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에디터의 몰입이 개방형 협업 콘텐츠 품질에 미치는 영향: 위키피디아 알찬급 승급을 중심으로

Effect of Editors' Commitment on Open Collaboration Contents: Promotion of Wikipedia Featured Articles

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초 록

위키피디아는 콘텐츠 협업을 위한 사이트들 중에서 사용자가 가장 많이 사용하는 사이트이다. 위키피디아의 성공은 수많은 자원 봉사자들이 자신의 지식을 제공하려는 동기와 지속적인 몰입 때문이다. 이 논문에서는 Cox 회귀 모델을 사용하여 에디팅에서의 셀프 루프(Self-loop)가 위키피디아 알찬글(Featured articles)로의 승급에 미치는 효과를 평가하였다. 2,978개의 위키피디아 알찬글에 대해서 글이 시작된 시점부터 2011년까지의 편집 내역을 수집하였다. 아티클 편집에서 자기가 수정한 후에 다른 사람이 수정하기 전에 다시 자기가 수정하는 셀프 루프를 사용자의 몰입에 대한 프록시로 사용하였으며, 셀프 루프의 수가 알찬글로의 승급에 긍정적인 영향을 미치는 것을 파악하였다. 추가적으로 자기 루프를 단기와 장기로 더 상세하여 구분하였고, 장기 셀프 루프가 단기 셀프 루프보다 더 긍정적인 영향을 미치는 것을 파악하였다.

ABSTRACT

Wikipedia is one of the world's most visited sites for content collaboration. Its success is due to thousands of volunteers' motivation and commitment to contribute their knowledge to Wikipedia. In this paper, we use the Cox regression model to assess the effect of self-loop editing on the promotion of Wikipedia featured articles. We collected 2978 Wikipedia featured article editing history from start of Wikipedia until 2011. We use self-loops as a proxy measure for Wikipedia editors' commitment, and find that self-loop editing has a positive effect on the promotion of featured articles. We further distinguish the self-loop into a short-term self-loop and a long-term self-loop. We find that long-term self-loop editing is more helpful than short-term self-loop editing. This research has been conducted with both theoretical and practical application methods.

키워드 : 위키피디아, 오픈 협력, 알찬글, 자기 루프, 헌신
Wikipedia, Open Collaboration, Featured Articles, Self-Loop, Commitment

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1. Introduction

Open collaboration is credited to the introduction of Web 2.0 technologies as well as to users' shared interest and commitment to contributing to an online community [54]. Collaboration in online communities depends on trust, loyalty, teamwork, flexibility and ease of use [19]. These factors not only maintain successful operation of online collaboration, but also increase the pace of the peer collaboration process. Online communities' sites, such as Myspace and Wikipedia, have deployed open collaboration tools like wikis for collective content contribution [3].

Wikipedia, a free online encyclopedia, is one of the most visited community sites on the Internet. Its success is due to the commitment of thousands of volunteers around the world who contribute their time and energy to improve accuracy, completeness and neutrality of content. Since the launch of Wikipedia, about 4,900,000 English articles have been published on the site, and more than six million users have registered. The elimination of barriers by Wikipedia allows anyone to contribute to the subject of their interest, which is a major attraction for users. Wikipedia's successful functioning and ease of use further motivate users to contribute. Scholars studying the motivation to contribute to online communities from a different perspective state that an editor's first contribution will determine their further contributions, while other scholars suggest instead that factors such as reciprocity, sense of efficacy and obligation motivate editors and keep them committed to contributing to Wikipedia [20, 22~24, 26~28]. Other researchers have also studied the importance of motivation in open, collaborative communities [8, 24, 26, 52].

Wikipedia featured articles have been evaluated by thousands of volunteers as the highest quality articles on Wikipedia, although several scholars question the site due to its open access and free editing [15]. Studies show substantial evidence that Wikipedia article quality and neutrality are comparable to those of other top encyclopedias, such as Britannica [15]. Academic researchers have attributed the success of open collaboration to centrality, total number of edits, diversity, member turnover and wisdom of the crowd [12, 22, 27, 40, 51]. However, these studies oversimplify the deep collaboration process of Wikipedia content contribution [29].

Commitment to organizations has been studied by social scientists in the context of work behavior, employee turnover and predicting work performance. Such studies state that commitment to an organization is believed to be highly correlated with low level of turnover, low absenteeism and high performance. Various scholars have studied two general forms of commitment: attitudinal and behavioral [9, 34, 35]. Attitudinal commitment focuses on the process of matching people with their personal and organizational goals, and includes factors such as cost of leaving an organization or feeling

obligated to contribute. These factors may maintain members committed to their communities [19, 34, 35].

Researchers studying the behavioral aspect of commitment in open collaboration have observed that physical dispersion can disconnect online content contributors; however, technologies such as wikis create a community that keeps the members committed to their work. Due to this technology's ease of use and effectiveness, contributors feel important and central to the community. Community members are committed to their work and remain in touch with their colleagues periodically, regardless of physical or temporal distance [18]. All this previous research on commitment, social collaboration and online open collaboration in Wikipedia leads us to a question ," how self-loop editing of editors will influence the promotion of Wikipedia featured article?"

In this paper, we study the effect of editor commitment on the efficiency and promotion of Wikipedia featured articles. We define the efficiency of an article's editing process as the number of days it takes from an article's start date until it is promoted to a featured article. We measure editors' commitment through editing loops, or self-loop editing. We further divide the editing loops into short-term and long-term loops to examine the editing behavioral patterns of Wikipedia editors and their effect on the promotion of an article to a featured article. We find that self-loop editing positively affects the promotion of a featured article, and that long-term self-loops are more helpful than short-term self-loops. We also check for the self-loops edits that falls between the short and long self-loops but the results were insignificant and were omitted form the analysis.

2. Literature Review

2.1 Commitment

Commitment to organizations has been studied by social scientists in the context of work behavior, employee turnover and predicting performance in the traditional work environment. Such studies state that commitment to an organization is highly correlated with a low level of turnover, low absenteeism and high performance [35]. Researchers have demonstrated that commitment is a factor that leads to effective, successful communities [30, 52]. Phang [40] states that factors such as enjoyment and belongingness positively impact members' commitment to the task or purpose of a community. While some scholars have found that knowledge contribution, ease of use, reliability and knowledge tracking are factors that maintain users' commitment to a community, Ma and Agarwal [33] alternatively show that perceived identity and self-presentation are important aspects of successful online communities [32].

Behavioral commitment to open collaboration is explained as an affinity or sense of

connection one develops to a community with which they identify. Commitment to online community collaboration is affected by satisfaction, obligation, goals and reciprocity of members towards that community. Similarly, attitudinal commitment is defined as an individual's perception of belongingness to a community, based on similarities and emotional attachment [8, 41]. Attitudinal commitment develops when a person considers her/his goals and values to match those of a community [9].

For Wikipedia, collaboration relies on the effort and commitment of a large volunteer base. Academic researchers accept the concept of commitment as a strong predictor of a person's behavior in an organization. Contributing one's knowledge to Wikipedia is central to the success of the site, and an individual's commitment maintains her/his bond to the online community [52]. Emotional attachment to the community, as well as corresponding goals between individuals and the community, motivate content editors.

2.2 Self-loop Editing and Commitment

A self-loop in graph theory is defined as the connection of a node to itself, specifically the edge that connects the node to itself [2]. On Wikipedia, a self-loop is defined as repeated editing of an article by a single individual before anyone else edits it.

Editing on Wikipedia is a mixture of behavioral processes and results, which may include planned editing as well as editors' habits of voluntarily helping others. Individuals edit articles for various reasons [36]. Repeated editing can result from people's editing habits, editing skills, knowledge and self-efficacy [44], personal responsibility and obligation, direction from the community (via Wikipedia talk pages and other contributions) and desire for recognition [6]. We use the concept of self-loop editing to measure the commitment of editors. Salancik [47] defines commitment as an obligation to behave or repeat actions in a manner that is consistent with prior actions; such consistency is associated with self-justification and dissonance-reduction [45]. Self-loop editing on Wikipedia reflects an editor's commitment to editing articles, contributing knowledge and sharing information. Therefore, we use self-loops as a proxy measure of editors' commitment, and assess the effect of commitment on the promotion of an article to a featured article. To our knowledge, this study is the first to use self-loops to assess or measure the effect of commitment on the outcomes of actions or behavior.

Commitment to Wikipedia editing is a social behavioral process through which a member develops a relationship with the community. Members contribute and collaborate with others to show their presence, belongingness and affiliation. Maintaining involvement in open collaboration entails reciprocity, or an 'obligation to continue contributing and helping others [9, 36, 52]. Additionally, self-loop editing on

Wikipedia is a self-generated process, where editors repeat edits and are committed to contributing their knowledge to Wikipedia for different reasons [9]. We believe self-loop editing on Wikipedia is a reasoned action and a planned behavior for editors who engage in this practice [1].

3. Hypotheses

Meyer and Herscovitch [36] define commitment as "a force that binds an individual to a course of action of relevance to one or more targets" [33]. Employees experience this force in the form of normative, affective and continuance commitment. These types of commitment reveal employees' perceived obligation, emotional ties and sunk costs, respectively, in relation to a given target; members will continue to repeat their behavior until the target is achieved [34].

Multiple factors affect editors' decisions to use self-loops. The desires to achieve personal goals and to match the values of the editing community influence the relationship that an editor develops with them [9, 34, 36]. Similarly, editors may use self-loops because of extrinsic rewards (e.g., peer recognition, editors' badges, learning from the process), team collaboration (i.e., receiving feedback from others on talk pages) and motivation to promote an article to a featured article [43, 46, 47]. For example, editors are committed to gaining hands-on editing experience, achieving recognition in the community or promoting an article to a featured article, so they repeat edits to show commitment to the task that they have taken on. Additionally, collaboration on Wikipedia is a self-generated process through which editors contribute, edit and self-assess. Repeated edits are more likely to be free of errors and are more productive with the consensus of others editors. Self-loop editing of Wikipedia articles shows editors' connection to both the article content and the community editing the same article. Editors also repeat edits to make content more concise and to provide additional resources that verify the material. Past research has shown a positive relationship between commitment to a task and project performance [51]. Based on the argument above, we propose that self-loop editing will have a positive effect on the promotion of an article.

H1: Editors' self-loop edits (editing commitment) will have a positive effect on the promotion of an article.

Individuals engage in online content collaboration by editing the contents, reading threads and either posting replies or moderating discussion [7, 24, 49]. Editors believe that the time they give for content contribution and thread-reading is associated with benefits they seek and receive from the community.

Editors' perceptions that they have the potential to fulfill personal and community goals

are based on community membership, or acceptance as a peer in the editing community. Editors try to self-loop edit to gain attention or recognition. This behavior is associated with the values and behavior of others in the editing community; thus, an increase in content and energy contributed will result in positive outcomes for the community as a whole [7, 17, 24].

Wikipedia editors repeat edits and provide content differently based on the role assigned to them by the Wikipedia community. Sometimes an article needs further improvements or citations to validate its content; other times an editor contributes additional knowledge to an article. Liu and Ram [31] claim that editors' varied roles have different impacts on the quality of an article, as well as the style in which editors write and provide content [29]. Professional writers tend to write more meaningful and concise edits, and provide links and other resources to validate the content provided. Editors are concerned with the style, format and content they contribute. According to Liu and Ram [31], well-rounded editors tend to repeat their edits by creating additional sentences, modifying the prior edit, deleting the contents of the edit, providing links and adding references to the material provided. As editing in Wikipedia is voluntary, editors who repeat edits are self-monitored, and contribute to obtain an affiliation with a knowledgeable community. The collaborative content that editors seek from the community provides a valuable contribution, which results in higher-quality articles.

Short-term self-loop editing occurs when an editor repeats an edit because it reaffirms their membership in the community via open social collaboration. In short-term self-loop editing, an editor either provides content repeatedly or polishes the content already provided. The role taken by a Wikipedia editor is an important factor affecting self-loop editing; certain roles played by an editor may motivates them to contribute higher quality content more consistently. Editors tend to repeat their edits to align their content with Wikipedia editing criteria. This repeated editing improves the quality of an article, hence increasing the likelihood that it will be promoted.

We predict that editors' use of short-term self-loop editing, either by self-monitoring their articles' contents or by providing external references to verify content, will positively affect the promotion of an article.

H2: Editors' short-term self-loop edits will have a positive effect on the promotion of an article.

Research on open collaboration shows that members of online communities build a strong sense of commitment to contribute and verify knowledge, remove unnecessary material and polish the style and presentation of the content [39]. This process of contributing time and energy maintains members' connections to community projects and goals. These bonds allow

members to fulfill their needs and to help others, thus becoming a part of the community [16]. As a result, participants contribute more time and higher quality content in order to establish themselves among the elite editors of the community [42]. The content contributed by these participants is high-quality and beneficial to the editing process.

While most of the edits on Wikipedia fall into the short-term range [14, 37], those that are repeated after a long period of time (i.e., long-term self-loops) show an editor's commitment to Wikipedia more strongly. Repeating an edit long after initial edits have been made shows an editor's connection to both the article content and the editing community. In addition, some scholars suggest that goal-oriented editing behavior has a positive effect on article promotion, as editors will contribute more content and invest more time when they aim to get an article promoted. As noted by Nemoto et al. [38], editors use talk pages to congratulate one another on article promotions to featured article status [36]. On Wikipedia, every article has associated talk pages where editors discuss article contents. Thus, edits that are repeated after a long time are based on the consensus of others and are more oriented toward the goal of article promotion. An editor's emotional attachment to the editing community, desire for recognition and goal-oriented behavior positively affect the promotion of an article. Based on the argument above, we predict that long-term self-loop editing will positively affect the promotion of an article.

H3: Editors' long-term self-loop edits will have a positive effect on the promotion of an article.

Self-loop editing on Wikipedia shows that editors impart value to their membership within the Wikipedia community. Due to this bond, editors repeatedly contribute their knowledge in order to help the community. Commitment to self-loop editing on Wikipedia is a self-generated, voluntary process; editors contribute their knowledge in order to demonstrate their efforts and to show affiliation with the editing community. Repeated edits are beneficial because they are high-quality, collaborative and oriented toward the goal of article promotion. However, editors' commitment varies; since the level of commitment is based on rewards and benefits to editors, it is susceptible to change. Editors repeat their edits in the short-term either to gain personal rewards or to attain status among expert editors. However, long-term repeated edits are not performed as a means of gaining rewards; these edits may result from an editor's personal habit of editing short sections at a time, or from the general editing process, which includes checking for errors and linking external references. Long-term commitment is both self-governed and self-generated, and has lasting effects on the process of content contribution to Wikipedia. Editors who are committed in the long-term

will only repeat their edits if they are sure that they fit the requirements of Wikipedia; in this sense, they play the role of housekeepers for the site [13]. They will repeat their edits until they believe they are close to their ultimate goal of promoting the article to a featured article [36].

Based on the above discussion, we predict that long-term self-loops will be more useful in the promotion of an article than short-term self-loops.

H4: Long-term self-loops will be more helpful or have a greater effect on the promotion of an article than short-term self-loops.

4. Methodology

A Wikipedia article is promoted to a featured article after a community of editors evaluates it for completeness, accuracy and neutrality. Article promotion requires varying efforts from different editors, including the commitment and time to contribute, verify and, if necessary, polish article contents. We gathered data regarding 2978 English Wikipedia featured articles and analyzed their editing histories to identify editing patterns and assess the effects of editors' commitment and behavior on the promotion of an article to a featured article.

We define the efficiency of an article's editing process as the total number of days it takes from an article's start date until it is promoted to a featured article. In our study, the variable called "duration" measures the efficiency of the editing process for Wikipedia articles.

Further variables are discussed in the following section.

4.1 Control Variables

In analyzing the effect of self-loop editing on the promotion of featured articles, we control for several variables, as explained below.

4.1.1 Total Number of Edits

The total number of edits represents all of an editor's contributions of knowledge to Wikipedia. A higher number of edits can bias the analysis, as more editing does not always equate purely to contributed knowledge; for instance, an edit can consist of re-saving the same edit, robotic edits and removing a vandal's incorrect content. A higher number of edits can also positively influence an article's promotion when users provide information in a timely manner. However, this may create conflicts or increase the time it takes for others to read an article, provide feedback or modify the edits. Therefore, we control for the total number of edits in our analysis.

4.1.2 Article length

We control for article length by measuring article size in bytes. Some articles are easy to edit and the contents of an edit can be sum-

marized more succinctly, while others require lengthy explanations and are difficult to edit as concisely.

4.1.3 Number of Editors

The number of editors may influence the analysis results, as a higher number of editors may have a positive effect on an article's promotion when the editing increases an article's quality. Alternatively, this variable may have a negative effect in circumstances where collaboration is not favorable or if the number of editors includes vandals that edits article maliciously for disruption and ego boosters that show their presence in editing community by boosting their contents without any concern for an article contents.

4.2 Independent Variables

We use self-loop editing as an independent variable for assessing an editor's commitment, and analyze the effect of self-loop editing on the promotion of an article. As explained previously, self-loop edits are repeated edits made by the same editor before anyone else edits a given article.

4.2.1 Self-Loop Ratio

We measure the self-loop ratio for an article by calculating the number of self-loop edits and dividing that number by the total number of edits. We use self-loops to measure the behavior of editors, although self-loop editing can have a variety of causes; sometimes an editor's habit of editing an article in small sections results in many timestamps, while other times self-loops reflect refinement of content. In this paper, we use self-loops as a proxy measure of an editor's commitment. As defined by Salancik [47], commitment is "an obligation to behave or repeat actions in a manner that is consistent with prior actions, and is associated with self-justification and dissonance-reduction," Self-loop editing in Wikipedia reflects an editor's commitment to editing articles, contributing knowledge and sharing information. Therefore, we use self-loops as a proxy measure of editors' commitment and assess the effect of commitment on the promotion of an article to a featured article.

4.2.2 Short-Term Self-Loop Ratio

We distinguish short-term self-loops from long-term self-loops. Short-term self-loops are editing loops in which consecutive edits from an editor occur within one hour (60 minutes). We calculate the number of short-term self-loops and divide that number by the total number of edits in order to assess the frequency and effect of short-term self-loop editing.

4.2.3 Long-Term Self-Loop Ratio

We define long-term self-loops as editing loops in which consecutive edits from an editor occur more than ten hours apart. We calculate the number of long-term self-loops and divide it by the total number of edits. For this study,

we did not include the self-loop edits that fall between short-term and long-term self-loops. As most self-loop edits fall in the short-term category, this should not affect the results of our analysis.

4.2.4 Short-Term Self-Loop-Reciprocal Ratio

We also calculate the short-term self-loop-reciprocal ratio to assess the effect of short-term self-loops in relation to long-term self-loops. We calculate this variable by dividing the number of short-term self-loops by the total number of self-loops in an article.

4.2.5 Long-Term Self-Loop-Reciprocal Ratio

We calculate the long-term self-loop-reciprocal ratio by dividing the number of long-term self-loops by the total number of self-loops in an article. We use this variable to differentiate the effects of short-term self-loops and long-term self-loops.

4.3 Dependent Variable

Our study examines the knowledge contribution and collaboration patterns of Wikipedia editors and their effect on the promotion of an article. Our dependent variable is duration (also referred to as efficiency), which reflects the time (number of days) it takes an article to be promoted to a featured article. Editing on Wikipedia follows an incremental process of knowledge contribution and collaboration [5], where editors continue to add edits until an article meets the criteria for a Wikipedia featured article.

A detail table of variables is attached in <Table 3>.

4.4 Data Analysis

Our data sample consists of articles that have been promoted to featured article status since their listing on Wikipedia. We evaluate the influence of our independent variable on the promotion of Wikipedia featured articles using the Cox regression model to assess our hypotheses. Cox regression is useful in considering the effect of a measure on the likelihood that an event will occur [42]. Cox regression assumes that variables have a relative effect on the unspecified underlying likelihood of an event requiring no assumption. In a previous study, Ransbotham [42] examined the turnover rate of Wikipedia editors and its effect on article promotion; this study used Cox regression in its data analysis. As our dependent variable is the same as that in the Ransbotham study, it is appropriate to use the Cox regression model for our data analysis.

5. Results and Discussion

<Table 1> represents the results of the Cox regression analysis; we use Cox regression to find the effect of editing time on the efficiency of an article's promotion to a featured article.

〈Table 1〉 Cox Regression Results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Nodes	-0.73*** [0.03]	-1.541*** [0.06]	-1.55*** [0.06]	-1.20*** [0.05]	-1.54*** [0.06]
Total number of edits	0.24*** [0.04]	0.885*** [0.06]	0.79*** [0.06]	0.67*** [0.06]	0.89*** [0.06]
Article length	-0.33*** [0.05]	-0.244*** [0.06]	-0.24*** [0.05]	-0.36*** [0.05]	-0.26*** [0.05]
Self-loop ratio		-1.821*** [0.11]	-2.18*** [0.21]		-1.82*** [0.11]
Short self-loop ratio			0.32* [0.16]	-0.99*** [0.08]	
Long self-loop ratio			-0.06** [0.02]	-0.07** [0.02]	
Short self-loop ratio reciprocal					0.003 [0.03]
Long self-loop ratio reciprocal					-0.07** [0.02]
R-squared	0.392	0.439	0.441	0.42	0.444
Significant Codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1, standard errors are enclosed in brackets					

Our results are based on 5 models. Model 1 contains only the control variables. Model 2 additionally contains the self-loop ratio to determine the effect of self-loop editing on an article's promotion. Model 3 is an extension of model 2, with the addition of two variables: short-term self-loops and long-term self-loops. In model 4, we remove the overall self-loop ratio to assess the effects that short-term and long-term self-loops have on an article's promotion. Model 5 contains the short-term self-loop-reciprocal and the long-term self-loop-reciprocal to differentiate between the two.

The results of models 2, 3 and 5 support our first hypothesis (H1); these results suggest that self-loop editing, as a proxy for commitment, is significant for the promotion of an article. The results of model 4 support our third and fourth hypotheses (H3 and H4) that short-term self-loop editing and long-term self-loop editing have a positive effect on the promotion of an article. Hypothesis 4 is supported by the results of model 5, as the long-term self-loop editing ratio is significant in the expected direction.

Relevant literature has suggested a positive relationship between commitment and its impact on work-related outcomes in traditionally structured organizations. Collaboration in online communities and affiliation with these communities are important factors related to level of commitment. This study examines the effect of Wikipedia editors' commitment on the promotion of an article to a featured article. We find that increased commitment of editors positively affects an article's promotion. Self-loop editing demonstrates editors' commitment based on their consecutive editing of the same article before anyone else edits it. The specific reasons that editors repeat edits are not explored in this study, but we use self-loop editing

as a proxy measure for editors' commitment to editing or providing knowledge. The results show support for our hypothesis that self-loop editing positively affects the promotion of an article. Gaved [13] defines the different roles played by Wikipedia editors, such as place-holders, housekeepers and completers 51. Short-term self-loops, which we assume include most of an editor's self-loop edits, are small edits like minor contributions of information, formatting of contents, spell-checking, providing reference links and adding new contents after discussing with other editors on talk pages [23]. We assume that short-term self-loop editors fill the roles of place-holders and housekeepers; these editors want to occupy a social role in the editing community, and are committed to both article content contribution and to housekeeping, which fights ego-boosters and vandals [13]. We assume that long-term self-loop editors repeat their editing after a long time either because of the technicality of the article, or because of a sense of connection to the online community. Experts in a given field may take considerable time to deliberate over precise and correct content. For instance, sometimes the technical nature of an article compels editors to engage in long discussions via talk pages on Wikipedia. Countering vandalism also increases time between edits, as searching for and finding vandals requires additional time; however, this activity keeps editors motivated and committed to an article. Some scholars also suggest that long-term self-loop edits may result from personal editing habits. For example, some editors may conduct a first edit in one session and return for later sessions to add more content or to perform other editing-related work, whereas other editors may complete an edit in a single session.

As far as we know, this paper discusses the first study conducted to assess commitment through the lens of self-loop editing. The results of this study contribute to our understanding of the effect of editors' motivation and commitment on successful promotion of an article to a featured article. The results, as shown in <Table 2>, reveal that a larger number of self-loops are short-term self-loops, which represents the level of commitment editors express when editing and contributing content. Park et al. [39] find that more than 80% of all editing consists of self-loops, which suggests a high level of editor commitment and indirectly supports the statement that the majority of the content on Wikipedia is

〈Table 2〉 Article Editing Patterns

Self-loop time	Frequency
0.1~10	2,654
11~30	537
31~60	153
61~120	106
121~240	69
241~480	27
481~600	56
601~2000	61
2001~	91
Short self-loop = 88%	
Long self-loop = 0.052%	

contributed by a small number of editors [22, 37]. Long-term self-loops may be the indirect result of Kittur [24] statements regarding Wikipedia content, potentially supporting Hypothesis 4, although a thorough investigation is still needed. <Table 2> illustrates that the majority of self-loop editing involves minor edits, such as the addition of content detail or formatting changes. Minor self-loop edits represent an editor's commitment to continue polishing and contributing content, which further supports Hypotheses 2 and 3.

This study contributes to the literature regarding open collaboration and commitment to online collaborative communities. A practical implication of this study for project managers is that the success of certain projects demands commitment from participating members. Previous studies have found that the majority of Wikipedia contents are provided by a small number of editors [22]. The fact that Wikipedia content contribution requires only an internet connection and a personal computer reflects how easy it is for editors to contribute. Thus, project managers, collaborative online sites and other entrepreneurs must seek ways to facilitate and encourage members to contribute and remain committed to these online communities.

This study is not without limitations, as we do not directly measure the commitment of editors, but rather use self-loop editing as a proxy measure for an editor's commitment. Future studies with direct supervision of editors would give a more detailed view of editors' commitment to Wikipedia. If further studies combined self-loop editing commitment with editor interviews, overall editor commitment to the collaboration process would be clarified.

〈Table 3〉 Measurement of Variable

Variable	Definition	Relevant studies
Total number of edits	Total number of edits made on one article.	Kittur[25]; Wilkinson[52]
Article length	Total size of an article in bytes	Wilkinson[52] Kittur[23], Liu[29]
Number of editors	Total number of edits edited that article	Kittur[25]; Kittur[23], Kane[21];
Self-loop ratio	Total number of self-loops divided by total number of edits	Keegan[22]
Short-term self-loop ratio	Total number of short self-loop divided by total number of edits	
Long-term self-loop ratio	Total number of Long self-loop divided by total number of edits	
Short-term self-loop-reciprocal ratio	Total number of short self-loop divided by total number of self-loops	
Long-term self-loop-reciprocal ratio	Total number of long self-loop divided by total number of self-loops	
Duration	Number of days an article takes to promote to a featured article	Ransbotham[40]

5.1 Conclusion

The purpose of this study was to determine the effect of self-loop editing on the success of the collaboration process, using self-loop editing as a proxy indicator of editor commitment. Our research provides a framework that indicates that self-loop editing positively impacts the promotion of Wikipedia featured articles. Editor commitment that is based on institutionalization is more helpful than commitment that is based on short-term benefits. This research provides a model for assessing the behavior of members of online collaborative communities, which can affect the process and success of content collaboration. For the long-term success of online communities, managers must create environments that promote feelings of association and connection to the organization. Future research focused on members' behavior regarding the online content contribution process will further refine our understanding of online collaboration.

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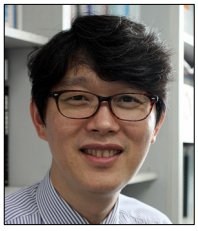

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