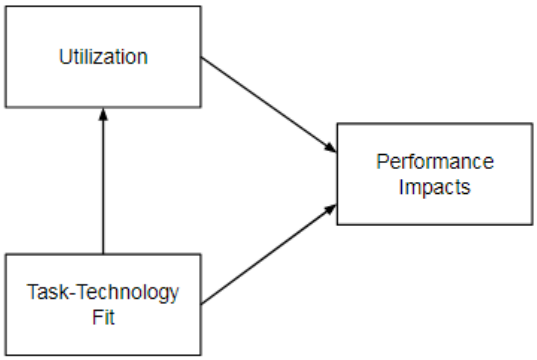

Figure 1. The task-technology fit model [14]

While these studies have been valuable to our understanding of the phenomenon, some observed limitations offer the opportunity to investigate the subject in greater depth. On the one hand, a long tradition in Information Systems (IS) literature, particularly Task-Technology Fit model (TTF) [14], considers that use of technology is not enough to reach individual benefits; also it is necessary the fit between the tasks (i.e., social activities) and the technology functionalities. Some studies have used TTF to explain the benefits in organizational SNS [e.g. 15, 16]; however, this aspect has been neglected in previous Facebook research. On the other hand, the above Facebook studies have conceptualized the benefits under a one-dimensional view focused on social interaction gains. For Ellison, Steinfield [10] Facebook bridges, bonds and maintains network; for Dong, Cheng [11] and Ou, Davison [12] this SNS allows to making friends, interacting and communicating with them. Nevertheless, research suggests that the benefits of using Facebook are multiple or multi-dimensional (e.g. relational, informative, enjoyment and curiosity benefits) [3].

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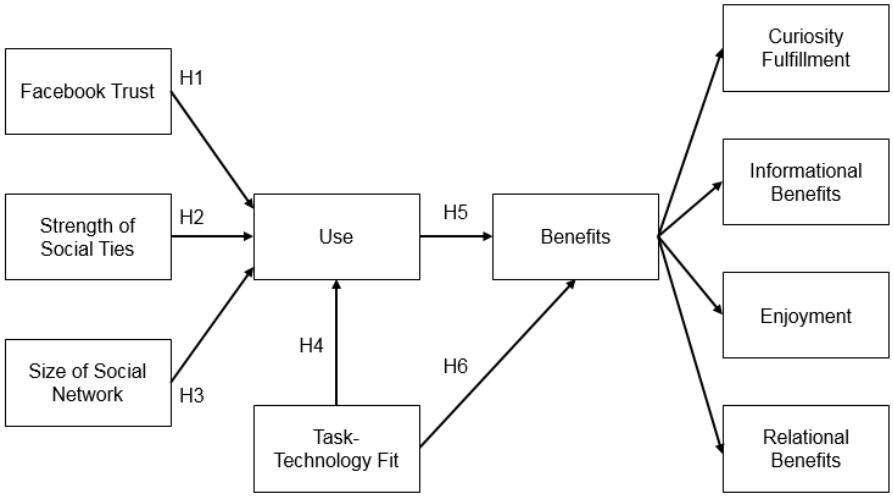

Figure 2. Research model

In addressing these gaps, the present study aims to develop and empirically test a model that explains Facebook benefits in a multidimensional way using a task-technology fit approach.

2. Theoretical Background

2.1 Task-Technology Fit

Goodhue and Thompson [14] studied the impact of the fit between technology and users' task on individual performance. They assert that the technology used must be a good fit with the task (or correspondence between its functionality and the task requirements) in order to have a positive impact on individual performance. To this extent, TTF is the degree to which technology assists an individual in performing his or her tasks [14]. This fit determines performance (i.e., benefit) and utilization (Figure 1). In the Facebook arena, previous research using this model reveals that TTF impacts directly on continued use [17, 18]. However, the impact on benefits remains unexplored.

2.2 Facebook benefits

Traditionally Facebook's benefit was focused on relational benefits in at least two ways. First, bridging social capital promoting relations with the network, but the ties are weak. Second, bonding social capital fostering strong ties between close people [19, 20].

According to the evolution of Facebook, the literature has added new benefits. Intrinsic benefits as enjoyment or empathy and extrinsic benefit as informational, reputation, self-expression, social presence, or companionship [21, 22]. Recently, Hu, Kettinger [3] systematized the various benefits based on perceived utilitarian and hedonic benefits. While utilitarian benefits provide instrumental payoffs of performing and achieving objective goals, including enhanced efficiency, convenience, and economic returns; hedonic benefits are derived from the experiential feelings or emotional states experienced with using the services, reflecting an affective appreciation of service activities and performance. They categorized informational and relational benefits as utilitarian benefits, and curiosity fulfillment and enjoyment as hedonic benefits. We use this taxonomy in this study.

3. Research model and hypotheses

Although the TTF model has been used in several context and technologies [23, 24], it requires some conceptual modification in the Facebook setting, given its particular characteristics. The typical functions of this SNS distinct from other applications include information exchange of short messages and expanding social contacts, and the capability for users to present themselves easily [12]. To this extent, rooted in TTF model, we proposed the following research model (Figure 2).

2.3 Trust

Trust in SNS context is the expectation that the platform will act predictably, fulfilling its obligations, and acting appropriately even in the possibility of manipulating revealed personal information [25]. In this way, people will use Facebook as long as they see that the attributes of the platform are reliable [26].

Users trust in the SNS according to the perception of credibility, benevolence, and responsibility they develop [27, 28]. Also, open and spontaneous

interactions that occur on SNS initiate the process of keeping each other updated, which in turn helps to build trust and reinforce friendship with satisfying experiences [29]. This mitigates the effects of worries and encourages the continued use of the platform [12, 30, 31].

Accordingly, when users' experience with a technology matches their technology trust expectations, users may express higher satisfaction and continuance intentions; and by contrast, unmet expectations may have negative consequences that could lead users not to use or abandon the technology [32].
This is the basis for the following hypothesis:

H1: Trust has a direct and positive influence on Facebook use

2.4 Strength of social ties

The strength of social ties is the representation of the frequency and extent of interactions and intimacy between the user and other members of the social network [33]. SNS primary purpose is enabling users to connect with others in a traditionally impossible way. Hence, Facebook focuses on the building and reflecting of social ties among people, such as those who share interests or activities [34].

Social ties are the primary motivator for the use of social networks such as Facebook [35, 36]. Users achieve the maintenance and strengthening of relationships through routine and strategic behaviors, such as affective actions and search and dissemination of information through the SNS [37, 38]. The strengthening and maintenance of any of these relationships will imply, therefore, the combination of time, emotional intensity, intimacy, and relational reciprocity that form all relationships [37].

Hence, it is expected:

H2: The strength of social ties has a direct and positive influence on Facebook use

2.5 Size of the social network

A core SNS attribute is the capability to enable interactions between individual users on a mass scale within a connected online network. According to Facebook, the average number of members in a user's network is 130, while an average user is a member of 80 groups, community pages, or events on Facebook [5].

If the size of the membership grows, the potential contact possibilities and social support increase, which in turn can increase the usefulness and attractiveness of SNS for their members [39]. To the extent that the network is vast, users could enable to keep in touch with more members through the exchange of messages. Also, users could meet new people and maintain existing relationships. As well as, ample networks could provide a wide range of social support [5, 10, 37, 40, 41].
On this basis, it is expected:

H3: The size of the social network has a direct and positive influence on Facebook use

2.6 Task-technology fit

TTF is the degree to which Facebook assists users in performing their tasks, implying a correspondence between task requirements and the functionality of the system. Utilization is the behavior of employing this application in completing social tasks. Benefits are the utilitarian and hedonic effects of this SNS has on an individual [14, 42].

In keeping with the TTF model, users who perceive that Facebook capabilities match task requirements may be motivated to use this technology more than those who observe a mismatch between Facebook functionalities and the same tasks. In that way, Koo, Wati [16], in instant messenger context, found empirically that TTF impact on use.

Consequently, we hypothesize:

H4: TTF has a direct and positive influence on Facebook use

Following the TTF approach, Facebook brings benefits when users utilize this SNS [14, 24]. The hedonic and utilitarian benefits of using SNS involve the expansion of the user's network and the improvement of the quality of social life. These outcomes can be achieved by exchanging messages and information with other people and sharing emotions and thoughts publicly [3, 12]. In other words, the usage of Facebook precedes its expected benefits. To this extent, Mirabolghasemi and Iahad [43] show that the use of SNS can increase the effectiveness of cancer-treating physicians.

Therefore, we posit:

H5: Facebook use has a positive impact on the perceived benefits of Facebook

Consistent with TTF model, Facebook leads to benefits when its functionality supports the social activities of the individual adequately. Facebook has several functionalities that allow the user to perform diverse social activities digitally. The congruence between this functionality and social tasks would lead to a perception of benefits derived from the use of the application. To carry out their social interaction, users have at hand a plethora of functions; for example, checking out people's walls, commenting on others'

status, uploading new photos, joining a group, creating events, posting videos, viewing videos and so on [44]

Hence, it is expected:

H6: TTF has a positive impact on the perceived benefits of Facebook

4. Method

A field study was carried out as a data collection technique to analyze the model. Partial least squares technique (PLS) was used for the analysis. SmartPLS 3 program was used for data analysis.

The questionnaire was constructed based on previously used scales that were adapted to the context of the study. Trust was assessed through a measure adapted from a study by Chang and Heo [45]. Social ties were measured by three items adapted from the studies of Ma, Sian Lee [46] and Gong, Lee [37]. Size of the social network was measured with one item extracted from the study by Almakrami [47]. Use was measured with five items assessing the frequency of Facebook use [10]. TTF was measured using the scale developed by Lu and Yang [17]. The benefits of using Facebook measures were adapted from the measures elaborated by Hu, Kettinger [3]. The benefits construct is a second-order construct resulting from relational benefits, informational benefits, enjoyment, and curiosity fulfillment. Seven-point Likert scales were used to answer the items. Specific actions were carried in order to minimize bias. For example, the questionnaire emphasized confidentiality, it was stated that there were no correct or incorrect answers, and dependent and independent variables were separated, among other techniques.

The sample was adult English-speakers users of Facebook. Amazon Mechanical Turk was the web-based platform to collect data. In this site, employers (called requesters) post outsourced tasks for an anonymous network of laborers (called workers) who receive compensation for their contribution. This platform is effective in data collection, and prior studies have reported that samples collected through this site produced similar results than those based on students and consumer panels[48]. Participants were told that the purposes of the study were strictly academic. Once the questionnaires that were incomplete were discarded, there were 240 usable questionnaires.

5. Results

Table 1 shows the demographic information of the participants. Most of them are in the middle age range (26-40 years old) and are USA citizens.

Table 1. Demographic information of the participants.

Characteristics	%
Gender	
Male	53.1
Female	46.9
Age	
21-25	2.5
26-30	18.9
31-35	24.7
36-40	18.9
41-45	11.9
46-50	7.4
50-55	5.8
56-60	4.5
>60	5.4
Origin	
The U.S.A.	85
Other (Canada, England)	15
Note: *n*=240	

Table 2. Descriptive statistics

Variable	M	SD
Trust	3.37	1.51
Social Ties	4.85	1.13
Size of Social Network	4.30	2.27
Use	4.73	1.64
Fit	5.18	1.11
Relational benefits	5.61	1.11
informational benefits	5.09	1.09
Enjoyment	4.87	1.34
Curiosity fulfillment	4.81	1.17

Table 3. Correlations, reliability and average variance extracted (AVE)

Variable	Correlations and square root of AVE (*)									α	*CR*	*AVE*
	Trust	Social Ties	Size	Use	Fit	Relation Ben.	Inform. Ben.	Enjoy	Curiosity			
Trust	0.921*									0.940	0.957	0.847
Social Ties	0.393	0.874*								0.844	0.906	0.763
Size of Social Network	0.183	0.084										
Use	0.550	0.461	0.325	0.907*						0.946	0.958	0.822
Fit	0.371	0.489	0.280	0.557	0.888*					0.866	0.918	0.789
Relational benefits	0.258	0.490	0.137	0.498	0.597	0.916*				0.936	0.954	0.839
Informational benefits	0.257	0.382	0.237	0.436	0.532	0.565	0.885*			0.907	0.935	0.783
Enjoyment	0.601	0.471	0.263	0.748	0.631	0.596	0.496	0.927*		0.944	0.960	0.859
Curiosity	0.363	0.326	0.170	0.475	0.582	0.597	0.622	0.593	0.872*	0.842	0.905	0.761

(*) Diagonal numbers are the square root of AVE for each construct

Table 2 displays the mean and the standard deviation of the study variables. These were calculated by averaging the responses of the items of each scale used.

The measurement model was evaluated through reliability, convergent validity, and discriminant validity according to the recommended values [49, 50]. To measure reliability by item, we checked that all item loads for their respective constructs were higher than the suggested value of 0.7 (Appendix 1). For internal consistency, composite reliability (CR) scores exceeded the recommended value of 0.7 for all variables. Besides, Cronbach's alpha values were also greater than 0.7. In the case of convergent validity, the values of the average variance extracted (AVE) were higher than the recommended value of 0.5 (Table 3). Finally, to

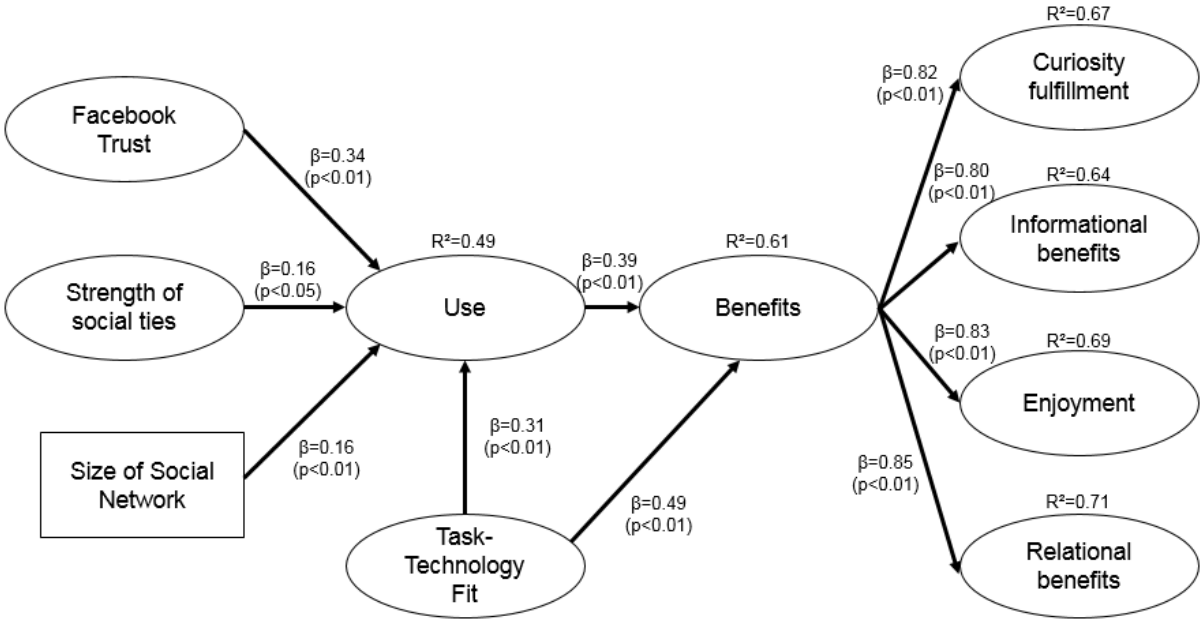

Figure 3. Results

establish the discriminant validity, the correlations between the variables with the square roots of the AVEs were compared. Adequate discriminant validity is presented when the square root of the AVEs is higher than the correlations between the variables – Table 3 - [51].

Regarding the structural model, Figure 3 shows the standardized coefficients (β), the level of significance of the links, and the explained variance of the latent variables. The links are significant at a level of 0.01 and 0.05. The explained variance of Facebook Use and Benefits are 49%, and 61%, respectively.

In a post-hoc analysis, we evaluate the effects of Use and TTF on each dimension of benefits. In all cases, the links are significant at the 0.01 level. Surprisingly, the impact of use on enjoyment benefit is twice the other dimensions; this finding depart from the traditional view of Facebook as a generator mainly of relational benefits.

6. Discussion

The objective of the present study was to develop and empirically test a model that explains Facebook benefits in a multidimensional way. This was based on the TTF model of Goodhue and Thompson [14], which emphasizes the role of task-technology fit in the use of an IS.

In this way, the central finding of this research is that the model has empirical support to explain the use and the multidimensional benefits of using Facebook of the individual. Applied to the models of IS success, this would support the inclusion of task-technology fit as a predictive variable of both use and benefits.

As expected, trust (H1), the strength of social ties (H2), and the size of the social network (H3) had a direct and positive influence on Facebook use. Of these three variables, the trust had the strongest predictive power. This finding can be since trust in a social network represents that the system is fulfilling its obligations appropriately, which matches the users' expectations [25, 32]. This affects the continuance intention of Facebook positively [32].

TTF also had a direct and positive influence on Facebook use (H4). This corresponds to previous findings [17, 43] and reveals that the use of Facebook was determined directly by the fit between the characteristics of task and technology.

As predicted, both Facebook use (H5) and TTF (H6) had a positive impact on the perceived benefits of Facebook. Similar results were previously documented by Ou, Davison [12], who found that Facebook use produced benefits such as information sharing with less time and effort. Unlike that study, Facebook benefits were assessed in a multidimensional way, taking into consideration hedonic and utilitarian benefits. This supports the statement that benefits can be attained by both using the SNS and the fit between task characteristics and SNS features.

Some contributions to the scientific literature are mentioned. First, this research integrates benefits, use, and task-technology fit into a single model in order to provide a more comprehensive perspective of Facebook use. There were no previous models in the literature to do so. Second, we conceptualized benefits as a multidimensional construct following Hu, Kettinger [3] instead of using a unidimensional view as previous research (e.g., Ou, Davison [12]). This allows us to consider both utilitarian and hedonic benefits as dimensions of value that can spawn greater continued use [3]. Third, this study is framed within a model that has previously been used in the workplace (TTF). This gives us empirical evidence that this model is generalizable to different situations and technologies.

Some practical implications are also mentioned. First, empirical research on examining the success factors of SNS can help identify the most effective design functions of SNS and provide implications for organizations and institutions [12]. This way, task-technology fit can be assessed as a measure to increase the benefits of Facebook use for individuals and to guarantee the functionality of the system. Also, many executives could gain insight from a multidimensional view of the benefits that goes beyond the traditional view of the relational benefits that comes from belonging to a social network service.

Regarding the limitations, data was collected through a survey in a cross-sectional study, so this study does not provide conclusive evidence about causal relationships. A longitudinal study is required to establish this type of relationship. Besides, benefits could be conceptualized in a broader way considering not only positive aspects also with negative ones. In the same way, an ampler usage measurement, beyond the frequency of use, could be more enriching to analyze the relationship with the multiple benefits of Facebook.

In conclusion, a model has been developed to explain the individual use and benefits of using Facebook. This has both theoretical and practical implications for this field of study. In particular, the results of this study may help practitioners to improve functionality in the context of SNS by focusing more precisely on significant aspects such as task-technology fit and utilitarian and hedonic benefits.

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Appendix 1 - Factor loadings

	Curiosity	Enjoy	Fit	Informational	Relational	Ties	Trust	Use
CUB01	0.851	0.490	0.600	0.592	0.591	0.327	0.267	0.432
CUB02	0.878	0.550	0.457	0.514	0.446	0.241	0.348	0.420
CUB03	0.887	0.513	0.459	0.517	0.518	0.281	0.338	0.389
ENB01	0.508	0.935	0.561	0.466	0.577	0.407	0.497	0.684
ENB02	0.558	0.950	0.616	0.488	0.606	0.438	0.551	0.692
ENB03	0.560	0.854	0.522	0.408	0.387	0.428	0.629	0.681
ENB04	0.576	0.964	0.635	0.472	0.616	0.475	0.562	0.720
FBT01	0.400	0.632	0.408	0.311	0.336	0.423	0.883	0.598
FBT02	0.339	0.538	0.303	0.222	0.201	0.336	0.934	0.465
FBT03	0.252	0.478	0.299	0.152	0.178	0.336	0.915	0.448
FBT04	0.321	0.533	0.334	0.234	0.204	0.329	0.948	0.480
FIT01	0.562	0.569	0.879	0.504	0.588	0.449	0.324	0.531
FIT02	0.471	0.537	0.887	0.470	0.484	0.383	0.311	0.448
FIT03	0.511	0.575	0.899	0.439	0.511	0.467	0.354	0.500
FQ01	0.375	0.627	0.468	0.355	0.361	0.372	0.447	0.904
FQ02	0.375	0.681	0.489	0.355	0.429	0.414	0.494	0.907
FQ03	0.422	0.650	0.477	0.332	0.377	0.393	0.522	0.863
FQ04	0.492	0.704	0.537	0.457	0.536	0.472	0.518	0.926
FQ05	0.474	0.721	0.546	0.461	0.532	0.428	0.507	0.931
INB01	0.600	0.476	0.442	0.892	0.529	0.287	0.238	0.413
INB02	0.489	0.368	0.412	0.824	0.390	0.262	0.215	0.341
INB03	0.537	0.474	0.516	0.904	0.559	0.441	0.229	0.394
INB04	0.569	0.428	0.506	0.915	0.506	0.352	0.226	0.391
REB01	0.466	0.459	0.504	0.466	0.918	0.398	0.153	0.388
REB02	0.576	0.554	0.583	0.510	0.898	0.480	0.255	0.458
REB03	0.568	0.609	0.562	0.538	0.910	0.454	0.301	0.496
REB04	0.569	0.551	0.535	0.550	0.938	0.460	0.228	0.476
SST01	0.309	0.434	0.428	0.315	0.435	0.818	0.331	0.384
SST02	0.269	0.419	0.442	0.342	0.422	0.903	0.367	0.433
SST03	0.278	0.382	0.412	0.344	0.430	0.896	0.329	0.387