

Adoption of Artificial Intelligence in Filmmaking: A Diffusion of Innovation Perspective

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ABSTRACT

Artificial Intelligence (AI) is changing its role from a tool to a collaborative partner in creative practices, particularly in Filmmaking. The current study investigates the perceptions, learning interests and adoption behavior of Generation Z film and media students towards AI in filmmaking. This study was conducted among 120 undergraduate and postgraduate students who are enrolled in film and media subjects. All the participants are engaged in filmmaking at various levels. The study is grounded in the Diffusion of Innovation theory by conceptualising AI as an innovation and studying its adoption among the students.

The results state that even though the learning interest (75%) is high, AI adoption remains limited. The correlation analysis states that there is a significant relationship between perceived value and learning interest ($r = 0.337$, $p < .05$). As per the regression analysis, neither the perceived value nor learning interest significantly predicts the adoption behaviour. The study clearly highlights the gap between attitudinal acceptance and behavioural adoption.

The study has identified key barriers, including limited technical exposure, ethical dilemmas and accessibility constraints. The study results positioned students within the persuasion-to-decision stage of the Diffusion of Innovation process. The study contributes to the literature on human-AI co-creation by focusing on the development of academic discourse and structured training in AI for film and media students.

Keywords: *Artificial intelligence, Filmmaking, Technology Adoption, Generation Z students, Creative Practices and AI*

INTRODUCTION

Traditionally, Artificial Intelligence is considered as a supportive system for data processing and optimisation(Davis, 1989; Rogers, 2003; Dwivedi et al., 2021; Paiola et al., 2021; Li et al., 2025). Later, the emergence of generative AI tools has expanded the capabilities to produce text, images, audio and video in creative industries. The developments represent a shift of AI from passive supporter to active contributor in content creation (Monserat & Srnec, 2025; Khatiwada et al., 2025; Dwivedi et al., 2023). Consequently, AI's participation is increasing day by day in the process of content ideation, production and creative decision making by challenging traditional concepts of authorship, originality and intellectual ownership (Khattak et al., 2025; Yu, 2025; Huang, 2026; Dwivedi et al., 2023).

AI has evolved from technical supporter to an active collaborator within creative domains reshaping the landscape of filmmaking and media education(Davaasambuu, 2025; Chen, 2025; Monserrat & Srnec, 2025; Paiola et al., 2021; Yu, 2025). Filmmaking traditionally involves multiple stages from script writing to postproduction which is augmented by AI tools across all stages: Scripting, production, editing and post-production (Byrnes, 2003; Mixson, 2021; Yang et al., 2023; Zhang et al., 2025). These AI tools enhance the efficiency, expand creative possibilities and automate repetitive processes, enabling a scope for new form of storytelling and visual expression (Yang et al., 2023; Yu, 2025; Dwivedi et al., 2023; Chen, 2025). As a result the global film industry is undergoing rapid technological transformation keeping AI as a key driver of innovation, production and personalization (Burrus, 2017; Dwivedi et al., 2023; Zhang et al., 2025; Anantrasirichai et al., 2025). The transformation redefines creative and production structures raising questions on; Is AI merely a tool, or is it evolving into a collaborative partner in filmmaking? (Du Sautoy, 2019; Khattak et al., 2025; Dwivedi et al., 2023; Huang, 2026).

Traditionally, film education is focused on technical tools such as cameras, scriptwriting and editing software, sound equipment to develop technical efficiency with critical thinking and creative expressionism. However, the integration of AI technologies is redefining the skills and competencies required for film and media professionals in the filmmaking process. AI driven tools are assisting in ideation, creation, designing and even decision making there by augmenting human creativity (Guo & Wang, 2024). These developments in the industry necessitates pedagogical transformation in filmmaking and media education including integration of AI literacy, ethical awareness and human-AI collaboration practices Hwang & Lee, 2025).

Within this technological landscape, a distinction is often made between narrow AI and generative AI (Babu M.V.S; Banana, K.R.I.S.H.N.A 2024). Narrow AI is the one which automates rules-based tasks like editing workflows or color grading. Whereas generative AI directly creates audio-visual assets like writing scripts and generating video from the text. Despite the advancements the concept of Human touch is central in creative production. This highlights the importance of emotional depth, unique authorship and intentionality of the content which separates human creation from AI generated content.

The current study focuses on Generation Z film and media students, who are digital natives actively engaged as both consumers and creators of AI driven content. These students show high adaptability to technological transformations and exhibit stronger engagement in usage of AI tools in creative content production. To understand this behavior the study applies Diffusion of innovation (DOI) theory which explains how individuals get adopted to new technologies through different stages such as knowledge, persuasion, decision, implementation and confirmation (Rogers, 2003). Within this framework the generation Z students can be categorised under majority, representing the progressive adoption and cautiousness influenced by benefits, compatibility and contextual constraints.

Despite increasing adoption, there remains a gap in empirical studies focusing on student-centric adoption behaviour within the context of creative education. The existing studies mostly focused on industrial application or technical capabilities of AI neglecting the behavioral and perceptual gaps of adoption. The current study investigates the gap between perceived value, learning interest on adoption behavior of AI tools among film and media students.

The analysis can help effectively integrate AI into the filmmaking curriculum by emphasizing the importance of exposure, hands-on experience, and pedagogical innovation. Furthermore, the research contributes to the evolving discourse on Human-AI co-creation in film and media education with a balanced approach in positioning AI as a partner that enhances creative potential while preserving human agency. The growing integration of AI tools by the gen z students underscores critical examination of future trajectory of AI in filmmaking and media education (Du Sautoy, 2019).

REVIEW OF LITERATURE

As defined by Andrew (1985) filmmaking is a “technological art” that “is composed of the culture it represents”. Films are the medium through which they translate values, beliefs of the culture they belong to. Over time, technological advancements shaped both the filmmaking production process and creative expression.

According to Byrnes (2003) the new technological adaptations can be observed at all the stages of filmmaking following commercial interests. When the integration progresses, the professional labour market changes dramatically. The adaptation to technology never ends; it remains a permanent process.

Yu & Wei et al., (2025) describes AI as a co-creator that supports Ideation, problem solving, and creative production rather than merely functioning as a technical tool. In filmmaking, AI is extended to script development, story-boarding, Visual Effects (VFX) generation, editing and content personalization. With these expansions AI has challenged traditional filmmaking on authorship and creative ownership. Raising a focus towards hybrid creative models where human and machine intelligence complement each other (Huang,2026).

Capello(2020) argues that the integration of AI tools in filmmaking serves different purposes. Firstly, AI functions as an operational tool that performs repetitive tasks and optimizes production costs. Secondly, it contributes to the development of decision-making on measurable outcomes. Thirdly, AI actively assists the creative process in generating unique content. These multifaceted functions of AI in filmmaking extend beyond technical support and become an integral part of creation.

It is a good time to explore potential AI solutions in all stages of filmmaking. The inclusion can impact the monotonous work from human hands and brains to release space for creativity and optimization of cost, which are important for film production (Mixon 2021). However,Piccirillo (2011), states that technological advancements alone don't improve the quality and success of the film. Ultimately, it depends on the talent of the filmmaker to use the technological advantages and present a story that impresses the audience.

The emergence of AI further expanded the potential of storytellers; that is to be more effective in expressing themselves in English (Fisher, 2023). Lev Manovich (2007) considered making films using After Effects as a novel process which was bought in mid-1990's, as it is a popular software to create to combine audio, visuals, graphics animation on a personal computer. Despite the

advancements, there are parallel discussions that stated there is a need to appreciate organic creativity and suggested to use tools to enhance rather than as a substitute.

From the industry perspective, filmmaking evolves with technological advancements, economic pressures and changing consumer preferences. The availability of AI driven tools and digital assets rapidly transformed the digital media industry enabling new forms of film production and distribution. Burrus (2017) describes technology shifts are hard trends, and they shape regardless of resistance. In this context, the integration of AI technology in filmmaking can be considered as a broader technological evolution and needs to be studied.

In the context of filmmaking and media education, AI tools influence student's learning and engagement in the creative process. Generative AI tools have been providing suggestions, interactive experience and suggestions which can develop the student engagement and motivation (Guo & Wang, 2024; Allen & Mizumoto, 2024). These abilities of tools can offer personalised learning styles as per the individual (Kim et al., 2024). And these abilities help students to maintain continuous learning and momentum (Escalante et al., 2023). The features of these tools reduce the extraneous cognitive load by providing immediate and clear feedback to the students (Paas et al., 2003).

Despite the advantages of AI, there are several challenges associated with reliability and potential overreliance during complex tasks which requires critical thinking and creativity (Wang, 2024). Accessibility and ease of use of these tools make students more likely to be adopted (Kohnke et al., 2023) but the socio-economic standards may limit the accessibility of tools exacerbating the digital divide (Holmes & Burgess, 2022). The existing studies highlighted both the challenges and opportunities associated with AI integration; there is limited research focused on student acceptance towards the changes in the creative learning environment in filmmaking where technical and artistic competencies are required.

The integration of AI in higher education has significantly influenced teaching and learning practices. Integrating AI in filmmaking helps students to experiment, innovate and accelerate the production process. In the studies of (Hwang & Lee, 2025), it has been mentioned that students generally consider AI as a useful creative partner that enhances content creation and learning outcomes. However, the successful adoption is a result of adequate training, opportunities to experiment and institutional support.

The research studies on digital storytelling and collaborative learning demonstrates, generative AI can improve problem solving abilities and creative performances when integrated in educational activities (Wei et al., 2025). And there is a need for educators to emphasize on the importance of critical thinking and ethical usage to ensure responsible use of AI.

To understand the adoption of AI technologies, Diffusion of Innovation (DOI) theory developed by Everett Rogers provides a framework. This is a theory to understand the technology adoption among individuals. As per the Rogers (2003), the adoption of innovation is influenced by various variables like compatibility, advantage, complexity, trialability and observability. Before full adoption, individuals go through progress of knowledge, persuasion, decision, implementation and confirmation. As per the rogers the adopters are innovators, early adopters, early majority, late majority and laggards. This theory has been used in understanding technology in education to

explain the emerging digital innovations. In this context DOI theory provides a useful lens to understand and evaluate the student's benefits and risks of AI technology and how these influence adoption decision.

Within this framework, the learning interest concept represents the willingness of individuals to engage with new knowledge and technologies. Studies on educational technology represent that the students who show higher interest in learning demonstrate stronger engagement, experimentation and adoption. Ge & Shin (2026) found that the intention of students to learn and engage in AI tools has significantly influenced their willingness to participate in Human-AI co-creation. The finding of the study suggests that learning interest serves as a critical independent variable of AI adoption in educational settings.

Despite benefits, there are ethical concerns related to job displacement, copyright infringement, loss of originality, biasness, content misuse in the fields of creativity. Studies on AI assisted creativity found that AI may enhance individuals' creativity but can reduce diversity of ideas and increase content homogenization. The challenges contribute to cautious adoption behaviour among students.

Research studies suggest that students and creative professionals perceive AI as a creative partner to extend creative possibilities by maintaining human judgement and meaning making. The perspective study aligns with the emerging hybrid creativity models, where human imagination, artistic vision and critical thinking coexist with machine knowledge of AI systems.

In this context, the role of educator plays a major role. The effective guidance supports students to engage with AI tools, leveraging technological advantages with creative autonomy (Moorhouse &Kohnke, 2024; Teng, 2023). Where educators can help students in developing ethical awareness and responsible practice by ensuring that AI is a supportive tool rather than a substitute to creative thinking. Consequently, the universities have started implementing policies and guidelines to promote ethical and responsible use of AI by including plagiarism detection software at the stage of writing (Moorhouse et al., 2023).

Although there are studies focused on AI adoption, creative collaboration, educational technology acceptance, there is limited research study which is focused on adoption of AI tools among film and media students using Diffusion of Innovation framework. Furthermore, the perceived value and learning interest of AI Adoption is under explored. Addressing the gap, the present study focuses on the factors that influence AI adoption among gen z film and media students and contributes to the growing discourse of Human-AI co-creation in creative education.

THEORETICAL FRAMEWORK

The theory of Everett Rogers, Diffusion of Innovation, explains how new technologies are adopted within a social system over time. DOI provides a comprehensive framework to understand the process, factors and behavioural patterns that influence adoption of innovation technology like AI in filmmaking. Applying this theory the film and media students are positioned between the persuasion and decision-making stage where there is a possibility to evaluate benefits and risks associated with AI tools before adopting them.

The current study focuses on perceived value and learning interest aligned with a concept of relative advantage in DOI theory. The framework combines DOI theory with learner-centric variables to explain AI adoption in filmmaking. This contributes to the contemporary shifts in creative industries where machine intelligence and human creativity come together to produce innovative outcomes.

With a focus on perceived value and learning interest the current study aims to provide contextual understanding of AI adoption in filmmaking. It can contribute to the emerging discourse of human AI co-creation by examining the negotiation between technology and creativity in film production environments by future filmmakers and media professionals.

Ultimately, this study proposes that adoption of AI in film production is not only decided by technological factors but also it is shaped by an interplay between perceived value, learning interest and contextual influences. This perspective extends DOI theory into creative education, creating insights into the student's awareness towards meaningful engagement with AI technologies in film production.

METHODOLOGY

The study has adopted a quantitative research design to analyse the relationship between student's perceptions, learning interests and adoption behaviour of Artificial Intelligence in filmmaking. The quantitative approach helps in objective measurement of variables and cross-sectional design facilitated data collection to understand current behavioural patterns among students. It is a descriptive and analytical study.

The study employed a structured questionnaire administered to 120 film and media students of the age group 18-26 years. Those who are actively involved in various forms of filmmaking, from short film to ad film, and documentary film production. This sample represents the emerging film and media practitioners with an exposure to both traditional and AI driven tools.

The convenience sampling method is employed to select participants based on accessibility and relevance of the study. Data is collected using a structured questionnaire using a five-point Likert scale to measure the perceptions and engagement of AI tools in filmmaking by the students.

OBJECTIVES

1. To study the perceived value of AI in filmmaking among film and media students.
2. To analyse the learning interest of film and media students in filmmaking.
3. To examine the influence of perceived value and learning interest on the adoption behaviour of AI in filmmaking.

HYPOTHESIS

H1:The perceived value has a significant positive effect on the adoption of AI tools in filmmaking.

H2: The learning interest has a significant positive effect on adoption of the AI tools in filmmaking among film and media students.

H3:Perceived value has a significant positive relationship with students learning interest.

RESULTS AND DISCUSSION

S.No	Age Group	Frequency	Percentage (%)
1	18–20	34	28.3
2	21–23	48	40.0
3	24–26	38	31.7
Total		120	100.0

Table 1: Age Group of the Respondents

The majority of the respondents fall under the category of 21-23 age group representing the largest segment of the sample. These respondents are in the mid-phase of their academic journey and have gained theoretical and practical knowledge regarding filmmaking. The dominance of this group represents that the study is largely representing the perceptions and behaviours of the students who are engaged in learning and applying the filmmaking process.

The age group 24-26 accounts 31.7% of the sample. This age group mostly belongs to postgraduation education which represents a significant proportion of relatively mature students. This is the group where there is greater exposure to emerging trends and industry practices including AI tools in contributing more informed and experience-based responses.

The 18-20 age group accounts 28.3% of the sample, who represents the early learning stage and these are the students who are in a process to develop their understanding towards filmmaking. Although they are smaller in number the inclusion of this group ensures that the study has captured perspectives among different levels of academic and experimental maturity. The presence of different age groups in the study strengthens the ability to generalize insight on AI adaptation among generation Z students.

S.No	Education	Frequency	Percentage
1	Undergraduate	89	74.17%
2	Postgraduate	31	25.83%

Table 2: Educational Level of the respondents

Most of the respondents are undergraduate students (74.17%) and the rest 25.83% are post graduate students. The sample indicates that the individuals are in the early to intermediate stages of academic journey in film and media education. The undergraduate student group represents the students who are in the process of building foundation knowledge of AI and other technicalities of film. Their experiences will result in their academic environments rather than industry experience.

Even postgraduate students are a smaller group and they play a critical role in adoption behaviour. As they are advanced in their academic journey and are likely to possess deeper engagement in filmmaking including AI. The distribution of education levels highlights the ability to understand diverse perspectives from exploratory engagement to informed evaluation of AI tools.

S.No	Level	Frequency	Percentage
1	Neutral	55	45.83%
2	Likely	41	34.17%
3	Unlikely	19	15.83%
4	Very Unlikely	3	2.5%
5	Very Likely	2	1.67%

Table 3: AI Adoption (Collaboration with AI)

The largest group of samples (45.83%) selected a neutral option. Which reflects the uncertainty of the sample on AI collaboration and their lack of clarity in Understanding the role of AI in filmmaking. This can be attributed to limited hands-on experience. From the result 34.17% which stated that they are likely to use AI in their projects, that represents the positive representation of students towards AI adoption.

Conversely, there are certain students which stated unlikely (15.83%) and very unlikely (2.5%), that represent the resistance towards AI although they are less in number. The resistance can be due to lack of technical skills, ethical concerns, and technological complexity. These conditions state that the students are in a transitional phase in awareness and interest towards AI.

From the conceptual standpoint, the current pattern of results reflects the persuasion stage of Diffusion of innovation process. This is the point where individuals frame attitudes towards innovations but have not progressed yet for active adoption. The findings also represent the presence of an attitude-behaviour gap.

S.No	Interest	Frequency	Percentage
1	Yes	90	75.0%
2	Maybe	16	13.33%
3	No	14	11.67%

Table 4: Learning Interest in AI

The majority of the respondents (75%) stated that they are interested in learning AI tools for filmmaking. The students have recognized the importance and relevance of AI in filmmaking. From the results it can be stated that there is a strong attitude of students towards skill development. 13.33 % of the respondents stated that they may be ready to learn AI tools as they are unsure about usefulness, complexity and career relevance. 11.67% which is the minor representation of the

sample stated low interest in learning. With a possible reason for fear of technology, lack of confidence and concerns regarding AI replacing humans.

From a conceptual perspective, the findings align with the persuasion stage of Diffusion of Innovation, where individuals develop favourable and unfavourable notions based on benefits and uncertainties.

Perceived Value (Relative Advantage):

Hypothesis 1: The perceived value has a significant positive effect on the adoption of AI tools in filmmaking.

R	R ²	Adjusted R ²	Std. Error
0.123	0.015	0.007	—

Table 5.1: Regression Analysis

ANOVA:

Source	F	Sig.
Model	0.572	0.451

Table 5.2: ANOVA Results

Coefficients:

S.No	Predictor (IV)	β	t	Sig. (p)
1	Constant	2.613	9.098	0.000
2	Perceived Value	0.064	0.756	0.451

Table 5.3: Co-efficients of Regression Analysis

The regression analysis indicates that perceived value doesn't have a significant effect on adoption of AI tools ($\beta = 0.064$, $p = 0.451$). Even though a positive relationship is there it is insignificant. Therefore, hypothesis(H1) is rejected.

The rejection doesn't imply that perceived value is irrelevant. It suggests that perceived value alone is insufficient to directly influence the adoption behaviour of the students in filmmaking education. As per the results students can recognize the benefits like creativity, efficiency and proficiency of AI but they are not ready to adopt, this shows the persuasion to decision making due to external variables like lack of technical skills, accessibility, ethical concern and practical exposure.

Learning Interest (Motivational Component):

Hypothesis 2: The learning interest has a significant positive effect on adoption of the AI tools in filmmaking among film and media students.

R	R²	Adjusted R²
0.173	0.030	0.022

Table 6.1: Regression Analysis

ANOVA:

Source	F	Sig.
Model	3.219	0.126

Table 6.2: ANOVA Results

Co-Efficients:

Predictor (IV)	β	t	Sig. (p)
Constant	—	—	—
Learning Interest	0.087	1.540	0.126

Table 6.3: Co-Efficients Regression Analysis

As per the results the P value 0.126 is greater than threshold value 0.05. which means that the hypothesis (H2) is rejected and the learning interest alone is not significant to adopt to AI in filmmaking($\beta = 0.087$, $p = 0.126$) by students of film and media. Higher learning interest can slightly increase adoption. Within DOI theory learning interest represent attitudinal and motivational components of the persuasion stage. The results indicate the motivation to the adoption gap which can be due to barriers like skills, ethical concerns and curriculum limitations. As per the findings there is motivation to behaviour gap which is clearly observable without external support such as training, accessibility and institutional integration.

Perceived value to Learning Interest: Hypothesis 3:**Co-Efficients:**

Variables	Perceived Value	Learning Interest
Perceived Value	1.000	0.337
Learning Interest	0.337	1.000

Table 7.1: Correlation matrix of Perceived Value and Learning Interest

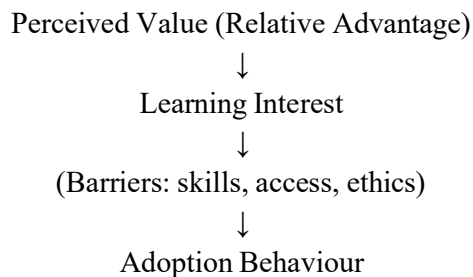
Relationship	r-value	Sig. (p)
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PV → Learning Interest	0.337	0.000 (<0.05)
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Table 7.2: Pearson's Correlation Analysis between Perceived Value and Learning Interest

The correlation analysis states that there is moderate, positive and significant relationship between perceived value and learning interest ($r = 0.337$, $p < 0.05$) of AI in filmmaking. The students who perceive the benefits of usage of AI tools are more likely to develop a strong interest in learning these tools. The findings of the study represent that cognitive evaluation of technology (perceived value) is closely associated with attitudinal readiness (learning interest). The relationship states the perceived value enhances interest but does not guarantee behavioural adoption.

Conceptual Explanation:



The findings align partially with diffusion of innovation theory. The perceived value showed a significant influence on learning interest, confirming the persuasion stage of the diffusion process. There is an identified gap between attitude formation and behavioural adoption. Which reflects the external barriers such as limited access to AI tools, training requirements and ethical concerns.

The other ethical moderators which control the adoption are deep fakes, copyright issues, loss of originality, ethical misuse. Even though students find a value in usage, ethical hesitation is controlling them from adoption.

Another moderator is accessibility where most of the students reported limited familiarity, low frequency of AI usage and moderate to difficulty in access to the tools. Even with high interest, lack of accessibility reduces the actual usage.

The results reveal there is a three level behavioural pattern among students; first level is cognitive where students recognize and appreciate the benefits of AI which is a perceived value. The second level is about attitudes where students demonstrate interest and willingness to learn AI tools and then behavioural level where students are hesitant and not actively adopting to the AI tools in filmmaking.

DISCUSSION AND CONCLUSION

The study examined the adoption behaviour of Artificial Intelligence among film and media students in filmmaking through diffusion of innovation theory. The findings state that AI is in a transition phase from functional tool to a collaborative partner. The students found to be positioned under early majority with a moderate familiarity and cautious engagement with AI technologies.

As per the results students have recognised the potentialities of AI tools to enhance creativity, efficiency and technical proficiency in filmmaking. The significant relationship between perceived value and learning interest confirms that when students recognize the benefits(relative advantage) they incline, they are interested in learning and experimenting with AI.

Particularly the persuasion stage of Diffusion of innovation theory is strongly supported by the study. This confirmed the relative advantages play a crucial role in shaping positive attitudes and motivation towards adopting AI. Despite awareness and interest students doesn't engage actively in the usage of AI tools. This shows the gap between attitude formation and behavioural adoption indicating interruption before reaching the decision and implementation stage.

The current study contradicted the traditional technology acceptance models, which state that perceived usefulness and user intentions lead to usage behaviour. The findings of the study stated the perceived value and learning interest are not sufficient for adoption particularly in creative fields like filmmaking.

The external factors, ethical concerns and accessibility are also critical barriers for adoption. As students expressed dilemmas regarding copyright infringement, deepfakes, loss of originality and ethical misuse of AI generated content.

As per the study the students are situated between persuasion and decision-making stages of the DOI process where they are evaluating the benefits and risks of AI before adopting. The study coins the importance of experimentation, guided learning and hands-on experience, which states importance of educational institutions in smoother adoption of AI technologies among students.

The study concludes stating that film and media students' recognition of advantages of AI tools and strong interest in learning them doesn't translate into adoption behaviour due to ethical concerns, accessibility limitations and lack of practical exposure.

The research contributes to the growing discourse of AI in media education particularly in the creative fields of filmmaking. It calls for a pedagogical shift that positions AI as a collaborative partner instead of a tool enabling students to navigate through the evolving landscape of filmmaking and creative industries.

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