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DIGITAL AUDIENCE PERSONA; THE PHYGITAL CAMPUS REVOLUTION FOR CAREER CENTER DEVELOPMENT AND UNIVERSITY BRANDING

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Abstract

This research outlines a phygital campus revolution strategy through the development of a data-driven Digital Audience Persona (DIA-PER) for university career centers. Unlike conventional tracer studies, DIA-PER creates a holistic profile by integrating physical data (academic performance, organizational involvement) with digital activity (online portfolios, coursework, professional social media). Using Focus Group Discussions and Latent Class Analysis (N = 400), the study maps graduate typologies within a smart university framework. The results demonstrate that DIA-PER transforms career centers into real-time phygital platforms that optimize graduate employability and accurately match talent with industry needs. Beyond improving recruitment precision, this data-driven system elevates university brand value and systematically mitigates educated unemployment and job mismatch.

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INTRODUCTION

A university in the digital era should be an educational ecosystem that goes beyond merely adopting digital technologies for administrative services and teaching or simply migrating offline learning to online platforms; it must involve a fundamental transformation and strategic approach by higher education institutions in managing their diverse assets, including graduate data. According to Zhou, M., & Gao, P. (2026), a university profile like this is called a smart university ecosystem. This term is used to brand universities and attract prospective students in this competitive era. A smart university must be capable of integrating physical infrastructure with students' digital footprints to create a unique and holistic educational experience, conceptualized as the phygital (physical-digital) campus revolution (Nadajarah and Ramalu, 2021). This research was developed based on the theoretical foundations of Marketing Management, Strategic Management, and Consumer Behavior which views university management as equivalent to an industry that needs to provide personalized treatment to its consumers, namely students and companies/employers who recruit them (Phillips, C. H., & Jones, S. J., 2025; Kethüda, Ö., & Bilgin, Y., 2025). The omnichannel Marketing theory approach views the implementation of phygital campus as a real manifestation that enhances the value of the university

brand while bridging the relationship between physical behavior and digital persona in the campus ecosystem (Georgescu, A., & Vatamaniuc, L. A., 2025) . In addition, universities in the digital era are not just adopting technology for administration, but must be able to integrate physical infrastructure with students' digital footprints (phygital campus revolution) to create a unique experience. The integration of the physical and digital realms within a smart university is an urgent imperative, especially given the intensification of global employment challenges, such as the rising unemployment rates among university graduates and skills mismatches (job mismatches). According to Coragio et al. (2024), job mismatch is caused by a lack of information about companies and the characteristics of jobs accepted by workers, as well as a lack of information about workers accepted by companies. This highlights the critical urgency of a university career center, particularly in the midst of an increasingly digitalized labor market. Its primary role is to communicate graduate profiles through a precise Digital Audience Persona (DIA-PER) to facilitate industry requirements in real-time (Vial & Järvinen, 2024). Consequently, universities are not only responsible for producing high-quality graduates but must also provide bridging solutions to ensure that graduates' knowledge can be applied in the industry in alignment with their expertise, ultimately optimizing their contributions and utility to society.

DIA-PER (Digital Audience Persona) is defined as a data-driven graduate audience persona system that transforms students' phygital (a combination of physical and digital) activity data into marketable persona profiles. This system works by utilizing Big Data and in its development can be strengthened by artificial intelligence (AI) to automatically scrape alumni's digital footprints on various professional platforms such as LinkedIn, GitHub, and digital portfolios. Through DIA-PER, the career center is expected to be able to specifically map the behavior, mindset, technology use, and business networks of graduates so as to strengthen branding as a smart university. DIA-PER's added value over conventional career tracing systems is the transformation of the Career Center's role from a mere job poster to a highly intelligent and precise "Talent Curator." When a company requests a candidate, the Career Center can immediately provide a persona validated for cultural fit.

Previous research on the Smart University by Mykhailenko et al. (2023) primarily concentrates on campus managerial efficiency. It fails to integrate the career center as a pivotal unit in managing graduates and cultivating the smart university's brand value through their subsequent professional contributions. However, when strategically developed, a career center can effectively leverage digital psychographic data to construct students' professional identities for external stakeholders. Furthermore, Rosak-Szyrocka and Wolniak (2025) investigated the management of technological investments within smart universities, focusing on a public governance perspective. In contrast, this research examines the smart university from the perspective of marketing management, strategic management, and consumer behavior in the digital era. It views that universities are equivalent to industries that must offer personalized treatment to their consumers, in this case the students and the employers who hire the graduates. Research by Lai, P. C., & Bausch, M. E. (2021) on career centers states that the industry demands just-in-time talent matching (not static job advertisements) so that Career Centers at Smart universities must transform to encourage data-based decision-making about graduate employability. According to Pang, E., & Lee, T. (2021), conventional tracer studies are conducted using static instruments, closed-ended questionnaires sent via email, telephone, or simple social media, with sampling rarely being representative. Meanwhile, tracer studies at smart universities, such as DIA-PER, are multi-source integrations: data from LMS, SIAKAD, e-portfolios, internship platforms, and professional networks (LinkedIn API, job portals). Table 1 shows the disadvantage of conventional tracer study compared to digital audience persona (DIA-PER). This gap indicates the reason why conventional tracer study methods are deemed ineffective or no longer relevant.

Table 1. Comparison of Conventional Tracer Study vs Digital Audience Persona

Dimension of Analysis	Conventional Tracer Study	Digital Audience Persona (DIA-PER)
Data Accuracy Sharma, J., Bhatia, B. S., & Bali, S. (2026)	Subjective Bias: Respondents tend to fill in data that "looks good" (social desirability bias).	Objective. Data is taken from real-life behavior on professional platforms (LinkedIn, GitHub, Portfolio).
Data Depth Abdulkareem Shafiq, D., Marjani, M., Ahamed Ariyaluran Habeeb, R., & Asirvatham, D. (2025)	Structured/Limited. Only answer what is asked in the questionnaire.	Granular. Capture frequently used soft skills, content preferences, and alumni professional networks.
Response Level Katwale, S., & Fujo, M. (2025).	Frequently Low. Respondents feel burdened by filling out long forms (survey fatigue phenomenon).	Non-Intrusive. It doesn't require active action from alumni because it uses a digital footprint.

The novelty and primary contribution of this research lie in the development of a data-driven graduate audience persona system that converts students' phygital activity data into marketable persona profiles. Unlike the conventional tracer studies, which are inherently reactive and retrospective, this research proposes a proactive solution through precision marketing at the individual graduate level. Its main contribution is providing a strategic framework that enables university career centers to transform into intelligent data centers capable of automated competency mapping. This transformation effectively minimizes the information gap between academia and industry practitioners (Schöbel et al., 2025). According to Huang, L., Gao, B., & Gao, M. (2023), phygital campus changes are often called revolutions and not transformations because the process of changing from physical to phygital is a fast and disruptive change following the rapid development of digital technology, while transformation refers more to slow and flowing changes. The Phygital Campus Revolution serves as a real-world manifestation of omnichannel marketing that elevates a university's brand value while bridging the gap between the human and technological aspects of the smart university ecosystem by demonstrating how physical behavior and digital personas can influence each other.

The primary objective of this research is to formulate an effective digital persona development model to enhance graduate employability within both national and international job markets. To achieve this objective and answer the research question on how can university career centers leverage DIA-PER to implement hyper-personalized career pathing and strengthen the institution’s brand positioning as a "Smart, AI-Ready University, this research employs a mixed-methods approach. The qualitative approach involves Focus Group Discussions (FGD) encompassing a diverse spectrum of graduate personas to validate the accuracy of the generated personas and to formulate a robust questionnaire. The quantitative approach utilizes Latent Class Analysis (LCA) applied to the students' digital footprints and career preference surveys.

METHOD

An in-depth study was conducted at a private university focused on computing and entrepreneurship, namely Universitas Komputer Indonesia (UNIKOM). This research location was selected considering UNIKOM's new branding as a "digital entrepreneurial university and AI Ready Campus”. UNIKOM has been chosen as the location of the research with the aims to provide strategic recommendations to UNIKOM's management regarding its rebranding as a smart university through the implementation of the developed DIA-PER (Digital Audience Persona). By implementing DIA-PER, which is based on Big Data scraping and AI (e.g., automatically analyzing alumni's LinkedIn profiles, GitHub, and digital portfolios), UNIKOM directly practices its branding. The development of DIA-PER is needed as concrete evidence that UNIKOM ecosystem is truly AI-Ready from upstream to downstream (not only in the classroom, but also in the graduate intake management system). DIA-PER can dynamically map the behavior, mindset, and business scale of alumni who become entrepreneurs. People can see how the alumni brand their products on social media, what technology they use in their startups, and how their business networks are formed. This granular data is very expensive to use as material for evaluating the digital entrepreneurship-based curriculum at UNIKOM.

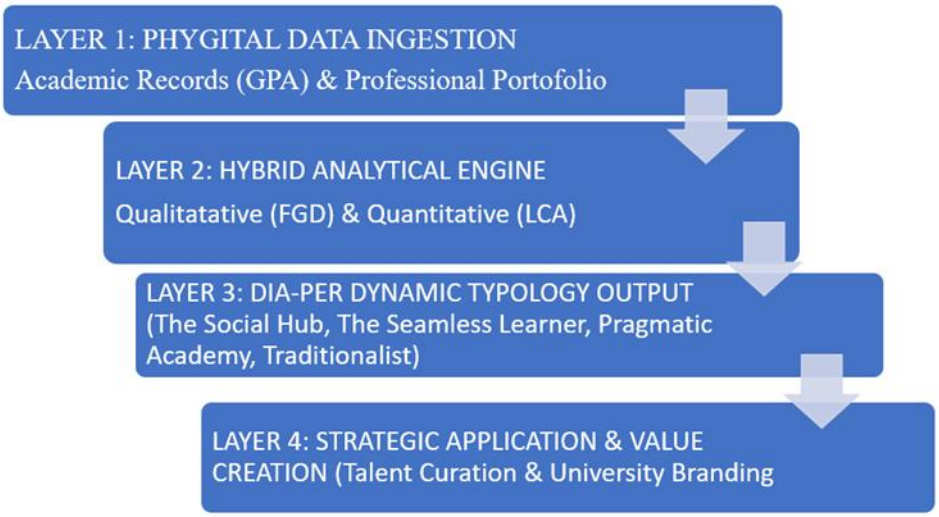

Figure 1. DIA-PER framework

This research employs a mixed-methods approach utilizing an exploratory sequential design. This study employed a mixed-methods approach with an exploratory sequential design (see Figure 1). The first step was a qualitative approach using in-depth interviews and focus group discussions (FGDs), consisting of homogeneous and heterogeneous FGDs, to formulate a questionnaire and precisely profile the subjects. This ensures the study captures not merely surface-level data, but also the underlying psychological motives and behavioral patterns of the users. The next step was a quantitative validation stage using the Latent Class Analysis (LCA) method applied to student digital footprint data and a career preference survey.

The first stage of FGD was conducted homogeneously, where each persona was brought together with other personas of the same type to explore their comfort level within the digital ecosystem. The second stage was conducted heterogeneously, where all persona types were brought together to discuss the best functions of physical and digital spaces. These two FGDs stages were conducted to gather identities and predict graduate competencies. For example, if in the second FGD a student is a social hub type and can influence other persona types to use collaboration tools or new applications, the career center can label this profile as Digital Leadership & Change Management and can offer this profile to positions that match the given label, or conversely, offer the results of this labeling to industries seeking candidates for digital leadership positions.

In-depth interviews and Homogenous Focus Group Discussions (FGDs) were conducted with 42 respondents distributes in 6 homogenous group (Groups 1 & 2 (Exact Sciences/Engineering/Computer Science; Groups 3 & 4 Socio-Humanities/Management/Accounting); Groups 5 & 6 (Art & Design/DKV) represented a broad fields in UNIKOM and a broad spectrum of digital behaviors, key touchpoints, physical presence, and technical expectations, resulting 4 groups namely The Traditionalist, The Seamless Learner, The Social Hub, and The Pragmatic Academic (see Table 2). The respondents were calculated by stratified purposive sampling.

Second stage FGD or Heterogeneous Focus Group (FGD) was conducted by number of participants per Group: 8–10 people. We divide respondents into 3 groups consisted of cross-disciplinary groups (each group contains a mix of IT, Management, Accounting, and Visual Communication Design students). Participants were selected from homogeneous FGD participants who are deemed the most vocal, critical, or have extreme profiles (very passive or very active), plus new representatives for validation. Total Participants in the Heterogeneous Phase: 24–30 people.

Following the Focus Group Discussions (FGDs), the next step involved quantitative validation employing the Latent Class Analysis (LCA) method. LCA is a formal statistical model that categorizes individuals into "hidden" (latent) groups based on their response probabilities to a set of phygital indicators. The study population comprised 1,152 active students at Universitas Komputer Indonesia who were currently undertaking their final projects, from which a sample of 400 respondents was drawn. This sample was determined in accordance with the recommendations of Nylund-Gibson and Choi (2018), who state that the suggested minimum sample size ranges from N = 300 to 500, or approximately 26–35% of the research population. This ensures the model is capable of identifying classes with stable classification probabilities. The sampling procedure was executed utilizing a Proportionate Stratified Random Sampling technique. This approach

involved dividing the 1,152 students into strata based on their respective Faculties or Study Programs, followed by the proportional random selection of samples from each stratum. The systematic procedures involved in the LCA are illustrated in Figure 1.

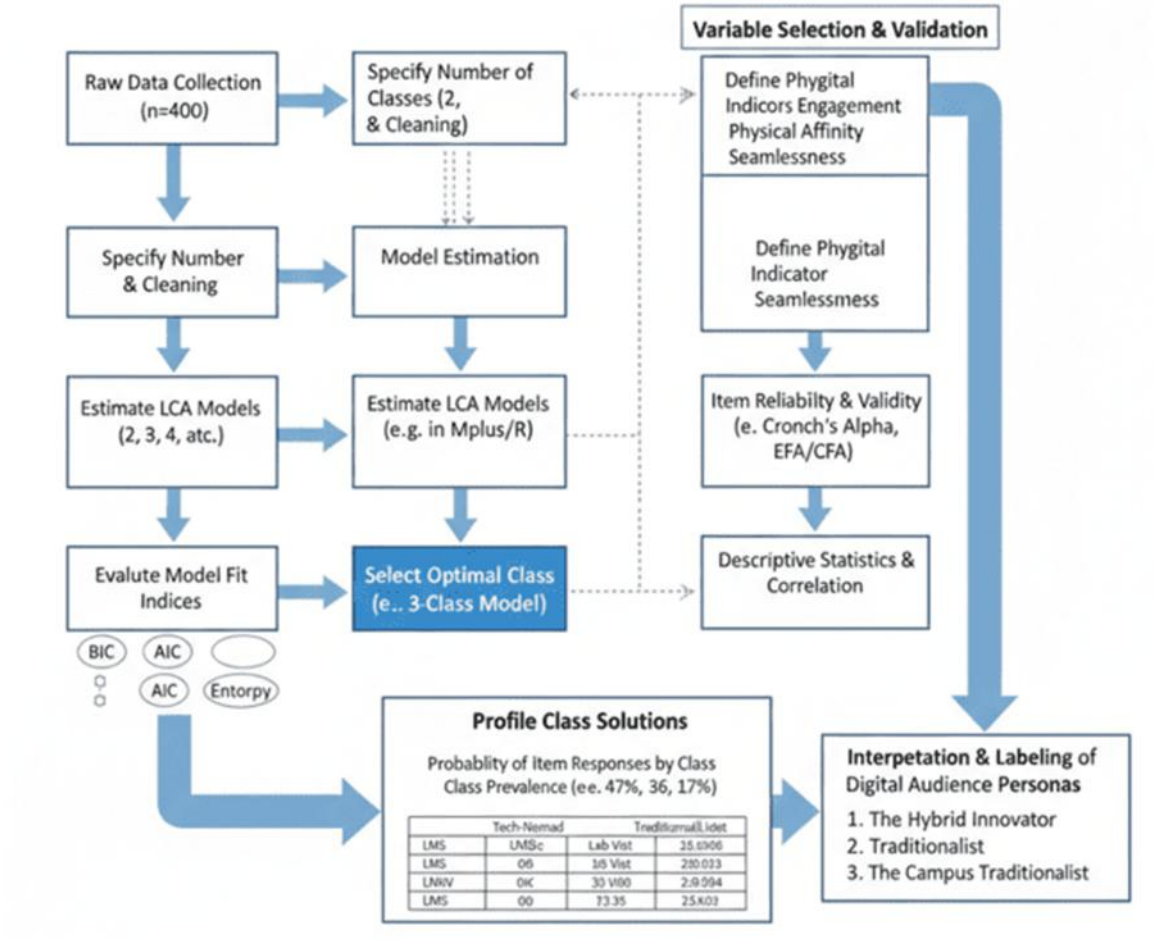

Figure 2. Latent Class Analysis Steps

Figure 2 illustrates that the initial phase of the Latent Class Analysis (LCA) involves selecting three primary phygital indicators: Engagement (digital involvement), Physical Affinity, and Seamlessness (fluidity of spatial transitions) (Hong, P., & Kim, W., 2025). The 3-class model was chosen because it produces high entropy values (typically > 0.80). This indicates that the inter-class filter is very strict, so the possibility of alumni being assigned to the wrong class is very small. Subsequently, a Cronbach's alpha reliability test is conducted, followed by specifying the number of latent classes through the evaluation of a three-class persona model. Following this, the model fit is evaluated, and the class solution profiles are generated. In the final stage, class labeling and career integration are executed.

In the context of the DIA-PER research that utilizes the alumni digital footprint, we use a nominal dichotomous or ordinal categorical scale (non-Likert scale). According to Cullian, S. M., Stantesley, N. M., & Schadrie, L. (2022), the non-Likert scale is used because the nature of digital persona data scraped from platforms such as LinkedIn, GitHub, or Instagram Business is generally factual-behavioral, not perceptual or attitudinal data (which is usually measured with a Likert scale of 1–5). In addition, the form of the LCA Indicator, namely the manifest indicator (observed) in this study is in the form of Business/Professional Account ownership (Yes = 1, No = 0), Frequency of Posting Professional Content (Rarely, Medium, Often) Categorical Ordinal and Number of Digital Skill Endorsements (Low, Medium, High).

RESULTS

The formation of these personas is sequential, with a deductive approach followed by an inductive approach. Deductively, the selection of grouping variables in the quantitative stage is based on theories of the phygital space ecosystem, namely Engagement, Physical Affinity, and Seamlessness. Then, inductively, through specific grouping of persona names. The persona names emerge from a combination of objective LCA algorithm data processing and behavioral mapping during the FGD (for example, observing how students interact in the startup simulation room). The Focus Group Discussions (FGDs) were conducted in two phases. The first phase, designated as the Homogeneous FGD (Psychological Comfort in the Digital Ecosystem), involved convening personas of the same typology to explore their level of comfort within the digital ecosystem (Table 2). The second phase was conducted heterogeneously, where all persona types were convened to discuss the optimal functions of physical and digital spaces. The objective of this FGD was to explore core identity and the comfort levels of using digital platforms without pressure from other groups. The objective of the heterogeneous FGD was to simulate a real-world working environment (Phygital Space) in order to map interpersonal competencies and digital leadership (Table 3).

The simulation scenario employed was as follows: "Each group is required to design a startup prototype within 30 minutes, utilizing novel collaboration tools with which they have no prior experience."

Table 2. Various Persona Types for Respondent Grouping in Homogenous FGD

Persona Type	Digital Behavior	Key Touchpoints	Physical Presence	Technical Expectations
Traditionalist	Low Medium	E-library	Prefer physicals spaces	Reliability
The Pragmatic Academic	Medium	E-library	Prefers formal spaces such as classrooms and laboratories	Reliability & simplicity
The Seamless learner	High Contact to digital media	Cloud, Apps LMS	Prefers gathering in co-working spaces; rarely on campus (remote) but actively utilizes university servers/LMS	Instant sync
The Social Hub	Medium High Contact to digital media	Social media, events	Prefers gathering in cafeterias or plazas; utilizes physical infrastructure as a source of innovation while remaining digitally integrated	Engagement & connectivity

Table 2 and 3 shows four persona types from the result of FGD homogenous. The "Low Medium" category in the traditionalist group in Table 2 refers to their tendency to function predominantly as "passive observers" rather than active creators" in the digital ecosystem. Meanwhile, their comfort using GitHub and Discord in Table 3 is specifically for "focused, deep work" because they find mainstream social media (like Instagram) too "noisy" and distracting. It can be concluded that they reject exposure to social digital engagement (free online interaction) and limit themselves to digital instruments that are purely academic or technical in nature.

Table 3. The Key Findings Heterogenous FGD Results

Persona Cluster	Key Findings	Emotional Response
Traditionalist	- Demonstrates a primary focus on physical presence and tangible real-world relationships; although exposed to digitalization, they function predominantly as passive observers rather than active creators. - Prioritizes focused, deep work, exhibiting a higher comfort level on platforms like GitHub and Discord. They consider mainstream social media platforms (e.g., Instagram) to be overly "noisy" and disruptive to the learning process.	Appreciate meetings and physical evidence
The pragmatic academy	Demonstrates a primary focus on physical presence and tangible real-world relationships; although exposed to digitalization, they function predominantly as passive observers rather than active creators	Self-Reliant, Proud of hard-skills.
The seamless learner	Actively leverages productivity applications, strategically prioritizing organizational or startup branding over personal profile development.	Agile, Data-driver learners.
The social hub	Exhibits seamless engagement across multiple platforms (omni-channel approach), maintaining a highly active presence on professional networks such as LinkedIn, and frequently generating short-form educational or tutorial content on platforms like TikTok and Reels.	Community-driven, Need social validation

Prior to conducting the Latent Class Analysis (LCA), the researchers performed validity and reliability testing, yielding the following results KMO Measure of Sampling Adequacy: 0.887 (Indicating excellent adequacy, confirming the data is suitable for factor analysis). Cronbach's Alpha: * Digital Engagement Scale: 0.84 Physical Interaction Scale: 0.81, Phygital Readiness: 0.83 All values are above 0.70, meaning the instrument is very reliable.

The research results were obtained from a specific statistical clustering process. This study used the Latent Class Analysis (LCA) method to group students. This is supported by the statement Lu, Z. (2025) that LCA is a formal statistical model that categorizes individuals into latent (hidden) groups based on the probability of their responses to a series of phygital indicators (i.e., Digital Engagement, Physical Affinity, and Seamlessness). Based on data collected from 400 student respondents at UNIKOM, the following section outlines the model parameters utilized to determine the optimal number of personas (latent classes).

Table 4. Comparison of Model Fit Indices

Model	Log-Likelihood	BIC (Bayesian Information Criterion)	Entropy	Classification Probability
2-Class Model	-4231.5	8612.4	0.78	0.85
3-Class Model	-3910.2	8124.7	0.87	0.91
4-Class Model	-3895.8	8245.1	0.72	0.82

Based on Table 4, we selected the 3-Class Model as it demonstrated the lowest Bayesian Information Criterion (BIC) and the highest entropy value (approaching 1.0). These metrics indicate that the model provides the highest level of accuracy in classifying the 400 student participants into three distinct personas with minimal class overlap.

Statistically, Latent Class Analysis (LCA) bases its decisions on the principle of parsimony (the best model simplicity based on p-value and BIC figures). Table 5 shows the LCA result from 400 respondents. However, in the operational reality of branding and marketing, market segments often require more granular segmentation to ensure unbiased communication messages. 3 latent classes are manifested into 4 persona architectures through the "Cross-Classification & Behavioral Splitting" technique by utilizing qualitative data from the previous FGD (Homogeneous & Heterogeneous) phase. Table 6 is a deconstruction matrix and a step-by-step explanation of how the 3 statistical classes are divided into 4 practical personas.

Table 5. LCA Matrix

Parameter/indicator	Latent Class 1 (C1)	Latent Class 2 (C2)	Latent Class 3 (C3)
Class size	45%	35%	20%
Digital Involvement	0.88 (High)	0.30 (low)	0.15 (low)
Physical affinity	0.82 (High)	0.25 (low)	0.90 (High)
Seamlessness	0.79 (High)	0.70 (High)	0.10 (Low)

Table 6. Conversion LCA Matrix to Persona

LCA Classes	Statistical Dominant Parameters	Behavioral Splitting	Practical Persona Architecture
Class 3: *Low Digital Engagement*	Low Accuracy, Minimal Technology Adoption	Fixated on conventional physical learning methods	1. The Traditionalist
Class 2: *High Technical Proficiency*	High Accuracy, High Tech Flexibility	Divided based on Goal Orientation: Focus on academic values and formal curriculum	2. The Pragmatic Academy
Class 2: *High Technical Proficiency*	High Accuracy, High Tech Flexibility	Focus on independent exploration outside the curriculum (Autodidactic)	3. The Seamless Learner
Class 1: *High Entrepreneurial Orientation*	High Business Orientation, High Technology Flexibility	Focus on commercialization, networking and digital leadership	4. The Social Hub

This section delineates the primary findings of the study. The distribution of the 400 samples across the identified classes shows at Table 7. Results derived from a Latent Class Analysis (LCA) of 400 respondents (representing a population of 1,152) shows that students' digital identities are heterogeneous, even within the UNIKOM environment. Table 7 is the labelling process from the LCA resulting behavioral group that are : social hub, the seamless learner/tech nomad and pragmatic academy/tradisionalist.

Table 7. Competency Findings (The Labeling Process)

Behavioral Observation	Competency Labeling (Career Center)	Industry Matchmaking
Student A (Social Hub): Proactively mentored the Pragmatic Academy/Traditionalist group in the adoption of new tools, successfully mitigating communication conflicts during the data integration process	- Digital Leadership & Change Management - Technical Communication Excellence	Scrum Master, Digital Project Manager, People Operations
Student B (The Tech Nomad): Demonstrated the ability to synthesize complex technical terminology into accessible, streamlined instructions for the Social Hub persona.	Digital Business Strategy	Solutions Architect, Pre-sales Engineer.
Student C (The Seamless Learner): Maintained strategic oversight by mapping the business vision despite the presence of technical disruptions within the team.	Operational strategy.	Product Owner, Venture Builder.
Student D (The Pragmatic Academy/The Traditionalist): Conducted comprehensive literature analyses to formulate Standard Operating Procedures (SOPs) for the newly implemented tools.	Excellent Scientist	Business Analyst, Lab Engineer

DISCUSSION

The explanation of the characteristics, typical behaviors, needs, and practical implications of each class (Latent Class) in Table 5, based on the interpretation of the combined indicators of Digital Involvement, Physical Affinity, and Seamlessness, is as follows

Latent Class 1 (C1) - Class Size: 45% this class exhibits high probabilities across all indicators, namely Digital Involvement (0.88), Physical Affinity (0.82), and Seamlessness (0.79). This group's typical behavior is highly active participation in both the digital world and the physical campus environment. High seamlessness scores indicate they experience no difficulties or psychological barriers when transitioning from face-to-face interactions to virtual collaboration. The practical Implications of this group require an ecosystem that truly integrates physical and digital infrastructure optimally. Implicitly, this class is best prepared for the modern workplace due to its strong entrepreneurial and business orientation. This class will later be transformed into The Social Hub persona.

Latent Class 3 (C3) – Class Size: 20%t his class has a very unbalanced combination with very low Digital Engagement (0.15) and low Seamlessness (0.10), but very high Physical Affinity (0.90). Typical Behavior of this group relies heavily on conventional physical spaces. Low seamlessness indicates that the transition to digital platforms is burdensome or uncomfortable for them. Their focus is fixed on conventional physical learning methods. The practical Implications that they are vulnerable to culture shock if forced into an automated/AI-driven ecosystem. Therefore, they need direct intervention (face-to-face) and gradual mentoring from the Career Center to migrate to the digital realm. This class will later be converted to the persona The Traditionalist.

Latent Class 2 (C2) - Class Size: 35% according to Table 5, this class exhibits a low probability of Digital Engagement (0.30) and low Physical Affinity (0.25), but a high Seamlessness score (0.70). The needs and practical implications of this group is highly adaptable. They tend to be goal-oriented (whether pursuing academic grades or independent learning outside the curriculum). Consequently, they do not need basic guidance, but rather an accelerated path (such as Fast-Track Recruitment) from the campus. (This class will later be split into two personas: The Pragmatic Academy and The Seamless Learner).

Digital footprint (LCA) instruments have limitations in capturing students' hidden motives, which can only be uncovered through focus group discussions (FGDs). Therefore, the Career Center cannot rely solely on Big Data/Scraping; it still requires a human touch (such as focus groups) to holistically validate graduate profiles. Although the Latent Class Analysis (LCA) model fit test optimally yielded three main classes based on BIC and Entropy values, qualitative findings from Focus Group Discussions (FGDs) identified a more granular division into four personas. This divergence between quantitative and qualitative data is not an anomaly, but rather a significant finding that enriches the DIA-PER architecture. Latent Class 2 (C2), which statistically demonstrated low levels of Digital Engagement (0.30) and Physical Affinity (0.25) but a high level of Seamlessness (0.70), warrants more cautious interpretation. The low Digital Engagement scores in this group do not reflect low technical proficiency, but rather reflect the operational limitations of quantitative instruments that heavily emphasize public professional digital footprints (such as business account ownership and content upload frequency). Students with high technological literacy but who do not use it for public exposure will automatically be recorded as having statistically low scores.

Therefore, the Cross-Classification & Behavioral Splitting technique was applied to dissect Latent Class 2 (C2) based on intrinsic motivation captured through FGD observations. Group C2 was identified as functional-passive technology users. Based on their goal orientation, this class is divided into two distinct personas: The Pragmatic Academy, which utilizes technology privately purely to achieve formal academic excellence (such as the use of AI tools for laboratory research), and The Seamless Learner, which uses its seamlessness agility for self-taught learning (such as cloud certification or independent coding) without regard for portfolio exhibitions on mainstream social media platforms.

This profile divergence provides strong empirical justification that the DIA-PER system within the Smart University ecosystem cannot operate solely relying on Big Data or scraping algorithms. The limitations of algorithmic data in uncovering the motives behind minimal digital footprints demonstrate that human intervention (human-in-the-loop) through the curatorial role of the Career Development Center (CDC)—such as offline counseling and workspace simulations—remains crucial. This ensures that student competency mapping is conducted holistically, not simply through superficial, algorithm-based measurement.

The Social Hub persona (45%) aligns with the concept of 'Liquid Talent'. While this cohort exhibits exceptionally high digital literacy (M=4.8), they demonstrate low physical engagement, marking them as a

distinct product of the phygital revolution. From a human resource management perspective, however, this group may present a risk of low organizational loyalty. To mitigate this, University Career Centers should provide Organizational Citizenship Behavior (OCB) training (Osman & Yatam, 2024). Such initiatives would ensure students not only excel interpersonally but are also better equipped to integrate into corporate cultures. This group is well-suited for digital-centric roles, such as data analysts, digital business consultants, and web developers that bridge the gap between digital and physical workspaces. The social hub is the epicenter of UNIKOM's "Digital Entrepreneurial University" identity. This type of student has a very active digital footprint, not as job seekers, but as creators or business owners. They are adept at leveraging AI for digital marketing strategies, building personal branding, managing small remote teams, and networking across sectors. They are the greatest asset to UNIKOM's brand equity. The success stories of the digital startups they started while still in college provide the strongest empirical evidence (social proof) in their student admissions marketing strategy.

However, career center should provide personalizer service since some research showed contradictive results. While in the phygital environment, students appreciate a smooth transition to digital platforms, other studies from Schroth, H. (2019), have found that final year students experience psychological burnout from digital career platforms (such as LinkedIn, campus job portals, AI resume screening) and radically demand 100% physical and personal interventions. Another study found that when it comes to the future and job search, Gen Z feels anxious when faced solely with algorithms. They demonstrate very high Physical Affinity scores, but deliberately suppressed Digital Involvement (rejecting online platforms as lacking "soul" or empathy). They don't seek seamlessness, but rather purely conventional human connections (Mishra, S., & Malhotra, G., 2021).

The Seamless Learner (35%) serves as a prototype for the modern professional. Their high utilization scores in both physical (M=4.6) and digital (M=4.2) domains reflect a successful integration of social and technical systems, as stated by Trist and Bamforth. This balance makes them uniquely suited for leadership positions that require a synthesis of digital dexterity and robust team interaction. Unlike other groups, Hybrid Innovators exhibit a high degree of adaptability, transitioning between virtual environments and real-world social life with ease (Mitra, 2023). The seamless learner are a group of students who are independently capable of seamlessly integrating physical and digital boundaries. They don't rely solely on lecturer materials; they actively pursue international certifications independently (Google, AWS, or Coursera). In the physical classroom, they act as group motivators, while in the digital space, they are agile, data-driven learners. Career Center Intervention to this group that they should position them in the Fast-Track Recruitment program and match them directly with international companies through an accelerated pathway. The seamless learner is a group of students who are independently capable of seamlessly integrating physical and digital boundaries. They don't rely solely on lecturer materials; they actively pursue international certifications independently (Google, AWS, or Coursera). In the physical classroom, they act as group motivators, while in the digital space, they are agile, data-driven learners. Career Center Intervention: They don't need basic training. The CDC should position them in the Fast-Track Recruitment program and match them directly with international companies or Big Four Public Accounting Firms (KAP) through an accelerated pathway.

Although the university operates within a computer-based campus environment, 20% of students still fall into the category of The Campus Traditionalist and Pragmatic Academy. The traditionalist characterized by highly dependent on the physical campus space. They use technology only for mandatory purposes (filling out their student's curriculum (KRS) or downloading materials from the LMS and e-library. Their professional digital footprints (such as LinkedIn) tend to be empty or passive. The career challenges faced that they are vulnerable to culture shock when entering an AI-driven industry due to a lack of verified digital portfolios. Table 3 shows that traditionalist appreciate meetings and physical evidence. That’s why they need Career Center Interventions to gather them physically. The CDC should provide an intensive mentoring program in the form of a "Digital Presence Boot Camp" to trigger behavioral migration from traditional to digital.

The pragmatic academy filled by students who have demonstrated exceptionally high academic performance. They are highly proficient in using campus-provided AI tools for research, final projects, and scientific data analysis. However, their orientation is very linear: graduating quickly, achieving a high GPA, and seeking a secure position as a corporate employee. This persona is the primary representative of the "AI-Ready Campus" branding in the context of academic technical competency. Their success in winning technology-based scientific competitions provides powerful promotional material for the university. This finding aligns with the concept of the internal Digital Divide (Christanti et al., 2024). It indicates that advanced technological infrastructure does not automatically lead to advanced digital behavior. Therefore, the Career Center holds both a moral and strategic responsibility to provide upskilling opportunities for this group so that they are not alienated when entering an increasingly automated labor market (Lakshmi et al., 2024). Based on

the analysis above, the managerial implication for universities is the need to develop Hyper-Personalized Career Pathing, which consists of two key steps. The first step is Differentiated Learning Spaces, where universities should provide flexible "phygital" environments that integrate physical and digital learning spaces. For the Nomad, institutions should establish strong virtual hubs, while for the Innovator persona, universities should develop makerspaces integrated with cloud-based sensor technologies (Mitra & Paul, 2025). The second step involves implementing Persona-Based Recruitment. At this stage, the Career Development Center (CDC) should begin incorporating a "Persona Profile" label into graduates' competency transcripts. This approach enables recruiting companies to identify candidates not solely based on their GPA, but also based on the alignment between the candidate's persona profile and the organization's work culture, such as preferences for remote or on-site working environments.

The use of the DIA-PER (Digital Audience Persona) Design Architecture from a marketing perspective can also serve as a strategy for university rebranding. In this context, it is applied to Universitas Komputer Indonesia (UNIKOM), which has introduced a new tagline: Digital Entrepreneurial University. The implementation of DIA-PER is expected to enhance UNIKOM's brand image and strengthen its bargaining position among industry stakeholders. In addition, this approach may increase prospective students' interest and influence their decision to choose UNIKOM, as the university adopts a more targeted and personalized marketing strategy. Graduate profile analysis is a crucial tool in evaluating the quality of higher education. By understanding the characteristics of students who have completed their studies, institutions can design more targeted development programs, identify patterns of academic success, and formulate curriculum policies that are responsive to student needs.

Persona influences the smart university ecosystem as follows t he Social Hub Digital Campus Governance: Encourages campuses to invest in co-working spaces equipped with digital collaboration tools like Smart Boards and high-speed IoT connectivity. AI-Enabled Career Services: Highly responsive to an integrated, omnichannel Customer Relationship Management (CRM) system, where their digital footprint is directly captured by the DIA-PER dashboard. Lifelong Learning: Encourages the creation of a dynamic learning ecosystem by consistently using AI for digital marketing strategies, building personal brands, and networking across sectors. University Branding: Becomes a key asset for the "Digital Entrepreneurial University" branding because their startup success stories provide strong empirical evidence to attract prospective new students. Employer Engagement: Facilitates universities in precision matchmaking to meet industry demand for candidates with Digital Leadership and Change Management competencies.

The Seamless Learner (Tech Nomad) Digital Campus Governance: This justifies campuses strengthening their virtual hub infrastructure, Learning Management System (LMS), and cloud computing services, as they are rarely physically present but actively utilize campus servers. AI-Enabled Career Services: These students benefit greatly from AI algorithms that automatically connect them to micro-credentialing applications without the need for manual intervention from Career Center staff. Lifelong Learning: These students become the primary driver of continuous learning as they independently pursue international certifications (such as Google, AWS, or Coursera) outside of the required campus curriculum. University Branding: This helps enhance the university's bargaining position in international rankings (such as the QS World University Rankings), particularly in terms of employer reputation. Employer Engagement: These students become premium candidates who can be directly offered to multinational companies through Fast-Track Recruitment.

The Pragmatic Academy This group pursues linear, pragmatic academic excellence and adherence to a formal curriculum. Digital Campus Governance: Justifies the allocation of technology governance to formal academic facilities, such as providing access to premium e-libraries, conventional laboratories, and AI systems for research or final projects. AI-Enabled Career Services: Ideal users of 24/7 self-service AI-based career assessment platforms and virtual job fairs. Lifelong Learning: Focusing their learning on structured literature and participating in business incubator programs to ensure they secure corporate employment. University Branding: Becoming a leading representative of the "AI-Ready Campus" brand through their victories in various technology-based scientific competitions and achieving high GPAs. Employer Engagement: Meeting the needs of conventional industries for a workforce with purely analytical and structured skills, such as Business Analysts or Laboratory Engineers.

The Traditionalist This group relies heavily on physical interactions, is reluctant to appear in the digital realm, but is capable of deep work. Digital Campus Governance: Ensuring that the campus does not eliminate the function of physical classrooms and human interaction, maintaining a balanced ecosystem so that the campus does not transform into a fully online platform. AI-Enabled Career Services: Providing crucial feedback that AI career algorithms still have biases or weaknesses (causing anxiety in certain students), so the campus must

continue to provide offline services (High-Touch Strategy). Lifelong Learning: Being the primary target for mentoring-based learning initiatives (such as Digital Presence Boot Camp) to bridge the skills gap (upskilling) before they graduate. University Branding: Demonstrating the campus's inclusiveness, demonstrating that the university has a moral responsibility to guide every student so they are not alienated in the era of automation. Employer Engagement: Contribute to filling roles in companies that value physical presence, procedural discipline, and the creation of detailed Standard Operating Procedures (SOPs)

The results of this study overall may generate several transformations and outputs for the university, as follows: Reform of the Career Center's Role (From "Job Poster" to "Talent Curator") System Integration: The Career Center must have a DIA-PER Dashboard that integrates academic grades with student digital portfolio APIs (GitHub, LinkedIn, Behance). However, even though the DIA-PER architecture offers a comprehensive solution, this study has several limitations that need to be addressed in further research. First, the validation of the digital footprint indicators in this study was conducted using categorical survey data collection and behavioral observations, rather than through direct API data scraping. Therefore, the development of a true software architecture for the DIA-PER dashboard is still needed.

Precision Matchmaking: When industry partners (for example, unicorn startups) seek candidates, the Career Center would no longer simply provide a list of students with the highest GPA. Instead, it would present a curated list of personas such as "Agile Tech-Leader," whose Digital Leadership competencies have been validated through Focus Group Discussions (FGD).

Student Development Personalization (Gap-Based Intervention) For students with a "Traditionalist" profile (high academic performance but low digital footprint), UNIKOM should require participation in workshops on personal branding and digital portfolio management. to close the Digital Gap. UNIKOM should hold Entrepreneurial Coaching for "Pragmatic Academic" students, UNIKOM should directly connect them with the Incubator Business Center (IBC) to transform their ideas into viable business ventures.

University Branding Strategy (Evidence-Based Branding) The Marketing Team of UNIKOM can utilize DIA-PER data to demonstrate to prospective students and parents that: "At UNIKOM, your potential is mapped scientifically, and your competencies are validated by industry even before you graduate."

Implementing DIA-PER provides a strong data-driven foundation for universities to align the quality of their graduates with global standards. Even though this research is at the stage of mapping internal student personas, the precision matchmaking approach resulting from this model has the potential to become a long-term strategy for responding to international ranking indicators. In the future, the integration of this system is expected to increase Employability and Employer Reputation (such as the QS indicators or THE World University Rankings) by ensuring that the industry receives candidates with technical and psychological profiles that are truly accurate to their needs.

Phygital Campus Revolution (Supporting Infrastructure) Based on the findings of the Phase 2 Focus Group Discussion (FGD), UNIKOM needs to expand the number of co-working spaces within the campus environment equipped with digital collaboration tools (e.g., Smart Boards and high-speed IoT connectivity). This initiative aims to stimulate continuous heterogeneous interaction among different personas within the academic ecosystem.

Some recommendation for further research was provided as follows Conduct a real-life questionnaire survey before student's graduate (for example, during graduation registration). Qualitatively validate personas through focus group discussions (FGDs) or interviews with representatives from each class. Analyze each faculty separately to identify more specific patterns. Compare graduate profiles across classes to detect longitudinal trends. Integrate non-academic data, such as attendance and student activity unit participation, from the campus system.

The persona findings in this study are used as the foundation for building Hyper-Personalized Career Pathing and designing Differentiated Learning Spaces. This is an implementation of Smart University, where the campus uses DIA-PER to conduct more precise segmentation. This is in line with research results of Asad, M. M., Ansari, A. N., & Almusharraf, N. (2025) stated that Smart university should transform the Career Center from a mere "Job Poster" to a "Talent Curator," as well as strengthening the university's branding value in the eyes of the industry.

CONCLUSION

This research demonstrates that conventional Tracer Study methods are no longer adequate for mapping competencies in the digital economy era. Integrating data from physical activities (academic and organizational

involvement) with digital footprints (professional portfolios and social media) produces a more holistic and objective persona profile. The DIA-PER approach is capable of revealing hidden competencies, such as digital leadership and change management, that are not captured through traditional academic transcripts. Unlike traditional survey-based approaches, DIA-PER also identifies hidden competencies such as digital empathy and instructional ability, which are crucial within UNIKOM's digital entrepreneurship landscape. This approach enables the University Career Center to function as a high-precision talent curator for industry.

From the research, we can conclude that the resulting latent classes require distinct, persona-driven interventions. The student population is predominantly composed of the Social Hub persona (Class 1: 45%), which requires an omnichannel approach and organizational behavior training. Meanwhile, Class 2 (35%) branches into two functional personas based on their academic orientation: The Seamless Learner and The Pragmatic Academy, both requiring accelerated or self-service digital interventions. Finally, The Traditionalist persona (Class 3: 20%) remains highly dependent on physical interactions, necessitating high-touch strategies such as in-person boot camps to aid their digital transition.

The policy implication for career center that they should provide omnichannel Strategy for The Social Hub and Seamless Learner Implement. Integrated CRM (Customer Relationship Management) system should be developed to integrate students' digital job search history with offline counseling modules.

Fast-Track and Self-Service Strategy should be provided for The Pragmatic Academy Provide for example the development of AI-based career assessment platform that can be accessed 24/7 independently, a virtual job fair, and a micro-credentialing application that directly connects to the industry without students having to go to the Career Center office. Concierge and High-Touch Strategy should be provided for The Traditionalist by Continue holding in-person career clinics, offline interview simulations, and group mentorship programs on campus. DIA-PER faces challenge in the lack of staff's digital literacy because they need data analytics skills needed to interpret results and facilitate counseling since it is fundamentally shifts the role of the Career Development Center (CDC) from a passive "Job Poster" (broadcasting static ads) to an active "Talent Curator" (matching persona fits using data).

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