ISSN 2348-1196 (print)
International Journal of Computer Science and Information Technology Research ISSN 2348-120X (online)
Vol. 14, Issue 2, pp: (78-91), Month: April – June 2026, Available at: www.researchpublish.com

A Conceptual KiddoTrack Business Model: A Safer and Predictable Operations for School Children Pickup Process

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DOI: https://doi.org/10.5281/zenodo.20288071

Published Date: 19-May-2026

Abstract*: This paper proposes a conceptual business model called KiddoTrack, a digital platform and mobile application designed to improve the safety, efficiency, and transparency of child pickup processes. The system targets key customer segments (CS), namely parents or legal guardians (CS1), schools or school administrators (CS2), and pickup service providers (CS3). Current challenges include lack of real-time visibility, risk of unauthorized pickups, inefficient manual verification methods, and poor coordination among stakeholders. These issues also limit the alignment with national digital transformation initiatives such as Malaysia's 13th Malaysia Plan (13MP), MyDigital, and the National Fourth Industrial Revolution (4IR) Policy, which emphasize smart, secure, and connected systems. This study adopts the Design Thinking (DT) methodology, including literature review, benchmarking of existing platforms such as Anak2U and IN Safe Child App using the Business Model Canvas (BMC), and data collection through interviews or surveys. Based on the findings, an initial business model and high-fidelity digital platform prototype are developed using tools such as the Environment Map (EM), Value Proposition Canvas (VPC), and BMC. The prototype is then tested and validated with target users. A Strategy Canvas is also constructed to compare KiddoTrack with existing market solutions. The key contribution of this paper is the development of a validated conceptual business model that integrates digital platform features such as real-time child pickup tracking, QR-based verification, and instant notifications as effective pain relievers, while offering gain creators such as increased safety, convenience, and operational efficiency. The proposed solution addresses critical user needs while supporting national and global digital transformation goals. Future work includes the development of a detailed business plan and implementation strategy.

***Keywords*: Child Pickup System, KiddoTrack, Digital Platform, Business Model Canvas, Child Safety, Design Thinking.**

I. INTRODUCTION

Ensuring the safety of children during school pickup is an increasingly important concern in modern society, particularly with the rise of dual-income households [17]. Parents or legal guardians (CS1) often rely on third parties such as relatives, drivers, or pickup service providers to collect their children from school. This creates a critical need for a system that ensures that children are handed over only to authorized individuals. Schools or administrators (CS2) are responsible for managing student dismissal efficiently while maintaining safety, while pickup service providers (CS3) require clear coordination and verification processes.

The key jobs-to-be-done across these customer segments include ensuring secure and verified child pickup, enabling smooth coordination among stakeholders, and minimizing delays during dismissal. However, several extreme pains exist, including lack of real-time tracking, risk of unauthorized pickups, inefficient manual verification processes, traffic congestion, and

poor communication between parents and schools [18]. The essential gains desired by users include enhanced child safety, real-time updates, convenience, and improved operational efficiency.

These challenges are highly relevant to Malaysia's national development agenda. Initiatives such as the 13th Malaysia Plan (13MP), MyDigital, and the National 4IR Policy emphasize the adoption of digital technologies, including mobile applications, cloud systems, and data-driven platforms, to improve safety, efficiency, and quality of life. In the education sector, digital transformation is crucial to modernize school operations and enhance student safety.

Currently, various solutions exist in the market, including school management systems and child monitoring applications such as Anak2U and IN Safe Child App. These platforms provide basic functionalities such as attendance tracking, communication, and notifications. From a business model perspective, they deliver value through digital platforms targeting parents and schools, with pain relievers such as improved communication and gain creators such as administrative efficiency. However, these solutions remain limited as they do not provide a comprehensive system for real-time child pickup tracking and secure verification. In addition, they lack full integration of all relevant stakeholders, including pickup service providers, and do not fully align with the requirements of smart, connected ecosystems promoted by national policies [19].

As a result, there is a clear gap in the current market. Existing solutions are fragmented and insufficient in addressing the specific challenges of child pickup safety and coordination [20]. Therefore, there is a need for a more integrated, secure, and intelligent solution. To address this gap, this paper proposes KiddoTrack, a digital platform and mobile application designed to provide real-time tracking, QR-based verification, and seamless communication to ensure a safe and efficient child pickup process.

II. PROBLEM STATEMENT/OBJECTIVES

The main objectives of this paper are to develop a conceptual multi-sided digital platform business model for KiddoTrack that addresses child pickup safety and provides services including the following:

a. To develop a digital platform that enables real-time child pickup tracking, allowing parents and schools to monitor the pickup process and ensure children are safely handed over to authorized individuals.

b. To design a secure verification system (e.g., QR code or digital pass) that ensures only authorized guardians or pickup service providers are allowed to collect the child, thereby reducing the risk of unauthorized pickups.

c. To provide instant notifications and real-time updates to parents or legal guardians regarding their child's pickup status, enhancing transparency and peace of mind.

d. To improve school operational efficiency by digitizing and streamlining the student dismissal process, reducing congestion, manual errors, and administrative workload.

e. To create a structured and integrated platform that connects parents, schools, and pickup service providers, enabling better coordination and communication among all stakeholders.

f. To support pickup service providers by offering a clear authorization system and efficient process that minimizes delays and miscommunication during child pickup.

g. To align the KiddoTrack platform with national digital transformation initiatives such as 13th Malaysia Plan (13MP), MyDigital, and the National 4IR Policy by leveraging mobile applications, cloud systems, and smart technologies.

h. To analyse market opportunities and limitations of existing solutions (e.g., Anak2U and IN Safe Child App) and identify how KiddoTrack can provide a more comprehensive and innovative solution.

i. To develop and validate the Business Model Canvas (BMC) and Value Proposition Canvas (VPC) for KiddoTrack to ensure its competitiveness and relevance in the market.

j. To design and prototype a high-fidelity mobile application that allows users to register, verify, track, and manage the child pickup process efficiently.

k. To position KiddoTrack within a less competitive market space using tools such as the Strategy Canvas, supporting its potential for sustainable growth and value creation.

III. METHODOLOGY

This study adapts the Design Thinking (DT) methodology to develop the KiddoTrack digital platform and its conceptual business model. The DT process consists of five stages including empathize, define, ideate, prototype and test which provide a structured and user-centered approach to problem solving [14].

A literature review (LR) is conducted to understand the challenges faced by the key customer segments, namely parents, schools and pickup service providers, particularly in relation to child safety and inefficient pickup processes. Benchmarking is also performed on similar leading platforms such as Anak2U and IN Safe Child App using the Business Model Canvas framework to analyse their business model, strengths and limitations.

To further understand the problems, interviews or surveys are conducted with the different customer segments to identify their job-to-do, extreme pains and essential gains. Based on these insights, an initial business model (BM) is developed together with a conceptual digital platform prototype. Business modelling tools such as the Environment Map (EM), Business Model Canvas (BMC) and Value Proposition Canvas (VPC) are applied to structure and refine the solution [12].

The initial BM and prototype are then tested and validated through interviews or surveys with the respective customer segments. The validation process highlights key findings related to user needs, system usability and safety requirements. Based on these findings, the business model and platform design are refined and improved, leading to the development of a validated conceptual business model.

Finally, a Strategy Canvas is developed to compare the relevance and sustainability of KiddoTrack against existing solutions, including Anak2U and IN Safe Child App, from the perspectives of different customer segments. This analysis highlights the key differentiators of the proposed solution and supports its positioning within a less competitive market space.

IV. LITERATURE REVIEW

A. Digital Transformation and 4IR in Malaysia

The Fourth Industrial Revolution (4IR) has significantly transformed various sectors through the integration of digital technologies such as mobile applications, cloud computing, data analytics as well as emerging technologies like artificial intelligence (AI) and the Internet of Things (IoT). These technologies enable smarter, more efficient and data driven solutions across industries including education and safety management. According to Malaysia's National 4IR Policy (2019), the government emphasizes the adoption of digital solutions to improve efficiency, safety, and quality of life.

In the education sector, digital transformation is becoming increasingly important, especially in school management systems. Technologies such as real-time tracking, digital verification, and cloud-based systems are aligned with 4IR initiatives. These technologies enable safer and more efficient processes in daily operations.

In relation to the proposed startup, KiddoTrack supports the goals of the National 4IR Policy by applying digital technology to enhance child safety and improve school dismissal processes. The use of mobile applications and real-time notifications reflects the shift towards smart and connected systems in Malaysia.

B. Demand for Child Safety and School Management Solutions

There is an increasing demand for safer and more efficient child pickup systems, particularly among working parents [2]. With the rise of dual-income households, many parents rely on guardians, relatives, or transport providers to pick up their children from school. This creates challenges in ensuring that children are safely handed over to authorized individuals.

Studies show that school pickup and drop-off periods are associated with safety risks such as traffic congestion, poor coordination, and potential unauthorized access [13]. In addition, manual pickup systems, such as verbal confirmation or physical identification, are often inefficient and prone to human error. These issues may lead to delays, confusion, and potential safety risks for children.

In Malaysia, many schools still rely on manual or semi-digital processes for managing student dismissal, such as teacher supervision, physical tags, or informal communication through messaging platforms. While these methods provide basic control, they lack real-time verification and structured tracking systems.

In contrast, more advanced nations have begun adopting digital and automated school management systems, including mobile applications, QR-based verification, and real-time tracking technologies to enhance safety and efficiency. These systems enable better coordination between parents, schools, and authorized pickup persons, while reducing risks associated with manual processes [11].

Furthermore, digital communication between parents and schools has been shown to improve transparency and real-time monitoring [5]. Mobile-based systems with real-time features can enhance coordination and reduce congestion during school dismissal. This indicates a strong demand for digital solutions that can improve both safety and efficiency in the pickup process.

From a demand perspective, parents and schools require a system that ensures safety, provides real-time updates, and simplifies the pickup process. However, existing solutions do not fully meet these needs, highlighting a gap in the market.

C. Benchmark of Existing Business Models

Several existing platforms provide partial solutions related to school management and child safety, including Anak2U and IN Safe Child App.

Anak2U is a school management system that offers features such as attendance tracking, parent communication, and administrative tools. Its business model targets schools and parents through a digital platform. The strengths of Anak2U include strong integration with school operations and improved communication between stakeholders. However, it does not provide a dedicated real-time pickup tracking and verification system.

The IN Safe Child App focuses on child safety through monitoring and notification features. It allows parents to receive updates related to their children. While it enhances awareness and monitoring, its limitations include limited integration with school systems and the absence of a structured pickup authorization mechanism.

To further analyze existing platforms, a comparison based on key Business Model Canvas (BMC) elements is presented in Table 1.0 below.

TABLE I: BENCHMARK COMPARISON TABLE (BMC-BASED) OF EXISTING MODELS ANDPROPOSED SYSTEM

BMC Element	Anak2U	IN Safe Child App
Customer Segments	Schools, Parents	Parents, Guardians
Value Proposition	School management, attendance, communication	Child monitoring, safety alerts
Channels	Mobile application	Mobile application
Customer Relationship	System-based communication	App-based notifications
Revenue Streams	Subscription fees (schools)	Not clearly defined / app-based
Key Activities	School management system operations	Monitoring & alert system
Strengths	Strong school integration, organized system	Simple safety monitoring
Weaknesses	No real-time pickup verification	Limited school integration

Based on the comparison, existing platforms focus mainly on communication and monitoring but lack a comprehensive system for real-time pickup verification and multi-party coordination. This highlights an opportunity for KiddoTrack to provide a more integrated and secure solution.

D. Employment Opportunities, Digital Skills and Platform Economy

The growth of digital platforms in the Fourth Industrial Revolution (4IR) has created new opportunities for flexible and part-time employment. According to national development plans such as Malaysia Digital Economy Blueprint (MyDIGITAL) 2030 and National Entrepreneurship Policy (NEP) 2030, there is an increasing focus on improving income levels and creating more inclusive job opportunities [6].

In particular, platform-based businesses such as ride-hailing and delivery services have enabled individuals, including those from lower-income groups (B40), to participate in the gig economy. These platforms allow individuals to generate income through flexible work arrangements without requiring high entry barriers.

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In the context of KiddoTrack, the system can also support pickup service providers, such as drivers or caretakers, who can be registered and verified within the platform. This creates potential opportunities for individuals to offer child pickup services in a structured and safe environment.

However, the adoption of such digital platforms also requires basic digital skills and awareness. There may be challenges such as lack of familiarity with mobile applications or resistance to adopting new technologies, particularly among older users or less tech-savvy individuals.

From a broader perspective, this aligns with the United Nations Sustainable Development Goals (SDGs), particularly:

- SDG 4 (Quality Education) – through digital literacy and skill development
- SDG 8 (Decent Work and Economic Growth) – through creation of flexible job opportunities

Therefore, KiddoTrack not only addresses child safety concerns but also contributes to the development of a digital platform that supports economic participation and aligns with national and global development goals (Malaysia Digital Economy Corporation, 2021; Ministry of Entrepreneur Development and Cooperatives, 2021) [6].

V. INITIAL BUSINESS MODEL (BM) – USING BMC & VPC

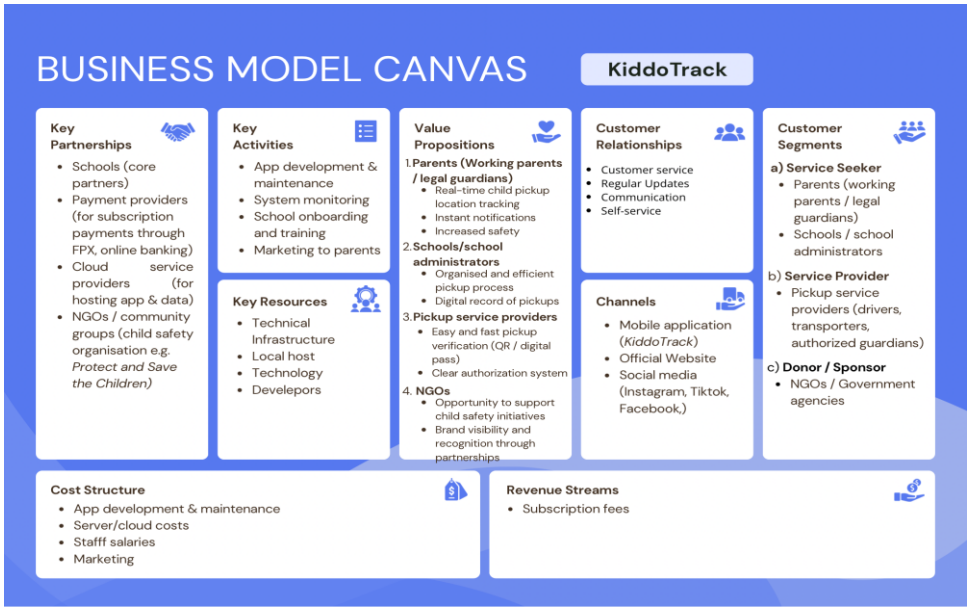

Fig. 1. Initial BMC

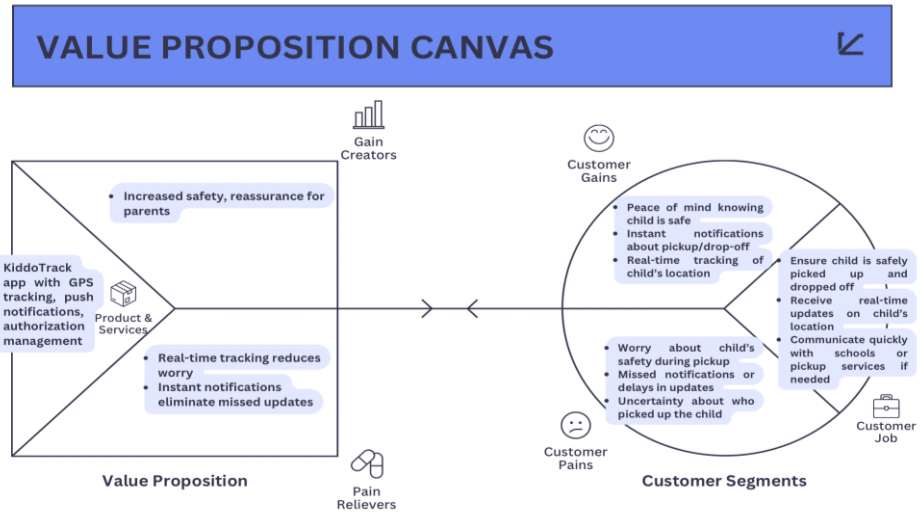

Fig. 2. VPC Diagram for Parents (Working Parents/ Legal guardians)

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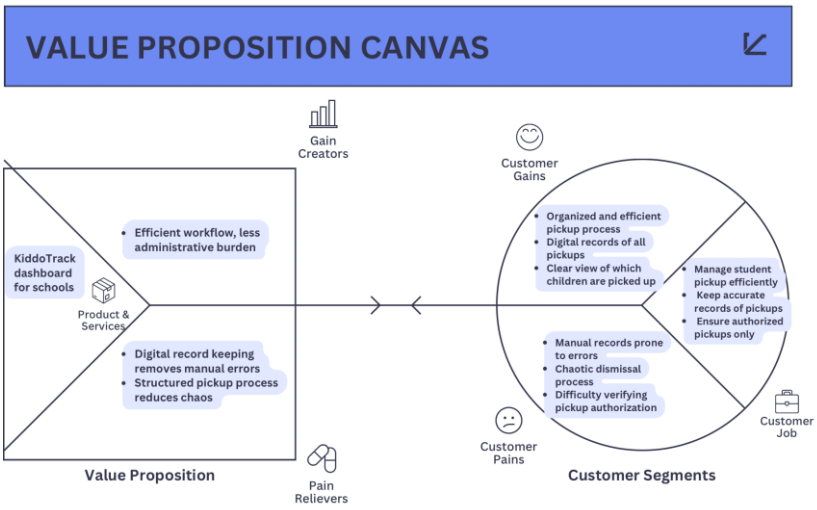

Fig. 3. VPC Diagram for Schools / School Administrators

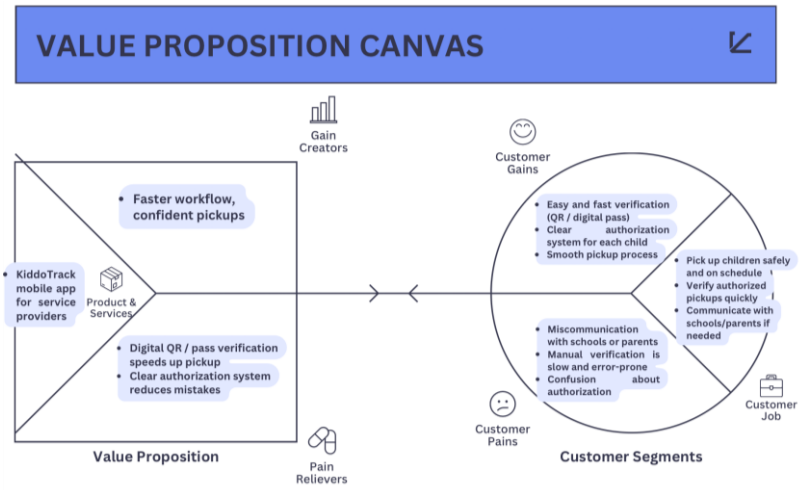

Fig. 4. VPC Diagram for Pickup Service Providers

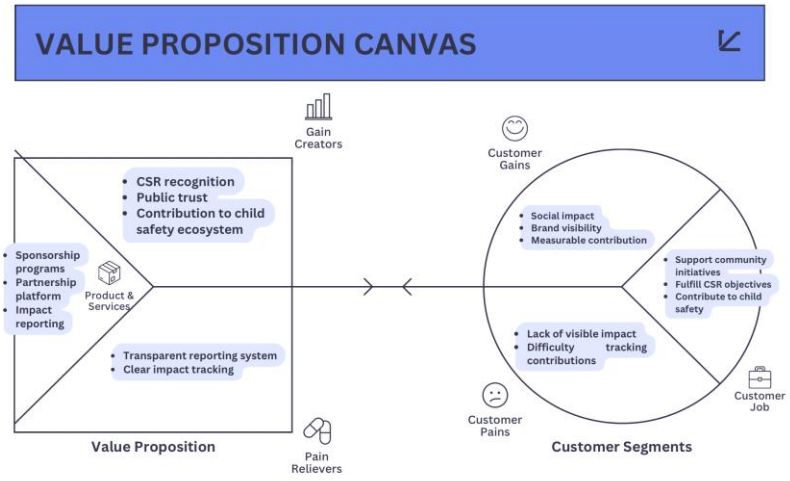

Fig. 5. VPC Diagram for Donors/Sponsors

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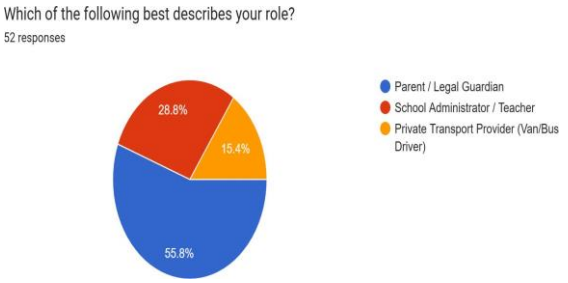
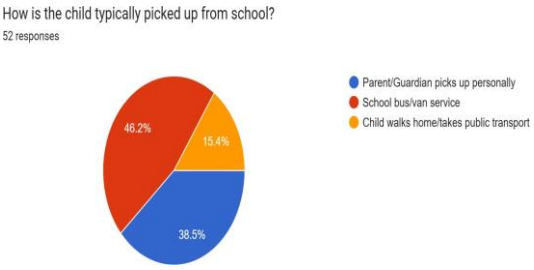
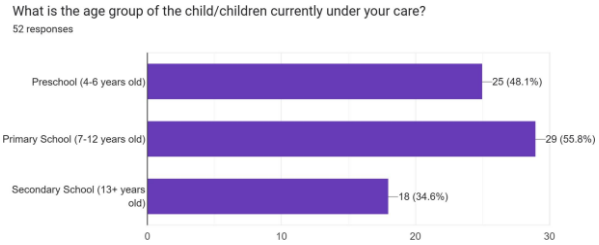
VI. VALIDATION OF INITIAL BM & KEY FINDINGS

We tested the initial BM by performing a survey among the customer segments. Total respondents are 52.

A. Demographic

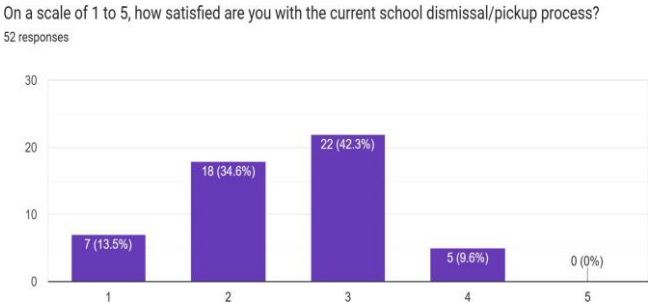


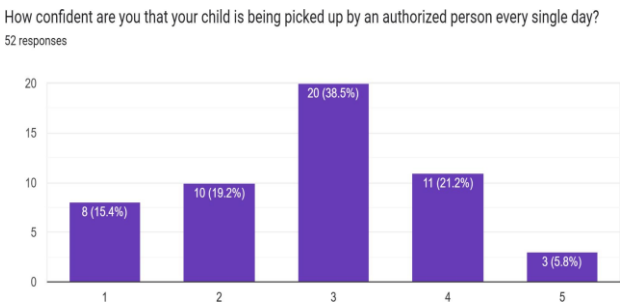


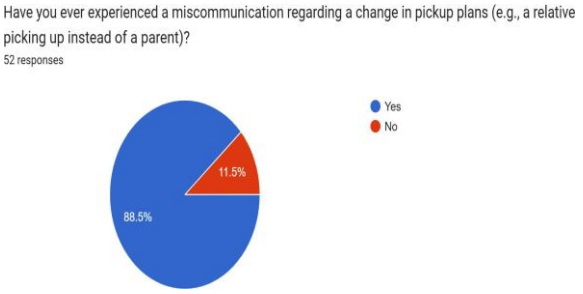


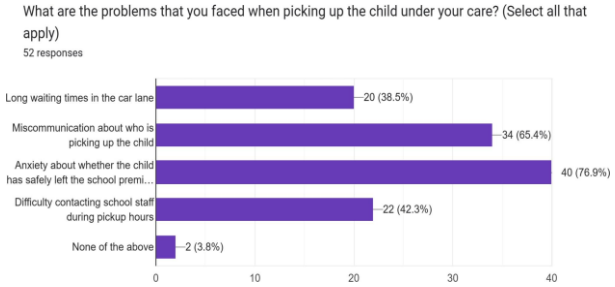
We had performed a survey to the customer segments which totalled to 52 respondents, primarily consisting of Parents and Legal Guardians (55.8%) and School Administrators or Teachers (28.8%) confirming that the feedback aligns with our core customer segments. A significant finding regarding current pickup behavior reveals that while 38.5% of parents pick up their children personally, a larger portion (46.2%) relies on school bus or van services, highlighting a critical need for a system that bridges the communication gap between schools, parents, and third-party transporters. Furthermore, the data shows that the primary users of KiddoTrack would be those managing children in Primary School (55.8%) and Preschool (48.1%), validating our strategy to focus marketing and system features on early childhood and primary education levels where supervision requirements are highest.

B. Problem Validation









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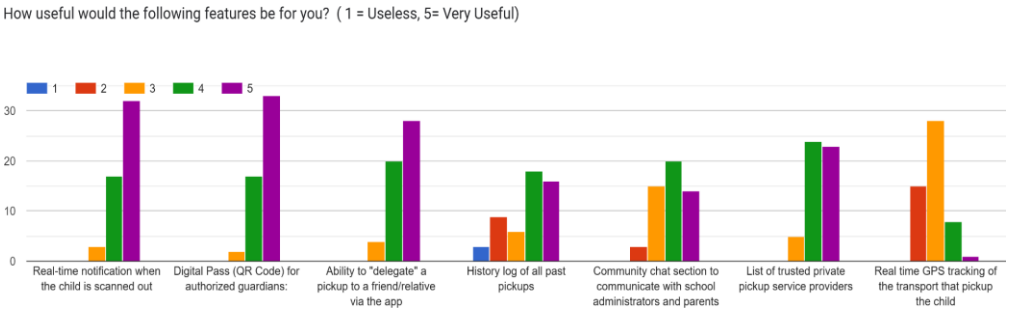
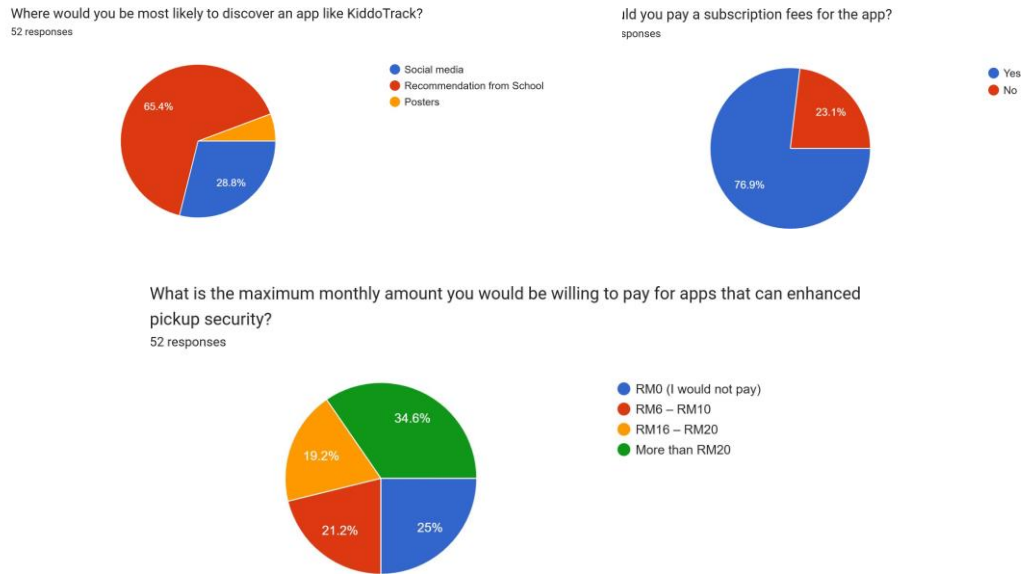
The survey results strongly validate the existence of significant safety and operational gaps in the current child pickup process. 88.5% of respondents are experiencing miscommunications regarding changes in pickup plans, indicating a failure in traditional manual coordination. Satisfaction levels are notably low, with nearly half of the participants (48.1%) rating their satisfaction at a 1 or 2 on a 5-point scale. The data reveals that the primary driver for a digital solution is emotional security, as 76.9% of respondents admitted to feeling anxiety about whether their child has safely left school premises. Additionally, 65.4% identified uncertainty regarding who is picking up the child as a core problem, and 42.3% struggled with contacting school staff during peak hours. These findings confirm that KiddoTrack's value proposition—focusing on real-time notifications and authorized digital passes—addresses an urgent and widespread need for transparency and peace of mind.

C. Prototype Validation



Real-time notifications and Digital Passes (QR Codes) showed as the most important with highest ratings among all the respondents. Over 60% of respondents rated them as "Very Useful" (Score 5). The ability to "delegate" pickups to friends or relatives also showed strong demand, validating our hypothesis that flexibility is key for working parents. From the stacked bar chart, we found that Real-time GPS tracking of the transport received the lowest scores, with a significant number of 2 to 3 ratings, suggesting that users prioritize the "authentication" of the picker over the "location" of the vehicle. These results allow us to streamline our development efforts by prioritizing the QR verification system and notification.

D. Revenue Models and Channels



The survey results provide a clear roadmap for KiddoTrack's market entry and monetization strategy. A majority 65.4% of respondents said they would most likely discover the app through a Recommendation from School, validating the school as our most critical channels and key partnerships. In terms of revenue, 76.9% of participants are willing to pay a subscription fee for the service. While 25% of respondents are unwilling to pay directly (RM0), the majority are comfortable with a premium tier, as 34.6% expressed a willingness to pay more than RM20 per month for enhanced security. This data supports a Tiered Subscription model, where basic security is accessible to all, but advanced features are marketed at a premium price point.

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VII. VALIDATED BM USING BMC FRAMEWORK

A. Validated BM

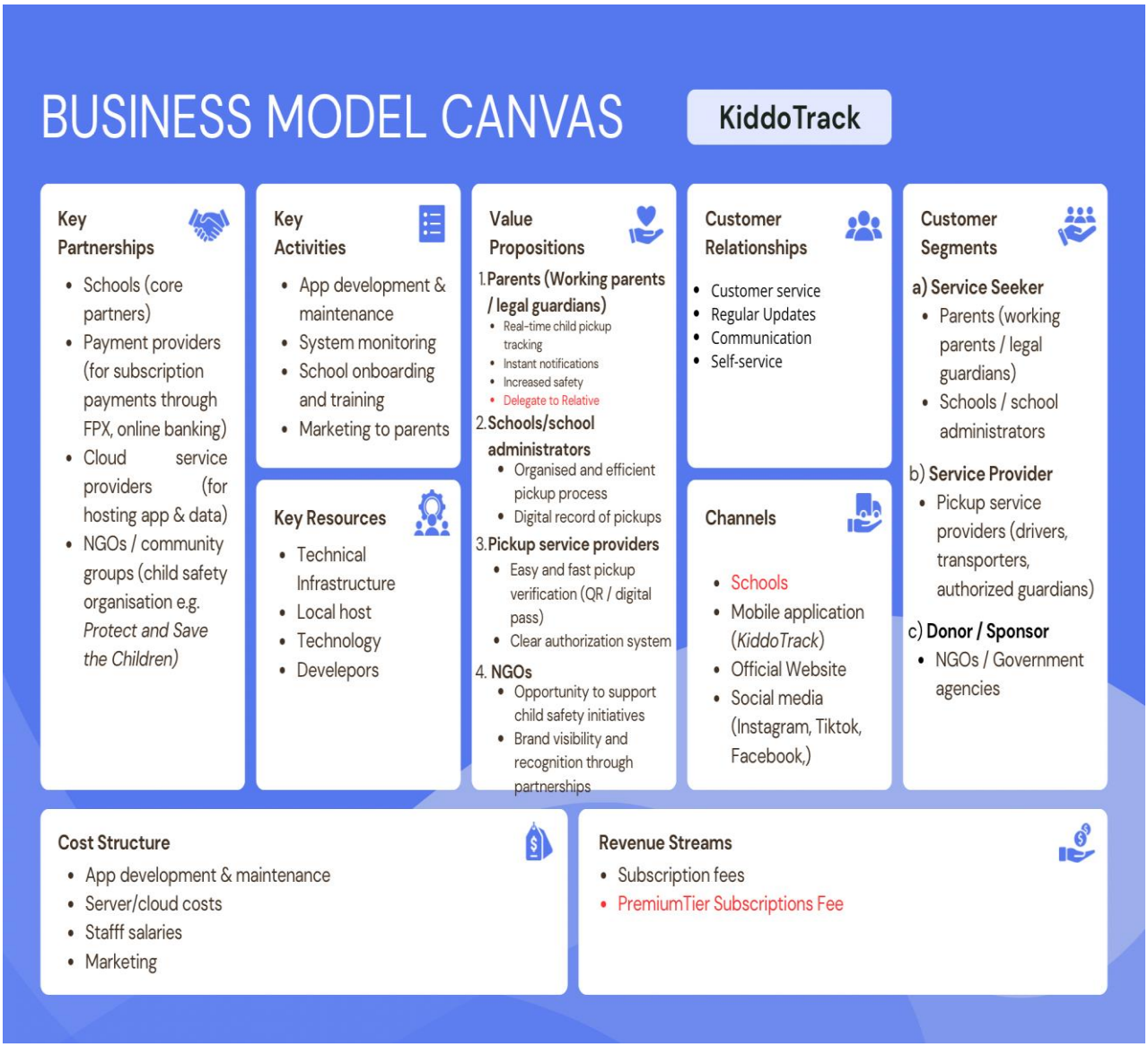

Fig. 6. Validated Business Model Canvas

1. Customer Segments

The customer segments for the KiddoTrack child pickup tracking system are categorized into service seekers, service providers, and donors or sponsors based on the roles shown in the Business Model Canvas. The service seekers consist of parents or legal guardians who use the system to monitor their children's pickup status and ensure safety during school dismissal times. The service providers include schools or school administrators and pickup service providers such as drivers, transporters, and authorized guardians who manage and verify the pickup process. In addition, donors or sponsors such as non-governmental organizations (NGOs) and government agencies may support the system through funding, partnerships, or community safety initiatives to enhance child protection and digital adoption in schools. These customer segments work together to improve safety, communication, and coordination in the child pickup process.

2. Value Propositions

The value proposition of KiddoTrack focuses on providing a safe, efficient, and organized child pickup management system through digital technology. Based on the Business Model Canvas, the system offers real-time child pickup tracking, instant

notifications, and increased safety for parents, allowing them to delegate pickup responsibilities to authorized guardians with confidence. For schools and school administrators, the system supports an organized and efficient pickup process by maintaining digital records of pickups and reducing manual errors. Pickup service providers benefit from faster verification using QR codes or digital passes, while NGOs and partners gain opportunities to support child safety initiatives and strengthen their community engagement through collaboration with the platform.

3. Channels

KiddoTrack delivers its services primarily through school because after surveying the customer segments, most of the respondents will likely know about the app through schools. Schools act as an important channel by introducing the system to parents and assisting with registration and onboarding. Other than that, the mobile application allows users to access tracking and notification features easily. The mobile application serves as the primary platform for tracking, notifications, and communication, while the website and social media channels are used to promote the service, provide updates, and increase awareness among potential users

4. Customer Relationships

KiddoTrack maintains customer relationships through continuous communication, reliable service, and user support. The system sends regular notifications and updates to keep parents informed about their child's pickup activities. Customer support services and self-service features allow users to manage accounts and resolve issues quickly, helping to build trust and long-term engagement.

5. Revenue Streams

KiddoTrack generates revenue mainly through subscription fees paid by parents and licensing fees paid by schools that implement the system. Parents or schools may pay regular subscription fees to access the system's core features, including tracking and notification services. Additional revenue can be obtained from premium tier subscriptions that provide enhanced features such as advanced tracking, additional user access, or extended reporting capabilities. This revenue model supports the sustainability of the business and allows continuous improvement of the system.

6. Key Resources

The key resources required for KiddoTrack include technological infrastructure, skilled personnel, and secure data management systems. The platform relies on cloud servers, mobile applications, and databases to operate effectively. Developers, system administrators, and support staff are essential for maintaining the system and ensuring reliable service delivery.

7. Key Activities

The key activities of KiddoTrack involve developing and maintaining the mobile application, monitoring system performance, and ensuring data security. The business also conducts school onboarding, user training, and marketing activities to expand its customer base. These activities ensure that the system remains functional, secure, and user-friendly.

8. Key Partnerships

KiddoTrack collaborates with schools, payment service providers, and cloud service providers to support its operations. Schools help implement the system and connect with parents, while payment providers enable secure subscription transactions. Cloud service providers ensure reliable data storage and system performance, making partnerships essential for smooth service delivery.

9. Cost Structure

The cost structure of KiddoTrack includes expenses related to system development, cloud hosting, staff salaries, and marketing activities. Ongoing maintenance and cybersecurity measures also contribute to operational costs. Managing these costs effectively is important to ensure the sustainability and growth of the business.

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B. Business Environment Map (EM)

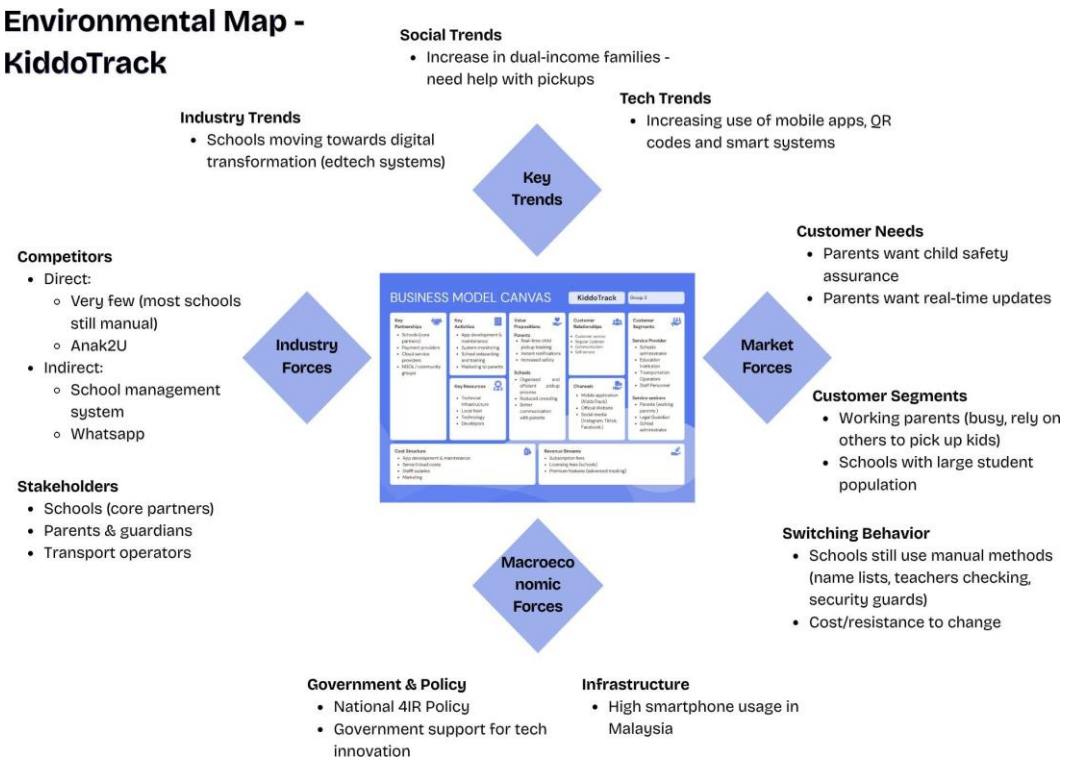

Fig. 7. Business Environmental Map

1. Key Trends

The 13th Malaysia Plan (13MP) prioritizes "Raising the Floor" for citizen wellbeing. KiddoTrack directly improves the Quality of Life for working parents by reducing the stress and time wasted during school pickups. It also provides a "safety floor" for children, ensuring that security technology isn't just for elite international schools but is accessible to all kindergartens and primary schools. The National 4IR Policy in MyDigital Phase 3 (2026–2030) establishes Malaysia as a regional lead in secure digital content [6]. KiddoTrack leverages these trends by replacing manual school dismissal with a high-trust, mobile-first ecosystem.

2. Market Forces

Market forces are driven by an "Economy of Trust," where parents no longer settle for verbal confirmation of their child's safety. Under the National Child Policy (2026–2030), there is a specific national mandate for "Digital Safety," pushing schools to move away from vulnerable manual methods like name lists and physical tags [3]. Our primary segment which is busy working parents requires the "essential gain" of real-time GPS updates to manage their daily schedules effectively.

3. Industry Forces

While the industry remains fragmented with many schools still utilizing manual check-ins or basic WhatsApp groups, the competitive landscape is shifting toward integrated platforms. KiddoTrack identifies its differentiator by fostering a People-Private-Public Partnership as encouraged by 4IR policies, linking schools, parents, and transport operators into a single verified loop. This creates a barrier to entry for generic apps that do not offer multi-party verification or direct school-admin integration.

4. Macroeconomic Forces (Government & Infrastructure)

The macroeconomic environment is highly favorable due to the Belanjawan MADANI (Budget 2026), which allocated significant funding for Cybersecurity and AI-driven governance [10]. Malaysia's rollout of 5G-Advanced infrastructure provides the technical backbone for our real-time tracking features. Furthermore, the National Entrepreneurship Policy (NEP 2030) supports high-growth startups through the Malaysia Digital Acceleration Grant [8]. Geopolitically, Malaysia's role as a tech leader in ASEAN allows us to position KiddoTrack as a scalable model for the region.

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Vol. 14, Issue 2, pp: (78-91), Month: April – June 2026, Available at: www.researchpublish.com

C. Strategy Canvas

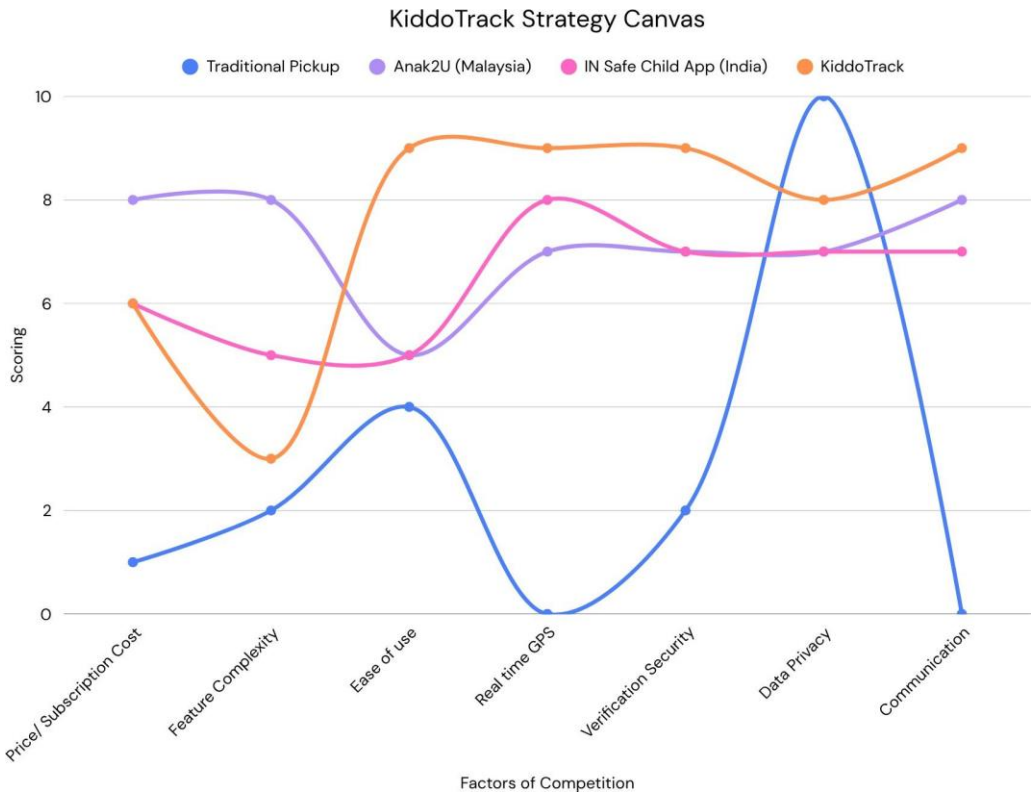

Fig. 8. Strategy Canvas

The strategy canvas compares the KiddoTrack child pickup tracking system with existing competitors in Malaysia which is Anak2U and globally which is IN Safe Child App. This line chart is to highlight their key differentiators using the "Purple Cow" concept and Blue Ocean Strategy (BOS). While many schools still rely on manual pickup methods, paper records, or simple communication tools such as messaging applications, existing digital platforms mainly focus on general school management or basic monitoring functions. For example, Anak2U provides attendance tracking, communication, and school administration features, and IN Safe Child App offers notifications and child monitoring capabilities. However, these systems do not provide a fully integrated, end-to-end child pickup management workflow.

KiddoTrack differentiates itself by offering several unique features that are not fully available in competing systems. These include secure QR code or digital pass verification specifically designed for child pickup authorization. We prioritise authorisation for the safety of the children. We are a centralized digital pickup record system that tracks the entire pickup history for safety. In addition, KiddoTrack supports authorized person registration and identity verification at the point of pickup, ensuring that only approved individuals can collect the child. These features work together to create a dedicated pickup safety solution rather than a general school management system, making KiddoTrack highly distinctive in the market.

These unique capabilities represent the system's "Purple Cow" value proposition because they make the product remarkable and safety-focused, clearly different from existing solutions. From a Blue Ocean Strategy perspective, KiddoTrack creates a new and uncontested market space by eliminating manual pickup verification processes reducing administrative workload and human error. By raising hild safety standards through secure identity verification, KiddoTrack created a specialized digital pickup management platform that integrates tracking, authorization, and communication into one system.

D. Low Fidelity Prototype of Application

The low-fidelity prototype of the KiddoTrack application illustrates the main user interfaces and system workflow. The prototype is designed to reflect the core features of the system, focusing on usability, simplicity, and role-based access for parents, school administrators, and pickup service providers.

ISSN 2348-1196 (print)
International Journal of Computer Science and Information Technology Research ISSN 2348-120X (online)
Vol. 14, Issue 2, pp: (78-91), Month: April – June 2026, Available at: www.researchpublish.com

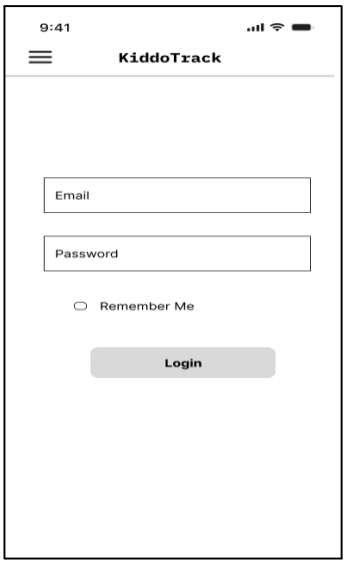

Fig. 9. Low-fidelity prototype of the login page supporting multiple user roles (parents, school administrators, and pickup service providers).

Fig. 10. Low-fidelity prototype of the home page displaying access to key system features.

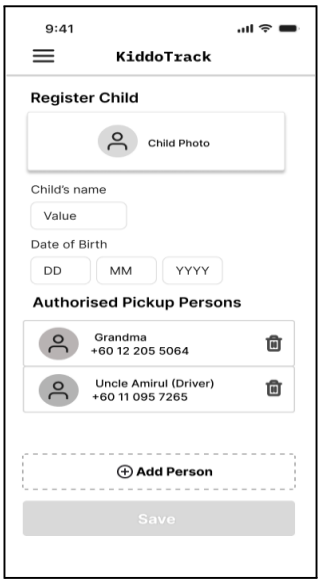

Fig. 11. Low-fidelity prototype of the child registration interface for adding child details and authorised pickup persons

Fig. 12. Low-fidelity prototype of the QR code scanning page used for secure pickup verification.

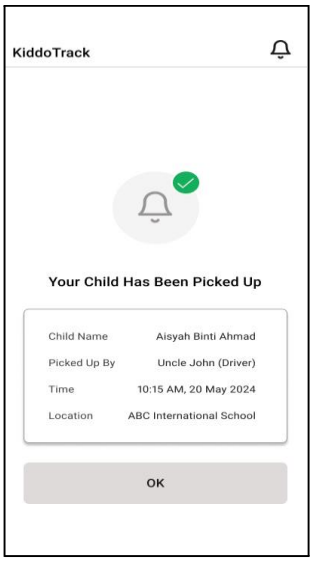

Fig. 13. Low-fidelity prototype showing real-time notification sent to parents after successful pickup.

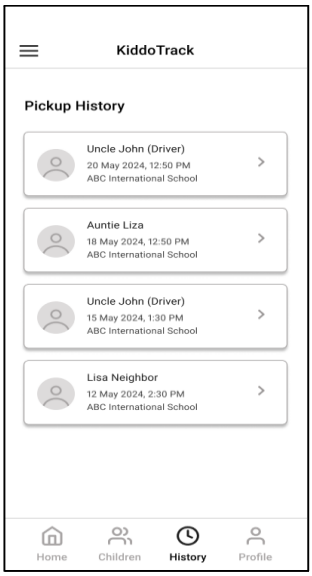

Fig. 14. Low-fidelity prototype of the pickup history page displaying past pickup records.

VIII. CONCLUSION AND FUTURE WORKS

In conclusion, this paper effectively addresses the extreme pains of working parents, such as the high-stress "blind wait" during school dismissal and the fear of unauthorized pickups. By automating the school administrator's job of managing gate traffic, our solution provides essential gains through real-time GPS visibility and a digital audit trail. This innovation directly aligns with the National Agenda, specifically supporting the 13th Malaysia Plan (13MP) for digital inclusivity and the Ekonomi MADANI framework for community safety.Our competitors focus solely on tracking, KiddoTrack acts as a pain reliever by eliminating manual logbook errors and a gain creator through AI-driven predictive arrival notifications. By integrating high-fidelity features like QR-code verification and IoT-enabled "Safe Zones," our digital platform transforms school logistics into a secure, collaborative ecosystem for all Customer Segments.

Future works will focus on transitioning this validated business model into a comprehensive detailed business plan, targeting a 5-year financial roadmap and break-even analysis. We aim to move from high-fidelity mock-ups to a Minimum Viable Product (MVP) for pilot testing within selected urban schools to refine our AI predictive system. A proper planning is required in order to better reach the designated customer segments through various channels.

REFERENCES

[1] Anak2U Sdn Bhd, "Anak2U | Tentang Anak2U," Apr. 13, 2023. [Online]. Available: https://anak2u.com.my/ms/tentang-anak2u/. [Accessed: Apr. 1, 2026].

[2] R. G. Banal, S. C. S. Alagos, C. J. C. Turija, D. F. D. Ramoran, and C. P. Dadula, "Development of an efficient schoolchildren drop-off and pick-up system in the Philippines: Enhancing safety and accessibility," *Journal of Engineering Environment and Agriculture Research*, vol. 4, no. 1, pp. 46–58, 2025.

[3] Bernama, "Digital Safety Key Focus Of National Child Policy 2026–2030," 2026. [Online]. Available: https://www.bernama.com/en/general/news.php?id=2522236.

[4] Economic Planning Unit, *National Fourth Industrial Revolution (4IR) Policy*. Putrajaya, Malaysia: Prime Minister's Department, 2021. [Online]. Available: https://ekonomi.gov.my/sites/default/files/2021-07/National-4IR-Policy.pdf.

[5] F. Harwanto, R. Werdiningsih, and E. S. Pudjiarti, "The role of digital communication between parents and schools in improving the effectiveness of student attendance and scholarship administration," *International Journal of Humanities and Social Sciences Reviews*, vol. 2, no. 3, pp. 75–86, 2025.

[6] Malaysia Digital Economy Corporation, *Malaysia Digital Economy Blueprint (MyDIGITAL)*. 2021. [Online]. Available: https://ekonomi.gov.my/sites/default/files/2021-02/malaysia-digital-economy-blueprint.pdf.

[7] Ministry of Digital, "Two years of the Ministry of Digital: Driving the National Digitalisation Agenda Towards an AI Nation by 2030," Press Release, Dec. 12, 2025. [Online]. Available: https://www.digital.gov.my/en-GB/siaran/Dua-Tahun-Kementerian-Digital.

[8] Ministry of Entrepreneur Development and Cooperatives (KUSKOP), *National Entrepreneurship Policy 2030*. Putrajaya, Malaysia, 2019. [Online]. Available: https://www.kuskop.gov.my/admin/files/med/image/portal/NEP 2030-Final.pdf.

[9] Ministry of Economy, *Thirteenth Malaysia Plan, 2026–2030: Melakar Semula Pembangunan (Executive Summary)*. Putrajaya, Malaysia, 2025. [Online]. Available: https://www.investmalaysia.gov.my/media/m3eamxey/thirteenth-malaysia-plan-2026-2030.pdf.

[10] Ministry of Finance, *Budget 2026: Accelerating Malaysia's Digital Transformation for All*. Kuala Lumpur, Malaysia, 2025. [Online]. Available: https://mof.gov.my/portal/en/news/press-release/pre-budget-statement2026.

[11] Organisation for Economic Co-operation and Development, *Digital Education Outlook 2021: Pushing the Frontiers with AI, Blockchain and Robots*. OECD Publishing, 2021.

[12] A. Osterwalder and Y. Pigneur, *Business Model Generation*. John Wiley & Sons, 2010.

[13] K. Sattanon and P. Upala, "Evaluation of risk factors for children during drop-off and pick-up time around primary schools in Thailand," *The Open Transportation Journal*, vol. 12, no. 1, pp. 301–318, 2018.

[14] E. Stevens, "The key principles and steps of the design thinking process," Jul. 9, 2019. [Online]. Available: https://careerfoundry.com/en/blog/ux-design/design-thinking-process/.

[15] United Nations, *Transforming Our World: The 2030 Agenda for Sustainable Development*. New York, USA, 2015.

[16] World Bank, "Malaysia's digital economy – A new driver of development," Jun. 25, 2021. [Online]. Available: https://www.worldbank.org/en/country/malaysia/publication/malaysias-digital-economy-a-new-driver-of-development.

[17] Department of Statistics Malaysia, "Labour Force Survey Report Malaysia 2023," 2023. [Online]. Available: https://www.dosm.gov.my

[18] United Nations Children's Fund (UNICEF), "Child Safety and Protection in Digital and Physical Environments," 2021. [Online]. Available: https://www.unicef.org

[19] Gartner, "Smart Campus and Connected Education Ecosystems," 2022. [Online]. Available: https://www. gartner.com

[20] World Economic Forum, "The Future of Digital Transformation in Education and Public Safety," 2020. [Online]. Available: https://www.weforum.org