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AI-Based Adaptive Front Office Training Prototype at Loccal Collection Hotel Labuan Bajo

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Abstract: *The global digital transformation in the hospitality industry demands accelerated adoption of Artificial Intelligence (AI) across all accommodation sectors; however, local hotels in the Labuan Bajo national priority destination lack structured AI-based training programs. This study aims to develop an AI-based adaptive Front Office training prototype, map the enabling and inhibiting factors of its adoption, and analyze staff and management perceptions of its impact. A qualitative applied approach using the Research and Development (R&D) framework with the ADDIE model was employed, involving seven purposively selected informants. Data were gathered through in-depth interviews, participatory observation, and document review, then analyzed using the Miles and Huberman procedure. The findings indicate that the prototype was developed through five ADDIE stages utilizing three simple AI technologies, namely ChatGPT, a voice assistant, and a chatbot. Key enabling factors include staff motivation, management commitment, and the availability of free AI tools, while primary barriers include unstable internet infrastructure and psychological resistance. All informants expressed positive perceptions regarding the prototype's impact on Front Office task efficiency and vocational work readiness. It is concluded that this prototype is viable for replication as an HR development model for local hotels across national priority tourism destinations.*
Keywords*:* Adaptive Training; Artificial Intelligence; Front Office; Labuan Bajo; Prototype

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INTRODUCTION

The digital transformation in the global hospitality industry has driven a fundamental shift in the way guest services are managed, particularly in the *Front Office* (FO) division which serves as the main gateway for interaction between hotels and customers. Artificial intelligence (AI) is now not just a complementary innovation, but has become a strategic component in improving operational efficiency and overall hotel service quality. The acceleration of AI technology adoption puts real pressure on all accommodation industry players to immediately adjust their human resource capacity to the demands of the ever-evolving digitalization era (Holmes et al., 2019).

Labuan Bajo is one of the national super priority destinations designated by the Indonesian government as a leading tourism area with international standards. However, the

actual condition of human resource management in the region's local hospitality sector is still far from expectations. Until now, there has not been a single local community-based accommodation in the Labuan Bajo super priority area that has implemented a human resource development program based on AI technology. This condition indicates a serious gap between the demands of the global tourism industry and the readiness of local hospitality human resources in facing the digitalization era.

The results of the initial observation which was carried out in January 2026 at the Loccal Collection Hotel Labuan Bajo revealed four fundamental problems that are interrelated. First, the digital capacity of FO staff is still at a very limited level, making it difficult to carry out technology-based operational tasks optimally. Second, the training approach applied so far is conventional and not adaptive to the differences in individual abilities of each staff. Third, there is a fairly wide gap between the teaching materials of hospitality vocational programs and real needs in the field, especially those related to AI-based digital competencies. Fourth, there has not been a structured and sustainable cooperation between higher education institutions and local hotel partners in designing and implementing relevant HR training programs. These four problems collectively have the potential to reduce the competitiveness of Labuan Bajo local hotels in the midst of increasingly fierce national and global tourism competition (Liestiandre et al., 2025).

Previous studies have made significant contributions to understanding this issue from various perspectives. An effective learning system for the adult workforce must rely on individual experience and contextual learning readiness, not a rigid uniform approach, as past experience is the main factor that determines the success of the competency improvement process (Kapur, 2015). On the technology side, the targeted use of simple AI has been proven to be able to significantly increase workforce capacity without requiring complex and high-cost infrastructure (Holmes et al., 2019). The development of an AI-based training concept for hospitality vocational personnel in an educational game format has also been pioneered, although its application is still limited to the conceptual level and has not been directly piloted to the hotel workforce on active duty (Raharjo & Roedavan, 2025). From an institutional aspect, systematic collaboration between universities and the hospitality industry in eastern Indonesia is considered a strategic key to the success of human resource development, but partnership models that specifically target local accommodation in super priority destinations are still not available in the existing literature (Saepudin et al., 2022).

Based on the overall analysis of the situation and the literature review above, there is a real and urgent knowledge gap to be filled, namely the unavailability of prototypes of AI-based adaptive FO training that are specifically designed according to the characteristics and limitations of local hotels in super priority destination areas. This research is here to fill this gap through the development and testing of AI-based adaptive training prototypes that are contextual, replicative, and rooted in the real needs of local hotels in Labuan Bajo (Liestiandre et al., 2025; Ministry of Tourism and Creative Economy, 2026).

Based on the background description that has been presented, this study formulates three research questions. First, what is the process of developing an AI-based *Front Office* adaptive training prototype at Loccal Collection Hotel Labuan Bajo? Second, what are the supporting and inhibiting factors experienced by *Front Office* staff in adopting the training

JIRK
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prototype? Third, how do *Front Office staff* and hotel management perceive the impact of the training prototype in improving the digital competence and job readiness of hospitality vocational graduates? This research has three objectives that are mutually sustainable. First, produce a prototype *of AI-based Front Office* training with the ADDIE model that matches the actual conditions of local hotels in Labuan Bajo. Second, systematically mapping the supporting and inhibiting factors in the AI technology adoption process by FO staff. Third, analyzing the perception of hotel staff and management on the contribution of the training prototype in improving digital competence and job readiness of hospitality vocational personnel.

This research provides benefits on two complementary dimensions. Theoretically, this research enriches the treasure of hospitality human resource development science by integrating adaptive learning theory and the use of simple AI in the context of local accommodation in super priority destinations that have so far escaped academic attention (Holmes et al., 2019; Kapur, 2015). Practically, the results of this study provide a prototype of a training module that can be directly replicated by similar local hotels in other priority tourist destination areas, as well as being the basis for policy recommendations for the development of more adaptive and technology-based hospitality human resources for all relevant stakeholders (Saepudin et al., 2022).

RESEARCH METHODS

This research uses an applied qualitative approach combined with *the Research and Development* (R&D) framework through the ADDIE model as the procedural basis for prototype development. The selection of this approach is based on its suitability in producing a scalable, contextual, and testable training product directly in the field (Sugiyono, 2019). The research location is located at the Loccal Collection Hotel Labuan Bajo, East Nusa Tenggara, with the person in charge of the partner from the hotel being Mr. Fransiskus Berto Ma. as *Front Office Manager*.

Participants were determined by *purposive sampling* by considering the relevance of the role and proximity of the informant to the focus of the study. The study participants consisted of 5 to 8 people consisting of one *Front Office Manager*, one *Supervisor*, three to five *Front Office* staff, and four hotel guests. The composition of these informants was strategically chosen to obtain a comprehensive perspective from various layers that are directly involved in the *Front Office service ecosystem* (Sugiyono, 2018).

Data collection is carried out in a triadic manner through three complementary instruments. First, *in-depth interviews* were conducted on a scheduled basis with all key informants using pre-prepared semi-structured interview guidelines, and all interview results were transcribed *verbatim* to maintain data validity. Second, participatory observations were carried out on the daily activities of the *Front Office division* to obtain an empirical picture of the actual conditions in the field. Third, the review of hotel operational documents such as daily records, work schedules, and applicable SOPs was also carried out during the research period (Sugiyono, 2018).

The implementation of the research was divided into two consecutive trial ranges, each lasting four weeks. The first range is focused on a limited trial of an adaptive training

prototype that contains three main components, namely simple AI-based training modules such as ChatGPT, *voice assistants*, and *chatbots* at no cost; AI-assisted *simulation of Front Office daily tasks* ; and measurement of staff understanding through contextual case studies. The second range is directed at the implementation of prototypes that have been refined through intensive mentoring sessions and peer-to-peer training, to ensure conformity with local conditions in Labuan Bajo while monitoring its impact on the efficiency of the implementation of FO tasks (Sugiyono, 2019).

Data analysis follows the procedure of Miles et al. (2014) which includes three continuous stages, namely thematic data reduction, presentation of data in the form of an analytical matrix, and conclusion drawing through verification. The validity of the findings is ensured through triangulation of sources and methods, *member checking* with participants, and assessments from hospitality and educational technology experts (Sugiyono, 2017). The theoretical framework that underpins the entire analysis process is the Adaptive Learning theory from Kapur (2015) and the concept of Simple AI Utilization from Holmes et al. (2019), which together allow a thorough evaluation of the prototype in the conventional training system of local hotels in Labuan Bajo.

RESULTS AND DISCUSSION

RESEARCH RESULTS

Research Informant Profile

This study involved seven informants who *were selected purposively* based on the relevance of their role to the focus of the study. The composition of the informants includes one *Front Office Manager*, one *Front Office Supervisor*, three *Front Office staff*, and two hotel guests. The full profile of the informant is presented in the following table.

Table 1. Research Informant Profile

No.	Informant Code	Job Title/Status	Education	Remarks
1	I-1	*Front Office Manager*	S1 Hospitality Management	Management
2	I-2	*Front Office Supervisor*	D3 Hospitality	Management
3	I-3	*Front Office Staff*	Hospitality Vocational School	Operational Staff
4	I-4	*Guest* (Domestic Traveler)	S1	Guest Perspective
5	I-5	*Front Office Staff*	D3 Hospitality	Operational Staff
6	I-6	*Front Office Staff*	Tourism Vocational School	Operational Staff
7	I-7	*Guest* (Foreign Tourists)	S2	Guest Perspective

Source: Primary Data, processed by researchers, 2026

Table 1 shows that the informants in this study include diverse representations in terms of educational background, position position, and service user perspective. This diversity of profiles provides a wealth of comprehensive data to support the validity of research findings.

Front Office Staff Digital Competency Conditions

Based on the results of in-depth interviews and participatory observations, it was found that the digital capacity of all *Front Office staff* at Loccal Collection Hotel Labuan Bajo is still at a very basic level. All informants from the management and staff elements consistently confirmed that the use of technology in the FO division is limited to a few

conventional applications only. The findings regarding the application used by FO staff are summarized in the following table.

Table 2. Digital Applications Used by Front Office Staff

No.	Apps/Devices	Function in Work	Categories
1	*Property Management System* (PMS)	Reservation management, *check-in/check-out*	Hotel System
2	Posted by E	Communication with guests and internal teams	Communication
3	Microsoft Excel / Google Sheets	Daily reporting and administration	Productivity
4	Microsoft Word	Preparation of operational documents	Productivity
5	Google Maps	Destination location guide for guests	Navigation
6	*Booking Platform* (Booking.com, Agoda)	Third-party reservation monitoring	*E-commerce*
7	E-mail	Formal correspondence	Communication

Source: Primary Data, processed by researchers, 2026

Table 2 shows that none of the AI-based devices were identified in the daily work practices of FO staff. This condition is in line with I-1's recognition that technologies such as *chatbots*, virtual assistants, and generative AI have never been used in operations. I-6 even confirmed that although he has heard about ChatGPT from various sources, he has never used it once in a work context. From the guest side, I-7 revealed that the recording of requests is still done manually using paper and pen, which is considered not in accordance with international standard tourist destination service standards.

AI-Based Training Needs

All informants from various layers stated that AI-based training is a very urgent need for FO staff. Thematic analysis of the informant's answers resulted in a mapping of training needs presented in the following figure.

JIRK
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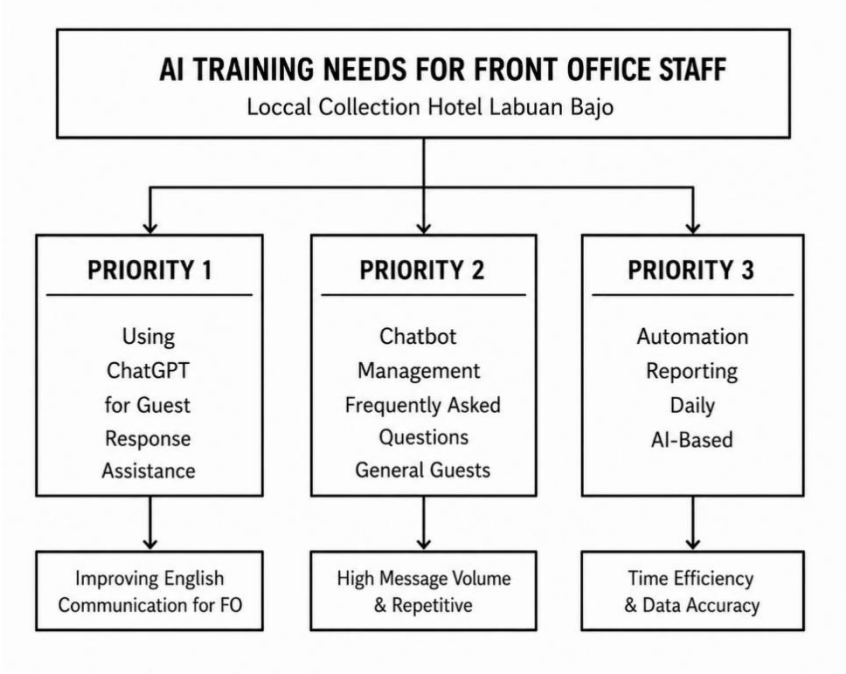


Figure 1. Front Office Staff AI Training Needs Map
Source: Primary Data Analysis Results, 2026

Figure 1 illustrates the three key priorities of AI training needs identified from all informants. The first priority is training on the use of ChatGPT to help staff compose responses to English-language guest messages in a professional manner, given that barriers to cross-lingual communication are the biggest challenges that staff face on a daily basis (I-3; I-6). The second priority is the mastery of *chatbots* to manage guest questions that are repetitive and time-consuming when handled manually (I-2). The third priority is the use of AI in the preparation of daily reports that are more efficient and accurate to reduce the administrative burden of staff (I-5).

Supporting and Inhibiting Factors of AI Adoption

Cross-informant analysis results in a comprehensive identification of the factors that affect the success and failure of the implementation of AI-based training. These findings are summarized in the following table.

Table 3. Supporting and Inhibiting Factors for the Adoption of AI-Based Training

No.	Dimensions	Supporting Factors	Inhibiting Factors
1	**HR**	The age of the staff is relatively young and familiar with *smartphones*	Psychological resistance to new technologies
2	**HR**	Intrinsic motivation of staff to thrive	Insecurity and fear of asking questions
3	**HR**	High spirit of service as basic capital	Inconsistencies in post-training implementation
4	**Institutional**	Full commitment and support of hotel management	Budget limitations for human resource development
5	**Institutional**	Willingness to collaborate between academia	Lack of a continuous evaluation

JIRK
Journal of Innovation Research and Knowledge
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		and industry	system
6	**Technology**	Availability of simple, free AI (ChatGPT, *chatbot*)	Unstable internet network infrastructure
7	**Technology**	Increasingly intuitive and easy-to-learn AI interfaces	Lack of technological devices in the FO work area
8	**Contextual**	Labuan Bajo's position as a national super priority destination	Lack of similar local hotel AI training references

Source: Primary Data, processed by researchers, 2026

Table 3 reveals that the strongest supporting factors come from the human resources and institutional dimensions, especially management commitment and staff learning spirit. I-1 emphasized that the support of hotel leaders is a key prerequisite for the program's success, while I-5 highlights the staff's high curiosity about new technologies as social capital that has not been optimally facilitated. On the other hand, the biggest obstacles lie in the instability of internet network infrastructure and budget constraints, two structural constraints that require layered and long-term solutions.

Perception of the Impact of Training on FO Task Efficiency

Informants from across categories consistently identified the three FO tasks that most required AI intervention based on the volume of work and the level of difficulty faced on a daily basis. The distribution of these perceptions is presented in the following figure.

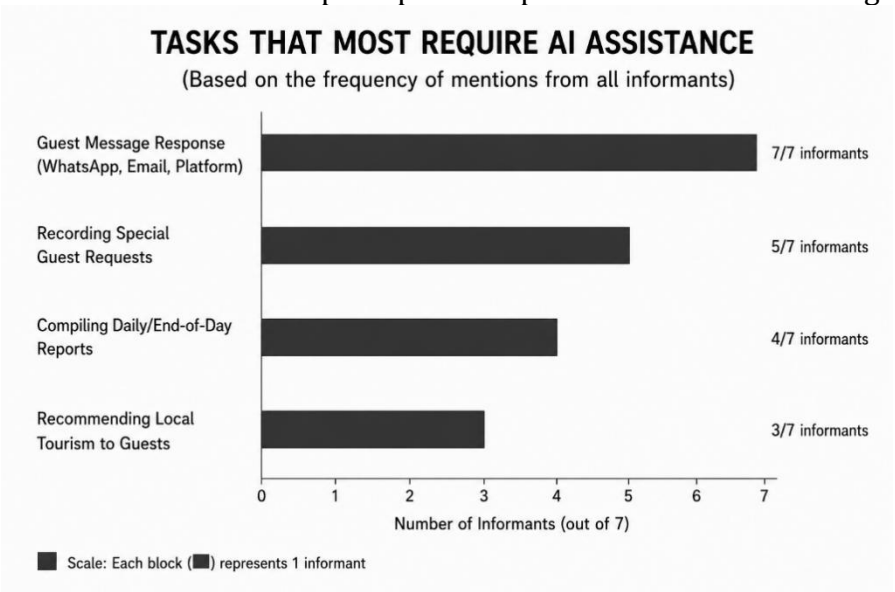


Figure 2. Distribution of Informant Perceptions of FO Tasks That Require AI Assistance
Source: Primary Data Analysis Results, 2026

Figure 2 shows that the task of responding to guest messages through various digital platforms is the task that all informants agree on the most as the most urgent area to be optimized with the help of AI. I-2 notes that staff receive tens to hundreds of incoming messages each day from multiple communication channels simultaneously, so manual handling is no longer adequate. The task of recording special guest requests ranks second because it is prone to negligence due to *the multitasking* conditions that are a daily routine

of FO staff (I-3). The preparation of daily reports and recommendations for local tourism is also considered a significant but secondary area compared to the first two tasks.

Expected Academic-Industry Collaboration Model

All informants from the hotel emphasized the importance of a collaborative model that is sustainable and based on direct involvement in the field, not just a one-way partnership that is ceremonial. I-1 describes the ideal collaboration as a two-way relationship where academics bring a structured methodological framework, while the hotel contributes a deep understanding of real operational conditions. I-5 specifically emphasizes the need for ongoing post-training mentoring so that the knowledge gained by staff is not degraded back to old habits due to the pressure of a busy work routine. From the perspective of guests, I-7 assesses that effective academic-industry collaboration has the potential to make Loccal Collection Hotel a pilot model for increasing the digital capacity of local hospitality human resources in all priority tourist destinations in Indonesia.

Overall, the findings of this study confirm that the still very limited digital competency conditions of FO staff, combined with the very real need for AI training and high motivation to learn staff, created a very conducive momentum for the development and implementation of AI-based adaptive training prototypes at Loccal Collection Hotel Labuan Bajo.

DISCUSSION

AI-Based Front Office Adaptive Training Prototype Development Process

The development process of the AI-based *Front Office* adaptive training prototype at Loccal Collection Hotel Labuan Bajo was carried out through a systematic approach that refers to the ADDIE framework, including the stages of needs analysis, module design, content development, trial implementation, and structured evaluation. At the analysis stage, field observations and in-depth interviews with seven informants revealed that all FO staff only mastered conventional digital devices such as *Property Management System* (PMS), WhatsApp, and Microsoft Excel, while AI-based technology was not integrated in their daily workflows at all. This condition reflects a significant digital competency gap between the needs of the modern hospitality industry and the actual capacity of the local hotel workforce, as also found in a study on the relevance of hospitality vocational learning outcomes to the ever-evolving demands of the industry (Putri et al., 2024).

At the design stage, the training module was constructed taking into account the unique characteristics of FO staff in Labuan Bajo, namely the limited level of digital literacy, the instability of internet network infrastructure, and the limited budget of local hotels. The principle of adaptive learning is applied by adjusting the difficulty level of the material based on the initial digital capacity of each participant. This approach is in line with the findings that AI-based modules designed in an adaptive and contextual manner have been proven to significantly increase participants' learning acquisition compared to conventional instruction methods (Sandi & Sutirman, 2026). The three simple AI components chosen as the backbone of the module are ChatGPT for the drafting of guest responses, *a voice assistant* for simulating verbal communication, and *a WhatsApp-based chatbot for the management of repetitive questions, all in a free version that does not require complex technological infrastructure.*

The implementation stage is divided into two trial ranges of four weeks each. The first

range focuses on the introduction and simulation of AI-assisted FO tasks in a limited scope, while the second range implements enhanced modules through intensive mentoring sessions and peer-to-peer learning. The *blended learning format* was chosen as a solution to the limitations of the internet network, where some content can be accessed offline through PDF modules and pre-downloaded videos. This strategy is in line with the findings that online learning in Indonesian tourism vocational schools faces similar challenges in the form of instability of internet connections and limitations in technology literacy that require a hybrid approach to overcome (Rido et al., 2024). Final evaluation is carried out through *member checking*, source triangulation, and expert assessment to ensure that the resulting prototype is valid, reliable, and can be replicated by similar local hotels in other priority tourist destinations.

Supporting and Inhibiting Factors for the Adoption of AI-Based Training Prototypes

Cross-informant analysis identified that the supporting factors for the adoption of training prototypes are divided into three main dimensions, namely the HR, institutional, and technology dimensions. From the human resources dimension, most of the FO staff at Loccal Collection Hotel are young with a high level of familiarity with the use *of smartphones* and social media in daily life. This informal digital capital is a conducive foundation for the acceleration of AI learning in a professional context. Previous research has proven that AI *readiness* in individuals who were previously familiar with the digital ecosystem has been proven to strengthen the perception of *employability* and encourage the intention of adopting new technologies more quickly and consistently (Vo et al., 2026). In addition, the intrinsic motivation of staff to thrive and not lag behind industry developments is a very significant psychological catalyst in encouraging active engagement during the training process.

From an institutional dimension, the hotel management's full commitment to this training program is the most crucial determining factor. Concrete management support in the form of providing special time outside peak operating hours and willingness to collaborate with research teams creates a safe and facilitated learning ecosystem. Studies on the impact of AI awareness on the adaptive performance of employees of five-star hotels show that adequate organizational support significantly strengthens employees' positive responses to new technologies and encourages proactive *task crafting behaviors* in dynamic work environments (Hasanein et al., 2026). Systematic collaboration between academics and hotels has also proven to be a differentiating factor that determines the relevance and accuracy of the goals of the resulting training modules.

On the inhibiting side, three main barriers were identified consistently from all informants. First, the instability of the internet network infrastructure in Labuan Bajo which has the potential to disrupt the smooth running of online training sessions. Similar challenges are also found in the implementation of learning technologies in vocational contexts, where connectivity limitations are one of the most dominant technical barriers that require layered solutions (Rido et al., 2024). Second, psychological resistance in the form of insecurity and fear of making mistakes when dealing with new technologies. These barriers are latent but have a significant impact on the speed and depth of the adoption process. Third, inconsistency in post-training implementation due to the pressure of busy operational routines, which has the potential to lead to the degradation of newly learned competencies if

not accompanied by a continuous monitoring and reminder system. The absence of a structured post-training evaluation system is also an institutional gap that needs to be addressed immediately through long-term mentoring mechanisms.

Perception of the Impact of Training Prototypes on Digital Competency and Job Readiness

All informants from management, FO staff, and hotel guests consistently expressed positive perceptions of the potential impact of AI-based adaptive training prototypes in improving digital competence and work efficiency of the *Front Office* division. From a management perspective, the prototype is seen as a strategic intervention that not only improves the technical prowess of staff, but also strengthens the competitiveness of local hotels amid the pressure of increasingly intense international tourism competition. The integration of generative AI such as ChatGPT in vocational learning systems has been proven to stimulate curiosity, increase learning motivation, and strengthen students' job readiness in the face of evolving industry demands (Horng et al., 2026).

From the perspective of FO staff, the most direct impact is the reduction of psychological barriers in communicating with foreign-speaking guests. Staff who previously spent very long hours composing a single guest message response can now produce a professionally drafted response in much less time with the help of AI. This directly contributes to improving the efficiency of three of the most critical FO tasks: guest message response, special request recording, and final *shift* reporting. These findings are in line with empirical evidence that the use of digital-based AI in vocational training significantly improves participants' technical skills, confidence, and learning autonomy (Sandi & Sutirman, 2026). The digitization of FO operational tasks, which were previously manual, also contributes to reducing the risk of recording errors due to *multitasking conditions* that have become a daily routine for staff.

From a guest's perspective, the increased speed and quality of pre-arrival response was rated as the most immediately felt indicator of service improvement. I-7 explicitly emphasizes that a guest's experience with a hotel actually begins long before their physical arrival, so optimizing the initial communication stage through AI-assisted has a huge impact on the overall perception of service quality. Designing an intelligently digitized guest experience requires adequate staff training so that they are able to leverage digital technology as a tool to increase service value, not just procedural automation (Youssofi et al., 2024). Furthermore, the integration of AI in hospitality services must also consider the balance between technological efficiency and the authenticity of a personal touch, given that the hospitality and warmth of local hotels' typical service is a competitive advantage that should not be degraded by technology adoption (Kumar et al., 2026).

In the context of the work readiness of hospitality vocational graduates, this training prototype has implications that go far beyond the scope of Loccal Collection Hotel alone. Hospitality vocational programs in Indonesia still face a gap of twenty percent between learning outcomes and industry needs, especially in the aspects of mastering digital systems and the latest hospitality technology (Putri et al., 2024). The prototype of an AI-based adaptive module resulting from this research has the potential to be a contextual learning model that can be adopted by hospitality vocational institutions to bridge the gap. AI-based

learning that is designed adaptively has been proven to create a more personalized, inclusive, and responsive learning environment to the diversity of students' abilities, resulting in graduates who are better prepared to face the demands of industry 4.0 (Zakariyah et al., 2026). Thus, this training prototype is not only relevant as a short-term operational solution for Labuan Bajo local hotels, but also as a long-term strategic contribution to improving the quality of national tourism human resources in a sustainable manner (Tavanxhiu et al., 2026).

CONCLUSION

This research produces three main conclusions that answer all the formulations of the problems that have been determined. First, the process of developing an AI-based *Front Office* adaptive training prototype at Loccal Collection Hotel Labuan Bajo was carried out systematically through the ADDIE framework which included five consecutive stages, namely field needs analysis, contextual module design, simple AI-based content development, trial implementation in two four-week spans, and evaluation through triangulation and *member checking*. The three components of AI technology chosen, namely ChatGPT, *voice assistant*, and WhatsApp-based *chatbot*, were proven to be in accordance with the limitations of the internet infrastructure and the digital capabilities of local hotel staff. The *blended learning* format that combines online and offline modes is an effective strategic solution in anticipating network instability which is the main technical obstacle in the Labuan Bajo area.

Second, the supporting factors for the adoption of training prototypes are sourced from three mutually supportive dimensions, namely the HR dimension characterized by the relatively young age of staff, high intrinsic motivation, and strong service spirit; the institutional dimension characterized by the full commitment of hotel management and willingness to collaborate with academics; and the technological dimension characterized by the availability of simple AI that can be accessed for free. On the contrary, the main obstacles identified include the instability of internet network infrastructure, the psychological resistance of staff to new technologies, limited HR development budgets, and the absence of a system of continuous evaluation and post-training mentoring. Third, all informants from management, *Front Office staff*, and hotel guests expressed a very positive perception of the impact of the training prototype in improving the digital competence of staff, the efficiency of the implementation of operational tasks, and the work readiness of hospitality vocational graduates. The three FO tasks that experienced the most significant efficiency improvements were guest message response, special request logging, and the preparation of end-shift reports.

Based on the above conclusions, this study formulated three strategic recommendations. First, the management of Loccal Collection Hotel is advised to institute this AI-based training program as part of a routine and structured human resource development system, equipped with periodic evaluation mechanisms and consistent post-training assistance to prevent competency degradation. Second, local governments and the Ministry of Tourism and Creative Economy are advised to make this adaptive training module prototype as a reference for hospitality human resource development policies in all national super priority destination areas, considering its high replicability and very affordable

implementation costs. Third, hospitality vocational education institutions are advised to integrate this simple AI training module into the *Front Office practice curriculum* to bridge the digital competency gap between vocational learning outcomes and the real needs of the industry, resulting in graduates who are more adaptive and ready to compete in the industrial era 4.0.

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