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SUSTAINABILITY GETS THE CLICKS? COMPARING ENGAGEMENT LEVELS ON SUSTAINABILITY VS. GENERAL HASHTAG POSTS FROM HOME APPLIANCES BRANDS

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Abstract

Purpose *– Due to prevailing issues like energy waste and environmental pollution, which causes rise in temperature suggests that human behavior have to be changed for better quality of life for future generations. Thus, this study aims to investigate how home appliances brands on social media uses #sustainability hashtag content to generate energy-saving behavior.*

Methodology *– 423 hashtag posts have been extracted with their COBRA levels (such as likes, comments and share frequencies) through Apify web scraping tool. COBRA analysis was used to perform descriptive statistics to determine which types of hashtags posts (#sustainability or #general) are most frequently used and how customers are engaged with #sustainability hashtag content by home appliance brands.*

Findings *– The findings showed that only 45 hashtags posts are related to #sustainability content and social media users have more interest in liking the # sustainability posts instead of commenting or sharing them.*

Originality of the research *– This paper provides the importance of #sustainability communication in the energy sector, more significantly, this study is the first to classify hashtag usage and analyze its effects on social media engagement. It highlights opportunities for further research and offers AI analysis techniques to forecast social network communication.*

INTRODUCTION

The global shift towards sustainable consumption has brought about a great awareness of the environmental impact on consumer decisions. Green product purchase behavior, characterized by the intention to acquire goods and services that minimize environmental harm, has become increasingly prevalent among consumers worldwide (Hassan et al., 2024). This trend is particularly evident in developing countries like Pakistan, where environmental concerns are gaining traction among the growing middle class (Shahid et al., 2022). According to the United Nations (2023), SDG7 seeks to "ensure access to affordable, reliable, sustainable, and modern energy for all." Along with other issues like energy waste and environmental pollution, this worrying rise in temperature shows that human behavior must change if future generations are to have a better quality of life (Ming et al., 2022). So, raising awareness of these problems is crucial for influencing behavior in a good way on a large scale and enabling people to take appropriate actions to combat the current crisis.

Social media sites like Facebook, Instagram, and Twitter have been very popular, making them a great way to contact a lot of people and these platforms offer strong instruments for enhancing influence by enabling the rapid and efficient dissemination of messages, such as the significance of environmental sustainability (Kaskazi & Kitzie, 2023). To ensure the wellbeing of the future generations, the consumers should take steps to adopt sustainable habits as quickly as possible (Bhattacharya et al., 2022). Reducing waste and pollution, using renewable energy conserving resources are all examples of sustainable practices (Ardito, 2023). Home appliances are the second-largest source of energy consumption in residential settings, according to the International Energy Agency (Zhang & Song, 2023). Research indicates that 93% of buyers rely on internet reviews to evaluate products and decide what to buy (Sun et al., 2023). Widespread adoption of energy-saving home appliances (EHAs) can help lower CO^2 emissions, ease the strain on the availability of resources like fossil fuels and lower household energy consumption (Yang et al., 2024).

As pragmatism emphasizes addressing real-world problems with its solution (Saunders et al., 2009) so this study aims to explore sustainability communication among home appliances brands on social media to generate energy conservation behavior, which will resolve the issue of energy crisis. Therefore, encouraging sustainable consumption behavior requires a knowledge of how energy-saving information in online reviews influences green product purchase behaviors. In order to close these gaps, this study uses hashtag technique to investigate how energy-saving communication in online environment used by home appliances brands. In this study, researchers use a network of hashtags used in relation to #sustainability (case-insensitive) to investigate Facebook communications (Si et al., 2024). With an emphasis on how social media may be utilized to promote sustainability initiatives, researcher examine the discussion around the #sustainability hashtag on Facebook in this research paper (Gerber, 2024).

This study aims to answer the research questions: "1. What types of hashtags posts are most frequently used by home appliance brands — #sustainability-oriented or general? 2. How does the use of sustainability-oriented hashtags, compared to general hashtags, influence audience engagement (likes, comments, and shares) on social media posts by home appliance brands?" Researchers, who want to learn more about the Facebook conversation around sustainability and those who want to utilize the results as a tool to promote sustainable content, will find great value from this study findings and raise awareness on a significant social issue. The primary contribution of this study is to employ hashtag technique to extract energy-saving information from Facebook, which we then further classify into #sustainability and general hashtag. As a result, this study takes a fresh approach to social media interaction by looking at hashtag usage through energy-saving perspective, which hasn't been done before (Gerber, 2024).

Hashtags are a cutting-edge feature on many social media platforms that let users connect and do information searches without adding friends or following sites (Yost et al., 2021). According to Salazar (2017), the hashtag's history started when Chris Messina proposed using it to organize tweets by topic or theme on Twitter in 2007. Hashtags have grown in importance for brands aiming to attract consumers pertaining to topics like politics, fashion, sustainability, environmentalism and today, it is a widely accepted sign (#) on a number of social networking sites, including Facebook, Instagram, LinkedIn, Twitter, and TikTok (Kola et al., 2023). According to a recent Instagram study, a post's "reach" can be increased by an average of 12.6% by including just one hashtag. As a result, broadcasting hashtags have the potential to boost content visibility and promote communication among larger audiences (Han et al., 2025). Past literature has concentrated on the behavioral aspect by determining the number of likes, comments as well as the number of shares (Harb et al., 2019). Organizations in the tourism sector have acknowledged the significance of hashtags (Unurlu, 2022). Hashtags open up new avenues for social media interaction, including easier communication and search (Kim & Chakraborty, 2023).

2. Literature Review

2.1 Hashtag

Globally, the number of social media users has increased dramatically in recent years, with estimates suggesting by 2027, there will be close to six billion users (Dixon & Kinnae, 2023). Since its debut on Twitter in July 2009, hashtags—phrases that begin with the letter "#"—have been used on a variety of social media platforms, particularly Instagram, to establish a common context for particular events or subjects (Salazar, 2017). Hashtags also apply to social research and they are largely utilized by organizations to market goods and services. As an example, Nike publicized their inspirational and dedicated message by using the hashtag #justdoit (La Rocca & Artieri, 2022). Compared to postings without hashtags, those with hashtags receive higher views and interaction (Kola et al., 2023). Hashtag usage is frequently motivated by hedonic, documentary, and social factors, all of which can increase social media engagement, thus, examining hashtag usage and social media participation in relation to local events is crucial (Lin et al., 2023). Furthermore, a study by Adi (2017) sheds light on Twitter's function in fostering a conversation around sustainability using the #sustainability hashtag. Pilař et al. (2019) determined the primary communication topics associated with the hashtag #sustainability on Twitter in order to find out how individuals throughout the world viewed these subjects. The study by Pilař et al. (2021) examines sustainability, and Gerber (2024)'s work on World Environment Day is similar to this study, however, they did not use COBRA analysis on Facebook posts.

2.2 COBRA Framework

Muntinga et al. (2011) used the framework Consumer Online Brand Related Activities (COBRAs), from the consumer's viewpoint, to originate a set of brand online activities in which the consumer uses social media and engage in term of creation, consumption and contribution (Schivinski et al., 2021). The levels of COBRAs from the lowest to the highest are consuming (liked/interested in post), contributing (posting a comment about post) and creating (sharing a post including the original content from the user) (Schivinski 2021). These COBRA levels can be positive for a favorable brand outcome such as commitment, loyalty, and brand engagement (Piehler et al., 2019). This study based on social media involvement follows the consumer online brand related activities (COBRAs) typology according to Muntinga et al. (2011). According to Muntinga et al. (2011) content creation, contribution, and consumption fall into three dimensions, in low to high brand related activities. Social media has transformed companies' approach to engage with clients, and COBRAs are integral as part of digital marketing communications (Schivinski et al. 2020).

A good framework for observing brand-related social media activity is the COBRAs framework, which was created by Muntinga et al. (2011). COBRA, a collection of brands related online activities of the consumer who varies the level of interaction with social media and participates in the consumption, contribution, and generation of content (Schivinski et al. 2020). As far as the authors are aware, there aren't many studies that examine how companies use different social media platforms using the COBRA framework for sustainability content (Mizukoshi, 2024). The current study applies COBRA in the sustainability domain to gain a better understanding of how a brand communicates sustainability on social media and how it may boost user engagement.

2.3 Social Media for Sustainability Communication

Social networks have become increasingly important platforms for efficient communication within the last ten years (Jha and Verma, 2023). Social media is crucial for organizations to communicate a variety of information to stakeholders (Benitez et al., 2020). Social media platforms have a huge opportunity to spread knowledge about sustainability and environmental issues to a large audience by enabling participatory communication (Jha and Verma, 2023). Social media sites like Facebook, Instagram, and Twitter can help overcome barriers regarding awareness and participation (Abuzeinab et al., 2024).

2.4 Online Reviews

Online reviews created by users have gained popularity as a reliable source of data in recent years (Nayak et al., 2023). Online reviews are becoming a key source of knowledge that influences other tourists' preference towards destination (Guo et al., 2021).

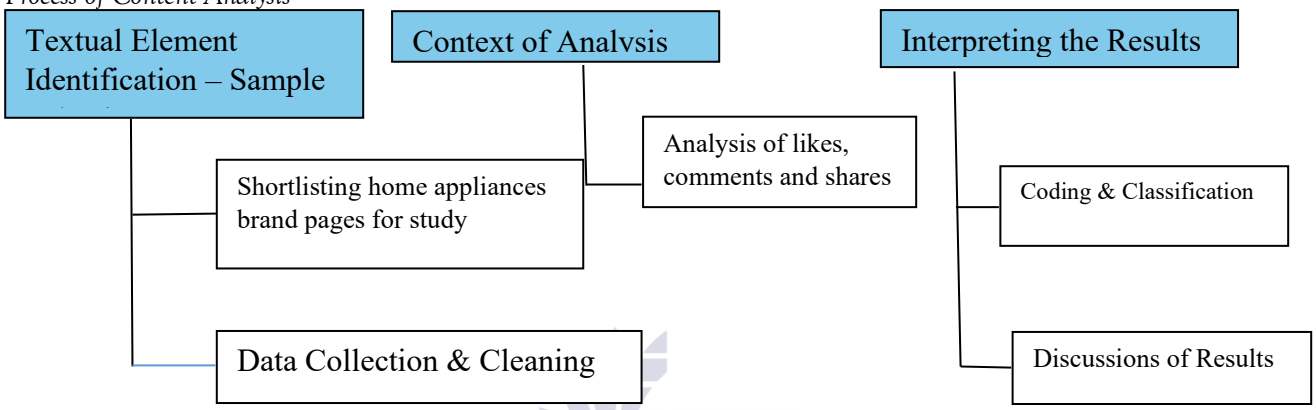
Online reviews by tourists create awareness, encouraging travel motivation, helps to choose and build the product image (Jiang et al., 2021). Reviews give a short overview of a product/service, from information search to post-purchase behaviors (McColl-Kennedy et al., 2019). Reviews on the internet are a great source of data for consumer research (Taecharungroj & Mathayomchan, 2019). Social media users believe that online content is reliable as it offers valuable information which converts the potential users into actual users (Garner, 2022). Online reviews have grown in popularity among researchers because they offer distinctive insights into the users' experience (Tan & Yeo, 2020).

3. Methodology

With the help of figure 3.1, researchers explained the process.

Figure 3.1

Process of Content Analysis



Six-step of Krippendorff (2018)'s content analysis framework used for the consumer engagement analysis with #sustainability hashtag.

1. Unitizing: Researchers selected three Pakistani appliances companies (Samsung, Haier and Orient) who have authentic Facebook page and have stores in Pakistan (Pookulangara et al., 2024).

2. Sampling: While discussing the above criteria, researchers used purposive sampling because researchers carefully select the companies which fall on predetermined criteria (Agarwal et al., 2024). Researchers gathered 423 hashtag posts from April 2024 to September 2024, a summer season in Pakistan (Lopez-Ordoñez et al., 2024).

3. Recording/Coding: In coding step, with the help of previous literature posts have been classified as #sustainability who have hashtag with words relating to energy-saving, green/environment and air/water (Agarwal et al., 2024). Others posts are classified as #general who have hashtag with words relating to sales promotion, product characteristics, celebrity endorsement and events marketing (Pookulangara et al., 2024).

4. Reducing: Data collected from posts in terms of views, likes, comments and shares with the help of web scrapping website Apify (Pereria & Ha, 2024). Researchers just considered textual posts and ignored images and videos contents.

5. Inferring: Descriptive statistics, in term of numbers of likes, comments and shares, used in order to find out social media user's engagement with #sustainability hashtag posts.

6. Narrating: In this stage research questions will be answered by presenting and explaining the findings. By using COBRA, allows researchers to analyze how users are engaged with #sustainability hashtag by using different levels (likes/comments/shares) of framework (Muntinga et al., 2011). Liking the post is considered as users are brand loyal and will make purchase in near future (Pathak & Kaushik, 2024).

4. Results & Discussion

Specific metrics (hashtag) around consumer engagements with brand related content on social media platforms, especially Facebook, are measured to create 'higher levels of engagement' (Pookulangara et

al., 2024). Below is how they are likely to take this measurement:
There are two primary types of engagement metrics on which the study focuses.

Likes (Consuming): This mention measures the level of approval or interest engaged by consumers toward a published brand's post. The number of likes indicates some form of engagement with the audience and is a basic level of engagement.

Comments (Contributing): Comments are a more active type of engagement where the consumers post their thought, opinion or reaction to the content. The more comments a post has, the deeper engagement the consumer can get, since it will take a lot more effort and involvement on the consumer's side than liking a post.
By explaining the methodology and data collection process in section 3, researchers extracted 423 total hashtag posts with their COBRA levels (such as likes, comments and share frequencies). Out of which only 45 hashtags posts are related to #sustainability content and others 378 posts are general hashtag posts. To answer the research question, researchers analyze #sustainability hashtag posts to know in which level social media users responds/engaged more. If we examine the Table 4.1 regarding the #sustainability hashtag posts then social media users have more interest/engaged in liking the # sustainability posts instead of commenting or sharing them. To check their engagement level mostly users are engaged with Haier brand hashtag posts because it's likes, comments and shares are high among all.

Table 4.2
Descriptive Statistics of #sustainability Hashtag Posts

Home Appliances Brand	*Total Posts*	*Likes*	*Comments*	*Share*	*View Counts*	Followers Count
Samsung	7	1337	272	63	13627	162 M
Haier	24	140664	2984	1008	3675566	14 M
Orient	14	1272	411	131	1272217	714 K
Total	45	143273	3667	2053	4961410	176.7 M

According to COBRA framework, liking (consuming), commenting (contributing) and sharing (creating) are engagement metrics where liking the post is considered as users are brand loyal and will make purchase in near future (Pathak & Kaushik, 2024).

Figure 4.1
View Counts against Likes

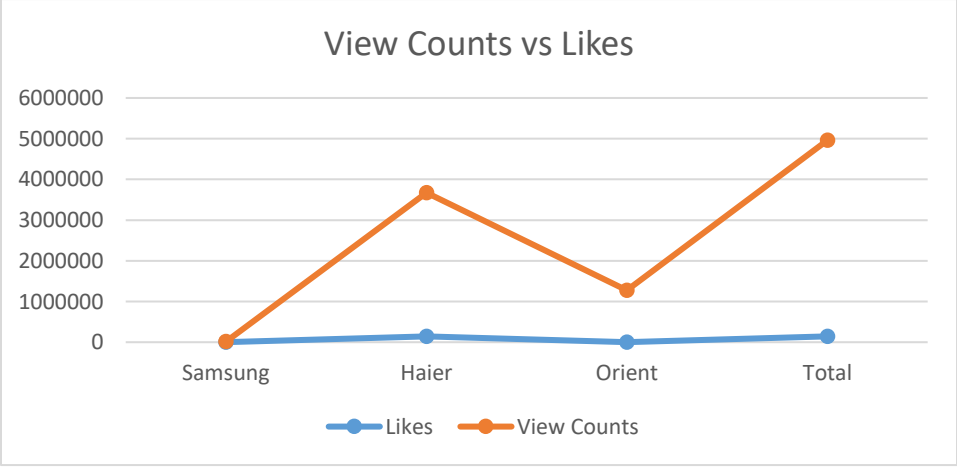
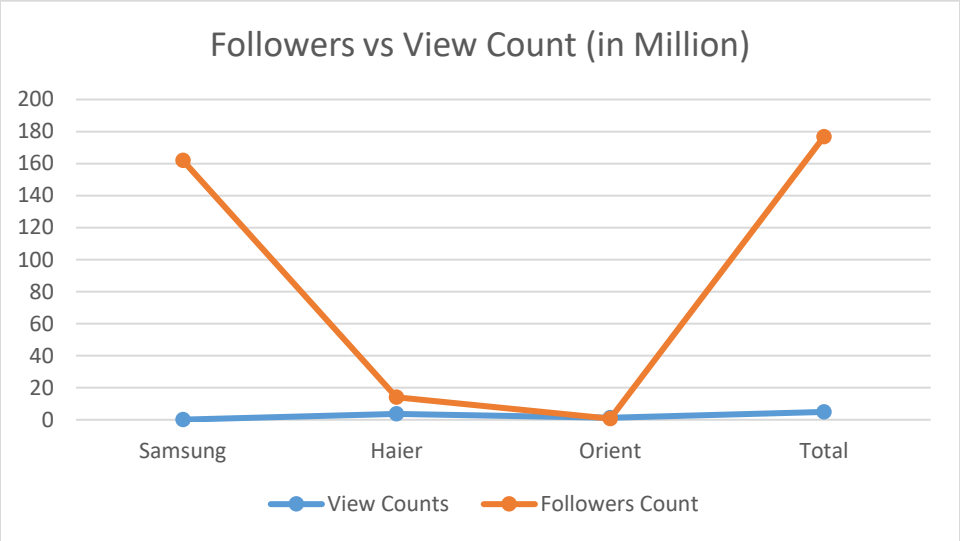


Figure 4.1 shows that view counts are higher than likes for all brands #sustainability posts. Among all brands, Haier gets the more likes and counts in #sustainability posts.

Figure 4.2

Followers against View Counts



Whereas according to Figure 4.2, Samsung has the most followers among all but their views are less than Haier. Authors used NVivo software (Shin, 2023) to identify 30 most used words through the to better understand how and why those words are used in the posts.

Table 4.3

Top 10 Used #Hashtag by Home Appliances Brands

Rank	*#hashtag*	*Count*	*Rank*	*#hashtag*	*Count*
1	#haier	287	6	#haierairconditioner	34
2	#morecreation	230	7	#playwiththenumberones	33
3	#morepossibilities	225	8	#haierrefrigerator	32
4	#orientelectronics	48	9	#unleashasmartfuturewithgreenenergy	25
5	#livinginnovation	45	10	#ifa2024	25

Table 4.3 indicates top most used hashtag words by home appliances brands.

Figure 4.3

Word Cloud of #hastag

In Figure 4.3, authors also performed Word Cloud in NVivo from top 30 words (Saleem & Umar, 2023) used to find out the most frequently used #hashtag words in the posts. How frequently that term appears in the Word Cloud identifies from word's size. In this study, if we analyze Table 4.3 and Figure 4.3 then we come to know that mostly home appliances brands are promoting their brand such as #haier, #orientelectronics, #morepossibilites, after that they are using sustainability hashtag such as #livinginnovation and #unleashasmartfuturewithgreenenergy then they are also doing event marking such as #ifa2024 and #eidwithhaier.

5. Conclusion

Conclusion of the whole study is that interactions with social networks is becoming a hot issue in many fields of study and many users now utilize it. The purpose of the study was to identify hashtag posts mostly used by home appliances brands and to learn about user involvement with #sustainability hashtag. A strong basis for comprehending the dataset and user interaction is provided by the examination of Facebook frequency distribution. In this article, hashtags, as a particular kind of communication, offer an opportunity to determine the opinions and experiences of users on social networks. Additionally, the COBRA framework offers a hashtag-based methodological process. By using this framework, researchers have found the answer of two research questions such as home appliances companies posts mostly general hashtag posts and in case of #sustainability hashtag posts social media users engage it though a very basic level of COBRA framework i.e. liking the posts.

As a result, this study contributes to the body of knowledge on hashtag usage patterns from the viewpoint of users in the home appliances sector. Second, by providing a thorough explanation of social media participation with relation to hashtag usage, this work contributes to the body of literature on social media and content marketing. More significantly, this study is the first to classify hashtag usage and analyze the effects on social media engagement. These findings support the limited body of research on hashtags and conceptualize social media interaction through hashtags. Thus, COBRA framework adds to the body of knowledge on social media and hashtag usage, offering a fresh perspective on social media interaction.

5.1 Implications & Limitations

Social media influencers, companies, and politicians can better promote their content on social media by recognizing and comprehending the key sustainability topics. This will help them connect their goals and activities with the study's findings. This study emphasizes the need for more strategic communication about sustainability from a policy standpoint.

It only looks at content on the Facebook platform, which is just one of several social media platforms, and posts that contain the #sustainability hashtag. There is a time limit on this study and individual traits are not taken into account, such as their education, the devices they use to connect (desktop vs. mobile), perceived innovativeness and social media usage.

5.3 Future Directions

Additionally, future study might gather the top most popular postings instead of a random selection. Another enhancement is the collection of data from sources other than Facebook. Future studies might concentrate on leveraging hashtags and artificial intelligence to forecast social network communication. Lastly, because this research has a wide range of machine learning applications, future studies could use other analysis techniques (Topic Modeling, LDA, etc.) to categorize the main subjects of conversation.

Declaration of Interest Statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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