Social Media Usage and Digital Engagement Across Major Economies: Insights from BRIC, EU, and the United States

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Abstract – This paper examines the BRIC, European Union and United States economies' social media usage trends in both personal and business-oriented activities. We employed a cross-sectional survey design, which involved standardized questionnaires to obtain feedback from respondents who reported that interaction with the platforms and usage depended on the activity. Interregional differences were determined using binary and ordinal variables through the methods of regional means, standard errors, and chi-square tests and pair-wise comparisons. Findings have shown that although personal use is predominantly done through connecting with family and friends on a global scale, business usage is highly diversified, with the US being more multi-faceted in their strategic use. In addition, there was variance in preferences on the platforms with MySpace and Twitter being the most used in BRIC nations. Lastly, the EU tended to be more invested in several platforms for business reasons.

Keywords – Social Media, Cross-Regional Comparison, Personal Use, Business Use, Platform Preference, Survey Analysis.

I. INTRODUCTION

Digitalization has become one the major drivers of modern economies, significantly advancing economic structures and enhancing global competitiveness, innovation, and productivity. The merits provided by these advancements have allowed countries to restructure their economic systems to becoming globally integrated and efficient. Digitization, specifically enhanced by the widespread implementation of ICT, has majorly advanced both developing and developed economies. The significance of digital technologies to economic development are not limited to advancing production; but also stimulating the designing of novel business frameworks and advance value chains. As the use of internet continues to spread, more digital economics and structures are sprouting to advance industrial production and labor markets.

As seen from the advancements that happened in social media recently, we can conclude that the patterns of these innovations are likely to grow at a speedy rate in the future. Novel types of SNS (social networking sites) are linking various types of users for various purposes. The employment of social media has seen significant development in terms of users across the globe. In a study by Hardy and Castonguay [1], approximately 70% adults in United States used at least 1 SNS in 2018. According to their estimations, an average user spent 5 years 4 months on accessing SNS throughout their lifetime.

According to Gilbert et al. [2], the usage of social media in the United States has rapidly increased since 2007 where more than 23% of users created social media profiles. Today, this number has increased to approximately 75% with most people have more than 1 profiles in different social media platforms. There are multiple SNSs, which are pervasive within the American culture today such as Tumblr, Pinterest, Instagram, LinkedIn, Twitter (X), Google+, and Facebook. Nonetheless, while these platforms are both popular in the country and the globe, they are not the only used ones in other countries.

While SNSs are highly employed in developed countries, these networks are increased employed by developing nations whose economic growth and population make them a significant part of the future global selection process. The nations with the most global impact are the BRIC made up of Brazil, Russia, India, and China. Cox [3] identify these nations as having the ability to become the largest economies of the globe, replacing the 6 largest western economies. Currently, the BRIC nations exceed for 3 billion people and it is projected that by 2030, these economies combined will be larger that the output of United Kingdom, United States, Italy, Germany, France, and Canada.

Basically, the BRIC nations have come to represent the advent of a new era where western economies look towards them for global economic stability and growth. Along with economic and population growth, the BRIC countries are also where social media is advancing rapidly. Currently, both India and Brazia have SNS preference just like the United States. From the viewpoint of organizational behavior research, preference in social media could be grouped into two: enterprise social media (ESM) and personal social media (PSM). Li et al. [4] focused their study on personal social media compared to enterprise social platforms because there has been extensive study on the application of ESM in the form of IS (information systems) over the past few decades. In addition, Stohl et al. [5] review the effects of social media application in firms, such as organizational size, type, policies, norms, and rules.

Li, Silva, and Larimo [6] also review whether the application of ESM in firms could stimulate communication efficiency, knowledge management, strategic communicator vision, cross-country social networking, perceived utilitarianisms and hedonism values, innovation, relationship satisfaction, job gratification, organizational performance, and job performance enhancement. Secondly, unlike ESM, which is limited to usage by corporate employees, PSM is available to everyone. This implies that PSM could significantly bridge the gap between professional and personal lives. The application of PSM not only permitted employees to connect and communicate with their families at work, but also allow them to complete and receive work assignments after working periods.

Based on the discussions above, our study focusses on evaluating the application of social media in both personal and enterprise levels in various US, EU, and BRIC economies, their regional variation in preferences, behaviors, and usage trends, including the role of technological, economic, and cultural background in conditioning professional and individual social media usage. The remainder of this paper has been organized as follows: Section II presents a background study of theoretical underpinnings, regional variations of technological adoption, and measurement approaches in cross-regional study. In Section III, we describe the research design, statistical testing, and validation procedures of our findings, which have been documented in Section IV. Lastly, Section V summarizes our findings distinguishing the differences and similarities of social media usage in our selected regions of study.

II.   BACKGROUND STUDY

Theoretical Underpinnings

Zitz, Wolfel, and Hoffmann [7] described a model for evaluating end-user attitude and behavior towards IS. Technology Acceptance Model (TAM) considers particular processes to evaluate the acceptance level of computer-oriented IS. A person's technological acceptance is affected by their extrinsic motivations, such as perceived usefulness. Nonetheless, TAM did not integrate constructs that evaluated a person's intrinsic motivations.

Extensive study has demonstrated that TOE (Technology, Organization, and Environment) has a wider applicability and integrates explanatory relevance across various cultural/national, industrial, and technological contexts. The model has been employed to describe the adoption level of inter-organizational models, electronic data exchange, enterprise systems, open systems, e-business, and the wide array of IS applications. In addition, this model has been employed to describe the implementation of technologies in a swarm of industries, such as manufacturing, financial services, wholesale, retail, and healthcare. The model has been tested in Asian, American, and European context, as well as both developing and developed countries. In every study, the three components of the model have shown to impact he manner in which a company searches for, adopts, and identifies need for novel technology.

According to Wei et al. [8], Uses and gratifications theory (UGT) posits that people use SNS to boost gratifications. The model is positivistic in its nature and has heuristic value. In addition, it seeks to demonstrate how and why individuals are motivated to use these technologies to satisfy their wants and needs. Therefore, UGT has been widely employed in exploring the uses of different media, and to enhance understanding of the motivation behind the usage of these platforms. Indeed, users would have various motivations for using the same media, or exhibit different gratification levels.

Regional Variations in Technological Adoption/Use

The diffusion and adoption of novel products or ideas by a system were critically discussed by Peres, Muller, and Mahajan [9] in their review of the Diffusion of Innovation Theory (DIT). The theory posits that trends in the acceptance (adoption) of IT within a system of users are determined by social influence and communication process, where future adopters are updated about the present and usage of new IT technologies by earlier adopters. The trend of cumulative adoption pattern of innovation over time establishes an S-shaped curve, which describes adopters' patterns and is known as the diffusion model.

Even though there are various variations of diffusion models, Mahajan, Muller, and Srivastava [1] focused their study on the Bass model. Considering the adoption timing, Bass categorized the adopters as innovators, early adopters, early majority, late majority, and laggards, as depicted in **Fig 1**. Bass described innovators as users who decide to adopt a technology solely before others adopt it within their social ecosystem. While literature considers imitators as typical adopters whose adoption timing is determined by social system pressure, this pressure tend to increase for later adopters as the count of earlier adopters rises.

Within the TOE model's environmental context, Awa and Ojiabo [11] sort to comprehend how national ecosystems might determine the patterns of adoption. A national ecosystem integrates various ecological factors (such as consumer, business, cultural, legal, and economic markets) that may impact the diffusion of IT. In recent literature, different ecologically imposed constraint that corporate executives in employing IT in less developed nations have been identified, including poor basic infrastructure, scarcity of financial, technical, and managerial resources at the firm level, and other

institutional factors such as politics and culture. However, current literature lacks sustainable empirical evidence that refer to extensive surveys.
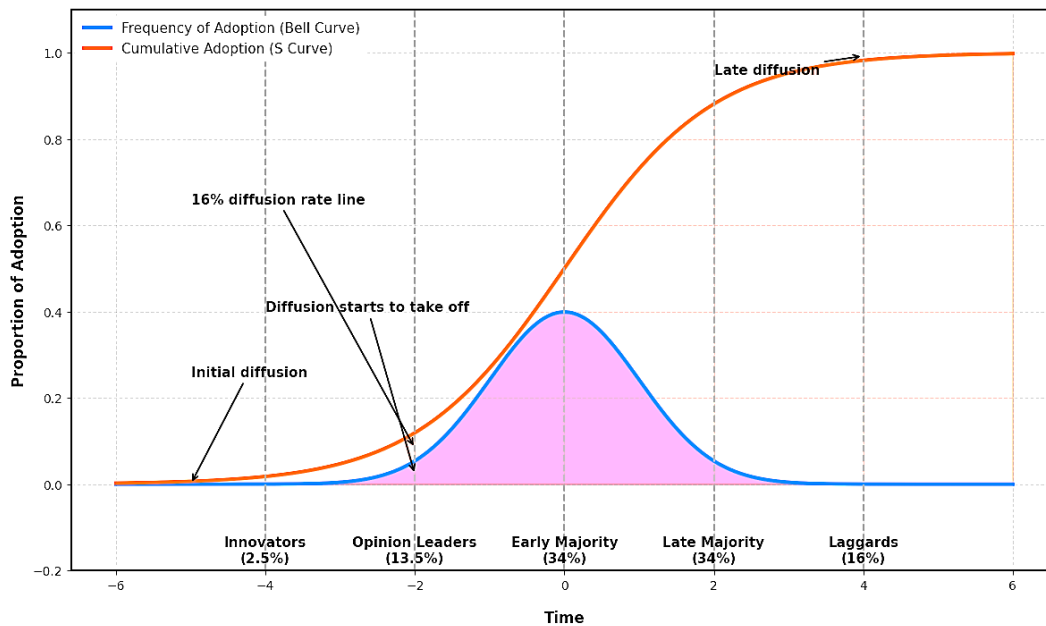

Fig 1. Technology Diffusion Curve and Adopter Category

Measurement Methods in Cross-Regional SNS Research

Junoh et al. [12] propose the application of SLR (systematic literature review) where peer-reviewed journals are viewed as a source of truth. In their study, the Scopus database was considered as a major source of relevant literature, citations and abstracts used in recent studies. During the process of conducting literature review, a critical issue is identifying keywords, which allow selecting the journal articles.

Snelson [13] proposed employing a descriptive methodological approach, which employs both mixed and qualitative methods for social media study. His research was concentrated on a systematic review of 229 mixed or qualitative approaches articles published between 2007 and 2013 where SNS played a key role. According to his study, literature review should first be contextualized by reviewing related scholarly operations in emerging social media study fields. This is succeeded by a review of publication patterns and approaches employed in SLR.

Table 1. Motivations of Quantitative Study

Aspects	Description	Impact	Refs
Urgency	Focuses on the need for timely and accurate study in the rapidly evolving DVUCA (disruptive, volatile, uncertain, complex, and ambiguous) and ADHOGS (automation, digitalization, hyperconnectivity, obligations, globalization, and sustainability) ecosystem	Enables timely strategy changes and hypothesis testing across fields.	Lim [17]
Relevance	Vital in data-rich period for valid and reliable conclusions	Enables scholars to examine intricate and big datasets.	Riley [18]
Importance	Allows extraction of trends (descriptive), prescriptions (prescriptive), prediction (predictive), and problem (diagnostic), which are the 4Ps of data evaluation.	Enriches strategy and discourse, which withstand public scrutiny and peer-review.	Walton [19]
Necessity	Deficiency of empirical rigor in study results to lowered real-life applicability and academic credibility.	Obstructs development in academic study, public policy, and industry applications.	Nenonen et al. [20]

Survey study is identified by Wenz et al. [14] as a collection of data from a sample of users through their feedbacks to questions. This form of study allows for a collection of approaches to select respondents, utilize different instrumentation approaches, and collect data. Survey study can employ quantitative study approaches (e.g., questionnaires with numerically-

based items), qualitative study approaches (e.g., open-ended questions), or both approaches (mixed methods). As it is often employed to define and evaluate human actions, surveys are typically employed in psychological and social research.

In [15], Laborda and Pérez used quantitative approaches to boost cross-regional comparability through standardized metrics and statistical testing. Quantitative research approaches serve as a foundation of evidence-oriented decision-making. Its relevance cannot be overstated as it provides empirical rigor, allowing academic, industry, and policy-makers to derive significant data insights. Nonetheless, despite its relevant, mastering quantitative research complexities typically remain an overwhelming task. In order to underscore the major role of quantitative study, its motivation can be comprehended through 4 major spectrums (urgency, relevance, importance, and necessity) as described by Westerman [16], and summarized by different scholars in **Table 1.**

III. DATA AND METHODS

Study Design and Data Structure

Our study employed a cross-sectional survey approach based on quantitative study to test the application trend of social media globally in 3 economic regions, including the EU, United States, and BRIC. The analytical model is designed in such a manner that it will be able to permit the regional comparison of personal-based and business-based social media application, but internal consistency between measurement classes is present. The application behaviors were self-reported using a similar questionnaire distributed across areas to minimize the bias of time in the participants.

The data has a regionally-stratified matrix format with every observation signifying a single respondent and every variable being one of the discrete platform interaction or usage function. $R \in \{1,2,3\}$ represents the financial region (USA, EU, or BRIC), while indices $i = 1, \dots, N_r$ are the participants within region r. Application indicators are determined as an ordinal or binary variable, based on the measurement scale, which allows aggregation of dispersion measures and regional means, in the case of every participant. The average application of activity j in r is obtained using Eq. (1).

$$\bar{X}_{rj} = \frac{1}{N_r} \sum_{i=1}^{N_r} X_{irj} \tag{1}$$

where $X_{irj} \in \{0,1\}$ represents whether participant i records employing SNS to perform activity j within region r. The standard error values are computer in Eq. (2) to compute sampling variability.

$$SE(\bar{X}_{rj}) = \sqrt{\frac{1}{N_r(N_r-1)} \sum_{i=1}^{N_r} (X_{irj} - \bar{X}_{rj})^2} \tag{2}$$

Eq. (2) allows establishing stable comparisons of types and areas of use, and it does not tamper with categorical data character it is based upon.

Statistical Testing and Measurement Specifications

The application of social media is being operationalized in two major stages, which include business use and personal user. Each region has a fixed cluster of activities based on earlier empirical study of digital media activities, some of which include content creation and content consumption that seem to be available in both regions and are clearly illustrated to eliminate category inconsistencies.

In order to effectively assess interregional inconsistencies in usage distribution, we performed the chi-square of independence. To test statistics of activity j, we computed Eq. (3).

$$\chi_j^2 = \sum_{r=1}^{3} \sum_{k=1}^{2} \frac{(O_{rjk} - E_{rjk})^2}{E_{rjk}} \tag{3}$$

where O_{rjk} signifies the recorded frequency of feedback cluster k of activity j within region r, and E_{rjk} signifies the projected response category k frequency under the null hypothesis of usage behavior and independent region. To effectively determine its statistical significance, standard thresholds and degrees of freedom ($p < 0.05, p < 0.01, p < 0.001$) are employed.

Average difference matrices are computed to permit pairwise comparison of regions, including cross-platform analysis. This difference of activity j between any two selected regions r and s is provided using Eq. (4).

$$\Delta_{rs,j} = \bar{X}_{rj} - \bar{X}_{sj} \tag{4}$$

The activities with statistically insignificant variations between the averages at a particular confidence degree are recorded with subscript notation so that similar superscripts show statistically insignificant differences between the average in cross-regional survey study based on standard comparative presentation conventions.

Platform level application is determined on an ordinal frequency spectrum as compared to activity level metrics and is aggregated in a similar manner. The variations across platforms in particular areas would be computed based on reference

platforms in order to guarantee internal comparability of economic contexts. **Table 2** provides a summary of the variable structures being evaluated as well as their treatment during the analysis process.

Table 2. Variable Domains, Statistical Treatment, and Measurement Scale

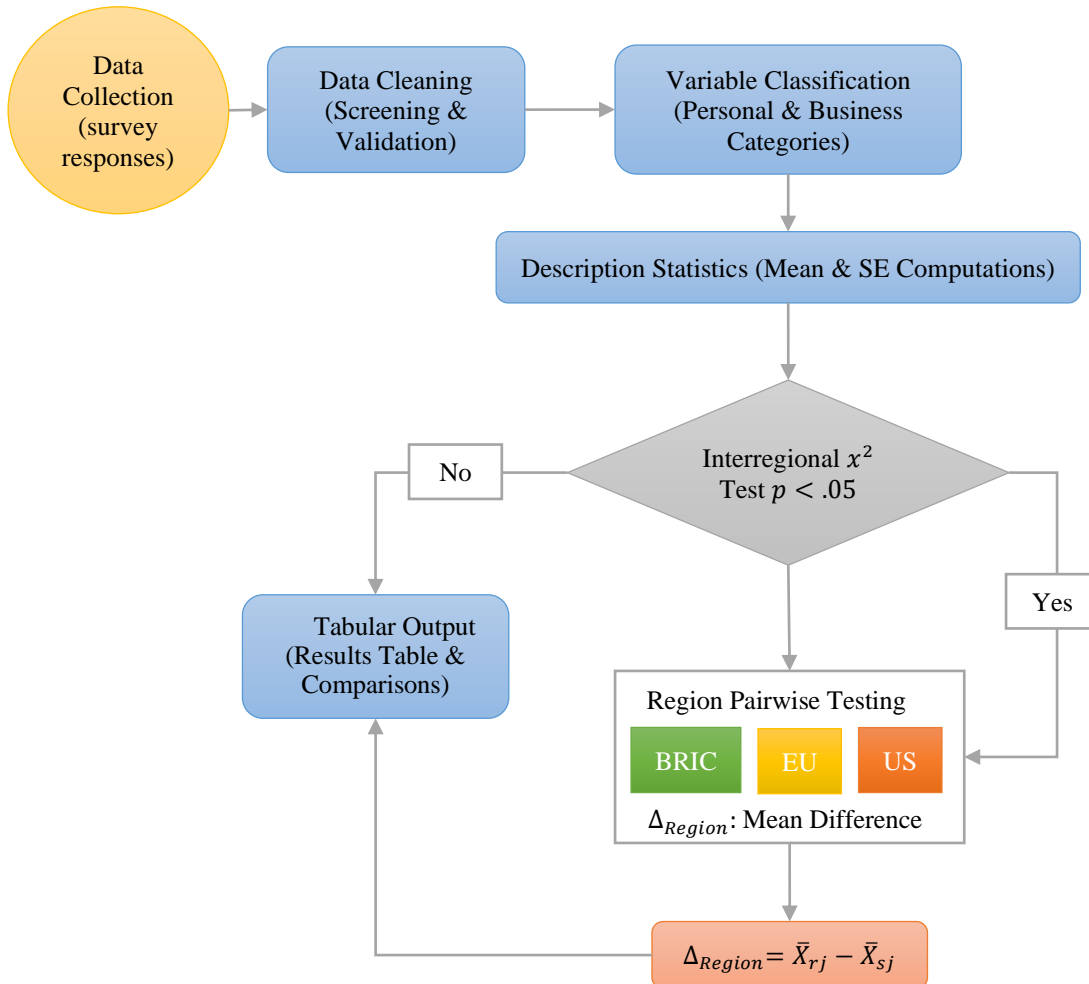| Domain	Variable Type	Measurement Scale	Aggregation Metric	Statistical Test
Personal Use	Activity indicators	Binary	Mean, SE	Chi-square
Business Use				
Platform Usage	Platform frequency	Ordinal		Mean difference
Regional Comparison	Cross-region contrasts	Derived	Δ Means	Pairwise tests

Fig 2. Cross-Regional Social Media Evaluation Based on Analytical Media

Validation Procedure and Analytical Workflow

Our validation process is done in stages, estimated by making sure that the process is repeatable, transparent and uniform. The processes of data pre-processing also comprise some screening process which examines the unfilled feedback and the processes allow normalization of labels of domain variables and regional validation. Calculation of descriptive statistics precedes inferential testing in the process of achieving distributional consistency of regions. This process begins with data ingestion followed by production of structured tabular output and statistical testing, as show in **Fig 2**. **Fig 2** codifies the analysis process and conforms to the standards of large-scale survey analytics.

$$\text{Data Collection} \rightarrow \text{Data Cleaning} \rightarrow \text{Variable Classification}$$
$$\rightarrow \text{Descriptive Statistics} \rightarrow \text{Inferential Testing} \rightarrow \text{Tabular Output} \qquad (5)$$

Validation procedures integrate review the internal consistency of overlapping variables and cross-checking of aggregate quantity between region subsamples, using Eq. (5). All computations are done using standardized statistical tool to ensure numerical consistency and reliability. We visualize our findings using graphs and tabulated formats to define the notation standards and significance levels for easier interpretation.

IV. RESULTS AND DISCUSSION

In **Figs 3-8**, we have computed the means, mean differences, and standard errors within the selected regions of SNS usage for personal and business application. To allow for variable differentiation, we employ the same superscripts to show no significant variations between variables. Thus, when two variables share a similar superscript, the connection between them is considered insignificant. The applications of social media for business are indicated in **Figs 3-5**.
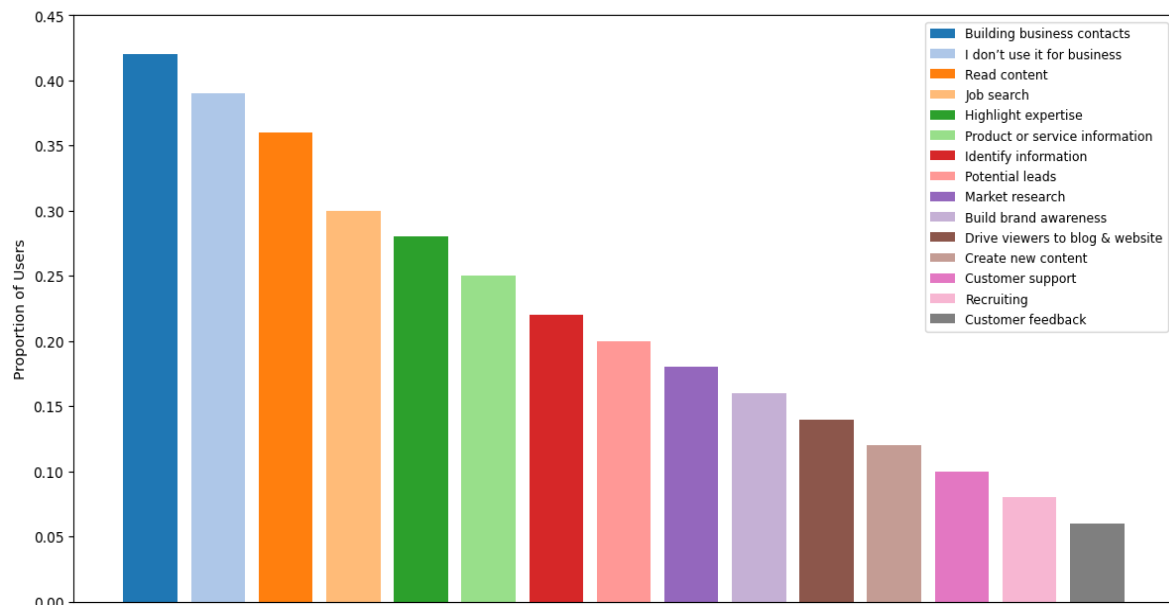

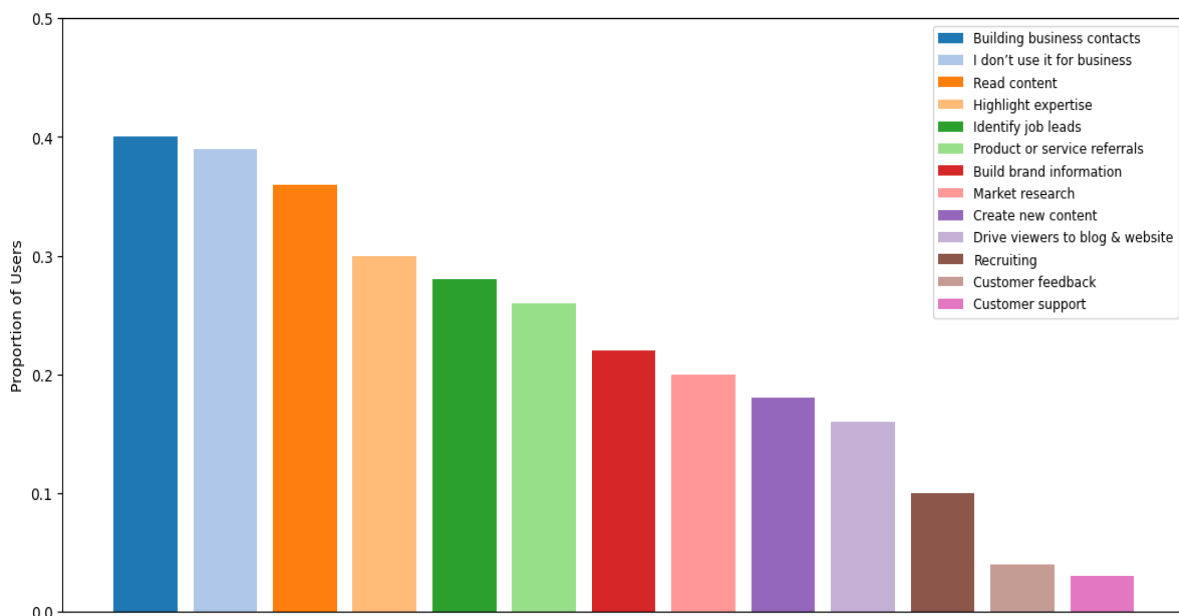**Fig 3.** SNS for Business Usage in the BRIC Countries

Fig 4. SNS for Business Usage in the EU

Findings from the three economic areas identified the major business application of SNS to be for establishing business contracts (means of .403, .429, and .595m in BRIC, EU, and USA, respectively). Unexpectedly, for both EU and BRIC countries, the second most famous user feedback was that they "never use it for business activities," showing that the key role of SNS has yet to be explored in these areas. Based on this, the participants tend to employ SNS for business activities as an advertisement and research tool, employing it to read content, highlight expertise, and participate in job search. In addition, users use SNS for business as a search strategy designed to assist identify leads and enhance market research.

For American users, insignificant differences in usage shows that they hold a wide array of strategic objectives of exploring social media. This shows that users in the USA are using these networks for different objectives and as a multi-layered strategic instrument instead of solely building contacts. Social media was widely employed for personal usage, especially to "connect with family and friends" (means of .857, .827, and .826, representing the BRIC, EU, and USA,

respectively). Based on this, consumers utilize social media to engage in connections and read content with like-minded individuals as well as building friendships.
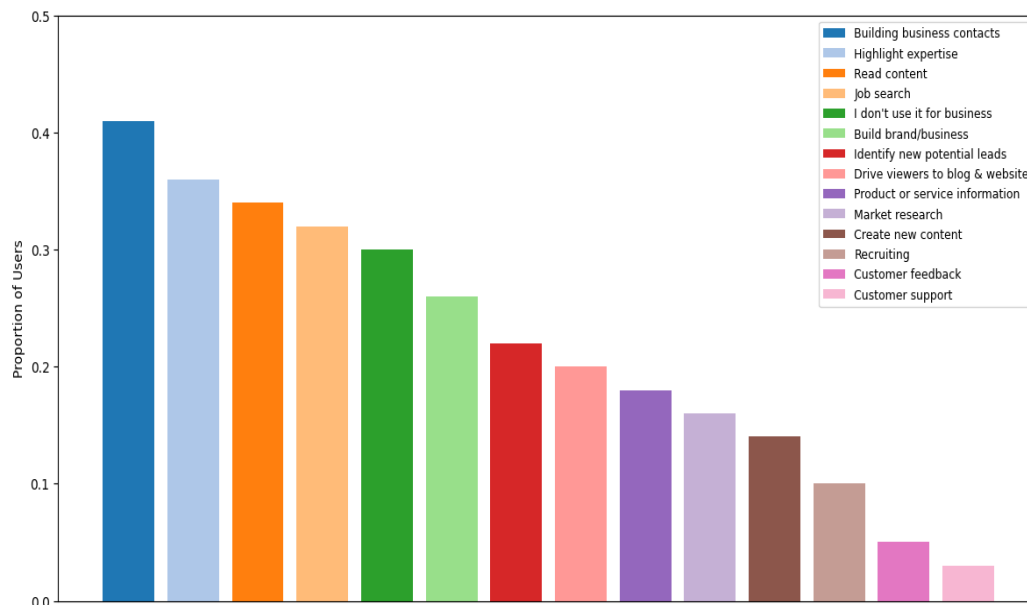

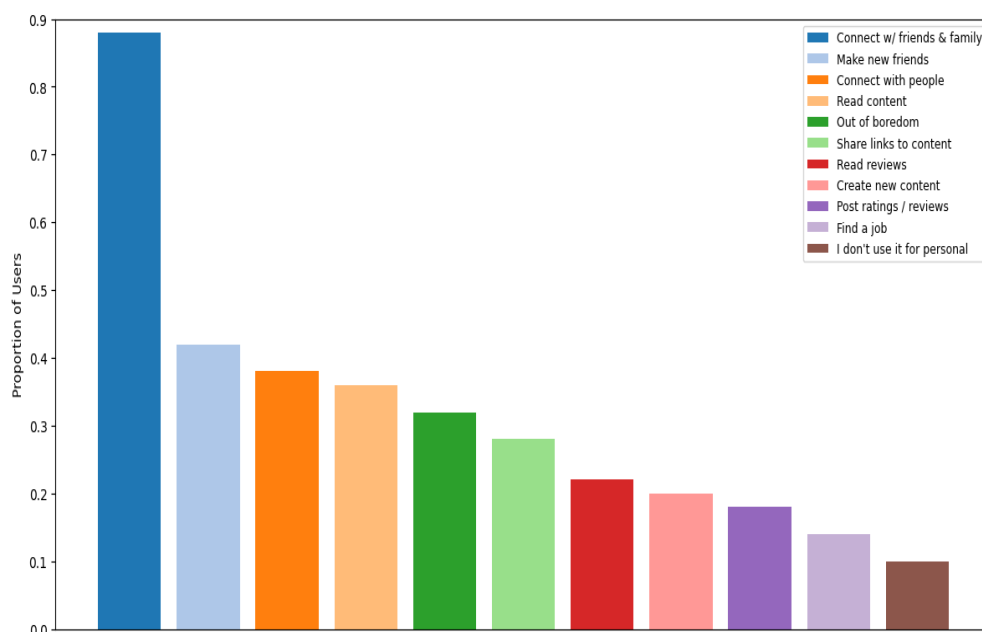**Fig 5.** SNS for Business Usage in the United States

Fig 6. SNS for Personal Usage in the BRIC Countries

This demonstrates the perceived usage of social media as a platform to connect and meet people through these electronic platforms. The decisions least selected integrate finding a job, reading reviews, and creating new content, highlighting that the employment of SNS is not acting as a new replacement for information search, with users preferring different approaches for job search, and product information lookup. **Table 3** displays the chi square differences, standard deviations, and means for these decisions between selected regions. In this study, we found out that both BRIC and EU regions are "I do not use it for business" as the second most typical SNS usage. The degree of variation between the EU and BRIC nations is significantly different from that of the USA. These findings are more significant in that they show that various regions have various objectives in the usage of SNS, both for personal and business usage. Worldwide, both EU and BRIC are similar in terms of SNS usage for business purposes compared to the USA.

There were distinct variations between regions in regards to SNS for personal usage. More congruency is evident between the United States and the EU on personal usage compared to the BRIC nations. These nations are more enthusiastic social media users that focus on making friends and connecting with family and friends than users from the EU and USA, who

instead differentiate their social media usage on an individual level. This implies that the EU and USA users focus on more personal objectives for exploring SNS.

Table 3. Differences Between SNS Decisions/Questions for Personal or Business Usage Based on Region

Usage Type	BRIC Mean	EU Mean	USA Mean	Chi-Square Difference (BRIC/EU)	Category
Connect with family/friends	0.857	0.827	0.826	3.11	Personal
Read content (Personal)	0.369**	0.417	0.481	4.81*	
Connect with others	0.376**	0.262**	0.361	29.48***	
Share content links	0.167**	0.147**	0.173	2.91	
Make new friends	0.412**	0.13**	0.13	197.29***	
Out of boredom	0.196**	0.173**	0.177	2.67	
New content creation (Personal)	0.11	0.107	0.111	0.62	
Find a job (Personal)	0.12	0.107	0.088	2.67	
I don't use it for personal	0.043**	0.04**	0.044	0.01	
Post reviews/ratings	0.072**	0.041	0.038	8.59**	
Building business contacts	0.403**	0.429**	0.595	1.29	Business
Highlight expertise	0.175**	0.264	0.264	1.54	
Read content (Business)	0.316**	0.234**	0.244	16.62***	
Job hunting (Business)	0.213	0.193	0.198	9.3**	
I don't use it for business	0.383**	0.407**	0.198	1.61	
Establish brand awareness	0.09**	0.147**	0.164	9.27**	
Identify leads	0.155	0.154	0.171	0.6	
Drive viewers to website/blog	0.085**	0.09**	0.143	1.54	
Service/product information	0.158**	0.129**	0.101	3.22	
Market research	0.136**	0.075**	0.093	21.17***	
New content creation (Business)	0.084	0.057	0.073	5.21**	
Recruiting	0.036	0.044	0.047	0.03	
Customer feedback	0.035	0.024	0.029	2.88	
Customer support	0.037	0.024	0.029	2.88	

Note. *p<.05, **p<.01, ***p<.001 represent statistical significance. "New content creation" and "Read content" appear in the two categories.
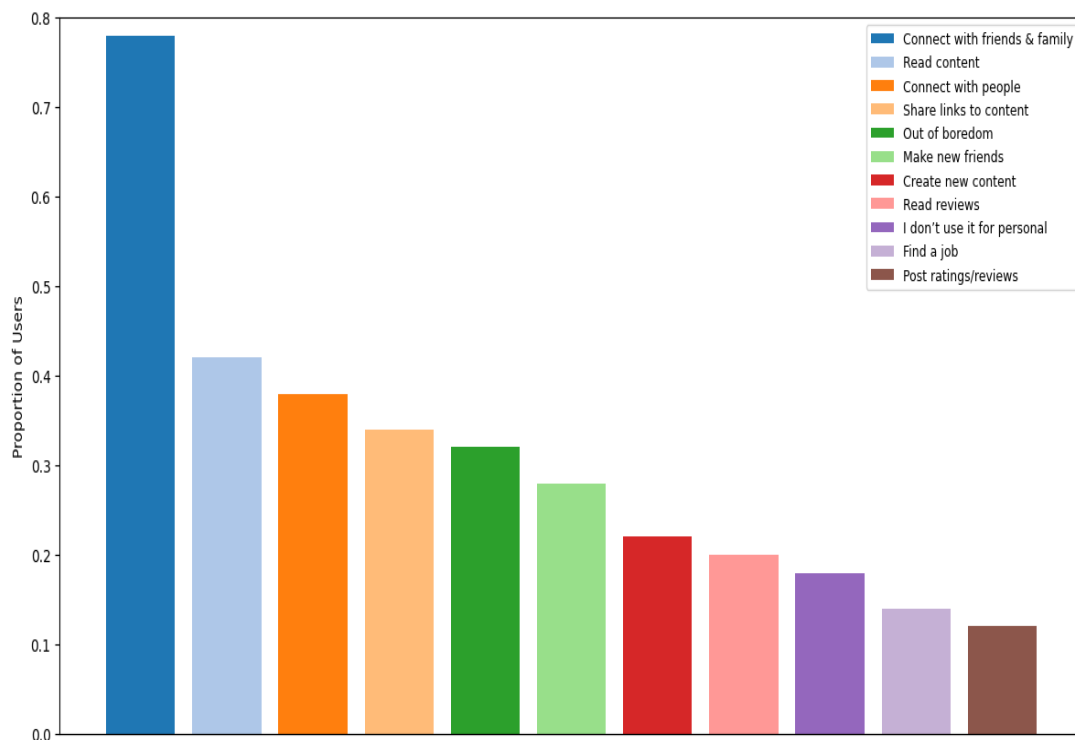

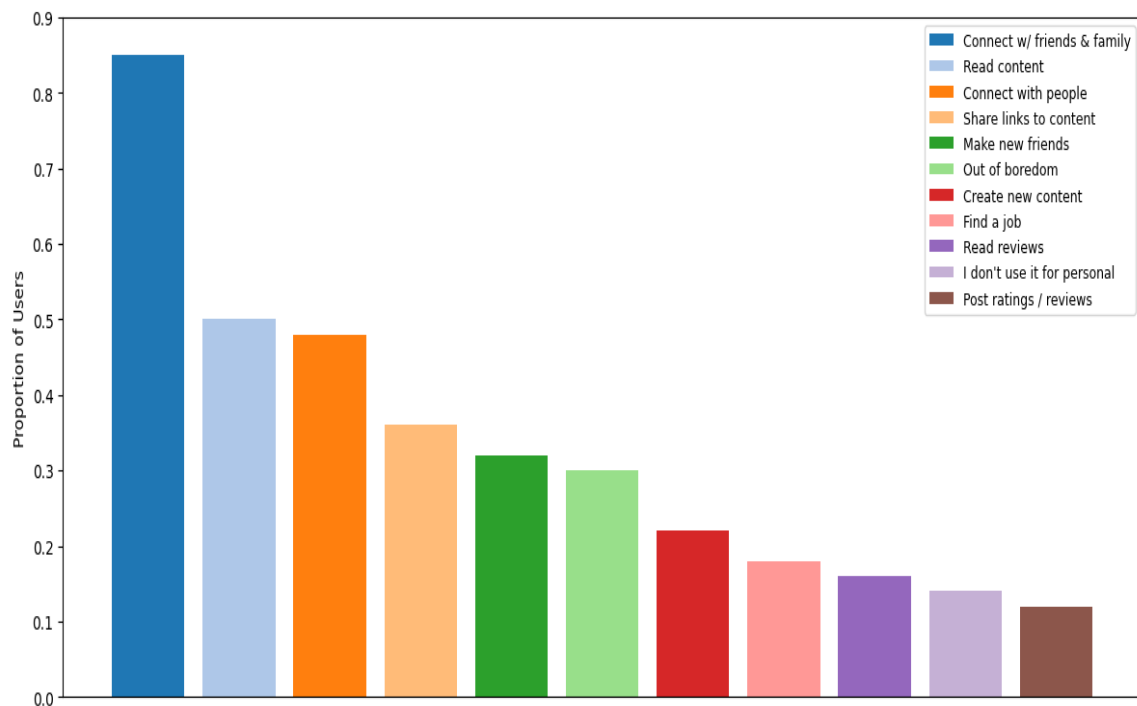**Fig 7**. SNS for Personal Usage in the EU

Fig 8. SNS for Personal Usage in the US

However, the BRIC countries are more likely to share content and are not clear about their major objectives of using SNS. For instance, they principally employ social media to link with family and friends. In addition, they not differentiate between reading content, linking with others, or making friends. This is different from the US and EU users, who after linking with family and friends make a significant decision regarding their usage of SNS for content reading, followed by linking with others, which shows that they are more complex SNS users. On the other hand, US and EU users are more focused in their supporting objectives for employing social media.

Lastly, whereas there are major variations between regions for both personal and business usage, the general rankings of objectives behind SNS usage are relatively the same. When we investigate these rankings, users tend to classify their objectives for using SNS in the same way, i.e., linking with family and friends, including making new friends ranking higher in terms of social media usage.

Table 4. Variations in Application of SNSs for Business Use Based on Regions

Platform	Region	Mean Usage	Std. Error	Diff vs Facebook	Diff vs MySpace	Diff vs LinkedIn	Diff vs Twitter	Diff vs BRIC	Diff vs EU	Diff vs US
Facebook	BRIC	2.658	0.044	0.000	0.776	0.206	0.710	0.000	0.309	0.045
	EU	2.968	0.031	0.000	0.836	0.164	0.585	0.309	0.000	0.354
	United States	2.613	0.037	0.000	1.219	0.619	0.321	0.045	0.354	0.000
MySpace	BRIC	3.434	0.061	0.776	0.000	0.570	0.066	0.000	0.369	0.399
	EU	3.803	0.051	0.836	0.000	0.672	0.251	0.369	0.000	0.030
	United States	3.833	0.054	1.219	0.000	0.600	0.898	0.399	0.030	0.000
LinkedIn	BRIC	2.864	0.046	0.206	0.570	0.000	0.504	0.000	0.061	0.368
	EU	2.803	0.031	0.164	0.672	0.000	0.421	0.061	0.000	0.429
	United States	3.232	0.039	0.619	0.600	0.000	0.298	0.368	0.429	0.000
Twitter	BRIC	3.368	0.053	0.710	0.066	0.504	0.000	0.000	0.185	0.433
	EU	3.553	0.042	0.585	0.251	0.421	0.000	0.185	0.000	0.618
	United States	2.935	0.032	0.321	0.898	0.298	0.000	0.433	0.618	0.000

Note. ** $p < 0.01$, * $p < 0.05$.

In reference to primary social networking tools for both personal and business usage, MySpace was identified as the most famous across the regions, with Twitter ranking second. However, Twitter ranked the same with MySpace in BRIC

nations. Nonetheless, for individual use, the variation between the four most popular SNS is minor. MySpace and Facebook tend to top the list in terms of personal social media usage across our three selected regions. In addition, we recorded variations throughout, with the EU topping the list in terms of social media usage for business activities across all SNSs, with exception of Facebook and LinkedIn, which are used for personal and business usage, respectively. The variations in SNS usage for business purpose has been highlighted in **Table 4.**

We also noted that respondents selected YouTube as their next platform, when asked other alternative networking sites in place of Twitter, LinkedIn, MySpace, and Facebook. A major similarity was recorded in the EU and USA with Digg, MSN, Delicious, and Flickr appearing in the top ten list. A huge difference is recorded from different choices made by BRIC nations, highlighting the role of country- and regional-level preferences.

V. CONCLUSION

We present quantitative research on the patterns of social media usage in the BRIC, EU, and US economies with reference to their major differences and similarities in the personal and business-related habits. The domination of social interaction makes up the major personal use globally, but the regions show considerable differences. The users of BRIC countries are more involved in the active use of the social networking sites in a more extensive and multi-faceted manner, compared to their counterparts in the EU and the US. Greater differences are observed in business related use particularly regarding the level of strategic adoption. The US users also rolled out social media to a broader extent of business activities, whereas the BRIC and EU economy users are less strategic, and simple networking is commonly used. The regional difference is also noted in usage patterns of platforms such as MySpace and Twitter being more prevalent in BRIC and EU countries.

CRediT Author Statement

The authors reviewed the results and approved the final version of the manuscript.

Data Availability

No data was used to support this study.

Conflicts of Interests

The author(s) declare(s) that they have no conflicts of interest.

Competing Interests

There are no competing interests

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