PROCESS MODELLING OF K-POP CONCERT TICKETING USING BPMN: A CASE STUDY

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ABSTRACT

The Korean Wave (Hallyu) has positioned K-Pop concerts as major cultural events in Indonesia, generating economic impacts but also exposing persistent ticketing challenges. Issues such as limited supply, technical failures, lack of transparency, and fraudulent resales often lead to fan dissatisfaction. This study applies Business Process Model and Notation (BPMN) within a qualitative case study to examine and improve the ticketing workflow. Data were obtained from documentation, observation, literature review, and limited fan interviews. The current "as-is" model revealed inefficiencies including unclear digital queues, system errors, failed payments, and opaque quota distribution. A redesigned "to-be" model introduces improvements such as real-time quota visibility, One ID One Ticket enforcement, third-party purchase restrictions, and identity-based wristbands. Findings show that BPMN provides clarity of roles among stakeholders while enhancing transparency, fairness, and trust. This research demonstrates the value of process modeling for creating more reliable ticketing systems in cultural industries.

Keywords: *BPMN, K-Pop, Ticketing, Business Process Modeling*

ABSTRAK

Gelombang Korea (Hallyu) menjadikan konser K-Pop sebagai peristiwa budaya besar di Indonesia yang tidak hanya berdampak ekonomi tetapi juga memunculkan berbagai kendala dalam sistem tiket. Permasalahan seperti keterbatasan kuota, kegagalan teknis, kurangnya transparansi, dan praktik penjualan ulang ilegal sering menimbulkan ketidakpuasan penggemar. Penelitian ini menerapkan *Business Process Model and Notation* (BPMN) dalam studi kasus kualitatif untuk menganalisis sekaligus merancang perbaikan alur kerja tiket. Data dikumpulkan melalui dokumentasi, observasi, kajian literatur, serta wawancara terbatas dengan penggemar. Analisis proses "as-is" mengungkap ketidakefisienan berupa antrian digital yang tidak jelas, kesalahan sistem, pembayaran gagal, dan distribusi kuota yang tidak transparan. Model "to-be" yang dirancang mencakup visibilitas kuota secara real-time, penerapan aturan *One ID One Ticket*, larangan pembelian pihak ketiga, serta distribusi gelang berbasis identitas. Hasil menunjukkan BPMN memperjelas peran pemangku kepentingan sekaligus meningkatkan transparansi, keadilan, dan kepercayaan konsumen. Penelitian ini menegaskan pentingnya pemodelan proses dalam menciptakan sistem tiket yang lebih andal di industri budaya.

Kata kunci: BPMN, K-Pop, Tiket, Pemodelan Proses Bisnis

1.INTRODUCTION

The Korean Wave (Hallyu) has evolved into a major global cultural movement that significantly impacts various aspects of society, including Indonesia, which hosts one of the largest K-pop fan bases worldwide (**Baker, 2025**). Jakarta, as the capital city, frequently hosts international K-pop concerts that attract tens of thousands of attendees, while simultaneously creating positive economic spillovers for sectors such as transportation, culinary services, and tourism (**Hernita et al., 2025**). The strength of this fandom is reflected in fans' willingness to purchase tickets even at relatively high prices (**Fatma Nur Azizah & Susila, 2025**). Previous studies have indicated that factors such as pricing, venue conditions, and service quality influence ticket purchasing decisions, highlighting ticketing as a central determinant of concert success (**Sibagariang et al., 2024**).

However, persistent ticket scarcity and the recurring 'ticket war' phenomenon frequently result in fan dissatisfaction, while fraudulent online sales continue to pose increasing financial risks (**Adisti & Sumarwan, 2024**). In Indonesia, concert tickets often sell out within minutes, preventing many fans from obtaining access despite high demand (**Hernita et al., 2025**). Fraudulent reselling on social media platforms, particularly Twitter, has led to significant financial losses for fans who become victims of scams (**Adisti & Sumarwan, 2024**). These issues demonstrate that concert ticketing is a complex process involving multiple stakeholders, including promoters, official ticketing services, artist management, and consumers (**Ma & Xie, 2025**).

The workflow of concert ticketing, covering stages such as promotion, quota allocation, online sales, ticket verification, and entry management, is inherently complex, making it difficult to evaluate without a structured model (**Hernita et al., 2025**). Business Process Model and Notation (BPMN) offers an effective solution by employing standardized, easily understood symbols to visualize workflows, thereby identifying inefficiencies, fraud vulnerabilities, and bottlenecks (**Ma & Xie, 2025**). However, research on K-pop concerts in Indonesia has primarily examined themes such as marketing strategies, fan engagement, pricing, or digital promotion, with limited attempts to provide a visualized model of the ticketing process (**Hernita et al., 2025; Irawanty et al., 2024**).

Although BPMN has been successfully applied in other domains for example demonstrated its effectiveness in digitizing football club ticketing to minimize waiting times, improve payment security, and strengthen transaction records (**N & Waspodo, 2026**), while applied it to optimize stakeholder interactions in court queue systems its use in the entertainment industry, particularly K-Pop concert ticketing, remains underexplored. Most existing literature focuses on consumer behavior, pricing, or fraud-related issues (**Fatma Nur Azizah & Susila, 2025**) without producing a comprehensive process map.

This study seeks to model the K-pop concert ticketing system in Indonesia through BPMN within a qualitative case study framework. The primary objective is to develop a standardized visual representation of the ticketing process and the actors involved (**Hernita et al., 2025; Ma & Xie, 2025**). The novelty of this research lies in its application of BPMN to systematically map all ticketing stages from promotion and quota distribution to online sales, verification, and entry procedures. Unlike previous studies that proposed technical solutions such as blockchain for ticket security and transparency (**Gowda et al., 2024**), this paper contributes a BPMN-based model that reveals bottlenecks, risks of fraud, and inefficiencies. The results are expected to provide practical insights for promoters, ticketing providers, and fans, ensuring a more transparent, secure, and efficient ticketing experience (**Lailia et al., 2024**).

2. METHODOLOGY

2.1 *Business Process With BPMN*

Business process models (BPMs) can be developed using a range of modeling techniques or languages, each characterized by specific features suited to different objectives (**Xie et al., 2023**). Commonly referenced approaches in the literature include IDEF0, IDEF3, UML, and BPMN, with BPMN emerging as the most widely adopted standard in recent years**(Ma & Xie, 2025**). BPMN is particularly valued for its ability to provide a notation that is accessible to all stakeholders in the K-Pop concert ticketing process, including promoters, ticketing platform providers, artist management, and end consumers (**Hernita et al., 2025**). Additionally, BPMN utilizes graphical notation through Business Process Diagrams (BPDs), based on flowcharting techniques, to visually represent process operations (**Ma & Xie, 2025**). This notation supports the development of both simple and complex models by utilizing four core elements: Flow Objects, Connecting Objects, Swimlanes, and Artifacts. As a result, BPMN offers significant flexibility for modeling ticketing processes, from basic workflows such as ticket purchasing to more intricate interactions involving allocation, validation, and consumer access (**Ma & Xie, 2025**).
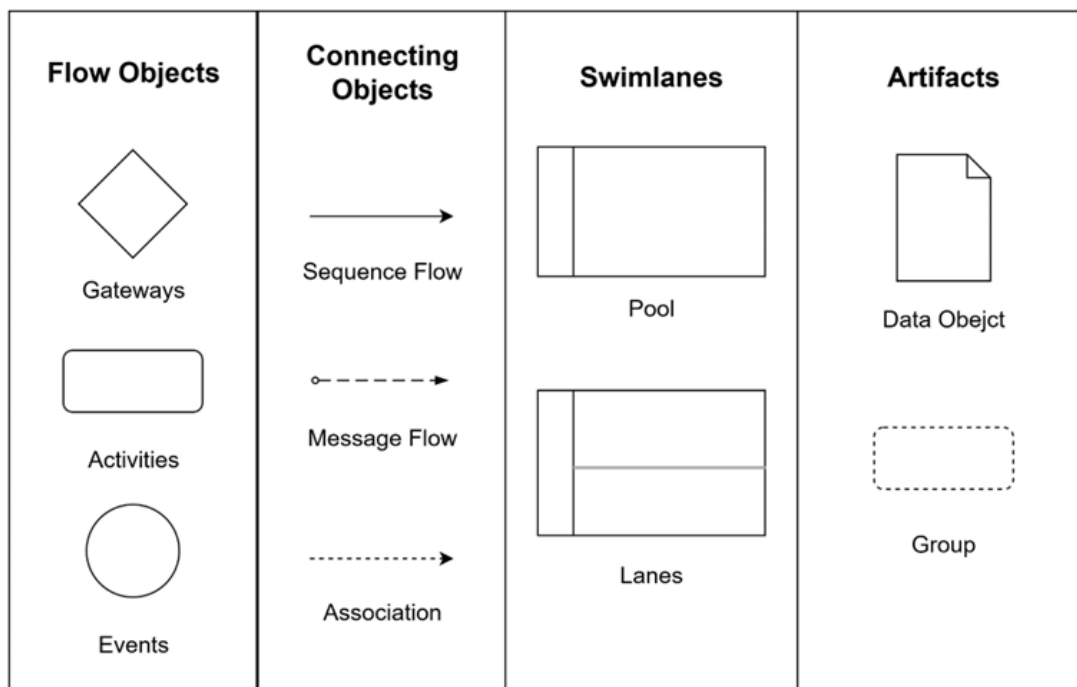

Picture. 1 BPMN notation elements

2.2 Steps of BPMN Modelling
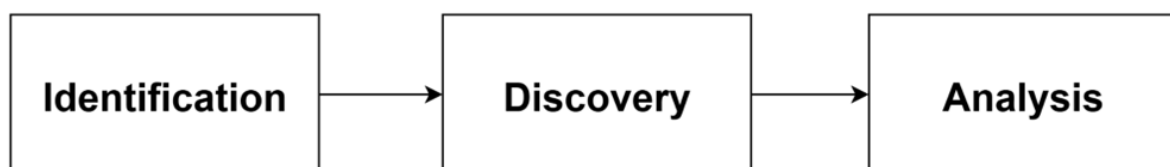
Picture. 2 Step of BPMN modeling

The BPMN modeling in this study followed three primary steps: identification, discovery, and analysis. During identification, the key actors in the K-Pop concert ticketing system, promoters, ticketing platforms, artist management, and end consumers were identified, and the main stages of the process, including promotion, online queuing, ticket purchasing, payment, and ticket validation, were mapped (**Hernita et al., 2025; Ma & Xie, 2025**). The discovery phase involved interviews, observations, documentation, and literature analysis to capture an accurate depiction of the workflow, including consumer experiences with digital queuing, technical challenges, and perceptions of transparency (**Adisti & Sumarwan, 2024; Irawanty et al., 2024**). The analysis phase synthesized data from interviews and observations, along with literature findings, to identify existing patterns, such as the ticket war phenomenon, increased ticket fraud on social media, and insufficient transparency in ticket distribution. These insights formed the basis for constructing the as-is BPMN model **(Adisti & Sumarwan, 2024; Hernita et al., 2025; Sibagariang et al., 2024**).
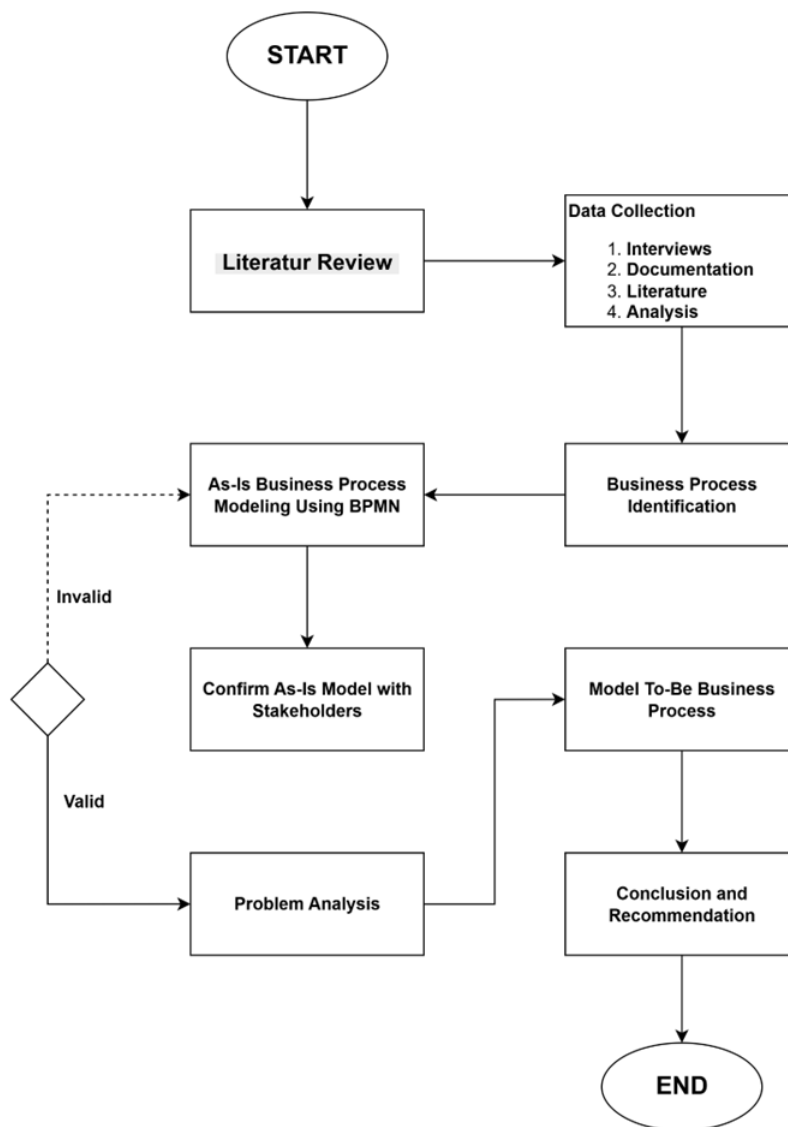
Picture. 3 Research Stages

2.3 Qualitative Approach

This study utilizes a qualitative case study approach to model the ticketing process for K-pop concerts (**Hernita et al., 2025**). The research focuses on the current as-is condition, examining how the ticketing system operates in practice (**Ma & Xie, 2025**). A qualitative methodology is selected to capture both the technical aspects and the lived experiences of stakeholders, including promoters, ticketing platforms, artist management, and end (**Hernita et al., 2025**). The case study design facilitates an in-depth investigation of K-pop concert ticketing as a real-world phenomenon characterized by multiple actors and complex interactions (**Irawanty et al., 2024**). Through documentation, observation, literature analysis, and targeted interviews, the study aims to develop a BPMN model that accurately reflects the ticketing process and the challenges faced by stakeholders (**Ma & Xie, 2025**). Accordingly, three guiding questions were formulated for K-pop fans who have previously purchased concert tickets:

1. What was your experience when purchasing K-pop concert tickets online, from queuing to purchase confirmation?
2. What difficulties did you encounter during the ticket purchase process, such as website access, queuing system, or payment methods?
3. How do you perceive the transparency and clarity of the ticket purchasing flow that you experienced?

3. RESULT AND DISCUSSION

Based on limited interviews with K-Poppers who had previously purchased concert tickets through official platforms, it was found that most respondents faced significant obstacles during the digital queuing stage, where tickets sold out within minutes despite having waited since the system opened (ticket war). One respondent even noted, "I had already queued online from the moment the system opened, but within just a few minutes all tickets were sold out," reflecting the intense competition that characterizes this process. In addition, some respondents encountered technical issues, such as website errors, slow server access, and failed payment transactions, despite having a sufficient balance or credit limit. Another issue emphasized was the lack of transparency, particularly regarding queue order, the number of available ticket quotas, and the e-ticket validation process, which raised doubts about the fairness of the system. Taken together, these findings reinforce the view that the K-Pop concert ticketing process is not merely a sales transaction, but a complex interaction that generates both emotional experiences and technical challenges for fans. To provide a clearer overview, the main findings from K-Poppers' experiences are summarized in the following table below,

Table 1. K-Popers' Ticketing Experiences

Guiding Question	Findings from K-Popers
What was your experience when purchasing tickets?	Fans entered the digital queue and experienced the "ticket war" phenomenon, where tickets sold out within minutes despite waiting since the system opened.

| What difficulties did you encounter?	Website frequently experienced errors or slow access, server overload, and failed payment transactions even when sufficient balance was available.
How do you perceive transparency?	Fans felt that the online queue was unclear, ticket quotas were not disclosed, and seat allocation lacked transparency, raising doubts about the fairness of the system.
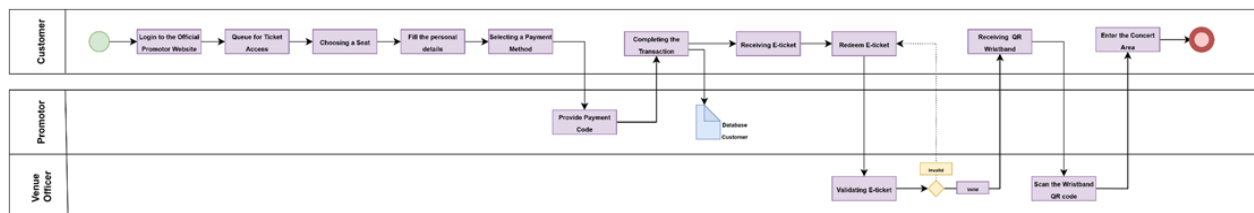
Picture. 4 BPMN Order Ticketing

Steps of the K-Pop Concert Ticket Purchasing Process (based on BPMN with database integration)

1. The customer accesses the official promoter's website to initiate the ticket purchasing process.
2. The customer enters the digital queue and is then directed to the ticket selection page.
3. The customer selects the preferred section or seating category.
4. The customer fills in the personal identity information required for the purchase.
5. The customer is directed to the payment method page.
6. The customer chooses a payment method (such as bank transfer, credit card, or e-wallet).
7. The Promoter/Platform Ticketing provides the customer with a payment code.
8. The customer completes the transaction using the chosen payment method.
9. After the transaction is completed, the Promoter stores the transaction data in the database for validation and sales recording purposes.
10. The customer receives an e-ticket via their registered email.
11. The customer can also access the ticket purchase history through the promoter's system.
12. On the day of the concert, the customer presents the e-ticket to the venue officer.
13. The Venue Officer validates the e-ticket against the transaction records stored in the promoter's database.
14. If the ticket is valid, the venue officer issues a concert wristband; if it is invalid, the e-ticket cannot be exchanged.
15. At the entrance gate, the venue officer scans the QR code on the wristband as proof of a valid ticket, allowing the customer to enter the concert area

Interviews and analysis of the K-pop concert ticket purchasing process revealed several significant issues. The ticket war phenomenon frequently resulted in tickets selling out within minutes, despite fans queuing from the system's opening. The system was also perceived as lacking transparency, particularly regarding queue order, ticket quota disclosure, and the clarity of the e-ticket validation process. To address these challenges, new policies are needed, including clear communication of ticket quotas, implementation of a one ID one ticket rule to prevent bulk purchases, prohibition of third-party purchasing services to ensure tickets reach legitimate buyers, and distribution of concert wristbands exclusively to verified customers to maintain ticket authenticity and security. These findings suggest that the current ticketing system does not yet offer a transparent or misuse-free experience. Consequently, the TO-BE stage involves modeling a redesigned business process using BPMN with database integration to establish a more efficient, transparent, and responsive ticketing flow,
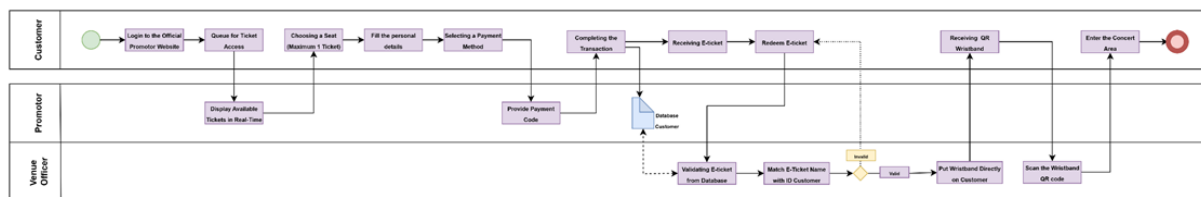
Picture 5. To-Be BPMN

The To-Be model, the K-Pop concert ticketing system is strengthened through the implementation of new mechanisms that are more transparent and fair. First, ticket quota clarity is displayed in real-time before sales begin, accompanied by a rule that limits the purchase to a maximum of one ticket per identity, thus enforcing the *One ID One Ticket* system to prevent bulk buying practices. Second, ticket purchases cannot be delegated through purchasing service, as the system requires the original identity of the buyer to match the data recorded on the e-ticket. Third, the wristband as the physical ticket is issued only directly to the rightful owner after the identity verification process at the venue, ensuring it cannot be transferred or picked up by another party. With these mechanisms, the ticketing process is expected to become more secure, transparent, and consumer-oriented toward a fairer experience. The To-Be model enhances the K-Pop concert ticketing system by introducing mechanisms that promote greater transparency and fairness. Real-time ticket quota information is displayed prior to sales, and a rule limits purchases to one ticket per identity, enforcing the "One ID, One Ticket" policy to prevent bulk buying. Ticket purchases cannot be delegated to third-party services, as the system requires the buyer's identity to match the e-ticket data. Additionally, wristbands are issued only to verified owners after identity verification at the venue, preventing them from being transferred or collected by unauthorized individuals. These measures are expected to create a more secure, transparent, and consumer-focused ticketing.

4. CONCLUSION

This study confirms that the ticket purchasing system for K-pop concerts in Indonesia continues to encounter significant challenges, including the ticket war phenomenon, technical barriers such as website errors and failed transactions, and insufficient transparency regarding ticket quotas, queue order, and e-ticket validation. These issues indicate that ticket purchasing is a complex process with substantial implications for fan experience and satisfaction. To address these challenges, this research utilizes the Business Process Model and Notation (BPMN) approach to analyze the As-Is model and develop a more effective To-Be model.

The proposed To-Be model incorporates several key improvements. The One ID One Ticket rule restricts each individual to a single ticket purchase, reducing bulk buying and resale. Prohibiting third-party purchasing services ensures that only legitimate buyers can obtain tickets, thereby preventing fraudulent practices. The system also offers real-time ticket quota information, increasing transparency and enabling fans to make informed purchasing decisions. Additionally, concert wristbands are distributed exclusively to verified buyers through identity checks, ensuring that only genuine ticket holders gain entry to the concert venue.

The improvements introduced in the BPMN To-Be model are expected to enhance the ticketing system's transparency, efficiency, and security. By reducing fraudulent practices and minimizing technical failures, the redesigned system can help restore fans' trust in the fairness of the ticketing process. This study also contributes to the broader discussion on enhancing user experiences through digital platforms by promoting transparency, integrating reliable data management, and adopting a user-centered design approach. The findings demonstrate that a BPMN-based ticketing flow not only addresses current challenges but also offers a sustainable model adaptable to concerts and other large-scale events in Indonesia and internationally.

This study is subject to several limitations, particularly regarding the scope of data. The research applied the Business Process Model and Notation (BPMN) approach to model the As-Is and To-Be processes. Future research could enhance the analysis by incorporating additional technologies, such as blockchain for ticket security, big data analytics for demand prediction, or machine learning to improve fairness in digital queuing management. The proposed To-Be model presented in this study is conceptual and has not yet been implemented in practice. Future research should prioritize testing the model within real-world ticketing systems to assess its effectiveness, efficiency, and impact on user experience. Additionally, comparative studies of concert ticketing practices in other countries could help identify best practices that may be adapted to enhance transparency, security, and user satisfaction in Indonesia's entertainment industry.

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