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AI-OPTIMIZATION OF THE LOOP FRAMEWORK FOR SUSTAINABLE GROWTH OF MOBILE APPLICATIONS

Classical marketing models of mobile applications are mostly based on the linear logic of the funnel, where the user moves from awareness of the product to making a purchase or performing another target action. Such an approach was effective in previous decades; however, it does not reflect the specifics of modern digital products, where user interaction with the application is cyclical in nature. In mobile ecosystems, the user does not make a one-time purchase but constantly interacts with the application, creates content, shares experiences, and generates data that can be used to attract other users. In this context, the Loop Framework offers a modern alternative to the classical model – the construction of closed growth cycles (growth loops). In such models, every user action becomes a source of new value that contributes to the product's dissemination and audience expansion. Chen (2022) emphasizes that loop models ensure more stable and organic growth than traditional funnels, as they create a system of business self-reinforcement in which each user potentially generates the next one [1]. A visualization of the Loop Framework for mobile app audience growth is presented in Figure 1.

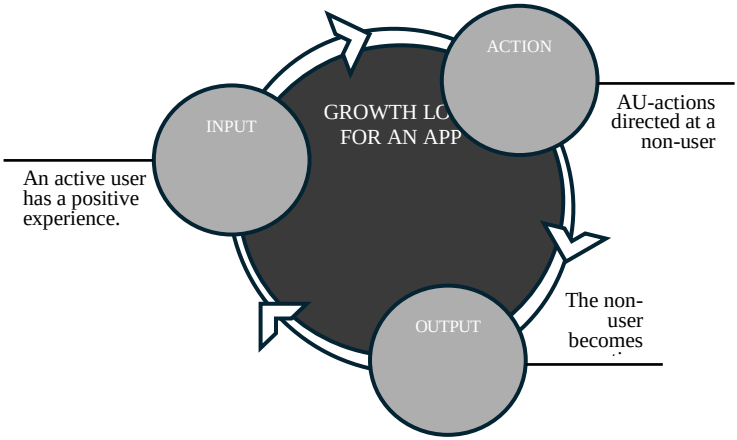

Fig. 1. The Loop Framework for mobile app audience growth

The most common example is content loops. In this case, the user creates content (photos, videos, reviews) that becomes available to others. The more content appears in the system, the higher the level of interest among new users who join the application. This approach underlies platforms such as TikTok and Instagram Reels. Another common type is referral loops, where current users receive bonuses or discounts for inviting friends, which stimulates rapid growth of the user base. Finally, there are paid acquisition loops, in which part of the income is reinvested in marketing, creating a multiplier effect when profit turns into even greater user acquisition [2].

Table 1 – The Impact of Artificial Intelligence on Growth Loops in a Mobile App

Growth Loop Type	Stage of the Loop Enhanced	AI Technology/ Application	Result (Loop Amplification)
Viral/ Referral	Driving Sharing (Retention/Referral)	Churn Prediction & LTV Modeling: Identifying highly loyal users with a high probability of successful referral.	More precise targeting of users for the referral program, increasing the Virality Coefficient (K-factor).
UGC Content	Content Creation (Activation/Content Input)	Generative AI (GenAI): Automatic creation, editing, or enhancement of user-generated content.	Lowering the barrier to content creation, leading to a higher volume of content (Input) into the system.
UGC Content	Traffic Acquisition (Acquisition)	Automatic SEO/ASO Optimization: AI generates keywords, tags, and descriptions for indexing user content externally.	Improved ranking of user content in search engines and app stores, driving more new traffic.
ASO Optimization	Conversion/Reviews (Retention/ASO)	Sentiment Analysis & Behavioral Modeling: AI identifies the perfect moment to request a review, when the user has just experienced peak satisfaction.	Increased average app rating in stores, directly boosting organic downloads (Acquisition).
Financial/ Paid	Monetization and Reinvestment (Revenue/Paid)	Precise LTV Prediction (Lifetime Value): Accurate forecasting of revenue from a new user/cohort.	Optimization of Ad Spend: Accurate determination of the maximum CAC and efficient reinvestment into the most profitable acquisition channels.
Engagement Driver	Activation and Retention (Activation/Retention)	Personalization and Recommendation Systems: AI customizes the interface, content, or the "Aha! Moment" for each new user.	Higher Activation Rate and better retention. As more data is gathered, the AI performs better, intensifying the loop.

The practical significance of the Loop Framework lies in the ability to integrate growth loops directly into the development of a mobile application. This means that the product's functionality should initially include mechanisms that stimulate content creation, social interaction, information sharing, and re-engagement. Li and Xu (2021) demonstrated that mobile apps that integrated growth loops into their architectures showed an organic growth rate 1.5–2 times higher compared to products that relied solely on traditional marketing [3].

Moreover, modern analytical approaches confirm that the effectiveness of growth loops significantly increases with the use of artificial intelligence technologies. Machine learning algorithms can personalize content, adapt recommendations, and predict user behavior. Sharma et al. (2024) showed that the integration of AI mechanisms into growth loops increases audience retention and reduces the cost of re-engagement [4]. Similar conclusions are drawn by Stocchi et al. (2021), who emphasize that the development of mobile marketing is impossible without combining classical strategies with new models, among which growth loops play a key role [5].

It is also important to note that the Loop Framework does not exclude the use of the classical marketing funnel but rather transforms it. While the funnel is aimed at quickly moving the user from acquisition to purchase, the loop ensures long-term organic growth through repeated interactions. This makes it more suitable for mobile applications, where continuous user engagement and retention are critical.

Thus, the Loop Framework can be considered an innovative marketing strategy tool focused on creating sustainable mobile application ecosystems. It ensures not only efficient user base growth but also establishes conditions for long-term interaction with the audience, utilizing both the internal resources of the product and the latest data analytics technologies.

REFERENCES

1. Chen N. Growth Loops: How to Build Self-Sustaining Systems for User Acquisition. Growth Engineering Journal. 2022. P. 90-126.

2. Ellis S., Lockie M. The Future of Growth in Mobile Applications. International Journal of Digital Marketing. 2023. Vol. 5, No. 2. P. 65-82.

3. Li J., Xu P. Integrating growth loops into mobile app ecosystems. Information Systems Frontiers. 2021. Vol. 23, No. 6. P. 1455–1470.

4. Sharma A., Gupta N., Singh R. AI-driven personalization in mobile app marketing. Computers in Human Behavior Reports. 2024. Vol. 15, No. P. 64-71.

5. Stocchi L. et al. Marketing research on Mobile apps: past, present and future. Journal of the Academy of Marketing Science. 2021. Vol. 50, No. 2. P. 195-225.