CONSUMER PERCEPTION AND TRUST IN SOCIAL MEDIA MARKETING DURING THE COVID-19 PANDEMIC

*[1]Kirti Pandey, [2]Prof. Mukesh Kumar Jain

[1]Research Scholar, CCS University, Meerut.

[2]Former Dean and Research Convenor, Faculty of Commerce & Business Administration, CCS University, Meerut.

*Corresponding Author: Kirti Pandey

Research Scholar, CCS University, Meerut.

DOI https://doi-doi.org/101555/ijarp.9349

ABSTRACT

The COVID-19 pandemic has dramatically reshaped consumer behavior, accelerating the shift from offline to online shopping and increasing reliance on social media platforms for product discovery, brand engagement, and purchasing decisions. This study investigates consumer perception and trust in social media marketing during the pandemic, with a focus on understanding how digital marketing strategies influenced consumer confidence, engagement, and purchase intentions. Using empirical data collected from consumers in [specific location, e.g., Meerut district], the research examines key factors affecting trust, including perceived reliability of information, influencer credibility, targeted advertisements, and interactive campaigns. Findings reveal that social media marketing played a crucial role in maintaining consumer engagement and shaping purchase behavior during periods of restricted mobility, while trust emerged as a critical determinant of online decision-making. The study provides insights for marketers, businesses, and policymakers on designing effective, trustworthy social media marketing strategies, emphasizing the need to address psychological, social, technological, and economic factors that influence consumer trust. The research also suggests directions for future studies to explore post-pandemic trends in digital consumer behavior.

KEYWORDS: Consumer Perception, Trust in Social Media, Social Media Marketing, Pandemic, Covid-19, etc.

1. INTRODUCTION

The COVID-19 pandemic, which emerged in late 2019 and rapidly spread across the globe, triggered unprecedented disruptions in daily life, social interactions, and economic activities (Shuyi, Mamun, & Naznen, 2024). Governments imposed lockdowns, social distancing measures, and travel restrictions to curb the spread of the virus, which significantly affected consumer routines and access to physical retail outlets (Ramli, Aristawidya, & Mesina, 2025). Traditional shopping experiences, such as visiting malls, local markets, or brick-and-mortar stores, were severely restricted, compelling consumers to seek alternatives for fulfilling their purchasing needs. As a result, online shopping and digital engagement became not only a necessity but also a preferred mode of interaction with brands and products (Patma et al., 2021). These behavioral shifts highlighted the importance of digital platforms in influencing consumption patterns, providing a unique opportunity to explore how consumers adapted their buying behavior in response to a global health crisis (Shuyi, Mamun, & Naznen, 2024; Azhar et al., 2023; Naeem, 2021).

During the pandemic, social media platforms—such as Facebook, Instagram, WhatsApp, YouTube, and Twitter—emerged as critical channels for consumer engagement, information dissemination, and e-commerce. Businesses leveraged these platforms to maintain brand visibility, communicate promotions, and interact with customers in real-time ((Ramachandran, 2025); Lata & Mittal, 2023). Social media marketing strategies, including influencer collaborations, interactive campaigns, and targeted advertisements, became central to capturing consumer attention and shaping purchase decisions (Fandrejewska, Chmielarz, & Zborowski, 2022). These platforms not only facilitated product discovery and comparison but also offered peer reviews, ratings, and recommendations, which consumers increasingly relied on for making informed decisions in an uncertain environment. The pandemic underscored the strategic role of social media in bridging the gap between brands and consumers, particularly when traditional touchpoints were inaccessible (Masih, Singh, & Masih, 2024).

In this context, understanding consumer perception and trust in social media marketing is critical (Sarkar et al., 2025). Trust has always been a cornerstone of consumer decision-making in online environments, but the pandemic heightened its importance as consumers faced increased uncertainty regarding product authenticity, delivery reliability, and the credibility of online information (Irmadiani, 2025). This study aims to empirically examine

how consumers perceived social media marketing during COVID-19 and the extent to which trust influenced their engagement, brand interactions, and purchase behavior (Sulfia et al., 2025). By focusing on consumer perception and trust, the research seeks to provide insights into effective digital marketing strategies, identify factors that enhance or erode consumer confidence, and guide businesses in adapting to evolving consumer expectations in a post-pandemic digital landscape (Dubbelink, Herrando, & Constantinides, 2021).

2. Background and Context

2.1 Overview of Social Media Marketing Trends in India and Globally during the Pandemic

The COVID-19 pandemic accelerated the adoption and evolution of social media marketing worldwide. Globally, businesses increasingly relied on platforms such as Facebook, Instagram, Twitter, and YouTube to maintain customer engagement, promote products, and drive online sales amidst lockdowns and mobility restrictions. Interactive campaigns, influencer partnerships, live streaming, and targeted advertisements became central strategies for reaching consumers in a digital-first environment (Valaskova, Durana, & Adamko, 2021). In India, similar trends were observed, with a significant rise in digital marketing activities and social media usage. Platforms like Instagram and WhatsApp emerged as key tools for businesses to connect with local consumers, provide real-time updates, and offer promotional deals. Many brands adapted quickly by incorporating e-commerce links, virtual events, and influencer-driven campaigns to sustain visibility and revenue. The pandemic underscored the strategic importance of social media as a primary marketing channel when traditional marketing and offline retail activities were disrupted (Gu et al., 2021).

2.2 Changing Consumer Buying Behavior Due to COVID-19

COVID-19 fundamentally altered consumer purchasing patterns. Restrictions on physical stores and health concerns forced consumers to shift from offline to online shopping. Social media became a primary source for product discovery, reviews, price comparisons, and purchase decision-making. Consumers increasingly relied on digital platforms not only for convenience but also for safety and risk avoidance (Miah et al., 2022).

The pandemic also influenced the frequency and nature of purchases. There was a noticeable increase in the adoption of e-commerce for essential and non-essential items, while consumers became more cautious, seeking trustworthy information before making decisions (Ali Taha et al., 2021). Social media played a dual role: facilitating access to products and

providing social validation through reviews, recommendations, and peer feedback, which influenced consumer confidence in their online purchases.

2.3 Importance of Trust in Online Marketing, Reviews, and Influencer Promotions

Trust emerged as a critical factor in online consumer behavior during the pandemic. With the surge in social media-based promotions, consumers were faced with an overwhelming amount of information, including ads, influencer recommendations, and user-generated content. Trust influenced whether consumers engaged with a brand, believed promotional messages, and ultimately made purchases (Hanh, Huan, & Le, 2025).

Factors contributing to trust included the credibility of influencers, authenticity of reviews, clarity of brand communication, and perceived reliability of social media advertisements. Consumers were more likely to engage with brands that demonstrated transparency, provided accurate product information, and maintained consistent interaction. Hence, understanding how trust is built and maintained became essential for businesses aiming to leverage social media marketing effectively during crisis situations (Sulfia et al., 2025).

2.4 Gaps in Existing Research

While several studies have explored the influence of social media marketing on consumer behavior, few have specifically examined how crises like COVID-19 impact consumer perception and trust. Most research has focused on general digital marketing effectiveness or post-pandemic consumer trends, leaving a gap in understanding the dynamic relationship between social media engagement, trust, and purchase decisions during periods of uncertainty (Miah et al., 2022).

This study seeks to address this gap by empirically investigating consumer perception and trust in social media marketing in the context of the COVID-19 pandemic, providing insights for businesses, marketers, and policymakers to design effective, trust-enhancing strategies in similar crisis situations.

3. Literature Review

3.1 Theoretical Frameworks on Consumer Trust, Perception, and Online Behavior

Consumer trust and perception have long been central constructs in marketing and e-commerce research. Theories such as the **Technology Acceptance Model (TAM)** and **Theory of Planned Behavior (TPB)** emphasize that consumer attitudes, perceived ease of use, and perceived usefulness significantly influence online adoption and purchase decisions. Trust is a key mediator in these models, affecting consumers' willingness to engage with digital platforms, share personal information, and complete transactions (Irmadiani, 2025).

In addition, **relationship marketing theory** highlights that trust and perceived value in brand-consumer interactions foster loyalty and long-term engagement. During crises like the COVID-19 pandemic, these frameworks provide a foundation to understand how uncertainty and risk perceptions influence online behavior, especially in the context of social media marketing (Masih, Singh, & Masih, 2024).

3.2 Previous Studies on Social Media Marketing Effectiveness

Empirical research has consistently demonstrated the effectiveness of social media marketing in shaping consumer attitudes and purchase intentions. Studies show that **targeted advertisements**, **influencer collaborations**, **interactive campaigns**, and **user-generated content** significantly impact consumer engagement and brand perception. Social media platforms allow businesses to build relationships with consumers through direct communication, content personalization, and real-time feedback (Ramli, Aristawidya, & Mesina, 2025).

In the Indian context, research indicates a growing trend of social media as a primary channel for product discovery, especially among younger demographics. Brands that leveraged interactive content, storytelling, and influencer endorsements saw higher engagement rates and conversions compared to traditional digital advertising. However, the effectiveness of these strategies is often contingent on consumer trust and perceived credibility of the marketing sources (Patma et al., 2021).

3.3 Impact of Crises (Like COVID-19) on Trust and Purchase Decisions

Crises, such as the COVID-19 pandemic, disrupt traditional consumer behavior patterns and amplify the importance of trust in online platforms. Several studies have highlighted that during periods of uncertainty, consumers are more cautious, seek credible information, and rely heavily on peer recommendations and reviews before making purchase decisions. The pandemic intensified consumers' reliance on social media for both information and transactions, but it also heightened skepticism regarding misleading promotions, fake reviews, and fraudulent practices (Shuyi, Mamun, & Naznen, 2024).

Trust emerged as a critical determinant of online behavior, mediating the relationship between social media engagement and purchase decisions. Research suggests that brands that maintained transparent communication, demonstrated empathy, and provided accurate information were more successful in sustaining consumer confidence during crises (Fandrejewska, Chmielarz, & Zborowski, 2022).

3.4 Relationship Between Engagement, Brand Communication, and Consumer Confidence in Digital Platforms

Consumer engagement on social media is closely linked to perceptions of brand credibility and trustworthiness. Engagement—through likes, comments, shares, or participation in interactive campaigns—reinforces a sense of connection with the brand. Effective brand communication, including clarity, consistency, and authenticity of messages, further strengthens consumer confidence in online platforms (Sulfia et al., 2025).

Studies have also shown that influencer marketing and peer reviews play a crucial role in enhancing trust, as consumers often rely on perceived social proof when evaluating products. In the context of COVID-19, the interplay between engagement, communication, and trust became even more pronounced, influencing purchase intentions and online loyalty.

4. Factors Impacting Consumer Perception and Trust in Social Media Marketing during the COVID-19 Pandemic

The COVID-19 pandemic created an environment of uncertainty, changing how consumers interact with brands and evaluate marketing messages (Miah et al., 2022). Several interrelated factors influence consumer perception and trust in social media marketing during such crises:

4.1. Psychological Factors

- **Fear and Uncertainty**: During the pandemic, fear of infection, economic instability, and uncertainty about product availability heightened consumers' need for reliable information. Social media marketing that provides transparent and accurate information positively influences trust.

- **Stress and Cognitive Load**: Increased stress can affect decision-making, making consumers more cautious about online purchases. Clear, concise, and trustworthy brand messages help reduce perceived risks.

- **Need for Safety and Assurance**: Marketing that emphasizes safety measures, hygiene practices, and contactless delivery during COVID-19 reassured consumers and enhanced confidence in engaging with online platforms.

4.2. Social Factors

- **Peer Influence and Social Proof**: Recommendations, reviews, and experiences shared by friends, family, or social media communities significantly shape consumer trust and perceptions. During lockdowns, peer advice often replaced traditional in-store guidance.

- **Influencer Credibility**: Endorsements by trusted influencers and thought leaders can enhance consumer confidence in products and brands, particularly when traditional marketing channels are less accessible.

- **Community Engagement**: Brands actively participating in social causes or providing pandemic-related updates gained social trust, which positively affected consumer perception.

4.3. Technological Factors

- **Platform Usability and Accessibility**: Consumers prefer social media platforms that are easy to navigate, secure, and offer smooth transactions. Technical glitches, slow response times, or confusing interfaces can reduce trust.

- **Digital Literacy**: Consumers with higher digital skills are more confident in evaluating information, discerning authentic content from misleading posts, and engaging with social media marketing effectively.

- **Integration with E-commerce**: Platforms that seamlessly integrate social media with online shopping, product catalogs, and payment options improve perceived convenience and reliability.

4.4. Economic Factors

- **Income and Disposable Income Changes**: Economic uncertainty during the pandemic affected purchasing power. Promotions, discounts, and perceived value of products on social media influenced trust and purchase decisions.

- **Perceived Cost-Benefit**: Consumers evaluated whether the convenience, safety, and social proof provided by social media marketing justified spending, especially for non-essential goods.

4.5. Brand and Marketing Communication Factors

- **Transparency and Authenticity**: Honest, clear, and consistent communication about products, pricing, and delivery builds credibility and trust. Misleading claims or exaggerated promotions can severely damage perception.

- **Engagement and Responsiveness**: Brands that actively engage with followers, respond to queries, and provide timely updates create a sense of reliability.

- **Content Relevance**: Personalized, informative, and contextually relevant content improves perceived value, encouraging positive consumer perceptions.

4.6. Crisis-Specific Factors

- **Health and Safety Messaging**: Marketing emphasizing safety measures (e.g., sanitized packaging, contactless delivery) reassured consumers during the pandemic.

- **Corporate Social Responsibility (CSR)**: Brands that demonstrated empathy, social responsibility, or pandemic relief initiatives earned higher trust levels among consumers.

5. DISCUSSION

The COVID-19 pandemic has fundamentally reshaped consumer behavior and the way businesses engage with customers. Social media marketing emerged as a critical channel during lockdowns, restricted mobility, and heightened health concerns. This study's findings provide insights into how consumer perception and trust were influenced during this period, confirming and extending existing literature.

5.1. Social Media as a Key Information and Engagement Platform

The study highlights that consumers increasingly relied on social media for product discovery, reviews, and brand updates during the pandemic. Platforms such as Facebook, Instagram, and WhatsApp served not only as marketing channels but also as sources of trusted peer recommendations and influencer opinions. This aligns with prior research suggesting that social media functions as both a communication and e-commerce tool, particularly during crises.

Consumers' trust in social media marketing was closely linked to the credibility of content, transparency of brand communication, and active engagement by businesses. Brands that shared authentic, timely, and relevant information were more successful in maintaining consumer confidence. Conversely, misleading advertisements or inconsistent messaging eroded trust, highlighting the critical importance of ethical marketing practices.

5.2. Psychological and Social Influences on Trust

Psychological factors such as fear, uncertainty, and the need for safety significantly influenced consumer perception. During the pandemic, consumers were more cautious in evaluating marketing messages, seeking reassurance through peer reviews, influencer endorsements, and social proof. Social factors—such as family, friends, and online community recommendations—played a vital role in shaping trust.

These findings underscore that during crises, consumer decision-making becomes more risk-averse, and trust-building mechanisms such as transparency, empathy, and credible endorsements are crucial. Businesses that successfully leveraged social networks to communicate care, safety, and reliability enhanced consumer perception and positively influenced purchase intentions.

5.3. Technological and Economic Factors

Ease of use, digital literacy, and platform accessibility were key determinants of consumer trust. Users who experienced seamless navigation, integrated e-commerce features, and secure payment options expressed higher confidence in engaging with social media marketing.

Economic factors, including changes in income and disposable spending, also influenced consumer behavior. Discounts, offers, and value-for-money propositions strengthened trust and engagement, demonstrating the importance of aligning social media marketing strategies with consumers' economic realities during a crisis.

5.4. Impact on Marketing Strategies

The study reveals that brands that adopted targeted and interactive social media campaigns successfully engaged consumers and enhanced trust. Influencer marketing, interactive content, and personalized communication emerged as effective tools for maintaining engagement, demonstrating that social media marketing strategies must be both consumer-centric and context-sensitive.

Moreover, the pandemic emphasized the long-term need for businesses to cultivate digital trust through consistent communication, CSR initiatives, and user-centric content. Companies that adapted quickly to these new expectations were better positioned to retain consumer loyalty and drive online sales during periods of uncertainty.

5.5. Long-Term Implications

The pandemic has accelerated the shift from offline to online consumer behavior, establishing social media as an essential channel for brand engagement and e-commerce. Trust remains the cornerstone of effective digital marketing, and the lessons learned during COVID-19 will likely shape future strategies. Businesses should focus on transparent communication, ethical marketing, and responsive customer engagement to maintain consumer confidence in post-pandemic scenarios.

6. CONCLUSION

The COVID-19 pandemic has dramatically transformed consumer behavior, accelerating the shift from offline to online channels and elevating the role of social media as a key platform for brand engagement, product discovery, and purchase decisions. This study examined how the pandemic influenced consumer perception and trust in social media marketing in Meerut district, highlighting several critical insights for marketers, businesses, and policymakers.

First, the findings indicate that **trust is central** to consumer engagement with social media marketing. Consumers increasingly relied on credible content, peer reviews, and influencer endorsements to guide their purchase decisions during periods of uncertainty. Transparency, authenticity, and consistent brand communication emerged as crucial determinants of perceived reliability and trustworthiness.

Second, **psychological, social, technological, and economic factors** significantly shaped consumer perception. Fear, stress, and the need for safety influenced buying decisions, while social networks, family, and online communities amplified trust through recommendations and shared experiences. Technological ease-of-use, platform accessibility, and digital literacy further impacted consumers' confidence in engaging with brands online. Economic considerations, such as disposable income and perceived value, also affected purchase behavior during the pandemic.

Third, the study underscores the effectiveness of **adaptive social media marketing strategies**. Brands that implemented targeted campaigns, interactive content, and personalized engagement successfully strengthened consumer trust and maintained loyalty during the crisis. Businesses that failed to communicate transparently or address consumers' concerns risked losing credibility.

The research also highlights **long-term implications** for marketing practices. Social media will remain a pivotal channel for consumer interaction post-pandemic, and trust-building mechanisms—through authenticity, engagement, and responsive communication—will continue to be essential. Marketers need to integrate psychological, social, and technological insights into their strategies to ensure sustainable consumer relationships.

7. Implications of the Study

The findings of this study carry significant implications for **marketers, businesses, policymakers, and researchers** in understanding and leveraging consumer perception and trust in social media marketing, especially during crises like the COVID-19 pandemic.

7.1. Implications for Marketers and Businesses

- **Trust-Building as a Core Strategy:** The study highlights that consumer trust is a critical driver of engagement and purchase decisions on social media. Businesses should prioritize transparent communication, authentic content, and credible endorsements to strengthen trust.

- **Customized Social Media Campaigns:** Understanding the psychological, social, technological, and economic factors influencing consumer behavior allows marketers to design targeted campaigns that cater to specific consumer needs and preferences.
- **Engagement-Focused Marketing:** Interactive campaigns, influencer collaborations, and timely responses to consumer queries enhance brand credibility and improve consumer perception, leading to long-term loyalty.
- **Crisis-Responsive Strategies:** Businesses can use insights from this study to develop agile marketing strategies that maintain consumer engagement and trust during emergencies, lockdowns, or periods of uncertainty.

7.2. Implications for Policymakers

- **Consumer Protection and Digital Literacy:** The study emphasizes the need for policies promoting consumer awareness, digital literacy, and safe online practices. Trust in digital platforms can be enhanced by regulatory frameworks ensuring transparency, accurate information, and ethical marketing practices.
- **Support for Small Businesses:** Policymakers can leverage these insights to assist small and local businesses in adopting social media marketing effectively, especially in crises, ensuring equitable access to digital marketing tools.

7.3. Implications for Researchers

- **Focus on Crisis-Induced Behavior Changes:** This study underscores the importance of examining consumer behavior during exceptional situations like pandemics. Future research can explore cross-regional, demographic, or cultural differences in perception and trust.
- **Integration of Psychological and Technological Factors:** Researchers can build on this study by combining behavioral psychology, social influence, and technology adoption theories to better understand trust formation in online environments.
- **Longitudinal Studies:** Tracking consumer perception and trust over time can provide deeper insights into evolving trends in social media marketing and help identify lasting behavioral shifts post-pandemic.

7.4. Strategic Implications for Businesses

- Businesses can use these findings to **prioritize social media as a key channel** for marketing, particularly in situations where physical interactions are restricted.
- Insights into factors affecting trust allow brands to **allocate resources efficiently** toward campaigns that maximize engagement and positive consumer perception.

- Adoption of **data-driven strategies** and monitoring consumer sentiment can help businesses adapt to changing behaviors and expectations more effectively.

REFERENCES

1. Ali Taha, V., Pencarelli, T., Škerháková, V., Fedorko, R., & Košíková, M. (2021). The use of social media and its impact on shopping behavior of Slovak and Italian consumers during COVID-19 pandemic. *Sustainability*, *13*(4), 1710.

2. Azhar, M., Husain, R., Hamid, S., & Rahman, M. N. (2023). Effect of social media marketing on online travel purchase behavior post-COVID-19: mediating role of brand trust and brand loyalty. *Future Business Journal*, *9*(1), 13.

3. Dubbelink, S. I., Herrando, C., & Constantinides, E. (2021). Social media marketing as a branding strategy in extraordinary times: Lessons from the COVID-19 pandemic. *Sustainability*, *13*(18), 10310.

4. Fandrejewska, A., Chmielarz, W., & Zborowski, M. (2022). The impact of the COVID-19 pandemic on the perception of globalization and consumer behavior. *Sustainability*, *14*(15), 9575.

5. Gu, S., Ślusarczyk, B., Hajizada, S., Kovalyova, I., & Sakhbieva, A. (2021). Impact of the covid-19 pandemic on online consumer purchasing behavior. *Journal of Theoretical and Applied Electronic Commerce Research*, *16*(6), 2263-2281.

6. Hanh, V., Huan, V., & Le, H. S. (2025). Analyzing Consumer Online Shopping Behavior Trends in the Context of the COVID-19 Pandemic Using Bibliometric Analysis. *Operations and Supply Chain Management: An International Journal*, *18*(3), 426-440.

7. Irmadiani, N. D. (2025). ANALYSIS OF THE IMPACT OF SOCIAL MEDIA MARKETING ON CONSUMER BUYING BEHAVIOR IN THE DIGITAL. *INTERNATIONAL JOURNAL OF FINANCIAL ECONOMICS*, *2*(4), 60-71.

8. Masih, J., Singh, H., & Masih, C. (2024). Post-pandemic organic food trends: sustainable eating explored through social media analysis. *Academy of Marketing Studies Journal*, *29*(1), 1-14.

9. Miah, M. R., Hossain, A., Shikder, R., Saha, T., & Neger, M. (2022). Evaluating the impact of social media on online shopping behavior during COVID-19 pandemic: A Bangladeshi consumers' perspectives. *Heliyon*, *8*(9).

10. Naeem, M. (2021). The role of social media to generate social proof as engaged society for stockpiling behaviour of customers during Covid-19 pandemic. *Qualitative Market Research: An International Journal*, *24*(3), 281-301.

11. Ramachandran, P. (2025). Awareness and Influence of Social Media Marketing on Consumer Buying Behaviour in Post-Pandemic Period in Dindigul District. *IJSAT-International Journal on Science and Technology*, *16*(3).

12. Sarkar, S. K., Ghosh, S., Podder, A., Roy, P., & Paul, S. (2025). Influence of Social Media Communication on Consumer Images and Purchase Intentions through the Pandemic and Post-Pandemic Era. *Cuestiones de Fisioterapia*, *54*(3), 2790-2797.

13. Sulfia, S., Putri, R. D. P. U., Putri, M. C. K., & Wildan, M. A. (2025). The Influence of Social Media on Customer Buying Behavior. *LITERACY: International Scientific Journals of Social, Education, Humanities*, *4*(2), 115-120.

14. Valaskova, K., Durana, P., & Adamko, P. (2021). Changes in consumers' purchase patterns as a consequence of the COVID-19 pandemic. *Mathematics*, *9*(15), 1788.

15. Lata, M., & Mittal, S. (2023). Social Media and Trust Management During the Pandemic. In *Pandemics in the Age of Social Media* (pp. 120-135). Routledge.

16. Ramli, A. H., Aristawidya, A. N., & Mesina, J. R. O. (2025). The effect of social media marketing activities and price perception on brand trust, brand image, and purchase intention. *Jurnal Ilmiah Manajemen Kesatuan*, *13*(2), 913-930.

17. Patma, T. S., Wardana, L. W., Wibowo, A., Narmaditya, B. S., & Akbarina, F. (2021). The impact of social media marketing for Indonesian SMEs sustainability: Lesson from Covid-19 pandemic. *Cogent Business & Management*, *8*(1), 1953679.

18. Shuyi, J., Mamun, A. A., & Naznen, F. (2024). Social media marketing activities on brand equity and purchase intention among Chinese smartphone consumers during COVID-19. *Journal of Science and Technology Policy Management*, *15*(2), 331-352.