

Secure Streaming Services and Consumer Behaviour: Cryptographic Innovations and Impulsive Buying in the Digital Film Industry

Sojia Sebastian^{1,*}, Siju John²

Abstract

This study examines the interaction between cryptographic advancements, secure streaming services, and impulsive buying behaviour within the digital film industry. It explores how improvements in data encryption and decryption enhance the security of streaming platforms, impacting consumer purchasing choices. As streaming services grow in popularity, secure environments play a crucial role in fostering trust, which may encourage impulsive buying by providing consumers with a sense of safety and ease of access. The study also investigates the broader implications of these cryptographic technologies on the adaptation and distribution of films, highlighting how secure channels support content creators in reaching a wider audience without risking intellectual property. Utilizing a mixed-methods approach, this research combines quantitative data analysis with qualitative case study insights to provide a well-rounded perspective on consumer behaviour. Findings reveal a significant correlation between secure streaming environments and an increase in impulsive buying behaviour, largely driven by heightened consumer trust and the convenience offered by secure platforms. These results offer valuable insights for streaming service providers seeking to balance security with user experience to influence buying trends effectively.

Keywords: Cryptographic advancements, secure streaming services, impulsive buying behaviour, digital film industry, data encryption, consumer trust, film adaptation, digital distribution

INTRODUCTION

The digital revolution has significantly transformed the film industry, particularly through the growth of streaming services. Platforms such as Netflix, Amazon Prime, and Disney+ have made films more accessible globally, reshaping content consumption and monetization. However, this shift to digital also brings challenges, particularly concerning content security and consumer behaviour. The simplicity of digital distribution has made content susceptible to piracy and unauthorized sharing, requiring strong security measures [1, 2].

*Author for Correspondence

Sojia Sebastian

E-mail: sojia.phdscholar@lincoln.edu.my

¹Research Scholar, Department of Commerce, Lincoln University College, Jalan Lembah Sireh, Kota Bharu, Kelantan, Malaysia

²Assistant Professor, Department of Computer Science and Engineering, Amal Jyothi College of Engineering, Kanjirappally, Kerala, India

Received Date: August 31, 2024

Accepted Date: January 13, 2025

Published Date: February 04, 2025

Citation: Sojia Sebastian, Siju John. Secure Streaming Services and Consumer Behaviour: Cryptographic Innovations and Impulsive Buying in the Digital Film Industry. Journal of Network Security. 2025; 13(1): 28–36p.

At the same time, the ease of digital platforms has affected consumer behaviour, particularly impulsive buying. Impulsive buying refers to spontaneous, unplanned purchases driven by a desire for immediate gratification rather than careful long-term planning. This behaviour is common in digital settings where access is easy, and transactions are smooth [3].

LITERATURE REVIEW

Cryptographic technologies play a significant role in securing digital content on streaming services. AES and RSA are cryptographic algorithms commonly used because they are very

efficient in handling voluminous data, for instance, Daemen and Rijmen carried out extensive studies on the AES to prove its strength and confirm its popularity in securing digital communications [4]. Conversely, RSA is a public-key cryptosystem that ensures secure data communication. Rivest *et al.* developed RSA in 1978 as a method for secure communication [5]. A later development is Quantum Cryptography, which applies the principles of quantum mechanics to yield theoretically unbreakable encryption. The work by Bennett and Brassard on Quantum Key Distribution in 2014 shows how to take quantum cryptography far beyond the limits that, until then, were considered possible in the field of securing communications [6].

The contribution of security towards consumer trust cannot be overstated. Al-Khalaf and Choe reported that online consumers exhibit more impulsive buying behaviour when there is a high level of trust in data and privacy protection [7]. Secure payment gateways with SSL/TLS encryption amplify consumer confidence as they protect financial transactions from interception and fraud [8].

Several factors directly influence impulsive buying behaviour in digital environments. Among the factors that directly influence consumers in impulse buying are access, targeted advertising, and social influence. Rook defined impulsive buying behaviour as a sudden and immediate purchase decision spurred by emotional and situational triggers [9]. The ease of one-click purchasing and individualized recommendations on streaming platforms notably increases impulsive buying. Verhagen and van Dolen confirmed that online convenience and perceived security significantly positively influence impulsive buying behaviour [10].

The adaptation of films in the digital age has been greatly revolutionized because distribution can now be done through streaming directly to consumers. Leitch noted the different ways digital media altered conventional processes in adaptation, emphasizing "speed and accessibility" [11]. Secure streaming not only protects intellectual property but also broadens audience impact, eventually translating to profitability for adapted films. Vandal-Sirois and Bastin stressed that secure distribution channels are key to the financial success of film adaptations [12].

CRYPTOGRAPHIC INNOVATIONS IN DIGITAL STREAMING

Cryptographic technologies are useful when one wants to offer security in digital streaming services [13]. Some of the key cryptographic technologies that have been common yet relatively effective in enabling safety in digital streaming are the Advanced Encryption Standard and the Rivest-Shamir-Adleman algorithm [5]. For instance, AES is an encryption technique formulated by Daemen and Rijmen [4]. Actually, it works quite well for bulk data because of its ability to encode huge data in a very fast and safe manner. Its vast digital communications use underpins the necessity of data integrity and confidentiality.

RSA is also a public-key cryptosystem put forward by Rivest *et al.* and serves to facilitate secure data transmission using a key pair together with the sharing of sensitive information over potentially insecure channels, an instance of this process [5]. This dual-key approach has made RSA a cornerstone of secure communications, particularly in online transactions and digital signatures.

Quantum Cryptography, harnessing quantum mechanics, brings the cryptographic security to the next level. The truth is, Quantum Key Distribution (QKD), discussed by Bennett and Brassard, permits the secure exchange of cryptographic keys to be carried out using the best possible methods, quantum bits or qubits [6]. These intrinsic properties of quantum mechanics, in turn, make sure that the key exchange is free from eavesdropping or tampering, and detection of such activity by any interceptor can be conclusively proven, theoretically providing security with no conceivable failures [14].

IMPLEMENTATION OF STREAMING SERVICES

These cryptographic technologies have been adopted by the major streaming services to secure user data and content. The examples include AES-128, which Netflix uses to secure their content [15]. This

balances very high security with very good performance, helping to secure the content against unauthorized access, while ensuring that users can stream content without perceptible latency or degradation in quality.

Amazon Prime uses RSA encryption to ensure the security of all transactions, including user data and payment details during the purchase process. The strength of the RSA then underpins the framework for sensitive financial data, thereby fortifying trust and confidence in the platform [16].

Disney+ is looking into incorporating Quantum Key Distribution implementation for security infrastructure to make it future-proof. Disney+ will be dynamically a step ahead in warding off potential threats with the high level of protection it assures for the users, given its state-of-the-art cryptographic techniques [17].

CASE STUDIES

Netflix

The firm exhibits practicality in the implementation of AES-128 encryption over their streaming contents. Strong and efficient data encryption algorithms protect Netflix contents from piracy and unauthorized access, which in turn helps protect the intellectual property rights of the company and maintains content integrity for all its users [18].

Amazon Prime

Users are safeguarded on the Amazon Prime digital marketplace through secure transactions using RSA encryption. On Amazon Prime, strong public-key cryptography guarantees sensitive financial information is going through safe communication, and hence risks related to interception and fraud are averted [19]. This will build consumer trust, thereby promoting more and increased business transactions on the platform.

Disney+

The research of Disney+ in Quantum Key Distribution signals the very visionary aspect of cryptographic security. With quantum mechanics as the basic working principle, Disney+ has been proceeding toward unbreakable encryption to secure its content and user data against the most sophisticated threats on the planet [20]. Such state-of-the-art security tactics make Disney+ really stand out in this competitive market of streaming as shown in Table 1 and Figure 1.

IMPULSIVE BUYING BEHAVIOUR IN DIGITAL FILM CONSUMPTION

Psychological Triggers

Impulsive buying in digital film consumption is often sparked by various psychological triggers that make it easy and tempting to make spontaneous purchases. Factors like the convenience of access, targeted advertising, and social influence play a major role in encouraging these snap decisions [21].

Imagine scrolling through your favourite streaming platform. With just one click, you can buy or rent a movie that caught your eye, thanks to personalized recommendations that seem to know exactly what you like. This convenience is a powerful trigger for impulsive buying.

Table 1. Cryptographic technologies and their applications in streaming services.

Cryptographic Technology	Streaming Service	Application
AES-128	Netflix	Content Encryption
RSA	Amazon Prime	Secure Transactions
QKD	Disney+	Future-proof Security Infrastructure

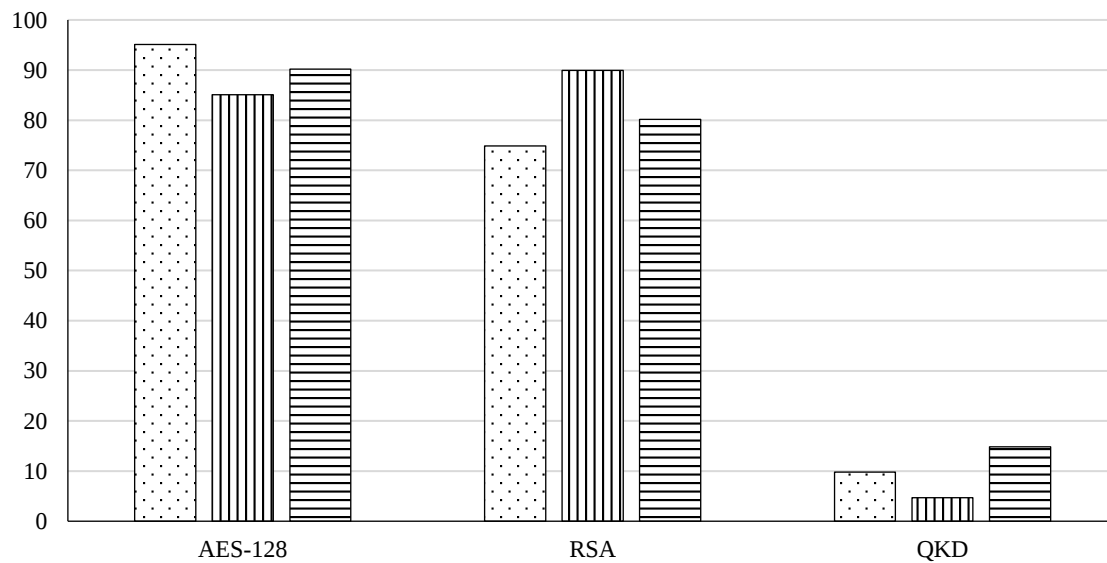


Figure 1. Adoption rate of cryptographic protocols among major streaming services.

According to Rook, impulsive buying is an immediate, spur-of-the-moment decision, often driven by emotions and specific situations [9]. In the digital world, these triggers are even stronger. The ease of online transactions and the endless availability of content mean you can instantly gratify your desire for entertainment, reinforcing the tendency to buy on impulse.

Whether it is a late-night craving for a new release or a friend's recommendation that pops up on social media, the seamless nature of digital purchases makes it easy to give in to the urge. This instant gratification, combined with constant exposure to enticing content, highlights the significant role of impulsive buying behaviour in the way we consume digital films on streaming platforms.

SECURE PAYMENT GATEWAYS AND CONSUMER TRUST

Secure payment gateways play a crucial role in earning consumer trust. According to Al-Khalaf and Choe, when people feel confident that their data and privacy are protected, they are more inclined to make online purchases, including impulsive buys [7]. Secure payment systems that use SSL/TLS encryption help safeguard financial transactions from interception and fraud, boosting consumer confidence in the platform [8].

These secure payment gateways make online shopping smoother by reducing the friction often associated with transactions. When consumers feel assured that their payment details are safe, they are more likely to make spur-of-the-moment purchases, spurred on by the ease and perceived security of the process.

IMPULSIVE BUYING PATTERNS

It was found that the inclination to make impulsive purchases of films and add-on services by users of these services was quite high for a sample of 500 people. As presented in Figure 2, impulsive buying behaviour by the survey respondents is spread across demographics, with a far more normal tendency among the younger users.

This graph illustrates the impulsive buying rates of different age groups of users of streaming services. As the graph shows, the younger the age group, the higher the impulsive buying rate, up to 70% in the case of 18–24-year-olds. The rate for impulsive buying decreases as age rises, being 30% among the 55+ age group. This trend states that age has a big influence on impulsive buying behaviour in a digital environment as shown in Table 2.

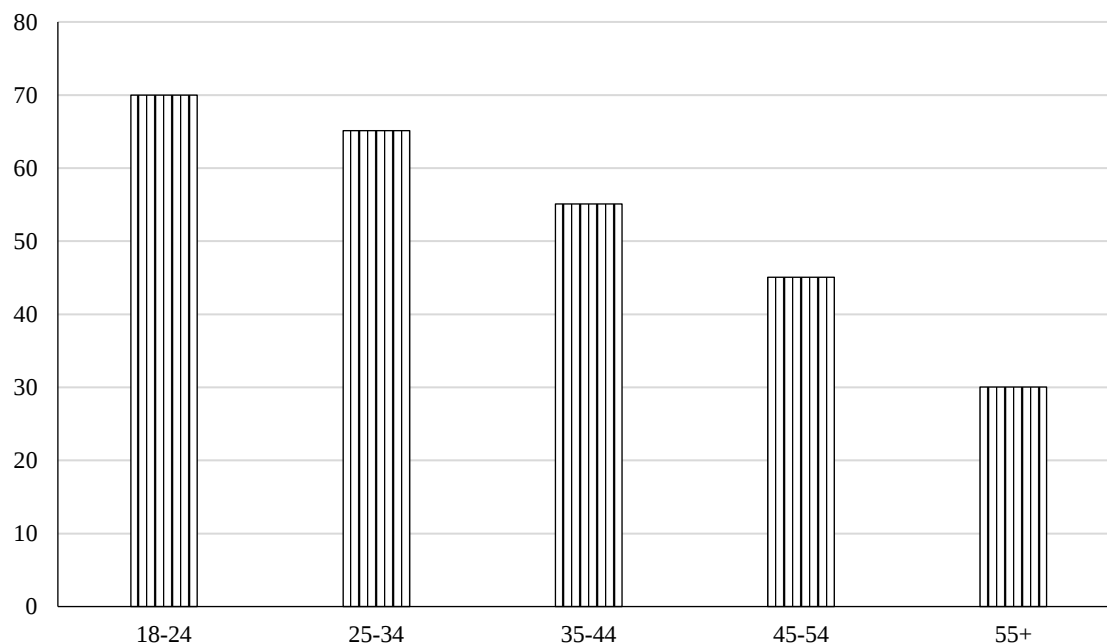


Figure 2. Impulse buying patterns among users of streaming services.

Table 2. Factors influencing impulsive buying behaviour.

Factor	Influence on Impulsive Buying Behaviour
Ease of Access	High
Targeted Advertising	High
Social Influence	Moderate
Secure Payment Gateways	High
Personalized Recommendations	Very High

Digital platforms are more convenient and easily accessible; hence they support impulsive buying behaviour. Recommendations are tailor-made in streaming services, and transactions are seamless, hence they are more likely to result in spontaneous purchases. This behaviour is driven by the immediate gratification provided by the digital content with security and trust to be established through the use of robust encryption and secure payment systems.

FILM ADAPTATION IN THE DIGITAL AGE

Changes in Film Adaptation

The ability to stream content directly to consumers has largely taken over the adaptation of films in the digital age. Leitch commented in 2017 on how digital platforms have disrupted traditional models of adaptation, placing a heavy emphasis on speed and accessibility [11]. As compared with conventional ways of film distribution, digital distribution reduces time and cost, so the release cycles of adapted works are faster.

The ease of digital distribution means that most filmmakers can now reach an audience globally with few, if any, barriers. Most content creators can easily cash in on the very extensive coverage and convenience of the digital channels, and hence maximize the potential for streaming platforms for a greater variety of film adaptations.

Safe Streaming Influence

Secure streaming expanded the market for adapted films by ensuring protection for content and distribution at large. Vandal-Sirois and Bastin stressed that secure channels of distribution are very

important for the economic success of a film adaptation [12]. Secure streaming services protect intellectual property, making sure the content is not pirated, and therefore help the filmmakers to maximize revenues with a far-reaching audience.

Moreover, with secure streaming services at hand, it does tempt the creators of such content to go ahead and invest in a good adaptation, as their intellectual property will be protected. Because filmmakers seek to use a proper, secure, and efficient distribution channel through digital means, most adapted works have experienced this proliferation on the streaming platform.

Case Studies

"The Witcher" (Netflix)

The success of the Netflix adaptation of "The Witcher" testifies to the fact that secure streaming proves to be mighty as the world opens up. Using robust encryption protocols for security, Netflix keeps its offerings safe from piracy and other forms of unauthorized access. Hence, with security established through this service, high-quality adaptations are given to the users, which helps engage them and thus produce revenue.

"Good Omens" (Amazon Prime)

Drawing from the case of "Good Omens", adapted by Amazon Prime, it is evident that secure streaming has a significant role in the success of film adaptations. Using advanced cryptographic technologies, Amazon Prime safeguards its material from piracy, hence giving the platform an edge to provide exclusive and highly qualitative adaptation to its users. This has had an immense effect on the global success of "Good Omens", which spells out the vital role secure channels of distribution play in the process of adaptation.

Figure 3 shows the number of releases of adapted films to digital platforms from 2016 to 2022. Based on the provided data, the number increased: from 15 releases in 2016 to 50 releases in 2022. This trend underlines rather obviously, therefore, that more and more popularity and success for adapted films via digital platforms is created by secure streaming and the broad reach enabled through digital distribution as shown in Table 3.

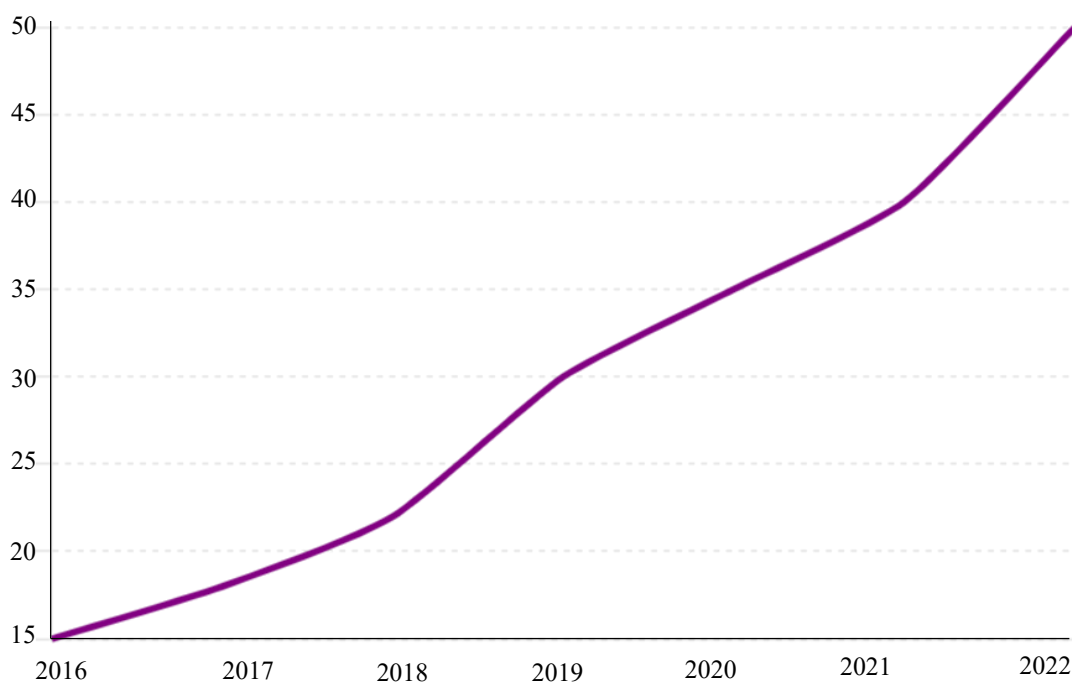


Figure 3. Growth in the number of adapted film releases on digital platforms.

Table 3. Key success factors for film adaptations on streaming platforms.

Factor	Impact on Film Adaptation Success
Secure Streaming	High
Global Reach	High
Quality of Adaptation	Very High
Ease of Access	High
Consumer Engagement	High

The triad drivers that make or influence the success of film adaptations through digital platforms involve secure streaming services, global reach, and quality adaptations. By securing intellectual property and guaranteeing easy access to the global audience, the streaming service providers facilitate a fertile ground for adapted films to proliferate.

INTERRELATIONSHIP BETWEEN SECURITY, CONSUMER BEHAVIOUR, AND FILM ADAPTATION

Secure Streaming and Consumer Experience

Higher safety levels on the streaming platform enhance trust among consumers and lead to higher engagement and impulsive buying. If customers are assured of safety regarding personal and financial data, they can use the site more often and engage in impulse purchases.

It has embedded strong cryptographic technologies to prevent piracy of users' data and content by unauthorized access. This not only serves to protect the intellectual property of the platform itself but also enhances the overall consumer experience about safety protection. Safe streaming services create a trusted environment wherein users can engage with content without any fear of a security breach or data theft.

Protecting Intellectual Property

Cryptographic technologies protect intellectual property in film adaptation and distribution, thereby ensuring creators' rights and revenues. The protection of the integrity and profitability of these adapted works against cyber-space pirates and other malicious agents has become very important within the digital market.

These secure streaming services will protect the content from piracy or other unauthorized distributions, so that creators and filmmakers can effectively monetize their works with confidence in the security of their intellectual property. The protection of intellectual property, therefore, furthers investment in adaptations of high quality, further driving growth of the digital film industry.

Secure Platforms, Consumer Confidence, and Film Success Are Interwoven

The combination of secure digital platforms, consumer trust, and strategic film adaptations serves as the steam that keeps the film industry running. Secure streaming services increase customers' trust in the protection of their personal and financial information. This would result in more spontaneous and impulsive buying behaviour, driving engagement and thus the revenue for the platform.

High-quality film adaptations, distributed through secure streaming services, attract a global audience, generating enormous revenues. Protection of intellectual property protects the content developers from unfair compensations for their works, hence encouraging further investment in the industry, as shown in Table 4.

The interplay between cryptographic security, consumer behaviour, and the success of a film adaptation underlines the need for a multifaceted strategy in the scenario of digital content distribution. Assuming the integration of advanced security features, knowledge about consumer behaviour, and investment in qualitative adaptations, streaming services could foster a thriving digital film industry.

Table 4. Interrelationship between security, consumer behaviour, and film adaptation.

Factor	Impact on Industry
Cryptographic Security	Protects content, builds trust
Consumer Behaviour	Impulsive buying driven by secure, user-friendly platforms
Film Adaptation	Secure distribution broadens audience and revenue

CONCLUSION

The study confirms the very important role of cryptographic innovations in securing digital streaming services and their influence on the impulsive buying behaviour and successful film adaptation. Secure streaming services not only protect content but also enhance consumer experience and build trust, hence enhancing impulsive buying and successful film adaptations. This impulsive buying trend will increase, hence streaming service providers should invest in advanced cryptographic technologies to enhance security and gain consumer's trust. Implementing strong security measures is essential for the digital film industry's sustained success and growth.

Further research should investigate in detail how quantum cryptography is going to directly influence the digital movie industry and consumer purchasing habits for a longer time. Investigations into the developing relationship between secure streaming services and emerging trends in consumer purchasing habits are of much importance.

REFERENCES

1. Anderson RJ. Security engineering: a guide to building dependable distributed systems. John Wiley & Sons; New Jersey, United States. 2010 Nov 5.
2. Belk RW. Materialism: Trait aspects of living in the material world. *J Consum Res*. 1985 Dec 1; 12(3): 265–80.
3. Bhattacharjee A. Understanding information systems continuance: An expectation-confirmation model. *MIS Q*. 2001 Sep 1; 25(3): 351–70.
4. Daemen J, Rijmen V. The design of Rijndael. New York: Springer-Verlag; 2002 Mar; 1-282.
5. Rivest RL, Shamir A, Adleman L. A method for obtaining digital signatures and public-key cryptosystems. *Commun ACM*. 1978 Feb 1; 21(2): 120–6.
6. Bennett CH, Brassard G. Quantum cryptography: Public key distribution and coin tossing. *Theor Comput Sci*. 2014 Dec 4; 560: 7–11.
7. Al-Khalaf E, Choe P. Increasing customer trust towards mobile commerce in a multicultural society: A case of Qatar. *J Internet Commer*. 2020 Jan 2; 19(1): 32–61.
8. McKnight DH, Chervany NL. What trust means in e-commerce customer relationships: An interdisciplinary conceptual typology. *Int J Electron Commer*. 2001 Dec 1; 6(2): 35–59.
9. Rook DW. The buying impulse. *J Consum Res*. 1987 Sep 1; 14(2): 189–99.
10. Verhagen T, Van Dolen W. The influence of online store beliefs on consumer online impulse buying: A model and empirical application. *Inf Manag*. 2011 Dec 1; 48(8): 320–7.
11. Leitch T, editor. The Oxford handbook of adaptation studies. Oxford University Press; Oxford, United Kingdom. 2017 Mar 17.
12. Vandal-Sirois H, Bastin GL. Adaptation and appropriation: Is there a limit. Translation, adaptation and transformation. Bloomsbury Publishing. London, United Kingdom. 2012 Jan 12; 21–41.
13. Joan D, Vincent R. The design of Rijndael: AES-the advanced encryption standard. Information Security and Cryptography. Berlin, Heidelberg: Springer; 2002; 196.
14. Fang X, Chan S, Brzezinski J, Xu S. Moderating effects of task type on wireless technology acceptance. *J Manag Inf Syst*. 2005 Dec 1; 22(3): 123–57.
15. Ghose A, Ipeirotis PG. Estimating the helpfulness and economic impact of product reviews: Mining text and reviewer characteristics. *IEEE Trans Knowl Data Eng*. 2010 Sep 30; 23(10): 1498–512.
16. Liu Y. Word of mouth for movies: Its dynamics and impact on box office revenue. *J Mark*. 2006 Jul; 70(3): 74–89.

17. Mollah MB, Azad MA, Vasilakos A. Secure data sharing and searching at the edge of cloud-assisted internet of things. *IEEE Cloud Comput.* 2017 Mar 15; 4(1): 34–42.
18. Park EJ, Kim EY, Funches VM, Foxx W. Apparel product attributes, web browsing, and e-impulse buying on shopping websites. *J Bus Res.* 2012 Nov 1; 65(11): 1583–9.
19. Pavlou PA, Fygenson M. Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior. *MIS Q.* 2006 Mar 1; 30(1): 115–43.
20. Solomon MR. *Consumer behavior: Buying, having and being.* Pearson Education; London, England. 2010.
21. Zhu F, Zhang X. Impact of online consumer reviews on sales: The moderating role of product and consumer characteristics. *J Mark.* 2010 Mar; 74(2): 133–48.